In accordance with Administrative Order 25 (AO25) and through the guidance of the NJDEP's Office of Permit and Project Navigation (OPPN), Covanta held a public hearing on their proposed Camden Green Initiative Project (CGI Project) on December 8, 2022. The CGI Project includes upgrading the air quality control systems on each municipal waste combustor (MWC) at the Camden County Energy Recovery Associates, LP (CCERA) and installing a system to allow for the processing of nonhazardous liquid wastes in each MWC. The following presents all comments received during the public hearing and throughout the public comment period via email. Many of the comments were related to one or more of the five main topics below.

- Public Engagement
- Beneficial Uses of the Plant
- Emission Controls
- Liquids Processing (LDI)
- Recommendations for the NJDEP

To the extent possible, we have consolidated our responses to these topics within the headings below in the first part of this document. In our responses to individual comments, we have referenced our responses to these topics where appropriate, while providing additional direct responses depending on the question.

In Part II of this document, we respond directly to all comments that have not been addressed in Part I For those questions that we feel are best addressed through our response in Part I, we have provided a reference to the appropriate topic in Part I. In addition, where comments were responded to during the live hearing, we have provided that response as well so that the full context of Covanta's response can be noted.

In the interest of transparency, all comments and responses are included in this response package with the multi-page comments assembled as Attachment 1. All comments are listed in the table of contents for ease of navigation through the document. In the event that one person or group submitted multiple comments, their submittals and our responses have been compiled in one location within this document. If you feel like your question has not been addressed, we encourage you to contact our facility through our website[1] and speak to one of our management team.

Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Some of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events, and through the June 2022 Community Benefits Agreement.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our air emissions from the facility. The proposed emission control upgrades and the liquids processing system

[1] https://info.covanta.com/cgi

will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward. We have tried to directly address each of your questions and have grouped the comments into a few themes: regarding emission controls, those that were addressed directly to the NJDEP, questions on the proposed Liquids Processing (LDI) measures, questions on our public engagement process, and some on the general need for our facility. Covanta has been working hard for years to be a good neighbor, and continuously looks for ways to improve our relationship with the community. We hope that our multi-year long effort to study emission control upgrades shows this commitment.

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Part I: General Responses to Common Issues and Concerns Raised

Many commenters referenced similar topics around the public engagement process, beneficial uses of the facility, emissions controls, and liquids processing. In addition, we received numerous suggestions or comments directed directly at the NJ DEP. In lieu of providing individual responses to each instance where these topics were raised, we have attempted to respond to these questions collectively below, so we can provide more background, and hopefully, clarity, to these important topics. In Part II, we either reference our responses in Part I, or provide additional information to respond specifically to the individual commentor.

Public Engagement

Public engagement is a critical part of our interaction with the community, which we take very seriously. In fact, open two-way dialogue is an important part of our Community Outreach and EJ policy, which we first announced over a decade ago, across the river from Camden in Chester, PA. As such, we welcome the feedback provided by our community members on the approach to public engagement we took in this process. Covanta believes that public engagement should be an ongoing process, that lasts far beyond individual comment periods related to any individual permitting action. We have had a published EJ policy[2] for more than 10 years and have been working since we took over the site in 2013 to be a good neighbor involved with the community. In June 2022 Covanta also agreed to a Community Benefits Agreement[3]. The Community Benefits Agreement (CBA) includes annual allocations of $50,000 plus $2 for every ton of liquids processed at the facility with funds to be allocated for community programs at the discretion of the independent board.

Covanta has been working in close coordination with the NJDEP's Office of Permitting and Project Navigation (OPPN) and has been following their guidance on best practices for complying with the public information session requirements of Administrative Order 2021-25 (AO-2021-25). Covanta was advised by NJDEP to call the meeting a public hearing and to hold our public hearing virtually in order to increase potential participation. We acknowledge that some people may not have internet access, and still more people were apparently unaware of the hearing. While we cannot help the first issue, to the second, we strongly recommend that all interested community members with internet can sign up for the DEP's Office of Environmental Justice (EJ) newsletter[4]. This is a free service that announces all scheduled upcoming EJ public hearings. To the notice aspect, we followed all NJDEP guidance and published in multiple newspapers, sent invitations to elected officials in and around Camden, and reached out to community members from across Camden who we have a relationship with.

We also understand that since our hearings, the NJDEP's guidance has been updated to now encourage hybrid presentations. Accordingly, we will follow this guidance and hold future meetings in a hybrid (in person and online) format. We will have Spanish translation services available in case they are needed. Numerous attempts were made to advertise our public hearing in a Spanish newspaper in the area, but we were not able to locate one. The NJDEP has been sent a recording of our public hearing as well as this

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[2] https://www.covanta.com/sustainability/environmental-justice

[3] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf

[4] https://public.govdelivery.com/accounts/NJDEP/signup/13189

response to comments package in both English and Spanish which will be posted on the NJDEP's EJ website. Any Spanish speaking residents wishing to submit comments are encouraged to do so at any time through the normal channels listed on our website[5] and someone from our team will promptly respond. This document has also been translated into Spanish and will be made available to the public. Current NJDEP guidance on Public Hearing Best Practices is included here[6]. We have also provided answers to many Frequently Asked Questions[7] about the CGI project on our website.

Consistent with the goals of New Jersey's environmental justice law (NJSA 13:1D-157) and Covanta's environmental policy in support of that law, the CCERA has been actively discussing the details of the proposed CCERA AQCS Upgrade Project with numerous local citizens and organizations.
Covanta Camden has recently conducted meetings concerning the Project with the following:

- City of Camden Councilwoman Boucher
- Heart of Camden Executive Director Morales
- City of Camden Mayor Carstarphen and staff
- Morgan Village Circle Community Development Corporation
- Camden County Solid Waste Recycling Coordinator
- Camden City School District Board of Education
- Camden Collaborative Initiative (CCI)
- NDEP – Air, Sustainable Waste, and Environmental Justice groups
- State Senator Nilsa Cruz-Perez
- State Assemblyman Moen
- State Assemblyman Spearman
- Waterfront South Community Meeting
- Camden County Director of Solid Waste
- Camden County Commissioner Nash
- Camden Area Health Education Center
- City of Camden African American Commission
- The Citizens of Newton Creek

Discussions have focused on the upgraded emissions control equipment and associated emission reductions, the details of the proposed LDI system, and the benefits of the project to the environment and the local community.

Finally, we want to stress that Covanta is committed to community partnership and speaking directly to EJ issues. We have had an EJ policy and program in place since 2011 and were the only industrial company in the State that we are aware of that testified in support of the New Jersey EJ Law. We are invested in the community for the long run, have worked hard to develop relationships with community leadership, and welcome future discussions, plant tours, and creative ideas to help highlight the amazing potential for this great city.

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[5] https://info.covanta.com/cgi

[6] https://dep.nj.gov/wp-content/uploads/ej/docs/njdep-ej-public-hearing-best-practices.pdf

[7] https://info.covanta.com/camden-green-initiative-faqs?hsCtaTracking=cd1aacf8-e165-4b7a-a246-4b55ee3bfd3f%7C64d6f400-f261-4666-8049-5002ba59c838

Beneficial Use

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance, avoidance of CO_2 equivalents (CO_2e) emissions from fossil fuel power generation, and the recovery of metals for recycling. Attached is a paper entitled "U.S. Waste-to-Energy GHG Reduction Overview" which summarizes a life cycle analysis which shows, according to USEPA, that waste-to-energy facilities reduce greenhouse gases in the atmosphere by about 1 ton for every ton of municipal solid waste combusted. (Attachment 4)

Covanta Camden is regulated under a Title V operating permit, meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[8] every day. Many commenters have cited a misleading series of statistics regarding our emissions footprint versus other sources in the area.

We acknowledge that we are a large facility, however, we do not feel that the full impact from other local large stationary facilities and transportation emissions are currently being appropriately considered in comparison. This is why we presented our emissions as a percentage of the regional air shed. Elevated ambient air contaminant concentrations can lead to health impacts and to have an accurate picture of causes for this in any given area you have to consider all sources and include emissions from neighboring major areas (like Philadelphia) as their emissions carry across the river to our city. Factoring in all of this, our NOx and PM10 emissions account for approximately 2.2% and 0.6% of the airshed respectively. The emission controls that we are proposing through this project will bring those figures down even further.

We are working to minimize our environmental impacts while also keeping a strong focus on meeting all of our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, and as shown with emissions data from Covanta's Indianapolis, IN and Warren County, NJ facilities provided in the air quality permit application for the project submitted to NJDEP on July 8, 2022, the LDI process has been found to have a minimal impact on air emissions. LDI is a useful financial tool to assist implementation of the proposed emission improvement upgrades in a timely and comprehensive manner. If LDI was eliminated from this CGI Project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable

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[8] https://www.covanta.com/where-we-are/our-facilities/camden

emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible. In the air permit application for the project, Covanta has proposed to reduce the existing short-term and annual emissions permit limits for filterable particulate matter, lead, cadmium, mercury, chromium, nickel, sulfur dioxide, hydrogen chloride, hydrogen fluoride, dioxins/furans, and 2,3,7,8-tetrachlorodibenzo-p-dioxin. A lower annual emission limit for oxides of nitrogen ("NOx") is also proposed.

In order to evaluate the potential health effects of the CCERA upon completion of the proposed upgrade of the air quality control systems, CCERA contracted with AECOM to conduct a multi-pathway human health risk assessment of the CCERA. A copy of the health risk assessment report is included in this document as Attachment 2. The proposed maximum short-term hourly emission rates and the proposed annual emission rates of air toxics were modeled using USEPA's preferred dispersion model, AERMOD, to obtain air concentrations and deposition rates for the area surrounding the facility. The IRAP-h View™ Industrial Risk Assessment Program (IRAP)[9] was then used to implement U.S. Environmental Protection Agency's (USEPA) Human Health Risk Assessment Protocol (HHRAP)[10] which integrates the AERMOD output, pollutant-specific emissions, site-specific physical and hydrological parameters, exposure parameters, and compound-specific toxicity values to estimate the cumulative human health risk at specific exposure locations near the facility. The approach was conservative in that maximum allowable emission rates were used (as opposed to actual emission rates) and in that it assumed all three (3) MWCs operated continuously (8,760 hours per year) when each is limited by permit to 8,256 hours per year of operation.

In accordance with USEPA's HHRAP (Human Health Risk Assessment Protocol), the following multi-pathway scenarios were evaluated for both adult and child exposure:

1. Resident/Fisher - An adult/child who eats local produce from a backyard garden and fish caught from local water bodies. This scenario was located where AERMOD output indicated the highest CCERA stack air concentrations and deposition fluxes regardless of whether actual residences are currently present.
2. Farmer Type 1/ Fisher: A farmer (adult/child) who eats mainly produce and livestock (excluding consumption of beef and dairy milk) and fish caught from local water bodies. This scenario was also conservatively located where AERMOD output indicated the highest facility impacts even though those locations are not zoned for agricultural use[11].
3. Farmer Type 2/ Fisher: A farmer (adult/child) who eats produce and livestock from the farm (including beef and dairy milk) and fish caught from local water bodies. This scenario was evaluated at actual farms located nearest to the facility and confirmed, through readily available online information, to have beef and/or dairy cows. The nearest of these are the farm at Saul High School in Philadelphia, PA (~11 miles away), and Wellacrest Farms in Mullica Hill, NJ (~12 miles away).

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[9] https://www.weblakes.com/software/risk-assessment/irap-h-view/

[10] https://epa-prgs.ornl.gov/radionuclides/2005_HHRAP.pdf

[11] USEPA 1991. Burning of Hazardous Waste in Boilers and Industrial Furnaces. 40 CFR Parts 260, 261, 264, 265, 266, 270, and 271. EPA/OSW-FR-91-012; SWH-FRL-3865-61. February. https://www.epa.gov/sites/default/files/2016-03/documents/52fr16982.pdf

The IRAP software used AERMOD output along with the site-specific physical and hydrological parameters and pollutant-specific emissions rates to calculate exposure point concentrations in the air, soil, surface water and fish, home-grown vegetables, farm-raised animals, cow's milk, eggs, and mother's milk (child only). The IRAP software then used the exposure point concentrations and toxicity values to calculate the pollutant-specific Excess Lifetime Cancer Risk which is expressed as a probability (e.g., 10^{-5} or one chance in 100,000), and non-carcinogenic risk, expressed as a hazard index (HI). The total cumulative risk was then calculated as the sum of the pollutant-specific values.

USEPA guidelines for hazardous waste boilers indicate that total incremental cancer risk should not exceed 1×10^{-5} (one chance in 100,000). USEPA selected this level partly to account for exposure to background contamination levels from offsite combustion sources. USEPA guidelines indicate that the non-cancer HI for an individual constituent, or mixture of constituents where appropriate, should be less than 1.0[12]. The USEPA cancer and non-cancer guidelines are also consistent with that of NJDEP as provided in Section 2.3.1 of *Technical Manual 1003 Guidance on Preparing a Risk Assessment for Air Contaminant Emissions*[13].

The risk findings assess calculated risk results relative to these cancer and non-cancer thresholds. The overall long-term risk results for all exposure scenarios evaluated are less than the acceptable cancer risk and non-cancer (HI) risk thresholds. The maximum acute risk results for each of the exposure scenario locations, applicable to both adults and children, are less than the acceptable HI risk threshold of 1.

[12] USEPA 1998. Human Health Risk Assessment Protocol for Hazardous Waste combustion Facilities. Office of Solid Waste and Emergency Response. EPA-530-D-98-001A. July. https://www.epa.gov/sites/default/files/2015-09/documents/rags_a.pdf

[13] https://www.state.nj.us/dep/aqpp/downloads/techman/1003.pdf

Emission Controls

After many years of study based on experience at other Covanta facilities, the Liquids Processing (LDI) process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission control improvement projects in a timely and comprehensive manner. Covanta currently utilizes scrubbers and electrostatic precipitators to control emissions from the site in accordance with state and federal laws. We are hoping to upgrade this to include automatic controls for the scrubber system tied into our continuous emissions monitoring system (CEMS) and temperature controls as well as installing a new baghouse for each combustion unit. These upgrades are considered a state of the art retrofit and would reduce current emission levels by up to 95%. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

Air permits are issued by state agencies (in this case the NJDEP) according to their State Implementation Plan (SIP) to comply with federal and state environmental laws. Emission standards are issued for industrial process operation classes as a means to facilitate adherence to National Ambient Air Quality Standards (NAAQS). These standards take into account emission rates that are technically achievable for that process. In many cases, as with our facility, the NJDEP will require emission controls, monitoring, and regular stack testing as requirements to obtain an operating permit. These controls are sized and selected based on federal and state air emission standards and air dispersion modeling that projects potential impacts of those emissions to local sensitive receptors (the local community). There is an established process in place to minimize air impacts and adhere with state and federal laws. The proposed baghouses and associated process upgrades would be partially financed through revenue from the addition of the LDI process. The new process for the Camden Facility helps facilitate this enhanced emission control and provides the added benefit of decreasing overall plant emissions. The process is in use at Covanta's Indianapolis and Niagara facilities and was previously approved by the NJDEP and successfully used at Covanta's Warren County, NJ facility.

The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

Liquid Processing (LDI)

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, and oily waters. Accepting those would be irresponsible and we would be agreeable to including conditions in our solid waste operating permit prohibiting acceptance of these liquids. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject four (4) to six (6) gallons per minute of liquid waste into each boiler. The combustion chambers are so hot at this point that the injected water instantly vaporizes. This is advantageous for many reasons as it brings down the overall limit of material that we are allowed to combust since the weight of that water must also be included against our limit.

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta hired an expert consulting team to conduct a traffic study (Attachment 3) around the Camden site. Their work began in September 2022 with taking baseline readings of turning movement counts (TMCs) and other level of service (LOS) observations per the Highway Capacity Manual standard. This essentially amounts to counting types of vehicles that pass select critical points in the neighborhood. The three intersections below were central in our research.

- Morgan Street and Master Street
- Holtec Blvd and CCERA Driveway/I-676 SB Off-Ramp
- Holtec Blvd and Broadway

The aim here is to gauge the congestion level at each critical intersection. As traffic builds over a certain threshold that area approaches its carrying capacity. We wanted to know if our potentially adding one more truck per hour into the system would have a statistically significant impact on local traffic conditions. The traffic analysis was completed using the Synchro traffic model (Version 11.0). A system peak was calculated by looking at the counts at the three intersections holistically and the AM peak hour was determined to be 7:30 AM to 8:30 AM, and the PM peak hour was determined to be 4:00 PM to 5:00 PM. Even during these peak hours, it was found that one more truck per hour into the system would have negligible impact on traffic congestion at the local major intersections listed above.

Currently the site sees an average of 180-195 trucks per day. With the new liquids process some of the MSW trucks would be replaced by liquids trucks and the new expected maximum daily range would be 190-205 trucks per day. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which has to be renewed every five years. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

Recommendations for the NJDEP

Many comments were addressed directly to the NJDEP in relation to Covanta's proposed CGI project. The NJDEP will read this document and has been involved in our AO25 process from the outset. As many comments in this subsection followed a similar format, we have included them here to hopefully address each main point and highlight the benefits of our facility while presenting an accurate picture of environmental impacts.

Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events.

This action will require further review following the conclusion of the AO25 response document. All proposed permit modifications remain to be evaluated by the NJDEP pursuant to the Solid Waste permitting regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air permitting regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to or renewals of the Title V Air Operating Permit. This evaluation includes a thorough technical review as well as a public comment period. Covanta has been coordinating with the NJDEP closely throughout this process, and we will relay your permitting concerns to them.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

Individual Responses

1. Camden for Clean Air

Public Hearing Comment: So I'm listening to the presentation, and if I didn't know better, it sounds convincing, but I'm concerned about this is as recently as the last week, and walking through the community and trying to inform the community about do they know that there is a public meeting taking place. And all the people that I talked to, were not aware that there's a public meeting here. So it's, like, what is your outreach? And the people that I also have talked to, they do not agree with Covanta dealing with liquid waste adding more trucks and pollution. And I want to still talk about the issue that they're dealing with, with their health. So I'm trying to figure out even when you talk about your copy of your health risk assessment; how did you assess the health risk or even the health -the current health situation in that area? Because according to the people, they haven't heard from Covanta since before the -- the pandemic. And back to the Community Benefits Agreement; the people were not even aware of that. The fact that the people had mentioned that they had a meeting on October 27th and the permit was already signed off for them saying that they agree with it when they knew nothing about that. And that really is solid the fact that $25,000 and 2.5 percent -- but that doesn't cover or deal with the health impact that they already are feeling, let alone bring in additional waste within this -- in this area. And the fact that Camden is going better than other areas -- if that's the case, then Camden should be sending their trash to other places and not the other municipalities sending their trash here, and now you want them to bring additional waste here. So again, this process should be in the community where people have accessibility to get there in person and also additionally having a virtual part to it. That would be more transparent, but the way you guys are coming off; it sounds good and convincing, but you know what? You can't put a price on the health -- the cumulative health of people living in that area. And you're trying to bring in additional waste within this area. So -- you know -- again, it's disheartening because that's what's not being said here. The people whoever that team was that met to go over the Community Benefits Agreement, they -- they didn't --how are you going to do that after and then you're going to say that you agree to something, but you never bring it to the community saying they supported that? Because they're asking the question, well, where did you come with 2.5 percent of? The 2.5 percent of what amount? But $25,000, and then you have a third party that's going to be overseeing the funding. Okay? Is there any administrative costs or anything? There is nothing to explain to the community as a whole, but you have a small group that's a part of a circle that's making these decisions. The process is unfair, and it needs to be reviewed.

Covanta Response: A copy of our recently completed human health risk assessment (HHRA) is included in this document as Attachment 2. Please see the Beneficial Use section above for a detailed summary of the HHRA.

Per the Community Benefits Agreement (CBA) signed in 2022, Covanta is allocating fixed funding levels over the next few years up to $250,000 total (based on various $50,000 allocations) and are supplementing that with $2 for every ton of liquids that the site processes through the proposed LDI system. There is no mention of 2.5% in the CBA, so we suspect you may have been referring to the $2/ton supplemental. If you have any further questions on this please reach out for follow up. The link to the CBA is included in the “Public Engagement” section above.

Public Hearing Comment: Thank you. I'll keep my comments pretty short. I think many on this call know the history of opposition to this facility ever opening in South Camden from Father Michael Doyle to Kelly Francis to the local NAACP chapter to local residents rallying against this facility for decades. It should be closed tomorrow if I had the power to do it. And frankly, it would close and pay reparations to families that had to breathe in the toxic pollution produced by this facility for years. It's a major reason, in my opinion why Camden school children are 150 percent more likely to go to the emergency room for asthma compared to the state average. I would ask that Covanta have a truly civically engaged and open public engagement process over these permits. We had a meeting just a few days ago in the Ferry Avenue Public Library branch with residents from just your backyard – just where in Crestberry Apartment, sadly, there's a playground with the smoke stack that puts out toxic metals, toxic pollution, every single day that these children -- they have to breathe it in. Members from that community attended that meeting, and many specifically said some didn't have phones, many did not have access to a computer. This is a conscious choice by Covanta. A corporation with extreme resources to hire a consultant to know this; that they are purposely excluding this population from being able to meaningfully engage with this process. Most of these people are people of color, multigenerational Camden residents; people that have paid the highest price from having to have a polluting, disgusting facility in their backyard where their children have no other choice but to breathe in the toxic fumes put out by this facility. Covanta is making a conscious choice to apply for these permits before New Jersey's historic Environmental Justice Law has been put into effect. A very openly cynical move on your part. Covanta continues to have a very good greenwashing campaign on its own behalf where it gives money to our public school, which is sickening to me because these school children -- they're garbage; when they throw it away in their public school system in Camden goes and is burned in this facility -- when they go out to the playground, they have to breathe it in because of this facility. This facility should be closed. I call on the DEP. I call on Governor Murphy. I call on our Camden County Commissioners. I call on our city public officials to do everything in their power to shut this facility down, to slow down this process, to enable meaningful public comment, and to stop taking blood money from this terrible corporation that is contributing extremely negatively towards the health outcomes of children and longtime residents of the City of Camden. I yield my time.

Covanta Response: More information is provided under the "Public Engagement" and "Beneficial Use" sections above.

Public Hearing Comment: You say you'll burn pharmaceutical waste. Pharmaceuticals often include halogens, fluorine, chlorine, and bromine. Some of these chemicals that form the most toxic chemicals known to science, dioxins, and furans, for which there is no safe dose. Most of these chemicals will be released as acid gases like hydrochloric and hydrofluoric acids, which are unsafe to breathe and be exposed to. Will Covanta commit not to take halogenated pharmaceutical wastes?

> **Live response provided by Mike Van Brunt of Covanta:** We don't process bromine and iodine containing waste. That's something that we definitely focus on. In terms of chloride containing waste the challenge with chloride or chlorine is it's a halogenated gas or a halogenated compound. That's endemic in a lot of waste.
>
> And so the way we manage that is through carefully controlled combustion. One of the reasons why we are so successful now in terms of bringing dioxin emissions down from waste energy facilities is because of that understanding around the combustion process.
>
> There was a study that Columbia University did a few years ago that looked at sources of dioxin

in the country[14]. By far the leading source of dioxin in the country now is uncontrolled combustion. So think about things like forest fires, landfill fires, building fires. Even people's fireplaces are significant sources of dioxin.

In a carefully controlled process, we can manage that. Your concern about the acid gases is an important one. That's specifically why we look at the scrubber technology that we're looking at. So that recirculating dry scrubber, for example, will result in lower rates of acid gas emissions. And again, it's important to note too that the chloride concern that you raised, that's something that we deal with in all sorts of waste. It's something, in fact, that even the food waste processing industry or anaerobic digester facilities have to deal with. There are chlorides in those kind of wastes as well.

Covanta Response: Since the hearing, the CCERA has advised the NJDEP that it will not accept liquid wastes that contain fluorine, bromine and iodine. The chlorine content should be less than 2 percent. More information is provided under the "Emissions Controls" section above.

Public Hearing Comment: It's nice to see that you don't plan to burn landfill leachate liquids that include PFAS, pesticides, and such. We know you do burn some of these things at other incinerators, such as Landfill Leachate. Will you commit to an enforceable permit condition that prohibits you from burning the wastes you say you will not burn?

Live response provided by Jack Bernardino of Covanta: So as Todd mentioned earlier he said we do have a lot of other categories of liquids and, yes, there's things we don't want. So you're correct, landfill leachate is processed at some of the other Covanta facilities that process liquid. That is something that, again, that we made clear that we do not want. And yes, we would be willing to also put that on a list of liquids not to be processed.

Covanta Response: Covanta expects the final permit to include conditions along the lines that you suggest.

Public Hearing Comment: How does burning water increase efficiency? Was this a misstatement? Did Jack mean that it cools down the waste enough that more waste can be burned?

Live response provided by Jack Bernardino of Covanta: Basically when I say operational efficiency, the baghouse is also going to help on the operational efficiency side, which will help with the processing. So that's what I meant. What's related to that was more on the baghouse.

Covanta Response: In addition, more information is provided under the "Emission Controls" and "Liquids Processing (LDI)" sections above.

Public Hearing Comment: If you'll be burning at your permitted level, that means the existing trash and liquid industrial waste, and that still only bring you to 90 percent capacity; so you're admitting you're lying and won't be turning away any of the trash you currently accept and that there will be a more significant increase in trucks.

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[14] Dwyer, H., & Themelis, N. J. (2015). Inventory of US 2012 dioxin emissions to atmosphere. *Waste management*, *46*, 242-246.

If you're at 85 percent capacity, which is what the DEP data shows, and the amount of waste you want to burn is just 5 percent of your capacity, why would you be turning away any waste so that there's only a small increase in trucks. You have the capacity to add this waste without turning away any trash. To help the community believe you, would you ask DEP for an enforceable permit condition reducing the allowed tonnage you can burn to no more than 90 percent of your current capacity? And whose trash will you be turning away?

Live Response from Patricia Earls of Covanta: When we did our truck traffic analysis we based it on our full throughput of wastes which would be MSW plus liquids up to the existing permitted limit of 451,000 tons. So that truck impact is based on if we were burning as much as we were allowed to burn. I'm not really sure what the 90% comment means but that's how it was done.

Live response from Todd Frace of Covanta: Thank you for the question. We currently process around 400,000 tons per year and our permit limit is just over 450,000 tons per year. Through the efficiencies that we are proposing we can come up toward that permit limit but 25,000 tons of that waste would be liquids as it has more benefit for us and approximately 85% of the waste by weight is water that gets vaporized instantly upon entering the combustion chamber. We will not be asking for a cap reduction as you suggest.

Covanta Response: In addition, more information is provided under the "Liquids Processing (LDI)" section above.

Public Hearing Comment: Why are incinerators begging to be shut down and why are you proceeding?

Live Response from Jyoti Agarwal of Covanta: We need to have ways to manage waste streams. Do we need more recycling, absolutely, do we need diversion, absolutely, but the truth is we do not have the infrastructure in place right now. We have laws that are being developed to put those systems in place and we are looking forward to that. In the meantime we have large volumes of wastes that need to be managed on a daily basis.

2. Dorothy Foley

Public Hearing Comment: Have you formally noticed residents within a one mile or at least 0.25 mile radius of your plans? How many Camden residents are on this Zoom meeting?

Live response provided by Lee Hoffman, meeting mediator: I can tell you that I can answer the second part of that because we have 65 participants on the Zoom right now and we've had more than that, but several have dropped off. But if Patricia Earls could answer the question about the formal notice and then also more broadly describe some of the notice provisions and what was done to promote this meeting that would be appreciated.

Live response provided by Patricia Earls of Covanta: So again, having this hearing we're following the Administrative Order 25 requirements of having the meetings and the notification requirements. So the administrative order requires a 30-day notice. We did do a 60-day notice where we published notice of this meeting on the New Jersey DEP's Environmental Justice website where they list all the environmental justice hearings under the AO-25 order. Also, we had an ad continuously posted in Tap Into Camden since October 7th. We also published a notice in the Courier Post, as well as the Anointed News Journal. Again, about 60 days before this hearing. So again, those are the outlets that we picked for this, which we based on some input from folks in Camden.

Also, we did send out some email invitations to some contacts we had. So we did get the word out. Again I would encourage everyone here, all environmental justice hearings under the AO-25 are on the New Jersey DEP's website, so that's where you can see all of them happening. But we did follow the requirements. And again, under the guidance of the New Jersey DEP.

Covanta Response: Additional detail is provided in the "Public Engagement" section earlier in this document, including a list of the diverse range of public meetings that were held around the community on this project.

3. Kerry Miller

Comment (Submitted via email): As a resident of a 'downwind' community in close proximity to the Covanta incinerator in Camden, I am in complete agreement with Camden for Clean Air's objections and requests regarding the public process around Covanta's pending applications for new and renewed permits to operate. I cannot fathom why NJDEP would approve such a weak and unbalanced outreach process, nor why it would allow Covanta to be the place the public is instructed to send its comments and questions, but the way in which Covanta carried out the public outreach task on these applications is deficient and disturbing. I urge you to take a step back, re-do the outreach in a way that honestly tries to engage the community, hold new hearings in the affected neighborhoods, extend another comment period, and designate NJDEP as the place to send public comments. As a major source of pollution in the air I breathe every day, I ask you to go back and do better.

Covanta Response: All permit considerations are made through the NJDEP pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit. Covanta has been coordinating with the NJDEP closely throughout this process, and we will relay your comment to them. Please refer to the "Public Engagement" section earlier in this document in regard to the outreach concerns that you voiced. Covanta works hard to try and be a good community member and is continuously trying to find new ways to engage more people.

4. David Pringle

Public Hearing Comment: Will you inform DEP that this hearing was not bilingual even though there are OBC's in immediate area of the incinerator that fit the definition of OBC due to language barrier.

Live Response from Patricia Earls of Covanta: This recording and the response to comments document will both go to the NJDEP. I know there have been some comments about Spanish speaking residents. While we do not have translators on this call you can certainly submit comments in Spanish by the means listed on the screen and we can get those answered.

Covanta Response: Please also refer to the "Public Engagement" section earlier in this document. All comments and responses will be translated into Spanish and provided on our website.

Public Hearing Comment: My name is David Pringle. I'm representing Clean Water Action, which is a national environmental group. We have 150,000 members in New Jersey and have been extremely active on the garbage incineration issue ever since Camden administration had the evil idea to put an incinerator into every single county. And Camden was special; they were going to get two incinerators. Fortunately, we defeated one, but unfortunately, we're having this hearing and you exist today. I'd like to congratulate Covanta. You get a gold medal tonight in greenwashing, which is a fancy way of basically saying you're lying. You say -- you know -- you pretend to be a good corporate partner when your basic business model is to make money poisoning the community that's already overburdened and buying support to dampen opposition. You present a false choice of incineration versus landfilling, when at best they are the worst options and -- you know -- Number 5 and Number 6 on the list. Recycling is actually -- everybody thinks recycling is wonderful. It's certainly better than the alternatives, but it's only Number 4 on the list. Reduction, reuse, and composting are far superior. So your basic premise of this meeting is false. So you're arguing that you're wonderful. A, it's incorrect when you say you're better than landfilling, but even then you're ignoring all of the things that are far superior to both. If you want to be a good partner, you would be doing all the things that you put in your presentation tonight that reduce emissions and not any of the things that increase emissions. As was previously said, I think, by Sean, you should be installing the baghouse if you're going to exist. You should be upgrading the scrubbers. You should have done it 10, 15, 20 years ago voluntarily. You should not be proposing to burn liquid waste. It is horribly inefficient, and it is impossible for it not to increase emissions. Now, you may do some things that will otherwise reduce emissions, so the net might not be as bad or maybe it's even better than it is today. But you should be -- again, reducing all emissions, not increasing emissions. And you basically lied when you say – you know -- is it harmful to my health? It meets all acceptable standards. Tell me what amount of particulates is healthy for an infant to consume? How much lead is healthy to consume? So if you want to be a good partner, do the good things in this project, install the baghouse, upgrade your scrubber, but don't lie to us. Be a good partner. Don't start burning liquid waste. Stop killing people and poisoning them.

Covanta Response: Throughout our public engagement processes and the AO25 process, we have tried to present a fair representation of our impacts and our benefits to the community. Please review the earlier detailed sections. Again, it has been stated numerous times in this document, but we are not proposing to increase emissions, rather quite the contrary.

Public Hearing Comment: You said that emissions are safe because they meet standards. What amount of particulates, lead, is healthy as an infant or a senior citizen to breathe in.

Live Response from Mike Van Brunt of Covanta: That's exactly what the human health risk assessment is meant to achieve. It looks at what the permitted emissions are from the facility, and goes through what the pathways are for those emissions to make it to humans through ingestion or inhalation. Generally the largest concern with lead is ingestion from drinking water or lead paint or contaminated soils. However that is one of the impacts that gets assessed as part of the human health risk assessment.

Public Hearing Comment: Let me confirm that I heard you correctly? You will only install the baghouse and do the upgrades if the liquid injection process is approved? That's your definition of environmental justice?

Live Response from Mike Van Brunt of Covanta: Just to clarify, we have submitted the application with LDI as part of the overall package. We were encouraged to submit all at once from the air and solid waste side. If we were to pull back on that now, it would affect the timeline and potential emissions reductions for the area. We would then have to reevaluate what could be supported. I'm not saying that it'd be nothing, we would still look to improve emissions, as we always do but it would throw the CBA off the rails since the revenue sharing piece would no longer be viable, and we would have to re-evaluate.

Covanta Response: The "Emissions Control" and "Liquids Processing (LDI)" sections go into this more but if the project were to be denied for whatever reason much of the investment of funds and time would be lost and any potential emissions reductions to the community delayed. Planning for large scale construction projects takes considerable time and dedicated revenue streams, common practice for any private company.

5. Alexis Mountes

Public Hearing Comment: Were there ads in Spanish or what was done in order to have things done for Spanish speaking individuals?

Live Response from Jack Bernardino of Covanta: I keep thinking about the meeting that we had at Waterfront South on June 9th. The advertisement in the flyer that was handed out door to door prior to the meeting; it was both in English and Spanish. We also had someone available at the meeting that could speak Spanish as well so we have the ability to do that and we will continue it if that's necessary.

Covanta Response: Please refer to the "Public Engagement" section earlier in this document. All comments and responses will be translated into Spanish and provided on our website.

Public Hearing Comment: Yeah, so I just want to kind of reiterate what some other people have been saying around, you all, kind of framing yourself as a green alternative to landfills. Because we do know that incineration is still very bad for the environment, and it does not avoid landfills because you still need a place to dispose of the toxic ash that is produced when burn trash. And then besides toxic gas, you are producing a lot of pollutants into the air, including lead. And Camden and it's surrounding towns do have a much worse air quality. Much higher levels of health problems that are associated with poor air quality. As well as the fact that trash incinerators, even if they are producing energy, they're producing even more green house gases than coal power plants do. So incinerators are being phased out in the U.S. for a reason. We are not building new ones because we do know the fact that they have a really harsh environmental impact and there is a very high cost of operations for them. So I don't think that we should be increasing the waste that this facility is taking in, and we really need to be moving away from trash incineration to more zero waste approaches that are better for the environment. And I also just want to add that I know there's been some talk about accessibility with this process, and I know someone else mentioned, like, hybrid meetings that is a way to make it accessible for more people. Have an in-person meeting with a call-in or Zoom option. And there just wasn't a lot of notice for this meeting. The permit pages are really, really long. And they're also only available in English. So if you really want to be accessible to people, you will also offer information in Spanish because we have a large Spanish speaking population in Camden. So just something to note as well. So yeah, thank you.

Covanta Response: Thank you for your comments Alexis. Please refer to the “Beneficial Use” section for more information but we believe that waste to energy is by far the cleanest option to dispose of large volumes of wastes. Your questions about engagement and Spanish language accessibility are also addressed in the “Public Engagement” section.

Comment (Submitted via email): Administrator Griselle Rivera, I am writing to express my opposition to Covanta's plan to burn new kinds of trash at their facility in Camden. Covanta is already the number one source of industrial air pollution in the county. The Covanta facility in Camden is the second most toxic in the entire nation! Pollutants released from Covanta contribute to asthma, cancers, heart attacks, COPD, stroke, learning disabilities and more. Covanta is also the county’s main source of greenhouse gas emissions. It's time to end our dependence on trash incineration, a dirty energy business that releases more greenhouse gases than a coal power plant. I support clean air. I support environment justice. I support necessary climate action. I oppose Covanta being permitted to spew more toxic chemicals into our air.

Covanta Response: The NJDEP will be provided with a copy of this document and has been a part of our AO25 process from the beginning. Thank you for your comment.

6. Joseph Bouvier

Public Hearing Comment: Which Covanta speakers from tonight live in Camden. I'm wondering if anyone can answer that question?

Live Response from Todd Frace of Covanta: We currently have 47 full-time employees. Six of them were born and raised in Camden, and we have two corporate employees who were born and raised in Camden so currently that’s about 13% of our staff. It is very important to us to try and get that number up to at least 20-25%.

Covanta Response: In addition to what Mr. Frace said during the live session, we wanted to add that Covanta is regularly hiring and wants to provide employment opportunities whenever possible within the community. Job postings can be found on our website and through numerous in-person events throughout the year.

Public Hearing Comment: Okay. Well, I'll start off my name is Joe Bouvier, I am from Merchantville, one of the neighboring towns. I am a member of Camden for Clean Air as a volunteer. I'm also a volunteer member of the Merchantville Green team. For environmental reasons, I'm really against incinerators as a whole because they produce greenhouse gases, they're bad for the environment, and we should be switching over to renewables in any event. But the incinerators are bad polluters as well. And New Jersey's Department of Health has posted studies on its website showing that air quality is statistically significantly worse in Camden, Gloucester City, Collingswood, Oakland, Pennsauken, Merchantville, Mount Ephraim, and Brooklawn. Virtually, all the towns surrounding Camden and Camden itself as compared to other municipalities in the state. So we've got a pollution problem that leads to poor air quality. Most of these same towns have higher risks of cancer from breathing in carcinogens in the air. And Camden's rates are statistically significantly higher when compared to the statewide average. So something around Camden seems to be causing health risks and harm to people. And the studies that I've been looking at say that the Covanta facility produces over 50 percent of the industrial pollution waste in the County of Camden. So it appears that the incinerator is causing harm to people. And frankly, that's what we want to stop. We want people to be healthier. We want this facility not to harm people. I think that the meeting tonight really should have been a public meeting around the Camden facility so that neighbors could come in and talk to the Covanta people about the health problems that they're having. The health risks in that area are much higher than in other areas. And in the spirit of New Jersey's soon to be effective environmental justice law, I feel like Covanta should be prepared to show that it's proposed additional operations, if the permits are granted, will not pose any increased health risks to the residents of Camden because they've, for a long time, gotten the short end of the stick when it comes to harm due to environmental hazards coming from facilities. I do have a number of other questions, but I think I'm probably just going to make that comment and I might submit more questions in the chat box. Thank you very much.

Covanta Response: Thank you very much for your comments. I would refer you back to the "Beneficial Use", "Emission Controls" and "Liquids Processing" sections earlier in this document. There are only two ways currently to manage wastes at large volumes – landfilling and waste to energy. Waste to energy is by far the cleaner of the two options. We are working to make it even cleaner still and the emission control improvements that the new Liquids Processing system will allow will be a large part of this.

Public Hearing Comment: Has Covanta conducted studies to try to determine if its operations cause an increased risk of health problems in the City of Camden and surrounding towns? If so, where can those studies be obtained?

Live response from Mike Van Brunt of Covanta: Yes, good question. So that speaks specifically to the human health risk assessment (HHRA) that we are completing as part of the permitting process. That will be submitted to NJDEP so that it will be a public document.

Covanta Response:
The HHRA is included in this document as Attachment 2 and summarized in the "Beneficial Use" section.

Public Hearing Comment: Didn't Covanta promise to install filter baghouses the last time it submitted a permit application for approval to the DEP? Why weren't they installed at that time?

Live response provided by Jack Bernardino of Covanta: Yes, thank you, Joseph for the question. I'm not aware of a permit application that we submitted for Camden for installing a baghouse prior to this, so maybe you can give a little more description or -- or a timeframe, but as far as I know, this is the first time that we've submitted an application for the scrubbers and the baghouse for Camden.

Comment (Submitted via email): I oppose Covanta Camden's plan to burn liquid waste. The Covanta incinerator is past its useful life and needs to be shut down. It releases toxic chemicals into the air, and the ash that gets distributed to landfills is also toxic. Not to mention the adverse greenhouse gas effect! We need to transition away from fossil fuels altogether, and the granting of a permit to Covanta for burning liquid waste will just prolong the facility's life, worsening our climate change crisis and causing serious health problems for people in the community. Environmental justice demands that the facility stop its operations.

Covanta Response: Please refer to the "Liquids Processing (LDI)" and "Beneficial Use" sections earlier in this document. If you look holistically at current waste disposal options at large volumes, waste to energy is by far the preferred option. Siting of these facilities has too often occurred in or near overburdened communities. Ever since we took over this plant we have been working hard to run a state of the art facility, minimize our environmental impacts and be a good neighbor within the community of Camden.

Public Hearing Comment: How many Camden residents are employed at the facility now and what percentage of the Covanta workforce is that?

Live response provided by Todd Frace of Covanta: Thank you for your questions. It is very important for us to try to get more Camden people employed at the facility. Currently, we have 47 full-time employees. Six of them were born and raised here in the City of Camden. We also have two employees with our corporate office that were born and raised here in the Camden area. So for the Camden plant, it's about 13 percent. And as Brittany said, we are really looking to increase that up to 20 to 25 percent and get as many Camden people as we can hired into the facility.

Comment (Submitted via email): Administrator Griselle Rivera, I am writing to express my opposition to Covanta's plan to burn new kinds of trash at their facility in Camden. Covanta is already the number one source of industrial air pollution in the county. The Covanta facility in Camden is the second most toxic in the entire nation! Pollutants released from Covanta contribute to asthma, cancers, heart attacks, COPD, stroke, learning disabilities and more. Covanta is also the county's main source of greenhouse gas emissions. It's time to end our dependence on trash incineration, a dirty energy business that releases more greenhouse gases than a coal power plant. I support clean air. I support environment justice. I support necessary climate action. I oppose Covanta being permitted to spew more toxic chemicals into our air.

Covanta Response: The NJDEP will be provided this document but please also refer to the "Beneficial Use" section for more information.

Comment (Submitted via email): Please accept these comments with regard to the Covanta permit applications under review by the New Jersey DEP for additions/modifications to its Camden incinerator. I am a volunteer member of the Merchantville Green Team and a volunteer member of the Camden for Clean Air organization. I request that the DEP deny Covanta's permits to expand operations at its Camden incinerator to include the burning of liquid industrial waste and Covanta's request to renew the operation permit for the Camden incinerator.

Climate change due to greenhouse gases is here, posing an existential threat to our planet. Climate-change deniers aren't seen as credible any longer, because the effects of climate change are now obvious and easily seen. Severe weather events have inundated our country in the last decade, and are believed to have been caused by or accelerated by climate change. Ask yourselves, prior to about ten years ago, how many tornadoes did we ever experience in the State of New Jersey? They were an extremely rare occurrence. Now, however, each summer and fall, we see several tornadoes ravishing our beloved State. It may be too late to improve this situation, but dramatic action must be taken right away to at least prevent things from getting worse. As a society, we must immediately shift away from greenhouse gas producers.

Levels of greenhouse gases produced by incinerators are far worse than levels produced by all other manners of disposing of municipal waste, such as landfilling. So, from a greenhouse gas perspective, incinerators are disfavored. And incinerators are an incredibly inefficient method of producing electricity (they release more than twice as much CO2 to make the same amount of electricity as a coal power plant).

But the problems are compounded when you consider the toxins produced by incinerators that are released directly into the air that we breathe. Carbon dioxide is not the only culprit. Dangerous nitrous oxides, sulfur dioxides, lead, and mercury are also released into the air. These substances cause severe and chronic health problems such as heart attacks and asthma. This is, further, an environmental justice issue. Virtually every incinerator in the Northeast United States is located in a marginalized community, causing poor people and people of color to disproportionately bear the burden and heavy physical toll, and exorbitant healthcare costs, resulting from poor air quality.

Recent published studies by the New Jersey Department of Health, which are viewable online, show that Camden and virtually every single one of its surrounding towns (including Gloucester City, Collingswood, Oaklyn, Pennsauken, Merchantville, Mt. Ephraim, and Brooklawn) have a statistically significantly worse air quality when compared to other municipalities in the State. And most of these towns have higher rates of the types of cancer caused by breathing carcinogen-polluted air than the statewide average. Camden, in particular, has a statistically significantly higher rate than the statewide average. I reference these findings of "statistically significantly" worse rates because such a characterization compels the conclusion that the air in and around Camden is believed to be causing these health hazards.

I have also seen reports that the Covanta incinerator in Camden produces over half of the industrial air pollution in all of Camden County. Is it improper to conclude that Covanta pollution may be the primary reason (or at least one of the primary reasons) that Camden residents have so many health problems? More scientific study might be needed to determine this to be definitively true, but the likelihood is that Covanta's incinerator hurts and kills people.

So, what can we do about this? I say let's try and help the people of Camden and surrounding towns by reducing the levels of air pollution by switching from incineration to landfills (the county can also work toward greater participation in recycling, reuse, and composting). Such a decision would help not only people's health, but will also assist in preventing the global problem of climate change from getting worse. It is the right thing to do. I attended the Covanta "public hearing" presentation on December 8, 2022, and must say I was disappointed by Covanta's failure to try to engage with the most-affected community on this issue, the people who live directly in the bowels of the Covanta smokestack in Camden. Few Camden residents were informed of the hearing. It should have been held in person, in the Covanta neighborhood. Instead, it was an on-line remote hearing. Residents within one mile (or perhaps two miles) should have been mailed direct notice of the hearing, in English and Spanish. A Spanish interpreter should further have been present at the hearing to answer questions, since such a high percentage of Camden residents speak Spanish. I saw that during the remote hearing, one resident asked a question in Spanish in the "chat" room, but the reply given was that Covanta was unable to provide a response to a question in Spanish.

I was struck by a couple of other things during the Dec. 8 public hearing, as well. Covanta employs extremely few Camden residents at its incinerator facility (I believe it was only 6 or 7 out of approximately 145 employees). Such representation is not indicative of being a good "neighborhood partner" (as Covanta likes to claim).

Also, Covanta is requesting a permit to install baghouses inside the incinerator, a type of filter that would help reduce pollutants from being released into the air. My question is, why has it taken so long for Covanta to move to install the baghouses? This should have been done a LONG time ago, as baghouses are apparently the standard nationwide for incinerators. And why in the world would Covanta say, as it did in the public hearing, that it only intends to install the baghouses provided that its permit for collection and disposal of liquid industrial waste is granted? Again, this type of representation is not the position a “good neighborhood partner” would take. In fact, the opposite is true. Covanta appears to be taking advantage of the Camden community and purposely neglecting to take basic steps that would help reduce pollution and health risks.

I lastly request that when DEP considers the Covanta permit applications, that it apply the spirit and rule of the soon-to-be-enacted Environmental Justice Law. Based on the long environmental disjustice heaped onto the citizens of Camden by this company, Covanta should have the burden of proving that the grant of its permits will not adversely affect marginalized communities. Thank you for your consideration of my comments.

Covanta Response: Covanta works hard to try and be a good neighbor while minimizing our environmental footprint, providing a needed service through waste disposal, and employing community members whenever possible. Throughout this document and during public outreach as a practice, we have worked to present a fair and accurate picture of our operations and impacts. Read through the earlier detailed sections and if you have any further questions we would be happy to follow up. All permit decisions are made by the NJDEP pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit and this document will be provided to them for their review.

7. Vida Neil

Public Hearing Comment: How do you expect the older people in the community who don't have computers or internet access to participate in this hearing?

Public Hearing Comment: The process online is unfair and intended to exclude the community who will not support your application. How do you plan to change that?

Live response provided by Patricia Earls of Covanta to above 2 questions: I'm Patricia Earls, the New Jersey Regional Environmental Manager. When we were organizing this hearing, we were working with the New Jersey DEP's Office of Permitting and Project Navigation, or OPPN, which is the office that handles these hearings or handles at least the guidance for permit applicants to set them up.

It was recommended that we do it as a virtual hearing just to make the recording of the hearing a little bit easier. Again, this is going to be posted on our website afterwards for people to view at any time.

Believe it or not we tend to get better attendance at these Zoom meetings just because it's a little easier for folks to be able to see it.

And I do understand there are older residents that may not have computer access. And certainly, the Camden staff, Todd, Jack, Alyssa, and Brittany have done quite a few meetings and are certainly willing to meet with any other members of the public that would like to discuss the project further and make additional comments and we can certainly answer their questions at a future time.

Public Hearing Comment: If Covanta doesn't get the permit for the liquid waste, will Covanta still add the baghouse filter?

Live response from Mike Van Brunt of Covanta: We submitted the liquids processing application in tandem with the baghouse and emissions control improvements. If this doesn't go through for whatever reason, we would have to go back to the drawing board and Jack mentioned earlier the sort of timeline that we foresee. That unfortunately would be pushed back if we have to look for other finance mechanisms.
Covanta Response: Please see the "Liquids Processing" and "Emission Controls" sections earlier in this document for more information.

8. Sherry Brown

Public Hearing Comment: How much of that 2.5 million do you believe should be distributed to families who have been affected by the process of waste removal, Covanta -- Covanta is proposing to use. What other techniques has Covanta tried to use to get rid of waste that does not require waste being burned? What eco-friendly techniques does Covanta plan to use in the next 5 to 20 years to get rid of waste? Why choose low-income communities to build your business in as opposed to buying and owning a large, spacious piece of land where people are not inhabited? What is the end game? What is Covanta's end game in trying to partner with EPA or EJO?

Live Response from Jack Bernadino of Covanta: The $2.5 million refers to fees that we pay to the city of Camden and we do not have any control on how they are allocated. However through the Community Benefits Agreement (CBA) that we signed last year $50,000 will be going directly to the community for allocation at the discretion of the Board that was established solely for this initiative. Through revenue sharing associated with the liquids processing proposal, that $50,000 will be expanded to about $100,000/year should the project meet all projected milestones. This is in addition to the volunteer hours and community benefits that the plant already offers.

To the question of eco-friendly techniques, we are always trying to move up the waste management hierarchy. This can be seen through our ferrous and non-ferrous metals recycling efforts that keeps these materials out of landfills. We are promoting recycling and composting through collaborations with various entities including Rutgers University and the New Jersey Composting Council. We are still looking for other opportunities to do similar studies.

We are trying to partner with our regulators to follow AO25 and best available guidance on applicable issues.

Covanta Response: More information on the CBA is included earlier in the "Public Engagement" section above. Covanta is continuously looking to improve operations, recycle more ferrous and non-ferrous metals, and support waste minimization processes like recycling and composting. Perhaps one day there will be another technology that will be able to manage large volumes of trash.

9. William Davis

Public Hearing Comment: How old is the facility? And is it currently up to standards to even consider additional processes? It seems to be two conflicting narratives. It makes it difficult to know whose stats to trust.

Covanta Response: The proposed liquids injection process along with the associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward. More information on the emissions benefits of our proposed project is included in the “Beneficial Use” and “Emissions Control” sections earlier in this document.

Live response provided by Todd Frace of Covanta: Thank you for the question. The facility became operational in 1991. So it's about 31 years old. Covanta acquired the facility in 2013 and since that time we have been making improvements and repairs to systems to bring it up to the original design specs, and we continue to make repairs and improvements to the facility.

10. Reverend Jones

Public Hearing Comment: Let me just ask a couple of questions first. And if I can get quick answers? And then I have a comment at the end. Now, Type 72 type waste includes sewage from septic tanks. Is that one of the types of waste that will be processed there? What is the annual rate of truck traffic now at the facility and what will it increase to? How did you determine what the health impact on the community was? Was it through a cumulative health impact study or environmental impact study? How was it determined? What’s the amount of revenue back to the City of Camden? Are you fully aware of the environmental justice profile for Camden? And so I want to just make a comment now and say that if Covanta is truly interested in being a partner with environmental justice communities you say you have a green initiative; it's very important that you do a cumulative health impact study. That is the only way you're going to be able to determine whether or not and what kind of health impact the plant has on the community. But I want to read a report statement from the New School for the Environment in New York. It says, "Incinerating trash is the most polluting way to deal with waste and emits more harmful air pollution than burning coal or natural gas for electricity." And then it goes on to say -- this was done May 23rd, 2019 -- this is in the report from the new school in New York -- their environmental center. Very knowledgeable people, a lot of scholars and researchers. And they said the second largest emitter of lead among Covanta's processing -- that this processing nationwide -- you guys represent the second largest emitter of lead in the country. I want you guys to respond to that and just I want to end with that. I've been involved with environmental justice issues for 30 years and there is a huge amount of companies that pollute the air, water, and soil in this city, and so we really don't need another facility that will possibly increase pollution in the community. Thank you.

Live response provided by Todd Frace of Covanta: Sure. Reverend Jones, thank you for your question there. So Type 72 waste has a lot of different waste that are all encompassing per the New Jersey Solid Waste Permit. We are not proposing, nor do we want to burn some of the waste that are listed in Type 72 waste. So we can in our permit spell out what we want to process on that. And we are definitely not looking to process leachates or sewage sludge, Reverend.

On the annual rate of truck traffic you asked, currently our facility has about 180 to 195 trucks per day and that is for our reagents, the MSW, the metal that goes out, and the ash that goes out. After the Camden Green Initiative, we will increase that potentially, at maximum, by one truck per hour, which would be 190 to 205 trucks per day. We have done a full traffic analysis and we will make that public (It is included in this document as Attachment 3). The other thing that I just wanted to answer here, Lee -- I'm just going to throw in one more answer to that question and that's a little bit about how we have engaged the community in the Waterfront South and Morgan Village. Alyssa Wilds, who is our community outreach manager was unable to be here, but starting in the beginning of this year, we had canvases to Morgan Village and the Waterfront South area that went door to door and had meetings set up to talk to residents.

We also had various other meetings with the residents and tried to reach out to them.
The hearing tonight is not the end process. And to Reverend Jones and some of the other leaders I think are on, we would love to be able to set up meetings with you and your local residents if you could help us gather so we could come and talk more about this process in our facility. So we are open to that. And I think we're going to skip to Question 4 and Jack will answer that about the revenue to the city.

Live response provided by Jack Bernardino of Covanta: Sure. Thank you Reverend Jones for the question. We currently pay a host fee for the facility to the City of Camden. And we do a couple of things. We pay a host fee. It's typically about $1.9 million a year that goes to the City of Camden. In addition, we're paying about $600,000 of property taxes also to the City of Camden. So the total is about 2.5 million that we're paying annually to the City of Camden.
Going back to Question Number 3, how did Covanta determine the health impact?

Live response provided by Mike Van Brunt of Covanta: Yes, thank you Reverend. We determined the health impacts for this particular facility with what's called a human health risk assessment. It is not a cumulative study, as you point out. However, what we did was still appropriate here because actually what we're proposing results in a pretty significant reduction in emissions and a reduction in human impacts. And so I think that's really important. I want to make sure that that doesn't get lost.

With the baghouse the significant reductions in the emissions that will result from that will result in already low human health impacts being reduced even further. So that's very significant from that standpoint.

The other question was Question 5. Are you fully aware of the environmental justice profile for the City of Camden?

Yes, we are very aware. Both from just looking at the numbers, which is what we have to do when we're looking at the environmental justice law, and then also more importantly with what Jack's team and Todd's team being members of the community, being in the community; not only see it from, the numbers standpoint, but actually see it firsthand.

Covanta Response: Please also refer to the "Liquids Processing (LDI)" section where we walk through some of your points on Type 72 wastes and detail the results of a recent traffic study that was conducted by an expert third party and showed that the proposed process would have negligible impact on surrounding traffic at the four major intersections around the facility.

11. Spencer Muscat

Public Hearing Comment: How many facilities do you guys actually have in non-people of color cities and townships? Because it seems like it's only predominantly in POC communities. And you see the detrimental effects it's having on not only the kids, but also the residents and also the surrounding residents by default.

Live response provided by Mike Van Brunt of Covanta: The question is a good one. I think if we look at the waste energy facilities across the country -- and again, I don't have the exact numbers in front of me, but certainly, over half are located in historically urban communities or communities that have historically borne a disproportionate impact. This is an issue that's been studied extensively.

And when it has been studied, race has been a factor in where these facilities initially were cited. We're not denying that. It's sort of, I think, an unfortunate history, not only of waste energy facilities, but frankly of the whole waste industry. Our job at this point in time is to take the facility that we operate where it's located today and operate it as well as we can and make sure we upgrade it to the equipment that we proposed here in the permit application.

So that's really what our focus is today is how do we take this facility, which already meets its permit requirements -- however, that is located in a community that has historically faced a disproportionate burden, and how can we improve on that performance?

12. Theresa Shields

Public Hearing Comment: I have a comment and a question. I heard the presenter talk about Europe and Germany and how we are doing better than those countries as far as the environment is concerned, but I just would like to say that communities from the east coast to the west coast are trying to shut down such facilities that we're talking about today. I have not heard one good reason why this one should remain open. I know that you showed the data stating that there would be less emissions of the poisons in the community, but for 30 years, lead, mercury, dioxin, and other gases have been emitted into the community. So that's my statement. Now, my question is, what surveys – what longitudinal studies have been done to ascertain what influences all of these toxins have had on the community? Because the data shows that at least 49 percent of the residents in Camden who have to go to the hospital for asthma -- or for Camden County – who have to go the hospital for asthma, are from the City of Camden. So that's my question. And my final question is, what other communities outside of the African American communities and Hispanic communities have these kind of facilities been proposed to? Thank you.

Live response provided by Mike Van Brunt of Covanta: Thanks very much for your question. We do, as part of the permitting process, undertake a very important exercise, which is a human health risk assessment, which is required. And during that assessment, we have to follow a very specific process that's developed by the USEPA. It's approved by the NJDEP to evaluate what the health risks are from the facility at its permitted level.

So that's very, very conservative. So you have to assume when you go through this process that you're going right up to the permit limit, which is not something that we do. We operate typically well below the permit limits. We've been working through that process now with a third-party engineering firm that does that work for us and goes through that analysis.

The data that we have so far from that analysis, which will be public, indicates that we're well below the thresholds that NJDEP has accepted with regard to unacceptable health risk for the community. So in layman's terms, what that means is that the NJDEP has concluded that this facility is protective of human health based on the information in the health risk assessment and the guidance document that the USEPA has put together.

Covanta Response: Covanta recently conducted a human health risk assessment (HHRA) on the proposed process, and have included the full report in this document (Attachment 2) and a summary earlier in the “Beneficial Use” section above.

13. Martin Levin

Public Hearing Comment: Are you monitoring the frequency of asthma cases in the neighborhood surrounding the Covanta Camden plant? How does that compare with other plants where baghouse technology is already implemented? …. in the slide where you showed the Covanta share of air pollution in the area, why did you dilute it by including all of Philadelphia? And in using the 2017 data for it, did you include the largest air polluter in the region, the PES oil refinery in Philadelphia which was operating in 2017 but blew up and shut down for good in 2019?

Live Response from Mike Van Brunt of Covanta: That's not something that we monitor. It's a very complicated issue but a significant one, significant to me because I grew up with asthma. Incidences of asthma are extraordinarily complicated in identifying the causes but they are often linked back to cumulative impacts. Through our interactions with the NJDEP, we were encouraged to look at how we compare with other sources, stationary and mobile, within the air shed. It's important to look at all potential pollutant contributors to this issue.

We included Philadelphia in the air shed because it's right across the river from Camden and emissions there inevitably blow over the river to us. We ran this by the DEP and they agreed with the approach, but advised us that we should have looked at NOx emissions from greater distances because NOx can be transported quite a ways. This is one of the reasons that New jersey is so engaged with NOx standards in Pennsylvania.

The EPA National Emissions Inventory was used for our calculations. When new data comes out shortly we will update our analysis to compare it with the inventory that the EPA puts together.

Covanta Response: More information on this is included in the "Beneficial Use" section of this document. The ambient air of any community is comprised of emissions from numerous sources, across county and state lines, from mobile sources, and yes from stationary sources. Covanta is a large facility, but there are nine others in the county, and multiple highways and other sources. We cannot control them, but we can work to minimize our impacts, which is the focus of this project through the proposed emission control improvements.

Public Hearing Comment: Can you provide a list of the tests that will be performed when a truck with liquid waste arrives at Covanta?

Live response provided by Mike Van Brunt of Covanta: Thank you, Mark, for the question. So there's a couple of sets of tests. You asked the question about what test do we provide for each truck. When each truck comes in, we'll test the load for pH, which is how acidic or how alkaline the waste is to make sure it's in a proper range.

We'll also check for the amount of solids that are present. We can't take high solid waste; sometimes you'll get loads in that have got a lot of sediment or solids in it that we can't process. We'll also check for what's called a flashpoint, which is an indication of how flammable the liquid waste is. We can't take, for example, you couldn't take gasoline as a liquid waste. It has to be water based.

We also test for reactivity. So we'll take a little bit of the sample from the truck and we'll mix it with the sample that's in the tank to make sure that there's no adverse reactions. Those reactions can be polymerization reactions, they can be increase in temperature or odors, and that way we make sure that we're not bringing in anything that's incompatible with what we already have on site.

Before we even get to that point, everything has to go through an approval process. During the approval process, depending on where the waste stream is coming from, whether it be for example, like, the paint manufacturer or a different process that were given as examples, we will actually require the generator of the liquid waste to give us analytical results on things that are appropriate for that particular waste stream, for example.

So if we're getting a liquid waste stream in from a machine shop, right, that's for a coolant, we'll ask them to provide us metals results so that we're not bringing in any heavy metals that are contained in the liquid waste. So it's that two-step process where we're both looking at the waste stream itself, but then also running through the individual tests that we do when the tanker comes into the facility.

14. Renee Bain

Comment (Submitted via email): I am sending this e-mail to inform you, that as a citizen of NJ, I oppose any additional pollution as is being applied for by Covanta Camden. We need to be working to decrease air pollution and make it nonexistent. We all deserve breathable air. Thank you.

Covanta Response: Thank you for your comment. Covanta is proposing to significantly reduce our annual emission levels through the installation of state-of-the-art emission controls. Please see the "Liquids Processing (LDI)" and "Emissions Controls" sections for more information.

15. Chris Whitehead

Public Hearing Comment: How has your recycling recovery rate for metals trended over the course of the last permit?

Live response provided by Todd Frace of Covanta: Mr. Whitehead, thank you for that question about the metal recycling rate. I can't give you the exact answer of the number of tons per year, but I do want to tell you that I became the facility manager here in 2019. At that time, our ferrous recovery rate was about 3.0 percent of the incoming trash. Currently today we recover about 3.7 percent of the incoming trash is metal that we recovered.

16. Doug O'Malley

Public Hearing Comment: So just to state clearly my name -- it's Doug O'Malley. I serve as the Director of Environment New Jersey. And we've weighed in in multiple decades on Covanta's Title V air permit. I did miss some of earlier testimony, although I did hear Reverend Jones. As you can see in the chat, I've listed kind of some of the questions I've -- yeah, some of the questions, which I'll get to. But I did just want to start off just by saying that Covanta by holding this hearing is kind of framing itself as a good neighbor. And kind of what I've heard even just over the last several minutes kind of dispels that assertion. And I just wanted to focus in specifically on the baghouse question because what I'm hearing directly is that this is a business decision that's being made to directly to essentially say that we, as the company at Covanta, we want to bring in more liquid waste and we're going to use that revenue to do the baghouse. And if we can't do that -- if we can't kind of include the amount of waste that we're burning, we're not going to go forward with the baghouse technology. And so it -- I just want to kind of take a moment to kind of -- you know -- look at the analysis. This is clearly quid pro quo. This is a business decision that's being made, or at least that's how I'm perceiving it and it -- it does get the point of, well, what is a good neighbor? And certainly, a good neighbor would not say, well, only if we can burn more we will put in better technology. Really, the point of the Clean Air Act – and this is not what -- you know -- this is not kind of a question of whether Covanta is a good neighbor or not, it's a question of the clean air act and the Title V permit, and ultimately a question for the DEP. Because Covanta should be using the best available technology. There have been efforts. And certainly, as all of you know, and other community members know, to put in stronger technology at Covanta facilities like in Newark. But -- you know -- I think what – Reverend Jones was hitting on this, and I'm sure other mentioned this as well -- you know -- this is a question of the fact that this Covanta facility is the largest industrial polluter in the county and it's no accident that it's based Waterfront South. It was not welcome in Waterfront South when it came. And -- you know – I just kind of want to reframe the conversation here because there's been discussion on outreach in Waterfront South. There's been discussion on the community service hours that have been spent. There's a direct monetary value placed on the benefits for Waterfront South neighborhoods of $50,000 to – you know -- to local non-profits. But there does not seem to be that cost benefit analysis for the health impacts of the pollution that's dispersed from the Covanta facility. And so I really wanted to come in and focus on that. The second question I had, which I've listed first in the chat is on the need for a cumulative impact study. I didn't hear a commitment to actually have that be done. To have it be shared publicly. And also inform DEP of the facts and -- you know – inform DEP of -- of those results as part of the permit process. And the third question I want to come back to is, obviously, we are in a position of having the environmental justice law which has now been passed and the environmental justice rules that have been proposed by DEP and hopefully will be adopted shortly. You know, a good neighbor would obviously be supporting those rules and not have opposed them. So I also wanted to kind of ask, clearly, whether Covanta was lobbying against the environmental justice law when it was being proposed and is Covanta still lobbying against the environmental justice regulations that are under consideration at this moment by DEP? I have more questions, but let's stop there because those are three very direct questions that I would strongly want to hear directly from the company.

Live Response from Patricia Earls of Covanta: We have been working closely with the NJDEP throughout this entire process and have been following the requirements of AO25. NJDEP will hold their own public hearings should they issue draft permits.

Live Response from Jack Bernardino of Covanta: Covanta has been an advocate for the New Jersey EJ law since 2020, and one of the only companies to publicly commit to a comprehensive EJ plan (since 2011) in the state. We were one of the only companies to testify and support this regulation.

Covanta Response: Covanta is a private company that needs revenue to allocate funds to projects. We meet existing NJDEP Title V permit and Solid Waste permit requirements and are proposing these upgrades to better that environmental performance. Please see the “Liquids Processing (LDI)” and “Emissions Controls” sections for more information. Thank you for your comment.

Public Hearing Comment: As a follow-up on the baghouse question, what is the analysis for health impacts that Covanta's failure to include stronger baghouse technology? Will Covanta provide a cost-benefit analysis in the permit on the inclusion of a baghouse to include the health impacts for Camden residents, not just the cost of Covanta?

Live Response from Mike Van Brunt of Covanta: The human health risk assessment that we are completing is based off of the new baghouse installation. That is part of the permitting process that we are completing.

Covanta Response: The full HHRA is included in this document as Attachment 2 and summarized in the "Beneficial Use" section earlier.

Public Hearing Comment: You have said you have not done a cumulative impact study. Will you do so? Share it with the public and inform NJDEP of that fact in your public report to NJDEP?

Live Response from Mike Van Brunt of Covanta: Good question. We have been encouraging the DEP to look at cumulative impacts. We need to look at how to do that for a facility and project where you are actually reducing impacts which is the case here. To our knowledge a cumulative impacts analysis is not required for a project that is reducing impacts.

Through the permitting process and through air dispersion modeling we have to look at associated ground level impacts in relation to existing local air monitoring stations and we add our impacts on top of that level. It gives you a picture of what you impact looks like in relation to national ambient air quality standards.

Covanta Response: Covanta has worked closely with the NJDEP throughout this process and we are meeting all elements of Administrative Order 25 and DEP guidance. As with all our environmental operations, our permit applications were based on the requirements of the air permitting regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit and pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and best available guidance on complying with AO-25. The full HHRA is included in this document as Attachment 2 and summarized in the "Beneficial Use" section earlier.

17. Robin Palley

Comment (Submitted via email): The text to Ms. Palley's comment is included in Attachment 1-Multipage comment submittals.

Covanta Response: Thank you for your comments and questions. Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and capacity building events, and through the June 2022 Community Benefits Agreement.

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance. Covanta Camden is regulated under a Title V operating permit, meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[15] everyday. Many commenters have cited a misleading series of statistics regarding our emissions footprint versus other sources in the area.

You stressed in your comments that Covanta Camden would fall under the New Jersey Environmental Justice Law. This application has been compiled in close coordination with the NJDEP pursuant to the requirements of AO-25 and Covanta is confident that it meets all requirements. The controls packages that we are proposing will decrease impacts and further improve upon sound performance compared to our permitted emission levels. Covanta recently conducted a comprehensive health risk assessment and have included that document here as Attachment 2 for your reference.

Toward the beginning of your comments you mention a series of statistics from Earthjustice that have been picked up numerous times but we do not feel are accurate or fair to our facility. The comment was, "Covanta Camden is the highest stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5"). Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide."

We are a large facility but far from the only one in the county. There are nine other Title V facilities in the area. Not to mention numerous highways and transportation pollution that gets carried over the river from Philadelphia and into our airshed. Paraphrasing a few commenters, there are no boundaries for pollution in the air, so we have to look at the airshed holistically taking into account all major sources. Using this method, our NOx emissions account for roughly 2.2% of ambient emissions and our PM10, roughly 0.6%.

We acknowledge that we are a large facility, however, we do not feel that the full impact from other local large stationary facilities and transportation emissions are currently being appropriately considered in comparison. We are working to minimize our environmental impacts while also keeping a strong focus on meeting all of our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, the LDI process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission improvement projects in a timely and comprehensive manner. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to

[15] https://www.covanta.com/where-we-are/our-facilities/camden

unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustions chambers are so hot at this point that the injected water instantly vaporizes. The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. Our traffic study is included in this document as Attachment 3. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operation permit, each of which has to be renewed every five years.

18. Ellen Pavlacka

Comment (Submitted via email): The text to Ms. Pavlacka's comment is included in Attachment 1-Multipage comment submittals.

Covanta Response:

Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and capacity building events, and through the June 2022 Community Benefits Agreement.

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance. Covanta Camden is regulated under a Title V operating permit, meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[16] everyday. Many commenters have cited a misleading series of statistics regarding our emissions footprint versus other sources in the area.

We acknowledge that we are a large facility, however, we do not feel that the full impact from other local large stationary facilities and transportation emissions are currently being appropriately considered in comparison. We are working to minimize our environmental impacts while also keeping a strong focus on meeting all of our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, the LDI process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission improvement projects in a timely and comprehensive manner. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustions chambers are so hot at this point that the injected water instantly vaporizes. The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per day, which would have a negligible impact on ambient air conditions. Our recent traffic study is included as Attachment 3. The LDI process would be folded into the both the facility's Title V air permit and Solid Waste Operating permit, each of which has to be renewed

[16] https://www.covanta.com/where-we-are/our-facilities/camden

every five years. The liquids for this new process would be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

To your point about stack testing versus the use of continuous emissions monitoring systems (CEMS), the EPA and NJDEP set strict rules for when a CEMS is required. When stack testing is utilized it must be performed at worst case scenario, with the process in question operating at 100% permitted throughput. This is important because it details potential emissions from the site at any given time. While a CEMS is useful for real-time information, it does not show worst case emissions. The EPA has an emissions monitoring hierarchy[17] where they comparatively judge the preferred monitoring method based on process and site type. Intermittent stack testing and continuous emissions monitoring are right next to each other on that comparison and both toward the top of the hierarchy. Generally speaking, CEMS are only required for new installations, air toxics, or to meet distinct state laws. Our current testing protocol was developed and is monitored under the supervision of the NJDEP and it meets all federal and state regulatory requirements.

Covanta submitted the Title V air permit renewal package to the NJDEP in 2018 and the permit modification applications for this project to NJDEP in 2022 and has worked closely with their Office of Permitting and Project Navigation throughout this process. We have done everything that they have asked of us.

19. Chris Ace

Public Hearing Comment: How will the upgrades be funded? Will it be private, or will there be government assistance?

Live response provided by Jack Bernardino of Covanta: Thank you, Chris, for your question. The upgrades will be paid for by Covanta. No government funding. And again, as everyone here is aware, we're looking for the revenues from the liquids processing to assist in paying for the $60 million upgrade.

20. Lisa Caswell

Comment (Submitted via Email): I am submitting the following comments under New Jersey Department of Environmental Protection ("DEP") Administrative Order No. 2021-25 ("AO-25") regarding the June 1, 2018 Title V Operating Permit Renewal Application and July 7, 2022 Title V Operating Permit Modification Application (the "Air Modification Application") and the September 30, 2022 Solid Waste Permit Modification Application (the "Waste Application") for Camden County Energy Recovery Associates L.P.'s municipal solid waste incinerator located at 600 Morgan Street, Camden, New Jersey ("Covanta Camden" or "Covanta").

Covanta negatively impacts the human and environmental health of Camden and the surrounding region. It is a major contributor to environmental pollution and degradation in the overburdened community of South Camden. While this community would be healthier without Covanta here at all, if

[17] Best Practices for Estimating Emissions Using Emissions Factors for Clean Air Act Permitting: Orde of Accuracy of Emissions Estimation Methods. 2021. Retrieved form https://www.epa.gov/system/files/documents/2022-02/emissions-factors-best-practices_0.pdf

Covanta is going to continue to burn waste here, they must implement all the best available technology to minimize their emissions and negative impacts on the community.

Covanta's proposal to add liquid waste to their facility is incompatible with the new EJ law that requires polluters in overburdened communities to take all feasible measures to reduce its emissions.

Concerns about adding liquid wastes:

1. Covanta will be burning more tons of waste than they currently are (and therefore more truck traffic & diesel pollution too).
    a. Covanta claims that the liquid waste would take the place of some of the Municipal solid waste (MSW), and not change the maximum amount of their permit, but this statement is misleading.

    b. Covanta currently doesn't have enough MSW contracts to run at their full capacity that is in their permits. This means they can keep all of the volume of incoming MSW they currently have, and add the liquid waste volume to fill the gap between what the volume of MSW they are currently receiving and the maximum volume allowed in their permit. Adding liquid waste is therefore adding additional pollution to this overburdened community.

2. Covanta is located in an overburdened community, so adding another source of pollution to the neighborhood is not legal under the EJ law.
3. Substances that are considered "non-hazardous" in liquids may become hazardous when burned (combusted) or released into the air as steam

4. Covanta isn't testing the liquids that arrive for heavy metals, halogens, or other hazards. There is no adequate accountability to ensure that they won't unknowingly burn hazardous liquids that they claim not to allow. The proposed testing is inadequate and does not protect human and environmental health.

Covanta is also proposing to add the baghouse filters and additional pollution controls.

1. The baghouse filters should have been installed long ago and are imperative for them to implement on the fastest time frame possible to mitigate harm to the community
2. To minimize harm in an EJ overburdened community, (and to fulfill their own EJ policy), Covanta needs to implement the best available technology. They should also be required to:
    - reduce dioxin limit to no higher than 2 ng/dscm
    - Install SCR and Use a NOx Limit of 50 ppmvd
    - Incorporate New Limits for Hazardous Air Pollutants in the permit

3. Annual emissions tests are inadequate accountability for this community. Covanta should provide quarterly stack tests in addition to their continuous monitoring, and add HCl, mercury, and PM2.5 to their current continuous emissions monitoring.
4. Covanta's risk assessment should account for cumulative impacts - not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community."

Covanta Response: Thank you very much for your comments and concerns. Being a good neighbor to our local communities is central to everything that we do at Covanta. We have proposed this project and the associated emissions control upgrades to lessen our environmental impacts even though we are already in good standing with the DEP through our Title V air permit. Your concerns have been addressed in earlier detailed sections but we would specifically like to point you to the “Liquids Processing (LDI)” and “Emissions Control” sections. Should you have any further questions, please reach out to us through the contact channels that we have listed earlier in the introduction and we would be happy to follow up.

21. Quinn Demenna

Public Hearing Comment: Why hasn't there been upgrades before wanting to bring more types of waste to Camden? Neighborhoods have been demanding overdue filter scrubbers.

Live response provided by Jack Bernardino of Covanta: I think the need for a baghouse has been talked about for a while. And as a company we had taken over the facility in 2013 from Foster Wheeler and the discussions about a baghouse really started in about 2017/2018. And if you remember, there were discussions of bringing it in along with a microgrid. So, when those got talked about, the microgrid had waned away and we were thinking of other opportunities to still install the baghouse. There were other things that were discussed with the microgrid as far as some financing, some Camden County waste, and actually the microgrid power pricing as well.

So as all of those things were, removed or weren't feasible at the time, what we had decided to do or thought about is that processing liquid waste is something that we have a lot of experience with. And knowing that the potential impact on the environment is really minimal and that it is a vehicle to help pay for this upgrade to the air quality controls.

So we started to go forward with it and I will say that there were some delays. Prior to the pandemic, we did have a change in CEO within Covanta. And then the pandemic hit, which just delayed things, and that put a screeching halt to a lot of things happening.

And then again as Paul had mentioned earlier, that the purchase by EQT also had to slow things down. So when you get a new owner and say, hey, listen we want to spend $60 million it takes some time to explain and go through it.

So yes, there has been delays to the project, but really the good news is that we're well on our way. We have the permits submitted to DEP. We're having the environmental justice hearing today. I'm looking forward to respond to your comments and hoping we can move forward.

Public Hearing Comment: Where will the liquid waste be coming from? I.e., Camden County, New Jersey, Pennsylvania, or elsewhere.

Live Response from Jack Bernardino of Covanta: Areas of South Jersey, Delaware, and Maryland would make up the bulk of the sources.

Covanta Response: Just to follow up on Jack’s initial comment, please see the “Liquids Processing (LDI)” section earlier in this document. We are only proposing to burn liquids whose solid components are already within our daily profile. The vast majority of the liquid is water, burns off instantly upon entering the combustion process, and all that is left is the solids.

22. Su Dru

Public Hearing Comment: Camden's air quality is consistently an F. F means fail. How will adding another category of burnable garbage improve our air quality? My child is a teenager breathing this air filled with particulates. Who can answer this question?

Live response provided by Mike Van Brunt of Covanta: I think the most important thing is with the baghouse installation -- it's really the cornerstone of this project, the baghouse and the scrubber. We're going to have very significant reductions in emissions. Across the board. Ranging from estimated NOx emission reduction of 5 percent, up through estimated lead emission reduction up to 95 percent. And importantly, that's all on a mass basis and it's all including the liquid waste that we're proposing to process at this facility as part of the project. So all in all, the environmental performance of the facility will be significantly better than it is today.

It is important to note that even where we stand today with the electrostatic precipitators, the facility already operates well-below it's permitted levels. This project will bring that down even further than where we stand today.

And as Todd pointed out we're all very excited about this project because this will be the first retrofit of an existing waste energy facility with this recirculating dry scrubber system and a very effective baghouse. So as we talk about those particulate emissions, that's a perfect example of how this technology will offer, really, best in class when it comes to scrubber technology out there on the market today. So all in all, it's a tremendous improvement in the environmental footprint of this facility.

Covanta Response: Please review the earlier detailed sections of this document. Covanta believes that we have identified a viable way to install state-of-the-art emission controls onsite without significantly deviating from the waste profile that we already combust. We can stay within our permitted combustion limits and do so with less impact on the environment.

23. Andy Kricun

Comment (Submitted via Email):
Dear Sean and David, I hope that the both of you are doing well. I am writing to express my serious concerns about Covanta's proposal to begin accepting liquid waste at the trash to steam incinerator in the Waterfront South neighborhood. As a person who worked in the Waterfront South neighborhood for many years, I am very familiar with how overburdened the Waterfront South neighborhood is. And, as a long time member of both the NJ Environmental Justice Advisory Council and the USEPA's Environmental Justice Advisory Council, I can confidently say that, unfortunately, the Waterfront South neighborhood of Camden City is a textbook example of disproportionate environmental burdens on a low income residential neighborhood largely populated by people of color.

For these reasons, I offer the following comments for the NJDEP's consideration:
1) The community of Waterfront South is a severely overburdened environmental justice community. This permit modification should not be approved if it results in any increase in emissions, and/or environmental or public health risk to the community.
2) Covanta has implemented a baghouse in its other New Jersey-based trash to steam incinerators and, if

the air emission permit is going to be opened up, it should be required to install a baghouse at its Camden facility as well as a best available technology to reduce impact on the residents of Waterfront South.
Thank you for the opportunity to submit comments and please let me know if you have any questions or if you would like to discuss further.

Covanta Response: While this comment was directed to NJDEP, it was forwarded to Covanta as well and we believe this response is relevant to the subject matter. We also wanted to include it in this package so that you would have access to associated reference materials. All permit decisions are made by the NJDEP pursuant to the Solid Waste permitting regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air permitting regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to or renewals of the Title V Air Operating Permit. Thank you for your long service to the various environmental groups that you mentioned.

24. Asiyah Kurtz

Comment (Submitted via Email): Looking at your 2020 10k, you realized an increase in energy revenue of 28 million. If the baghouse is so important, why did Covanta not invest in this necessary technology before now instead of unnecessarily tying its installation to this liquid revenue opportunity for your organization?

Covanta Response: While we cannot comment on internal financing, overhead costs, and long-term planning but we can generally say that any project has to have its own dedicated revenue source. This is common practice in any private business. Planning such projects and getting subsequent approvals takes considerable time to be done right. We have invested extensive time and money into the planning stages of this project. If it were to not go forward for any reason, much of that would be lost, and any possible emissions reductions would be delayed until we could facilitate a new viable control package.

Public Hearing Comment: Covanta Camden wants to start burning liquid industrial waste in communities and neighborhoods. This is unacceptable and public health is non-negotiable, especially in Camden County which is already overburdened with air pollution. Covanta Camden is the number one source of stationary air pollutants in Camden, including toxic mercury, hydrogen chloride, nitrogen oxides, and fine particulate matter (PM).
Covanta Response: Please review the earlier detailed sections, in particular the “Beneficial Use” information.

25. Sean Mohan

Public Hearing Comment: Good evening and thank you for the opportunity to speak tonight. My name is Sean Mulan. I am the executive director of tri-county sustainability. We're the regional hub for the 101 towns, 10 legislative districts, and 1.2 million people; Camden, Burlington, and Gloucester Counties. Why does Camden County continue to get failing grades from the American Lung Association? Well, there are several reasons, but the biggest stationary source of emissions is the Covanta facility on Newton Creek and Camden, which happens to be three miles from my house. The reason the incinerator boilers run at 1800 degrees is because most of the trash they process is wet household food waste. Going forward for both economic and environmental reasons, all of our municipalities are going to have to implement food waste reduction mitigation policies, including anaerobic digestion. There are billions of dollars in federal funds coming online to support these initiatives. I bring it up here because per the terms of the Danish firm, EQT's, leveraged buyout of Covanta last year; they have to meet several key performance indicators related to growth in the amount of waste they process. That's not going to happen once these municipal food waste policies are implemented. It's an antiquated business model for an antiquated facility. With that in mind, we call on the DEP to deny Camden County Energy Recovery Associates LP request to modify both its Title V operating permit, and solid waste facility permit for the Camden County Energy Recovery Center as it relates to liquid direct injection. Regarding the baghouse; you guys should do that anyway. Honestly, who wants to go to a park if the kids might get asthma playing there?

Covanta Response: We support composting, recycling, and other waste minimization efforts. It has been stated numerous times through this document but unfortunately there are only two viable methods to currently dispose of wastes at very large volumes, landfilling and waste to energy, with the latter being far cleaner. We are working to minimize our environmental impacts and look forward to continuing to develop stronger ties within the community. Please refer to the earlier detailed sections for more information and thank you for your efforts through Tri-County Sustainability to try and advocate for this region. That is a desire we share.

26. Janet Parker

Comment (Submitted via Email): I am submitting the following commentary under New Jersey Department of Environmental Protection ("DEP") Administrative Order No. 2021-25 ("AO-25")regarding the June 1, 2018 Title V Operating Permit Renewal Application and July 7, 2022 Title V Operating Permit Modification Application (the "Air Modification Application") and the September 30, 2022 Solid Waste Permit Modification Application (the "Waste Application") for Camden County Energy Recovery Associates, L.P.'s musical solid waste incinerator located at 600 Morgan Boulevard, Camden, NJ ("Covanta Camden" or "Covanta").

Since moving to the Waterfront South neighborhood of Camden ten years ago, I have suffered two severe asthma exacerbations. I have taken my teen-aged god-daughter, who lives several houses down from me, to the emergency room for a bad asthma attack. She has been hospitalized several times in the past few years for her asthma. Another neighbor, who started preschool in September, has a chronic cough. Children who attend Sacred Heart School, just across the street from my house, breathe the air here every day. Many of them suffer from asthma. I worry about all of us.

Covanta is a facility that contributes to adverse cumulative stressors in the overburdened community of Waterfront South. Accordingly, Covanta must go beyond the bare minimum to reduce the facility's emissions and negative impacts on the community.

Our community is asking for increased emission control measures, including: the use of a baghouse; reduction of dioxin emission limit to no higher than 2 ng/dscm; risk assessment should account for cumulative impacts; and, a continuous emissions monitoring system ("CEMS") for HCl, Hg, and PM 2.5 Should be required. Please address these concerns seriously. We as a community have worked hard to improve the quality of life for ourselves and our neighbors. The additional pollution created by approving Covanta's permit renewals and modifications defeats our efforts.

Covanta Response: Thank you very much for your comments and we hear your concerns. Please review the earlier detailed sections, in particular the "Beneficial Use" and "Emissions Control" sections. To your comments about CEMS units, our site already utilizes CEMS for numerous emission parameters and is in good standing with the DEP in regard to our Title V air permit. The contaminants that you named are already being monitored through process monitors and stack testing. Finally, we are not proposing any "additional pollution", quite to the contrary in fact. The emission controls that we hope to install would considerably reduce our overall annual emissions profile.

27. Betty Musetto

Comment (Submitted via Email): The text of Ms. Musetto's comment is included in Attachment 1-Multipage comment submittals.

Covanta Response: Thank you for your comments and questions. Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events, and through the June 2022 Community Benefits Agreement.[18]

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance. Covanta Camden is regulated under a Title V operating permit, meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[19] everyday. Many commenters have cited a misleading series of statistics regarding our emissions footprint versus other sources in the area.

You stressed in your comments that Covanta Camden would fall under the New Jersey Environmental Justice Law. This application has been compiled in close coordination with the NJDEP pursuant to AO-25 and Covanta is confident that it meets all requirements. Covanta recently conducted a comprehensive health risk assessment and have included that document here as Attachment 2 for your reference.

The controls packages that we are proposing will decrease impacts and further improve upon sound performance compared to our permitted emission levels. The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

We acknowledge that we are a large facility, however, we do not feel that the full impact from other local large stationary facilities and transportation emissions are currently being appropriately considered in

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[18] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf
[19] https://www.covanta.com/where-we-are/our-facilities/camden

comparison. We are working to minimize our environmental impacts while also keeping a strong focus on meeting all of our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, the LDI process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission improvement projects in a timely and comprehensive manner. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustions chambers are so hot at this point that the injected water instantly vaporizes. The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per day, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

To your point about stack testing versus the use of continuous emissions monitoring systems (CEMS), the EPA and NJDEP set strict rules for when a CEMS is required. When stack testing is utilized it must be performed at worst case scenario, with the process in question operating at 100% permitted throughput. This is important because it details potential emissions from the site at any given time. While a CEMS is useful for real-time information, it does not show worst case emissions. The EPA has an emissions monitoring hierarchy[20] where they comparatively judge the preferred monitoring method based on process and site type. Intermittent stack testing and continuous emissions monitoring are right next to each other on that comparison and both toward the top of the hierarchy. Generally speaking, CEMS are only required for new installations, to monitor emissions of hazardous air pollutants (HAPs), or to meet distinct state laws. Our current testing protocol was developed and is monitored under the supervisor on the NJDEP and it meets all federal and state regulatory requirements.

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

Covanta submitted the Title V permit renewal package to the NJDEP in 2018 and the permit modification applications for this project to NJDEP in 2022 and has worked closely with their Office of Permitting and Project Navigation throughout this process. We have done everything that they have asked of us.

28. Linda Delengowski

Comment (Submitted via Email): The text to Ms. Delengowski's comment is included in Attachment 1- Multipage comment submittals.

Covanta Response: Thank you for your comments and questions. Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events, and through the June 2022 Community Benefits Agreement.[21]

Covanta currently utilizes scrubbers and electrostatic precipitators to control emissions from the site in accordance with state and federal laws.

Air permits are issued by state agencies (in this case the NJDEP) according to their State Implementation Plan (SIP) to comply with federal and state environmental laws. Emission standards are issued for industrial process operation classes as a means to facilitate adherence to National Ambient Air Quality Standards (NAAQS). These standards take into account emission rates that are technically achievable for that process. In many cases, as with our facility, the NJDEP will require emission controls, monitoring,

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[20] Best Practices for Estimating Emissions Using Emissions Factors for Clean Air Act Permitting: Orde of Accuracy of Emissions Estimation Methods. 2021. Retrieved form https://www.epa.gov/system/files/documents/2022-02/emissions-factors-best-practices_0.pdf

[21] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf

and regular stack testing as requirements to obtain an operating permit. These controls are sized and selected based on federal and state air emission standards and air dispersion modeling that projects potential impacts of those emissions to local sensitive receptors (the local community). There is an established process in place to minimize air impacts and adhere with state and federal laws. The proposed baghouses and associated process upgrades would be partially financed through revenue from the addition of a Liquid Direct Injection process. The new process for the Camden Facility helps facilitate this enhanced emission control which provides the added benefit of decreasing overall plant emissions. The process is in use at Covanta's Indianapolis and Niagara facilities and was previously approved by the NJDEP and successfully used at Covanta's Warren County, NJ facility.

Toward the beginning of your comments you mention a series of statistics from Earthjustice that have been picked up numerous times but we do not feel are accurate or fair to our facility.

The comment was, "Covanta Camden is the highest stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5").13 Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide."

We are a large facility but far from the only one in the county. There are nine other Title V facilities in the area. There are also numerous highways and transportation pollution that gets carried over the river from Philadelphia and into our airshed. Paraphrasing a few commenters, there are no boundaries for pollution in the air, we have to look at the airshed holistically taking into account all major sources. Using this method, our NOx emissions account for roughly 2.2% of ambient emissions and our PM10, roughly 0.6%.

To your point about stack testing versus the use of continuous emissions monitoring systems (CEMS), the EPA and NJDEP set strict rules for when a CEMS is required. While a CEMS is useful for real-time information, it does not show worst case emissions. The EPA has an emissions monitoring hierarchy[22] where they comparatively judge the preferred monitoring method based on process and site type. Intermittent stack testing and continuous emissions monitoring are right next to each other on that comparison and both toward the top of the hierarchy. Generally speaking, CEMS are only required for new installations, monitoring hazardous air pollutants (HAPs), or to meet distinct state laws. Our current testing protocol was developed and is monitored under the supervision of the NJDEP and it meets all federal and state regulatory requirements. Our stack tests must be performed at 100% permitted operating capacity so by definition, this reflects the worst case scenario emissions profile that we are likely to encounter.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all

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[22] Best Practices for Estimating Emissions Using Emissions Factors for Clean Air Act Permitting: Orde of Accuracy of Emissions Estimation Methods. 2021. Retrieved form https://www.epa.gov/system/files/documents/2022-02/emissions-factors-best-practices_0.pdf

liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustions chambers are so hot at this point that the injected water instantly vaporizes. The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. A copy of this traffic study is included as Attachment 3 and summarized in the "Beneficial Use" section. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward. Covanta submitted the Title V permit renewal package to the NJDEP in 2018 and the permit modification applications for this project to NJDEP in 2022 and has worked closely with their Office of Permitting and Project Navigation throughout this process. We have done everything that they have asked of us.

29. Michelle Boddorff

Comment (Submitted via Email): As a resident, taxpayer and voter who lives in Camden County and within 5 miles of this proposed waste facility, I have strong objections to this proposal to burn liquid waste. The pollutants and toxins that would result are unacceptable to the natural and human environment. It is both irresponsible and an affront to environmental Justice to allow this facility to operate, especially for the residence that live in close proximity to this facility. There needs to be a safe and more environmentally process used to eliminate the waste products in question.

Covanta Response: Thank you for your comments. The NJDEP will review this document and Covanta has worked closely with them throughout the AO-25 process. We are both working hard to minimize impacts to the community while providing a needed service. Please see the "Beneficial Use" section for more information.

30. Mike Morgan

Public Hearing Comment: Is Covanta applying for a temporary or permanent permit for burning liquid waste?

Live Response from Todd Frace of Covanta: We are applying for a permanent process. Our Warren facility had a temporary permit process for liquids processing but that is only for R & D purposes.

Comment (Submitted via Email): The text to Mr. Morgan's comment is included in Attachment 1-Multipage comment submittals.

Covanta Response:

Thank you for your comments and questions. Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events, and through the June 2022 Community Benefits Agreement.[23]

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance. Covanta Camden is regulated under a Title V operating permit, meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[24] everyday. Many commenters have cited a misleading series of statistics regarding our emissions footprint versus other sources in the area.

We acknowledge that we are a large facility, however, we do not feel that the full impact from other local large stationary facilities and transportation emissions are currently being appropriately considered in comparison. We are working to minimize our environmental impacts while also keeping a strong focus on meeting all of our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, the LDI process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission improvement projects in a timely and comprehensive manner. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the considerable emissions

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[23] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf
[24] https://www.covanta.com/where-we-are/our-facilities/camden

reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustions chambers are so hot at this point that the injected water instantly vaporizes. The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. A copy of this traffic study is included as Attachment 3. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

You mentioned numerous times in your comments that Covanta Camden would fall under the New Jersey Environmental Justice Law. While we are a Title V facility, we do not meet the requirements to submit an environmental justice impact statement (EJIS) since our project does not increase environmental impacts and the permit applications were submitted at least 6 months prior to issuance of the final EJ Regulation in April 2023. The controls packages that we are proposing would significantly decrease impacts and further improve upon sound performance compared to our permitted emission levels.

The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

To your point about stack testing versus the use of continuous emissions monitoring systems (CEMS), the EPA and NJDEP set strict rules for when a CEMS is required. When stack testing is utilized it must be performed at worst case scenario, with the process in question operating at 100% permitted throughput. This is important because it details potential emissions from the site at any given time. While a CEMS is useful for real-time information, it does not show worst case emissions. The EPA has an emissions monitoring hierarchy[25] where they comparatively judge the preferred monitoring method based on process and site type. Intermittent stack testing and continuous emissions monitoring are right next to each other on that comparison and both toward the top of the hierarchy. Generally speaking, CEMS are only required for new installations, monitoring hazardous air pollutants (HAPs), or to meet distinct state laws. Our current testing protocol was developed and is monitored under the supervision of the NJDEP and it meets all federal and state regulatory requirements.

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

Covanta submitted the Title V permit renewal package to the NJDEP in 2018 and the permit modification applications for this project to NJDEP in 2022 and has worked closely with their Office of Permitting and Project Navigation throughout this process. We have done everything that they have asked of us.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

31. Maureen Pontecorvo

Comment (Submitted via Email): No burning liquid industrial waste near or in communities. What if this were your home?

Covanta Response: Covanta assumed control of this facility in 2013 and has been working to be a good neighbor ever since. The new emissions control proposal would greatly reduce environmental impacts. Please review the earlier detailed sections and feel free to reach out if you have any follow-up questions.

32. Sheryl H

Public Hearing Comment: From the description of the testing that would take place at Covanta for liquid waste, it sounds like you would not be testing incoming tanks for heavy metals but would rely on the supplier's own analytics of metal content and only require that if it was deemed likely that the particular source would include some metals. Am I understanding this accurately?

Live Response from Todd Frace of Covanta: You are correct Sheryl. Testing for metals is something that is usually done in a laboratory setting which we do not have here.

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[25] Best Practices for Estimating Emissions Using Emissions Factors for Clean Air Act Permitting: Orde of Accuracy of Emissions Estimation Methods. 2021. Retrieved form https://www.epa.gov/system/files/documents/2022-02/emissions-factors-best-practices_0.pdf

33. Vikram Sikand

Comment (Submitted via Email): Covanta Camden wants to start burning liquid industrial waste in communities and neighborhoods. This is unacceptable and public health is non-negotiable, especially in Camden County which is already overburdened with air pollution. Covanta Camden is the number one source of stationary air pollutants in Camden, including toxic mercury, hydrogen chloride, nitrogen oxides, and fine particulate matter (PM)

Covanta Response: Thank you for your comments. The profile of the liquid wastes is actually quite similar to what is already being combusted at the facility and the proposed process would still keep us under permitted limits while reducing annual emissions. Please see the "Liquids Processing (LDI)" and "Beneficial Use" sections for more information.

34. Rajdeep Usgaonker

Comment (Submitted via Email): Hello, I oppose Covanta's permit applications to pollute people for profit. Please do not burn liquid industrial waste in Camden County

Covanta Response: Thank you for your comment. As stated earlier, there are only two viable means currently to dispose of very large volumes of waste, landfilling or waste to energy. The latter is far cleaner, and we are working, and proposing this project, to make it even cleaner still.

35. Anjuli Ramos-Busot, Director, Sierra Club

Comment (Submitted via Email): The text to the Sierra Club comment is included in Attachment 1-Multipage comment submittals.

Covanta Response:

Thank you for your comments and questions. Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and capacity building events, and through the June 2022 Community Benefits Agreement[26].

As Ms. Patricia Earls stated during the latest public hearing held on December 8, 2022, Covanta has been working in close coordination with the NJDEP's Office of Permitting and Project Navigation (OPPN) and have been following their guidance on best practices. Covanta was told to hold our public hearing virtually in order to increase potential participation. We acknowledge that some people may not have internet access, and still more people were apparently unaware of the hearing. While we cannot help the first issue, to the second, we strongly recommend that Also, please be aware that all interested community members with internet can sign up for the DEP's Office of Environmental Justice (EJ) newsletter.[27] This is a free service that announces all scheduled upcoming EJ public hearings. To the

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[26] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf
[27] https://public.govdelivery.com/accounts/NJDEP/signup/13189

notice aspect, we followed all DEP guidance and published in multiple newspapers, sent invitations to elected officials in and around Camden, and reached out to community members from across Camden who we have a relationship with.

We also understand that since our hearings, the DEP guidance has been updated to now encourage hybrid presentations. Accordingly, we will follow this guidance and hold future meetings in a hybrid (in person and online) format. We will have Spanish translation services available in case they are needed. Numerous attempts were made to advertise our public hearing in a Spanish newspaper in the area, but we were not able to locate one. The NJDEP has been sent a recording of our public hearing as well as this response to comments package. Any Spanish speaking residents wishing to submit comment are encouraged to do so at any time through the normal channels listed on our website[28] and someone from our team will promptly respond.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustion chambers are so hot at this point that the injected water instantly vaporizes. This is advantageous for many reasons but it also brings down the overall limit of material that we are allowed to combust since the weight of that water must also be included against our limit.

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

To your point about stack testing versus the use of continuous emissions monitoring systems (CEMS), the EPA and NJDEP set strict rules for when a CEMS is required. When stack testing is utilized it must be performed at worst case scenario, with the process in question operating at 100% permitted throughput. This is important because it details potential emissions from the site at any given time. While a CEMS is useful for real-time information, it does not show worst case emissions.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

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[28] www.covanta.com

All permit considerations are made through the NJDEP pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit, and we will relay your comments to them. Covanta submitted the Title V permit renewal package to the NJDEP in 2018 and the permit modification applications for this project to NJDEP in 2022 and has worked closely with their Office of Permitting and Project Navigation throughout this process. We have done everything that they have asked of us. The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

We have not been able to identify any documents on our website[29] with "the beginning and ending of every page cut off". If you can identify the problematic file we would be happy to look into it further and send you PDF copies of any public document on our website. You are correct when you say that technical data is impossible to read without proper context.

We also understand that since our hearings, the DEP guidance has been updated to now encourage hybrid presentations. Accordingly, we will follow this guidance and hold future meetings when needed in a hybrid (in person and online) format. We will have Spanish translation services available in case they are needed.

36. Suzanne Curry

Comment (Submitted via Email): Please find another method of disposal. I agree with the NJ Sierra Club.

Covanta Response: Thank you for your comment. Please refer to Covanta's response to comments from the Sierra Club.

37. Mike Ewall, Esq, Executive Director, Energy Justice Network

Comment (Submitted via Email): The text to the Energy Justice Network comment is included in Attachment 1- Multipage comment submittals.

Covanta Response:

Thank you for your comments and questions.

To your question about the Camden for Clean Air Council letter to the NJDEP, we understand that this was only addressed to them so they would be the ones to respond. They will also be reviewing this response to comments package.

Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to

[29] https://info.covanta.com/cgi

the local community. This can most directly be seen through employment opportunities, sponsoring various programs and capacity building events, and through the June 2022 Community Benefits Agreement.[30]

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustion chambers are so hot at this point that the injected water instantly vaporizes. This is advantageous for many reasons as it brings down the overall limit of material that we are allowed to combust since the weight of that water must also be included against our limit. We expect a permit condition from the NJDEP to explicitly forbid burning landfill leachate, PFAS and a few other detrimental source categories.

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

To your question about continuous emissions monitoring systems (CEMS) versus stack testing, we wanted to stress that any stack testing is strictly coordinated according to state and federal regulations and performed at worst case scenarios. By definition worst case scenarios would represent the highest likely emissions profile from each source. Covanta's emissions monitoring program meets regulatory requirements.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

All permit considerations are made through the NJDEP pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit. As you note, Covanta first submitted the Title V permit renewal application to the NJDEP in 2018 and the permit modification applications for this project to NJDEP in 2022 and have been coordinating with them since that point.

[30] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf

38. Multiple Commenters to the NJDEP

The following commenters submitted this comment to Covanta employee Griselle Rivera, our Administrative Assistant, and no other comments. In a few cases this comment was also submitted in addition to separate comments and have been grouped previously by submitter name. Each of these comments were submitted via email. Any comments related to permit approvals will be conveyed to the NJDEP.

Angela Baiano, Lisa Bonanno, Denise Brush, Brian Burns, Jill Chiciak, Katie Clune, John C. Connell, Denise Coyne, Linda Delany, Edward DeMarco, Aidan DiMarco, Susan Druckenbred, Ira Eckstein, Maria Enriquez, Dennis Gormley, Judy Greenberg, Sharon Hardy, Rohn Hein, Rebecca Holloway, Jeanne Jordan, Christine Kain Singh, Mary Anne Leonard, Michael Muller, Jodi Nieman, Mahee Patel, Joeigh Perella, Roberta Reavey, Victor Rivera, Ben Saracco, Maria Nina Scarpa, Larry Schulz, David Stahl, Roseann Stanley, Alicia Torres, Larissa Whitman

Comment: "Administrator Griselle Rivera, I am writing to express my opposition to Covanta's plan to burn new kinds of trash at their facility in Camden. Covanta is already the number one source of industrial air pollution in the county. The Covanta facility in Camden is the second most toxic in the entire nation! Pollutants released from Covanta contribute to asthma, cancers, heart attacks, COPD, stroke, learning disabilities and more. Covanta is also the county's main source of greenhouse gas emissions. It's time to end our dependence on trash incineration, a dirty energy business that releases more greenhouse gases than a coal power plant. I support clean air. I support environment justice. I support necessary climate action. I oppose Covanta being permitted to spew more toxic chemicals into our air."

Covanta Response: The NJDEP will see this document and has been a supportive partner throughout the AO-25 process. Please review the detailed sections of this document with an open mind. We have worked hard to present an accurate and fair representation of our impacts and benefits to the community. This project is all about reducing impacts to the community and will not result in any emissions increases.

39. Rebecca Canright

Comment (Submitted via Email): Greetings! My name is Rebecca and I am a young person who cares about protecting our magnificent local ecosystem. I respectfully ask you to do what you can to safeguard the health of our air from harmful pollution. This will safeguard both our ecosystems and human communities from air pollution. Please oppose Covanta's permit applications to pollute people for profit. Thanks for your time!

Covanta Response: Thank you for your comment Rebecca and for your passion about safeguarding the environment. That is something we share. This project will improve the facility's environmental performance and provide a critical need to the community. Please review the earlier detailed sections and feel free to reach out if you have any questions. We also do numerous events in the community throughout the year focused on youth engagement. We hope to see you at one in the future.

40. Jane Leven

Comment (Submitted via email): I live in Camden County and work in the Centerville neighborhood of Camden. I am 100% opposed to any expansion of Covanta's incinerator operations and believe the facility should be shut down or at the very least made cleaner with the installation of a baghouse filtering system. Covanta is a major polluter and contributor to environmental injustice and should cease operations.

https://whyy.org/articles/incinerators-in-camden-chester-are-among-the-nations-most-polluting-report-finds/

Covanta Response: Thank you for your comment. The proposed project is centered around improving our annual emissions profile. Please refer to the detailed sections earlier in this document for more information. Waste-to-energy is the cleanest way to manage very large volumes of garbage. We are proud of our ferrous and non-ferrous recycling capabilities and will continue to support local recycling and composting programs.

41. Kerry Miller and Mark Huddell

Comment (Submitted via email): As a resident of a 'downwind' community in close proximity to the Covanta incinerator in Camden, I am in complete agreement with Camden for Clean Air's objections and requests regarding the public process around Covanta's pending applications for new and renewed permits to operate.

I cannot fathom why NJDEP would approve such a weak and unbalanced outreach process, nor why it would allow Covanta to be the place the public is instructed to send its comments and questions, but the way in which Covanta carried out the public outreach task on these applications is deficient and disturbing.

I urge you to take a step back, re-do the outreach in a way that honestly tries to engage the community, hold new hearings in the affected neighborhoods, extend another comment period, and designate NJDEP as the place to send public comments. As a major source of pollution in the air I breathe every day, I ask you to go back and do better.

Covanta Response: Thank you for your comment but we take pride in our outreach efforts and have detailed them thoroughly in the "Public Engagement" section earlier in this document.

42. William O'Neill

Comment (Submitted via Email): Why do Big Business pick spots to dump, burn or store dangerous substances in low income neighborhoods? Because the residents don't have the political power to stop Big Business which has the politicians duped with supposed jobs, real estate tax or contributions to their election committees. Take your business where it will do the least harm, away from residential areas and to more suitable places.

Covanta Response: We took over the Camden plant in 2013 and have been working hard since then to be a good neighbor and minimize environmental impacts. Thank you for your comment.

43. Susan DePalma

Comment (Submitted via Email): Please oppose the permit application #2021-25. We have too much pollution as it is.

Covanta Response: Thank you for your comment. The NJDEP will read this document. However, please note that our proposed project will not increase emissions as your comment suggested. Rather through the installation of state-of-the-art emissions controls, we would be decreasing our emissions. Please see the "Liquids Processing (LDI)" section for more information.

44. Sharon Hardy

Comment (Submitted via Email): Administrator Griselle Rivera, I am writing to express my opposition to Covanta's plan to burn new kinds of trash at their facility in Camden. Covanta is already the number one source of industrial air pollution in the county. The Covanta facility in Camden is the second most toxic in the entire nation! Pollutants released from Covanta contribute to asthma, cancers, heart attacks, COPD, stroke, learning disabilities and more. Covanta is also the county's main source of greenhouse gas emissions. It's time to end our dependence on trash incineration, a dirty energy business that releases more greenhouse gases than a coal power plant. I support clean air. I support environment justice. I support necessary climate action. I oppose Covanta being permitted to spew more toxic chemicals into our air. I reject any further investment in the dirty energy of trash incineration. We need to be moving away from incineration, not helping Covanta find new ways to make money at the public's expense. No new permits for Covanta! End our dependence on the dirty business of trash incineration!

Covanta Response: Thank you for your comment. The NJDEP will see this document, but in the interim please review the detailed sections toward the beginning of this document. Waste to energy is the cleanest available method to dispose of large volumes of waste and our proposed project will make our local impacts even cleaner.

45. Chester Hicks

Public Hearing Comment: My name is Chester Hicks. I also live in Merchantville. I just have one simple question, what can prevent this project from going forward? What to stop it?

Covanta Response: Thank you for your comment. The NJDEP makes all permitting decisions and will review this document.

46. Jessica Franzini

Comment (Submitted via Email): Dear NJDEP, I am writing to express my strongest concerns with Covanta's permit application to burn liquid waste at its facility in Camden, NJ. I have worked in the Waterfront South community for many years and have seen first-hand how overburdened it is by negative environmental impacts. Residents of this community are largely lower income people of color who have been subjected to environmental injustices for far too long. As a member of the general public, I have struggled to navigate and make sense of Covanta's permit application. I do not have access to the resources needed to verify Covanta's claims about liquid waste being safe and emission-free. But I do know this - the baghouse is long overdue and was promised to the community years ago. It should be installed independently of and not contingent upon Covanta's ability to burn liquid waste. I am writing to advocate that NJDEP: 1) not approve this permit if ANY additional emissions will occur; 2) require Covanta to install the baghouse, independent of its ability to accept liquid waste; and 3) postpone or deny the liquid waste portion of the application pending verification into Covanta's claims re: its safety and lack of emissions. Thank you.

Covanta Response: Thank you for your comment. The NJDEP will review this document as part of the permit review process. Please review the earlier detailed sections but we want to again stress that this project will not increase emissions. It will reduce them.

47. Marilyn Quinn

Comment (Submitted via Email): To those who are looking at the application that Covanta has made to the state so they can burn liquid industrial waste: PLEASE do not allow this company, i.e. Covanta, to pollute our air any more than they already do. South Jersey has such bad air that many people I know are hoping they can move to another state. I look at our air quality online everyday, and I am appalled. This application is really an application to kill or make New Jersey residents more unhealthy than we already are. Another solution must be devised to deal with this waste. Industries should find a way to get rid of the waste in as safe a manner as possible. Thank you.

Covanta Response: Thank you for your comment. The NJDEP will review this document. To your last comment, waste to energy is the safest and cleanest way to dispose of large volumes of garbage. We support recycling and waste minimization efforts and have proposed this project as a way to further improve on our plant's environmental performance.

48. Sacred Heart Parish

Comment (Submitted via email): The text to the Sacred Heart Parish comment is included in Attachment 1- Multipage comment submittals.

Covanta Response:

Thank you for your comments and questions. It is obvious from the extensive signature list that you submitted that you love your community. Covanta works hard to be a good member of that community and is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events, and through the June 2022 Community Benefits Agreement.[31]

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance. Covanta Camden is regulated under a Title V operating permit,

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[31] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf

meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[32] everyday.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustion chambers are so hot at this point that the injected water instantly vaporizes. This is advantageous for many reasons but it also brings down the overall limit of material that we are allowed to combust since the weight of that water must also be included against our limit.

We are working to minimize our environmental impacts while also keeping a strong focus on meeting all of our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, the LDI process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission improvement projects in a timely and comprehensive manner. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years, through the issuance of a Title V permit modification and a Solid Waste Operating permit modification. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey.

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[32] https://www.covanta.com/where-we-are/our-facilities/camden

You stressed in your comments that Covanta Camden would fall under the New Jersey Environmental Justice Law. This application has been compiled in close coordination with the NJDEP pursuant to the requirements of AO-25 and Covanta is confident that it meets all requirements. The controls packages that we are proposing will decrease impacts and further improve upon sound performance compared to our permitted emission levels. Covanta recently conducted a comprehensive health risk assessment and have included that document here as Attachment 2 for your reference.

The controls packages that we are proposing will decrease impacts and further improve upon sound performance compared to our permitted emission levels. The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

49. Center for Environmental Transformation et al

Comment (Submitted via Email): The text to the Center for Environmental Transformation's group comment submittal is included in Attachment 1- Multipage comment submittals. The groups included in the comment are listed below:

Center for Environmental Transformation

New Jersey Environmental Justice Alliance

Earthjustice

Ironbound Community Corporation

The New School

Tishman Environment and Design Center

Covanta Response:

Thank you for your comments and questions. The passion that you have for these issues and the effort that you took with your comment submission are both quite clear. We have made an effort to answer each main comment or question point by point. If after reading this response, you have further questions or would like to discuss any particular point, we would be happy to accommodate a meeting. You will see your entire submitted comment package included as part of Attachment 1 – Multi-page comments.

Covanta is proud to provide municipal solid waste (MSW) disposal, metals recycling, and supply power for the local community. Many of our management and staff live in Camden County. We work hard to minimize our environmental impacts while actively expanding ways to supply associated co-benefits to the local community. This can most directly be seen through employment opportunities, sponsoring various programs and relationship building events, and through the June 2022 Community Benefits Agreement[33].

At present there are only two viable commercial methods to dispose of post-recycled MSW on a large scale: combustion or landfilling. Our site is permitted to process up to 451,140 tons of solid waste per year. We do so through a process that works to maximize potential benefits by recycling ferrous and non-ferrous metals, providing electric power for local residents, and lowering greenhouse gas emissions through landfill methane avoidance. Covanta Camden is regulated under a Title V operating permit, meaning that we are above various emissions thresholds. However, to properly compare our emissions footprint against other local sites or MSW disposal processes, you need to consider the emissions that would be created as a result of all associated services. Covanta provides considerable power (35 MWe) to the local grid that would otherwise most likely have to be provided by fossil fuels. Our site also recycles ferrous and non-ferrous metals saving emissions versus the production of virgin material. In an effort to be transparent and build trust within our community, we post emissions data on our facility website[34] everyday.

Applicability to the NJ EJ Law

You stressed in your comments that Covanta Camden would fall under the New Jersey Environmental Justice Law. This application has been compiled in close coordination with the NJDEP pursuant to the requirements of AO-25 and Covanta is confident that it meets all requirements. The controls packages that we are proposing will decrease impacts and further improve upon sound performance compared to our permitted emission levels. Covanta recently conducted a comprehensive health risk assessment and have included that document here as Attachment 2 for your reference.

The facility has conducted health risk assessments through air dispersion modeling to project any potential adverse health impacts on the local community (sensitive receptors). This study has deemed that there are no adverse impacts. At this time the site is not imminently planning to perform a cumulative impacts assessment (CIA) as this project is projected to reduce emissions.

Liquids Processing (LDI)

After many years of study based on experience at other Covanta facilities, the Liquids Processing (LDI) process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission control improvement projects in a timely and comprehensive manner. Covanta currently utilizes scrubbers and electrostatic precipitators to control emissions from the site in accordance with state and federal laws. We are hoping to upgrade this to include automatic controls for the scrubber system tied into our continuous emissions monitoring (CEMS) and temperature controls as well as installing a new baghouse for each combustion unit. These upgrades are considered a state of the art retrofit and would reduce current emission levels by up to 95%. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control

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[33] https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/CBA%20City%20of%20Camden_CVA%202022%2009.pdf
[34] https://www.covanta.com/where-we-are/our-facilities/camden

platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

There seems to have been some confusion about the type and amount of liquid wastes that Covanta is proposing. Any wastes that we accept will be non-hazardous and require detailed analysis, inspection and manifests. We will not accept certain liquid wastes at this facility such as landfill leachate, sewage sludge, pesticides, oily waters. Accepting those would be irresponsible. Approximately 90-95% of all liquid wastes under consideration are made up of water, with the remaining ~5-10% being various solids of the type that are already processed at the facility. The system is designed to inject up to six (6) gallons per minute of liquid waste into each boiler. The combustion chambers are so hot at this point that the injected water instantly vaporizes. This is advantageous for many reasons but it also brings down the overall limit of material that we are allowed to combust since the weight of that water must also be included against our limit.

We are working to minimize our environmental impacts while also keeping a strong focus on meeting all our permitted compliance requirements. It is important to note that as a non-governmental entity, there are financial considerations that weigh on these goals and factor into what improvements are viable. An example of this is the liquids process (LDI) that we have proposed. After many years of study based on experience at other Covanta facilities, the LDI process was found to have minimal environmental impacts and is a useful financial tool to assist implementation of emission improvement projects in a timely and comprehensive manner. If LDI was eliminated from this project, the entire project would need to be re-evaluated and may not allow for as many improvements or the faster timeline to bring about these improvements. There would still be other emissions control platform improvements, but they would not be as comprehensive as the current proposal and due to unanticipated re-design and delays from a change to the scope of the project, may not be put in place for several more years. The current proposal is the fastest way to achieve the sort of considerable emissions reductions that we have cited in our previous presentations and permit applications in the quickest manner possible.

Air permits are issued by state agencies (in this case the NJDEP) according to their State Implementation Plan (SIP) to comply with federal and state environmental laws. Emission standards are issued for industrial process operation classes to facilitate adherence to National Ambient Air Quality Standards (NAAQS). These standards consider emission rates that are technically achievable for that process. In many cases, as with our facility, the NJDEP will require emission controls, monitoring, and regular stack testing as requirements to obtain an operating permit. These controls are sized and selected based on federal and state air emission standards and air dispersion modeling that projects potential impacts of those emissions to local sensitive receptors (the local community). There is an established process in place to minimize air impacts and adhere with state and federal laws. The proposed baghouses and other emission control upgrades would be partially financed through revenue from the addition of the LDI process. The new process for the Camden Facility helps facilitate this enhanced emission control and provides the added benefit of decreasing overall plant emissions. The process is in use at Covanta's Indianapolis and Niagara facilities and was previously approved by the NJDEP and successfully used at Covanta's Warren County, NJ facility.

In your comment submission you cited 40 C.F.R. § 60.51b (Subpart Eb definition of "municipal solid waste" – (MSW)); *see also* 40 C.F.R. § 60.31b (incorporating Subpart Eb definitions into Subpart Cb) as a fundamental basis for objecting to the proposed Liquids Processing (LDI) addition. We would like to directly address that question with the three points below.

- Our application seeks to allow us to burn various non-hazardous wastes – which is acceptable under state law.
- While the EPA definition of MSW in 40 CFR 60.51b/31b excludes industrial and manufacturing wastes, those sections do not prohibit MWCs from co-firing other materials, therefore we are permitted to do so. See the definition of co-fired combustor in 40 CFR 60.51b. If you are a co-fired combustor you aren't subject to Subpart Eb and Cb which do apply to MWCs. You have to be combusting less than 30% MSW as defined in the definition in 40 CFR 60.51b to qualify as a co-fired combustor or you are subject to Subpart Eb. See 40 CFR 60 Subpart Eb (j).
- Covanta has been utilizing this same liquids process at numerous other facilities around the country under the direct approval of applicable state agencies and in accordance with federal laws. While this process would be new to the Camden location, it is far from new for Covanta.

You also questioned the destruction capabilities of the NOx control system in relation to potential liquids injection. Liquids are proposed to be injected after the central combustion chamber (which typically burns at around 2000F but well before the SNCR system injection points and still within the range of 1600-1800F which is more than enough to facilitate destruction.

Airshed Characterization

Toward the beginning of your comments you mention a series of statistics from Earthjustice that have been picked up numerous times but we do not feel are accurate or fair to our facility.

The comment was, "Covanta Camden is the highest stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5").13 Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide."

We are a large facility but far from the only one in the county. There are nine other Title V facilities in the area, not to mention numerous highways and transportation pollution that gets carried over the river from Philadelphia and into our airshed. Paraphrasing a few commenters, there are no boundaries for pollution in the air, we have to look at the airshed holistically taking into account all major sources. Using this method, our NOx emissions account for roughly 2.2% of ambient emissions and our PM10, roughly 0.6%.

There were a few instances where you requested installation of a CEMS until in lieu of the stack testing protocol that is currently in place. As I am sure you know, the EPA has an emissions monitoring hierarchy[35] where they comparatively judge the preferred monitoring method based on process and site type. Intermittent stack testing and continuous emissions monitoring are right next to each other on that comparison and both toward the top of the hierarchy. Generally speaking, CEMS are only required for new installations, monitoring hazardous air pollutants (HAPs), or to meet distinct state laws. Our current testing protocol was developed and is monitored under the supervision of the NJDEP and it meets all federal and state regulatory requirements. Our stack tests must be performed at 100% permitted operating capacity so by definition, this reflects the worst case scenario emissions profile that we are likely to encounter.

SSM Conditions

In response to NJDEP's request for information dated December 15, 2022, we have proposed emission rates during periods of warmup, startup and shutdown and fully expect the proposed emission rates to be included in any draft permit to approve the proposed project.

As we have said previously, the facility operating permits are governed by the NJDEP and any decisions on permit conditions will come from them pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit.

Truck traffic

The issue of increased truck traffic associated with this new process has been raised by a few commenters. Covanta recently contracted a neutral third-party consultant to perform a statistical analysis on projected truck traffic and associated measures. On average it was found to be an increase of just one more truck per hour, which would have a negligible impact on ambient air conditions. The LDI process would be folded into both the facility's Title V air permit and Solid Waste Operating permit, each of which must be renewed every five years. The liquids for this new process would largely be sourced regionally, from New Jersey, New York, and Pennsylvania, with the largest share being from local industry in New Jersey. A copy of our recent traffic study is included as Attachment 3.

Public Engagement

As Ms. Patricia Earls stated during the latest public hearing held on December 8, 2022, Covanta has been working in close coordination with the NJDEP's Office of Permitting and Project Navigation (OPPN) and have been following their guidance on best practices. Covanta was told to hold our public hearing virtually in order to increase potential participation. We acknowledge that some people may not have internet access, and still more people were apparently unaware of the hearing. While we cannot help the first issue, to the second, we strongly recommend that Also, please be aware that all interested community members with internet can sign up for the DEP's Office of Environmental Justice (EJ) newsletter.[36] This is a free service that announces all scheduled upcoming EJ public hearings. To the notice aspect, we followed all DEP guidance and published in multiple newspapers, sent invitations to

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[35] Best Practices for Estimating Emissions Using Emissions Factors for Clean Air Act Permitting: Orde of Accuracy of Emissions Estimation Methods. 2021. Retrieved form https://www.epa.gov/system/files/documents/2022-02/emissions-factors-best-practices_0.pdf

[36] https://public.govdelivery.com/accounts/NJDEP/signup/13189

elected officials in and around Camden, and reached out to community members from across Camden who we have a relationship with.

We also understand that since our hearings, the DEP guidance has been updated to now encourage hybrid presentations. Accordingly, we will follow this guidance and hold any future meetings as needed in a hybrid (in person and online) format. We will have Spanish translation services available in case they are needed. Numerous attempts were made to advertise our public hearing in a Spanish newspaper in the area, but we were not able to locate one. The NJDEP has been sent a recording of our public hearing as well as this response to comments package. Any Spanish speaking residents wishing to submit comment are encouraged to do so at any time through the normal channels listed on our website[37] and someone from our team will promptly respond. This document has also been translated into Spanish and is available to the public on our website and on the NJDEP's Environmental Justice website.

Covanta understands and recognizes the community and Environmental Justice concerns over our Camden facility. That is one of the key reasons we have proposed to significantly reduce our emissions at the facility. The proposed liquids injection process and associated emission control upgrades will allow us to greatly reduce the overall emissions from our plant. We will continue to engage and speak with community members and outside groups as this process moves forward.

All permit considerations are made through the NJDEP pursuant to the Solid Waste regulations under N.J.A.C 7:26, Subchapter 2 for modifications to the Solid Waste Operating permit and pursuant to the Air regulations under N.J.A.C. 7:27, Subchapter 22 for modifications to and renewals of the Title V Air Operating Permit. Covanta has been coordinating with them closely throughout this process, and we will relay your comment to them.

[37] www.covanta.com

Attachment 1 – Multi-Page Comments

February 6, 2023

VIA EMAIL

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera
CamdenPublicComments@covanta.com

CC: Sean Moriarty, Deputy Commissioner, New Jersey DEP
David Pepe, Director, Office of Permitting and Project Navigation, New Jersey DEP

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

Center for Environmental Transformation, Ironbound Community Corporation, Tishman Environment and Design Center, New Jersey Environmental Justice Alliance, and Earthjustice submit the following comments under New Jersey Department of Environmental Protection ("DEP") Administrative Order No. 2021-25 ("AO-25") regarding the June 1, 2018, Title V Operating Permit Renewal Application and July 7, 2022, Title V Operating Permit Modification Application (the "Air Modification Application") and the September 30, 2022, Solid Waste Permit Modification Application (the "Waste Application") for Camden County Energy Recovery Associates L.P.'s municipal solid waste incinerator located at 600 Morgan Street, Camden, New Jersey ("Covanta Camden" or "Covanta"). As explained further below, under the new Environmental Justice Law ("EJ Law") regulatory regime, Covanta is a facility that contributes to adverse cumulative stressors in the overburdened community of Camden's Waterfront South. Accordingly, Covanta must go beyond the four corners of the current permits and take all possible measures to reduce the facility's emissions and negative impacts on the community.

In 2020, New Jersey enacted the EJ Law as a promise to overburdened communities that the State would no longer allow for the continuation of old patterns of disproportionate impacts from environmental harms. Specifically, the New Jersey Legislature declared that "it is past time for the State to correct th[e] historical injustice" of the "legacy of siting sources of pollution in overburdened communities [which] continues to pose a threat to the health, well-being, and economic success of the State's most vulnerable residents."[1] It is similarly past time for Covanta to reduce its impacts on the overburdened community of Waterfront South beyond the bare minimum previously required in its permits. As explained below, the EJ Law now compels Covanta to adopt additional emission controls like installing a baghouse, tightening emission limits, improving and expanding monitoring, and minimizing the facility's impacts on Waterfront South as much as possible—and by no means *increase* those impacts through the addition of liquid waste injection

[1] N.J.S.A. 13:1D-157.

I. THE EJ LAW AND AO-25 REQUIRE COVANTA'S PERMITS TO INCLUDE ALL FEASIBLE MEASURES TO REDUCE ENVIRONMENTAL IMPACTS.

Under the new substantive and procedural safeguards of the EJ Law, facilities located in overburdened communities may no longer do nothing more than the bare minimum to mitigate their harms on the surrounding community. Specifically, the EJ Law states that for renewals of major source permits in overburdened communities—like Covanta's—DEP may:

> [A]pply conditions . . . to protect public health, upon a finding that approval of a permit or permit renewal, as proposed, would, together with other environmental or public health stressors affecting the overburdened community, cause or contribute to adverse cumulative environmental or public health stressors in the overburdened community that are higher than those borne by other communities within the State, county, or other geographic unit of analysis . . .[2]

While other portions of the EJ Law are not fully in force until DEP finalizes its implementing regulations,[3] AO-25 notes that DEP already has "inherent authority . . . to apply conditions to permits" and therefore instructs that DEP "shall . . . apply such special conditions [to permits] as may be necessary to avoid or minimize environmental or public health stressors upon the overburdened community to the maximum extent allowable by law."[4]

DEP has proposed implementing regulations (the "EJ Rule")[5] that clarify the process under which a facility would "cause or contribute to adverse cumulative environmental or public health stressors in the overburdened community that are higher than those borne by other communities."[6] Under the EJ Rule's approach, DEP compares the values for 26 environmental and public health stressors for the block group where the facility is located to the values of the State and county.[7] If a stressor is above either the State or county value it is classified as "adverse," and if the block group has more total adverse stressors than the 50th percentile of block groups in either the State or county, then the block group is said to have "adverse cumulative stressors."[8] The protections of the EJ Law apply in full force to overburdened communities with "adverse cumulative stressors," including provisions mandating that permit renewals adopt "[a]ll feasible measures to avoid facility contributions to environmental and public health stressors."[9]

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[2] N.J.S.A. 13:1D-160(d).
[3] N.J.S.A. 13:1D-160(a).
[4] DEP, Admin. Order No. 2021-25 (Sept. 20, 2021) ("AO-25").
[5] Environmental Justice Rules, 54 N.J.R. 971(a) (proposed June 6, 2022) (to be codified at N.J.A.C. 7:1C) ("EJ Rule").
[6] N.J.S.A. 13:1D-160(d).
[7] *See* EJ Rule, Proposed N.J.A.C. 7:1C-2.1 & Appendix.
[8] EJ Rule, Proposed N.J.A.C. 7:1C-2.1.
[9] EJ Rule, Proposed N.J.A.C. 7:1C-8.6 & 7:1C-9.1.

Covanta Camden is located in such an overburdened community that is fully protected under the EJ Law. DEP has classified 20 out of 26 stressors as adverse in the overburdened community where Covanta is located, including:[10]

- Four "Concentrated Areas of Air Pollution" stressors (Ground-Level Ozone; Cancer Risk from Diesel Particulate Matter; Cancer Risk from Air Toxics Excluding Diesel Particulate Matter; and Non-Cancer Risk from Air Toxics);
- All three "Mobile Sources of Air Pollution" stressors (Traffic–Cars, Light- and Medium-Duty Trucks; Traffic–Heavy-Duty Trucks; and Railways);
- All three "Contaminated Sites" stressors (Known Contaminated Sites; Soil Contamination Deed Restrictions; and Ground Water Classification Exception Area/Currently Known Extent Restrictions);
- All two "Transfer Stations, or Other Solid Waste Facilities, Recycling Facilities, Scrap Metal Facilities" stressors (Solid Waste Facilities and Scrap Metal Facilities);
- The "Combined Sewer Overflow" stressor;
- Four of the "May Cause Potential Public Health Impacts" stressors (Lack of Recreational Open Space; Lack of Tree Canopy; Impervious Surface; and Flooding); and
- All three "Density/Proximity" stressors (Emergency Planning Sites; Permitted Air Sites; and NJPDES Sites)

With so many adverse stressors (20 altogether), the overburdened community where Covanta is located easily surpasses the 50th percentile of block groups in the state (13) and Camden County (14), and therefore this overburdened community has cumulative adverse stressors.[11] Under the EJ Law and EJ Rule, this overburdened community is subject to a "disproportionately high number of environmental and public health stressors, including pollution from numerous industrial, commercial, and governmental facilities," and must be protected to the fullest extent of the law.[12]

As a major polluter in Waterfront South and Camden County, Covanta contributes to many of these adverse stressors. Covanta Camden is the highest stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5").[13] Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide.[14]

The renewed permits must include all feasible measures to reduce emissions and mitigate the impacts associated with Covanta's air emissions, solid waste handling, truck traffic, and other

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[10] DEP, Overburdened Community Stressor Summary for Block Group 340076018002 (June 2, 2022) (attached as Ex. 1).
[11] *Id.*
[12] *See* N.J.S.A. 13:1D-157.
[13] Earthjustice et al., *New Jersey's Dirty Secret: The Injustice of Incinerators and Trash Energy in New Jersey's Frontline Communities* 9 (2021), https://earthjustice.org/sites/default/files/files/nj-incinerator-report_earthjustice-2021-02.pdf.
[14] *Id.* at 5.

adverse stressors to which the facility contributes. The mere fact that a particular control measure is not expressly required by any pre-existing EPA or DEP regulation is no longer an excuse for Covanta's permits to fail to impose that measure. To the extent that any control measure, permit condition, or action recommended in these comments is not required by other EPA or DEP regulations, they are now required by the EJ Law and AO-25 and must be included in the renewed permits.

II. COVANTA MUST NOT EXPAND ITS PERMITS TO ALLOW THE ACCEPTANCE AND BURNING OF LIQUID WASTE.

Covanta proposes to accept industrial liquid wastes and inject them into the boiler, in which they would likely not be fully combusted. As explained below, doing so threatens to increase toxic air emissions in an overburdened community with cumulative adverse stressors. This proposed permit expansion plainly contravenes the directive of the EJ Law and AO-25 to "limit the future placement and expansion of such facilities [which, by the nature of their activity, have the potential to increase environmental and public health stressors] in overburdened communities."[15] For this reason, **Covanta's proposed major modification to newly accept and inject industrial liquid wastes must be rejected.**

Moreover, the EPA regulations that govern here do not allow Covanta to accept many of the liquid wastes it has proposed to accept. Covanta proposes to add "Type 72 Liquid Waste" to the list of waste types that the incinerator may receive and burn.[16] Covanta's presentation at its AO-25 hearing clarified that this includes "*process* wash waters in the pharmaceutical, food, or other *industrial or manufacturing* operations" and that such "[t]ypical liquids are from tank rinses and line flushes from various *manufacturing and industrial* applications."[17] But the EPA regulations that govern Covanta's municipal waste combustors expressly exclude "industrial process or manufacturing wastes" from the definition of the "municipal solid waste" that Covanta is allowed to burn, noting that waste from industrial facilities is permitted only if it is from "nonmanufacturing activities."[18] Thus, **EPA regulations forbid Covanta from accepting most, if not all, of the liquid wastes it seeks to accept.[19]**

Moreover, just because DEP's solid waste regulations define Type 72 waste as "*non-hazardous* liquid and semiliquids," including "*non-hazardous* pesticide liquids,"[20] does not mean that these wastes will truly be nonhazardous when injected into the Covanta incinerator. DEP's solid waste regulations, and EPA's regulations under the Resource Conservation and Recovery

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[15] N.J.S.A. 13:1D-157.
[16] Waste Application at 3-9.
[17] Covanta, Covanta Camden AO 2021-25 Public Hearing at 25, 26 (Dec. 8, 2022), https://4944195.fs1.hubspotusercontent-na1.net/hubfs/4944195/Camden-12-8-2022-EJ%20Hearing%20Presentation.pdf ("AO-25 Hearing Presentation") (emphasis added).
[18] 40 C.F.R. § 60.51b (Subpart Eb definition of "municipal solid waste"); *see also* 40 C.F.R. § 60.31b (incorporating Subpart Eb definitions into Subpart Cb).
[19] To the extent that Covanta's Waste Permit already allows it to accept "dry industrial waste," *see* Waste Permit at I-10 #73, EPA's regulations similarly prohibit the facility from accepting dry "industrial process or manufacturing wastes."
[20] N.J.A.C. 7:26-2.13(h)(1)(i).

Act ("RCRA") that DEP incorporates by reference,[21] consider whether such material is "hazardous" for the purpose of RCRA, and not necessarily whether such material would cause hazards if emitted into the air in a combusted, partially combusted, or non-combusted form.[22] For example, EPA's RCRA regulations allow waste that contains considerable amounts of lead, arsenic, chromium, and other pollutants to still be classified as nonhazardous.[23] And EPA's RCRA regulations even exempt wastes listed as hazardous—like many types of spent solvents—from classification as "hazardous waste" if they are mixed with other solid wastes and meet other criteria.[24] So these mixed wastes are "nonhazardous" merely because of a regulatory exemption, and not because they are truly not hazardous to the surrounding community when burned. Covanta's proposed injection of liquid wastes like scrubber water and wash waters from the manufacture of latex, pharmaceuticals, and other industrial processes[25] could contain a wide variety of substances that are hazardous when burned and emitted into the air. Indeed, such hazardous constituents are likely if industrial facilities consider this liquid waste too toxic to discharge or send to the wastewater treatment plant, and opt instead to send to Covanta to burn.

Covanta claimed in the public hearing that it would spray the liquid waste into the "combustion zone,"[26] and similarly claims in the application that the liquids would be "injected in a high temperature area of the furnace where thermal destruction of organics occurs."[27] But this does not seem to be the case. Covanta plans to use its urea injectors to inject the liquid waste, meaning that it would be injected well above the combustion zone. Diagrams from Covanta's public hearing show that this urea (ammonia) injection happens much higher than the floor of the combustion chamber (grate surface):[28]

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[21] N.J.A.C. 7:26G-1.4.
[22] *See* Waste Application at 3-12 ("All LDI wastewater proposed for processing at [Covanta Camden] must be categorized as non-hazardous under the Resource Conservation and Recovery Act").
[23] 40 C.F.R. § 261.24(b).
[24] 40 C.F.R. § 261.3(a)(2)(iv).
[25] *See* Waste Application at 3-12; Air Modification Application at 2-10.
[26] AO-25 Hearing Presentation at 25.
[27] Waste Application at 3-14.
[28] AO-25 Hearing Presentation at 19, 22.

Figure 1: Loading and Combustion Portion of Waste-to-Energy Process

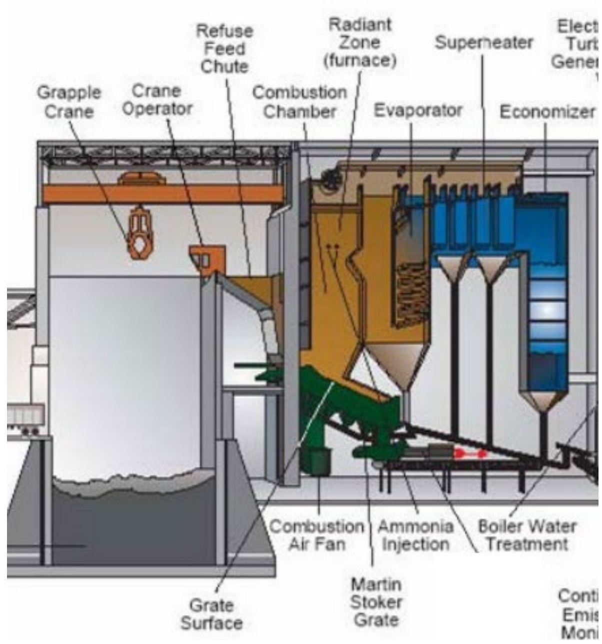
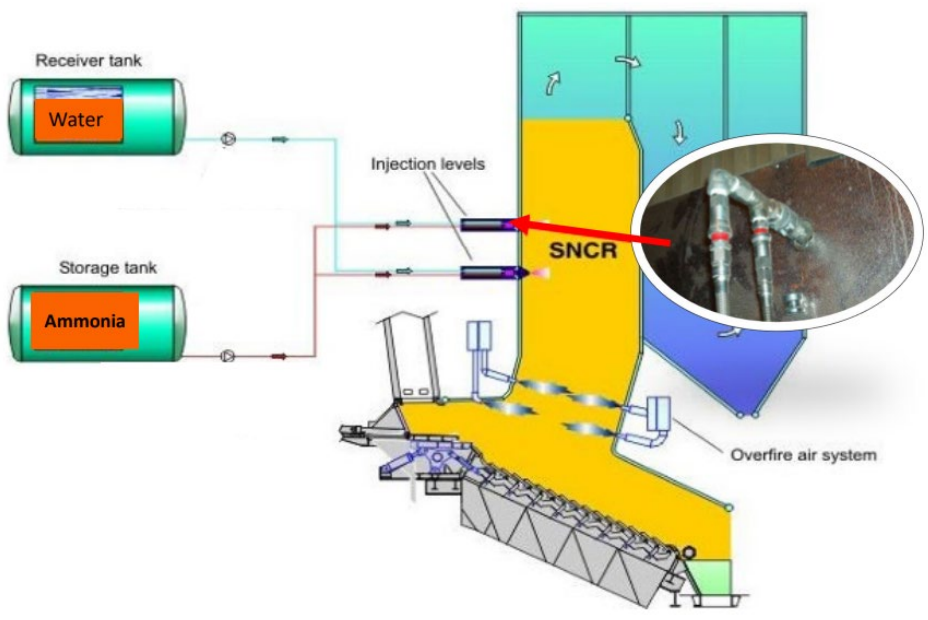


Figure 2: Proposed NOx Control Flow Diagram



Indeed, the Air Permit recognizes that temperatures drop off sharply the higher one goes in the boiler. The Air Permit requires combustion temperature of at least 1500 °F one second downstream of secondary air injection, but sets surrogate conditions of at least 830 °F, and an average of 920 °F, for the permanent thermocouple monitor located at an elevation of some 216 feet.[29] So if Covanta plans to inject the liquid waste well above the furnace area, temperatures are likely no longer high enough to ensure complete combustion of the liquid wastes. Moreover, the mere fact that Covanta is spraying large amounts of liquids into the boiler will also have an effect of quenching whatever thermal energy remains at that higher elevation, and may require increased thermal energy input by burning additional waste and/or auxiliary fuels. Thus, Covanta's proposal may result in many, if not most, of the industrial and pharmaceutical wastes to be emitted in a partially combusted or un-combusted state, and additional emissions from the burning of additional auxiliary fuels.

Covanta argues that data from other incinerators that inject liquid waste suggest that emissions would not increase if Covanta Camden did the same.[30] But data for Covanta Warren—which is most relevant here because it presumably would have the same liquid waste profile as Covanta Camden—found neither a statistically significant increase nor a statistically significant decrease in emissions of six of the eight analyzed pollutants after Covanta Warren began to inject liquid waste. The Covanta Warren data thus provides little predictive value of what would happen to emission levels at Covanta Camden for these pollutants if Covanta began to inject liquid waste there. This is especially so because Covanta Camden has a permitted waste throughput over twice what Covanta Warren had, and is allowed to burn more types of waste (such as bulky waste and construction and demolition waste) than what was permitted at Covanta Warren.[31] Moreover, the Covanta Warren analysis does not consider various other types of air toxics associated with the industrial and pharmaceutical liquid waste that Covanta Warren accepted, and thus may present an incomplete picture of air emission changes after liquid waste injection was permitted at that site.

Additionally, Covanta claims that a benefit of the proposed liquid waste injection is "to reduce NOx formation while reducing or eliminating the need to use potable water, while potentially reducing reagent use,"[32] seemingly because "the liquid wastes often contain ammonia used in some commercial cleaning processes and that would save Covanta money."[33] Presumably, the reduction in NOx formation would come from Covanta's proposed automation of the urea feed rate for its Selective Non-Catalytic Reduction ("SNCR") system—an upgrade that is long overdue, and unrelated to the proposed liquid waste injection. The benefit of liquid waste injection here, then, would be for Covanta to save money on its urea expenses only. And even at that, it is unclear whether the proposed automation system is calibrated to work with the parallel injection of liquid waste, which may spray unpredictable amounts of ammonia into the boiler. And as explained further below, the EJ Law does not allow Covanta to condition necessary emission reductions on the approval of emission-*increasing* activities like liquid waste injection.

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[29] Air Permit U1 OS Summary Ref. ##68, 69.
[30] *See* Waste Application at 3-14–3-16.
[31] *See* DEP, Authorized New Jersey Incinerators (Apr. 2018) (attached as Ex. 2).
[32] Waste Application at 3-3.
[33] Neill Borowski, *Trash Incinerator Firm Seeks Community Input on Expansion Plan,* TAPintoCamden (Dec. 6, 2022), https://www.tapinto.net/towns/camden/sections/green/articles/trash-incinerator-firm-seeks-community-input-on-expansion-plan.

Moreover, Covanta's proposed testing of the liquid waste before injection is lacking. Covanta says that, before approving a new waste stream for acceptance at the facility, it would test for pH, total dissolved solids, and total suspended solids, adding only additional tests when the "waste approver deems [them] necessary."[34] But Covanta presents no standards by which these important additional tests, such as flash point, total metals, total VOCs, and total halogens, would be considered "necessary." Additionally, once a waste stream is approved, Covanta will test each incoming load for pH and reactivity only.[35] This is insufficient testing to ensure that Covanta is not accepting industrial manufacture process liquids that have unanticipated hazardous components, or hazardous components that are in larger concentrations than the initial pre-approval test.

And while Covanta has represented to the community that it would not accept landfill leachate or PFAS-containing waste,[36] it does not appear that Covanta's applications to DEP contain any such limitation.[37] Since EPA has yet to designate PFAS as hazardous under RCRA,[38] and EPA expressly excludes landfill leachate from the definition of a RCRA hazardous waste,[39] the permits would need to include express conditions prohibiting the acceptance of these wastes. This is particularly true for PFAS, since even EPA acknowledges that it does not know whether PFAS can be safely incinerated.[40]

Regardless, the EJ Law and AO-25 do not allow Covanta Camden to expand its permits to add a new liquid waste stream, which is likely to contribute to adverse environmental stressors in an overburdened community that already has adverse cumulative stressors. On that basis only, the Covanta liquid waste injection project must not move forward.

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[34] Waste Application at 3-12.
[35] Air Modification Application at 2-9.
[36] AO-25 Hearing Presentation at 26, 29.
[37] *See* Waste Application at 3-12.
[38] *See* Office of Information and Regulatory Affairs, EPA/OLEM: Listing of PFOA, PFOS, PFBS, and GenX as Resource Conservation and Recovery Act (RCRA) Hazardous Constituents (Oct. 2022), https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202210&RIN=2050-AH26 (setting forth August 2023 goal for EPA to propose listing certain PFAS as RCRA "hazardous constituents," but providing no goal date for finalization of this hazardous-constituents rule, nor any dates for the subsequent rulemaking to designate PFAS as a RCRA hazardous waste).
[39] 40 C.F.R. § 261.4(b)(15).
[40] EPA, Per- and Polyfluoroalkyl Substances (PFAS): Incineration to Manage PFAS Waste Streams 2 (Feb. 2020), https://www.epa.gov/sites/production/files/2019-09/documents/technical_brief_pfas_incineration_ioaa_approved_final_july_2019.pdf; EPA, Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances: Draft for Public Comment 33–50 (Dec. 18, 2020), https://beta.regulations.gov/document/EPA-HQOLEM-2020-0527-0002.

III. COVANTA'S AIR PERMIT MUST UPDATE ITS OUTDATED EMISSION CONTROL TECHNOLOGY AND LOWER ITS EMISSION LIMITS.

A. Covanta's Installation of a Baghouse is Long Overdue and is Necessary Regardless of Whether the Liquid Waste Injection is Approved.

Covanta has proposed to replace its existing electrostatic precipitator ("ESP") with a new fabric filter baghouse to reduce its emissions of pollutants like particulate matter and air toxics. Installation of this ubiquitous technology is long overdue. EPA data shows that in 2001, only 21 out of the 167 total municipal waste combustor units (boilers) in existence had ESPs instead of baghouses.[41] That means that over twenty years ago, over 87% of incinerator boilers already had baghouse controls. This percentage has likely only increased in the intervening years, as some of those 21 boilers have installed baghouses—like the three boilers at the Covanta Essex incinerator in Newark, New Jersey—and as a new incinerator with baghouses was constructed in West Palm Beach, Florida.[42] Installation of a baghouse is a permit condition that DEP should have required decades ago, and is especially required now that the EJ Law and AO-25 require Covanta to take all feasible measures to reduce its emissions. The top-down technical feasibility analysis of the proposed EJ Rule—which would apply here since the current ESP was installed over 20 years ago—would most likely result in a finding that installation of the baghouse is a necessary measure.[43] Indeed, Covanta's own state of the art ("SOTA") analysis, which is similar to the EJ Rule's top-down analysis, identified the baghouse as the SOTA control technology for particulate matter and associated metal pollutants.[44]

Covanta has marketed the installation of the baghouse and other emission reduction measures as a kind of package deal that comes only with the facility being allowed to take the potentially emission-increasing measure of accepting liquid waste. For example, Covanta has stated that it is "funding this upgrade to the air emissions system at the facility in part through revenue from the operation of the proposed liquid washwater processing system,"[45] suggesting that it needs the increased revenues from the proposed liquid waste injection in order to pay for the baghouse and other improvements.[46] But neither the EJ Law, the EJ Rule, nor AO-25 allow for such tit-for-tat measures, which hold necessary emission reductions hostage unless a revenue-creating and emission-increasing action is also approved. To withhold these measures would perpetuate the legacy of disproportionate environmental burdens in New Jersey's overburdened communities that the EJ Law is designed to stop. For these reasons, **Covanta must install the**

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[41] Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors, 70 Fed. Reg. 75,348, 75,351, 55–56 (proposed rule).

[42] *See* Babcock & Wilcox Power Generation Group, Inc., Palm Beach Renewable Energy Facility No. 2 (2014), https://www.swa.org/DocumentCenter/View/1607/REF2-Info-and-Specs.

[43] EJ Rule, Proposed N.J.A.C. 7:1C-8.5.

[44] Air Modification Application at 4-1–4-2.

[45] Covanta, *Camden Green Initiative Frequently Asked Questions* (last visited Dec. 29, 2022), https://info.covanta.com/camden-green-initiative-faqs.

[46] Covanta has also made hundreds of thousands of dollars in contributions to the Covanta Camden Community Benefits Fund contingent on DEP's approval of the proposal to burn liquid waste. *See* Camden County Energy Recovery Associates, L.P., City of Camden – Waterfront South & Morgan Village Covanta Community Benefits Agreement § VI (June 2022).

baghouse without tying this and other emission reduction measures to approval of the liquid waste injection proposal.

A baghouse should not be paired with liquid waste injection for the additional reason that the added moisture from liquid waste injection threatens to reduce the control efficiency of the baghouse. Covanta is already proposing to newly inject hydrated lime flow as part of its circulating dry scrubber upgrade,[47] and seeks to add to this the injection of up to 26,000 gallons of liquid waste per day.[48] This would add significant moisture to the air stream being passed through the baghouse. But EPA instructs that pulse-jet fabric filter baghouses—like the one Covanta proposed to install—"cannot be operated in moist environments; hygroscopic materials, condensation of moisture, or tarry adhesive components may cause crusty caking or plugging of the fabric or require special additives."[49] So Covanta's proposed liquid injection not only threatens to increase emissions because of the addition of new industrial wastes that will not be fully combusted, as discussed in Section II above, but also because it may compromise the control efficiency of the proposed new baghouse.

B. The Air Permit Must Include a More Stringent NOx Limit for its Three Municipal Waste Combustors.

Long-term exposure to NOx pollution can lead to a range of adverse health impacts, including respiratory illnesses, such as asthma and bronchitis, as well as heart disease. NOx pollution also contributes to the formation of ground-level ozone (smog) and acid rain. To reduce the likelihood of subjecting the community around the facility to these health and environmental effects, Covanta must be required to comply with a significantly more stringent limit on NOx emissions from its three municipal waste combustors.

According to Covanta's June 23, 2020, Title V Operating Permit (the "Air Permit"), Covanta Camden's three municipal waste combustors are subject to a NOx limit of less than or equal to 150 ppmvd @ 7% O2 based on a calendar-day average.[50] To achieve this limit, Covanta utilizes SNCR.

Covanta's Air Application proposes to upgrade the SNCR system from a semi-automated to a fully automated system that continuously modulates urea injection to meet a NOx stack concentration set point.[51] This improvement is long overdue, since this technology is standard in SNCR systems across the country. In addition, it is not clear from Covanta's applications whether Covanta has accounted for how the injection of liquid waste into the SNCR zone would affect—or potentially compromise—the effectiveness of this new automated system. This upgrade alone is insufficient to satisfy the emission reduction requirements for a facility in an overburdened community that is adverse for ground-level ozone. As discussed directly below, it is well documented that municipal waste combustors can achieve significantly greater NOx

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[47] Air Modification Application at 2-4.
[48] Waste Application at 3-13.
[49] EPA, EPA-452/F-03-025, Air Pollution Control Fact Sheet: Fabric Filter - Pulse-Jet Cleaned Type (also referred to as Baghouses) at 5, https://www.epa.gov/sites/default/files/2020-10/documents/ff-pulse.pdf.
[50] Air Permit U1 OS Summary Ref. #34.
[51] Air Modification Application at 2-3.

control than is currently required of Covanta Camden. By installing Selective Catalytic Reduction ("SCR"), Covanta could achieve even larger NOx reductions.

1. Covanta Must Install SCR and Use a NOx Limit of 50 ppmvd.

By installing SCR, Covanta could achieve an emission limit that is only one-third of its current limit. SCR is a widely available technology that already is in use, for example, at Palm Beach Renewable Energy Facility No. 2 in Florida. Specifically, the Palm Beach facility uses SCR and, since its original pre-construction permitting in 2010, has been subject to a NOx emission limit of 50 ppmvd as a 24-hour block arithmetic mean.[52] SCR is thus plainly a feasible control measure that Covanta must now adopt under the EJ Law and AO-25. To minimize the adverse effects of its NOx pollution on the already overburdened community around the Covanta Camden facility, **Covanta must retrofit the Covanta Camden facility with SCR and the Air Permit must include a 50 ppmvd limit.**

2. In the Interim, Covanta Can Achieve the More Stringent 110 ppmvd NOx Limit Recently Adopted by Pennsylvania.

During the period in which Covanta is sourcing and installing the SCR technology, Covanta should adopt a significantly more stringent—but still achievable using its existing SNCR—NOx limit than what is set forth in the Pre-Draft Permit. Specifically, in April 2022, the Pennsylvania Department of Environmental Protection ("Pennsylvania DEP") set a reasonably available control technology ("RACT") limit for existing sources at 110 ppmvd NOx @ 7% oxygen using a daily average.[53] Pennsylvania DEP decided to tighten the NOx RACT limit based on its analysis demonstrating that for sources using SNCR, "the emission limitation of 110 ppmvd NOx @ 7% oxygen is achievable, cost-effective and constitutes RACT for municipal waste combustors."[54] Pennsylvania DEP also observed that the Municipal Waste Combustor Workgroup Report published by the Ozone Transport Commission likewise "concluded that based on the workgroup's . . . review of engineering studies of similar [municipal waste combustors] in the [ozone transport region], a control level of 110 ppmvd on a 24-hour averaging period is likely achievable for most large [municipal waste combustors] in the [ozone transport region]."[55] In fact, the Ozone Transport Commission reported that numerous facilities operating with SNCR are already subject to a 110 ppmvd limit, and that testing reveals that many of these facilities' actual emissions are significantly below that level.[56]

While the EJ Law and AO-25 compel Covanta to install SCR and achieve the lowest NOx emission rate possible, in the interim and at the very least, Covanta's current SNCR can achieve compliance with a 110 ppmvd or lower limit. **Covanta must evaluate how much it can**

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[52] Title V Air Operation Permit Renewal, Palm Beach Energy Renewable Park, Sec. III: Emissions Units and Specific Conditions, at 25 (Sept. 1, 2016) ("PB2 Permit") (attached as Ex. 3).
[53] 25 Pa. Bull. 6960, 6991 (Nov. 12, 2022), https://www.pacodeandbulletin.gov/secure/pabulletin/data/vol52/52-46/52_46_rr.pdf (enacting 25 Pa. Code § 129.112(f)).
[54] *Id.* at 6966.
[55] Pa. DEP, Technical Support Document for Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQS, at 17 (Apr. 2022) (attached as Ex. 4).
[56] Ozone Transport Comm'n Stationary & Area Sources Comm., Municipal Waste Combustor Workgroup Report, at 16 (Apr. 2022) (attached as Ex. 5).

reduce its NOx emissions and the renewed Air Permit must include that lower NOx limit and associated compliance assurance conditions.

3. The Air Permit must also reduce hourly ppmv and lb/hr NOx limits.

Not only must Covanta reduce the daily average ppmvd limit to 50 ppmvd, or no higher than 110 ppmvd, but Covanta should also reduce its hourly NOx emission limits to be in line with other incinerator permits. For example, the recently closed Detroit Incinerator had a 247 ppmv (1-hour) NOx limit,[57] but the Covanta Camden incinerator has a 300 ppmv (1-hour) limit to which Covanta proposes no changes. In addition, the Covanta Palm Beach No. 2 Incinerator—with a throughput of 3000 tons of waste per day, or nearly 2.5 times that of Covanta Camden—has a 37.4 lb/hr NOx limit,[58] while Covanta Camden has a 48 lb/hr limit. **The Covanta Camden Permit must reduce its other NOx emission limits to no higher than 247 ppmv (1-hour) and 37.4 lb/hr.**

C. Covanta Must Further Reduce its Dioxin Emission Limit.

Covanta has proposed to reduce the Permit's dioxin/furan emission limit of 35 ng/dscm @ 7% O2 down to 13 ng/dscm.[59] But this is insufficient, especially when other incinerators have even lower emission limits. For example, the Covanta incinerator in Fairfax, Virginia has a dioxin/furan limit of only 2 ng/dscm.[60] The EJ Law and AO-25 compels the Covanta Camden permit to include all feasible conditions to reduce emissions, and an emission limit that a larger Covanta incinerator achieves is plainly feasible. Accordingly, **Covanta Camden should reduce its dioxin limit to no higher than 2 ng/dscm.**

D. The Air Permit Must Incorporate New Limits for Hazardous Air Pollutants.

N.J.A.C. 7:27-22 provides that facilities with Title V permits:

> [S]hall ensure that no air contaminant is emitted from any significant source operation at a rate, calculated as the potential to emit, that exceeds the applicable threshold for reporting emissions set forth at N.J.A.C. 7:27–22 Appendix, Table A, incorporated herein by reference, or 17.9, Tables 3A and 3B, unless emission of the air contaminant is authorized by the operating permit.[61]

This includes new hazardous air pollutants ("HAPs") and thresholds that DEP added to these regulatory provisions in 2018.

The Air Modification Application proposes emission limits for many of these newly listed HAPs that are not currently in the Covanta Permit, like beryllium and chromium.[62] But the application labels them as "Proposed project emissions," suggesting that these are emission limits that would only become effective upon completion of the entire project in the end of

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[57] Renewable Operating Permit, Detroit Renewable Power at 45 (Sept. 16, 2014) (attached as Ex. 6).
[58] PB2 Permit at 25, Ex. 3.
[59] Air Modification Application at 4-6.
[60] Federal Operating Permit, Covanta Fairfax at 12 (June 10, 2016) (attached as Ex. 7).
[61] N.J.A.C. 7:27-22.3(c).
[62] Air Modification Application at 2-14, 2-15 tbl.2-6.

2026.[63] But N.J.A.C. 7:27-22 requires the inclusion of these HAPs regardless of whether a facility may be planning to install new control equipment or not. **The renewed air permit must include all necessary HAP emission limits now, and not wait until the completion of new equipment installation.**

In addition, neither the Air Permit nor the Air Modification Application address many N.J.A.C. 7:27-22 HAPs that are emitted at other incinerators, like Covanta Essex. These include hexavalent chromium, carbon tetrachloride, formaldehyde, PERC, trichloroethylene, and vinyl chloride.[64] **Covanta Camden and DEP must ensure that the Air Permit includes emission limits for all pollutants emitted above the reporting thresholds of N.J.A.C. 7:27-22.**

E. The Air Permit Must Not Include Illegal SSM and Affirmative Defense Provisions.

1. The Air Permit Must Remove Impermissible Affirmative Defense Provisions.

The Air Permit must remove all affirmative defense provisions, including those in General Provisions Nos. 2(c), 10(a), and 10(b). Federal courts and EPA have made clear that each of these "affirmative defense" provisions is impermissible:

- **General Provision 10(a):** This provision relies on EPA Title V regulation 40 C.F.R. § 70.6(g) to provide Covanta with an affirmative defense to permit violations during "emergencies." But in 2014, the D.C. Circuit held that EPA has no authority to create blanket affirmative defenses to violations of emission standards, since the Clean Air Act ("CAA") says only courts—not EPA—can decide whether a particular violation is excusable.[65] In a 2016 proposed rule to eliminate this illegal "affirmative defense" provision, EPA clarified that states like New Jersey "have *never* been obligated to include the § 70.6(g) affirmative defense provision in their part 70 operating permit programs . . . [or] individual operating permits."[66] So General Provision 10(a) must be removed from the Air Permit because it violates the CAA, and there is no EPA regulation that requires this provision.

- **General Provisions 2(c) and 10(b):** General Provision 10(b) directly incorporates the language of N.J.A.C. 7:27-22.16(l) to provide Covanta with an affirmative defense to permit violations that "occurred as a result of an equipment malfunction, an equipment startup or shutdown, or during the performance of necessary equipment maintenance." General Provision 2(c), meanwhile, sets forth the parameters by which Covanta can claim the affirmative defense under N.J.A.C. 7:27-22.16(l). But in the

[63] *Id.* at 2-14; *see also id.* at 2-22 fig.2-3 (stating that final baghouse would be installed in September 2026).
[64] *Compare* Air Modification Application at 2-15 tbl.2-6 and Air Permit *with* Covanta Essex Title V Operating Permit Renewal Application, Hazardous Air Pollutants Risk Assessment at 3-4, tbl.3-2 (Mar. 2, 2018).
[65] *Nat. Res. Def. Council v. EPA*, 749 F3d 1055, 1063 (D.C. Cir. 2014) ("[U]nder the [CAA's] statutory scheme, the decision whether to accept the defendant's [affirmative defense] argument is for the court in the first instance, not for EPA.").
[66] Removal of Title V Emergency Affirmative Defense Provisions from State Operating Permit Programs and Federal Operating Permit Program, 81 Fed. Reg. 38,645-01, 38,647 (June 14, 2016) (emphasis added).

> 2016 proposed rule referenced above, EPA explained that provisions like these "that do not exactly mirror the language of 40 C.F.R. § 70.6(g), but nonetheless provide for title V affirmative defenses" would need to be revised because these provisions "generally implicate the same concerns that prompted the EPA to propose removing 70.6(g)."[67] EPA specifically listed N.J.A.C. 7:27-22.16(l) as a provision that would need to be revised because it contains an impermissible affirmative defense.[68] Thus, General Provisions 2(c) and 10(b) are illegal and should be removed from the Air Permit.

Recent developments further support the position that these affirmative defense provisions must be removed from Covanta's permit. In a November 9, 2020, proposed rule, EPA reiterated its position that the 2014 D.C. Circuit decision compelled it to remove affirmative defense provisions from other CAA regulations.[69] On September 30, 2021, EPA issued a policy memo reiterating EPA's position that "[State Implementation Plan] provisions that contain exemptions or affirmative defense provisions are not consistent with CAA requirements."[70] Finally, on April 1, 2022, EPA *re*-proposed the 2016 proposed rule that would amend its Title V regulations to completely remove 40 C.F.R. § 70.6(g)—the provision on which General Provision 13(a) relies—and reiterated that such an action would require the removal of state provisions like N.J.A.C. 7:27-22.16(l)—on which General Provisions 2(c) and 10(b) rely.[71]

Now, with the clear statutory mandate of the EJ Law to minimize pollution and increase protections in overburdened communities, it is impermissible for a permit in a cumulatively adverse overburdened community—like Covanta's—to continue to include illegal exemptions and affirmative defenses that were never required in the first instance.

2. The Air Permit Must Remove Impermissible SSM Exemptions.

In addition to the affirmative defense provisions above, the Air Permit must also remove emission-limit exemptions during periods of startup, shutdown, and malfunction ("SSM"). In 2008, the D.C. Circuit Court of Appeals held that SSM exemptions violate the CAA's requirement that all emission limitations apply "on a continuous basis."[72] In response to this holding, EPA issued a Final Rule in 2015 in which the Agency recognized that its "justification for exemptions from emission limitations during SSM events in NSPS [New Source Performance Standards] . . . made prior to the 2008 decision of the court in the Sierra Club case . . . is no longer correct."[73] Accordingly, new NSPS standards issued after 2008 do not include SSM

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[67] *Id.* at 38,651.
[68] *See* EPA, Title V Affirmative Defense Provisions in State, Local, and Tribal Part 70 Programs, EPA-HQ-OAR-2016-0186-002, at 2 tbl.1 (attached as Ex. 8).
[69] National Emission Standards for Hazardous Air Pollutants: Polyvinyl Chloride and Copolymers Production Reconsideration, 85 Fed. Reg., 71,490, 71,505–06 (Nov. 9, 2020) (proposed rule removing affirmative defense from regulations governing for polyvinyl chloride and copolymers production).
[70] Memorandum from Janet McCabe, EPA Deputy Adm'r, to EPA Regional Administrators 3 (Sept. 30, 2021), https://www.epa.gov/system/files/documents/2021-09/oar-21-000-6324.pdf.
[71] Removal of Title V Emergency Affirmative Defense Provisions from State Operating Permit Programs and the Federal Operating Permit Program, 87 Fed. Reg. 19,042-01, 19,044–45 (Apr. 1, 2022).
[72] *See Sierra Club v. EPA*, 551 F.3d 1019, 1026–27 (citing 42 U.S.C. § 7602(k)).
[73] State Implementation Plans: Response to Petition for Rulemaking, 80 Fed. Reg. 33,840, 33,907–08 (June 12, 2015).

exemptions, and EPA has been eliminating pre-existing SSM exemptions in many federal regulations as they are reviewed and revised pursuant to schedules under the CAA.[74] EPA has also prohibited states from applying SSM exemptions to any NSPS standard incorporated in their SIPs.[75] Pre-2008 general NSPS provisions that appear to allow an SSM exemption are, in EPA's own words, "inconsistent with the CAA" and no longer good law.[76] Community groups and environmental advocates petitioned EPA in September 2022 to remove all these remaining illegal SSM exemptions from the regulations once and for all.[77]

In accordance with this principle, DEP guidance prohibits SSM exemptions in air permits, and specifies that startup and shutdown operating scenarios must still include emission limits compliant with RACT.[78] The guidance also states that malfunction operating scenarios "[m]ay not be included in [the] permit application."[79] But Covanta's Air Permit does the exact opposite on both counts. Many of the Permit's emission limits impermissibly state that they apply "except during periods of startup, shutdown, and malfunction."[80] This results in the Permit having *no* emission limits for pollutants like lead, cadmium, HCl, arsenic, hydrogen fluoride, nickel, and polycyclic aromatic hydrocarbons during SSM periods. In addition, the current Covanta Permit includes a malfunction-specific operating scenario,[81] and Covanta's application does not request any changes to this. To start, **the malfunction scenario should be removed from the Permit, and all malfunction exemptions should be deleted from emission limits, since these are no longer permissible in New Jersey air permits.**

To the extent that the Covanta Permit is formally subject to NSPS Subpart Cb but *not* Subpart Eb, this is particularly egregious because Subpart Cb contains no SSM exception. Instead, the Permit points to NSPS Subpart FFF as the source of the SSM exception,[82] but that NSPS applies to incinerators that were "not regulated by an EPA approved and currently effective State or Tribal plan" as of November 12, 1998.[83] Just because New Jersey failed to

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[74] *See id.* at 33,890.
[75] *See id.* at 33,892.
[76] *Id.* at 33,890.
[77] Petition for Rulemaking to Eliminate Startup, Shutdown, and Malfunction Exemptions in Clean Air Act Section 111 Regulations (Sept. 13, 2022) (attached as Ex. 9).
[78] DEP, Startup/Shutdown/Malfunction Guidance (July 2018), https://dep.nj.gov/wp-content/uploads/boss/permitting-guidance/ssm.pdf.
[79] *Id.*
[80] *See, e.g.*, Permit GR1 Ref. #15; *id.* U1, OS Summary Ref. #125; *id.* U1, OS1/OS3/OS5 Ref. ##1–35; *id.* U9, OS Summary Ref. #5.
[81] *See* Permit U1, Emergency Malfunction on OS2/OS4/OS6 (requirements applicable to operation under malfunction conditions).
[82] *See* Permit U1, OS1/OS3/OS5 Ref. ##26–35 (citing 40 C.F.R. § 62.14109(b)). While both Subpart FFF and Subpart Cb incorporate portions of 40 C.F.R. § 60.58b of Subpart Eb, Subpart FFF incorporates "the compliance and performance testing methods and procedures listed in 40 CFR 60.58b of subpart Eb," 40 C.F.R. § 62.14109(b), whereas Subpart Cb incorporates only "the performance testing methods listed in § 60.58b of subpart Eb," 40 C.F.R. § 60.38b(a). Thus, Subpart Cb incorporates those portions of 40 C.F.R. § 60.58b that concern performance testing, *e.g.*, 60.58(b) through 60.58(q), but Subpart Cb does *not* incorporate the "compliance"-related SSM exception of 60.58b(a), which is not relevant to "performance testing."
[83] 40 C.F.R. § 62.14102(a); Federal Plan Requirements for Large Municipal Waste Combustors Constructed on or Before September 20, 1994, 63 Fed. Reg. 63,191, 63,193 tbl.1 (Nov. 12, 1998).

even submit a state plan to regulate incinerators by that date[84] does not mean that New Jerseyans should be subject to lesser protections. And even if Covanta *is* formally subject to Subpart Eb, all SSM exemptions in EPA regulations, including those in Subpart Eb, are no longer good law and cannot be relied upon.[85] Thus, **the Air Permit must include emission limits during all startup and shutdown periods, with adequate compliance assurance provisions (monitoring, recordkeeping, and reporting).**

IV. COVANTA'S RISK ASSESSMENT MUST TAKE INTO ACCOUNT CUMULATIVE IMPACTS.

DEP regulations require Covanta Camden to conduct a facility-wide risk assessment for its toxic emissions in support of its permit renewal application.[86] The purpose of this assessment is to "evaluate the incremental inhalation risk from exposure to the permitted air toxic emissions."[87] In other words, the risk assessment is to protect the public health.

Covanta's application expresses Covanta's intent to conduct such a risk assessment but does not provide an outline of the methodology Covanta will use or any preliminary results.[88] As stated previously, now under the EJ Law and AO-25, applicants seeking permit renewals for polluting facilities in overburdened communities must perform an impact assessment of environmental and public health stressors within the community, and the facility's contributions to these stressors, taking into account cumulative impacts. Covanta's emissions contribute to cumulative impacts on the Waterfront South community because these emissions deteriorate air quality, contribute to smog, and are linked to increased risk of miscarriages, preterm birth, asthma, developmental issues in children, and more.[89] **Covanta's risk assessment should therefore take into account not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community.** Covanta is already taking into account other nearby polluters for its proposed NO2 air dispersion modeling (required because preliminary modeling results show NO2 concentrations above EPA's Significant Impact Level).[90] Covanta should extend that same principle to other air toxics and air pollutants when conducting the risk assessment required by DEP.

Lastly, the application is unclear as to whether Covanta is considering possible pollutant increases from the proposed injection of liquid waste in the dispersion modeling and risk assessment. If the liquid waste injection proposal is not rejected for the multiple reasons set forth

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[84] *See* Federal Plan Requirements for Large Municipal Waste Combustors Constructed on or Before September 20, 1994, 63 Fed. Reg. 63,191, 63,193 tbl.1 (Nov. 12, 1998) (listing New Jersey under "Neither a State plan nor a negative declaration letter submitted to EPA").
[85] *See* Ex. 9, Petition for Rulemaking to Eliminate Startup, Shutdown, and Malfunction Exemptions in Clean Air Act Section 111 Regulations (Sept. 13, 2022).
[86] N.J.A.C. 7:27-22.3(cc); *id.* 7:27-22.30(f).
[87] DEP, Technical Manual 1003: Guidance on Preparing a Risk Assessment for Air Contaminant Emissions 2–3 (2018), https://dep.nj.gov/wp-content/uploads/boss/technical-manuals/1003.pdf.
[88] *See* Air Modification Application at Appendix F, § 3.5.
[89] Earthjustice et al., *supra* note 13 at 4, 9.
[90] *See* Air Modification Application at Appendix F, § 4.

in Section II above, at the very least, Covanta must consider increased emission from liquid waste in its air dispersion modeling and risk assessment before that project is approved.

V. COVANTA MUST INSTALL CONTINUOUS EMISSIONS MONITORING SYSTEMS FOR HCL, MERCURY, AND PM.

A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 would benefit the community by providing a more accurate picture of the facility's emissions and enabling Covanta to quickly identify and correct any problems with the facility's operations that cause unusually high emissions. In addition, continuous monitoring is needed to assure the facility's compliance with the applicable emission limits.

CAA Title V instructs that "[e]ach permit . . . shall set forth . . . requirements to assure compliance with the permit terms and conditions."[91] EPA regulations further state that where the underlying applicable requirement does not require periodic testing, the permit must specify "periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit."[92] Even if the underlying requirement does specify some form of monitoring, the permitting authority must include additional monitoring if needed to "assure compliance."[93]

As explained below, the monitoring specified in the Air Permit is insufficient to assure Covanta's ongoing compliance with its HCl, mercury, and PM limits. To ensure the legally required protection for the overburdened community around the Covanta Camden facility, Covanta must install a CEMS for each of these pollutants and the Air Permit must identify each CEMS as a means for assuring Covanta's compliance with applicable CAA requirements. As explained below, continuous monitoring for HCl, mercury, and PM is feasible and appropriate for the Covanta Camden facility.

A. A HCl CEMS Is Needed to Assure Compliance with the Short-Term HCl Limits.

The Permit identifies two short-term HCl emission limits applicable to Covanta Camden's three municipal waste combustors:

(1) 29 ppmvd @ 7% O2 or 5% of the potential hydrogen chloride emission concentration (95% reduction by weight or volume), whichever is less stringent, derived from the NSPS, 40 C.F.R. part 60, Subpart Cb (40 C.F.R. § 60.33b(b)(3)(ii) and § 62.14103(b)(2)), monitored by annual stack testing.[94]

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[91] 42 U.S.C. § 7661c(c).
[92] 40 C.F.R. § 70.6(a)(3)(i)(B).
[93] *Id.* § 70.6(c)(1); *see also Sierra Club v. EPA*, 536 F.3d 673, 677 (D.C. Cir. 2008) ("[A] monitoring requirement insufficient 'to assure compliance' with emission limits has no place in a permit unless and until it is supplemented by more rigorous standards.").
[94] Air Permit U1 OS1/OS3/OS5 Ref. #33.

(2) 50 ppmvd @ 7% O2 in the stack gas of each unit for any one-hour period except for one-hour periods during which the average concentration of HCl (ppmv) in the stack gas is less than or equal to 10% of the average concentration of HCl (ppmv) at the inlet to the acid gas control equipment, derived from preconstruction permit, monitored by annual stack testing.[95]

Limit (1) does not specify an averaging period and thus applies instantaneously, at all times. The annual testing requirement associated with this instantaneous limit cannot assure Covanta's ongoing compliance as mandated by Title V and the federal Title V regulations. Not only does annual testing provide an extremely limited snapshot of the facility's operations that cannot account for variability in the facility's HCl emissions, but the annual test fails to provide any indication of whether the facility's three municipal waste combustors are meeting the HCl limits during startup and shutdown—and, as noted above, the SSM exemptions in these two permit conditions are no longer permissible.

Under similar circumstances, EPA objected to the Title V permit for the Montgomery County Resource Recovery Facility ("MCRRF") in Maryland. Specifically, EPA agreed with Petitioners that the frequency of monitoring must bear some relationship to the averaging time used to demonstrate compliance, and accordingly, concluded "that the annual stack test required by the Permit, by itself, is insufficient to assure compliance with the hourly HCl emission limit."[96]

Following EPA's objection, the Maryland Department of the Environment revised MCRRF's Title V permit to require installation of a HCl CEMS and to identify the HCl CEMS as the facility's compliance demonstration method for the hourly HCl limit.[97] Likewise, at least one other of Covanta's facilities, Covanta Delaware Valley LP in Chester, Pennsylvania, also utilizes a HCl CEMS.[98]

It is plainly feasible for the Covanta Camden facility to utilize a HCl CEMS, given the use of HCl CEMS at the MCRRF and Covanta Delaware Valley facilities. Moreover, in light of EPA's 2020 objection to the Title V permit for MCRRF, a HCl CEMS is required to satisfy Title V's compliance assurance monitoring requirements. A HCl CEMS is particularly necessary given that, as noted above, Covanta Camden is not only the highest emitter of HCl in Camden County, it is the highest emitter of HCl in all of New Jersey.[99] Not only would a HCl CEMS provide data on a frequency that is relevant to the time period over which compliance with the HCl limit is measured, but a HCl CEMS also would demonstrate compliance with the HCl limit during startup and shutdown. **Covanta must install and utilize a HCl CEMS and the Air Permit must include the HCl CEMS as the compliance demonstration method.**

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[95] *Id.* Ref. #8.
[96] *Montgomery Cnty. Res. Recovery Facility*, Order Granting Petition No. III-2019-2 at 9 (EPA Dec. 11, 2020), https://www.epa.gov/sites/default/files/2020-12/documents/montgomery_response2019.pdf.
[97] Part 70 Operating Permit for MCRRF at 47 (excerpt attached as Ex. 10).
[98] *See* Title V State Operating Permit, Covanta Delaware Valley (Sept. 2, 2016) (attached as Ex. 11).
[99] Earthjustice et al., *supra* note 13, at 5, 9.

B. A Mercury CEMS Is Needed to Assure Compliance with the Applicable Short-Term Mercury Limits.

Mercury, which causes a wide range of adverse health effects including neurological damage, kidney damage, and birth defects, is among the most toxic substances emitted from the Covanta Camden facility. Mercury exposure is especially dangerous for young children and pregnant women, as it can affect the developing brain and nervous system. Ensuring Covanta Camden's mercury emissions are controlled to the maximum degree possible should be among Covanta's highest priorities. A key action that Covanta could take to ensure maximum mercury control is to install a mercury CEMS.

A Mercury CEMS would provide a reliable and cost-effective means for Covanta to ensure that its facility complies with applicable short-term mercury limitations on a continuous basis. According to the Air Permit, the facility's three municipal waste combustors are subject to the following short-term mercury emission limits:

(1) Mercury Emissions <= 28 ug/m^3 corrected to 7% O2, based on stack emission tests, or >= 95% reduction based on stack emission tests, derived from the PSD permit. Compliance is determined via annual stack testing.[100]

(2) Mercury compounds <= 0.08 lb/hr based on concentration limit of 28 ug/dscm @ 7% O2, derived from the PSD permit. Compliance is determined via an annual stack test.[101]

(3) Mercury Emissions <= 0.05 mg/dscm @ 7% O2 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight), corrected to 7% oxygen, whichever is less stringent, derived from the federal NSPS, 40 CFR 60.33b(a)(3) & 62.14103(a)(3). Compliance is determined via annual stack testing.[102]

Limit (2) is expressly framed as an hourly limit. Limits (1) and (3) do not specify an averaging period and thus should be interpreted as applying on an instantaneous basis. As recorded in the Air Permit, compliance for limits (1) and (3) are determined by annual stack testing. This language impermissibly restricts the evidence that can be used to demonstrate that Covanta is not complying with these limits and it must be removed.

For all of these short-term mercury limits, the specified annual testing requirement is insufficient to assure Covanta's ongoing compliance as mandated by Title V and the federal Title V regulations. As with the short-term HCl limits, annual testing does not account for emissions variability that can easily result in Covanta violating mercury limits between stack tests.

A Mercury CEMS would dramatically improve Covanta's ability to track compliance with the applicable short-term mercury limits, enabling Covanta to quickly correct operational

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[100] Air Permit U1 OS1/OS3/OS5, Ref. #17.
[101] *Id.*
[102] *Id.* at Ref. #31.

problems that increase mercury emissions. As Covanta is aware, installation of a mercury CEMS at the Covanta Camden facility is feasible, as demonstrated by its multi-year field test of a mercury CEMS at its Hillsborough County Resource Recovery Facility in Tampa, Florida. While Florida DEP ultimately allowed Covanta to remove the mercury CEMS after demonstrating that the Hillsborough facility's mercury emissions were very low, Covanta's successful field test of the mercury CEMS (from February 2012 through May 2015) demonstrates that CEMS is feasible for use at its Covanta Camden facility.[103] Likewise, hundreds of power plants across the United States have installed mercury CEMS to comply with the monitoring requirements in the Mercury and Air Toxics Standards rule.[104]

To protect the community around the Covanta Camden facility, **Covanta must install and utilize a mercury CEMS and the Air Permit must include the mercury CEMS as the compliance demonstration method.** Continuous mercury monitoring would enable Covanta to better understand its mercury emissions and hopefully identify additional ways to reduce its emissions of this highly toxic pollutant. In addition, access to continuous mercury emissions data would serve to reassure the community that Covanta Camden is meeting its mercury emission limits at all times, including during startup and shutdown.

C. A PM CEMS Is Needed to Assure Baghouse Control Efficiency and Compliance with PM Emission Limits.

Particulate matter can be very hazardous to human health. PM2.5 presents the most danger because it can bypass the body's natural defenses in the nose and throat and enter the lungs. Short-term exposure to PM2.5 can aggravate lung disease, cause asthma attacks and acute bronchitis, and increase susceptibility to respiratory infections. Long-term exposures, such as those experienced by people living for many years in areas with high particulate matter levels, are associated with problems such as reduced lung function and the development of chronic bronchitis, and even premature death. Given the serious health risks posed by PM2.5, Covanta must do everything that it can to minimize its PM and PM2.5 to the maximum extent, including supplementing its existing PM monitoring activities with a PM CEMS.

The Air Permit subjects Covanta Camden's three municipal waste combustors to various particulate emission limits, for which compliance is demonstrated via an annual stack test.[105] But the Air Permit has no PM2.5 limit at all. Given the particular dangers of PM2.5 compared to larger particulate matter**, the Permit must include a PM2.5 limit.**

Covanta Camden has proposed to control PM with new baghouses. To ensure that Covanta Camden complies with the applicable PM limits and that the facility's baghouses are achieving the maximum possible reduction in PM, **Covanta must install a PM CEMS.** A PM CEMS would provide more accurate and reliable detection of baghouse filter leaks and control efficiency. The quicker Covanta can detect filter leaks, the quicker Covanta can fix them, thereby

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[103] *See* Air Permit No. 0570261-018-AC/PSD-FL-369E, Hillsborough County Resource Recovery Facility (June 11, 2015) (attached as Ex. 12).
[104] *See* 40 C.F.R. pt. 63, subpt. UUUUU. *See also* Zero Mercury Working Grp., *Continuous Emission Monitoring Systems for Mercury* (2013), https://www.nrdc.org/sites/default/files/int_13090401a.pdf.
[105] *See, e.g.*, Air Permit U1 OS1/OS3/OS5 Ref. ##1–5.

minimizing PM emissions and reducing the risk to public health and the environment. And as noted above, the high degree of moisture that Covanta is also proposing to add to the boilers may compromise baghouse control efficiency, and PM CEMS could aid in monitoring and swift fixing of declines in baghouse performance caused by this moisture.

VI. WASTE PERMIT ISSUES

A. Covanta's Waste Permit Must Be More Protective.

Covanta's renewed Waste Permit must include changes to ensure the proper disposal of spent baghouse filters. Last year, Covanta had an incident at its Newark incinerator where a potentially hazardous spent baghouse filter was mistakenly shipped to a non-hazardous waste landfill.[106] In response, DEP required Covanta to add new conditions to its waste permit to minimize potential impacts from its spent baghouse disposal practices.[107] **The Covanta Camden Waste Permit should include the same conditions to ensure no further mishaps with spent baghouse filters once the baghouse is constructed.**

In addition, the Waste Permit must improve waste inspection protocols to ensure that prohibited waste is not thrown into the boilers. The purple plume saga at Covanta's Newark incinerator, in which Covanta was unable to prevent the purple plumes or locate their source for months, highlights the inadequacies of Covanta's current waste inspection protocols. Covanta Camden should adopt the same requirements imposed on Covanta Essex under the administrative consent order meant to address the purple plumes, such as additional waste inspection measures and tipping floor camera upgrades. But those measures by themselves are inadequate. **Covanta should at the very least conduct throwdown inspections of all non-residential loads.** In addition, **Covanta should conduct periodic, detailed waste audits of the waste it receives to have a better sense of the waste that is being burned at the facility.**

The Waste Permit should require improved waste inspection procedures, and these measures must also be incorporated into the Air Permit as enforceable conditions because the composition of the waste affects air emissions. Materials Recovery Facilities use technology to sort different types of recyclable and non-recyclable waste to their proper destination, so there is no excuse for Covanta to push piles of waste into boilers without proper sorting and inspection, particularly under the EJ Law and AO-25. All types of available sensors, sorting, and inspection technology should be used.

B. Covanta's Waste Permit Must Be At Least As Protective As Other New Jersey Incinerator Waste Permits.

Covanta Camden's Waste Permit should adopt measures at least as protective as those in other New Jersey incinerator waste permits, like those in the Covanta Essex waste permit

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[106] *See* Letter from Patricia Earls, Covanta, to Anthony Fontana, DEP, re: 15-Day Report for Incident Reported on June 4, 2021 (June 25, 2021) (attached as Ex. 13).
[107] *See* Letter from Patricia Earls, Covanta, to Anthony Fontana, DEP, re: Technical Notice of Deficiency (Jan. 10, 2022) (excerpt attached as Ex. 14); Letter from Patricia Earls, Covanta, to Anthony Fontana, DEP, re: Second Technical Notice of Deficiency (May 10, 2022) (excerpt attached as Ex. 15).

("Essex Waste Permit"). The following permit conditions from the Essex Waste Permit should be incorporated into the Camden Waste Permit:

(1) **The Waste Permit should include procedures for dealing with radioactive waste**, such as the Essex Waste Permit's specification that loads "determined to have radioactive material that exceeds acceptable levels [in the Camden facility] shall be addressed in accordance with [an] approved facility procedure 'Response to Radioactive Waste Detection Alarm' . . . [N.J.A.C. 7:26-2B.8(v)8]."[108] If Camden's facility does not have an approved facility procedure, it should develop and implement one.

(2) **Camden's Waste Permit should include conditions to mitigate noise impacts from trucks**, such as the requirements in the Essex Waste Permit to "implement the necessary steps to prevent the continued acceptance of any haulage vehicles that are not equipped with working exhaust silencer systems or that create excessive noise," and "maintain a program to notify affected vehicle owners of the problem, and to inform them that failure to correct the situation will result in the vehicle being denied access to the facility. [N.J.A.C. 7:26-2]"[109]

(3) **The Camden permit should contain additional requirements about waste unloading and inspection**, such as the Essex Waste Permit's requirements that "[w]aste storage is allowed in only those areas specifically identified in the design for such purposes. Prior to moving waste into the pit by means of a front-end loader, waste shall be deposited onto the tipping floor near a bay opening and visually inspected by tipping floor personnel in accordance with the O&M Manual. If unacceptable waste is identified, it shall be removed."[110]

(4) In addition to maintaining a sign at or near the scale house on prohibited and acceptable items,[111] **the Camden facility should conduct educational programs on acceptable wastes**, such as the Essex Waste Permit's requirement to "conduct an education and information program on an on-going basis, to ensure that waste generators and transporters are fully aware of the facility's acceptable and prohibited waste types, waste acceptance procedures, facility rules and regulations, and penalties associated with delivering or attempting to deliver unauthorized or hazardous wastes."[112]

(5) **Camden's Waste Permit should add a number of conditions to improve ash handling, and removal practices**, such as by incorporating these provisions of the Essex Waste Permit:
    a. For exterior ash handling practices, the Camden facility should "implement and maintain good management practices within the ash and metals loading areas to minimize or prevent the tracking of ash residue beyond the interior of the building by the exiting trucks. Facility exterior grounds [should] be

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[108] NJ Solid Waste Facility Permit, Covanta Essex at I-9 #72 (Oct. 21, 2019) ("Essex Waste Permit") (attached as Ex. 16).

[109] *Id.* at I-11 #84.

[110] *Compare* Waste Permit at I-12 #86 *with* Ex. 16, Essex Waste Permit at I-13 #87.

[111] Waste Permit at I-13 #88.

[112] Ex. 16, Essex Waste Permit at I-14 #89.

maintained in a manner free of the accumulation of ash residue . . . [N.J.A.C. 7:26-2]."[113]

b. For interior ash handling practices, "[i]nterior storage of ash residue and recovered metals [should] be restricted to the ash residue storage building. The metal recovery systems [should also] be maintained in an operable condition at all times. Storage of ash residue and recovered metals in truck bodies or containers [should be] allowed on the facility tipping floor only during those hours when waste deliveries are prohibited . . . [N.J.A.C. 7:26-2]."[114]
c. Pertaining to ash residue removal, when conducted by truck, the facility should be sure to conduct removal during off-peak traffic hours and utilize "major arteries that transgress non-residential areas wherever possible."[115]

(6) **The Camden permit should prohibit rain or snow from accumulating at the bottom of the truck body or container** since this can increase the risk of leakage or spill.[116]

Under the EJ Law and AO-25, Covanta Camden's Waste Permit must, at the least, incorporate these conditions that already apply to other Covanta incinerators in New Jersey.

C. Covanta's Waste Permit Must Be At Least As Protective as Incinerator Waste Permits in Other States.

In addition, waste permits from Covanta's incinerators in other states also provide examples of permit conditions that Covanta is already complying with in other states, and should be complying with in New Jersey as well. For example, **the Covanta Camden permit should have a limit on Covanta's acceptance of bulky and industrial waste**, like the 10% daily limit for industrial waste throughput in the waste permit for Covanta's facility in Hempstead, New York.[117]

As for waste inspection procedure, **the Covanta Camden permit should require waste inspections at a set frequency**—like once per 500 tons of waste received—and **should require waste to be spread out on the floor for inspection in a separate area from the working floor**, like in the permit for Covanta's facility in Long Beach, California.[118] And **the Covanta Camden permit should require a "clean hour" at least once per week during which no waste is permitted on the tipping floor**, like in the Hempstead permit.[119]

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[113] *Compare* Waste Permit at I-15 #101 *with* Ex. 16, Essex Waste Permit at I-16 #102.
[114] Ex. 16, Essex Waste Permit at I-16 #103.
[115] *Id.* at I-19 #121.
[116] *Compare* Waste Permit at I-18 #119 *with* Essex Waste Permit at I-19 #119.
[117] NY Solid Waste Management Permit, Covanta Hempstead Permit § 5 (Dec. 2, 2015) ("Hempstead Permit") (attached as Ex. 17).
[118] CA Solid Waste Facility Permit, SERRF Long Beach § 17.B.1.b (Aug. 19, 2015) ("Long Beach Permit") (attached as Ex. 18).
[119] Ex. 17, Hempstead Permit § 7.

The Covanta Camden permit's recordkeeping and reporting provisions should also be strengthened to at least the standards of out-of-state permits. For example, **Covanta Camden should immediately report to DEP, the Office of the Attorney General, and other agencies the types and quantities of all types of prohibited wastes and their disposition**, similar to the immediate reporting requirement of the Hempstead permit,[120] and not merely for hazardous waste.[121] Similarly, **Covanta Camden should report to DEP the amount of separated or commingled recyclables received at the facility and their disposition**, like the Long Beach and Hempstead permits,[122] instead of solely reporting to the County recycling coordinator.[123] **The Covanta Camden permit should also require the reporting of all written complaints and records of telephone complaints and actions taken to resolve those complaints**, like the Long Beach permit.[124] Finally, **Covanta Camden should be required to keep records for seven years**, similar to the Hempstead permit,[125] and not just three years as Camden's current permit states.[126]

VII. CONCLUSION

The EJ Law and AO-25 compel Covanta to go beyond the bare minimum. The renewed Air and Waste Permits must take the measures recommended above, and all other feasible measures, to protect the people of Waterfront South and Camden from additional negative and disproportionate impacts from Covanta's pollution.

Sincerely,

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120 *Id.* § 15.
121 Waste Permit at I-14 #89.
122 Ex. 18, Long Beach Permit § 16.a; Ex. 17, Hempstead Permit § 20.
123 Waste Permit at I-4 #34.
124 Ex. 18, Long Beach Permit § 16.e.
125 Ex.17, Hempstead Permit § 20
126 Waste Permit at I-20 #126.

List of Exhibits:

Exhibit 1: DEP, Overburdened Community Stressor Summary for Block Group 340076018002 (June 2, 2022)

Exhibit 2: DEP, Authorized New Jersey Incinerators (Apr. 2018)

Exhibit 3: Title V Air Operation Permit Renewal, Palm Beach Energy Renewable Park (Sept. 1, 2016

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Exhibit 9: Petition for Rulemaking to Eliminate Startup, Shutdown, and Malfunction Exemptions in Clean Air Act Section 111 Regulations (Sept. 13, 2022)

Exhibit 10: Part 70 Operating Permit for Montgomery County Resource Recovery Facility MCRRF [Excerpt]

Exhibit 11: Title V State Operating Permit, Covanta Delaware Valley (Sept. 2, 2016)

Exhibit 12: Air Permit No. 0570261-018-AC/PSD-FL-369E, Hillsborough County Resource Recovery Facility (June 11, 2015)

Exhibit 13: Letter from Patricia Earls, Covanta, to Anthony Fontana, DEP, re: 15-Day Report for Incident Reported on June 4, 2021 (June 25, 2021)

Exhibit 14: Letter from Patricia Earls, Covanta, to Anthony Fontana, DEP, re: Technical Notice of Deficiency (Jan. 10, 2022) [Excerpt]

Exhibit 15: Letter from Patricia Earls, Covanta, to Anthony Fontana, DEP, re: Second Technical Notice of Deficiency (May 10, 2022) [Excerpt]

Exhibit 16: NJ Solid Waste Facility Permit, Covanta Essex Waste Permit (Oct. 21, 2019)

Exhibit 17: NY Solid Waste Management Permit, Covanta Hempstead Permit (Dec. 2, 2015)

Exhibit 18: CA Solid Waste Facility Permit, SERRF Long Beach § 17.B.1.b (Aug. 19, 2015)

Exhibit 1

Overburdened Community Stressor Summary

Block Group: 340076018002 **Municipality: Camden City** **County: Camden** **OBC Criteria: Adjacent**

Combined Stressor Total	
Block Group Value: Combined Stressor Total	**20**
County	14
State	13
Geographic Point of Comparison	**13**
Adverse Cumulative Stressors	**Higher than 50th Percentile**

Concentrated Areas of Air Pollution

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Ground-Level Ozone (3-year average days above standard)	**3.0**	2.7	1.3	**1.3**	**Yes**
Fine Particulate Matter ($PM_{2.5}$) (3-year average days above standard)	**0**	0	0	**0**	**No**
Cancer Risk from Diesel Particulate Matter (estimated cancer risk/million)	**151**	129	95	**95**	**Yes**
Cancer Risk from Air Toxics Excluding Diesel Particulate Matter (estimated cancer risk/million)	**60**	44	40	**40**	**Yes**
Non-Cancer Risk from Air Toxics (Combined Hazard Quotient)	**3.27**	2.78	2.05	**2.05**	**Yes**

Mobile Sources of Air Pollution

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Traffic – Cars, Light- and Medium-Duty Trucks (Annual Average Daily Traffic (AADT)-mile/square mile)	**30384**	42890	23623	**23623**	**Yes**
Traffic – Heavy-Duty Trucks (AADT-mile/square mile)	**2014**	1030	398	**398**	**Yes**
Railways (rail mile/square mile)	**0.55**	0.0	0	**0**	**Yes**

Contaminated Sites

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Known Contaminated Sites (weighted sites/square mile)	**13.34**	2.44	1.49	**1.49**	**Yes**
Soil Contamination Deed Restrictions (percent area)	**1.84**	0.0	0	**0**	**Yes**
Ground Water Classification Exception Area/Currently Known Extent Restrictions (percent area)	**6.34**	0.0	0	**0**	**Yes**

Transfer Stations, or Other Solid Waste Facilities, Recycling Facilities, Scrap Metal Facilities

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Solid Waste Facilities (sites/square mile)	**0.34**	0	0	**0**	**Yes**
Scrap Metal Facilities (sites/square mile)	**2.56**	0	0	**0**	**Yes**

Point-Sources of Water Pollution

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Surface Water (percent of uses impaired)	**79.82**	100.0	87.99	**87.99**	**No**
Combined Sewer Overflows (count)	**3**	NA	NA	**NA**	**Yes**

May Cause Potential Public Health Impacts

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Drinking Water (count of public drinking water violations or exceedances, or percent of private well testing exceedances)	**0**	NA	NA	**NA**	**0**
Potential Lead Exposure (percent houses older than 1950)	**0.0**	16.26	15.38	**15.38**	**No**
Lack of Recreational Open Space (population/acre of open space within 0.25 mile)	**7652.0**	23.16	19.14	**19.14**	**Yes**
Lack of Tree Canopy (percent lack of tree canopy)	**92**	68	63	**63**	**Yes**
Impervious Surface (percent impervious surface)	**71**	41	34	**34**	**Yes**
Flooding (Urban Land Cover) (percent urban land use area flooded)	**91**	1	2	**1**	**Yes**

Density/Proximity Stressors

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Emergency Planning Sites (sites/square mile)	**0.85**	0.05	0.05	**0.05**	**Yes**
Permitted Air Sites (sites/square mile)	**1.71**	1.26	0.8	**0.8**	**Yes**
NJPDES Sites (sites/square mile)	**0.09**	0.0	0.0	**0.0**	**Yes**

Social Determinants of Health

Stressor	Block Group Value	County Non OBC 50th	State Non OBC 50th	Geographic Point of Comparison	Adverse Stressor
Unemployment (percent unemployed)	**0.0**	3.95	3.7	**3.7**	**No**
Education (percent without high school diploma)	**0.0**	4.24	3.59	**3.59**	**No**

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Exhibit 2

Authorized New Jersey Incinerators (last update April, 2018)

FACILITY/LOCATION	CONTACT	COUNTY	FACILITY ID	WASTE TYPE	CAPACITY	PERMIT ISSUED	PERMIT EXPIRES
Camden County RRF Camden	Mr. Richard Harrington Camden County Energy Recovery Assoc. 600 Morgan Blvd. Camden New Jersey 08104 (856) 966-7174	Camden	133512	10,13,13C,23,27	451,140 TPY	4/30/2013	4\30\2018
Essex County RRF Newark	Carlos Ascencio Covanta Essex Company, 183 Raymond Blvd Newark New Jersey 07105 (973) 344-0900	Essex	133546	10,23,25,27	985,500 TPY	2/23/2016	2/23/2021
Gloucester County RRF Westville	Ludwig Saenz Wheelabrator Gloucester Company, L.P. 600 U.S. Route 130 Westville, New Jersey 08093 (856) 742-1484	Gloucester	133564	10,13,23,25	209,875 TPY	4/30/2013	4/30/2018
Union County RRF	Mr. Alan	Union	132721	10,25,27	562,100		

Rahway	Harleston, Covanta Union, Inc. 1499 Routes 1&9 Rahway, New Jersey 07065 (732) 499-0101				TPY	6/30/2015	6/30/2020
Warren County RRF Oxford	Todd Frace, Covanta Warren Energy Resource Company, L.P. 218 Mt. Pisgah Avenue Oxford, New Jersey 07863 (908) 453-2195	Warren	132752	10,23,27	200,000 TPY	6/29/2017	6/29/2022

If you have questions about this information, please contact Solid Waste Permitting at (609) 292-9880.

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Last Updated: January 12, 2018

Exhibit 3

Solid Waste Authority of Palm Beach County

Palm Beach Renewable Energy Park (PBREP)

Facility ID No. 0990234
Palm Beach County

Title V Air Operation Permit Renewal

Permit No. 0990234-037-AV
(Renewal of Title V Air Operation Permit No. 0990234-020-AV)

Permitting Authority:

State of Florida
Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road
Mail Station #5505
Tallahassee, Florida 32399-2400

Telephone: 850/717-9000
Fax: 850/717-9097

Compliance Authority:

State of Florida
Department of Environmental Protection
Southeast District Office

3301 Gun Club Road, MSC 7210-1
West Palm Beach, Florida 33406

Telephone: 561/681-6600
Fax: 561/681-6755

Title V Air Operation Permit Renewal

Permit No. 0990234-037-AV

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Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
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PERMITTEE:
Solid Waste Authority of Palm Beach County
7501 North Jog Road
West Palm Beach, FL 33412

Permit No. 0990234-037-AV
Palm Beach Renewable Energy Park (PBREP)
Facility ID No. 0990234
Project: Title V Air Operation Permit Renewal

The purpose of this permit is to renew the Title V air operation permit for the above referenced facility. This existing facility is located in Palm Beach County at 7501 North Jog Road, West Palm Beach, Florida; UTM Coordinates are: Zone 17, 585.82 km East and 2960.474 km North; Latitude: 26° 45' 53" North and Longitude: 80° 08' 12" West.

This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. The above named permittee is hereby authorized to operate the facility in accordance with the terms and conditions of this permit.

Effective Date: September 1, 2016
Renewal Application Due Date: January 19, 2021
Expiration Date: September 1, 2021

For:

Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

SA/dlr/sms

Subsection A. Facility Description.

The Palm Beach Renewable Energy Park is located in Palm Beach County at 7501 North Jog Road, West Palm Beach, Florida.

The Palm Beach Renewable Energy Park (PBREP) consists of two renewable energy facilities ("Palm Beach Renewable Energy Facility No. 1" and "Palm Beach Renewable Energy Facility No. 2") also known as waste-to-energy (WTE) facilities. Each individual facility, the Palm Beach Renewable Energy Facility No. 1 ("PBREF-1") and the Palm Beach Renewable Energy Facility No. 2 ("PBREF-2") are further described below.

The existing PBREF-1 facility is a municipal waste combustor plant designed to process 2,000 tons per day (TPD) of municipal solid waste (MSW). The facility burns processed MSW that is called "refuse derived fuel" (RDF). The RDF plant is equipped with three MSW processing lines, any two of which can handle the 2,000 TPD of incoming MSW. The boiler plant includes two Babcock & Wilcox (B&W) boilers (Nos. 1 and 2) with auxiliary burners. Each boiler was designed with a maximum heat input of 427.5 MMBtu/hr and a maximum steam production rating of 324,000 lbs/hour. At a reference heating value of 5,700 Btu/lb, this is equivalent to 900 TPD of RDF per boiler. The gross nominal electric generating capacity of the facility is 62 megawatts (MW). These emissions units are referred to as the Palm Beach Renewable Energy Facility Number 1 ("PBREF-1").

The recently constructed PBREF-2 facility consists of three 1,000 TPD mass-burn MWC units, each with a maximum steam production rate of 320,100 pounds per hour (lb/hr) on a 4-hour average block basis. The supporting equipment for the new units include a 90 to 100 MW steam turbine generator (STG); two lime storage silos; one carbon storage silo; two diesel engine-driven fire pumps; one emergency generator; and one ash handling system and building. The new equipment is collectively referred to as the Palm Beach Renewable Energy Facility Number 2 ("PBREF-2").

Two landfills, a Class I Landfill and a Class III Landfill, each with its own gas collection system and flare, are also located at the facility.

A biosolids pelletization facility (BPF) is located adjacent to the existing landfill.

Additional activities at the facility include: material processing systems, a metals recovery system, storage and handling systems for RDF; lime storage and processing facilities; storage and handling systems for ash and ash treatment; and, cooling towers.

Also included in this permit are miscellaneous unregulated/insignificant emission units and/or activities.

The total capacity of this existing facility is 5,000 tons/day (TPD) of municipal solid waste fuel. The nominal (i.e., generator nameplate) electric generating capacity of the facility is 162 megawatts (MW), which is sold to the local utility company. The facility is owned and currently operated by the Solid Waste Authority of Palm Beach County.

Subsection B. Summary of Emissions Units.

E.U. ID No.	Brief Description
Regulated Emissions Units	
Palm Beach Renewable Energy Facility No. 1 (PBREF-1)	
	Municipal Waste Combustors
001	Municipal Solid Waste Boiler No. 1
002	Municipal Solid Waste Boiler No. 2
019	Ash Building and Handling System
Palm Beach Renewable Energy Facility No. 2 (PBREF-2)	

	Municipal Waste Combustor
024	Municipal Waste Combustor - Unit No. 3
025	Municipal Waste Combustor - Unit No. 4
026	Municipal Waste Combustor - Unit No. 5
027	Lime Storage Silo A
028	Lime Storage Silo B
030	Activated Carbon Storage Silo
034	Ash Handling System and Building
Landfills and Flares	
004	Class III Landfill and Flare (1,800 scfm, manufactured by LFG Specialties, model number PCF820I8)
008	Class I Landfill and Flare (3,500 scfm, manufactured by Shaw LFG Specialties, model number CF1238I10)
Biosolids Pelletization Facility (BPF)	
010	BPF Sludge Dryer Train #1
011	BPF Sludge Dryer Train #2
012	BPF Recycle Material Bin for Sludge Dryer Train #1
014	BPF Recycle Material Bin for Sludge Dryer Train #2
045	Pellet Storage Silo for Sludge Dryer Trains #1 & 2
Engines	
016	Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified)
021	Emergency Generator - Operations Building (EPA Tier 3 certified)
031	Emergency Firewater Pump Engine A (351 HP) - PBREF No. 2 (EPA Tier 3 certified)
032	Emergency Firewater Pump Engine B (351 HP) - PBREF No. 2 (EPA Tier 3 certified)
033	Emergency Generator - PBREF No. 2 (EPA Tier 2 certified)
035	PBREF No. 1 Emergency Generator
036	PBREF No. 1 Emergency Fire Water Pump
037	Emergency Generator - Scalehouse (EPA Tier 3 certified)
038	Emergency Generator - Utilities Facility
042	Emergency Generator - Administration
043	Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified) (SWA of PBC ID# MRF-E1)
046	Emergency Generator - Landfill Scalehouse E2 (EPA Tier 3 certified)
047	Emergency Generator - MIS (EPA Tier 3 certified)

Unregulated Emissions Units and/or Activities	
005	RDF Storage
006	RDF Processing Lines
007	Oversized Bulk Waste Processing Line
018	Cooling Towers (3) at PBREF No. 1 {The cooling towers do no not use chromium-based water treatment chemicals.}

Subsection C. Applicable Requirements.

Based on the Title V air operation permit renewal application received on February 19, 2016, this facility is a major source of hazardous air pollutants (HAP). This facility is classified as a Prevention of Significant Deterioration (PSD) major facility. A summary of important applicable requirements is shown in the following table.

Applicable Requirement	E.U. ID No(s).
Palm Beach Renewable Energy Facility No. 1 (PBREF-1) *Municipal Waste Combustors*	
40 CFR 60, Subpart A, Standards of Performance for New Stationary Sources (NSPS) General Provisions	001, 002 & 019
40 CFR 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors *{Permitting note(s): The EG 40 CFR 60, Subpart Cb, cross references applicable requirements that are contained in the NSPS 40 CFR 60, Subparts A and Eb.}*	001, 002 & 019
Rule 62-296.416, F.A.C., Waste-to-Energy Facilities	001 & 002
Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD)	001, 002 & 019
Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT)	001, 002 & 019
Palm Beach Renewable Energy Facility No. 2 (PBREF-2) *Municipal Waste Combustors & Auxiliary Burners*	
40 CFR 60, Subpart A, Standards of Performance for New Stationary Sources (NSPS) General Provisions	024, 025, 026 & 034
40 CFR 60, Subpart Eb, NSPS for Large Municipal Waste Combustors	024, 025, 026 & 034
Rule 62-296.416, F.A.C., Waste-to-Energy Facilities	024, 025 & 026
Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD)	024, 025, 026, 027, 028, 030 & 034
Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT)	024, 025, 026, 027, 028, 030 & 034
Landfills and Flares	

40 CFR 60, Subpart A, Standards of Performance for New Stationary Sources (NSPS) General Provisions	004 & 008
40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills	004 & 008
40 CFR 61, Subpart A, General Provisions	004 & 008
40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Asbestos	004 & 008
40 CFR 63, Subpart A, General Provisions	004 & 008
40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills	004 & 008
Biosolids Pelletization Facility (BPF)	
40 CFR 61, Subpart A, General Provisions	010 & 011
40 CFR 61, Subpart E, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Mercury	010 & 011
40 CFR 64, Compliance Assurance Monitoring (CAM)	010 & 011
Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD)	010, 011, 012 & 014
Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT)	010, 011, 012 & 014
Engines	
40 CFR 60, Subpart A, Standards of Performance for New Stationary Sources (NSPS) General Provisions	016, 021, 031, 032, 033, 037, 042, 043, 046 & 047
40 CFR 60, Subpart IIII, NSPS for Compression Ignition Internal Combustion Engines (CI-ICE)	016, 021, 031, 032, 033, 037, 042, 043, 046 & 047
40 CFR 63, Subpart A, General Provisions	016, 021, 031, 032, 033, 035-038, 042, 043, 046 & 047
40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE)	016, 021, 031, 032, 033, 035-038, 042, 043, 046 & 047
Unregulated Emissions Units and/or Activities	
Rule 62-210.300, F.A.C., Permits Required	005, 006, 007 & 018

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The following conditions apply facility-wide to all emission units and activities:

FW1. Appendices. The permittee shall comply with all documents identified in Section IV., Appendices, listed in the Table of Contents. Each document is an enforceable part of this permit unless otherwise indicated. [Rule 62-213.440, F.A.C.]

Emissions and Controls

FW2. **Not federally enforceable.** Objectionable Odor Prohibited. No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rules 62-296.320(2) & 62-210.200 (Definitions), F.A.C.]

FW3. General Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1)(a), F.A.C.]

{Permitting note: Nothing is deemed necessary and ordered at this time.}

FW4. General Visible Emissions. No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20% opacity. EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b), F.A.C.]

FW5. Unconfined Particulate Matter. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction; alteration; demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.
Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include:

a. Chemical or water application to unpaved road and unpaved yard and landfill areas;
b. Paving and maintenance of roads, parking areas and yards;
c. Landscaping or planting of vegetation;
d. Confining abrasive blasting where possible and appropriate;
e. Unpaved roads and active unpaved areas are sprayed with a water truck;
f. Landfill areas that are closed are promptly re-vegetated;
g. Ash is quenched with water prior to landfilling;
h. Waste transfer trucks are tarped;
i. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities;
j. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulates from becoming airborne;
k. Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter;
l. Enclosure or covering of conveyor systems; and,
m. Tipping floor at PBREF No. 2 is maintained under negative pressure during active periods.

[Rule 62-296.320(4)(c), F.A.C.; Permit No. 0990234-032-AC/PSD-FL-413C; and, proposed by applicant in the Title V air operation permit renewal application received on February 19, 2016.]

Annual Reports and Fees

See Appendix RR, Facility-wide Reporting Requirements, for additional details.

FW6. Electronic Annual Operating Report (EAOR) and Title V Annual Emissions Fees. The information required by the Annual Operating Report for Air Pollutant Emitting Facility [Including Title V Source

Emissions Fee Calculation] (DEP Form No. 62-210.900(5)) shall be submitted by April 1st of each year, for the previous calendar year, to the Department of Environmental Protection's Division of Air Resource Management. Each Title V source shall submit the annual operating report using the DEP's Electronic Annual Operating Report (EAOR) software, unless the Title V source claims a technical or financial hardship by submitting DEP Form No. 62-210.900(5) to the DEP's Division of Air Resource Management instead of using the reporting software. Emissions shall be computed in accordance with the provisions of Rule 62-210.370(2), F.A.C. Each Title V source must pay between January 15th and April 1st of each year an annual emissions fee in an amount determined as set forth in Rule 62-213.205(1), F.A.C. The annual fee shall only apply to those regulated pollutants, except carbon monoxide and greenhouse gases, for which an allowable numeric emission-limiting standard is specified in the source's most recent construction permit or operation permit. Upon completing the required EAOR entries, the EAOR Title V Fee Invoice can be printed by the source showing which of the reported emissions are subject to the fee and the total Title V Annual Emissions Fee that is due. The submission of the annual Title V emissions fee payment is also due (postmarked) by April 1st of each year. A copy of the system-generated EAOR Title V Annual Emissions Fee Invoice and the indicated total fee shall be submitted to: **Major Air Pollution Source Annual Emissions Fee, P.O. Box 3070, Tallahassee, Florida. 32315-3070**. Additional information is available by accessing the Title V Annual Emissions Fee On-line Information Center at the following Internet web site: http://www.dep.state.fl.us/air/emission/tvfee.htm. [Rules 62-210.370(3), 62-210.900 & 62-213.205, F.A.C.; and, Section 403.0872(11), Florida Statutes (2013)]

{Permitting notes:

If the permittee chooses to use the EAOR software, instructions provided with the system should be followed.

Resources to help complete the AOR are available on the website at: http://www.dep.state.fl.us/air/emission/eaor. If you have questions or need assistance after reviewing the information posted on the EAOR website, please contact the Department by phone at (850) 717-9000 or email at eaor@dep.state.fl.us.

Also, the Title V Annual Emissions Fee form (DEP Form No. 62-213.900(1)) was repealed; a separate Annual Emissions Fee form is no longer required to be submitted by March 1st each year.}

FW7. Annual Statement of Compliance. The permittee shall submit an annual statement of compliance to the compliance authority at the address shown on the cover of this permit and to the U.S. EPA at the address shown below within 60 days after the end of each calendar year during which the Title V air operation permit was effective. (See also Appendix RR, Conditions RR1 and RR7.) [Rules 62-213.440(3)(a)2. & 3. and (b), F.A.C.]

U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303
Attn: Air Enforcement Branch

{Permitting note: As specified in Specific Condition RR7 of Appendix RR, the permittee shall use DEP Form No. 62-213.900(7) to comply with this requirement.}

FW8. Prevention of Accidental Releases (Section 112(r) of CAA). If and when the facility becomes subject to 112(r), the permittee shall:

a. Submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent electronically through EPA's Central Data Exchange system at the following address: https://cdx.epa.gov. Information on electronically submitting risk management plans using the Central Data Exchange system is available at: http://www2.epa.gov/rmp. The RMP Reporting Center can be contacted at: RMP Reporting Center, Post Office Box 10162, Fairfax, VA 22038, Telephone: 703/227-7650.

b. Submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.

[40 CFR 68.]

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Subsection A. Emission Units 001, 002 & 019

***PBREF-1:* Municipal Solid Waste Boiler Nos. 1 & 2 and Ash Building and Handling System**

The specific conditions in this section apply to the following emissions unit(s):

E.U. ID No.	**Brief Description**
Palm Beach Renewable Energy Facility No. 1 (PBREF-1)	
	Municipal Waste Combustors
001	Municipal Solid Waste Boiler No. 1
002	Municipal Solid Waste Boiler No. 2
019	Ash Building and Handling System

Description: Units 1 and 2 are identical Babcock & Wilcox MSWC units that began commercial operation on November 15, 1989. The following descriptions include the changes being made in this permit.

Boiler Type: The boiler use a moving grate to burn the RDF fuel.

Fuel: RDF.

Supplementary Fuel: Natural gas is used for startup, shutdown and during combustion of low Btu waste to maintain combustor temperature.

Capacity: The permitted capacity is 324,000 pounds per hour of steam (4-hour block average) based on a unit design capacity of 900 tons per day of RDF.

Generator Nameplate Rating: 62 Megawatts (MW).

Spray Dryer Absorber (SDA): Each unit uses lime injection to control acid gas emissions.

Fabric Filter System: Each unit uses a fabric filter system to control particulate matter (PM) emissions.

Combustion Control System and OFA System: Each unit optimizes furnace conditions with an automated control system and OFA system for proper combustion while minimizing carbon monoxide (CO), nitrogen oxides (NOx) and volatile organic compounds (VOC).

SNCR System: Each unit injects urea with an SNCR system to control NOx emissions.

ACI System: Each unit injects activated carbon to adsorb metal and dioxin/furan emissions, which are then collected by the fabric filter system.

Continuous Monitors: Each unit uses the following equipment to continuously monitor the following pollutants and parameters: continuous emissions monitoring systems (CEMS) for CO, carbon dioxide (CO_2), NOx and sulfur dioxide (SO_2); continuous opacity monitoring system (COMS) for opacity; and continuous monitoring systems (CMS) for the temperature of the flue gas stream at the fabric filter inlet, the steam production rate and urea injection rate.

Stack Parameters: Units 1 and 2 each have a stack that is 250 feet tall with a diameter of 8 feet and are both surrounded by a single stack shell. The volumetric flow rates of each MSWC at permitted capacity are approximately 191,494 actual cubic feet per minute (acfm) and 116,274 dry standard cubic feet per minute (dscfm) @ 7% oxygen (O_2).

Exit Temperature: Approximately 310 ^oF, as measured downstream of the SDA.

Emissions Unit ID No. 019 is the Ash Building and Handling System. Fly ash from the fabric filter system is wetted to control the dust and minimize fugitive emissions. Bottom ash from the RDF boilers is combined with the fly ash prior to going to the landfill. Emissions from the building are uncontrolled.

{Permitting notes: These emissions units are regulated under 40 CFR 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors (MWC) adopted and incorporated by reference in Rule 62-204.800(9)(b), F.A.C.; Rule 62-296.416, F.A.C., Waste-to-Energy Facilities; Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) [PSD-FL-108, as amended]; Rule 62-212.400(6),

F.A.C., Best Available Control Technology (BACT); and, Florida Electrical Power Plant Site Certifications [PA84-20].}

Essential Potential to Emit (PTE) Parameters

A.1. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200 (Definitions - Potential to Emit (PTE)), F.A.C.; and, Permit No. 0990234-015-AC/PSD-FL-108H.]

A.2. Capacity. The following maximum values (capacities) shall not be exceeded:
a. 324,000 lbs/hr individual MWC unit steam production on a 4-hour block arithmetic average.
The MWC units shall not be loaded in excess of their maximum operating capacity, equivalent to 2,000 TPD of mixed MSW. See 40 CFR 60.31b of Appendix 40 CFR 60, Subpart Cb and 40 CFR 60.58b(j) of Appendix 40 CFR 60, Subpart Eb for additional restrictions on capacity. [Rules 62-4.160(2) & 62-210.200 (PTE), F.A.C.; 40 CFR 60.31b & 40 CFR 60.58b(j); and, Permit No. 0990234-015-AC/PSD-FL-108H.]

A.3. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. See the "maximum demonstrated municipal waste combustor unit load" provisions of 40 CFR 60.34b(b) and 40 CFR 60.51b for additional restrictions on operating rate. [Rule 62-297.310(2), F.A.C.; and, 40 CFR 60.34b(b) & 40 CFR 60.51b.]

A.4. MWCs - Fuels. The open storage of solid waste outside of a building is prohibited. [PSD-FL-108A, specific condition 10.]

A.5. MWCs - Methods of Operation - Fuels.
a. *Allowable Fuels.*
(1) The only fuels allowed to be burned in the MWCs is RDF from mixed municipal solid waste (MSW), with natural gas as an auxiliary fuel. Other fuels or wastes, not specifically listed herein, shall not be burned without written prior approval from the Department. Fuels or wastes specifically authorized herein do not require prior Department approval before combustion.
(2) The primary fuel for the facility is RDF from mixed municipal solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40 CFR 60.51b or Section 403.706(5), Florida Statutes (2010). The following items and materials fit within the definition of MSW contained in either 40 CFR 60.51b or Section 403.706(5), Florida Statutes (2010):
(a) Residue from the Recycling of Construction & Demolition (C&D) Debris. This residue is the combustible material that is removed from typical C&D debris at a recycling facility. This residue may contain some incidental amounts of non-combustibles.
(b) Residue from Processing Recovered Materials. Recovered Materials are defined in Section 403.703, Florida Statutes, as metal, paper, glass, plastic, textile, or rubber materials that have been diverted and source separated from the solid waste stream. These materials are collected from residential and commercial customers and then processed at a Recovered Materials Processing Facility ("RMPF"). The residue generated at the RMPF includes non-recyclable materials (e.g., food waste) and recyclable materials that were missed or rejected on the sorting line at the RMPF.
(c) Residue from Processing Recyclables at a Dirty MRF or a Single Stream MRF. Materials Recovery Facilities ("MRFs") generate various residues from the processing of MSW and recyclable materials. At a "dirty" MRF, MSW is delivered and recyclable materials are extracted from the solid waste. At a "single stream" MRF, recyclable materials that are collected at curbside are delivered in a "single stream" (i.e., all of the customer's recyclable materials are placed into one container and then collected together in a single, comingled load). The residues from dirty and single stream MRFs are materials that are rejected from the processing lines inside the MRFs (e.g., items that are removed from the sorting lines because they are unsuitable for recycling) and materials that simply escaped processing.

b. *Unauthorized Fuels.* Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW, which are described in **d. - f.**, below. However, the facility
   (1) shall not burn:
      (a) those materials that are prohibited by state or federal law;
      (b) those materials that are prohibited by this permit;
      (c) lead acid batteries;
      (d) hazardous waste;
      (e) nuclear waste;
      (f) radioactive waste;
      (g) sewage sludge;
      (h) sewage sludge from sewage treatment plants [1];
      (i) explosives;
      (j) beryllium-containing waste, as defined in 40 CFR 61, Subpart C. *{The U.S. EPA letter dated April 6, 2000 (see attached), on 40 CFR 61, Subpart C further addresses the applicability of this federal regulation with regard to beryllium-containing waste(s).}*
   (2) and shall not knowingly burn:
      (a) untreated biomedical waste from biomedical waste generators regulated pursuant to Chapter 64E-16, F.A.C., and from other similar generators (or sources). See the attached Appendix BW, Biomedical Waste Definitions, for definitions of what constitutes biomedical waste;
      (b) segregated loads of biological waste.

c. *Fuel Handling.* The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is segregated non-MSW material, the fuel shall be well mixed with MSW. For the purposes of this permit, a segregated load is defined to mean a container or truck that is almost completely or exclusively filled with a single item or homogeneous composition of waste material, as determined by visual observation.

d. *Other Solid Waste.* Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:
   (1) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons and microfilm);
   (2) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
   (3) Wood pallets, clean wood, and land clearing debris;
   (4) Packaging materials and containers;
   (5) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; or
   (6) Rugs, carpets, and floor coverings, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings.

e. *Waste Tires.* Subject to the conditions and limitations contained in this permit, waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 3%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis.

f. *Non-MSW Material.* Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e., the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis.

(1) Construction and demolition debris.
(2) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.
(3) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.
(4) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.
(5) Waste materials that:
 (a) are generated in the manufacture of items in categories **f.(3)** or **f.(4)**, above and are functionally or commercially useless (expired, rejected or spent); or
 (b) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.
(6) Waste materials that contain oil from:
 (a) the routine cleanup of industrial or commercial establishments and machinery; or
 (b) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.
(7) Used oil and used oil filters. Used oil containing a polychlorinated biphenyls (PCB) concentration equal or greater than 50 parts per million (ppm) shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).
(8) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW, subject to written prior approval of the Department.

[Rules 62-4.070(1), (3), 62-213.410 & 62-213.440, F.A.C.; [1] PSD-FL-108A, specific condition 11.; and, Applicant Request.]

{Permitting note: At RDF plants, the 3% (or 5%) restriction applies to the municipal solid waste received. On-site processing of material at the facility is not included in this restriction. Exceedance of this percentage requires prior department approval.}

A.6. Auxiliary Burners - Methods of Operation - Fuels. Auxiliary burners for each MWC shall be fired only with natural gas. Natural gas may be used as a supplemental fuel during startups, shutdowns, and at other times when necessary and consistent with good combustion practices. [Rules 62-4.160(2), 62-210.200 (PTE), 62-213.410, & 62-213.440, F.A.C.; and, PSD-FL-108A.]

A.7. Auxiliary Gas Burner Operations.

a. During boiler startup, the auxiliary gas burners shall be operating at their maximum capacity prior to the introduction of RDF to the boilers, and shall remain in operation until the lime spray dryer absorbers and particulate matter emissions control device (fabric filter system) are fully operational.
b. During normal, non-emergency boiler shutdown, the auxiliary gas burners shall be operated at their maximum capacity until all RDF has been combusted.
[Rules 62-4.160(2), 62-210.200 (PTE), 62-213.410, & 62-213.440, F.A.C.; 0992034-015-AC/PSD-FL-108H; and, PSD-FL-108A, specific conditions 7. & 8.]

Air Pollution Control Technologies and Measures

A.8. Carbon Usage Rate. The carbon injection rate operating standard and monitoring requirements set forth in 40 CFR 60.58b(m) of 40 CFR 60, Subpart Eb, incorporated by reference in Rule 62-204.800, F.A.C., shall apply. See Appendix 40 CFR 60, Subpart Eb. [Rule 62-296.416(5), F.A.C.]

Emission Limitations and Standards

Unless otherwise specified, the averaging times for Specific Conditions **A.9. - A.19.** are based on the specified averaging time of the applicable test method.

{Permitting note: The May 10, 2006 amendments to 40 CFR 60 Subpart Cb changed some of the emission standards and limitations for Unit Nos. 1 & 2. Five (5) air pollutant standards/limitations were lowered under the amendments: PM, cadmium (Cd), Hg, Pb and dioxin/furan (D/F).}

Stack Emissions

A.9. Particulate Matter (PM) Emissions. The emission limit for particulate matter (PM) contained in the gases discharged to the atmosphere is 25 milligrams (mg) per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.a., F.A.C.; 40 CFR 60.33b(a)(1)(i); and, PSD-FL-108A, specific condition 3.a.]

A.10. Opacity. As determined by the continuous opacity monitoring system (COMS) or EPA Method 9, the emission limit for opacity exhibited by the gases discharged to the atmosphere is 10 percent (6-minute average). [Rule 62-204.800(9)(b)3.b., F.A.C.; 40 CFR 60.33b(a)(1)(iii); and, PSD-FL-108A, specific condition 3.k. & Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.e.]

A.11. Cadmium. The emission limit for cadmium (Cd) contained in the gases discharged to the atmosphere is 35 micrograms (ug) per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.c., F.A.C. and 40 CFR 60.33b(a)(2)(i).]

A.12. Mercury. The emission limit for mercury (Hg) contained in the gases discharged to the atmosphere is 50 micrograms per dry standard cubic meter or 15 percent of the potential mercury emission concentration (85-percent reduction by weight), corrected to 7 percent oxygen, whichever is less stringent. [Rule 62-204.800(9)(b)3.d., F.A.C.; 40 CFR 60.33b(a)(3); and, PSD-FL-108A, specific condition 3.e.]

A.13. Lead. The emission limit for lead (Pb) contained in the gases discharged to the atmosphere is 400 micrograms per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.c., F.A.C.; 40 CFR 60.33b(a)(4); and, PSD-FL-108A, specific condition 3.d.]

A.14. Sulfur Dioxide. As determined by the continuous emissions monitoring system (CEMS), the emission limit for sulfur dioxide (SO_2) contained in the gases discharged to the atmosphere is 29 parts per million by volume (ppmv) or 25 percent of the potential sulfur dioxide emission concentration (75-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent. Compliance with this emission limit is based on a 24-hour daily geometric mean. [Rule 62-204.800(9)(b)3.e., F.A.C.; 40 CFR 60.33b(b)(3)(i); and, PSD-FL-108A, specific condition 3.i. & Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.d.]

A.15. Hydrogen Chloride. The emission limit for hydrogen chloride (HCl) contained in the gases discharged to the atmosphere is 25 parts per million by volume or 5 percent of the potential hydrogen chloride emission concentration (95-percent reduction by weight or volume), corrected to 7 percent oxygen (dry basis), whichever is less stringent. [Rule 62-204.800(9)(b)3.f., F.A.C.; 40 CFR 60.33b(b)(3)(ii); and, PSD-FL-108A, specific condition 3.j.]

A.16. Dioxin/Furan. The emission limit for dioxin/furan (D/F) contained in the gases discharged to the atmosphere from designated facilities that do not employ an electrostatic precipitator-based emission control system is 30 nanograms per dry standard cubic meter (total mass), corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)3.g., F.A.C.; 40 CFR 60.33b(c)(1)(iii); and, 0990234-021-AC/PSD-FL-108J]

A.17. Nitrogen Oxides. As determined by the CEMS, the emission limit for nitrogen oxides (NOx) contained in the gases discharged to the atmosphere from a refuse derived fuel type municipal waste combustor technology is 250 parts per million by volume, corrected to 7 percent oxygen, dry basis. Compliance with this emission limit is based on the 24-hour daily arithmetic average of the hourly emission concentrations using continuous emission monitoring system outlet data. Emissions averaging pursuant to 40 CFR 60.33b(d)(1) shall be allowed. 40 CFR 60.33b(d)(2) shall not apply. [Rule 62-204.800(9)(b)3.h., F.A.C.; 40 CFR 60.33b(d); and, PSD-FL-108A, specific condition 3.b. & Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.d.]

A.18. Carbon Monoxide. As determined by the CEMS:

a. the emission limit for carbon monoxide (CO) contained in the gases discharged to the atmosphere from a refuse derived fuel stoker type municipal waste combustor technology is 200 parts per million by volume (ppmvd), measured at the combustor outlet in conjunction with a measurement of oxygen concentration, corrected to 7 percent oxygen, dry basis, and calculated on a 24-hour block average. Calculated as an arithmetic average. [Rule 62-204.800(9)(b)3.i., F.A.C.; 40 CFR 60.34b(a); and, Permit No. 0990234-015-AC/PSD-FL-108H, specific condition 17.d.]

b. CO emissions shall not exceed 400 ppmvd, corrected to 7 percent oxygen, dry basis, and calculated on a 4-hour block average. [Permit No. 0990234-015-AC/PSD-FL-108H, specific conditions 3.c. & 17.d.]

A.19. Volatile Organic Compounds. Volatile organic compound (VOC) emissions shall not exceed 1.6 x 10^{-2} lb/MMBtu. [PSD-FL-108A, specific condition 3.h.]

Fugitive Ash Emissions

A.20. **(This condition only applies to the ash conveying systems of E.U. ID No. 019.)** Fugitive Ash Emissions.

a. No owner or operator of an affected facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 percent of the observation period (i.e., 9 minutes per 3-hour period), as determined by EPA Reference Method 22 observations as specified in 40 CFR 60.58b(k), except as provided in paragraphs b. and c.

b. The emission limit specified in paragraph a. does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, the emission limit specified in paragraph a. does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.

c. The provisions of paragraph a. do not apply during maintenance and repair of ash conveying systems.

[Rule 62-204.800(9)(b)6., F.A.C.; and, 40 CFR 60.36b and 40 CFR 60.55b.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C., cannot vary any requirement of an EG, NSPS or NESHAP provision.

A.21. Excess Emissions Allowed - Startup, Shutdown or Malfunction. Excess emissions resulting from startup, shutdown or malfunction shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. The Department authorizes three hours per occurrence in any 24-hour period for these emissions units. A malfunction means any unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. [Rules 62-210.700(1) & (5), F.A.C. and PSD-FL-108A, specific condition 15.]

A.22. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

A.23. Carbon Monoxide. For the purpose of compliance with the carbon monoxide emission limits in 40 CFR 60.53b(a), if a loss of boiler water level control (e.g., loss of combustion air fan, induced draft fan, combustion grate bar failure) is determined to be a malfunction, the duration of the malfunction period is limited to 15 hours per occurrence. [40 CFR 60.38b & 40 CFR 60.58b(a)(1)iii.]

Continuous Monitoring Requirements

{Permitting note: The following continuous monitors are installed on these emissions units: steam flow, urea injection rate, ACI rate, inlet temperature to the fabric filter, opacity, SO_2, NOx, CO and carbon dioxide (CO_2).}

A.24. Steam Flow Meter. The owner or operator shall calibrate, maintain, and operate a steam flow meter or a feedwater flow meter; to measure steam (or feedwater) flow in kilograms per hour (or lbs/hour) on a continuous basis; and record the output of the monitor. Steam (or feedwater) flow shall be calculated in 4-hour block arithmetic averages. [Rule 62-213.440, F.A.C.; 40 CFR 60.34b, 40 CFR 60.53b & 40 CFR 60.58b(i)(6); and, PSD-FL-108A.]

A.25. Urea Injection Rate. The permittee shall calibrate, operate and maintain a CMS to continuously monitor and record the urea injection rate of each SNCR system. [0990234-015-AC/PSD-FL-108H]

A.26. ACI Rate. The permittee shall calibrate, operate and maintain a CMS to continuously monitor and record the ACI injection rate of each ACI system. [0990234-015-AC/PSD-FL-108H]

A.27. Inlet Temperature to Particulate Matter Control Device. The owner or operator shall calibrate, maintain, and operate a device for measuring on a continuous basis the temperature of the flue gas stream at the inlet to each particulate matter control device utilized. Temperature shall be calculated in 4-hour block arithmetic averages. [Rule 62-213.440, F.A.C.; 40 CFR 60.34b, 40 CFR 60.53b & 40 CFR 60.58b(i)(7); and, 0990234-015-AC/PSD-FL-108H]

A.28. Continuous Emissions Monitoring Systems (CEMS) Required. The owner or operator shall calibrate, operate and maintain continuous emissions monitoring systems (CEMS) for monitoring opacity, sulfur dioxide (SO_2), nitrogen oxides (NOx) and carbon monoxide (CO). [Rule 62-213.440, F.A.C.; and, 40 CFR 60.38b; 40 CFR 60.58b(c)(8) (opacity); 40 CFR 60.58b(e)(5) (SO_2); 40 CFR 60.58b(h)(4) (NOx) & 40 CFR 60.58b(i)(3) (CO).]

A.29. Oxygen (O_2) or Carbon Dioxide (CO_2) CEMS. The owner or operator shall calibrate, maintain, and operate a continuous emission monitoring system (CEMS) for measuring the oxygen or carbon dioxide content of the flue gas at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored and record the output of the system. [Rule 62-213.440, F.A.C. and 40 CFR 60.38b, & 40 CFR 60.58b(b).]

Test Methods and Procedures

A.30. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method(s)	Description of Method(s) and Comment(s)
EPA Methods 1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
EPA Methods 5	Methods for Determining PM Emissions
EPA Methods 6, 6A, 6C or 8	Methods for Determining SO_2 Emissions
EPA Method 7, 7A, 7B, 7C, 7D or 7E	Determination of NOx Emissions
EPA Method 9	Visual Determination of the Opacity of Emissions (VE)
EPA Method 10, 10A or 10B	Determination of CO Emissions
EPA Method 12	Determination of Pb Emissions
EPA Method 19	Determination of "F" factors used in determining heating value of RDF

Method(s)	Description of Method(s) and Comment(s)
EPA Method 22	Visual Determination of Fugitive Emissions from Material Sources
EPA Method 23	Measurement of D/F Emissions. Authorized to omit methylene chloride rinse.[1]
EPA Method 25 or 25A	Determination of VOC Emissions
EPA Method 26 or 26A	Determination of HCl Emissions from Stationary Sources. Changes were approved to the EPA Method 26 testing methodology.[2]
EPA Method 29	Determination of Metal (e.g., Cd, Hg and Pb) Emissions from Stationary Sources
EPA Method 101A	Determination of Hg Emissions

The above methods are described in Chapter 62-297, F.A.C. and/or 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Chapter 62-297, F.A.C.; Rule 62-204.800(9)(b)7., F.A.C.; PSD-FL-108A; [1] Appendix ATP, U.S. EPA Alternative Test Procedure Approval dated June 3, 2004; and, [2] Permit No. 0990234-019-AC/PSD-FL-108I.]

A.31. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

A.32. Annual Compliance Test. The owner or operator shall conduct a performance test for PM, opacity, Cd, Hg, Pb and D/F emissions on a calendar year basis (no less than 9 calendar months and no more than 15 calendar months following the previous performance test; and must complete five performance tests in each 5-year calendar period). For each required cadmium, dioxin/furan, lead, mercury, and PM test run, the permittee shall also record and report the actual ACI rate, lime injection rate, and temperature data for the fabric filter system. The owner or operator shall conduct a performance test for HCl emissions on an annual basis. For each required hydrochloric acid test run, the permittee shall also record and report the actual lime injection rate. [Rule 62-297.310(8), F.A.C. [Rules 62-297.310(7) & 62-204.800(9)(b)7., F.A.C. and PSD-FL-108A, specific condition 4. and PSD-FL-108H.]

A.33. VOC Emission Testing. Compliance with the VOC limit shall be demonstrated by compliance with both Carbon Monoxide limits in lieu of stack testing, but should the Department feel the VOC limit is not being met, a special compliance test could be required. [Permit No. 0990234-021-AC/PSD-FL-108J.]

A.34. Dioxins/Furans. The alternative performance testing schedule for dioxins/furans (D/F) specified in 40 CFR 60.58b(g)(5)(iii) (See Appendix 40 CFR 60, Subpart Eb) shall apply to municipal waste combustor plants that achieve a dioxin/furan emission level less than or equal to **15** nanograms per dry standard cubic meter, corrected to 7 percent oxygen. [Rule 62-204.800(9)(b)7.b, F.A.C.]

A.35. HCl Emission Testing. EPA Method 26 shall be used for the determination of hydrochloric acid concentration or other methods approved by DEP and EPA. The permittee may modify the EPA Method 26 sampling train as follows: full-size (Greenburg-Smith design) impingers may be used in lieu of midget impingers; and, the two sodium hydroxide (NaOH) impingers may be replaced with one empty impinger. [Permit No. 0990234-019-AC/PSD-FL-108I, specific condition 4.i.]

A.36. Mercury Testing Frequency. The Department's Order Granting Variance dated August 25, 1997, is a part of this permit. The variance allows the facility to test mercury emissions annually provided each future annual test demonstrates compliance. The order contains additional terms. If compliance is not demonstrated by each annual test, the Department retains the right to reinstate quarterly testing. The variance does not apply to any other new or existing state or federal rule which may require more frequent mercury testing. [Rule 62-296.416(3)(a)3., F.A.C.; and, Order Granting Variance dated August 25, 1997.]

{Permitting note: 40 CFR 60, Subpart Cb requires annual Hg testing.}

A.37. RDF Analysis. During compliance stack tests, the RDF shall be analyzed by at least two separate labs, approved by the Department, using split samples for the Btu and moisture contents. [PSD-FL-108A, specific condition 12.]

Recordkeeping and Reporting Requirements

A.38. Reporting Schedule. The following reports shall be submitted to the Compliance Authority:

Report	Reporting Deadlines	Related Conditions
Excess Emissions from Malfunctions, if requested by the Compliance Authority	Every 3 months (quarter)	**A.39.**
NSPS Excess Emissions and Monitoring System Performance	Every 6 months (semi-annual), except when more frequent reporting is specifically required	**A.49.**
EG Cb (Eb) Annual Report	Every 6 months (semi-annual)	**A.47** & **48.** Appendix Cb/Appendix Eb - 40 CFR 60.59b(g)
EG Cb (Eb) Semi-Annual Report	Every 6 months (semi-annual)	**A.47** & **48.** Appendix Cb/Appendix Eb - 40 CFR 60.59b(h)

[Rule 62-210.700(6), F.A.C.; 40 CFR 60, Subparts A, Cb & Eb.]

A.39. Excess Emissions from Malfunctions. In the case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Compliance Authority. [Rule 62-210.700(6), F.A.C.]

A.40. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

A.41. Records of Non-MSW. The facility owner or operator shall prepare and maintain records concerning the description and quantities of all segregated loads of non-MSW material which are received and used as fuel at the facility, and subject to a percentage weight limitation (see Specific Conditions **A.5.e.** and **A.5.f.**). The following records shall be prepared and maintained to demonstrate compliance with the segregated non-MSW percentage limitations:

a. *Segregated Loads of non-MSW Materials*. Each segregated load of non-MSW materials, that is subject to the percentage weight limitations (see Specific Conditions **A.5.e.** and **A.5.f.**), which is received for processing shall be documented as to the description and weight of the waste. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.
b. *Waste Tires*. Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of tires shall be divided by the total weight of all waste materials received in the same calendar month, and the resultant number shall be multiplied

by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 3% limitation.

c *Non-MSW Material.* Each day the total weight of segregated non-MSW materials received that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of segregated non-MSW materials subject to the 5% restriction shall be divided by the total weight of all waste materials received in the same calendar month, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

[Rules 62-4.070(1), (3), 62-213.410 & 62-213.440, F.A.C.]

A.42. Daily Waste Logs Required. The permittee shall maintain a daily log of the municipal solid waste received. Such a log must record, at a minimum, the amount of waste, the time, and the type of waste received. [PSD-FL-108A, specific condition 18. and Rule 62-213.440, F.A.C.]

A.43. Reporting and Recordkeeping. The reporting and recordkeeping requirements applicable to each municipal waste combustor unit subject to Rule 62-204.800(9)(b), F.A.C., shall be the same as set forth in 40 CFR 60.59b, except for the siting requirements under 40 CFR 60.59b(a), (b)(5) and (d)(11). See Appendix 40 CFR 60, Subpart Eb. [Rule 62-204.800(9)(b)7.b, F.A.C.]

Operator Practices, Training and Certification

A.44. Operating Practices. The owner or operator shall comply with the operating practices as set forth in 40 CFR 60.53b(b) and (c). [Rule 62-204.800(9)(b)4., F.A.C.; and, 40 CFR 60.34b & 40 CFR 60.53b.]

A.45. Operator Training and Certification. The owner or operator shall comply with the operator training and certification requirements of 40 CFR 60.54b. Compliance with these requirements shall be conducted according to the schedule specified in 40 CFR 60.39b(c)(4). [Rule 62-204.800(9)(b)5., F.A.C.; and, 40 CFR 60.35b & 40 CFR 60.54b.]

EG 40 CFR 60, Subpart Cb Requirements

A.46. EG Requirements - General Applicability and Definitions. These emissions units shall comply with all applicable requirements of 40 CFR 60, Emission Guidelines and Compliance Times which have been adopted by reference in Rule 62-204.800(9), F.A.C., except that the term "Administrator," when used in any provision of 40 CFR 60 that is delegated to the Department by the U.S. Environmental Protection Agency, shall mean the Secretary or the Secretary's designee. [Rule 62-204.800(9)(a), F.A.C.]

{Permitting note: Pursuant to Rule 62-204.800(9)(a)1., F.A.C., the Emission Guidelines for Existing Sources shall be controlling over other standards in the air pollution rules of the Department except that any emissions limiting standard contained in or determined pursuant to the air pollution rules of the Department which is more stringent than one contained in an Emission Guideline, or which regulates emissions of pollutants or emissions units not regulated by an applicable Emission Guideline, shall apply.}

A.47. EG Requirements - Subpart Cb. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart Cb, Emissions Guidelines (EG) and Compliance Times for Large Municipal Waste Combustors, which have been adopted and incorporated by reference in Rule 62-204.800(9), F.A.C. These emissions units shall comply with Appendix 40 CFR 60 Subpart Cb included with this permit. [Rule 62-204.800(9)(b), F.A.C.]

NSPS 40 CFR 60, Subpart A & Eb Requirements

{Permitting notes: The EG 40 CFR 60, Subpart Cb, cross references conditions (applicable requirements) that are contained in the NSPS 40 CFR 60, Subparts A and Eb.}

A.48. NSPS Requirements - Subpart Eb. Except as otherwise provided in this permit, these emissions units shall comply with all applicable provisions of 40 CFR 60, Subpart Eb, Large Municipal Waste Combustors, adopted and incorporated by reference in Rule 62-204.800(8)(b), F.A.C.; except that the Secretary is not the Administrator for purposes of the authorities cited at 40 CFR 60.50b(n). These emissions units shall comply with all applicable provisions of Appendix 40 CFR 60 Subpart Eb included with this permit. [Rule 62-204.800(8)(b)7., F.A.C.]

A.49. NSPS Requirements - Subpart A. This emissions unit shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. This emissions unit shall comply with all applicable provisions of Appendix 40 CFR 60 Subpart A included with this permit. [Rule 62-204.800(8)(d), F.A.C.]

Other Requirements

A.50. Acid Rain Part Application. For any unit which is a solid waste incinerator, burning less than 20 percent fossil fuel as described in 40 CFR 72.6(b)(7), adopted and incorporated by reference at Rule 62-204.800, F.A.C., the designated representative of the source containing the unit shall submit a complete Acid Rain Part application governing such unit to the Department before March 1st of the year following the three calendar year period in which the incinerator consumed 20 percent or more fossil fuel on a British thermal unit (BTU) basis. [Rule 62-214.320(1)(g), F.A.C.]

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Subsection B. Emission Units 024, 025, 026, 027, 028, 030, 034

PBREF-2: **Municipal Waste Combustor - Unit Nos. 3, 4, 5, Lime Storage Silos A & B, Activated Carbon Storage Silo, and Ash Handling System and Building**

The specific conditions in this section apply to the following emissions unit(s):

E.U. ID No.	**Brief Description**
Palm Beach Renewable Energy Facility No. 2 (PBREF-2)	
	Municipal Waste Combustors
024	Municipal Waste Combustor - Unit No. 3
025	Municipal Waste Combustor - Unit No. 4
026	Municipal Waste Combustor - Unit No. 5
027	Lime Storage Silo A
028	Lime Storage Silo B
030	Activated Carbon Storage Silo
034	Ash Handling System and Building

Municipal Waste Combustor Nos. 3, 4 & 5 are collectively referred to as the Palm Beach Renewable Energy Facility No. 2 (PBREF-2) and are described below:

Description: Emission unit ID Nos. 024, 025 and 026 are each a 1,000 TPD mass burn municipal waste combustor (MWC) unit, each with a fossil fuel fired auxiliary burner system. The natural gas-fired burner systems are used as needed during periods of startup, shutdown and for flame stabilization. Each MWC unit produces high pressure, high temperature (HPHT) steam that is used in a single steam turbine generator (STG) to generate 90 to 100 MW of electrical power.

Fuels: The primary boiler fuel for each MWC unit is municipal solid waste (MSW) and the other fuels as specified in this subsection. Natural gas is used as a startup, shutdown and flame stabilization fuel in the auxiliary burner system.

Steam Capacity: The maximum steam production limit per unit on a 4-hour block average basis is 320,100 lb steam/hr.

Heat Input: The heat input required to generate the maximum steam capacity is approximately 458 million British thermal units per hour (MMBtu/hr). The maximum heat input limit for the natural gas burner system for each MWC unit is 167 MMBtu/hr during periods of startup, shutdown and for flame stabilization.

Controls for each MWC: The air pollution control systems consist of good combustion practices (GCP), spray dryer (SD), Fabric Filter (FF), carbon injection (CI), selective catalytic reduction (SCR) and use of inherently clean natural gas as a startup, shutdown and flame stabilization fuel in the MWC.

Stack Parameters for each MWC: Each of the MWC units have a separate exhaust flue. The exhaust flues are co-located and contained in a common outer stack. Each stack flue is approximately 8.1 feet in diameter (maximum) and 310 feet tall (minimum). Exhaust from each flue exits the stack at the following approximate conditions: an exit temperature of 285 °F and a volumetric flow rate of 184,310 actual cubic feet per minute (acfm).

Continuous emissions and opacity monitoring systems (CEMS, COMS): Emissions of carbon monoxide (CO), nitrogen oxides (NOx), and sulfur dioxide (SO_2) from each MWC unit and mercury (Hg) from one of the MWC units will be monitored and recorded by CEMS. Opacity (VE) from each unit will be monitored and recorded by a COMS.

Applicability of 40 CFR Subpart Eb (NSPS Subpart Eb): Each MWC unit is subject to NSPS Subpart Eb - Standards of Performance for Large Municipal Waste Combustors.

{Permitting Note: These emission units are subject to BACT determinations for NOx, CO, SO_2, PM, VOC, MWC

acid gases as SO_2+hydrogen chlorides (HCl), MWC organics as dioxin/furans (D/F), and MWC metals as PM, as implemented in Permit No. 0990234-032-AC/PSD-FL-413C. E.U. ID No. 024 commenced initial operation on 02/24/2015, E.U. ID No. 025 commenced initial operation on 03/21/2015, and E.U. ID No. 026 commenced initial operation on 04/12/2015.}

{Permitting Note: Unless otherwise specified in a specific condition of this subsection, the descriptions above under Description and Steam Capacity are not operating limitations.}

Equipment

B.1. MWC Units. The permittee is authorized to operate three MWC stoker boiler units, each with a natural gas burner system, overfire air ports, steam drum, superheater, economizer, air heater, ash hoppers, ducts, fuel feeding equipment, dry cooling towers, air pollution control equipment and other associated equipment. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.2. Aqueous Ammonia or Urea Storage Tank. The permittee is authorized to operate a nominal 30,000 gallon or smaller tank to store aqueous ammonia or urea for the SCR systems. In accordance with 40 CFR 68.130, the storage of aqueous ammonia or urea shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68. [Permit No. 0990234-032-AC/PSD-FL-413C.]

Essential Potential to Emit (PTE) Parameters

B.3. Permitted Capacity.

a. *Heat Input from Fossil Fuels.* The maximum heat input capacity from natural gas for each MWC unit on a steady state basis during boiler startup, shutdown and flame stabilization shall be limited to 167 MMBtu/hr.

b. *Steam Production Limits*. For each MWC unit, the maximum allowable steam production rate is 320,100 lb/hr (4 hour block average basis).

c. *Maximum Demonstrated MWC Unit Load.* The maximum demonstrated MWC unit load shall be determined during the initial performance test for D/F and each subsequent performance test during which compliance with the D/F emission limit is achieved. The maximum demonstrated MWC unit load shall be the highest 4-hour arithmetic average load based on steam production achieved during four consecutive hours during the most recent test during which compliance with the dioxin/furan emission limit was achieved. Unit load means the steam load of the MWC measured as specified in 40 CFR 60.58b(I)(6). Each unit shall not operate at a load level greater than the steam production rate given in paragraph b. of this condition or, if it is less, 110% of the unit's "maximum demonstrated unit load". Higher loads, within the limit in paragraph b. of this condition, are allowed for testing purposes as specified in 40 CFR 60.53b(b).

See 40 CFR 60.58b(j) of Appendix 40 CFR 60, Subpart Eb for additional restrictions on capacity.

[40 CFR 60.34b(b), 60.51b, 60.53b(b) & 60.58b(i)(6); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.4. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. See the "maximum demonstrated municipal waste combustor unit load" provisions of 40 CFR 60.51b for additional restrictions on operating rate. [Rule 62-297.310(2), F.A.C.; and, 40 CFR 60.51b.]

B.5. Methods of Operation - MWC Boiler Unit Fuels. Each MWC boiler unit is authorized to combust MSW and other fuels authorized in Specific Condition **B.7.** of this subsection. In addition, each MWC unit is authorized to combust natural gas as a startup, shutdown and flame stabilization fuel. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.6. Prohibited Fuels.

a. The facility shall not burn:

(1) Those materials that are prohibited by state or federal law;

(2) Those materials that are prohibited by this permit;
(3) Lead acid batteries;
(4) Hazardous waste;
(5) Nuclear waste;
(6) Radioactive waste;
(7) Sewage sludge;
(8) Explosives; and
(9) Beryllium-containing waste, as defined in 40 CFR 61, Subpart C. *{The U.S. EPA letter dated April 6, 2000 (see attached), on 40 CFR 61, Subpart C further addresses the applicability of this federal regulation with regard to beryllium-containing waste(s).}*

b. Further, the facility shall not knowingly burn:
(1) Nickel-cadmium batteries pursuant to Section 403.7192 (3);
(2) Mercury containing devices and lamps pursuant to Sections 403.7186(2), and (3);
(3) Untreated biomedical waste from biomedical waste generators regulated pursuant to Chapter 64E-16, F.A.C., and from similar generators (or sources);
(4) Segregated loads of biological waste; and
(5) Copper Chromated Arsenate (CCA) treated wood.

[Permit No. 0990234-032-AC/PSD-FL-413C.]

B.7. Authorized Fuels. The primary fuel for the facility is MSW, including the items and materials that fit within the definition of MSW contained in either 40 CFR 60.51b or Section 403.706(5), F.S. (1995). Subject to the limitations contained in this permit, the authorized fuels for the facility also include the other solid wastes that are not MSW which are described below. Fuels or wastes specifically authorized herein do not require prior Department approval before combustion.

a. Subject to the conditions and limitations contained in this permit, the following other solid waste may be used as fuel at the facility:
(1) Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons and microfilm);
(2) Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
(3) Wood pallets, clean wood, and land clearing debris;
(4) Packaging materials and containers;
(5) Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; or
(6) Rugs, carpets, and floor coverings, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings.

b. Subject to the conditions and limitations contained in this permit, waste tires may be used as fuel at the facility. The total quantity of waste tires received as segregated loads and burned at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis in accordance with Specific Condition **B.34.** of this subsection.

c. Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total (cumulative) quantity of the following non-MSW material received as segregated loads and burned at the facility shall not exceed 20%, by weight, of the facility's total fuel and, except as specifically provided below, none of the following materials individually shall exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis in accordance with Specific Condition **B.34.** of this subsection. The Department's prior approval is not required to use the following materials as fuel, subject to the conditions and limitations contained in this permit.

(1) Construction and demolition debris.

(2) Oil spill debris from aquatic, coastal, estuarine or river environments. Such items or materials include but are not limited to rags, wipes, and absorbents.

(3) Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market. Such items or materials include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances.

(4) Consumer-packaged products intended for human or domesticated animal use or application but not consumption. Such items or materials include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents.

(5) Waste materials that:

(a) are generated in the manufacture of items in paragraphs c.(3) or c.(4), above and are functionally or commercially useless (expired, rejected or spent); or

(b) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.

(6) Waste materials that contain oil from:

(a) the routine cleanup of industrial or commercial establishments and machinery; or

(b) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.

(7) Used oil and used oil filters. Used oil containing a polychlorinated biphenyls (PCB) concentration equal or greater than 50 parts per million (ppm) shall not be burned, pursuant to the limitations of 40 CFR 761.20(e).

(8) Materials for witnessed destruction. These materials consist of the products and goods that are identified in paragraphs c.(3), c.(4) and c.(5), above.

(9) Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW.

(10) Biosolids. Biosolids are defined in 62-640.200(6), F.A.C., to mean the residues generated from the treatment of domestic wastewater at domestic wastewater treatment facilities. Note that "liquid biosolids" as defined in 62-640.200(28), F.A.C., (i.e. biosolids that are less than 12% solids by weight, or that are determined to contain free liquids as defined by Methods 9095B (Paint Filter Liquids Test)) are not authorized fuels.

(11) Livestock waste as a maximum quantity not to exceed 10%, by weight, of the facility's total fuel. Livestock waste means the material that has been used for livestock bedding and sanitary purposes in barns and stables. Livestock waste typically is comprised of straw, wood shavings (sawdust), hay, waste animal feed, and similar materials. Such waste contains the excreta of animals.

(12) Waste processing residue from ethanol production. Such material contains the undigested organics, lignins, celluloses, and plastics remaining from the anaerobic digestion treatment processes used on various waste streams including MSW, vegetative and woody waste, and biosolids.

(13) Waste gasification process residue. Such material is the "char" or carbonaceous material remaining from the low- to medium-temperature processes used to gasify various waste streams including MSW, vegetative and woody waste, and biosolids.

d. The following materials are also authorized fuels at the facility.

(1) The combustible residue generated when recycling construction and demolition debris. Such materials include wood, plastic, paper, packaging materials, and similar combustible materials, but may also include incidental amounts of noncombustible material (e.g. concrete).

(2) The residue generated when processing MSW to make refuse-derived fuel.
(3) The residue generated when processing recovered materials in a recovered materials processing facility, as those terms are defined in Rules 62-701.200(95) and (96), F.A.C., respectively.
(4) The residue generated when processing recyclable materials at a materials recovery facility, as those terms are defined in Rules 62-701.200(98) and (71), F.A.C., respectively.
[Permit No. 0990234-032-AC/PSD-FL-413C.]

B.8. Segregated Loads. The fuel may be received either as a mixture or as a single-item stream (segregated load) of discarded materials. If the facility intends to use an authorized fuel that is a segregated non-MSW material, the fuel shall be either:
a. well mixed with MSW in the refuse pit; or
b. alternately charged with MSW in the hopper.
[Permit No. 0990234-032-AC/PSD-FL-413C.]

B.9. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Permit No. 0990234-032-AC/PSD-FL-413C.]

Control Technology

B.10. Air Pollution Control Equipment. The permittee shall have installed and shall maintain and operate the following add-on air pollution control equipment on each MWC unit:
a. *SD/FF Baghouse System*. The permittee shall design, install, operate and maintain a SD/FF baghouse system. The SD/FF baghouse system shall be brought on line in accordance with the manufacturer's procedures and guidelines and will be utilized whenever the MWC unit is in operation and burning MSW.
b. *SCR System*. The permittee shall design, install, operate, and maintain an ammonia (NH_3) or urea based SCR system including reagent storage tank, pumps, metering system, injection grid, reactor and catalyst to reduce NOx emissions in the flue gas exhaust and achieve the NO_X emissions limit specified in this subsection. The SCR shall be brought on line in accordance with the SCR manufacturer's procedures and guidelines and shall be utilized whenever the MWC unit is in operation and burning MSW. The SCR system also represents BACT for D/F emissions.
c. *SNCR System*. The permittee may install, operate, and maintain an NH_3 or urea based SNCR system including reagent storage tank, pumps, metering system and injection equipment to reduce NOx in the furnace prior to further downstream treatment by the SCR system.
d. *Activated CI System and FF Baghouse.* The permittee shall install, operate and maintain an activated CI system and FF baghouse (same baghouse used for SD) to capture the spent carbon. The CI system and FF baghouse shall be designed, constructed and operated to achieve the Hg and other metals emission limits specified in this subsection. The CI system shall be brought on line in accordance with the manufacturer's procedures and guidelines and will be utilized whenever the MWC unit is in operation and burning MSW.
e. *Circumvention*. The permittee shall not circumvent the air pollution control equipment or allow the emissions of air pollutants without this equipment operating properly.
[Rule 62-210.650, F.A.C.; 40 CFR 60, Subpart Db and Permit No. 0990234-032-AC/PSD-FL-413C.]

B.11. Combustion Practices. To ensure that the facility's fuel does not adversely affect the facility's combustion process or emissions, the facility operator shall:
a. Comply with good combustion operating practices in accordance with 40 CFR 60.53b;
b. Operate and maintain CEMS for oxygen, CO, SO_2, NO_X and temperature in accordance with 40 CFR 60.58b; and,
c. Record and maintain the CEMS data in accordance with 40 CFR 60.59b.
These steps shall be used to ensure and verify continuous compliance with the emissions limitations in this permit. Natural gas may be used as fuel during boiler startup, shutdown and flame stabilization, and at other

times when necessary and consistent with good combustion practices. [Permit No. 0990234-032-AC/PSD-FL-413C.]

NSPS Applicability

B.12. NSPS Subparts Eb & A Applicability. Each MWC unit, including the shared steam turbine generator (STG), are subject to all applicable requirements of 40 CFR 60, Subpart Eb, which applies to Large Municipal Waste Combustors and Subpart A, General Provisions. The applicable conditions are given in Appendices A and Eb of this permit. [Rule 62-204.800(7)(b); 40 CFR 60, Subparts A & Eb; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

Emission Limitations and Standards

Unless otherwise specified, the averaging times for Specific Condition **B.13.** are based on the specified averaging time of the applicable test method.

B.13. Emissions from each MWC unit (E.U. ID Nos. 024, 025 & 026) shall not exceed the following standards/limits:

Air Pollutant	Emission Standard/Limit [1]	lb/hour [2]	Basis
NOx	50 ppmvd - 24 hour block arithmetic mean	37.4	BACT
	45 ppmvd - 12 month rolling average		BACT
CO	100 ppmvd - 4 hr block arithmetic mean	45.5	Subpart Eb
	80 ppmvd - 30-day rolling average		BACT
SO_2	24 ppmvd - 24 hour geometric mean	25.0	BACT
HCl [3]	20 ppmvd	11.9	BACT
VOC (as propane)	7 ppmvd	5.0	BACT
$PM/PM_{10}/PM_{2.5}$	12.0 mg/dscm	4.7	BACT
Lead (Pb)	125 µg/dscm	0.049	Avoid PSD
Hg [4]	N/A [5]	37.7 lbs/yr [6]	Avoid PSD
	25 µg/dscm	0.0098	Applicant Request
Cadmium (Cd)	10 µg/dscm	$3.91E^{-03}$	Subpart Eb
D/F [7]	13.0 ng/dscm		Subpart Eb
	10 ng/dscm until completion of initial D/F performance tests		Initial Test
	0.75 to 10 ng/dscm after completion of initial D/F performance tests		BACT
Opacity	10 % – 6 minute average	N/A	BACT Subpart Eb
Ammonia Slip	10 ppmvd	2.76	PM, Opacity

1 All concentration values are corrected to 7% O_2: µg/dscm = micrograms per dry standard cubic meter; mg/dscm = milligrams per dry standard cubic meter; ng/dscm = nanograms per dry standard cubic meter; and ppmvd = part per million dry volume.
2 Mass emission limits reflect maximum values calculated at 110% of 24 hour steam production limit of 291,000 lb steam/hr for each MWC. The 110% steam limit is 320,100 lb steam/hr for each MWC.
3 HCl is not a BACT pollutant. However, it must be limited together with SO_2 because they both comprise MWC-Acid Gases which has its own PSD threshold.

Air Pollutant	Emission Standard/Limit [1]	lb/hour [2]	Basis
4 Within 60 days after achieving the maximum production rate, but not later than 180 days after the initial startup, PBREF-2 shall commence quarterly performance Hg stack test events for the first two years of operation for each MWC exhaust flue to show compliance with the 25 µg/dscm emission limit. The 25 µg/dscm quarterly stack based standard is based on the applicant's request. After the first two years of operation, the stack testing frequency can be reduced to annually to show compliance with the 25 µg/dscm emission limit. By meeting the stack test standard, PBREF-2 will show compliance with Subpart Eb Hg emission standard of 50 µg/dscm. 5 N/A = not applicable. 6 The 37.7 lbs/yr emission limit is equivalent to a 12-month average concentration of 12 µg/dscm (conservatively assuming continuous operation 8,760 hours per year). Compliance with this annual limit shall be demonstrated based on quarterly stack testing during the first two years of operation and annually thereafter. The Hg CEMS is required for monitoring Hg emissions from one of the MWC units and must become operational within 60 days after PBREF-2 achieves its maximum production rate, but not later than 180 days after the initial startup. During the first four quarters of Hg CEMS availability, the CEMS must achieve an 80% data availability rate. Subsequently, an 85% data availability rate is required. 7 Dioxins/furans: Total tetra through octa-chlorinated dibenzo-p-dioxins and dibenzofurans. Until the completion of initial performance tests for D/F described in Specific Condition **B.31.** of this subsection, the 10 ng/dscm limit applies. Subsequently, the To Be Determined (TBD) limit will be determined by the Department based on initial performance and efficiency tests at the inlet and outlet of the SCR as per Specific Condition **B.31.** of this subsection. Based on these tests a D/F limit between 10 ng/dscm and 0.75 ng/dscm will be selected by the Department. The pound per hour limit will correspond to TBD ng/dscm limit.			

[Permit No. 0990234-032-AC/PSD-FL-413C.]

Excess Emissions

Specific Conditions **B.14., B.15.** and **B.16.** apply to the State Implementation Plan (SIP)-based emissions standards specified in Specific Condition **B.13.** of this subsection. Rule 62-210.700, F.A.C. (Excess Emissions) cannot vary or supersede any federal provision of an NSPS or Acid Rain programs.

B.14. Excess Emissions Prohibited. Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C. and Permit No. 0990234-032-AC/PSD-FL-413C.]

B.15. Emission Limit Compliance and Excess Emissions. Because of the long-term nature of the 12-month NO_X concentration limit as part of PSD and the associated BACT determination, all emissions data for this pollutant/averaging time, including periods of startup, shutdown and malfunction, shall be included in compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C. and Permit No. 0990234-032-AC/PSD-FL-413C.]

B.16. Excess Emissions Allowed - BACT Limits. The following provisions apply to the NOx and CO emissions limits given in Specific Condition **B.13.** of this subsection that were specified pursuant to BACT. As specified in this condition, excess emissions resulting from startup, shutdown and documented malfunctions are allowed for the 24-hour NOx and 30-day CO rolling concentration and mass limit provided that operators employ the best operational practices to minimize the amount and duration of emissions during such incidents. NOx and CO emission data exclusions resulting from startup, shutdown, or documented malfunctions shall not exceed three hours in any 24-hour period. A "documented malfunction" means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.17. Regulations Pursuant to 40 CFR 60, Subpart Eb. The following provisions apply to the emissions limits given in Specific Condition **B.13.** of this subsection that were specified pursuant to 40 CFR 60, Subpart Eb.

a. *The opacity standards* set forth in 40 CFR 60 shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard. [40 CFR 60.11(c).]

b. *Startup, Shutdown and Malfunction.* Except as provided by 40 CFR 60.56b, the standards under 40 CFR 60, Subpart Eb, as incorporated in Rule 62-204.800(8)(b), F.A.C., apply at all times except during periods of startup, shutdown, or malfunction. Duration of startup or shutdown periods are limited to 3 hours per occurrence, except as provided in 40 CFR 60.58b(a)(1)(iii). During periods of startup, shutdown, or malfunction, monitoring data shall be dismissed or excluded from compliance calculations, but shall be recorded and reported in accordance with the provisions of 40 CFR 60.59b(d)(7).

(1) The startup period commences when the affected facility begins the continuous burning of municipal solid waste and does not include any warm-up period when the affected facility is combusting fossil fuel or other non-municipal solid waste fuel, and no municipal solid waste is being fed to the combustor.

(2) Continuous burning is the continuous, semi-continuous, or batch feeding of municipal solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of municipal solid waste solely to provide thermal protection of the grate or hearth during the startup period when municipal solid waste is not being fed to the grate is not considered to be continuous burning.

[40 CFR 60.58b(a).]

c. *Special Provisions for CO*. For the purpose of compliance with the carbon monoxide emission limits in 40 CFR 60.53b(a), if a loss of boiler water level control (e.g., loss of combustion air fan, induced draft fan, combustion grate bar failure) is determined to be a malfunction, the duration of the malfunction period is limited to 15 hours per occurrence. [40 CFR 60.58b(a)(1)(iii).]

[Permit No. 0990234-032-AC/PSD-FL-413C.]

Monitoring of Operations

B.18. Pressure Drop. The permittee shall maintain and calibrate a device which continuously measures and records the pressure drop across each baghouse controlling the PM, sorbent and powdered activated carbon (PAC) emissions for each MWC unit. Records shall be maintained on site and made available upon request. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.19. Bag Leak Detection. The permittee shall maintain continuous operation of bag leak detection systems on each baghouse for each MWC unit including keeping records of the systems measurements. Baghouse leak detection records shall be kept on site and made available upon request. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.20. SCR NH_3 or Urea Injection. In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the NH_3 or urea injection rate for the SCR system on each MWC unit. The permittee shall document the general range of NH_3 or urea flow rates required to meet the NOx standard over the range of load conditions by comparing NOx emissions with NH_3 or urea flow rates. During NOx CEMS downtimes or malfunctions, the permittee shall operate at an NH_3 or urea flow rate that is consistent with the documented flow rate for the given load condition. Records shall be maintained on site and made available upon request. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.21. Activated CI. In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a mass flow meter or Department approved device to measure and record the activated CI rate (lb/hour) for each MWC unit. The permittee shall document the general range of activated CI mass flow rates required to meet the Hg standard over the range of load conditions by comparing Hg emissions with activated CI mass flow rates. Records shall be maintained on site and made available upon request. [40 CFR 60.58(m)(2); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

Continuous Emissions Monitoring Requirements

{Permitting Note: The following continuous monitors are installed on these emissions units: steam flow, inlet temperature to baghouse, opacity, SO_2, NOx, CO and CO_2 or O_2.}

B.22. Steam Parameters. In accordance with the manufacturer's recommendations, the permittee shall calibrate, operate and maintain continuous monitoring and recording devices for the following parameters on each MWC unit: steam temperature (°F), steam pressure (psig) and steam production rate (lb/hour). Records shall be maintained on site and made available upon request. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.23. Steam Monitoring. MWC unit load means the steam load of the MWC unit measured as specified in 40 CFR 60.58b(i)(6). The owner or operator shall install, calibrate, maintain, and operate a steam flow meter, shall measure steam flow in pounds of steam per hour on a continuous basis, and record the output of the monitor (in accordance with the ASME method described in 40 CFR 60.58b(i)(6)). Steam flow shall be calculated in a 4-hour block arithmetic average. For each MWC unit, the maximum steam production limit corresponding to maximum demonstrated unit load is 320,100 lb/hr (4 hour block average basis). Higher unit loads are allowed for testing purposes pursuant to 40 CFR 60.53b(b). [Rules 62-204.800(8), F.A.C.; 40 CFR 60.53b(a) & 60.58b(i); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.24. CEMS. The permittee shall calibrate, maintain, and operate CEMS to measure and record the emissions of CO, NOx, and SO_2 from each MWC unit in a manner sufficient to demonstrate continuous compliance with the CEMS emission standards given in Specific Condition **B.13.** of this subsection. The permittee shall also install, calibrate, maintain and operate a single CEMS to measure and record Hg emissions from one of the three MWC units.

a. *CO CEMS.* CO CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A and shall comply with all requirements of 40 CFR 60.58b. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The required RATA tests shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

b. *NOx CEMS.* NO_X CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 2 and shall comply with all requirements of 40 CFR 60.58b. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The required RATA tests shall be performed using EPA Method 7E in Appendix A of 40 CFR 60. The monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

c. *SO_2 CEMS.* SO_2 CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 2 and shall comply with all requirements of 40 CFR 60.58b. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F. The required RATA tests shall be performed using EPA Method 6C in Appendix A of 40 CFR 60. The SO_2 monitor span values shall be set appropriately, considering the expected range of emissions and corresponding emission standards.

d. *Hg CEMS.* Hg CEMS shall be certified pursuant to the requirements in Performance Specification 12A (PS-12A), "Specifications and Test Procedures for Total Vapor Phase Mercury Continuous Monitoring Systems in Stationary Sources," or that has passed verification tests conducted under the auspices of the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) Program. The owner or operator shall adhere to the calibration drift and quarterly performance evaluation procedures and ongoing data quality assurance procedures in 40 CFR Part 60, Appendix F or 40 CFR Part 75, Appendix B. If the calibration system associated with Hg CEMS is not able to conform to the above referenced data quality assurance procedures, then the owner or operator shall propose alternate quality assurance procedures in a CEMS Operation Plan specifically for the Hg CEMS. The CEMS may be used as the method of demonstrating compliance with the annual mass emission rate.

e. *Diluent Monitor:* A continuous emission monitoring system for measuring either the oxygen content or the carbon dioxide content of the flue gas at each location where carbon monoxide, sulfur dioxide, nitrogen oxides emissions are monitored shall be installed, calibrated, maintained, and operated in accordance with the requirements of 40 CFR 60.58b.

[Permit Nos. 0990234-032-AC/PSD-FL-413C and 0990234-034-AC (PSD-FL-413D).]

B.25. Inlet Temperature to Particulate Matter Control Device. The owner or operator shall calibrate, maintain, and operate a device for measuring on a continuous basis the temperature of the flue gas stream at the inlet to each particulate matter control device utilized. Temperature shall be calculated in 4-hour block arithmetic averages. [Rule 62-213.440, F.A.C.; and, 40 CFR 60.34b, 40 CFR 60.53b & 40 CFR 60.58b(i)(7).]

B.26. COMS. A continuous opacity monitoring system (COMS) shall be installed, calibrated, operated, and maintained in exhaust flue of each MWC unit in a manner sufficient to demonstrate continuous compliance with the opacity standard specified in this section. Opacity shall be based on a 6-minute block average computed from at least one observation (measurement) every 15 seconds. For the COMS, the 6-minute block averages shall begin at the top of each hour. The COMS shall meet the applicable requirements of 40 CFR 60.58b(c)(8). [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.27. Continuous Flow Monitor: A continuous flow monitor shall be installed to determine the stack exhaust flow rate to be used in determining mass emission rates. The flow monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 6. [Permit No. 0990234-032-AC/PSD-FL-413C.]

Test Methods and Procedures

B.28. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
6C	Determination of SO_2 Emissions (Instrumental - note: data from CEMS certified in accordance with 40 CFR 60, Appendix B may be used in lieu of stack tests).
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
8	Measurement of Sulfuric Acid Mist
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
13A or 13B	Measurement of Fluoride Emissions
18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
23	Measurement of Dioxin/Furan Emissions. Authorized to omit methylene chloride rinse.[1]
26 or 26A	Determination of Hydrogen Chloride Emissions. The permittee may modify the EPA

EPA Method	Description of Method and Comments
	Method 26 sampling train as follows: full-size (Greenburg-Smith design) impingers may be used in lieu of midget impingers and the two sodium hydroxide (NaOH) impingers may be replaced with one empty impinger.
29	Determination of Metals Emissions from Stationary Sources (Hg, Cd, Pb)
CTM-027	Conditional EPA Test Method 027, Measurement of Ammonia Slip (or equivalent method)

Method CTM-027 is published on EPA's Technology Transfer Network Web Site at "http://www.epa.gov/ttn/emc/ctm.html". The other methods are specified in Appendix A of 40 CFR 60, adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. Tests shall be conducted in accordance with the appropriate test method and the applicable requirements specified in this permit, and NSPS Subpart A in 40 CFR 60. [Permit No. 0990234-032-AC/PSD-FL-413C; and, [1]Appendix ATP, U.S. EPA Alternative Test Procedure Approval dated June 3, 2004.]

B.29. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

B.30. Annual Compliance Testing. Annual stack tests for each MWC units exhaust flue gas shall be conducted for VOC, HCl, $PM/PM_{10}/PM_{2.5,}$ Pb, Cd, Hg (quarterly during the first two years of operation and annually thereafter), D/F (quarterly during the first one to two years of operation at the inlet and outlet of the SCR and stack flue exhaust and annually thereafter at the stack flue exhaust only), VE and ammonia slip during each calendar year (January 1st to December 31st) to show compliance with the emission limits given in Specific Condition **B.13.** of this subsection. Data collected from the reference method during the required RATA tests for CO, NOx, SO_2 and Hg (one quarter of four) may be used to satisfy the annual testing requirement provided the notification requirements and emission testing requirements for performance and compliance tests of this permit are satisfied. [Rules 62-296.416, 62-297.310(8)(a) & (b), F.A.C., 40 CFR 60.8 & 60.58b; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.31. Emissions Limit Subject to Revision D/F. D/F emissions from each MWC shall not exceed the limitation stated in Specific Condition **B.13.** of this subsection. Stack acceptance testing and SCR inlet/outlet D/F destruction testing shall be performed quarterly on each MWC exhaust flue gas during the first one to two years of operation. The permittee shall provide a protocol for the SCR efficiency testing for review and approval by the Department ninety days prior to the commencement of testing. The permittee shall provide the results to the Department within 45 days of completion of the four to eight D/F destruction efficiency and stack tests so that the Department can set a numerical BACT D/F limit based on the performance of the SCR technology.

The D/F emission limit standard will be between a maximum value of 10 ng/dscm and a minimum value of 0.75 ng/dscm. Between these upper and lower limit values, the limit will be ten times the average of the four to eight quarterly D/F SCR efficiency and stack test results conducted during the first one to two years of PBREF-2 operation. For example, if the average of these tests is 0.50 ng/dscm then the limit will be set by the Department at 5.0 ng/dscm, while if the average of the stack tests is 1.2 ng/dscm then the limit will be set at the upper limit value of 10.0 ng/dscm. A single D/F limit will be established for all three MWC units.

If the D/F average emissions based on the SCR efficiency and stack tests is 0.05 ng/dscm or less, then the D/F emission limit shall be set at 0.74 ng/dscm as a non-PSD/BACT limit.

After the first four quarterly stack tests are completed, the permittee may request the Department to set the D/F emission limit based on the results of the first four tests. If the permittee makes this request, the

Department shall review the test results and decide whether additional testing is necessary to establish a sufficient database for setting the D/F emission limit. Based on its review of the test data, the Department may authorize the permittee to terminate the quarterly testing after the first four quarters, or the Department may require the permittee to conduct a second year of quarterly stack tests for D/F. The Department will notify the permittee of the subsequent D/F emissions limit once it has been determined.

{In accordance with Specific Condition ***B.3.c.*** *of this subsection NSPS Subpart Eb, only the annual D/F compliance test and not the additional SCR efficiency tests will be used to re-set the maximum demonstrated MWC unit load or other operating parameter levels.}*
[40 CFR 60.52b(c); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.32. Continuous Compliance: The permittee shall demonstrate continuous compliance with the CO, NO_X and SO_2 concentration and mass emission standards based on data collected by the certified CEMS. The permittee shall demonstrate continuous compliance with the opacity limit based on data collected by the required COMS. [Rule 62-210.200 (BACT), F.A.C.; 40 CFR 60, Subpart Eb; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

Recordkeeping and Reporting Requirements

B.33. Reporting Schedule. The following report shall be submitted to the Compliance Authority:

Report	Reporting Deadline(s)	Related Condition(s)
Excess Emissions	Every 3 months (quarter)	**B.35.**
NSPS Excess Emissions and Monitoring System Performance	Every 6 months (semi-annual), except when more frequent reporting is specifically required	**B.39.** & **B.40.**
Eb Semi-Annual Report	Every 6 months (semi-annual)	**B.39.** & **B.40.** Appendix Eb - 40 CFR 60.59b(g)&(h)

[Rule 62-210.700(6), F.A.C.; 40 CFR 60, Subparts A & Eb.]

B.34. Segregated Solid Waste Record Keeping. The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of Specific Condition **B.7.** of this subsection**:**

a. Each segregated load of non-MSW materials, subject to the percentage weight limitations of Specific Condition **B.7.** of this subsection**,** which is received for processing, shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured and recorded using the facility truck scale.
b. Each day the total weight of segregated tires received shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of tires shall be divided by the total weight of all waste materials received in the same calendar month, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.
c. Each day the total weight of segregated non-MSW materials received that are subject to the 20% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of segregated non-MSW materials subject to the 20% restriction shall be divided by the total weight of all waste materials received in the same calendar month, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 20% limitation.

d. Each day the weight of each load of segregated non-MSW material received that is subject to a 5% or 10% individual material restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of each type of segregated load of non-MSW material subject to a 5% or 10% restriction shall be divided by the total weight of all waste materials received in the same calendar month, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% or 10% limitation.

[Permit No. 0990234-032-AC/PSD-FL-413C.]

B.35. SIP Quarterly Permit Limits Excess Emissions Report. Within 30 days following the end of each calendar quarter, the permittee shall submit a report to the Compliance Authority summarizing periods of CO and NOx emissions in excess of the BACT permit standards and the amounts of authorized data excluded following the Figure 1 format from NSPS 40 CFR 60, Subpart A. Periods of startup, shutdown and malfunction shall be monitored and recorded at all times. In addition, the report shall summarize the CEMS systems monitor availability for the previous quarter. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.36. Annual Operating Report (AOR): The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. After the first two years of operation of all 3 MWCs, the permittee shall report the quantity in lbs/year/unit and the total lbs/year from all 3 MWC units in the AOR report. Annual operating reports shall be submitted to the Compliance Authority by April 1st of each year. [Rule 62-210.370, F.A.C. & 62-212.400(12) (Source Obligation, escape PSD BACT for Hg emissions), F.A.C.; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.37. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440(1)(b), F.A.C.]

Operator Practices, Training and Certification

B.38. Operator Training and Certification. The owner or operator shall comply with the operator training and certification requirements of 40 CFR 60.54b of 40 CFR 60, Subpart Eb. Compliance with these requirements shall be conducted according to the schedule specified in 40 CFR 60.39b(c)(4) of 40 CFR 60, Subpart Cb. [Rule 62-204.800(9)(b)5., F.A.C.; and, 40 CFR 60.35b & 40 CFR 60.54b.]

NSPS 40 CFR 60 Requirements

B.39. NSPS Requirements - Subpart Eb. Except as otherwise provided in this permit, these emissions units shall comply with all applicable provisions of 40 CFR 60, Subpart Eb, Large Municipal Waste Combustors, adopted and incorporated by reference in Rule 62-204.800(8)(b), F.A.C.; except that the Secretary is not the Administrator for purposes of the authorities cited at 40 CFR 60.50b(n). These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 60 Subpart Eb** included with this permit. [Rule 62-204.800(8)(b)7., F.A.C.]

B.40. NSPS Requirements - Subpart A. This emissions unit shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR

60.13(g), (i) and (j)(2), and 40 CFR 60.16. This emissions unit shall comply with all applicable provisions of **Appendix 40 CFR 60 Subpart A** included with this permit. [Rule 62-204.800(8)(d), F.A.C.]

Other Requirements

B.41. Acid Rain Part Application. For any unit which is a solid waste incinerator, burning less than 20 percent fossil fuel as described in 40 CFR 72.6(b)(7), adopted and incorporated by reference at Rule 62-204.800, F.A.C., the designated representative of the source containing the unit shall submit a complete Acid Rain Part application governing such unit to the Department before March 1st of the year following the three calendar year period in which the incinerator consumed 20 percent or more fossil fuel on a British thermal unit (BTU) basis. [Rule 62-214.320(1) (g) , F.A.C.]

E.U. ID No.	Brief Description
Palm Beach Renewable Energy Facility No. 2 (PBREF-2)	
027	Lime Storage Silo A
028	Lime Storage Silo B
030	Activated Carbon Storage Silo

Emission Units 027 and 028 are identical lime storage silos manufactured by Chemco (model No.CECDC300) used to provide the storage of lime for use in the spray dryer absorber control device to reduce acid gas emissions in the flue gas streams from the MWC units.

Emissions Unit 030 is a storage silo manufactured by Mac Process, LLC (model No. 72ST36) for storing activated carbon which is used to provide storage of carbon which is injected into the flue gas streams from the MWC units for control of mercury emissions. Each silo has a storage capacity of 4,000 to 5,000 cubic feet and is equipped with its own low temperature (<180°F) fabric filter baghouse to control particulate matter (PM) emissions. Each baghouse was designed, and is operated and maintained, to achieve a PM mass emission rate of 0.01 grains per dry standard cubic foot (gr/dscf) or less and shall be operated during all silo filling operations.

{Permitting note: During the filling of the lime storage silos, the displaced air is forced through the fabric filter baghouses and discharged through individual stacks that are 118 feet in height and 4.875 feet in diameter at a flow rate of approximately 760 actual cubic feet per minute and at ambient temperature. During the filling of the carbon storage silo, the displaced air is forced through the fabric filter baghouse and discharged through a stack that is 82 feet in height and 9.6 feet in diameter at a flow rate of approximately 910 actual cubic feet per minute and at ambient temperature. All three storage silos commenced initial operation in February of 2015. These storage silos are subject to regulation pursuant to permit No. 0990234-032-AC/PSD-FL-413C, which revised and replaced previous permit Nos. 0990234-017-AC (PSD-FL-413), 0990234-023-AC (PSD-FL-413A) and 0990234-028-AC (/PSD-FL-413B).}

Essential Potential to Emit (PTE) Parameters

B.42. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Permit No. 0990234-032-AC/PSD-FL-413C.]

Control Technology

B.43. Fabric Filter (FF) Baghouses. Each storage silo is equipped with its own FF baghouse to control PM emissions. Each baghouse shall be designed, operated and maintained to achieve a PM mass emission rate of 0.01 grains per dry standard cubic foot (gr/dscf) or less. The baghouses shall be operated during all silo filling operations. [Permit No. 0990234-032-AC/PSD-FL-413C.]

Emission Limitations and Standards

Unless otherwise specified, the averaging times for Specific Conditions **B.44. - B.46.** are based on the specified averaging time of the applicable test method.

B.44. FF Baghouse PM Emission Standard. Particulate matter emissions from each storage silo baghouse shall not exceed 0.010 gr/dscf. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.45. FF Baghouse PM Standard by Opacity Measurement. A visible emission reading of 5% opacity or less may be used to demonstrate compliance with the FF baghouse PM emission standard, above**.** A visible emission reading greater than 5% opacity will require the permittee to perform a PM emissions stack test within 60 days to show compliance with the PM standard. [Permit No. 0990234-032-AC/PSD-FL-413C ; and Rules 62-297.620(1)-(3) & 62-297.620(4), F.A.C.]

{Permitting Note: The baghouses are designed to control PM emissions to 0.010 gr/dscf. The 5% opacity limitation is consistent with this design and provides reasonable assurance that annual emissions of $PM/PM_{10}/PM_{2.5}$ for emission units will be less than 0.1 TPY.}

B.46. Fugitive Emissions Limits. Fugitive emissions are limited to 10% opacity from any emissions point not controlled by a FF baghouse. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.47. Best Management Practices to Control Unconfined Emissions of PM. To ensure the emission standards with regard to opacity and PM of this subsection are complied with, the procedures set forth in Specific Condition **FW5.** of Section II. of this permit, "Unconfined Emissions of Particulate Matter," shall be adhered to where practical and cost effective. [Permit No. 0990234-032-AC/PSD-FL-413C.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C. cannot vary any requirement of an EG, NSPS or NESHAP provision.

B.48. Excess Emissions Allowed. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

B.49. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Test Methods and Procedures

B.50. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
9	Visual Determination of the Opacity of Emissions from Stationary Sources

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-204.800, F.A.C.; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.51. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

B.52. Annual Compliance Demonstrations. Each emission point shall be tested to demonstrate compliance with the visible emission limits for each emission point during each calendar year (January 1st to December 31st). As specified in Specific Condition **B.45.** of this subsection, a PM test must be conducted on a FF baghouse of a storage silo within 60 days of its failure in meeting the VE standard. [Permit No. 0990234-032-AC/PSD-FL-413C; Rule 62-297.310(8), F.A.C.]

Recordkeeping and Reporting Requirements

B.53. Baghouse O&M Log. For each baghouse the permittee shall maintain an operation and maintenance (O&M) plan to address proper operation, parametric monitoring, and a schedule for conducting periodic inspections and preventive maintenance. Baghouse inspections and maintenance activities shall be recorded in a written log. [Permit No. 0990234-032-AC/PSD-FL-413C.]

E.U. ID No.	**Brief Description**
Palm Beach Renewable Energy Facility No. 2 (PBREF-2)	
034	Ash Handling System and Building

This emissions unit is the ash handling system and building for handling bottom ash from the municipal waste combustor (MWC) units and fly ash from the fabric filter (FF) baghouses. The system includes an enclosed conveyor system to transport collected ash from the boiler and air pollution control buildings to the ash management building. Included inside the ash handling building is an ash processing equipment consisting of ferrous and non-ferrous metal recovery systems. To minimize particulate matter emissions from the ash handling equipment, the permittee operates a wet scrubber through which air from the ash handling building is routed prior to discharge to the atmosphere. To minimize fugitive particulate matter emissions from the ash handling equipment, ash (bottom and fly) is wetted to a moisture content of approximate of 20 to 25 percent.

{Permitting Note: This emissions unit is regulated pursuant to Permit No. 0990234-032-AC/PSD-FL-413C. This emissions unit commenced initial operation in February of 2015. Emissions from the wet scrubber are exhausted to the atmosphere through a horizontal duct with an exit diameter of 10.8 feet and at a height of 40 feet above grade.}

Essential Potential to Emit (PTE) Parameters

B.54. Permitted Capacity. The ash handling system is authorized to handle all of the bottom and fly ash generated on-site. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.55. Hours of Operation. This emissions unit may operate continuously (8,760 hours/year). [Rule 62-210.200(PTE), F.A.C.]

Control Technology

B.56. Wet Scrubber. To minimize particulate matter emissions from the ash handling equipment, the permittee shall operate and maintain a wet scrubber through which air from the ash handling building will be routed to prior to discharge to the atmosphere. *{Permitting Note: To minimize fugitive particulate matter emissions from the ash handling equipment, ash (bottom and fly) will be wetted to a moisture content of approximate of 20 to 25 percent.}* [Permit No. 0990234-032-AC/PSD-FL-413C.]

Emission Limitations and Standards

Unless otherwise specified, the averaging times for Specific Conditions **B.59. - B.62.** are based on the specified averaging time of the applicable test method.

B.57. Fugitive Ash Emissions.

a. On and after the date on which the initial performance test is completed or is required to be completed under 40 CFR 60.8 of Subpart A, no owner or operator of an affected facility shall cause to be discharged to the atmosphere visible emissions of combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 percent of the observation period (i.e., 9 minutes per 3-hour period), as determined by EPA Reference Method 22 observations as specified in 40 CFR 60.58b(k), except as provided in paragraphs b. and c., below.
b. The emission limit specified in a., above, does not cover visible emissions discharged inside buildings or enclosures of ash conveying systems; however, the emission limit specified in a., above, does cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.
c. The provisions of a., above, do not apply during maintenance and repair of ash conveying systems.

[40 CFR 60.55b; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.58. Testing for Fugitive Ash Emissions. The procedures specified in a. through b. below shall be used for determining compliance with the fugitive ash emission limit under 40 CFR 60.55b.

a. The EPA Reference Method 22 shall be used for determining compliance with the fugitive ash emission limit under 40 CFR 60.55b. The minimum observation time shall be a series of three 1-hour observations. The observation period shall include times when the facility is transferring ash from the municipal waste combustor unit to the area where ash is stored or loaded into containers or trucks.
b. The average duration of visible emissions per hour shall be calculated from the three 1-hour observations. The average shall be used to determine compliance with 40 CFR 60.55b.
c. The owner or operator of an affected facility shall conduct an initial performance test for fugitive ash emissions as required under 40 CFR 60.8.
d. Following the date that the initial performance test for fugitive ash emissions is completed or is required to be completed under 40 CFR 60.8 for an affected facility, the owner or operator shall conduct a performance test for fugitive ash emissions on an annual basis (no more than 12 calendar months following the previous performance test).

[40 CFR 60.58b(k) ; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.59. Ash Handling Wet Scrubber PM Emission Standard. PM emissions from the wet scrubber of the ash handling building shall not exceed 0.010 gr/dscf. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.60. Wet Scrubber PM Standard by Opacity Measurement. A visible emission reading of 5% opacity or less may be used to demonstrate compliance with the wet scrubber's PM emission standard. [Permit No. 0990234-032-AC/PSD-FL-413C.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C. cannot vary any requirement of an NSPS, NESHAP or Acid Rain program provision.

B.61. Excess Emissions Allowed. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

B.62. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Monitoring of Operations

B.63. Wet Scrubber O&M Plan and Monitoring. For the wet scrubber, the permittee shall maintain an operation and maintenance (O&M) plan to address proper operation, parametric monitoring, and a schedule for conducting periodic inspections and preventive maintenance. Wet scrubber inspections and maintenance activities shall be recorded in a written log. The wet scrubber shall be operated in accordance with the manufacturer's recommendations for the given operating conditions. The permittee shall take corrective actions as necessary when the water level alarm activates. [Permit No. 0990234-032-AC/PSD-FL-413C.]

Test Methods and Procedures

B.64. Test Methods. When required, tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
22	Fugitive Opacity

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-204.800, F.A.C.; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

B.65. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

B.66. Annual Compliance Tests. During each calendar year (January 1st to December 31st), the bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes and dust collectors associated with this emission unit shall be tested to demonstrate compliance with the VE emission standards specified in Specific Condition **B.59.** of this subsection. During each calendar year (January 1st to December 31st), the ash handling building wet scrubber shall be tested to demonstrate compliance with its VE emission standard emission standard specified in Specific Condition **B.63.** of this subsection. [Permit No. 0990234-032-AC/PSD-FL-413C.]

B.67. Ash Handling Building Wet Scrubber PM Compliance Testing. The annual VE tests in Specific Condition **B.68.** of this subsection with regard to the ash handling building wet scrubber shall serve as a surrogate for PM emissions testing. If the Department has reason to believe that any particulate matter limitation is not being met, it shall require compliance be demonstrated by conducting a particulate matter test in accordance with EPA Method 5 specified at 40 CFR 60 Appendix A. [Rule 62-297.620(1)-(3) &(4), F.A.C.; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

Recordkeeping and Reporting Requirements

B.68. Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for reporting requirements. [Rule 62-213.440(1)(b), F.A.C.; and, Permit No. 0990234-032-AC/PSD-FL-413C.]

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Subsection C. Emission Units 004 & 008
Landfills and Flares

The specific conditions in this section apply to the following emissions unit(s):

E.U. ID No.	Brief Description
	Landfills and Flares
004	*Class III Landfill and Flare (1,800 scfm, manufactured by LFG Specialties, model number PCF820I8)*
008	*Class I Landfill and Flare (3,500 scfm, manufactured by Shaw LFG Specialties, model number CF1238I10)*

The facility currently has two contiguous landfills, a Class I landfill and a Class III landfill, each with its own gas collection system and flare.

Both landfills have a design capacity greater than 2.5 million megagrams (Mg) by mass or 2.5 million cubic meters by volume. The design capacity of the Class I landfill is 33,212,516 Mg by mass and the Class III landfill is 5,723,708 Mg by mass. The landfills commenced construction in August 1988. A minor modification was requested and approved in 1994, expanding the landfills and changing the slopes. The Class I landfill started receiving waste in August 1989 and the Class III landfill started receiving waste in April 1990. The yearly waste acceptance at the Class I and Class III landfills in fiscal year (FY) 2004 was 643,501 and 203,470 Mg/yr, respectively. The Class I landfill currently accepts both municipal solid waste and ash from the resource recovery facility. The Class III landfill accepts predominately construction and demolition (C&D) debris. The Class I landfill received asbestos from 1989-1993. In 1993, asbestos disposal was transferred to the Class III landfill, which continues to receive the material.

Non-methane organic compound (NMOC) emissions from each landfill were calculated to be greater than 50 Mg per year, therefore, gas collection and control systems were required. Collection and control of landfill gas emissions began in February 1996 for both landfills.

The facility has two flares with one located at each landfill. The flares are used to control emissions from the landfills. The gas flow rates from the Class I and Class III landfill flares are 1,839.6 million ft^3/year and 946.08 million ft^3/year, respectively. Each flare is rated based on a maximum heat content of 550 Btu/scfm. The Class I landfill flare, a 3,500 scfm flare (Emissions Unit ID No. 008) was manufactured by Shaw LFG Specialties, model number CF1238I10 and began operations on May 15, 2008. The Class III landfill flare, a 1,800 scfm flare (Emissions Unit ID No. 004) was manufactured by LFG Specialties, model number PCF820I8 and began operations in 1999.

The landfills are collocated with a major source of HAP; however, individually they are not major sources of HAP. The landfills do not contain bioreactors.

The Class III landfill is expected to close around 2020 and the Class I landfill around 2049.

{Permitting note(s): These emissions units are regulated under Rule 62-210.300, F.A.C., Permits Required; 40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills adopted by reference in Rule 62-204.800(8)(b), F.A.C.; 40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills adopted by reference in Rule 62-204.800(11)(b)59., F.A.C.; and, 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Asbestos adopted by reference in Rule 62-204.800(10)(b), F.A.C. The flares are regulated under the NSPS 40 CFR 60, Subpart A, General Provisions, specifically at 40 CFR 60.18(b), adopted by reference in Rule 62-204.800(8)(d), F.A.C.}

Essential Potential to Emit (PTE) Parameters

C.1. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200 (Definitions - Potential to Emit (PTE), F.A.C. and Permit No. 0990234-002-AC/PSD-FL-108D.]

C.2. Flares - Landfill Gas Flow Rate. The owner or operator shall not allow more than 3,500 scfm of landfill gas to be directed to the Class I flare and 1,800 scfm of landfill gas to be directed to the Class III flare. [Rule 62-4.070(3), F.A.C., and Permit No. 0990234-002-AC/PSD FL-108D, specific condition 3.]

Landfills - Collection and Control System Design Plan

C.3. Landfills - Collection and Control System Design Plan. As an amendment to the gas collection and control plan, the owner requested and received approval from the Department for alternative provisions to inactivate gas wells. The owner or operator shall inactivate gas wells in accordance with the plan approved by the Department. [Rule 62-204.800(8)(b)75., F.A.C.; 40 CFR 60.752(b)(2)(i) & 40 CFR 60.753(b); Class I and Class III Landfill Gas Well Inactivation Plan received September 19, 2005; and, DEP approval dated December 13, 2005.]

Landfills - Collection System Temperature, Oxygen and Nitrogen Requirements

C.4. Landfills - Collection System Temperature, Oxygen and Nitrogen Requirements. The permittee requested and received approval from the Department to establish a higher landfill gas temperature of 82.2º C for the interior wellhead in the gas collection system. The owner or operator shall operate each interior wellhead in the collection system with a landfill gas temperature less than 82.2º C. [Rule 62-204.800(8)(b)75., F.A.C.; 40 CFR 60.753(c); and, DEP approval dated October 25, 2005.]

Landfills - Surface Methane Requirements

C.5. Landfills - Surface Methane Requirements. The permittee requested and received approval from the USEPA to reduce the frequency of surface monitoring of methane gas emissions. The frequency of surface monitoring of methane gas emissions shall be annual for the Class III Landfill, provided that the methane concentration level remains below 250 parts per million (ppm). If the methane concentration equals or exceeds 250 ppm, then the surface monitoring shall revert back to a quarterly monitoring frequency. If no readings of 250 ppm or greater are detected in three consecutive subsequent quarterly samples, the frequency shall again become annual. Note that although quarterly monitoring shall be required if the methane concentration equals or exceeds 250 ppm, corrective action measures, as required by 40 CFR 60.755(c)(4), shall only be required when the concentration level equals or exceeds 500 ppm or more above background at any location. [Rule 62-204.800(7)(b), F.A.C.; 40 CFR 60.755(c)(1); USEPA approval dated June 7, 2002; and, Permit No. 0990234-005-AC/PSD-FL-108E, specific condition 2.]

Flares - General Control Device Requirements

C.6. Flares - Operation. The flares shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f). [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(c)(2)]

C.7. Flares - Exit Velocity. The flares shall be operated with an exit velocity, in accordance with 40 CFR 60.18(c)(4) and (5), as determined by the methods specified in 40 CFR 60.18(f)(4) and (f)(6). [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(c)(4) & (5)]

C.8. Flares - Actual Exit Velocity. The owner or operator shall annually determine the actual exit velocity of each flare. [Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

C.9. Flares - Operation. Flares used to comply with provisions of 40 CFR 60, Subpart A shall be operated at all times when emissions may be vented to them. [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(e)]

Emission Limitations and Standards

C.10. Flares - Visible Emissions. The flares shall be operated with no visible emissions (VE), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(c)(1).]

Monitoring Requirements

{Permitting note: TABLE L-1. SUMMARY OF MONITORING REQUIREMENTS FOR MSW LANDFILLS under 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

C.11. Flares - Landfill Gas Flow Rate. Total landfill gas flow to the flares shall be continuously measured and recorded. [Rules 62-4.160(2) & 62-4.070(3), F.A.C.; and, Permit No. 0990234-012-AC, specific condition 2.]

C.12. Flares - Landfill Gas Flow Rate. The actual flow rate shall be determined for each flare on a monthly average basis by dividing the measured flow by the hours that each flare was operated each month. Compliance with this limitation shall be by measuring landfill gas flows to each flare and recording flows with a totalizing meter. Records of the totalizing meter values shall be recorded in an operators log monthly, or whenever the meter is reset for any purpose, whichever is more frequent. The owner or operator shall maintain a strip chart recorder to record the flow rate to each flare as a backup device in the event that the totalizer meter is not functioning; the strip chart recorder shall also be used in conjunction with an operators log to document the hours each month that each flare was operated. [Rule 62-4.070(3), F.A.C., and Permit No. 0990234-002-AC/PSD FL-108D, specific condition 3.]

C.13. Sampling & Analysis of Sulfur Content of Landfill Gas. The sulfur content of each landfill's gas shall be sampled annually, analyzed and the results provided to the compliance authority with a copy to the Bureau of Air Regulation. The sulfur content of each landfill's gas shall be analyzed at the inlet to the flare. Based on the sampling results and Rule 62-297.310(7)(b), F.A.C., the Department may request additional gas sampling and analyses. [Rules 62-4.070(3) and 62-297.310, F.A.C.; Permit No. 0990234-012-AC, specific condition 7.; and, Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

C.14. Startup, Shutdown and Malfunction Plan under NESHAP 40 CFR 63, Subpart AAAA. The owner or operator shall follow the written startup, shutdown and malfunction plan (SSM Plan). A copy of the SSM Plan must be maintained on site. [Rule 62-204.800(11)(d)1., F.A.C. and 40 CFR 63.1960.]

Test Methods and Procedures

C.15. Flares - Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method(s)	Description of Method(s) and Comment(s)
ASTM Method D1072-90, or later method	Sulfur Content Analysis of Landfill Gas
ASTM D1945-03 [1]	Alternative Method of Determining Net Heating Value of Landfill Gas
In-place Calibrated Flow Meter [1]	Determining Flare Gas Exit Velocity
EPA Method 22	Visual Determination of Smoke Emissions from Flares

The above methods are described in Chapter 62-297, F.A.C. and/or 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Chapter 62-297, F.A.C. & Rule 62-204.800(9)(b)7., F.A.C.; Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.; and, [1] USEPA approval dated August 10, 2005.]

C.16. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

C.17. Annual Compliance Test. During each calendar year (January 1st to December 31st), the flares shall be tested to demonstrate compliance with the emission limitations for VE. [Rule 62-297.310(7), F.A.C.]

C.18. Flares - Determining Net Heating Value of Landfill Gas. The owner or operator requested and received approval from USEPA for an alternative method of determining the net heating value of the gas being combusted in the flares. ASTM D1945-03 shall be used in place of EPA Method 18. A minimum collection of three (3)-thirty (30) minute samples is required. The requirement to test for hydrogen with ASTM D1946 is waived due to the low levels of hydrogen in the landfill gas. [Rule 62-204.800(8)(d), F.A.C.; 40 CFR 60.18(f)(3); and, USEPA approval dated August 10, 2005.]

C.19. Flares - Determining Flare Gas Exit Velocity. The owner or operator requested and received approval from USEPA for an alternative method of determining the flare gas exit velocity. The in-place calibrated flow meter shall be used in place of EPA Methods 2, 2A, 2C, or 2D. [Rule 62-204.800(8)(d), F.A.C.; 40 CFR 60.18(f)(4); and, USEPA approval dated August 10, 2005.]

C.20. Flares - Visible Emission Test Method. EPA Method 22 shall be used to determine the compliance with the visible emission limit for the flares. The observation period is 2 hours and shall be used according to EPA Method 22. [Rule 62-204.800(8)(d), F.A.C.; and, 40 CFR 60.18(f)(1).]

C.21. Flares - Sulfur Content of Landfill Gas. The owner or operator shall annually analyze the sulfur content of the landfill gas directed to each flare using ASTM Method D1072-90, or later method. [Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

Recordkeeping and Reporting Requirements

{Permitting note: TABLE L-2. SUMMARY OF RECORDKEEPING REQUIREMENTS FOR MSW LANDFILLS under 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

{Permitting note: TABLE L-3. SUMMARY OF COMPLIANCE REPORTING REQUIREMENTS FOR MSW LANDFILLS under 40 CFR 60, Subpart WWW and 40 CFR 63, Subpart AAAA, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

C.22. Reporting Schedule. The following reports shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition
Semi-Annual Compliance Reports	Every 6 months, due March 1st and September 1st	**C.24.**

[Rule 62-213.440, F.A.C.]

C.23. Flares - Reporting Requirements. The owner or operator shall annually report the actual exit velocity of each flare and the sulfur content of the landfill gas directed to each flare. The actual exit velocity shall be reported to the Department as an attachment to the facility's annual operating report (AOR). The sulfur content along with SO_2 emissions in tons per year (TPY) for each flare shall also be included with the AOR. [Permit No. 0990234-002-AC/PSD FL-108D, specific condition 5.]

C.24. Landfills - Semi-Annual Compliance Reports under NESHAP 40 CFR 63, Subpart AAAA. The owner or operator shall submit semi-annual compliance reports. The semi-annual compliance reports shall be due March 1st and September 1st. [Rule 62-204.800(11)(d)1., F.A.C.; 40 CFR 63.1980(a); and, Applicant's Request.]

C.25. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

NSPS 40 CFR 60, Subpart A & WWW Requirements

C.26. NSPS Requirements - Subpart WWW. Except as otherwise provided in this permit, these emissions units shall comply with all applicable provisions of 40 CFR 60, Subpart WWW, Municipal Solid Waste Landfills, adopted by reference in Rule 62-204.800(8)(b), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.754(a)(5). These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 60 Subpart WWW** included with this permit. [Rule 62-204.800(8)(b)75., F.A.C.]

C.27. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:
40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,
which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 60 Subpart A** included with this permit. [Rule 62-204.800(8)(d), F.A.C.]

NESHAP 40 CFR 61, Subpart A & M - Asbestos Disposal Site Standards

C.28. NESHAP 40 CFR 61 Requirements - Subpart M [Set A]. The asbestos waste disposal sites shall comply with all applicable requirements of 40 CFR 61, Subpart M, National Emission Standard for Asbestos, which have been adopted by reference in Rule 62-204.800(10)(b), F.A.C.; except that the Secretary is not the Administrator for the purposes of 40 CFR 61.149(c)(2), 40 CFR 61.150(a)(4), 40 CFR 61.151(c), 40 CFR 61.152(b)(3), 40 CFR 61.154(d), and 40 CFR 61.155(a). These emissions units shall comply with all applicable provisions of **Appendix 40 CFR 61, Subpart M "Set A,"** included with this permit. [Rule 62-204.800(10)(b)8., F.A.C.]

C.29. NESHAP 40 CFR 61 Requirements - Subpart A. The asbestos waste disposal sites shall comply with all applicable requirements of 40 CFR 61, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(10)(d), F.A.C.; except for 40 CFR 61.08 and except that the Secretary is not the Administrator for the purposes of 40 CFR 61.04, 40 CFR 61.11, and 40 CFR 61.18. In lieu of the process set forth in 40 CFR 61.08, the Department will follow the permit processing procedures of Rule 62-4.055, F.A.C. The asbestos waste disposal sites shall comply with all applicable provisions of **Appendix 40 CFR 61 Subpart A - General Provisions** included with this permit. [Rule 62-204.800(10)(d), F.A.C.]

NESHAP (MACT) 40 CFR 63, Subpart A & AAAA Requirements

*{Permitting note: Most of the requirements of NESHAP 40 CFR 63, Subpart AAAA cross references conditions (applicable requirements) that are contained in NSPS 40 CFR 60, Subpart WWW. However, NESHAP 40 CFR 63, Subpart AAAA does include several additional requirements, most importantly the requirement to develop and implement a written startup, shutdown and malfunction plan (SSM Plan) (see 40 CFR 63.1960 in **Appendix 40 CFR 63 Subpart AAAA**, and 40 CFR 63.6(e)(3) in **Appendix 40 CFR 63 Subpart A**), and the requirement for submittal of a semi-annual compliance report (see 40 CFR 60.757(f) in **Appendix 40 CFR 60 Subpart WWW** and 40 CFR 63.1980 in **Appendix 40 CFR 63 Subpart AAAA**).)}*

C.30. 40 CFR 63 Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(11)(d)1., F.A.C., except that the Secretary is not the Administrator for purposes of 40 CFR 63.5(e), 40 CFR 63.5(f), 40 CFR 63.6(g), 40 CFR 63.6(h)(9), 40 CFR 63.6(j), 40 CFR 63.13, and 40 CFR

63.14. These emissions units shall comply with **Appendix 40 CFR 63 Subpart A** included with this permit. [Rule 62-204.800(11)(d)1., F.A.C.]

C.31. 40 CFR 63 Requirements - Subpart AAAA. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart AAAA, Municipal Solid Waste Landfills, which have been adopted by reference in Rule 62-204.800(11)(b)59., F.A.C., except that the Secretary is not the Administrator for purposes of the authorities cited at 40 CFR 63.1985(c). These emissions units shall comply with **Appendix 40 CFR 63 Subpart AAAA** included with this permit. [Rule 62-204.800(11)(b)59., F.A.C.]

Odor Remediation Plan

C.32. Not Federally Enforceable. Odor Remediation Plan. The facility shall be operated to control objectionable odors in accordance with subsection 62-296.320(2), F.A.C. After being notified by the Department that objectionable odors have been confirmed beyond the landfill property boundary, the owner or operator shall:

a. Immediately take steps to reduce the objectionable odors. Such steps may include applying or increasing initial cover, reducing the size of the working face, and ceasing operations in the areas where odors have been detected;
b. Submit to the Department for approval an odor remediation plan for the gas releases. The plan shall describe the nature and extent of the problem and the proposed long-term remedy. The remedy shall be initiated within 30 days of approval.
c. Implement a routine odor monitoring program to determine the timing and extent of any off-site odors, and to evaluate the effectiveness of the odor remediation plan.

[Rule 62-701.530(3)(b), F.A.C.]

C.33. Pin Wells and Surface Collectors for Odor Control. The permittee is authorized to install and remove pin wells and surface collectors for odor control at the Class III Landfill (E.U. ID No. 004) and the Class I Landfill (E.U. ID No. 008). The permittee is allowed to operate these devices for odor control at its discretion and is not required to operate them according to requirements of 40 CFR 60.753(c). [Applicant Request/DEP approval dated November 6, 2011.]

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The specific conditions in this section apply to the following emissions unit(s):

E.U. ID No.	Brief Description
	Biosolids Pelletization Facility (BPF)
010	BPF Sludge Dryer Train #1
011	BPF Sludge Dryer Train #2
012	BPF Recycle Material Bin for Sludge Dryer Train #1
014	BPF Recycle Material Bin for Sludge Dryer Train #2
045	Pellet Storage Silo for Sludge Dryer Trains #1 & 2

The BPF has two 337.5 wet tons per day (wtpd) {67.5 dry tpd} sludge drying trains, Dryer Train #1 and #2, and related appurtenances. The sludge dryer trains were manufactured by Baker Rullman Drum Assembly, Model No. SD-125-42. Each dryer train at the BPF combusts landfill gas generated from the nearby landfill and/or natural gas in a rotary drum dryer to dry sewage sludge and then screens the dried sludge into marketable fertilizer pellets. Each dryer has a rated capacity of 40 MMBtu/hour heat input (natural gas or landfill gas) plus an additional 2 MMBtu/ hour heat input from each regenerative thermal oxidizer (RTO) for a total rated capacity of 84 MMBtu/ hour heat input from the dryers and the RTOs.

Dry low NOx burners and acid addition in the tray/condenser scrubber are used to control NOx emissions from each dryer's exhaust. A tray/condenser scrubber and a venturi scrubber are used to control PM emissions from each dryer's exhaust. The BPF uses a regenerative thermal oxidizer (RTO) on each dryer exhaust to control VOC emissions with an efficiency of 98%. The RTO also minimizes odors. VOCs are also combusted in the dryer burners with an estimated efficiency of 98%. CO emissions are controlled by good combustion in the dryer and in the RTO.

Each dryer RTO train has its own flue within a shared single stack. The stack parameters are: height, 138 feet; diameter, 2.5 feet; exit temperature, 194 degrees F; and, actual stack gas flow rate, 15,000 acfm. The sludge dryer trains began operation on May 22, 2009.

Each biosolids dryer train also has the following: a recycle material bin and pellet storage silo, and a cooling tower. Dusty air from both silo filling operations is ducted to a product silo dust collector. Each recycle material bin baghouse vents through a building odor scrubber which exhausts through an approximately 0.5 feet diameter outlet at about 50 feet above grade. Emissions from the cooling towers are uncontrolled.

{Permitting note(s): The sludge drying trains are regulated under 40 CFR 61, Subpart E, National Emission Standards for Hazardous Air Pollutants for Mercury, adopted and incorporated by reference in Rule 62-204.800(10)(b)3., F.A.C. and 40 CFR 64, Compliance Assurance Monitoring (CAM). The sludge drying trains are not regulated under 40 CFR 60, Subpart LLLL, Standards of Performance for New Stationary Sources: Sewage Sludge Incineration Units and 40 CFR 60, Subpart MMMM, Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units pursuant to the specific exemptions at 40 CFR 60.4780 and 40 CFR 60.5065. Some of these emissions units are regulated under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) [PSD-FL-108F, G & I and, Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT).}

Essential Potential to Emit (PTE) Parameters

D.1. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200 (Definitions - Potential to Emit (PTE), F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.2. Permitted Capacity. The maximum process rate for each dryer train is 337.5 wet tons of sludge per day (wtpd, at 20% solids) or 67.5 dry tpd. The maximum process rate for the Biosolids Pelletization Facility

(BPF) is 675 wet tons of sludge per day (wtpd, at 20% solids) or 135 dry tpd. The maximum heat input rate for each dryer and RTO are as follows:

E.U. ID No.	Brief Description	Max. Heat Input (Natural or Landfill Gas)
010	BPF Sludge Dryer Train #1	42 MMBtu/hour
011	BPF Sludge Dryer Train #2	42 MMBtu/hour

[Rules 62-4.160(2) & 62-210 (PTE), F.A.C. and Permit Nos. 0990234-006-AC/PSD-FL-108F & 0990234-019-AC/PSD-FL-108I.]

D.3. Methods of Operation - Fuels. The dryers may be fired with natural gas and/or landfill gas. [Rules 62-4.160(2) & 62-210.200 (PTE), F.A.C. and Permit Nos. 0990234-006-AC/PSD-FL-108F & 0990234-019-AC/PSD-FL-108I.]

D.4. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(2), F.A.C.]

Monitoring of Operations

D.5. Sludge Process Rate. The owner or operator shall monitor and record daily the sludge process rate for each dryer train. [Rule 62-4.070(1) & (3), F.A.C.; and, Permit No. 0990234-006-AC/PSD-FL-108F.]

Operation and Maintenance of Air Pollution Control Technologies

D.6. Operation and Maintenance of Air Pollution Control Technologies. The owner or operator shall operate and maintain the selected air pollution control technologies, e.g., dry low NOx burners, exhaust gas recirculation system, tray scrubber/condenser scrubber, venturi scrubbers and RTOs. [BACT Determination and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.7. Operation and Maintenance of Fabric Filters. The owner or operator shall operate and maintain fabric filters on each material recycle bin exhaust to control PM emissions from the material recycle bin and the pellet storage silo. [BACT Determination and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.8. Operation and Maintenance Manuals. The owner or operator shall follow the manufacturers' Operation and Maintenance Manuals for the selected air pollution control technologies, e.g., dry low NOx burners, exhaust gas recirculation system, tray scrubber/condenser scrubber, venturi scrubber, RTOs and fabric filters. [BACT Determination and Permit No. 0990234-006-AC/PSD-FL-108F.]

Emission Limitations and Standards

Unless otherwise specified, the averaging times for Specific Conditions **D.9. - D.17.** are based on the specified averaging time of the applicable test method.

D.9. Nitrogen Oxides. NOx emissions from each sludge dryer RTO train shall not exceed 5.60 lbs/hour and 24.55 tons/year. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.10. Particulate Matter. PM/PM_{10} emissions from each sludge dryer RTO train shall not exceed 2.42 lbs/hour and 10.6 tons/year. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.11. Visible Emission. VE from each sludge dryer RTO train shall not exceed 5% opacity, except 20% opacity is allowed for up to 3 minutes in 1 hour. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.12. Particulate Matter. PM/PM_{10} emissions from each recycle material bin and the pellet storage silo baghouse shall not exceed 0.010 gr/dscf. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.13. Visible Emission. VE from each recycle material bin and the pellet storage silo baghouse shall not exceed 5% opacity. [BACT Determination and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.14. Sulfur Dioxide. SO_2 emissions from each sludge dryer RTO train shall not exceed 4.45 lbs/hour and 19.5 tons/year. [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.15. Carbon Monoxide. CO emissions from each sludge dryer RTO train shall not exceed 3.37 lbs/hour and 14.75 tons/year. [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.16. Volatile Organic Compound. VOC emissions from each sludge dryer RTO train shall not exceed 1 lbs/hour and 4.4 tons/year. [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.17. Mercury. Hg emissions from each sludge dryer RTO train shall not exceed 2.2 E-02 lb/24-hour period. {The Hg emissions standard under the NESHAP is 3.2 kg (7.1 lb)/24-hour period. The applicant proposed a limit which is much lower than the NESHAP standard.} [Rules 62-212.400(12) (Source Obligation, escape PSD), 62-4.070(1), & (3), F.A.C., and Table AP-1 from Permit No. 0990234-006-AC/PSD-FL-108F.]

D.18. Unconfined Particulate Matter Emissions at BPF. Pursuant to Rules 62-296.320(4)(c)1., 3. and 4., F.A.C., reasonable precautions to prevent emissions of unconfined particulate matter at the BPF include the following requirements consistent with current practices by the Solid Waste Authority:

a. Pave all parking lots and permanent drives;
b. Street sweep paved areas on a regular basis; and,
c. Use a water truck to spray water on unpaved roads and active unpaved areas.

[Rule 62-296.320(4)(c)2., F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C., cannot vary any requirement of a NESHAP provision.

D.19. Excess Emissions Allowed. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

D.20. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Monitoring Requirements

D.21. Compliance Assurance Monitoring (CAM) Requirements. Each sludge dryer RTO train is subject to the CAM requirements contained in the attached Appendix CAM. Failure to adhere to the monitoring requirements specified does not necessarily indicate an exceedance of a specific emissions limitation; however, it may constitute good reason to require compliance testing pursuant to Rule 62-297.310(7)(b), F.A.C. [40 CFR 64; and, Rules 62-204.800 & 62-213.440(1)(b)1.a., F.A.C.]

{Permitting note: The excursion level specified in the approved CAM Plan was established based upon the initial PM test data (September 2009) and the manufacturer's recommendations. The excursion level shall be re-evaluated at the time of permit renewal based upon the new most recent test data and the manufacturer's recommendations.}

Test Methods and Procedures

D.22. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method(s)	Description of Method(s) and Comment(s)
EPA Methods 1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
EPA Method 5	Methods for Determining Particulate Matter (PM) Emissions
EPA Method 6C	Method for Determining Sulfur Dioxide (SO_2) Emissions
EPA Method 7 or 7E	Method for Determining Nitrogen Oxides (NOx) Emissions
EPA Method 9	Visual Determination of the Opacity of Emissions (VE)
EPA Method 10	Method for Determining Carbon Monoxide (CO) Emissions
EPA Method 25 or 25A	Methods for Determining Volatile Organic Compound (VOC) Emissions
EPA Method 101A or EPA Method 105	Method for Determining Particulate and Gaseous Mercury (Hg) Emissions from Sewage Sludge Incinerators or Method for Determining Mercury (Hg) in Wastewater Treatment Plant Sewage Sludge The specific testing and sampling conditions as outlined in 40 CFR 61.53 and 61.54 shall be followed as described.

The above methods are described in Chapter 62-297, F.A.C. and/or 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Chapter 62-297, F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.23. Annual Compliance Test. Except as specified in Specific Condition **D.26.**, during each calendar year (January 1st to December 31st), Emissions Unit ID Nos. 010 and 011 (Sludge Dryer Train #1 and #2) and 012 & 014 (Recycle Material Bins & Pellet Storage Silos for Sludge Dryer Train #1 and #2) and Pellet Storage Silo for Sludge Dryer Trains #1 & 2 shall be tested to demonstrate compliance with the emission limitations for VE. Compliance with the visible emissions limit for the recycle bin fabric filter exhaust is determined at the building odor control scrubber exhaust. [Rule 62-297.310(7), F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.24. Compliance Test Prior To Renewal. Prior to permit renewal, Emissions Unit ID Nos. 010 and 011 (Sludge Dryer Train #1 and #2) shall be tested to demonstrate compliance with the emission limitations for NOx, PM/PM_{10}, SO_2, and Hg. [Rule 62-297.310(7)(a)3., F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.25. Compliance Testing - CO and VOC Emissions. The testing frequency for CO and VOC emissions was an initial demonstration only; no subsequent testing is required for CO and VOC because the lb/hour emission rates stated in Table AP-1 were achieved in the initial test. In lieu of frequent testing for CO and VOC emissions, the owner or operator shall follow the Operation and Maintenance Manuals for the dry low NOx burners and the RTOs. [Permit No. 0990234-006-AC/PSD-FL-108F and Rule 62-297.310(7)(a)4., F.A.C.]

D.26. Minor PM Source Testing. The recycle material bins and pellet storage silos are minor sources of particulate matter. Because of the expense and complexity of conducting a stack test on minor sources of particulate matter, and because these sources are equipped with baghouses, the Department pursuant to the authority granted under Rule 62-297.620(4), F.A.C., hereby establishes a visible emission limitation not to exceed an opacity of 5% in lieu of a particulate matter stack test. In accordance with Rule 62-297.620(4), minor particulate matter sources equipped with baghouses with visible emissions that are greater than or equal to 5 percent opacity may result in the permittee being required to perform a stack test in accordance with approved methods to verify compliance with the gr/dscf emission limits. The visible emissions test shall be conducted by a certified observer using Method 9 and the procedures in 40 CFR. 60.11 and Rule 62-297.320, F.A.C. [Rule 62-297.620(1)-(4), F.A.C. and Permit No. 0990234-006-AC/PSD-FL-108F.]

D.27. Common Testing Requirements. Unless otherwise specified above, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

Recordkeeping and Reporting Requirements

D.28. Reporting Schedule. The following report shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition
Excess Emissions from Malfunctions, if requested by the Compliance Authority	Every 3 months (quarter)	**D.29.**

[Rule 62-210.700(6), F.A.C.]

D.29. Excess Emissions from Malfunctions. In the case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Compliance Authority. [Rule 62-210.700(6), F.A.C.]

D.30. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

NESHAP 40 CFR 61, Subparts A & E Requirements

D.31. NESHAP 40 CFR 61 Requirements - Subpart A. The dryers shall comply with all applicable requirements of 40 CFR 61, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(10)(d), F.A.C., except for 40 CFR 61.08 and except that the Secretary is not the Administrator for the purposes of 40 CFR 61.04, 40 CFR 61.11, and 40 CFR 61.18. In lieu of the process set forth in 40 CFR 61.08, the Department will follow the permit processing procedures of Rule 62-4.055, F.A.C. The dryers shall comply with all applicable provisions of Appendix 40 CFR 61 Subpart A - General Provisions included with this permit. [Rule 62-204.800(10)(d), F.A.C.]

D.32. NESHAP 40 CFR 61 Requirements - Subpart E. The dryers shall comply with all applicable requirements of 40 CFR 61, Subpart E, National Emission Standards for Hazardous Air Pollutants for Mercury, which have been adopted by reference in Rule 62-204.800(10)(b)3., F.A.C., except that the term "Administrator," when used in any provision of 40 CFR Part 61 that is delegated to the Department by the U.S. Environmental Protection Agency, shall mean the Secretary or the Secretary's designee. The dryers shall comply with all applicable provisions of Appendix 40 CFR 61 Subpart E - NESHAP for Mercury included with this permit. [Rule 62-204.800(10)(a) & (b)3., F.A.C.]

D.33. Biosolids Pelletization Facility (BPF) - Product Silo Dust Collector Project under Permit No. 0990234-036-AC. The project under Permit No. 0990234-036-AC was not completed at the time of the renewal permit's issuance. Therefore, a mini-compliance plan (schedule for completion of construction/modification activities) is therefore included in the renewed permit. The following requirements apply as part of the plan:

- The permittee shall notify the Compliance Authority when the project is done; and,
- Within 60 days of completion of the construction/modification the Pellet Storage Silo for Sludge Dryer Trains #1 & 2 shall be tested to demonstrate compliance with the emission limitations for VE.

[62-213.440(1) & (2), F.A.C.]

Subsection E. Emission Units 016, 021, 031, 032, 033 & 035-038, 042, 043, 046 & 047
Engines

Engines in this subsection are grouped by similar engine type as regulated by EPA. Each group number is followed by a very brief explanation of the engine type as described in the EPA regulations/tables.

	Group 1: *"Existing" stationary CI RICE less than or equal to 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**E.1. - E.10. & E.101. - E.104.**
035	PBREF No. 1 Emergency Generator - Palm Beach Renewable Energy Park (PBREP) (SWA of PBC ID# WTE-E2)	
036	PBREF No. 1 Fire Water Pump - PBREP (SWA of PBC ID# WTE-E1)	
	Group 2: *"Existing" stationary CI RICE greater than 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**E.11. - E.12. & E.101. - E.104.**
038	Emergency Generator - Utilities Facility (SWA of PBC ID# U-E5)	
	Group 4: *"New" stationary CI RICE greater than or equal to 175 HP and less than or equal to 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**E.37. - E.52. & E.101. - E.104.**
021	Emergency Generator - Operations Building (EPA Tier 3 certified) (SWA of PBC ID# OPS-E1)	
	Group 5: *"New" stationary CI RICE greater than 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**E.53. - E.69. & E.101. - E.104.**
016	Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified) (SWA of PBC ID# BPF-E1)	
033	Emergency Generator - PBREF No. 2 (EPA Tier 2 certified)	
042	Emergency Generator - Administration (EPA Tier 1 certified) (SWA of PBC ID# A-E1)	
043	Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified) (SWA of PBC ID# MRF-E1)	
	Group 6: *"New" stationary CI RICE less than 175 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**E.70. - E.85. & E.101. - E.104.**
037	Emergency Generator - PBREP Scalehouse (EPA Tier 3 certified) (SWA of PBC ID# WTES-E1)	

046	Emergency Generator - Landfill Scalehouse E2 (EPA Tier 3 certified)	
047	Emergency Generator - MIS (EPA Tier 3 certified)	
	Group 7: *"New" stationary CI RICE fire pumps greater than or equal to 175 HP and less than or equal to 500 HP*	**See Specific Conditions**
E.U. ID No.	**Brief Description**	**E.86. - E.100. & E.101. - E.104.**
031	Emergency Firewater Pump Engine A (351 HP) - PBREF No. 2 (EPA Tier 3 certified)	
032	Emergency Firewater Pump Engine B (351 HP) - PBREF No. 2 (EPA Tier 3 certified)	

This subsection of the permit is comprised of compression ignition (CI) type engines, some of which are emergency generators. Air pollutant emissions from these engines are uncontrolled.

{Permitting notes: These emissions units, engines, are regulated under 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE) adopted in Rule 62-204.800(11)(b), F.A.C. The permittee identified numerous other non-road engines (portable) located at the facility; these engines are not regulated under 40 CFR 63, Subpart ZZZZ. The "new" engines must meet 40 CFR 60, Subpart IIII, NSPS for Compression Ignition Internal Combustion Engines (CI ICE).}

Each part of this subsection includes unit-specific applicable requirements for each group of engines which were customized from the entire 40 CFR 63, Subpart ZZZZ and/or 40 CFR 60, Subpart IIII.

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 1: *"Existing" stationary CI RICE less than or equal to 500 HP*
E.U. ID No.	**Brief Description**
035	PBREF No. 1 Emergency Generator - Palm Beach Renewable Energy Park (PBREP) (SWA of PBC ID# WTE-E2)
036	PBREF No. 1 Fire Water Pump - PBREP (SWA of PBC ID# WTE-E1)

{Permitting note: This part of the subsection addresses "existing" stationary CI RICE less than or equal to 500 horsepower (HP) that are located at a major source of HAP and that have not been modified or reconstructed after 6/12/2006. Unless the RICE is modified or reconstructed after 7/11/2005, NSPS 40 CFR 60, Subpart IIII, will not apply.}

The following table provides important details for these emissions units:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer Model # Engine Serial #
035	356	1989	-	Diesel	Emergency	1.73	Caterpillar® 3306 85Z04092

036	273	1994	-	Diesel	Emergency	1.75	Caterpillar®
							3306D
							6AF15B

<u>Essential Potential to Emit (PTE) Parameters</u>

E.1. <u>Hours of Operation</u>.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 63.6640(f)(1)]

b. *Maintenance and Testing*. Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 63.6640(f)(1)]

c. *Non-emergency Situations*. Each RICE is authorized to operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. [40 CFR 63.6640(f)(1)]

d. *Other Situations*. Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity; except that owners and operators may operate the emergency engine for a maximum of 15 hours per year as part of a demand response program if the regional transmission organization or equivalent balancing authority and transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout, such as unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level. The engine may not be operated for more than 30 minutes prior to the time when the emergency condition is expected to occur, and the engine operation must be terminated immediately after the facility is notified that the emergency condition is no longer imminent. The 15 hours per year of demand response operation are counted as part of the 50 hours of operation per year provided for non-emergency situations. The supply of emergency power to another entity or entities pursuant to financial arrangement is not limited by this paragraph, as long as the power provided by the financial arrangement is limited to emergency power. [40 CFR 63.6640(f)(1)]

e. *Engine Startup*. During periods of startup the owner or operator must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for the appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR 63.6625(h)]

<u>Emission Limitations and Operating Requirements</u>

{Permitting note: These "existing" stationary CI engines with ≤ 500 HP do not have specific numerical emission limitations and standards.}

E.2. <u>Work or Management Practice Standards</u>.

a. *Oil*. Change oil and filter every 500 hours of operation or annually, whichever comes first. [40 CFR 63 Table 2c(1)(a)]

b. *Air Cleaner*. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first. [40 CFR 63 Table 2c(1)(b)]

c. *Hoses and Belts*. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. [40 CFR 63 Table 2c(1)(c)]

d. *Operation and Maintenance*. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions or develop and follow your own maintenance plan which must provide, to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution, control practice for minimizing emissions. [40 CFR 63.6625(e)]

e. *Oil Analysis*. The owner or operator has the option of using oil analysis to extend the change requirement. The oil analysis must be performed at the same frequency specified for changing the oil. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent of water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent of water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 CFR 63.6625(i)]

Monitoring of Operations

E.3. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 63.6625(f)]

Compliance Requirements

E.4. Continuous Compliance. Each unit shall be in compliance with the emission limitations and operating standards in this section at all times. [40 CFR 63.6605(a)]

E.5. Operation and Maintenance of Equipment. At all times the owner or operator must operate and maintain, any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the compliance authority which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

Recordkeeping Requirements

E.6. Notification, Performance and Compliance Records.

a. A copy of each notification and report that the owner or operator submitted to comply with this section, including all documentation supporting any Initial Notification or Notification of Compliance Status that the owner or operator submitted.
b. The owner or operator must keep the records required in 40 CFR 63.6625(e) of this section to show continuous compliance with each emission limitation or operating requirement.
c. The owner or operator must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for demand response operation, the owner or operator must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response.

[40 CFR 63.6655]

E.7. Malfunction Records.

a. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control and monitoring equipment.

b. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b) of this section including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

[40 CFR 63.6655]

E.8. Maintenance Records.

a. Records of all required maintenance performed on the air pollution control and monitoring equipment.

b. The owner or operator must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the stationary RICE and after-treatment control device (if any) are operated and maintained according to its own maintenance plan.

[40 CFR 63.6655]

E.9. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.

b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

Reporting Requirements

E.10. Emergency Situation. If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the work practice requirements on the schedule required of this section, or if performing the work practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The work practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. Sources must report any failure to perform the work practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable. [40 CFR 63.6602 Table 2c, footnote 1]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 2: *"Existing" stationary CI RICE greater than 500 HP*
E.U. ID No.	**Brief Description**
038	Emergency Generator - Utilities Facility (SWA of PBC ID# U-E5)

{Permitting note: This part of the subsection addresses "existing" stationary CI RICE greater than 500 HP that are located at a major source of HAP and that have not been modified or reconstructed after 12/19/2002. Unless the RICE is modified or reconstructed after 7/11/2005, NSPS 40 CFR 60, Subpart IIII, will not apply. This RICE is not used as a fire pump.}

The following table provides important details for this emissions unit:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer / Model # / Engine Serial #
038	3,164	5/7/2002	-	Diesel	Emergency	4.3	Caterpillar® 3516B 1HZ02187

Essential Potential to Emit (PTE) Parameters

E.11. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 63.6640(f)(2)]

b. *Maintenance and Testing*. Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by the manufacturer, the vendor, or the insurance company associated with the engine. Required testing of such units should be minimized, but there is no time limit for routine testing and maintenance. [40 CFR 63.6640(f)(2)]

c. *Non-emergency situations*. Each RICE is authorized to operate for an additional 50 hours per year in non-emergency situations. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 63.6640(f)(2)]

d. *Engine Startup*. During periods of startup the owner or operator must minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for the appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [40 CFR 63.6625(h)]

Emission Limitations and Operating Requirements

{Permitting note: This "existing" stationary CI engine with > 500 HP does not have a specific numerical emission limitations and standards.}

Recordkeeping Requirements

E.12. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.

b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. [40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 4: *"New" stationary CI RICE greater than or equal to 175 HP and less than or equal to 500 HP*
E.U. ID No.	**Brief Description**
021	Emergency Generator - Operations Building (EPA Tier 3 certified) (SWA of PBC ID# OPS-E1)

{Permitting note: This part of the subsection addresses "new" stationary CI RICE greater than or equal to 175 HP and less than or equal to 500 HP, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP and that have been modified, reconstructed or commenced construction on or after 6/12/2006 and have a 2007 or later model year. This RICE is not used as a fire pump.}

The following table provides important details for this emissions unit:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer Model # Engine Serial #
021	250	2008	-	Diesel	Emergency	1.115	Cummings/Onan® DSGAB

							-

Applicability

E.13. Applicability. Pursuant to 40 CFR 63.6590(c), these engines must comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of NSPS 40 CFR 60, Subpart IIII. Pursuant to 40 CFR 63.6590(c), no further requirements apply to the engine under 40 CFR 63, Subpart ZZZZ. [Rules 62-204.800(11) & (8), F.A.C.; and, 40 CFR 63.6590(c)]

Essential Potential to Emit (PTE) Parameters

E.14. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content*. The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel.
b. *Cetane and Aromatic*. The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 60.4207(b) and 40 CFR 80.510(b)]

E.15. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 60.4211(e)]
b. *Maintenance and Testing.* Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 60.4211(e)]
c. *Other Situations*. Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 60.4219]

Emission Standards and Limitations

E.16. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 4.0 g/KW-hr {equivalent to: 3.2 lbs/hour (OPS-E1)}. [40 CFR 60.4205(b)]

E.17. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 1.4 lbs/hour (OPS-E1)}. [40 CFR 60.4205(b)]

E.18. PM Emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr {equivalent to: 4.3 lbs/hour (OPS-E1)}. [40 CFR 60.4205(b)]

E.19. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner or operator must meet the requirements of 40 CFR 89, 94 and/or 1068, as they apply. [40 CFR 60.4211(a)]

Monitoring of Operations

E.20. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Compliance Requirements

E.21. Compliance Requirements. Owner or operator must demonstrate compliance according to one of the methods below:

c. *Certification*. Have purchased an engine certified according to 40 CFR 89 or 94, as applicable, for the same model year and maximum engine power.

d. *Manufacturer Data*. Keep records of engine manufacturer data indicating compliance with the standards.
e. *Vendor Data*. Keep records of control device vendor data indicating compliance with the standards.
f. *Performance Test*. Conduct an initial performance test to demonstrate compliance with the emission standards according to the testing requirements in this section.
g. *Similar Engine Tests*. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

[40 CFR 60.4211(b)]

Testing Requirements

E.22. Performance Test. Performance test must be conducted according to the in-use testing procedures in 40 CFR 1039, Subpart F. [40 CFR 60.4212]

E.23. Engine Manufacturer's Recommendations and Instructions. If the owner/operator does not install, configure, operate, and maintain the engine according to the manufacturer's recommendations and instructions, any required testing shall be completed in accordance with 40 CFR 60, Subpart IIII. [40 CFR 60.4212.]

E.24. Not to exceed (NTE) Standards. Exhaust emissions from stationary CI ICE that are complying with the emission standards must not exceed the not to exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard, determined from the following equation: NTE = (1.25) x (Standard). [40 CFR 60.4212]

Recordkeeping Requirements

E.25. Required Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214]

E.26. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

NSPS 40 CFR 60, Subpart A & IIII Requirements

E.27. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. The applicable 40 CFR 60, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.4218 and are included in **Appendix 40 CFR 60 Subpart A**. [Rule 62-204.800(8)(d), F.A.C.]

E.28. 40 CFR 60 Requirements - Subpart IIII [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which have been adopted by reference in Rule 62-204.800(8), F.A.C. These emissions units shall comply with **Appendix 40 CFR 60 Subpart IIII "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 60, Subpart IIII. This appendix also contains useful information like definitions (see 40 CFR 60.4219) that are specific to engines regulated under 40 CFR 60 Subpart IIII. [Rule 62-204.800(8), F.A.C.]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 5: *"New" stationary CI RICE greater than 500 HP*
E.U. ID No.	**Brief Description**
016	Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified) (SWA of PBC ID# BPF-E1)
033	Emergency Generator - PBREF No. 2 (EPA Tier 2 certified)
042	Emergency Generator - Administration (EPA Tier 1 certified) (SWA of PBC ID# A-E1)
043	Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified) (SWA of PBC ID# MRF-E1)

Emissions from E.U. ID No. 033 are exhausted through a vertical stack with weather cap that is 16 feet in height, has an exit diameter of 0.83 feet, an exit flow rate of approximately 18,908 acfm, and an exit temperature of 853°F. This engine is also regulated pursuant to Permit No. 0990234-032-AC/PSD-FL-413C.

{Permitting note: This part of the subsection addresses "new" stationary CI RICE greater than 500 HP, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP and that have been modified, reconstructed or commenced construction on or after 12/19/2002 and have a pre-2007 or 2007 & later model year. These RICE are not used as fire pumps.}

The following table provides important details for these emissions units:

E.U. ID No.	**Engine Brake HP**	**Date of Construction**	**Model Year**	**Primary Fuel**	**Type of Engine**	**Displacement liters/cylinder (l/c)**	**Manufacturer / Model # / Engine Serial #**
016	550	2009	2007	Diesel	Emergency	2.33	Kohler® / 350REOZDD / 2180993
033	3,705	2013	-	Diesel	Emergency	78 l/c, 18 cyl.	Cummings® / QSK78-G12 / -
042	913	5/2/2006	2001	Diesel	Emergency	2.25	Caterpillar® / 3412

							BPG00204
043	775	2009	-	Diesel	Emergency	2.48	Cummings/Onan®
							DFEG 60 Hz
							-

Applicability

E.29. Applicability. Pursuant to 40 CFR 63.6590(c), these engines must comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of NSPS 40 CFR 60, Subpart IIII. Pursuant to 40 CFR 63.6590(c), no further requirements apply to the engine under 40 CFR 63, Subpart ZZZZ. [Rules 62-204.800(11) & (8), F.A.C.; and, 40 CFR 63.6590(c)]

Essential Potential to Emit (PTE) Parameters

E.30. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content*. The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel.
b. *Cetane and Aromatic*. The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 60.4207(b) and 40 CFR 80.510(b)]

E.31. Hours of Operation. The E.U. ID No. 033 emergency generator may operate up to 100 hours per year for maintenance and testing purposes. [Permit No. 0990234-032-AC/PSD-FL-413C; and, Rules 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

E.32. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 60.4211(e)]
b. *Maintenance and Testing*. Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 60.4211(e)]
c. *Other Situations*. Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 60.4219]

Emission Standards and Limitations

E.33. The following emission standards and limitations apply to E.U. ID No. 016, Emergency Generator - Biosolids Pelletization Facility (BPF) (EPA Tier 3 certified):

a. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 4.0 g/KW-hr {equivalent to: 3.62 lbs/hour}. [40 CFR 60.4205(b)]
b. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 3.17 lbs/hour}. [40 CFR 60.4205(b)]
c. PM emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr{equivalent to: 0.18 lbs/hour}. [40 CFR 60.4205(b)]

E.34. The following emission standards and limitations apply to E.U. ID No. 033, Emergency Generator - PBREF No. 2 (EPA Tier 2 certified):

a. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 6.4 g/KW-hr {equivalent to: 39.0 lbs/hour}. [40 CFR 60.4205(b)]

b. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 21.3 lbs/hour}. [40 CFR 60.4205(b)]
c. PM emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr {equivalent to: 0.2 lbs/hour}. [40 CFR 60.4205(b)]

[Permit No. 0990234-032-AC/PSD-FL-413C.]

E.35. The following emission standards and limitations apply to E.U. ID No. 042, Emergency Generator - Administration (EPA Tier 1 certified):

a. HC Emissions. Hydrocarbon emissions shall not exceed 1.3 g/KW-hr or 1.0 g/HP-hr {equivalent to: 1.9 lbs/hour}. [40 CFR 60.4205(a)]
b. NOx Emissions. Nitrogen oxide emissions shall not exceed 9.2 g/KW-hr or 6.9 g/HP-hr {equivalent to: 13.8 lbs/hour}. [40 CFR 60.4205(a)]
c. CO Emissions. Carbon monoxide emissions shall not exceed 11.4 g/KW-hr or 8.5 g/HP-hr {equivalent to: 17.1 lbs/hour}. [40 CFR 60.4205(a)]
d. PM emissions. Particulate matter emissions shall not exceed 0.54 g/KW-hr or 0.40 g/HP-hr {equivalent to: 0.8 lbs/hour}. [40 CFR 60.4205(a)]

E.36. The following emission standards and limitations apply to E.U. ID No. 043, Emergency Generator - Materials Recovery Facility (MRF) (EPA Tier 2 certified):

a. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 6.4 g/KW-hr {equivalent to: 7.95 lbs/hour}. [40 CFR 60.4205(b)]
b. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 4.35 lbs/hour}. [40 CFR 60.4205(b)]
c. PM emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr {equivalent to: 0.25 lbs/hour}. [40 CFR 60.4205(b)]

E.37. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner or operator must meet the requirements of 40 CFR 89, 94 and/or 1068, as they apply. [40 CFR 60.4211(a)]

Monitoring of Operations

E.38. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Compliance Requirements

E.39. Compliance Requirements. Owner or operator must demonstrate compliance according to one of the methods below:

a. *Certification*. Have purchased an engine certified according to 40 CFR 89 or 94, as applicable, for the same model year and maximum engine power.
b. *Manufacturer Data*. Keep records of engine manufacturer data indicating compliance with the standards.
c. *Vendor Data*. Keep records of control device vendor data indicating compliance with the standards.
d. *Performance Test*. Conduct an initial performance test to demonstrate compliance with the emission standards according to the testing requirements in this section.
e. *Similar Engine Tests*. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

[40 CFR 60.4211(b)]

Testing Requirements

E.40. Performance Test. Performance test must be conducted according to the in-use testing procedures in 40 CFR 1039, Subpart F. [40 CFR 60.4212]

E.41. Engine Manufacturer's Recommendations and Instructions. If the owner/operator does not install, configure, operate, and maintain the engine according to the manufacturer's recommendations and instructions, any required testing shall be completed in accordance with 40 CFR 60, Subpart IIII. [40 CFR 60.4212.]

E.42. Not to exceed (NTE) Standards. Exhaust emissions from stationary CI ICE that are complying with the emission standards must not exceed the not to exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard, determined from the following equation: NTE = (1.25) x (Standard). [40 CFR 60.4212]

Recordkeeping Requirements

E.43. Required Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214]

E.44. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

NSPS 40 CFR 60, Subpart A & IIII Requirements

E.45. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. The applicable 40 CFR 60, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.4218 and are included in **Appendix 40 CFR 60 Subpart A**. [Rule 62-204.800(8)(d), F.A.C.]

E.46. 40 CFR 60 Requirements - Subpart IIII [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which have been adopted by reference in Rule 62-204.800(8), F.A.C. These emissions units shall comply with **Appendix 40 CFR 60 Subpart IIII "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 60, Subpart IIII. This appendix also contains useful information like definitions (see 40 CFR 60.4219) that are specific to engines regulated under 40 CFR 60 Subpart IIII. [Rule 62-204.800(8), F.A.C.]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 6: *"New" stationary CI RICE less than 175 HP*
E.U. ID No.	**Brief Description**
037	Emergency Generator - PBREP Scalehouse (EPA Tier 3 certified) (SWA of PBC ID# WTES-E1)
046	Emergency Generator - Landfill Scalehouse E2
047	Emergency Generator - MIS

{Permitting note: This part of the subsection addresses "new" stationary CI RICE less than 175 HP, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP and that have been modified, reconstructed or commenced construction on or after 6/12/2006 and have a 2007 or later model year. This RICE is not used as a fire pump.}

The following table provides important details for this emissions unit:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer / Model # / Engine Serial #
037	88.5	-[1]	-	Diesel	Emergency	1.1 (est.)	Caterpillar® D60-8S -
046	97.6	-[1]	-	Diesel	Emergency	4.4	Perkins® 1104D.E44TG1 T3 -
047	97.6	-[1]	-	Diesel	Emergency	4.4	Perkins® 1104D.E44TG1 T3 -

[1] Compliance Plan. These units were in the process of being purchased at the time the permit application had been submitted. The permittee shall notify the compliance office of the date when the unit was placed in service and when the readiness testing was completed. [Rule 62-213.440(2), F.A.C.; and, Applicant Request.]

Applicability

E.47. Applicability. Pursuant to 40 CFR 63.6590(c), these engines must comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of NSPS 40 CFR 60, Subpart IIII. Pursuant to 40 CFR 63.6590(c), no further requirements apply to the engine under 40 CFR 63, Subpart ZZZZ. [Rules 62-204.800(11) & (8), F.A.C.; and, 40 CFR 63.6590(c)]

Essential Potential to Emit (PTE) Parameters

E.48. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content*. The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel. {equivalent to: 0.0006 lb SO_2/hour}

b. *Cetane and Aromatic*. The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 60.4207(b) and 40 CFR 80.510(b)]

E.49. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 60.4211(f)(1)]

b. *Maintenance and Testing.* Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. [40 CFR 60.4211(f)(2)]

c. *Other Situations*. Each RICE cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. Each RICE may be operated for up to 50 hours per calendar year in non-emergency situations. [40 CFR 60.4211(f)(3)]

Emission Standards and Limitations

E.50. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 4.7 g/KW-hr {for E.U. ID No. 037 equivalent to: 0.22 + 0.68 lb/hour; for E.U. ID Nos. 046 & 047 equivalent to: 0.8 lb/hour}. [40 CFR 60.4205(b)]

E.51. CO Emissions. Carbon monoxide emissions shall not exceed 5.0 g/KW-hr {for E.U. ID No. 037 equivalent to: 0.73 lb/hour; for E.U. ID Nos. 046 & 047 equivalent to: 0.8 lb/hour}. [40 CFR 60.4205(b)]]

E.52. PM Emissions. Particulate matter emissions shall not exceed 0.40 g/KW-hr {for E.U. ID No. 037 equivalent to: 0.06 lb/hour; for E.U. ID Nos. 046 & 047 equivalent to: 0.1 lb/hour}. [40 CFR 60.4205(b)]

E.53. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engine according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. The owner or operator must meet the requirements of 40 CFR 89, 94 and/or 1068, as they apply. [40 CFR 60.4211(a)]

Monitoring of Operations

E.54. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Compliance Requirements

E.55. Compliance Requirements. Owner or operator must demonstrate compliance according to one of the methods below:

a. *Certification*. Have purchased an engine certified according to 40 CFR 89 or 94, as applicable, for the same model year and maximum engine power.

b. *Manufacturer Data*. Keep records of engine manufacturer data indicating compliance with the standards.

c. *Vendor Data*. Keep records of control device vendor data indicating compliance with the standards.

d. *Performance Test*. Conduct an initial performance test to demonstrate compliance with the emission standards according to the testing requirements in this section.

e. *Similar Engine Tests*. Keep records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

[40 CFR 60.4211(b)]

Testing Requirements

E.56. Performance Tests. Any performance tests conducted pursuant to 40 CFR 60, Subpart IIII must be according to the in-use testing procedures in 40 CFR 1039, Subpart F. [40 CFR 60.4212]

E.57. Engine Manufacturer's Recommendations and Instructions. If the owner/operator does not install, configure, operate, and maintain the engine according to the manufacturer's recommendations and instructions, any required testing shall be completed in accordance with 40 CFR 60, Subpart IIII. [40 CFR 60.4212.]

E.58. Not to exceed (NTE) Standards. Exhaust emissions from stationary CI ICE that are complying with the emission standards must not exceed the not to exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard, determined from the following equation: NTE = (1.25) x (Standard). [40 CFR 60.4212]

Recordkeeping Requirements

E.59. Required Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214]

E.60. Record Retention.
a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

NSPS 40 CFR 60, Subpart A & IIII Requirements

E.61. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. The applicable 40 CFR 60, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.4218 and are included in **Appendix 40 CFR 60 Subpart A**. [Rule 62-204.800(8)(d), F.A.C.]

E.62. 40 CFR 60 Requirements - Subpart IIII [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which have been adopted by reference in Rule 62-204.800(8), F.A.C. These emissions units shall comply with **Appendix 40 CFR 60 Subpart IIII "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 60, Subpart IIII. This appendix also contains useful information like definitions (see 40 CFR 60.4219) that are specific to engines regulated under 40 CFR 60 Subpart IIII. [Rule 62-204.800(8), F.A.C.]

The specific conditions in this part of the subsection apply to the following group of emissions units:

	Group 7: ***"New" stationary CI RICE fire pumps greater than or equal to 175 HP and less than or equal to 500 HP***
E.U. ID No.	**Brief Description**
031	Emergency Firewater Pump Engine A (351 HP) - PBREF No. 2 (EPA Tier 3 certified)
032	Emergency Firewater Pump Engine B (351 HP) - PBREF No. 2 (EPA Tier 3 certified)

These units are emergency fire pumps that provide emergency fire protection for the plant. The compression ignition reciprocating internal combustion engines used to power these fire pumps are fired on ultra-low sulfur diesel fuel.

These fire pumps are also regulated pursuant to Permit No. 0990234-032-AC/PSD-FL-413C.

Emissions from these engines are exhausted through vertical stacks with weather caps that are 12 feet in height, have an exit diameter of 6 inches, an exit flow rate of approximately 1,878 acfm, and an exit temperature of 817°F.

{Permitting note: This part of the subsection addresses "new" stationary CI RICE fire pumps greater than or equal to 175 HP and less than or equal to 500 HP, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP and that have been modified, reconstructed or commenced construction on or after 6/12/2006 and have a 2007 or later model year. This RICE is used as a fire pump.}

The following table provides important details for these emission units:

E.U. ID No.	Engine Brake HP	Date of Construction	Model Year	Primary Fuel	Type of Engine	Displacement liters/cylinder (l/c)	Manufacturer / Model # / Engine Serial #
031	351	2011	2011	Diesel	Emergency	1.5	John Deere/Clarke ® / JW6H-UFADD0 / -
032	351	2011	2011	Diesel	Emergency	1.5	John Deere/Clarke ® / JW6H-UFADD0 / -

Applicability

E.63. Applicability. Pursuant to 40 CFR 63.6590(c), these engines must comply with 40 CFR 63, Subpart ZZZZ by meeting the requirements of NSPS 40 CFR 60, Subpart IIII. Pursuant to 40 CFR 63.6590(c), no further requirements apply to the engine under 40 CFR 63, Subpart ZZZZ. [Rules 62-204.800(11) & (8), F.A.C.; and, 40 CFR 63.6590(c)]

Essential Potential to Emit (PTE) Parameters

E.64. Allowable Fuel. The stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel:

a. *Sulfur Content*. The sulfur content shall not exceed 15 ppm (0.0015% by weight) for non-road diesel fuel.
b. *Cetane and Aromatic*. The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.
c. *Use of Existing Fuel.* Any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.

[40 CFR 60.4207(b) and 40 CFR 80.510(c)]

E.65. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations.
b. *Maintenance and Testing.* These engines are authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year.
c. *Non-emergency Situations*. This engine may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing.

[40 CFR 60.4211(f)]

Emission Standards and Limitations

(apply to each fire pump)

E.66. NMHC + NOx Emissions. Non-methane hydrocarbons and nitrogen oxide emissions shall not exceed 4.0 g/KW-hr {equivalent to: 2.3 lbs/hour}. [40 CFR 60.4205(c); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

E.67. CO Emissions. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr {equivalent to: 2.0 lbs/hour}. [40 CFR 60.4205(c); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

E.68. PM Emissions. Particulate matter emissions shall not exceed 0.2 g/KW-hr {equivalent to: 0.12 lbs/hour}. [40 CFR 60.4205(c); and, Permit No. 0990234-032-AC/PSD-FL-413C.]

E.69. Operation and Maintenance. The owner or operator must operate and maintain the stationary CI internal combustion engines according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. This RICE must be maintained and operated to meet the emission standards over the entire life of the engine. [40 CFR 60.4206, 4211(a)(1), (2) & (3)]

Monitoring of Operations

E.70. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Compliance Requirements

E.71. Engine Certification Requirements. The owner or operator must comply with the emissions standards specified above by having purchased an engine certified by the manufacturer to meet those limits. The engine must have been installed and configured according to the manufacturer's emission-related specifications. [40 CFR 60.4211(c)]

E.72. Compliance Requirements Due to Loss of Certification. If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions.

In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. [40 CFR 60.4211(g)(2)]

Testing Requirements

E.73. Performance Test. Performance test must be conducted according to the in-use testing procedures in 40 CFR 1039, Subpart F. [40 CFR 60.4212]

Recordkeeping Requirements

E.74. Required Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214]

E.75. Maintenance Records.

a. Records of all required maintenance performed on the air pollution control and monitoring equipment.
b. The owner or operator must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the stationary RICE and after-treatment control device (if any) are operated and maintained according to its own maintenance plan.

[40 CFR 63.6655]

E.76. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

NSPS 40 CFR 60, Subpart A & IIII Requirements

E.77. NSPS Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart A, General Provisions, including:

40 CFR 60.7, Notification and Recordkeeping
40 CFR 60.8, Performance Tests
40 CFR 60.11, Compliance with Standards and Maintenance Requirements
40 CFR 60.12, Circumvention
40 CFR 60.13, Monitoring Requirements
40 CFR 60.19, General Notification and Reporting Requirements,

which have been adopted by reference in Rule 62-204.800(8)(d), F.A.C.; except that the Secretary is not the Administrator for purposes of 40 CFR 60.4, 40 CFR 60.8(b)(2) and (3), 40 CFR 60.11(e)(7) and (8), 40 CFR 60.13(g), (i) and (j)(2), and 40 CFR 60.16. The applicable 40 CFR 60, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.4218 and are included in **Appendix 40 CFR 60 Subpart A**. [Rule 62-204.800(8)(d), F.A.C.]

E.78. 40 CFR 60 Requirements - Subpart IIII [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which have been adopted by reference in Rule 62-204.800(8), F.A.C. These emissions units shall comply with **Appendix 40 CFR 60 Subpart IIII "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 60, Subpart IIII. This appendix also contains useful information like definitions (see 40 CFR 60.4219) that are specific to engines regulated under 40 CFR 60 Subpart IIII. [Rule 62-204.800(8), F.A.C.]

THE FOLLOWING SPECIFIC CONDITIONS APPLY TO ALL GROUPS OF EMISSIONS UNITS

Operation and Maintenance Requirements

{Permitting note: TABLE E-1. SUMMARY OF MAINTENANCE REQUIREMENTS FOR ENGINES, summarizes maintenance requirements under 40 CFR 63, Subpart ZZZZ for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Test Methods and Procedures

E.79. Common Testing Requirements. Any tests, if required, shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

Recordkeeping and Reporting Requirements

E.80. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440, F.A.C.]

NESHAP 40 CFR 63, Subpart A & ZZZZ Requirements

E.81. 40 CFR 63 Requirements - Subpart A. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart A, General Provisions, which have been adopted by reference in Rule 62-204.800(11)(d)1., F.A.C., except that the Secretary is not the Administrator for purposes of 40 CFR 63.5(e), 40 CFR 63.5(f), 40 CFR 63.6(g), 40 CFR 63.6(h)(9), 40 CFR 63.6(j), 40 CFR 63.13, and 40 CFR 63.14. The applicable 40 CFR 63, Subpart A, General Provisions to which these emissions are subject to are found at 40 CFR 63.6665 and are included in **Appendix 40 CFR 63 Subpart A**. [Rule 62-204.800(11)(d)1., F.A.C.]

E.82. 40 CFR 63 Requirements - Subpart ZZZZ [Generally Applicable Requirements]. These emissions units shall comply with all applicable requirements of 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), which have been adopted by reference in Rule 62-204.800(11)(b), F.A.C. These emissions units shall comply with **Appendix 40 CFR 63 Subpart ZZZZ "Generally Applicable Requirements,"** included with this permit, which includes applicable requirements that apply in general to all engines regulated under 40 CFR 63 Subpart ZZZZ. This appendix also contains useful information like provisions that are not delegated to state or local agencies (see 40 CFR 63.6670) and contains definitions (see 40 CFR 63.6675) that are specific to engines regulated under 40 CFR 63 Subpart ZZZZ. [Rule 62-204.800(11)(b), F.A.C.]

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Exhibit 4

Technical Support Document

For Final-Form Rulemaking
Environmental Quality Board
[25 Pa. Code Chs. 121 and 129]
Additional RACT requirements for Major Sources of NO_x and VOCs for the 2015 ozone NAAQS
(RACT III)

April 2022

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I. Introduction

The U.S. Environmental Protection Agency (EPA) is responsible for establishing National Ambient Air Quality Standards (NAAQS), which are maximum allowable concentrations in the ambient air for the following six pollutants: ground-level ozone; particulate matter; nitrogen dioxide (NO_2); carbon monoxide (CO); sulfur dioxide; and lead. These pollutants are identified as criteria pollutants by the EPA and are considered harmful to public health and welfare, including the environment. Section 109 of the Clean Air Act (CAA) (42 U.S.C.A. § 7409) established two types of NAAQS: primary standards, which are limits set to protect public health; and secondary standards, which are limits set to protect public welfare and the environment, including protection against visibility impairment and from damage to animals, crops, vegetation and buildings. The EPA established primary and secondary ground-level ozone NAAQS to protect public health and welfare.

Ground-level ozone is formed in the atmosphere by photochemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) in the presence of sunlight. In order to reduce ground-level ozone concentrations, the CAA (42 U.S.C.A. §§ 7401—7671q) requires control of sources of VOC and NO_x emissions to achieve emission reductions in nonattainment areas classified as "moderate" or higher. Among effective control measures, reasonably available control technology (RACT) air pollution controls significantly reduce VOC and NO_x emissions from major stationary sources. The CAA NO_X RACT requirements are described by the EPA in the "NO_x Supplement" notice titled, "State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble; Clean Air Act Amendments of 1990 Implementation of Title I; Proposed Rule." See 57 FR 55620, 55624 (November 25, 1992). In the NO_x Supplement notice, the EPA defined RACT as "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." *Id.* at 55624; See also 44 FR 53761, 53762 (September 17, 1979).

Section 110(a)(1) of the CAA (42 U.S.C.A. § 7410(a)) requires states to submit, within 3 years after the EPA's promulgation of a new or revised standard, a state implementation plan (SIP) revision meeting the applicable requirements of section 110(a)(2). Re-evaluation of RACT is required each time a revised ozone NAAQS is promulgated for nonattainment areas. Section 172(c)(1) of the CAA (42 U.S.C.A. § 7502(c)(1)), requires states to develop nonattainment plan provisions "as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at minimum of [RACT]) to provide for the attainment of the [NAAQS]."

A major source in an ozone nonattainment area is defined as any stationary source that emits or has the potential to emit (PTE) NO_x or VOC emissions above a certain applicability threshold that is based on the ozone nonattainment classification of the area: marginal, moderate, serious, or severe. Sections 182(b)(2) and 182(f)(1) of the CAA (42 U.S.C.A. §§ 7511a(b)(2) and 7511a(f)(1)) require states with moderate, or worse, ozone nonattainment areas to implement RACT controls on all stationary sources and source categories covered by a control techniques guidelines (CTG) document issued by the EPA, and on all major sources of VOC and NO_x emissions located in the nonattainment area. The EPA's CTGs establish presumptive RACT control recommendations for various VOC source categories. Presumptive RACT limits are category-wide requirements that are based on capabilities that are general to an emission source category. The CTGs typically identify a particular control level that the EPA recommends as RACT. In some cases, the EPA has issued Alternative Control Technique (ACT) guidelines primarily for NO_x source categories, which in contrast to the CTGs, only present a range for possible control options but do not identify any particular option as the presumptive norm for what is RACT. States are required to implement RACT for the source categories covered by CTGs through a SIP. States may opt to require alternative controls rather than following the recommendations in a CTG. See *NRDC v. EPA*, 571 F.3d 1245, 1254 (D.C. Cir. 2009).

The CAA amendments of 1990 introduced the requirement for existing major stationary sources of NO_x in nonattainment areas to install and operate NO_x RACT. Specifically, section 182(b)(2) of the CAA requires states to adopt RACT provisions for all major sources of VOC in ozone nonattainment areas and section 182(f) requires states to adopt RACT provisions for major stationary sources of NO_x.

Section 302 of the CAA (42 U.S.C.A. § 7602), defines a major stationary source as any facility which has the PTE 100 tons per year (TPY) of any air pollutant. For serious ozone nonattainment areas, a major source is defined by section 182(c) of the CAA as a source that has the PTE 50 TPY of NO_x. For severe ozone nonattainment areas, a major source is defined by section 182(d) of the CAA as a source that has the PTE 25 TPY of any pollutant.

The Ozone Transport Region (OTR) has special provisions for major sources because section 184(a) of the CAA (42 U.S.C.A. § 7511c(a)) requires areas in the OTR to be treated as moderate (or higher) ozone nonattainment. Therefore, in marginal and moderate nonattainment areas and attainment areas in the OTR, a major NO_x source is one with the PTE 100 TPY or more of NO_x. Because the entire Commonwealth is in the OTR and is treated as a moderate nonattainment area, RACT is applicable to major sources of NO_x emissions or VOC emissions, or both, Statewide.

II. 1971 Photochemical Oxidants NAAQS - 0.08 ppm and 1979 and 1993 Ozone NAAQS – 0.12 ppm, averaged over 1 hour (RACT I)

On April 30, 1971, the EPA promulgated primary and secondary NAAQS for photochemical oxidants under section 109 of the CAA. See 36 FR 8186 (April 30, 1971). These standards set an hourly average of 0.08 parts per million (ppm) total photochemical oxidants not to be exceeded more than 1 hour per year. On February 8, 1979, the EPA announced a revision to the then-current 1-hour standard. The EPA's final rulemaking revised the level of the primary 1-hour ozone standard from 0.08 ppm to 0.12 ppm and set the secondary standard identical to the primary standard. See 44 FR 8202 (February 8, 1979). This revised 1-hour standard was reaffirmed on March 9, 1993. See 58 FR 13008 (March 9, 1993).

Section 110(a) of the CAA gives states the primary responsibility for achieving the NAAQS. Section 110(a) of the CAA provides that each state must adopt and submit to the EPA a plan to implement measures (a SIP) to enforce the NAAQS or a revision to the NAAQS promulgated under section 109(b) of the CAA. A SIP includes the regulatory programs, actions and commitments a state will carry out to implement its responsibilities under the CAA. Once a component is approved by the EPA as a revision to the SIP, the SIP component is legally enforceable under both Federal and State law.

Section 182 of the CAA requires that, for areas that exceed the NAAQS for ozone, states must develop and implement a program that mandates that certain major stationary sources develop and implement a RACT program. Under sections 182(f)(1) and 184(b)(2) of the CAA, these RACT requirements are applicable to all sources in Pennsylvania that emit or have a PTE greater than 100 TPY of NO_x. Under sections 182(b)(2) and 184(b)(2) of the CAA, these RACT requirements are applicable to all sources in Pennsylvania that emit or have a PTE greater than 50 TPY of VOCs. NO_x and VOC controls are required Statewide because of the Commonwealth's inclusion in the OTR established by Congress under section 184(a) of the CAA. Additionally, because the five-county Philadelphia area was designated as severe ozone nonattainment for the 1-hour standard in 1979, sources of greater than 25 TPY of either pollutant were required to implement RACT under section 182(d) of the CAA.

Section 182(b)(2) of the CAA provides that for moderate ozone nonattainment areas, a state must revise its SIP to include RACT for sources of VOC emissions covered by a CTG issued by the EPA prior to the area's date of attainment; sources of VOC emissions covered by a CTG issued prior to November 15, 1990; and all other major stationary sources of VOC emissions located in the area. The EPA has issued RACT recommendations in the form of CTGs for approximately 25 to 30 classes of VOC sources. The CTGs cover many types of source categories, including large graphic arts facilities, industrial surface coating operations, petroleum refineries and gasoline marketing terminals. Over the years, the Department has established regulatory requirements consistent with the RACT recommendations of these CTGs, including establishment of source-specific emission limitations. These regulations include §§ 129.52—129.52e, 129.54—129.69, 129.71—129.75, 129.77, 129.101—129.107 and 129.301—129.310.

The Commonwealth's RACT regulations under §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs) (RACT I) were implemented Statewide in January 1994 for the 1979 and 1993 1-hour ozone standard. See 24 Pa.B. 467 (January 15, 1994). These regulations imposed a requirement that the owners and operators of sources and facilities emitting VOCs and NO_x determine if they are a major stationary source of VOCs or NO_x, or both. If a facility is a major stationary source for either or both of these pollutants, the owner and operator shall develop and submit a RACT proposal to the Department and to the EPA for approval. Sources subject to the EPA's New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) are required to comply with all applicable requirements including requirements and emission limitations that are more stringent than RACT requirements and RACT emission limitations.

Under § 129.92, owners and operators of certain major stationary source categories of NO_x, VOCs, or both, were required to perform a case-by-case RACT analysis using descending order of control effectiveness [top-down RACT analysis]. A top-down RACT analysis ranks the technically feasible air pollution control technologies from most effective control to least effective control. Each technically feasible air pollution control technology is then analyzed for economic feasibility (cost analysis). The highest ranking technically feasible air pollution control technology that is economically feasible is the air pollution control technology that is selected for installation and operation on the source. As an alternative, the final amendments under § 129.93 provided the option for owners and operators of certain specified categories of major NO_x emitting facilities to implement presumptive NO_x RACT requirements. The owners and operators of small industrial boilers were required to make appropriate adjustments to the combustion process to minimize NO_x emissions. The owners and operators of small combustion units and certain other classes of fossil fuel-burning equipment (<20 million Btu/hour) were required to operate the source in accordance with the manufacturer's specifications. The owners and operators of larger combustion units (equal to or greater than 20 million Btu/hour to < 50 million Btu/hour) were required to perform an annual tune-up and make adjustments to provide for a low NO_x emitting operation; and the owners and operators of very large coal-fired combustion units (equal to or greater than 100 million Btu/hour) were required to install a low NO_x burner system with separated overfire air (LNB-SOFA). See § 129.93. An additional alternative was provided under § 129.94 for the owners and operators of major NO_x emitting facilities to submit an averaging plan proposal instead of a case-by-case proposal for an alternative RACT requirement or RACT emission limitation to meet RACT I.

On February 1, 1994, the Department developed guidance for submitting RACT proposals for major NO_x sources which were required to determine the RACT for NO_x emissions on a case-by-case basis (Appendix 1). The guidance recommends that the RACT analysis should include a ranking of all applicable and available control technologies for the affected sources in descending order of control effectiveness. The applicant should examine the most stringent or "top" alternative. If the applicant could show that this top level of control for the source under review is technically or economically infeasible based on the EPA's Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, then the next most stringent level of control is determined and similarly evaluated. The analysis continues until the RACT level under consideration cannot be eliminated by any substantial or unique technical or economical objection.

In this guidance document, the Department indicated that most states have included presumptive limits for NO_x emissions in their regulations and control measures available to achieve these levels show a range of cost-effectiveness from about $570—1,500 per ton of NO_x emissions reduced. The guidance document also indicated that technologies available to meet the EPA's preliminary presumptive RACT levels for electric utility boilers show a range of cost-effectiveness from about $160—1,300 per ton of NO_x emissions reduced. The EPA document "Evaluation and Costing of NO_x Controls for Existing Utility Boilers in the NESCAUM Region," [EPA 453/R-92-010] shows that the control costs for LNB-SOFA vary from $270—1,590 per ton of NO_x emissions reduced depending on site-specific factors (such as the type of boiler, size of the boiler and the amount of use) (Appendix 2). The control measures available to achieve the levels established as presumptive RACT for utility boilers by other states show a range of cost-effectiveness from about $570—1,500 per ton of NO_x emissions reduced. Two NO_x RACT proposals, discussed in the guidance document (Appendix 1), using LNB-SOFA document costs of $1,222 and $1,298 per ton of NO_x emissions reduced.

Based on the above information, the Department used $1,500 per ton of NO_x emissions reduced as the benchmark cost at which consider the NO_x emissions control option to be cost-effective.

The Department suggested using $1,500 as the benchmark for NO_x emissions control options because it was comparable to but lower than the control cost for sources of VOCs (the other major ozone precursor) to comply with existing RACT regulations based on the EPA's guidelines. For VOCs, the cost-effectiveness benchmark of $3,000 per ton of VOC emissions reduced was used.

Under §§ 129.91—129.95, case-by-case RACT determinations for approximately 600 facilities were made for attaining and maintaining the 1-hour ozone standard and were submitted to the EPA as RACT SIP revisions. The case-by-case analysis process began in 1995 and was not completed until 2006 due to the need for EPA approval of SIP submittals for the case-by-case RACT determinations. Many facility owners and operators had to hire consultants or additional staff to complete their case-by-case RACT analyses and proposals and handle the permitting requirements. The Department has added more presumptive requirements and emissions limitations under §§ 129.96—129.100 and §§ 129.111—129.115 to provide the subject owners and operators with options to comply without going through the resource intensive and sometimes costly case-by-case process.

III. 1997 Ozone NAAQS – 0.08 ppm and 2008 Ozone NAAQS - 0.075 ppm, averaged over 8 hours (RACT II)

On July 18, 1997, the EPA concluded that revisions to the then-current 1-hour ozone primary standard to provide increased public health protection were appropriate at this time to protect public health with an adequate margin of safety. Further, the EPA determined that it was appropriate to establish a primary standard of 0.08 ppm averaged over 8 hours. The EPA also established a secondary standard equal to the primary standard. See 62 FR 38856 (July 18, 1997). In 2004, the EPA designated 37 counties in this Commonwealth as 8-hour ozone nonattainment areas for the 1997 8-hour ozone NAAQS. See 69 FR 23858, 23931 (April 30, 2004).

On March 27, 2008, the EPA lowered the primary and secondary 8-hour ozone standards from 0.08 ppm to 0.075 ppm. See 73 FR 16436 (March 27, 2008). The EPA made designations for the 2008 8-hour ozone standards on April 30, 2012, with an effective date of July 20, 2012. The EPA designated all or portions of Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland counties as nonattainment for the 2008 8-hour ozone NAAQS, with the rest of this Commonwealth designated as unclassifiable/attainment. See 77 FR 30088, 30143 (May 21, 2012). The EPA's 2008 ozone implementation rule required the Department to submit a SIP revision that met the RACT requirements of section 184(b)(2) of the CAA for the entire Commonwealth. See 40 CFR 51.1112 and 51.1116.

The Commonwealth's RACT regulations under §§ 129.96—129.100 (relating to additional RACT requirements for major sources of NO_x and VOCs) (RACT II) were implemented in April 2016, for the 1997 and 2008 8-hour ozone standards. See 46 Pa.B. 2036 (April 23, 2016). The Department's final-form rulemaking established requirements for the implementation of specified RACT control measures for the nine identified source types for attaining and maintaining the 1997 and 2008 8-hour ozone standards. The Department used a top-down approach to determine presumptive NO_x and VOC RACT emissions limits for various source categories. This included searching for and identifying the best methodology, technique, technology or other means for reducing NO_x or VOC emissions while factoring environmental, energy and economic considerations into the analysis. The Department contacted various vendors and reviewed the EPA's CTG and ACT documents. The Department also identified controls installed on existing air contaminant sources in this Commonwealth and identical air contaminant sources in other states. The Department estimated the capital, installation and annual operating costs using the EPA's OAQPS and Control Cost Manual (Sixth edition) and vendor's quotes, as well as input from independent entities such as the PJM Interconnection.

The Department used a specific dollar value per ton of NO_x or VOC emissions reduced as a benchmark to consider a specific control technology's cost-effectiveness. In the absence of guidance for cost-effectiveness benchmark cut-off limits during the RACT II development, the Department determined the cost-effectiveness benchmark number based on the EPA's approved cost-effectiveness benchmark values in the 1990 RACT implementation guidance and used the United States Bureau of Labor Statistics Consumer Price Index (CPI) to calculate the new cost-effectiveness benchmarks. The Department evaluated various NO_x and VOC control technologies for technical and economical feasibility. The Department did not establish a bright-line cost-effectiveness threshold to determine the economic feasibility for implementation of the RACT II requirements. See 57 FR 18074 (April 28, 1992). The Department had used cost-effectiveness benchmarks of $1,500 and $3,000 per ton of NO_x and VOC emissions reduced, respectively, in 1990 dollars, for the implementation of the RACT I requirements for the 1979 1-hour ozone NAAQS in §§ 129.91—129.95. The Department used the CPI and adjusted the $1,500 in 1990 dollars to $2,754 in 2014 dollars. The Department used a NO_x emission control cost-effectiveness upper bound of $2,800 per ton of NO_x emissions reduced and $5,500 per ton of VOC emissions reduced.

Based on the uncontrolled emission rates and control efficiency of technically and economically feasible control options, the Department determined the presumptive RACT II emission limits for NO_x and VOCs. The RACT II final-form rulemaking also incorporated operational flexibility, including the option to request approval to use facility-wide or system-wide NO_X emissions averaging, a source-specific NO_x or VOC emission limitation, or a source-specific NO_x RACT or VOC RACT requirement as alternative methods of compliance. See 25 Pa. Code §§ 129.98—129.99.

The Department determined that certain add-on control technologies represented RACT for the 1997 and 2008 8-hour ozone NAAQS for nine existing source categories that did not have presumptive RACT requirements or emission limitations specified elsewhere in Chapter 129. These nine source categories included combustion units; boilers; process heaters; turbines; stationary internal combustion engines; municipal solid waste landfills; municipal waste combustors (MWCs); cement kilns; and certain other sources that were not regulated elsewhere under Chapter 129. The RACT II final-form rulemaking amended Chapter 129 to adopt presumptive RACT requirements and RACT emission limitations for certain major stationary NO_x and VOC emissions that were subject to § 129.96. See 25 Pa. Code § 129.97 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule).

IV. 2015 Ozone NAAQS - 0.070 ppm averaged over 8 hours (RACT III)

On October 26, 2015, the EPA lowered the primary and secondary 8-hour ozone standards from 0.075 ppm to 0.070 ppm. See 80 FR 65292 (October 26, 2015). The EPA issued the 2015 ozone implementation rule on December 6, 2018 (83 FR 62998). See 40 CFR 51.1306—51.1318. The EPA's 2015 ozone implementation rule requires the Department to submit a SIP revision that meets the RACT requirements of section 184(b)(2) of the CAA for the entire Commonwealth. See 40 CFR 51.1312 and 51.1316.

On *******, 2022 [Date of publication], the Environmental Quality Board amended Chapters 121 and 129 (relating to general provisions; and standards for sources) with additional RACT requirements for major sources of NO_X and VOCs for the 2015 ozone NAAQS. See _ Pa.B. _. The amendments to § 121.1 and the substantive provisions in §§ 129.111—129.115 implement RACT requirements for the 2015 8-hour ozone NAAQS.

(A) Applicability:

The RACT III regulations established in §§ 129.111—129.115 are applicable to the owner and operator of a "major NO_x emitting facility" or a "major VOC emitting facility," or both, in this Commonwealth, that commenced operation on or before August 3, 2018. The owner and operator of a source or facility that commenced operation on or before August 3, 2018, that was not a major NO_x emitting facility or a major VOC emitting facility, but installed a source after August 3, 2018, or made a modification after August 3, 2018, to a source that commenced operation on or before August 3, 2018, that results in the source or the facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility is also subject to the RACT III regulations.

The owner and operator of a facility that commenced operation on or before August 3, 2018, that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022, is not subject to §§ 129.111—129.115. See § 129.111(d). However, if the owner or operator of a facility that complied with § 129.111(d) meets the definition of a major NO_x emitting facility or a major VOC emitting facility after December 31, 2022, then the owner and operator shall comply with the applicable requirements of §§ 129.111—129.115.

Owners and operators of facilities that are major facilities solely for NO_x emissions are only subject to the NO_x RACT requirements. Likewise, owners and operators of facilities that are major facilities solely for VOC emissions are only subject to the VOC RACT requirements. The Statewide RACT III applicability thresholds for NO_x and VOC are 100 and 50 TPY, respectively, and 25 TPY, respectively, for major facilities located in Bucks, Chester, Delaware, Montgomery or Philadelphia County.

The RACT III regulations do not apply to sources that have a PTE less than 1 ton of NO_x or 1 ton of VOC, or both, as applicable, on a 12-month rolling basis. [25 Pa. Code § 129.111].

(B) Presumptive RACT source categories and determination of RACT for the 2015 8-hour ozone NAAQS (RACT III):

It is not possible to provide a precise presumptive RACT NO_x or VOC emission limit for each individual source, or estimate the control costs that may be incurred by the owner or operator, due to the wide range of source types, their size, type of fuel burned and operating characteristics located in this Commonwealth. Therefore, the Department has categorized the existing and affected sources into various source categories to evaluate, analyze and determine the presumptive RACT NO_x or VOC, or both, emissions limitations and requirements. These categories include combustion units and process heaters; municipal solid waste landfills; MWCs; turbines; stationary internal combustion engines; cement kilns; glass melting furnaces; lime kilns; direct-fired heaters, furnaces, ovens and other combustion sources; and other sources that are not regulated elsewhere under Chapter 129.

The Department used a top-down approach in determining presumptive NO_x or VOC, or both, RACT emissions limitations for various source categories. This approach included searching and identifying the reasonably available controls, methodology, techniques, technologies or other means for reducing NO_x or VOC emissions, while factoring technical and economic feasibility considerations into the analysis. The Department reviewed the 2015 ozone implementation rule and EPA guidance documents about air pollution control technologies and associated costs, contacted various vendors for estimated costs for specific technologies, and engaged with neighboring states to learn about their RACT III regulations.

The Department evaluated NO_x control technologies such as Low NO_x Burner (LNB), Dry Low NO_x Combustor (DLNC), Low Emission Combustion (LEC), Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), and Non-Selective Catalytic Reduction (NSCR) as well as Oxidation Catalyst VOC control technology.

LNB technology reduces NO_x emission by accomplishing the combustion process in stages. Staging partially delays the combustion process, resulting in a cooler flame which suppresses thermal NO_x formation. The two most common types of LNB technology applied to natural gas-fired boilers are staged air burners and staged fuel burners. LNB retrofits typically achieve NO_x emissions reductions in the range of 50%.

DLNC technology involves increasing the air-to-fuel ratio of the mixture so that the peak and average temperatures within the combustor will be less than that of the stoichiometric mixture, thus suppressing thermal NO_x formation. Introducing excess air not only creates a leaner mixture but it also can reduce residence time at peak temperatures. NO_x emissions reductions of up to 30% are achieved using lean primary zone combustion, without increasing CO emissions.

LEC technology achieves lower NO_x emissions by providing sufficient excess air to reduce the maximum combustion temperature and minimize NO_x formation. NO_x emissions from natural gas combustion are formed from nitrogen and oxygen in the combustion air and emissions of NO_x increase significantly at higher combustion temperatures. Engine manufacturers and regulatory agencies use the term "LEC" broadly and a number of technology approaches can be used depending on the type of engine and the NO_x emissions limitation. In many cases, multiple

LEC-related technologies may be required (for example, additional air through new or upgraded turbocharging, higher energy ignition/pre-combustion chambers, and enhanced mixing). NO_x emissions reductions of 30—50% are achieved using lean primary zone combustion without increasing CO emissions.

SCR systems selectively reduce NO_x emissions by injecting ammonia (NH_3) into the exhaust gas stream upstream of a catalyst. NO_x, NH_3 and oxygen (O_2) react on the surface of the catalyst to form nitrogen (N_2) and water (H_2O). The exhaust gas must contain a minimum amount of O_2 and be within a particular temperature range (typically 450°F to 850°F) in order for the SCR system to operate properly. The temperature range is dictated by the catalyst material which is typically made from noble metals, including base metal oxides such as vanadium and titanium, or zeolite-based material. The removal efficiency of an SCR system in good working order is typically from 65—90%. Exhaust gas temperatures greater than the upper limit (850°F) cause NO_x and NH_3 to pass through the catalyst unreacted. Ammonia emissions, called NH_3 slip, may be a consideration when specifying an SCR system.

SNCR technology is a post combustion emissions control technology for reducing NO_x by injecting ammonia or urea into the furnace at a properly determined location without the need of a catalyst. Combustion units with furnace exit temperatures of 1550—1950°F, residence times of greater than 1 second, and high levels of uncontrolled NO_x are required for higher control efficiencies. SNCR technology reduction efficiencies vary over a wide range. Temperature, residence time, type of NO_x reducing reagent, reagent injection rate, uncontrolled NO_x level, distribution of the reagent in the flue gas, and CO and O_2 concentrations all affect the reduction efficiency of the SNCR technology. The median (as a measure of average) reductions for urea-based SNCR systems in various industry source categories range from 25—60%, while median reductions for ammonia-based SNCR systems range from 61—65%.

NSCR technology uses the residual hydrocarbons and CO in the rich-burn engine exhaust as a reducing agent for NO_x. In an NSCR system, hydrocarbons and CO are oxidized by O_2 and NO_x. The excess hydrocarbons, CO, and NO_x pass over a catalyst (usually a noble metal such as platinum, rhodium, or palladium) that oxidizes the excess hydrocarbons and CO to H_2O and CO_2, while reducing NO_x to N_2. NO_x reduction efficiencies are usually greater than 90%, while CO reduction efficiencies are approximately 90%. The NSCR technology is effectively limited to engines with normal exhaust O_2 levels of 4% or less. This includes 4-stroke rich-burn naturally aspirated engines and some 4-stroke rich-burn turbocharged engines. Engines operating with NSCR systems require tight air-to-fuel control to maintain high NO_x emissions reduction effectiveness without high hydrocarbon emissions. To achieve effective NO_x emissions reduction performance, the engine may need to be run with a richer fuel adjustment than normal. This exhaust excess O_2 level would probably be closer to 1%. Lean-burn engines cannot be retrofitted with NSCR technology because of the reduced exhaust temperatures.

Oxidation catalysts (or two-way catalytic converters) are used to reduce hydrocarbon and CO emissions. Specifically, oxidation catalysts are effective for the control of CO, non-methane hydrocarbons, VOCs, and formaldehyde and other hazardous air pollutants. Oxidation catalysts consist of a substrate made up of thousands of small channels. Each channel is coated with a highly porous layer containing precious metal catalysts, such as platinum or palladium. As exhaust gas travels down the channel, hydrocarbons and CO react with O_2 within the porous catalyst layer to form CO_2 and water vapor. The resulting gases then exit the channels and flow through the rest of the exhaust system. Use of an oxidation catalyst can reduce VOC emissions by 50—60%.

After gathering this data, the Department ranked all available control technologies in the order of their control effectiveness. After finding the most effective controls in the list, the Department evaluated the most stringent control for technical and economic feasibility. The Department eliminated the most stringent control and analyzed the second-most stringent control in the list if the most stringent control was determined to be technically infeasible or economically cost-prohibitive. The Department then reviewed the existing allowable NO_x or VOC emissions limitations and actual emissions monitoring test data to establish a baseline emission level to determine economic feasibility for emission controls for this final-form RACT III rulemaking.

After ranking the available control technologies and establishing the baseline emission levels, the Department conducted a generic cost analysis for sources in each source category subject to presumptive NO_x or VOC, or both, RACT emissions limitations to determine if additional NO_x or VOC, or both, controls would represent RACT for the 2015 8-hour ozone NAAQS. The Department performed cost analyses using guidance provided in the EPA Air Pollution Control Cost Manual, EPA/452/B-02- 001, 6th edition, January 2002 and the 7th edition, issued beginning in 2019, vendor's quotes, and cost data compiled from previous installations inside and outside of the Commonwealth. The cost analyses include the total capital investment of the add-on control equipment, the annual operating costs of the add-on control, and the cost-effectiveness of the control in reducing emissions from the source. Capital investments include costs associated with purchased equipment, installation, monitoring equipment, delivery, start-up and initial testing and taxes. Direct annual costs include the costs of electricity or fuel to operate the add-on control and the monitoring equipment, if needed, maintenance and repair costs. Indirect annual costs include overhead, administrative cost, property taxes, insurance and capital recovery cost. In accordance with the EPA's guidance in the Control Cost Manual, 7th edition (revised in 2019), the Department used equipment life for SCR at 30 years, for SNCR and other control equipment at 20 years and an annual interest rate of 5.5% to calculate the capital cost recovery factor. The capital cost recovery factor is added to the annual cost to determine annualized cost. The cost-effectiveness of the control is calculated by dividing the annualized costs of the add-on control by the amount of emissions reductions achieved annually from operation of the add-on control.

The Department adjusted the RACT II cost benchmarks of $2,800 and $5,500 per ton of NO_x or VOC emissions reduced, respectively, by multiplying by the CPI differential between 2014 and 2020 to arrive at benchmarks of $3,000 and $6,000 per ton of NO_x or VOC emissions reduced, respectively, for RACT III. The Department further adjusted the cost-effectiveness benchmarks to $3,750 per ton of NO_x emission reduced and $7,500 per ton of VOC emissions reduced to ensure the implementation of RACT-level controls similar to what was done for RACT II. See 46 Pa.B. 2044 (April 23, 2016). The Department determined that the presumptive RACT limitations included in this RACT III final-form rulemaking are reasonable as they reflect control levels achieved by the application and consideration of available control technologies, after considering both the technological and economic circumstances of certain source categories in this Commonwealth. Using these cost-effectiveness benchmarks as a guide, the Department evaluated technically feasible emissions controls for the regulated sources for cost-effectiveness and economic feasibility. The Department additionally considered the RACT guidance on economic feasibility from the EPA, which stated in part that, "*economic feasibility for RACT purposes is largely determined by evidence that other sources in a source category have in fact applied the control technology in question*." And also, "*States may give substantial weight to cost effectiveness in evaluating the economic feasibility of an emission reduction technology*." See 57 FR 18074 (April 28, 1992).

Using the uncontrolled emissions rates of the subject major source categories and the control efficiency of technically and economically feasible control options, the Department determined the presumptive RACT emissions limitations for certain major stationary source categories of NO_x and VOC emissions. The Department also compared these presumptive RACT emissions limitations to presumptive RACT emissions limitations established by other states for similar major stationary source categories.

Compliance costs may vary for the owner and operator of each source or facility depending on the source size, type, operation limitation and which control option is selected by the owner and operator of the affected source or facility. Memorandum from Roger Strelow, Assistant Administrator for Air and Waste, USEPA, to Regional Administrators I-X, "Guidance for determining Acceptability of SIP Regulations in Non-Attainment Areas" (December 9, 1976) at 2, available at: https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19761209_strelow_ract.pdf; see 57 FR 18070, 18073—18074 (April 28, 1992) and 44 FR 53761, 53762—53763 (September 17, 1979); see also *Nat'l Steel Corp., Great Lakes Steel Div. v. Gorsuch*, 700 F.2d 314, 322–323 (6th Cir. 1983). An owner or operator of an affected source that cannot meet the applicable presumptive RACT emissions limitation may participate in either a facility-wide or system-wide NO_x emissions averaging program under final-form § 129.113 or propose an alternative NO_x or VOC emissions limitation or requirement, or both, on a case-by-case basis under final-form § 129.114.

(C) RACT analysis and proposed NO_x and VOC RACT emission limitations for small source categories:

Combustion units or process heaters with a rated heat input equal to or greater than 20 million Btu/hour and less than 50 million Btu/hour:

The Department evaluated LNB technology for NO_x emissions reduction and oxidation catalyst technology for VOC emission reduction for combustion units or process heaters with a rated heat input equal to or greater than 20 million Btu/hour and less than 50 million Btu/hour. The Department determined that the cost-effectiveness of LNB technology ranges from approximately \$3,536—8,841 per ton of NO_x emissions reduced and from approximately \$260,750—651,876 per ton of VOC emissions reduced. See Appendix 3. The Department determined that the installation and operation of LNB and oxidation catalyst control technology options on these combustion units and process heaters to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced and \$7,500 per ton of VOC emissions reduced. The benchmark is not a hard bright-line number. In this case, the very low end of the range dips slightly under the benchmark. The Department has used its discretion to determine that the installation and operation of LNB and oxidation catalyst control technology on these combustion units and process heaters is not cost-effective.

Therefore, the Department has established in this final-form rulemaking that the existing biennial tune-up requirements in accordance with 40 CFR Part 63, Subpart 63.11223, established in 25 Pa. Code § 129.97(b)(1) continue to represent RACT for combustion units or process heaters with a rated heat input equal to or greater than 20 million Btu/hour and less than 50 million Btu/hour. [25 Pa. Code § 129.112(b)(1)(i)].

Insignificant NO_x and VOC emitting source categories:

The Department evaluated LNB, SCR and SNCR technologies for NO_x emissions reduction and oxidation catalyst technology for VOC emission reduction for insignificant NO_x and VOC emitting source categories.

The Department performed a cost-effectiveness analysis for a 50 million Btu/hour combustion unit with an uncontrolled NO_x emissions rate of 5.0 TPY using reference cost data for LNB technology and determined the cost-effectiveness to be approximately $30,981 per ton of NO_x emissions reduced. The Department also performed a cost-effectiveness analysis for a 50 million Btu/hour combustion unit with an uncontrolled VOC emissions rate of 2.7 TPY using reference cost data for oxidation catalyst technology and determined the cost-effectiveness to be approximately $76,139 per ton of VOC emissions reduced. See Appendix 4. The Department determined that the installation and operation of LNB and oxidation catalyst control technology options on these combustion units and process heaters to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced and $7,500 per ton of VOC emissions reduced.

Using the results of the above cost analysis, the Department determined that operation of NO_x and VOC emitting sources with PTE less than 5 TPY of NO_x and less than 2.7 TPY of VOC, respectively, with no add-on or inherent NO_x or VOC controls as established in 25 Pa. Code § 129.97(c)(1) and (2) remains RACT for these sources for the 2015 8-hour ozone NAAQS.

Therefore, the Department has established in this final-form rulemaking that the owners and operators of subject units in the source categories below shall continue to comply with the presumptive RACT requirements established in 25 Pa. Code § 129.97(c)(1) and (2) of installation, maintenance, and operation of the source in accordance with the manufacturer's specifications and with good operating practices, as listed below. [25 Pa. Code § 129.112(c)(1)—(11)].

- A NO_x air contamination source that has the potential to emit less than 5 TPY of NO_x
- A VOC air contamination source that has the potential to emit less than 2.7 TPY of VOC
- A natural gas compression and transmission facility fugitive VOC air contamination source that has the potential to emit less than 2.7 TPY of VOC
- A boiler or other combustion source with an individual rated gross heat input less than 20 million Btu/hour

- A combustion turbine with a rated output less than 1,000 bhp
- A lean burn stationary internal combustion engine rated at less than 500 bhp (gross)
- A rich burn stationary internal combustion engine rated at less than 100 bhp (gross)
- An incinerator, thermal oxidizer, catalytic oxidizer or flare used primarily for air pollution control
- A fuel-burning unit with an annual capacity factor of less than 5%
- An emergency standby engine operating less than 500 hours in a 12-month rolling period
- An electric arc furnace

The Department has also established in this final-form rulemaking that the owners and operators of subject units in the source categories below shall comply with the presumptive RACT requirements of installation, maintenance, and operation of the source in accordance with the manufacturer's specifications and with good operating practices for control of the VOC emissions from the combustion unit or combustion source, as listed below. [25 Pa. Code § 129.112(d)].

- combustion unit
- brick kiln
- cement kiln
- lime kiln
- glass melting furnace
- combustion source

(D) Municipal Solid Waste (MSW) Landfills:

The Department has established in this final-form rulemaking that the owner and operator of a MSW landfill constructed, reconstructed or modified on or before July 17, 2014, and have not been modified or reconstructed since July 17, 2014, shall comply with the Federal Plan for Municipal Solid Waste Landfills in 40 CFR Part 62, Subpart OOO. The Federal Plan specifies control of collected MSW landfill emissions through the use of control devices meeting at least one of the following provisions: (1) A non-enclosed flare designed and operated in accordance with the parameters established in § 60.18; or (2) A control system designed and operated to reduce nonmethane organic carbon emissions (NMOC) by 98% by weight; or (3) An enclosed combustor designed and operated to reduce the outlet NMOC concentration to 20 ppm as hexane by volume, dry basis at 3% oxygen, or less. These control requirements are consistent with § 60.752 and § 60.33f. Therefore, the existing requirements continue to represent RACT. [25 Pa. Code § 129.112(e)(1)].

The Department has also established in this final-form rulemaking that the owner and operator of a MSW landfill constructed, reconstructed or modified on or after July 18, 2014, shall comply with the New Source Performance Standards in 40 CFR Part 60, Subpart XXX (relating to standards of performance for municipal solid waste landfills). The control of collected MSW landfill emissions through the use of control devices meeting at least one of the following provisions: (1) An open flare designed and operated in accordance with the parameters established in § 60.18; or (2) A control system designed and operated to reduce NMOC by 98% by weight; or (3) An enclosed combustor designed and operated to reduce the outlet NMOC concentration to 20 ppm as hexane by volume, dry basis at 3% oxygen, or less. These control requirements are consistent with § 60.762 and are adopted and incorporated by reference in § 122.3. [25 Pa. Code § 129.112(e)(2)].

The EPA issues guidance, in the form of a CTG, in place of regulations where the guidelines will be "substantially as effective as regulations" in reducing VOC emissions from a product or source category in ozone nonattainment areas. On October 27, 2016, the EPA issued the Control Techniques Guidelines for the Oil and Natural Gas Industry (EPA 453/B–16–001) (O&G CTG) which provided information to assist states in determining what constitutes RACT for VOC emissions from select oil and natural gas industry emission sources. See 81 FR 74798 (October 27, 2016). The EPA requires the owner or operator of a subject source to reduce VOC emissions by 95.0% by weight or greater by routing emissions to a control device such as a flare. This final-form rulemaking requires VOC emissions to be routed to a flare or other control device that achieves reductions of VOC emissions of at least 98% by weight, which is greater than the 95.0% by weight control that the EPA identified in the O&G CTG as consistent with section 111 of the CAA.

(E) Municipal Waste Combustors:

The Department studied several references to evaluate various NO_x control technologies and permitted NO_x emissions rates for existing MWCs. The study included various permitted MWCs in other states and also a June 2021 "Municipal Waste Combustor Workgroup Report" prepared by the Ozone Transport Commission (OTC) Stationary and Area Sources (SAS) Committee (OTC SAS Report).

Appendix A of the OTC SAS Report, regarding "OTR Large MWC Actual and Proposed Emissions," lists NO_x emissions limits in parts per million by volume, dry basis (ppmvd) for various large size MWCs operating in various OTR states as follows:

State	Permit NO_x limit range (ppmvd)
CT	120 - 150
MD	140 - 150
MA	146-150
ME	180 - 230
NH	205
NJ	150
NY	150 - 205
PA	135 - 180
VA	110

Several OTR states have proposed or revised NO_x RACT emission rate standards for large MWCs. New Jersey adopted a regulation that established a NO_x RACT emission rate of 150 ppmvd as determined on a calendar day average. Massachusetts and Maryland established a NO_x RACT emissions rate of 150 ppmvd for large MWCs. Connecticut adopted a 150 ppmvd limit for mass burn waterwall combustors on a 24-hour daily average.

The Department evaluated SCR technology for combustors firing municipal waste and found that performance of SCR can be detrimentally affected if the catalyst becomes de-activated due to poisoning or masking. Catalyst poisoning can occur if the catalyst is exposed to sufficient amounts of certain heavy metals that are present in the flue gas as a result of MSW combustion. Catalyst masking can occur when the catalyst surface becomes coated with a foreign material, preventing the flue gas from physically coming into contact with the catalyst. The Department also evaluated whether any existing MWCs in the OTR are equipped with SCR, but could not identify any. Therefore, the Department determined that adding SCR NO_x emissions control technology would likely not be considered RACT because of its technical infeasibility.

Appendices 5 and 6 provide an analysis of cost to control NO_x emissions from MWCs based on the Department's review of cost data for a reference MWC in Olmstead, Minnesota and of emissions monitoring data from calendar years 2018 and 2019 for the 19 MWCs located in this Commonwealth. Ten MWCs in this Commonwealth are equipped with SNCR controls and these ten MWCs are permitted with an allowable NO_x emissions rate between 135—180 ppmvd @ 7% oxygen. Nine MWCs in this Commonwealth are operating without SNCR controls and are permitted with an allowable NO_x emissions rate of 180 ppmvd @ 7% oxygen.

The Department evaluated the cost-effectiveness for operating SNCR controls on uncontrolled MWCs using an estimated throughput of 500 tons per day (tpd) of municipal waste and year 2007 control cost data adjusted to 2020 dollars from the reference MWC located in Olmstead, Minnesota. The Department found that the cost-effectiveness to retrofit uncontrolled MWCs with SNCR controls operating with 40% NO_x emissions reduction efficiency to a limitation of 110 ppmvd @ 7% oxygen is approximately \$2,465 per ton of NO_x emissions reduced and, therefore is an economically feasible option for MWCs located in this Commonwealth compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced. See Appendix 5.

The Department analyzed Continuous Emission Monitoring System (CEMS) data from the years 2018 and 2019 for NO_x emissions from the 19 MWCs located in this Commonwealth. The Department determined that MWCs equipped with SNCR controls are capable of achieving an emissions rate limitation of 110 ppmvd NO_x @ 7% oxygen using a daily average. See Appendix 6.

The Department also reviewed the June 2021 OTC SAS Report. The OTC SAS workgroup performed a cost analysis for installation and operation of LNB technology on an MWC controlled with SNCR with a baseline NO_x emissions rate of 180 ppmvd. The OTC SAS workgroup estimated the cost-effectiveness for installation and operation of LNB technology in conjunction with the SNCR at \$3,204 per ton of NO_x emissions reduced with a post-control NO_x emissions rate of 110 ppmvd. The OTC SAS workgroup concluded that based on the workgroup's cost analysis for LNB technology and its review of engineering studies of similar MWCs in the OTR, a control level of 110 ppmvd on a 24-hour averaging period is likely achievable for most large MWCs in the OTR. The Department's cost-effectiveness result of approximately \$2,465 per ton of NO_x emissions reduced for operating SNCR controls compares favorably with the OTC SAS workgroup's cost-effectiveness result of \$3,204 per ton of NO_x emissions reduced for the installation of LNB technology. The Department's analysis of CEMS data and the OTC SAS workgoup's review of engineering studies both support the conclusion that a control level of 110 ppmvd @ 7% oxygen using a daily average basis is achievable for the large MWCs located in this Commonwealth.

Based on the Department's review of NO_x emissions data from the MWCs located in this Commonwealth, the Department's independent cost-effectiveness analysis, and the information contained in the OTC SAS workgroup's report, the Department has established in this final-form rulemaking that the owner and operator of an MWC subject to § 129.111 shall comply with the presumptive RACT emission limitation of 110 ppmvd NO_x @ 7% oxygen. [25 Pa. Code § 129.112(f)]. The owners and operators of MWCs equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average will be considered valid if it contains at least 18 valid hourly averages reported at any time during the calendar day as required in the Quality Assurance Section of the Department's Continuous Source Monitoring Manual. [25 Pa. Code § 129.115(b)(3)].

(F) Combustion Units or Process Heaters:

Presumptive NO_x RACT requirements for a natural gas-fired, propane-fired or liquid petroleum gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour:

Most natural gas-fired, propane-fired or liquid petroleum gas-fired combustion units or process heaters with a rated heat input equal to or greater than 50 million Btu/hour are equipped with LNB technology. The Department analyzed stack test data for combustion units or process heaters in this size range that demonstrate NO_x emission rates as high as 0.99 lb NO_x/million Btu heat input. The Department evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from $8,905—18,334 per ton of NO_x emissions reduced. See Appendix 7. The Department determined the installation and operation of SCR control technology on these combustion units and process heaters to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas-fired, propane-fired or liquid petroleum gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall continue to comply with the existing presumptive RACT emission limitation of 0.10 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(g)(1)(i)]. The owners and operators of subject combustion units and process heaters equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

Presumptive NO_x RACT requirements for a distillate oil-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour:

Most oil-fired combustion units or process heaters located in this Commonwealth with a rated heat input equal to or greater than 50 million Btu/hour units are equipped with LNB technology. The Department analyzed stack test data for distillate oil-fired combustion units or process heaters in this size range that demonstrate NO_x emission rates as high as 0.11 lb NO_x/million Btu heat input. This demonstrated emission rate of 0.11 lb NO_x/million Btu heat input is indicative of tight compliance with the RACT II presumptive NO_x limit of 0.12 lb NO_x/million Btu heat input established in 25 Pa. Code § 129.97(g)(1)(ii). The Department evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from $6,719—13,899 per ton of NO_x emissions reduced. See Appendix 8. The Department determined the installation and operation of SCR control technology on these distillate oil-fired combustion units and process heaters to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a distillate oil-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall continue to comply with the existing presumptive RACT emission limitation of 0.12 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(g)(1)(ii)]. The owners and operators of subject distillate oil-fired combustion units and process heaters equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

Presumptive NO_x RACT requirements for a residual oil-fired or other liquid fuel-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour:

Most residual oil-fired or other liquid fuel-fired combustion units or process heaters located in this Commonwealth with a rated heat input equal to or greater than 50 million Btu/hour are equipped with LNB technology. The Department analyzed stack test data for residual oil-fired or other liquid fuel-fired combustion units or process heaters in this size range that demonstrate NO_x emission rates as high as 0.37 lb NO_x/million Btu heat input. The Department evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from $4,400—8,552 per ton of NO_x emissions reduced. See Appendix 9. The Department determined the installation and operation of SCR control technology on these residual oil-fired or other liquid fuel-fired combustion units or process heaters to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a residual oil-fired or other liquid fuel-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall continue to comply with the existing presumptive RACT emission limitation of 0.20 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(g)(1)(iii)]. The owners and operators of subject residual oil-fired or other liquid fuel-fired combustion units or process heaters equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

Presumptive NO_x RACT requirements for a refinery gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour:

Most refinery gas-fired combustion units or process heaters located in this Commonwealth with a rated heat input equal to or greater than 50 million Btu/hour units are equipped with LNB technology. The Department analyzed stack test data for refinery gas-fired combustion units or process heaters in this size range that demonstrate NO_x emission rates as high as 0.27 lb NO_x/million Btu heat input. The Department evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from $3,730—7,387 per ton of NO_x emissions reduced. See Appendix 10. The Department determined the installation and operation of SCR control technology on these refinery gas-fired combustion units or process heaters to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced. The benchmark is not a hard bright-line number. In this case, the very low end of the range dips slightly under the benchmark. The Department has used its discretion to determine that the installation and operation of SCR control technology on these subject units is not cost-effective.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a refinery gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall continue to comply with the existing presumptive RACT emission limitation of 0.25 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(g)(1)(iv)]. The owners and operators of subject refinery gas-fired combustion units or process heaters equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

Presumptive NO_x RACT requirements for a coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour and less than 250 million Btu/hour:

The Department has identified only one unit in this category that commenced operation prior to August 3, 2018, and still operating today – a spreader stoker boiler – at a major NO_x emitting facility located in this Commonwealth. The Department analyzed stack test data for this spreader stoker boiler that demonstrates NO_x emission rates as high as 0.36 lb NO_x/million Btu heat input. The Department also analyzed stack test data for boilers that existed prior to April 23, 2016, the date of promulgation for §§ 129.96—129.100 (RACT II). These boilers are no longer operating, but the stack test data for these coal-fired combustion units is included in the evaluation for the RACT limit for the 2015 8-hour ozone NAAQS as it would not be appropriate to set a presumptive limit for the 2015 8-hour ozone NAAQS based on one data point. Most of these previously operating coal-fired combustion units were equipped with LNB technology because they were not spreader stoker boilers. The stack test data for these coal-fired boilers demonstrate NO_x emission rates as high as 0.51 lb NO_x/million Btu heat input.

The Department evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from $4,338—8,247 per ton of NO_x emissions reduced. See Appendix 11. The Department determined the installation and operation of SCR control technology on these coal-fired combustion units to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

The Department also evaluated these same subject boilers for the cost-effectiveness for the installation and operation of SNCR control technology and determined that the cost-effectiveness ranges from $5,409—11,273 per ton of NO_x emissions reduced. See Appendix 12. The Department determined the installation and operation of SNCR control technology on these coal-fired combustion units to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour and less than 250 million Btu/hour shall continue to comply with the existing presumptive RACT NO_x emission limitation of 0.45 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(g)(1)(v)]. The owners and operators of subject coal-fired combustion units equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

Presumptive NO_x RACT requirements for a circulating fluidized bed (CFB) combustion unit firing primarily Bituminous waste (gob) coal or firing primarily Anthracite waste (culm) coal with a rated heat input equal to or greater than 250 million Btu/hour:

The Department analyzed CEMS NO_x emissions data for 3 years (2018—2020) for all CFBs located in this Commonwealth firing waste coal using the EPA's Clean Air Markets Division (CAMD) calculator. https://www.epa.gov/airmarkets; https://www.epa.gov/airmarkets/doing-business-camd. See Appendix 13 for the CAMD calculated results for two sizes of boilers. These units were permitted under RACT II with a NO_x emissions limitation of 0.16 lb NO_x/million Btu heat input on a 30-day rolling average. The wide range of NO_x emissions rates demonstrated by CEMS results indicated that NO_x emissions rates from CFBs firing waste coal are independent of the operation of SNCR control technology; rather, the NO_x emission rates are based on the variable characteristics and chemical composition of the waste coal being burned. The Department further evaluated the EPA CAMD data for the 3 years (2018—2020) using a daily average and determined that these units, except Scrubgrass Unit 2, near Kennerdell PA, are capable of meeting the NO_x emissions rate of 0.16 lb NO_x/million Btu heat input on a daily average basis.

The Department evaluated waste coal-fired CFB units with a baseline emission rate of 0.16 lb NO_x/million Btu heat input and determined that the cost-effectiveness for the installation and operation of SNCR control technology ranges from \$4,747—6,207 per ton of NO_x emissions reduced. See Appendix 13. The Department determined the installation and operation of SNCR control technology on these CFBs firing waste coal to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced.

SCR control technology has been demonstrated to achieve high levels of NO_x emissions reduction on several types of combustion sources, including pulverized coal-fired and stoker-type coal-fired boilers, but has not been demonstrated on CFB boilers firing waste coal. This technology could potentially be transferred to a CFB boiler, but not without significant difficulty. Installation and operation of the SCR control technology upstream of the baghouse is technically infeasible because the particulate matter loading upstream of the baghouse will contain a very high percentage of alkaline particulate matter that would likely preclude effective SCR operation. Installation and operation of SCR control technology downstream of the baghouse is technically infeasible because the exhaust gas temperature at the downstream location is too low to support effective SCR operation. Location of the SCR downstream of the baghouse would require installation and operation of an additional burner, which would reduce the combustion unit's efficiency for generating electricity; the added burner would also emit air pollutants.

The Department evaluated the waste coal-fired CFB units with a baseline emission rate of 0.16 lb NO_x/million Btu heat input and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from \$5,507—9,060 per ton of NO_x emissions reduced. See Appendix 14. The Department determined the installation and operation of SCR control technology on these CFBs firing waste coal to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced. These cost-effectiveness determinations do not include the costs that would be incurred for installation and operation of a burner to heat the exhaust gas downstream of the baghouse.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a CFB combustion unit firing primarily bituminous waste (gob) coal or firing primarily anthracite waste (culm) coal with a rated heat input equal to or greater than 250 million Btu/hour shall comply with the presumptive RACT emission limitation of 0.16 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(g)(1)(vi)]. The owners and operators of subject CFBs equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

The Department has also established in this final-form rulemaking that the owner or operator of a CFB waste coal-fired combustion unit shall control the NO_x emissions each operating day by operating the installed air pollution control technology and combustion controls at all times consistent with the technological limitations, manufacturer's specifications, good engineering and maintenance practices and good air pollution control practices for controlling emissions. [25 Pa. Code § 129.112(g)(1)(vi)(C)].

Presumptive NO_x RACT requirements for a solid fuel-fired combustion unit that is not a coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour:

The Department analyzed stack test data for solid fuel-fired combustion units that are not coal-fired combustion units with a rated heat input equal to or greater than 50 million Btu/hour. The stack test data analysis demonstrates that these units are complying with the existing NO_x emissions rate limitation of 0.25 lb NO_x/million Btu heat input established in 25 Pa. Code § 129.97(g)(1)(vii).

The Department evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from \$7,562—13,971 per ton of NO_x emissions reduced. See Appendix 15. The Department determined the installation and operation of SCR control technology on these subject solid fuel-fired combustion units to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced.

The Department also evaluated various sizes of subject boilers and determined that the cost-effectiveness for the installation and operation of SNCR control technology ranges from \$7,840—18,200 per ton of NO_x emissions reduced. See Appendix 16. The Department determined the installation and operation of SNCR control technology on these subject solid fuel-fired combustion units to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a solid fuel-fired combustion unit that is not a coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour shall continue to comply with the existing presumptive RACT emission limitation of 0.25 lb NO_x/million Btu heat input established in 25 Pa. Code § 129.97(g)(1)(vii). [25 Pa. Code § 129.112(g)(1)(vii)]. The owners and operators of subject combustion units equipped with CEMS shall comply with the NO_x emissions rate limitation using a daily average. The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day. The daily average for the source shall include all emissions that occur during the entire day. [25 Pa. Code § 129.115(b)(4)].

Presumptive VOC RACT requirements for a combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source:

The typical amount of VOC emissions from a natural gas-fired, distillate oil-fired, residual oil-fired or other liquid fuel-fired, refinery gas-fired, coal-fired or solid fuel-fired combustion unit or process heater that is not a coal-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour, or from a brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source range from 0.002 to 0.05 lb VOC/million Btu heat input, that is, very close to zero VOC emissions. The Department evaluated oxidation catalyst technology for for the control of VOC emissions from these sources using an average uncontrolled VOC emissions rate of 0.01 lb VOC/million Btu heat input with 60% VOC emission control efficiency. The Department determined the cost-effectiveness of oxidation catalyst technology on these sources ranges from approximately $59,992 to approximately $75,875 per ton of VOC emissions reduced due to the low amounts of VOC emissions. See Appendix 17. Therefore, the Department determined that the installation and operation of oxidation catalyst technology on these sources to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

The Department has established in this final-form rulemaking that the owner and operator of a natural gas-fired, distillate oil-fired, residual oil-fired or other liquid fuel-fired, refinery gas-fired, coal-fired or solid fuel-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour, or a brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source shall continue to comply with the existing presumptive VOC RACT emission requirements of installation, maintenance and operation in accordance with the manufacturer's specifications and with good operating practices established in 25 Pa. Code § 129.97(d). [25 Pa. Code § 129.112(d)].

(G) Combustion Turbines:

The Department notes that changes to the proposed requirements for combined cycle or combined heat and power combustion turbines and for simple cycle or regenerative cycle combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 180 MW were made in this final-form rulemaking as a result of comments received on the proposed rulemaking. Section 129.112(g)(2) is amended from proposed to this final-form rulemaking to clarify the applicable presumptive RACT emission limitations for combined cycle or combined heat and power combustion turbines and for simple cycle or regenerative cycle combustion turbines.

Proposed § 129.112(g)(2)(i) established the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 brake horsepower (bhp) and less than 180 MW. Final-form § 129.112(g)(2)(i) establishes the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp, rather than the proposed rated output of less than 180 MW. The applicable presumptive RACT emission limitations for subject turbines are established in § 129.112(g)(2)(i)(A)—(D). Clause (A) establishes the limitation of 120 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (C) establishes the limitation of 150 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Final-form § 129.112(g)(2)(ii) establishes the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp, rather than the proposed rated output of equal to and greater than 1,000 bhp, and less than 180 MW. The applicable presumptive RACT emission limitations for subject turbines are established in § 129.112(g)(2)(ii)(A)—(D). Clause (A) establishes the limitation of 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (C) establishes the limitation of 96 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Proposed § 129.112(g)(2)(ii) is renumbered in this final-form rulemaking to § 129.112(g)(2)(iii). Final-form § 129.112(g)(2)(iii) establishes the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW. The applicable presumptive RACT emission limitations for subject turbines are established in § 129.112(g)(2)(iii)(A)—(D). Clause (A) establishes the limitation of 4 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 2 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (C) establishes the limitation of 8 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation of 2 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Proposed § 129.112(g)(2)(iii) is renumbered in this final-form rulemaking to § 129.112(g)(2)(iv). Final-form § 129.112(g)(2)(iv) establishes the applicable presumptive RACT emission limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp, rather than the proposed rated output of less than 3,000 bhp. The applicable presumptive RACT emission limitations for subject turbines are established in § 129.112(g)(2)(iv)(A)—(D). Clause (A) establishes the limitation of 120 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (C) establishes the limitation of 150 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Proposed § 129.112(g)(2)(iv) is renumbered in this final-form rulemaking to § 129.112(g)(2)(v). Final-form § 129.112(g)(2)(v) establishes the applicable presumptive RACT emission limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp, rather than the proposed rated output of equal to or greater than 3,000 bhp, and less than 60,000 bhp. The applicable presumptive RACT emission limitations for subject turbines are established in § 129.112(g)(2)(v)(A)—(D). Clause (A) establishes the limitation of 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (C) establishes the limitation of 96 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Presumptive NO_x RACT and VOC RACT requirements for a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp:

Most of the natural gas-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp in this Commonwealth are manufactured by Solar Turbines and used for natural gas compression applications. The Department assumed for the proposed rulemaking that natural gas-fired combined cycle combustion or combined heat and power turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp could use DLNC as the NO_x emissions control technology. Through comments received on the proposed rulemaking, the Department learned that Solar Turbines does not offer NO_x control technologies, including DLNC, for subject turbines rated below 4,100 bhp. Based on information provided by Solar Turbines, there are other turbine manufacturers that do offer DLNC technology for their new turbines rated at less than 4,100 bhp but these turbines are limited to electric generating applications. At this time, the Department is not aware of other turbine manufacturer equipment that can be used for a natural gas compression application.

The Department evaluated natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp with an existing RACT II emissions rate limitation of 150 ppmvd NO_x @ 15% oxygen and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from approximately $22,750—27,861 per ton of NO_x removed. See Appendix 18. The Department determined the installation and operation of SCR control technology on these turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

The Department analyzed stack test results for natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp. The Department also analyzed test results for natural gas-fired turbines rated between 1,000 bhp and 4,100 bhp provided by the vendor. Based on the available test results, the Department determined that these turbines can comply with an emissions rate limitation of 120 ppmvd NO_x @ 15% oxygen.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp, shall comply with the presumptive RACT emission limitation of 120 ppmvd NO_x @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(i)(A)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

The Department also analyzed VOC emissions data and determined that existing natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp are able to meet 5 ppmvd VOC (as propane) or lower @ 15% oxygen.

The Department evaluated natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines between 1,000 and 4,100 bhp with an uncontrolled VOC emissions rate of 5 ppmvd VOC (as propane) @ 15% oxygen for control with oxidation catalyst technology. The Department determined that the cost-effectiveness for the installation and operation of oxidation catalyst technology ranged from approximately $32,052—94,104 per ton of VOC emissions reduced. See Appendix 19. The Department determined the installation and operation of oxidation catalyst technology on these turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall comply with the presumptive RACT emissions rate limitation of 5 ppmvd VOC (as propane) @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(i)(B)].

Presumptive NO_x RACT and VOC RACT requirements for a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 megawatts (MW):

Most of the large combined cycle turbines in this category are equipped with DLNC.

The Department evaluated varying sizes of subject turbines with a rated output equal to or greater than 4,100 bhp and less than 60,000 bhp with an existing RACT II emissions rate limitation of 42 ppmvd NO_x @ 15% oxygen for the installation and operation of SCR control technology. The Department determined that the cost-effectiveness for the installation and operation of SCR control technology on these turbines ranges from approximately $9,304—39,059 per ton of$NO_x$ emissions reduced. See Appendix 20. The Department determined the installation and operation of SCR control technology on these turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

The Department analyzed test results for these subject turbines that demonstrated NO_x emissions rates of 40 ppmvd and lower in compliance with the presumptive RACT emission limitation of 42 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(A).

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW shall continue to comply with the existing presumptive RACT emission limitation of 42 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(A). [25 Pa. Code § 129.112(g)(2)(ii)(A)]. The owners and operators of subject turbines equipped with

CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

The Department also analyzed VOC emissions data and determined that existing natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 4,100 bhp are able to meet 5 ppm VOC (as propane) or lower @ 15% oxygen.

The Department evaluated natural gas or noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 4,100 bhp and less than 60,000 bhp for control with oxidation catalyst technology for control of VOC emissions. The Department determined that the cost-effectiveness for the installation and operation of oxidation catalyst technology ranged from approximately $10,778—40,277 per ton of VOC emissions reduced. See Appendix 21. The Department determined the installation and operation of oxidation catalyst technology on these turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW shall continue to comply with the existing presumptive RACT emissions rate limitation of 5 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(C). [25 Pa. Code § 129.112(g)(2)(ii)(B)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Presumptive NO_x RACT and VOC RACT requirements for a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW:

The natural gas and noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 180 MW in this Commonwealth are equipped with DLNC and SCR control technology. The Department analyzed NO_x emissions test results for these subject turbines and determined that these turbines are able to comply with a NO_x emissions rate of 4 ppmvd NO_x @ 15% oxygen.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW shall continue to comply with the existing presumptive RACT emissions limitation of 4 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(A). [25 Pa. Code § 129.112(g)(2)(iii)(A)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

The Department analyzed test results for these subject turbines that demonstrated VOC emission rates of 2 ppmvd VOC (as propane) or lower @ 15% oxygen in compliance with the presumptive RACT emission limitation of 2 ppmvd VOC @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(C).

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW shall continue to comply with the existing presumptive RACT emissions limitation of 2 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(C). [25 Pa. Code § 129.112(g)(2)(iii)(B)].

Presumptive NO_x RACT and VOC RACT requirements for a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp:

Based on a review of the Department's records in databases and permits, there are no combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp powered solely by fuel oil in this Commonwealth. There are turbines of this type that use oil as a start-up fuel before switching to natural gas. The existing requirements for these turbines are consistent with the requirements in 40 CFR Part 60, Subpart KKKK, regarding standards of performance for stationary combustion turbines.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall continue to comply with the existing presumptive NO_x RACT emission limitation of 150 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(B) and with the existing presumptive VOC RACT emission limitation of 9 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(D). [25 Pa. Code § 129.112(g)(2)(i)(C)] and [25 Pa. Code § 129.112(g)(2)(i)(D)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Presumptive NO_x RACT and VOC RACT requirements for a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW:

Based on a review of the Department's records in databases and permits, there are no combined cycle or combined heat and power combustion turbines with a rated output equal to or greater than 4,100 bhp and less than 180 MW powered solely by fuel oil in this Commonwealth. There are turbines of this type that use oil as a start-up fuel before switching to natural gas. The existing requirements for these turbines are consistent with the requirements in 40 CFR Part 60, Subpart KKKK.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW shall continue to comply with the existing presumptive RACT emission limitation of 96 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(B) and with the existing presumptive RACT emission limitation of 9 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(i)(D). [25 Pa. Code § 129.112(g)(2)(ii)(C)] and [25 Pa. Code § 129.112(g)(2)(ii)(D)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Presumptive NO_x RACT and VOC RACT requirements for a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW:

The existing NO_x RACT emissions rate limitation of 8 ppmvd NO_x @ 15% oxygen for these subject turbines established in 25 Pa. Code § 129.97(g)(2)(ii)(B) is consistent with the NO_x emissions rate limitations for fuel oil-fired turbines equipped with SCR control technology.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW shall continue to comply with the existing presumptive RACT emission limitation of 8 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(B). [25 Pa. Code § 129.112(g)(2)(iii)(C)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

The Department analyzed test results for these subject turbines that demonstrated VOC emissions rates of 2 ppmvd VOC (as propane) or lower @ 15% oxygen in compliance with the presumptive RACT emission limitation of 2 ppmvd VOC @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(D).

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW shall continue to comply with the existing presumptive RACT emission limitation of 2 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(D). [25 Pa. Code § 129.112(g)(2)(iii)(D)].

Presumptive NO_x RACT and VOC RACT requirements for a natural gas or a noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp:

Most of the natural gas-fired simple cycle turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp in this Commonwealth are manufactured by Solar Turbines and used for natural gas compression applications. Solar Turbines does not offer NO_x control technologies, including DLNC, for subject turbines rated below 4,100 bhp. Based on information provided by Solar Turbines, there are other turbine manufacturers that do offer DLNC technology for their new turbines rated at less than 4,100 bhp but these turbines are limited to electric generating applications. At this time, the Department is not aware of other turbine manufacturer equipment that can be used for a natural gas compression application.

The Department evaluated natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp with the existing presumptive RACT emissions rate limitation of 150 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(iii)(A) and determined that the cost-effectiveness for the installation and operation of SCR control technology ranges from approximately \$22,750—27,861 per ton of NO_x removed. See Appendix 18. The Department determined the installation and operation of SCR control technology on these turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$3,750 per ton of NO_x emissions reduced.

The Department analyzed stack test results for natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp. The Department also analyzed test results for natural gas-fired simple cycle turbines with a rated output between 1,000 bhp and 4,100 bhp provided by the vendor. Based on the available test results, the Department determined that these turbines can comply with an emissions rate limitation of 120 ppmvd NO_x @ 15% oxygen.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall comply with the presumptive RACT emission limitation of 120 ppmvd NO_x @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(iv)(A)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

The Department analyzed test results for these subject turbines that demonstrated VOC emission rates of 9 ppmvd VOC (as propane) or lower at 15% oxygen in compliance with the presumptive RACT emission limitation of 9 ppmvd VOC @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(ii)(D).

The Department evaluated natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbines with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp with uncontrolled VOC emissions rates of 9 ppmvd (as propane) @ 15% oxygen for control of VOC emissions with oxidation catalyst technology. The cost-effectiveness ranges from approximately \$17,807—52,280 per ton of VOC emissions reduced. See Appendix 22. The Department determined the installation and operation of oxidation catalyst technology on these subject turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of \$7,500 per ton of VOC emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall continue to comply with the existing presumptive RACT emission limitation of 9 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(iii)(C). [25 Pa. Code § 129.112(g)(2)(iv)(B)].

Presumptive NO_x RACT and VOC RACT requirements for a natural gas or a noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp:

All turbines in this category are equipped with DLNC. The Department analyzed NO_x emissions test results for thirteen natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbines with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp and found ten of them are able to achieve a NO_x emissions rate of 42 ppmvd @ 15% oxygen. The owners and operators of natural gas or noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbines with a rated output equal to greater than 6,000 bhp are currently required to comply with the presumptive RACT NO_x emissions rate limitation of 42 ppmvd @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(iv)(A).

The Department evaluated turbines in this category with an uncontrolled NO_x emissions rate of 42 ppmvd @ 15% oxygen for the installation and operation of SCR control technology. The Department determined that the cost-effectiveness for the installation and operation of SCR control technology on these turbines ranges from approximately $8,525—26,175 per ton of NO_x emissions reduced. See Appendix 23. The Department determined the installation and operation of SCR control technology on these turbines to be a cost-prohibitive option compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced. Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp shall continue to comply with the existing presumptive RACT emission limitation of 42 ppmvd NO_x @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(v)(A)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Most of the subject turbines in this size category meet the VOC emissions rate of 9 ppmvd VOC (as propane) @ 15% oxygen. The Department evaluated these turbines for control of VOC emissions with oxidation catalyst technology. The cost-effectiveness ranges from approximately $9,441—22,027 per ton of VOC emissions reduced. See Appendix 24. The Department determined the installation and operation of oxidation catalyst technology on these subject turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp shall comply with the presumptive RACT emission limitation of 9 ppmvd VOC (as propane) @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(v)(B)].

Presumptive NO_x RACT and VOC RACT requirements for a fuel oil-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp:

Based on a review of the Department's records in databases and permits, there are no simple cycle or regenerative cycle combustion turbines with a rated output equal to greater than 1,000 bhp and less than 4,100 bhp powered solely by fuel oil in this Commonwealth. There are turbines of this type that use oil as a start-up fuel before switching to natural gas.

The Department evaluated turbines in this category with a NO_x emissions rate of 150 ppmvd NO_x @ 15% oxygen for the installation and operation of SCR control technology. The Department determined that the cost-effectiveness for the installation and operation of SCR control technology on these turbines ranges from approximately $21,643—26,506 per ton of NO_x emissions reduced. See Appendix 25. The Department determined the installation and operation of SCR control technology on these turbines to be a cost-prohibitive option compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall continue to comply with the existing presumptive RACT emission limitation of 150 ppmvd NO_x @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(iii)(B). [25 Pa. Code § 129.112(g)(2)(iv)(C)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

The Department evaluated subject turbines with uncontrolled VOC emissions rates of 9 ppmvd (as propane) @ 15% oxygen for control of VOC emissions with oxidation catalyst technology. The cost-effectiveness ranges from approximately $17,807—52,280 per ton of VOC emissions reduced. See Appendix 22. The Department determined the installation and operation of oxidation catalyst technology on these subject turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall continue to comply with the existing presumptive RACT emission limitation of 9 ppmvd VOC (as propane) @ 15% oxygen established in 25 Pa. Code § 129.97(g)(2)(iii)(D). [25 Pa. Code § 129.112(g)(2)(iv)(D)].

Presumptive NO_x RACT and VOC RACT requirements for a fuel oil-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp:

Based on a review of the Department's records in databases and permits, there are no fuel oil-fired simple cycle or regenerative cycle combustion turbines with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp powered solely by fuel oil in this Commonwealth. There are turbines of this type that use oil as a start-up fuel before switching to natural gas.

The Department evaluated turbines in this category subject to the presumptive RACT NO_x emissions rate of 96 ppmvd NO_x @ 15% oxygen for the installation and operation of SCR control technology. The Department determined that the cost-effectiveness for the installation and operation of SCR control technology on these turbines ranges from approximately $8,518—23,498 per ton of NO_x emissions reduced. See Appendix 26. The Department determined the installation and operation of SCR control technology on these turbines to be a cost-prohibitive option compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department is has established in this final-form rulemaking that the owner and operator of a fuel oil-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp shall continue to comply with the existing presumptive RACT emission limitation of 96 ppmvd NO_x @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(v)(C)]. The owners and operators of subject turbines equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Most of the subject turbines in this size category meet the VOC emissions rate of 9 ppmvd VOC (as propane) @ 15% oxygen. The Department evaluated these turbines for control of VOC emissions with oxidation catalyst technology. The cost-effectiveness ranges from approximately $9,441—22,027 per ton of VOC emissions reduced. See Appendix 24. The Department determined the installation and operation of oxidation catalyst technology on these subject turbines to be cost-prohibitive compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a fuel oil-fired simple cycle or regenerative cycle combustion turbine with a rated output equal to greater than 4,100 bhp and less than 60,000 bhp shall comply with the presumptive RACT emission limitation of 9 ppmvd VOC (as propane) @ 15% oxygen. [25 Pa. Code § 129.112(g)(2)(v)(D)].

(H) Stationary Internal Combustion Engines:

Presumptive NO_x RACT requirements for a natural gas or a noncommercial gaseous fuel-fired lean burn stationary internal combustion engine with a rating equal to or greater than 500 bhp and less than 3,500 bhp:

Most of these engines are equipped with LEC technology. Test results for natural gas-fired engines above 500 bhp demonstrate NO_x emissions rates of 3.0 gram NO_x/bhp-hr or lower. Engines manufactured on or after July 1, 2007, and subject to 40 CFR Part 60, Subpart JJJJ are required to meet the emission limitation of 2 gram NO_x/bhp-hr and engines manufactured on or after July 1, 2010, are required to meet the emission limitation of 1 gram NO_x/bhp-hr.

The Department evaluated engines with a rating equal to or greater than 500 bhp and less than 3,500 bhp for the installation and operation of SCR control technology. The Department determined that the cost-effectiveness for the installation and operation of SCR control technology on these engines ranges from approximately $3,871—10,449 per ton of NO_x emissions reduced. See Appendix 27. The Department determined the installation and operation of SCR control technology on these engines to be a cost-prohibitive option compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department is has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired lean burn stationary internal combustion engine with a rating equal to or greater than 500 bhp and less than 3,500 bhp shall comply with the presumptive RACT emission limitation of 3.0 gram NO_x/bhp-hr. [25 Pa. Code § 129.112(g)(3)(i)(A)].

Presumptive NO_x RACT requirements for a natural gas or a noncommercial gaseous fuel-fired lean burn stationary internal combustion engine with a rating equal to or greater than 3,500 bhp:

Most of these engines in this Commonwealth are equipped with LEC technology with a NO_x emissions rate limitation of 3.0 gram NO_x/bhp-hr.

The Department evaluated subject engines with a rating equal to or greater than 3,500 bhp for the installation and operation of SCR control technology with 80% NO_x emissions reduction efficiency. The Department determined that the cost-effectiveness for the installation and operation of this SCR control technology on these engines ranges from approximately $3,326—3,676 per ton of NO_x emissions reduced. See Appendix 28. The Department determined the installation and operation of this SCR control technology on these engines to be an economically feasible option compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has determined that the installation and operation of this SCR control technology on these subject engines to be technically and economically feasible and is determined to be RACT for the 2015 8-hour ozone standard. The Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired lean burn stationary internal combustion engine with a rating equal to or greater 3,500 bhp shall comply with the presumptive RACT emission limitation of 0.6 grams NO_x/bhp-hr. [25 Pa. Code § 129.112(g)(3)(ii)(A)].

Presumptive NO_x RACT requirements for a liquid fuel or dual-fuel-fired stationary internal combustion engine with a rating equal to or greater than 500 bhp:

The Department evaluated diesel engines with a rating equal to or greater than 500 bhp and less than 5,000 bhp with an existing RACT II NOx emissions rate limitation of 8 gram NOx/bhp-hr established in 25 Pa. Code § 129.97(g)(3)(ii) for the installation and operation of SCR control technology with 80% NO_x emissions reduction efficiency. The Department determined that the cost-effectiveness for the installation and operation of this SCR control technology on these engines ranges from approximately $2,543—3,503 per ton of NO_x emissions reduced. See Appendix 29. The Department determined the installation and operation of this SCR control technology on these engines to be an economically feasible option compared to the Department's cost-effectiveness benchmark of $3,750 per ton of NO_x emissions reduced.

Therefore, the Department has determined that the installation and operation of this SCR control technology on these subject engines to be technically and economically feasible and is determined to be RACT for the 2015 8-hour ozone standard. The Department has established in this final-form rulemaking that the owner and operator of a liquid fuel or dual-fuel-fired stationary internal combustion engine with a rating equal to or greater than 500 bhp shall comply with the presumptive RACT emission limitation of 1.6 gram NO_x/bhp-hr. [25 Pa. Code § 129.112(g)(3)(iii)].

Presumptive NO_x RACT requirements for a natural gas or a noncommercial gaseous fuel-fired rich burn stationary internal combustion engine with a rating equal to or greater than 100 bhp:

Uncontrolled NO_x emissions rates from natural gas-fired rich-burn engines in this Commonwealth typically range from 13—16 gram NO_x/bhp-hr. During the development of the RACT II regulation, the Department determined that NSCR with 80% NO_x emissions removal efficiency is technically and economically feasible and established a NO_x emissions rate limitation of 2.0 gram NO_x/bhp-hr for rich-burn engines with ratings equal to or greater than 500 bhp.

Most of the rich-burn engines with ratings greater than 500 bhp in this Commonwealth are retrofitted with NSCR or equivalent technology that reduces NO_x emissions to rates of 2 gram NO_x/bhp-hr or less. The Department evaluated the economic feasibility for the installation and operation of NSCR technology for engines with ratings as low as 100 bhp. NO_x emissions removal efficiency for NSCR technology varies from 80—95% depending on the size of the engines from small to large. The cost analysis was performed with an average 80% NO_x emissions reduction efficiency and 50% VOC emissions reduction efficiency. The Department determined that the cost-effectiveness ranges from approximately $70—616 per ton of NO_x emissions reduced and per ton of VOC emissions reduced. See Appendix 30.

Based on these evaluations, the Department has lowered the applicability to engines as small as 100 bhp. The Department has established in this final-form rulemaking that the owner and operator of a natural gas or a noncommercial gaseous fuel-fired rich burn stationary internal combustion engine with a rating equal to or greater than 100 bhp shall comply with the presumptive RACT NO_x emission rate limitation of 2.0 gram NO_x/bhp-hr and with the presumptive RACT VOC emission rate limitation of 0.5 gram VOC/bhp-hr. [25 Pa. Code § 129.112(g)(3)(iv)(A)] and [25 Pa. Code § 129.112(g)(3)(iv)(B)].

The Department notes that the proposed presumptive RACT NO_x emission rate limitation of 0.6 gram NO_x/bhp-hr was a typographical error which is corrected in this final-form rulemaking to the 2.0 gram NO_x/bhp-hr .

Presumptive VOC RACT requirements for all internal combustion engines:

The Department evaluated the economic feasibility for the installation and operation of oxidation catalyst technology on internal combustion engines with ratings equal to or greater than 500 bhp with an existing VOC emission rate limitation of 1.0 gram VOC/bhp-hr. The Department determined that the cost-effectiveness ranges from approximately $1,976–4,181 per ton of VOC emissions reduced. See Appendix 31. The Department determined the installation and operation of oxidation catalyst technology on the subject engines to be an economically feasible option compared to the Department's cost-effectiveness benchmark of $7,500 per ton of VOC emissions reduced.

The Department also reviewed stack test results for a sample of internal combustion engines and found the VOC emissions rate to be 0.5 gram VOC/bhp-hr or lower.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of subject lean-burn internal combustion engines with ratings equal to or greater than 500 bhp shall comply with the presumptive RACT VOC emission rate limitation of 0.5 gram VOC/bhp-hr, excluding formaldehyde. [25 Pa. Code § 129.112(g)(3)(i)(B)] and [25 Pa. Code § 129.112(g)(3)(ii)(B)].

(I) Portland Cement Kilns:

The EPA has evaluated SCR control technology systems for installation and operation at cement kilns and has found that their use at cement kilns is technically feasible. A review of the summary of comments received regarding the Consent Decree between Lehigh Cement and the EPA dated March 27, 2020, however, demonstrates that the installation and operation of SCR control technology is cost prohibitive for many cement kilns and would increase the cost per ton of clinker to the extent that it may render the cement plant economically non-viable. Therefore, the Department has determined that the installation and operation of SCR control technology for cement kilns in this Commonwealth is an economically infeasible option.

Long wet-process cement kiln:

All long wet-process cement kilns in this Commonwealth are equipped with and operating SNCR control technology. The Department evaluated NO_x emissions reduction test results for a long wet-process cement kiln located at Armstrong Cement.

Based on the review of these test results, the Department has established in this final-form rulemaking that the owner and operator of a long wet-process cement kiln shall continue to comply with the existing presumptive RACT emission limitation of 3.88 pounds of NO_x per ton of clinker produced established in 25 Pa. Code § 129.97(h)(1). [25 Pa. Code § 129.112(h)(1)]. The owners and operators of subject cement kilns equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Long dry-process cement kiln:

All long dry-process cement kilns in this Commonwealth are equipped with and operating SNCR control technology. The Department evaluated NO_x emissions reduction test results for a long dry-process cement kiln located at Evansville Cement.

In response to the Consent Decree between Lehigh Cement Evansville and the EPA, the Department established a limit of 3.0 pounds of NO_x per ton of clinker produced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a long dry-process cement kiln shall comply with the presumptive RACT emission limitation of 3.0 pounds of NO_x per ton of clinker produced. [25 Pa. Code § 129.112(h)(2)]. The owners and operators of subject cement kilns equipped with CEMS shall comply with the NO_x emissions rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Preheater and Precalciner cement kilns:

Precalciner cement kilns in this Commonwealth are equipped with and operating SNCR control technology.

SCR control technology systems applied to cement preheater/precalciner (PH/PC) kilns can be either “low-dust” or “high-dust” systems depending on their location after or before the particulate matter control device. In both types of systems, capital costs include the cost of the SCR catalyst and reactor, the costs to upgrade or replace kiln induced draft fans when the SCR control technology is added to existing PH/PC kilns, and the costs of the reagent delivery system, storage, and instrumentation. Because of the problems of catalyst plugging, the high-dust system requires a catalyst cleaning mechanism such as pressurized air nozzles or sonic horns. The low-dust system avoids costs associated with catalyst cleaning. Operating costs for both types of systems include operating labor and maintenance costs, reagent costs, and the electricity for reagent pumping. High-dust SCR systems incur higher energy costs for catalyst cleaning. Operating costs also include catalyst replacement every few years.

The EPA’s “Alternative Control Techniques Document Update - NO_X Emissions from New Cement Kilns” (EPA-453/R-07-006 November 2007) document establishes that the average cost-effectiveness of SCR for PH/PC kilns is approximately $4,200 per ton of NO_x emissions reduced. Therefore, the Department has determined the installation and operation of SCR control technology to be a cost-prohibitive option for PH/PC cement kilns.

In response to the Consent Decree between Lehigh Cement and the EPA, the NO_x emissions rate for the Lehigh Cement kiln at Nazareth is limited to 2.30 pounds of NO_x per ton of clinker produced.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a PH/PC cement kiln shall comply with the presumptive RACT emission limitation of 2.30 pounds of NO_x per ton of clinker produced. [25 Pa. Code § 129.112(h)(3)]. The owners and operators of subject cement kilns equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

VOC RACT for all cement kilns:

Based on the Department's cost analysis performed for the installation and operation of oxidation catalyst technology for combustion units and combustion sources, add-on controls such as oxidation catalyst technology is cost-prohibitive for combustion units or sources located at cement plants. See Appendix 17. Therefore, the Department established in this final-form rulemaking that the owner and operator of a subject cement kiln shall continue to comply with the existing presumptive VOC RACT requirements of installation, maintenance, and operation of the source in accordance with manufacturer's specifications and with good operating practices established in 25 Pa. Code § 129.97(d). [25 Pa. Code § 129.112(d)].

(J) Glass Melting Furnaces:

There are several glass melting furnaces in this Commonwealth that are major source emitters of NO_x. Most of the glass furnaces in this Commonwealth are equipped with SCR, LNB or Oxy-Firing and Air Staging controls.

Several alternative control technologies are available for glass manufacturing facilities to limit NO_x emissions. These options include combustion modifications (low NO_x burners, oxy-fuel firing, oxygen-enriched air staging), process modifications (fuel switching, batch preheat, electric boost), and post combustion modifications (fuel reburn, SNCR, SCR). Oxy-firing is an effective NO_x emissions reduction technique and is best implemented with a complete furnace rebuild. This strategy not only reduces NO_x emissions by as much as 85%, but reduces energy consumption, increases production rates by 10—15%, and improves glass quality by reducing defects. Oxy-firing is a demonstrated technology and has penetrated all segments of the glass melting industry.

The Department performed cost analyses for the installation and operation of SCR control technology on those glass melting furnaces that are equipped with LNB or Oxy-Firing controls.

Container glass furnaces:

All existing container glass furnaces in this Commonwealth are equipped with Oxy-firing and LNB. The Department performed a cost analysis for the installation and operation of SCR control technology on these subject furnaces. The Department determined that the cost-effectiveness ranges from approximately \$4,356 - \$5,064 per ton of NO_x emissions reduced. See Appendix 32. The Department determined the installation and operation of SCR control technology to be cost-prohibitive for these subject glass furnaces.

Therefore, the Department has established in this final-form rulemakig that the owner and operator of a container glass furnace shall comply with the presumptive RACT emission limitation of 4.0 pounds of NO_x per ton of glass pulled, which is consistent with the recommended emission limit in the OTC's "Identification and Evaluation of Candidate Control

Measures Final Technical Support Document" and 25 Pa. Code § 129.304. [25 Pa. Code § 129.112(i)(1)]. The owners and operators of subject glass furnaces equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Pressed or Blown glass furnaces:

All existing pressed or blown glass furnaces in this Commonwealth are equipped with SCR control technology.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a pressed or blown glass furnace shall comply with the presumptive RACT emission limitation of 7.0 pounds of NO_x per ton of glass pulled, which is consistent with the recommended emission limit in the OTC's "Identification and Evaluation of Candidate Control Measures Final Technical Support Document" and with 25 Pa. Code § 129.304. [25 Pa. Code § 129.112(i)(2)]. The owners and operators of subject glass furnaces equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Fiberglass furnaces:

No fiberglass furnace subject to RACT has been found in in this Commonwealth. If a fiberglass furnace in this Commonwealth becomes subject to RACT, the Department has established in this final-form rulemaking a NO_x RACT emission rate limitation for fiberglass furnaces of 4.0 pounds of NO_x per ton of glass pulled. [25 Pa. Code § 129.112(i)(3)]. The owners and operators of subject glass furnaces equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

This emission limit is also consistent with the recommended emission limit in the OTC's "Identification and Evaluation of Candidate Control Measures Final Technical Support Document" and 25 Pa. Code § 129.304.

Flat glass furnaces:

Most flat glass furnaces in this Commonwealth are equipped with Oxy-firing and LNB or SCR control technology with a controlled NO_x emission rate limitation of 7 pounds of NO_x per ton of glass pulled. However, one flat glass furnace in this Commonwealth is operating with a NO_x emission rate limitation of 26.75 pounds of NO_x per ton of glass pulled. This glass furnace is not able to meet the presumptive RACT III limit of 7.0 pounds of NO_x per ton of glass pulled. The Department performed a cost analysis for the installation and operation of SCR control technology on flat glass furnaces with an uncontrolled NO_x emissions rate of 26.75 pounds of NO_x per ton of glass pulled. The Department determined the cost-effectiveness to be less than $500 per ton of NO_x emissions reduced. See Appendix 32.

Since most flat glass furnaces are equipped with Oxy-firing and LNB or SCR control technology, the Department has established in this final-form rulemaking that the owner and operator of a flat glass furnace shall comply with the presumptive RACT emission limitation of 7.0 pounds of NO_x per ton of glass pulled, which is consistent with the recommended emission limit in the OTC's "Identification and Evaluation of Candidate Control Measures Final Technical Support Document" and 25 Pa. Code § 129.304. [25 Pa. Code § 129.112(i)(4)]. The owners and operators of subject glass furnaces equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

All other glass melting furnaces:

All other glass furnaces are equipped with LNB or Air Staging controls. The Department performed an incremental cost analysis for the installation and operation of SCR control technology on these subject glass melting furnaces and found the cost-effectiveness to be higher than $4,000 per ton of NO_x emissions reduced. The Department determined the installation and operation of SCR control technology on these subject glass melting furnaces to be cost-prohibitive. See Appendix 33.

The Department evaluated a test result for NO_x emissions for other glass melting furnaces that demonstrates NO_x emissions rates of 5.7 pounds of NO_x or lower per ton of glass pulled. Therefore, the Department has established in this final-form rulemaking that the owner and operator of any other type of glass melting furnace shall comply with the presumptive RACT emission limitation of 6.0 pounds of NO_x per ton of glass pulled, which is consistent with 25 Pa. Code § 129.304. [25 Pa. Code § 129.112(i)(5)]. The owners and operators of subject glass melting furnaces equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

(K) Lime Kilns:

The Department evaluated SCR control technology for a long rotary kiln. The EPA's (SCR) RACT/BACT/LAER Clearinghouse (RBLC) does not show this technology as being applied to either long rotary or preheater lime kilns. SCR control technology is generally not considered to be a technically feasible option for long rotary lime kilns because of particulate fouling, especially with calcium-based particulates. The optimum temperature for the operation of SCR controls is significantly higher than the exhaust gas temperatures from a long rotary kiln (typically less than 500°F) and the fluctuation and variability of the exhaust gas temperature in a long rotary kiln hinders the control efficiency of SCR controls. Therefore, the Department has determined SCR control technology to be a technically infeasible option.

SNCR control technology has not been applied to a long rotary lime kiln where the reagent must be injected into the calcining zone of the kiln. The location of the injection point is critical to the level of NO_x reductions. The optimal location of the injection point in a long rotary kiln is variable and the ability to match the injection location to the NO_x concentration is difficult and inaccurate. Failure to match the required criteria could result in poor effectiveness of the ammonia reagent or by-product generation of NO_x from the ammonia reagent, or both. SNCR control technology has not been installed at a long rotary kiln in this Commonwealth and currently is not a reasonable control alternative. Therefore, the Department has determined the installation and operation of SNCR control technology on long rotary lime kilns to be a technically infeasible option.

Combustion/burner optimization techniques such as Low Excess Air, Overfire Air, Low NO_X Burner and Flue Gas Recirculation can reduce NO_x emissions by anywhere from 5—60%. The goal of these control techniques is to optimize the efficiency of combustion while minimizing emissions of NO_x. The Department reviewed the operating permit for long rotary lime kiln No. 5 at Carmeuse Lime, Inc. The kiln incorporates combustion controls using multi-channel, multi-fuel feed burners. Carmeuse has an on-going program designed to minimize NO_x emissions through combustion of various fuels. Where applicable, depending on fuel type, product mix, and process conditions, the program incorporates an appropriate combustion/burner optimization technique. During the RACT II evaluation of this kiln, the Department revised the NO_x emission rate limitation from 6 lb to 4.6 lb of NO_x per hour with combustion/burner optimization for Kiln No. 5 at Carmeuse Lime, Inc.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a subject lime kiln shall comply with the presumptive RACT emission limitation of 4.6 lb of NO_x per hour. [25 Pa. Code § 129.112(j)]. The owners and operators of subject lime kilns equipped with CEMS shall comply with the NO_x emission rate limitation using a 30-operating day rolling average. [25 Pa. Code § 129.115(b)(1)].

Direct-fired Heater, Furnace, Oven or other combustion source with a rated heat input equal to or greater than 20 million Btu/hour:

The Department believes that the direct-fired heaters, furnaces, ovens or other combustion sources located in this Commonwealth are generally natural gas-fired with emission characteristics similar to natural gas, propane or LPG-fired combustion units or process heaters.

Therefore, the Department has established in this final-form rulemaking that the owner and operator of a subject direct-fired heater, furnace, oven or other combustion source with a rated heat input equal to or greater than 20 million Btu/hour shall comply with the presumptive RACT emission limitation of 0.10 lb NO_x/million Btu heat input. [25 Pa. Code § 129.112(k)]. The owners and operators of subject sources equipped with CEMS shall comply with the NO_x emission rate limitation using a daily average. [25 Pa. Code § 129.115(b)(5)].

(L) Electric Arc Furnace:

The Department evaluated several electric arc furnaces (EAFs) as part of case-by-case determinations for RACT II. The Department determined that no NO_x or VOC emission control technology is technically feasible for EAFs. This is because EAFs do not use combustion and are batch processes. Since there is no combustion, methods used to alter NO_x and VOC emissions cannot be employed as they would be for a combustion source. A numerical RACT emission rate limitation for either NO_x or VOC is not appropriate. The Department has determined that the presumptive RACT III requirement of the installation, maintenance and operation of EAFs in accordance with the manufacturer's specifications and with good operating practices is consistent with previous RACT determinations and is appropriate as discussed below.

NO_x RACT:

An EAF is a furnace that heats charged material by means of an electric arc. In an EAF, the charged material is directly exposed to an electric arc and the current in the furnace terminals passes through the charged material. In an EAF, NO_x is primarily formed as thermal NO_x. Thermal NO_x is formed when oxygen and nitrogen molecules dissociate into individual atoms at temperatures above 2000°F. Individual nitrogen and oxygen atoms combine to make NO_x.

The first step of a RACT analysis is to identify available control technologies. The following control technologies were identified as having the potential to reduce NO_x emissions from EAFs:

- Selective Non-Catalytic Reduction (SNCR)
- Selective Catalytic Reduction (SCR)
- Catalyst Filters
- Good Operating and Management Practices

The second step in a RACT analysis is to eliminate technically infeasible options. The following control technologies were eliminated as technically infeasible:

- Selective Non-Catalytic Reduction (SNCR)
- Selective Catalytic Reduction (SCR)
- Catalyst Filters

SNCR requires a high but very specific temperature range and a minimum residence time at the temperature to be effective. The reaction requires a stable exhaust gas volumetric flow rate, a stable temperature range and a stable NO_x concentration. The stable conditions are not achievable in batch processes. Therefore, SNCR is a technically infeasible control technology for EAFs.

SCR uses a catalyst in the presence of injected ammonia at 500°F to 750°F to reduce NO_x concentrations. The reaction requires a stable temperature range in the gas entering the catalyst. Particulate matter present in the exhaust stream adversely affects the catalyst. If the SCR is placed upstream of a particulate filter, catalyst poisoning, fouling and masking will occur because of the high particulate emissions from the EAF. If the SCR is placed after a fabric filter, the gases will be too cold for effective reaction for NO_x control. Heating the gases would result in additional NO_x emissions. Also, use of SCR has not been commercially demonstrated on EAF steel making operations. Therefore, SCR is a technically infeasible control technology.

Catalyst filters with embedded SCR catalyst material are used in specially designed baghouses and have not been demonstrated on steel making process operations. These systems are not listed in the RBLC for EAF sources. Therefore, catalyst filters are a technically infeasible control technology.

Other typical common technologies used for the control of NO_x emissions from fuel-fired combustion sources such as low-NO_x burners & ultra-low-NO_x burners (LNB, ULNB), flue gas recirculation (FGR), overfire air, and oxy-fuel combustion reduce NO_x generated during the combustion of fuel. These types of controls are not feasible for application on an EAF because EAFs do not use a fuel source. Therefore, these common technologies used for fuel-fired combustion sources are not technically feasible for use with EAFs.

There are no known technically feasible or commercially demonstrated add-on control technologies for production-related NO_x emissions from EAF ventilation systems. Most NO_x reduction technologies used for combustion processes are effective only at relatively stable gas flow rates, NO_x concentrations and temperatures. Since EAFs are cyclical batch processes, no active control technology for NO_x emissions are technically feasible. The only technically feasible method to control NO_x from EAFs is continued use of good operating and management practices.

VOC RACT:

VOC emissions from EAFs originate from contamination of scrap material used to make specialty stainless steel. Residual oil, plastic and other organic material in the scrap contributes to VOC formation during the initial period of scrap heating in the furnace. At an operating temperature greater than 2000°F, an EAF performs as an efficient organic materials oxidizer. There is no information to indicate that any EAF in the United States has active VOC emission controls or that suitable controls are available. However, listed below are various technologies that have been identified for the control of VOC emissions:

- Catalytic Incineration/Oxidation
- Thermal Incineration/Oxidation
- Carbon Adsorption
- Absorption (Scrubbing)
- Refrigerated Condensers
- Flares
- Good Operating and Management Practices

None of the technologies listed above have been commercially demonstrated on EAFs, but rather are more likely applicable to traditional VOC gas stream sources. Therefore, the control technologies are deemed technically infeasible and have been eliminated as potential RACT technologies. The only technically feasible method to control VOC from EAFs is continued use of good operating and management practices.

Based on the above, the Department determined that no add-on or inherent NO_x or VOC controls are technically feasible for use with EAFs.

Therefore, the Department has established in this final-form rulemaking that the owners and operators of subject EAFs shall continue to comply with the presumptive RACT requirements of installation, maintenance, and operation of the source in accordance with manufacturer's specifications and with good operating practices. [25 Pa. Code § 129.112(c)(11)].

(M) Alternative RACT proposals and petitions for alternative compliance schedules:

Owners and operators of sources that cannot meet presumptive RACT requirements or emission limitations established in this final-form rulemaking for certain source categories may elect to meet the applicable NO_x RACT emission limitation by averaging NO_x emissions on either a facility-wide or system-wide basis. [25 Pa. Code § 129.113(a)].

Owners and operators of sources that cannot meet presumptive RACT requirements or presumptive NO_x or VOC emission rate limitations by averaging NO_x emissions on either a facility-wide or system-wide basis will be required to evaluate RACT requirements on a case-by-case basis for NO_x emissions or VOC emisisons, or both. [25 Pa. Code § 129.114(a), (b) and (c)].

Owners and operators of sources that are subject to the RACT III regulatory requirements but do not have presumptive RACT requirements or RACT emission rate limitations for the sources shall evaluate RACT requirements or RACT emission rate limitations on a case-by-case for NO_x emissions and VOC emissions as applicable.

Case-by-case RACT proposals must be submitted to the appropriate regional office by December 31, 2022. [25 Pa. Code § 129.114(d)(1)].

The owner or operator shall complete the implementation of the case-by-case RACT within 1 year after the effective date of adoption of the rulemaking. [25 Pa. Code § 129.114(d)(4)].

If an owner or operator is going to install a control device as part of a case-by-case RACT determination, the owner or operator may petition the Department for an alternate compliance schedule. [25 Pa. Code § 129.114(l)].

The case-by-case RACT proposal shall be submitted in accordance with the procedures specified in 25 Pa. Code § 129.114(d).

The proposal must also include testing, monitoring, recordkeeping, and reporting requirements to show compliance with the proposed case-by-case RACT.

(N) Compliance Demonstration:

An owner or operator must demonstrate compliance with the RACT III regulation by January 1, 2023. An owner or operator subject to RACT III may have the following compliance options:

1) Compliance with presumptive RACT requirements or RACT emission limitations, or both.
2) Facility-wide or system-wide averaging.

3) Case-by-case RACT determinations.

The owner or operator of a source with CEMS shall demonstrate compliance with the applicable presumptive RACT emission limitations using a 30-operating day rolling average basis except for MWCs subject to § 129.112(f), combustion units or process heaters subject to § 129.112(g)(1) and direct-fired heaters, furnaces, ovens or other combustion sources subject to § 129.112(k). [25 Pa. Code § 129.115(b)(1)].

The clinker production rate for Portland cement kilns is calculated in accordance with 40 CFR 63.1350(d). [25 Pa. Code § 129.115(b)(2)].

For an MWC with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average. [25 Pa. Code § 129.115(b)(3)].

For a direct-fired heater, furnace, oven or other combustion source subject to § 129.112(k) with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average. [25 Pa. Code § 129.115(b)(5)].

For an air contamination source without a CEMS, monitoring and testing in accordance with a Department-approved emissions source test that meets the requirements of Chapter 139, Subchapter A (relating to sampling and testing methods and procedures). The source test shall be conducted to demonstrate initial compliance and subsequently on a schedule set forth in the applicable permit. [25 Pa. Code § 129.115(b)(6)].

(O) Recordkeeping and Reporting:

The owner or operator of a source shall comply with all applicable recordkeeping and reporting requirements established in 25 Pa. Code § 129.115. This includes compliance with the monitoring, recordkeeping and reporting requirements in the applicable regulations under 25 Pa. Code, Part I, Subpart C, Article III (relating to air resources) and the requirements established in the applicable plan approvals or operating permits, or both, for the subject facilities or sources.

Exhibit 5

Municipal Waste Combustor Workgroup Report

Prepared by the Ozone Transport Commission Stationary and Area Sources Committee

Revised April 2022

Contents

Acronyms

ASNCR	Advanced selective non-catalytic reduction
BACT	Best available control technology
CEM	Continuous emission monitor
CFD	Computational fluid dynamics
CFR	Code of federal regulations
EGU	Electric generating units
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
FGR	Flue gas recirculation
LN™	Low NOx technology
MMbtu	Million British thermal units
MWC	Municipal waste combustors
NOx	Nitrogen oxides
NSR	Normalized stoichiometric ratio
OTC	Ozone Transport Commission
OTR	Ozone Transport Region
PM	Particulate matter
ppm	Parts per million
ppmvd	Parts per million dry volume
PTE	Potential to emit
RACT	Reasonably available control technology
RDF	Refuse derived fuel
SAS	Stationary and Area Sources Committee
SCR	Selective catalytic reduction
SNCR	Selective non-catalytic reduction
SOx	Sulfur oxides
VLN™	Very low NOx technology

Introduction

This report summarizes results from a municipal waste combustor (MWC) pilot project conducted by the Ozone Transport Commission (OTC) Stationary and Area Sources (SAS) Committee. The report provides an estimate of oxides of nitrogen (NOx) emissions from Ozone Transport Region (OTR) MWCs, identifies opportunities for additional NOx reductions from the units, and provides example costs for installing additional NOx controls on OTR MWCs. The report has five sections, including background information, an overview of methods used in the pilot study, findings, policy implications, and conclusions. There are seven appendices to the report, three of which detail emissions and operating characteristics of the approximately 100 MWCs in the OTR, one that provides information on MWCs outside of the OTR, two that provide calculations for converting NOx concentrations to mass emissions and costs for urea use, and one which describes MWC emission reduction technologies.

Background

During the development of the 2020 Stationary and Area Sources Committee Charge, SAS Committee members identified a number of sectors, including MWCs, small electric generating units, and others, as significant sources of NOx emissions in the OTR. In the 2020 Charge, the SAS Committee prioritized MWCs for a pilot project as the first sector for evaluation. The pilot was intended to provide a template for evaluation of other sectors in the region. The SAS Committee formed an MWC workgroup to conduct an evaluation of MWCs in the region and the results of that effort are described in this report.

Waste incinerators are a common means of handling municipal trash and they provide a valuable solid waste disposal service to the communities they serve. However, their operation produces a variety of harmful pollutants, such as particles, nitrogen oxides, dioxin, lead, mercury, and greenhouse gases. The emissions released by the burning of trash contribute to ozone and adverse health impacts, especially for nearby communities that are often overburdened with environmental justice issues. Emissions from MWCs also affect the environment in areas downwind from the facilities. Many of these facilities operate with technology that is 30 to 40 years old. Urban areas are working to transition towards cleaner alternatives of waste management, such as anaerobic digestion or composting and recycling. In the interim, additional air pollution control technologies are available to bridge the gap and lessen the public health impacts from MWCs. Ensuring the use of modern pollution controls on MWCs will improve public health and assist states in achieving clean air goals.

In 2018, MWCs emitted approximately 22,000 tons of NOx in the OTR. Nine states in the OTR have MWCs and have established Reasonably Available Control Technology (RACT) regulatory or permit limits for the MWC NOx emissions. These states are Connecticut, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Pennsylvania, and Virginia. Some OTC states have initiated a process to update NOx RACT for MWCs and this potentially provides an opportunity to strengthen emissions limits.

NOx reduction technologies applicable to MWCs have evolved over time, providing a greater selection of NOx reduction controls and strategies to cost effectively reduce NOx emission rates in retrofit situations. This SAS MWC workgroup effort included the evaluation of available information to help identify technically feasible and cost effective NOx controls for MWCs. This RACT type evaluation of available NOx controls is intended to identify numerical presumptive NOx RACT emission rate limits that could be widely met across the various sizes and configurations of the MWC category.

While it is believed that the proposed presumptive NOx RACT rate limits are generally attainable for many or most existing MWCs, it is understood that the proposed presumptive NOx RACT rate limits may not be attainable at every subject MWC. It is anticipated that the proposed presumptive NOx RACT rate limits will assist states in their conduct of case-by-case RACT determinations, considering the technological and economic circumstance for individual MWCs in their respective states.

Further, information developed in this work effort is intended to provide input to the OTC Modeling Committee. It is anticipated that the information will be used to help estimate the air quality impact of the existing OTR MWCs and any potential air quality benefit of adopting the presumptive NOx RACT limits.

Method

The pilot study was directed by the members of the SAS MWC workgroup. The sub-sections that follow in this section describe each basic step of the analysis method. In brief, these steps consisted of:

1) Developing a state-by-state OTR MWC unit inventory;
2) Estimating tons of NOx emitted annually from each MWC;
3) Conducting a literature review to identify additional control technologies;
4) Estimating tons per year of NOx that could be reduced with further controls; and
5) Researching and estimating the potential costs of further MWC NOx controls.

Developing a state-by-state MWC Inventory

In this step, MWC workgroup members compiled information in an Excel spreadsheet for each of the MWCs in their states. The information included the MWC unit ID, plant name, location, type of MWC, capacity (in tons of refuse processed per day), permit or RACT limits, existing control technology, and other information. In addition, using the federal definition, the workgroup segmented MWCs into "large" or "small" MWCs. A large unit has the capacity to process greater than 250 tons per day of refuse, and a small unit has the capacity to process 250 tons or less of refuse per day. Small units referred to in this report includes a "very small" category of MWCs defined in 40 CFR Part 60 as units that process less than 35 tons of refuse per day. MWCs were also categorized by technology type based on 40 CFR part 60 classifications.[1] The purpose of categorizing the MWCs was to identify characteristics of the MWCs that would either lend themselves to further emission controls or preclude further emission control. Appendix A provides NOx emissions for large MWCs and an estimate of potential reductions, Appendix B provides characteristics of the large MWCs, and Appendix C details characteristics of small MWCs in the OTR. The workgroup also identified non-OTR MWC electric generating units (EGUs) in the 48 contiguous states. The Results section provides an overview of findings, and Appendix D lists the MWCs outside of the OTR.

[1] *See* The Energy Recovery Council, "2018 Directory of Waste to Energy Facilities" accessed at: http://energyrecoverycouncil.org/wp-content/uploads/2019/10/ERC-2018-directory.pdf.

Developing an Emissions Inventory for the OTR MWCs

To develop inputs for the OTC Modeling Committee to use in air quality modeling, individual MWC permit limit NOx emission concentrations in parts per million (ppmvd) were collected.[2] These permit limits were used to estimate NOx mass emissions rates in pounds per million British thermal units (lb/MMBTU) using the provisions of 40 CFR Part 60 Appendix A Method 19 to convert from ppmvd to pounds per standard cubic foot (lb/scf). The workgroup subsequently used the provided F-factors to convert from lb/scf to lb/MMBtu. Method 19 provides conversion factors using F-factors for determining particulate matter (PM), sulfur dioxide (SO_2), and NOx emission rates in mass per unit calorific value, i.e., lb/ MMBtu.[3] Once inputs to the Method 19 calculation were gathered, the design capacity of the emission unit in MMBtu/hr was multiplied by the estimated lb/MMBtu emission rate to convert to a mass emission rate in pounds per hour (lb/hr).

Because these MWC units run practically all the time except for routine maintenance, the workgroup assumed these units operate continuously and used a consistent estimate of hours of operation per year across all emission units. The assumption of nearly constant operating levels of the MWCs was confirmed by examination of Energy Information Administration (EIA) fuel consumption data indicating nearly constant month-to-month fuel consumption over a year's time. By converting lb/hr to tons per year, the workgroup was able to compare the actual tons of NOx emitted per year relative to the permitted levels by using the same formula but inserting the permitted emission concentration in ppmvd. Appendix E provides a detailed description of the method used.

In addition to estimating tons per year of NOx for air quality modeling, the estimated mass emissions were used by the MWC workgroup to develop an estimate of the potential tons of NOx that could be reduced with the application of additional emissions controls.

Conducting a Literature Review to Identify Additional NOx Control Technologies

The MWC workgroup identified and reviewed a number of guidance documents and engineering analyses that evaluated the technical potential to reduce NOx emission from MWCs. Of particular interest to the workgroup were studies that evaluated NOx reductions from large MWCs with similar configurations to those in the OTR. A pair of studies conducted by Trinity Consultants for two Covanta facilities in Virginia were evaluated.[4] The studies used similar methodologies for both facilities. Another study conducted by Babcock Power Environmental for a Wheelabrator facility in Baltimore, Maryland was reviewed.[5] Like many large MWCs in the region, all three facilities use selective non-catalytic

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[2] Throughout this report, the term ppmvd is used in reference to NOx emissions concentrations. As background, ppm can be shown on a mass (ug/g, or ug/cubic meter) or volume (ul/l) basis. The unit "ppmvd" means that the concentration is on a volume basis. The ppmvd designation indicates that the associated values are on a dry basis (e.g., water vapor is not part of the sample), which provides consistency for comparing any two values, by ensuring that the value is corrected on a dry basis which eliminates the variability introduced by moisture content in the sample gas. This process is similar to correcting a measured value for O_2 content of the sample gas, such as x ppmvd @12% O_2.

[3] EPA, "Method 19 - Sulfur Dioxide Removal and Particulate, Sulfur Dioxide and Nitrogen Oxides from Electric Utility Steam Generators," see: Method 19 - Sulfur Dioxide Removal and Particulate, Sulfur Dioxide and Nitrogen Oxides from Electric Utility Steam Generators | Air Emission Measurement Center (EMC) | US EPA.

[4] Trinity Consultants, "Project Report Covanta Alexandria/Arlington, Inc., Reasonably Available Control Technology Determination for NOx," September 2017, and "Project Report Covanta Fairfax, Inc., Reasonably Available Control Technology Determination for NOx," September 2017.

[5] Babcock Power Environmental, "Waste to Energy NOx Feasibility Study," Prepared for: Wheelabrator Technologies Baltimore Waste to Energy Facility Baltimore, MD, February 20, 2020.

reduction (SNCR) as their baseline NOx control technology. A brief summary of these studies is provided below and more detail on the studies can be found in the Results section.

Trinity Consultants Studies

The Trinity Consultants studies evaluated two Covanta facilities, one in Alexandria/Arlington, VA and the other in Fairfax, VA, which are subject to RACT requirements for the 2008 ozone standard. Four technologies were evaluated for these MWCs: 1) optimized SNCR; 2) a proprietary low NOx combustion system (LN™) developed by Covanta for certain MWC configurations owned by Covanta; 3) selective catalytic reduction (SCR); and 4) Very Low NOx (VLN)/SNCR combination.

Babcock Power Environmental

The Babcock Power Environmental Study was conducted for a Wheelabrator facility in Baltimore, Maryland. The purpose of this study was to provide a feasibility analysis for additional control of NOx emissions from the waste-to-energy facility. As with the Covanta facilities evaluated in the Trinity Consultants' studies, the Baltimore MWCs were equipped with SNCR systems. The study analyzed seven technologies: 1) advanced SNCR (ASNCR), 2) flue gas recirculation SNCR (FGR-SNCR), 3) FGR-ASNCR, 4) hybrid SNCR-SCR, 5) DeNOx catalytic filter bags, 6) optimized SNCR, and 7) tail end SCR systems. A technology vendor (Fuel Tech, Inc.) was hired to provide a more comprehensive analysis of SNCR and ASNCR system capabilities to augment Babcock Power Environmental's analysis.

Findings from the Trinity and Babcock Power studies are excerpted in the Results section of this report.

Other Resources

Additional papers, correspondence, and studies were evaluated for this report. They include:

- A North American Waste to Energy paper which evaluated the feasibility of a 100 ppmvd 24-hour NOx limit[6]
- Information from a Montgomery County Resource Recovery NOx optimization study[7]; and
- Recent stack test data from the Covanta Essex facility in New Jersey where LN™ technology was working in conjunction with a conventional SNCR system[8]

Small MWCs

No studies were found regarding the retrofit of NOx controls to small MWCs in the OTR, which are characterized by limited space for NOx reduction technology installation. One study from South Korea was reviewed by the MWC workgroup. The study discusses computational fluid dynamics (CFD) modeling and actual test data for the application of SNCR on a small (50 ton per day) MWC.[9] More information on the configuration of small MWCs and space limitations is provided in the following section.

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[6] White, M.; Goff, S.; Deduck, S.; Gohlke, O., "New Process for Achieving Very Low NOx," Proceedings of the 17th Annual North American Waste-to-Energy Conference, NAWTEC17, May 18-20, 2009.
[7] HDR, "Montgomery County Resource Recovery Facility NOx Optimization," May 18, 2016.
[8] Letter from the State of New Jersey to Michael Klein, dated March 14, 2019, in reference to Covanta Energy Group, Inc. Essex County Resource Recovery Facility – Newark Annual Stack Test Program.
[9] Nguyen, T.D.B., *et al*., "Application of urea-based SNCR to a municipal incinerator: On-site test and CFD simulation," Chemical Engineering Journal 152 (2009) 36-43.

Estimating Tons per Year of NOx that Could Be Reduced with Further Controls

Using the classifications of MWCs in the region (Part 60 classifications) and the results of engineering studies found in the literature, the MWC workgroup estimated the potential for additional NOx reductions at MWCs. As described in the literature review section above, several studies were identified and reviewed. The approach used in this estimation is described below.

Large MWCs:

Most of the existing large MWCs in the OTR are equipped with SNCR, which was the baseline technology in both the Trinity and Babcock studies. Improvements to these units could include enhancing or modifying the existing SNCR system as installed with better monitoring or better spray nozzles. Another approach that was described in a Babcock study involved retrofitting the entire system. Additional approaches were described in detail in the Babcock study.

Using the OTR MWC inventory Excel worksheet, the workgroup applied two control levels to the large MWCs in the region: 130 ppmvd and 105 ppmvd. These two levels were both assumed to be 30-day averages. It is important to note that the Trinity studies used for this analysis assumed 24-hour averaging periods, but not a 30-day averaging period. The Babcock study assumed a 30-day averaging period, though the report also concluded that a 24-hour limit of 110-125 ppmvd could be met as well through the utilization of ASNCR. In addition, one unit in operation in the region at the Covanta Montgomery facility in Maryland which utilizes LN™ has a permit limit of 105 ppmvd for a 30-day rolling average.

The workgroup identified 105 ppmvd NOx on a 30-day averaging period as technically feasible for the large MWC units, based on the engineering analyses reviewed. The workgroup decided to use the same emission limit of 105 ppmvd over a 30-day average for nearly all large MWCs in the region, assuming that the control technologies evaluated in the studies can achieve this limit among nearly all large MWCs. This is the 30-day average value for ASNCR from the Babcock study. Like ASNCR, Covanta's Low NOx Technology is also able to meet a 30-day average of 105 ppmvd (e.g., the Covanta Montgomery facility in Maryland). This provides a consistent 30-day limit that is obtainable for the Covanta and Wheelabrator facilities. To the extent that the estimated emission reduction potential for some units is based on the permit limit values with 24-hour average periods, there is not a 1-to-1 comparison with the recommended limit of 105 ppmvd on a 30-day average unless the averaging time differences are accounted for.

In addition to researching the potential for a 30-day averaging period NOx limit, the workgroup evaluated the potential for a 24-hour averaging period NOx limit. The workgroup researched existing facilities permitted to a 110 ppmvd standard, read literature on technical feasibility and capital costs, and evaluated potential operating and maintenance costs associated with a more stringent 24-hour standard. Note that a 110 ppmvd @ 7% O2, 24-hr standard, if achieved by subject large OTR MWCs, would result in NOx reductions during ozone season days that may have a positive impact on air quality during ozone events. It is estimated that, relative to existing permit limits, compliance with a 110 ppmvd @ 7% O2 24-hr standard, and assuming a daily 90% capacity factor, at subject large OTR MWCs could result in an approximate 19 ton/day reduction in NOx emissions.

For both a 30-day and 24-hour NOx ppmvd averaging period, the workgroup researched and compiled implementation examples of MWCs that have been retrofitted with technologies to achieve the lower NOx limits.

Excluded Large MWCs:

There were existing large MWCs in the region that were also equipped with SNCR but were excluded from the estimation of further NOx reductions. The excluded units are the Wheelabrator Saugus units in Massachusetts. Due to the physical constraints of the two existing MWC units at this facility, the 105 ppmvd 30-day average NOx limit was not assumed to be achieved without major modifications of the existing MWCs. The Saugus MWCs are a vintage European design that incorporates a low profile “tail-end boiler” configuration with a single pass short waterwall furnace. The older tail end design and short furnace limits the ability to install additional cost effective NOx controls.

Small MWCs

Small MWCs located in the OTR tend to utilize rotary combustors or modular combustors of either the starved air or excess air configurations. While some small MWCs of these configurations incorporate some NOx control provision in their original design, little recent information was located discussing the technical or economic feasibility of retrofitting additional or more modern NOx controls on such units. The exception was the study conducted in South Korea (see footnote 9). For the MWC in the South Korean study, a NOx reduction of 70 percent was found to be feasible. This percentage reduction is similar to that found in the literature for large MWCs with the installation of ASNCR. The installation of DeNOx filter bags may be a technically feasible NOx reduction strategy for retrofit of small MWCs. But because the available information appears to indicate the use of the DeNOx filter bags may not be cost effective for larger installations, it was assumed that the economics would be no better for small capacity installations. Due to the limited number of small MWCs in the OTR and the sparsity of public information regarding the technological and economic feasibility of advanced controls, the MWC workgroup was unable to recommend NOx emission rate limitations more stringent than the values already permitted. However, the workgroup recommends that this category of sources not be forgotten as it is possible that additional reductions from this category may be found to be technically and economically feasible in the future as control options are introduced and improved.

The possibility of additional control for these small MWCs, as demonstrated in non-US applications, should be considered in the event additional sources of NOx reductions become necessary. Conducting additional research on small MWCs is a potential area for additional research since further review of the literature may yield more information on the potential to reduce emissions from these units. A list of these units is provided in Appendix C.

Researching the Potential Costs of Further MWC NOx Controls

The MWC workgroup relied on the Trinity and Babcock studies described above for example NOx control technology costs in this pilot study. In addition, the workgroup used costs found in an EPA document:

Chapter 2 - Cost Estimation: Concepts and Methodology[10] to fill in gaps in cost data. Last, the workgroup used information from EPA's NSR Guidance document to estimate urea consumption-related operating costs.[11]

The pair of studies by Trinity Consultants (described in previous sections) for the Covanta MWCs located in Alexandria/Arlington and Fairfax, VA were first evaluated. The Covanta facilities were equipped with SNCR at the time of the RACT analysis and costs were evaluated for adding three additional potential technologies: 1) the proprietary low NOx combustion system (LN™) developed by Covanta for certain MWC configurations utilized in its own facilities; 2) selective catalytic reduction (SCR); and Very Low NOx (VLN)/SNCR combination.

In the analysis for the SCR costs, Covanta solicited bids from engineering, procurement, and construction companies to determine system costs. The SCR system included the SCR reactor; gas-to-gas recuperative heat exchanger; steam coil heater; reagent feed injection and mixing system; and all associated support steel, piping, and controls. The consultants were instructed to design the SCR to receive NOx at 90-180 ppmvd (24-hour average) and control it to 50 ppmvd (24-hour average). Direct and indirect annual operating costs were obtained from a BACT analysis of an MWC in West Palm Beach, Florida.[12]

Capital costs for installation of the LN™ process were estimated by examining each of the boilers at the facility and costs were developed on a per-boiler basis. The installation cost, which includes items such as fans, dampers, ducting, and process controls, was estimated based on actual expenses from another Covanta facility (Montgomery County, MD). The annual costs were scaled linearly from the Montgomery County project costs to the Covanta facilities in Virginia.

Total capital investment costs were provided in both Covanta studies, including direct costs (purchased equipment) and indirect costs (installation costs and lost production due to extended downtime for installation). Direct and indirect costs were also presented for annual operating costs.

The third study was the Babcock Power Environmental analysis conducted for the Wheelabrator facility in Baltimore. Capital and operating costs were evaluated for each technology. At the Baltimore facility, each of the three MWCs is equipped with SNCR. As mentioned above, the study analyzed advanced SNCR (ASNCR), FGR-SNCR that incorporates flue gas recirculation into the SNCR design, FGR-ASNCR, hybrid SNCR-SCR, DeNOx catalytic filter bags, and tail end SCR systems. Because Covanta's Low NOx combustion system is proprietary technology, it was not considered for the Wheelabrator facility in Baltimore. For each of these technologies, Babcock Power Environmental estimated costs for materials, equipment, and installation. A technology vendor (Fuel Tech, Inc.) was hired to provide a more comprehensive analysis of SNCR and Advanced SNCR (ASNCR) system capabilities to augment Babcock's analysis. In this study, annualized capital costs were not provided and so the MWC workgroup estimated

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[10] EPA, "Economic and Cost Analysis for Air Pollution Regulations," Chapter 2 - Cost Estimation: Concepts and Methodology, last updated in February 2018.
[11] EPA NSR Guidance Document, 2019, https://www.epa.gov/sites/production/files/2017-12/documents/sncrcostmanualchapter7thedition20162017revisions.pdf.
[12] Florida Department of Environmental Protection "Written Notice of Intent to Issue a Permit," "Public Notice of Intent to Issue Air Permit," "Technical Evaluation and Preliminary Determination," "Draft Permit with Appendices" November 2010.

these costs from a formula in the EPA document: Chapter 2 - Cost Estimation: Concepts and Methodology (see footnote 10).

To estimate the costs per ton of NOx reduced assuming a 24-hour NOx limit, the workgroup relied on the Trinity and Babcock Power studies. The workgroup made some adjustments to these costs. First, the workgroup estimated tons of NOx reduced each year using the 110 ppmvd limit. Operating cost adjustments were made to account for the fact that the Trinity study evaluated a 90 ppmvd annual NOx limit and the workgroup was estimating costs for a 110 ppmvd 24-hour limit. To adjust operating costs, the workgroup estimated the difference in cost for urea between the 90 ppmvd NOx annual limit and a 110 ppmvd 24-hour averaging period. The cost for urea consumption for NOx removal was performed in two ways. First, the cost estimate on a per lb of NOx reduction was developed using information in the Wheelabrator Baltimore study. The differences between the optimized SNCR and advanced SNCR control options were evaluated. The second estimation method was based on simple chemical reaction estimates available in guidance from EPA, and urea cost values from the Wheelabrator Baltimore study. Details of the utilized estimation methodologies are found in Appendix G. Additional information on how costs were developed in the RACT studies that the MWC workgroup relied on is provided in the next section.

The MWC workgroup anticipates the control technologies, associated costs and emissions reduction capability found in the literature would apply to most of the MWCs throughout the OTR. However, additional analyses may be needed to further refine these estimates for specific MWCs.

Findings

In this section, an inventory of MWC units and NOx emissions in tons per year, a summary of technologies to reduce NOx from MWCs, an estimate of the NOx emission reduction potential for OTR MWCs, and estimated costs for installing and operating additional technologies are provided.

OTR MWC Inventory of Units and NOx Emissions

The inventory of MWC units in the OTR is summarized in Table 1. A total of 103 large and small units are operating in the nine OTR states with MWCs. In 2018, large units emitted over 21,000 tons of NOx annually and small units emitted approximately 900 tons of NOx. Missing from this analysis are a few MWCs in the region for which the MWC workgroup could not calculate annual NOx emissions. This is a minor portion of the inventory and could be estimated in a follow-on analysis.

Table 1: Summary of OTR MWCs and NOx Emissions by State

State	Number of Large Units	Number of Small Units	Annual Tons of NOx Emissions - Large Units (2018)	Annual Tons of NOx Emissions - Small Units (2018)
Connecticut	12	0	2,169	0
Maine	4	2	670	278
Maryland	6	0	1,435	0
Massachusetts	11	6	4,754	173
New Hampshire	2	0	344	0
New Jersey	11	0	2,044	0
New York	13	5	3,998	456

Pennsylvania	19	0	3,531	0
Virginia	7	0	2,276	0
Total	**90**	**13**	**21,221**	**906**

As can be seen from Table 1, large MWCs emit most of the NOx pollution from MWCs in the OTR. As mentioned above, information was found in the literature on additional NOx control technologies for the types of MWCs in the "large" category. For these reasons, the MWC workgroup focused its attention on technologies to reduce NOx emissions from large MWCs.

Technologies to Reduce NOx from MWCs in the OTR

Information is provided below on the potential to reduce NOx emissions from MWCs in the OTR. First, excerpts from the Trinity Consultants' report describing the technologies and the potential NOx reductions that can be achieved using each of the technologies on Covanta facilities are provided, followed by information from the Babcock Power study on a Wheelabrator facility. Additional information on the technologies is available in Appendix F.

Covanta patented low NOx technology (LN™)

Covanta has developed a proprietary low NOx combustion system that involves staging of combustion air. The system is a trademarked system and Covanta has received a patent for the technology. The Covanta LN™ is not applicable to all MWC configurations, including some that are owned or operated by Covanta, and its overall NOx reduction effectiveness may vary from unit to unit depending upon individual MWC characteristics.

Secondary air (also called overfire air) is injected through nozzles located in the furnace side walls immediately above the grate creating turbulent mixing to complete the combustion process. The Covanta LN™ process modifies the secondary air stream. A new series of air nozzles are installed higher in the furnace (tertiary air) and a portion of the secondary air is diverted to these new nozzles. The distribution of air between the primary, secondary, and tertiary streams is then controlled to yield the optimal gas composition and temperature to minimize NOx formation and control combustion. The tertiary air achieves complete coverage of the furnace cross-section to ensure good mixing with the combustion gases. Note that the total air flow to the MWC is not changed, only the distribution of air is changed. The LN™ combustion system works in concert with an optimized SNCR system to achieve lower NOx emissions. The LN™ process can be retrofitted to an existing unit, and Covanta has installed the LN™ process at approximately 20 units worldwide. The LN™ process can appreciably increase annual maintenance costs due to increased refractory wear and boiler fouling.

The Trinity report found that implementation of LN™ can reasonably achieve an annual NOx emission limit of 90 parts per million volume dry (ppmvd) (7% O_2) and a daily NOx limit of 110 ppmvd (7% O_2). LN™ is used in combination with SNCR and is thus presented considering usage of the combustion technology plus SNCR. (Note also that while the Covanta LN™ technology is highly effective on some MWC configurations, including the facility discussed in the Trinity report, it is not applicable to all MWC configurations operated by Covanta.)

SCR

Trinity Consultants instructed its subcontractors to design a SCR system that included the SCR reactor; gas-to-gas recuperative heat exchanger; steam coil heater; reagent feed injection, and mixing system; and all associated support steel, piping, and controls. The consultants were instructed to design the SCR to receive NOx at 90-180 ppmvd (24-hour average) and control it to 50 ppmvd (24-hour average). The study concluded there are significant space considerations with SCR system installation which can be managed in a cost effective way in a new development, but which make retrofit installation very costly and complex. Specifically, the piping, wiring, supports, and other hardware require substantial space which may not be available in an existing facility.

VLN Technology

The Very Low NOx (VLN) system employs a unique combustion air system design, which in addition to the conventional primary and secondary air systems, features an internal gas recirculation injection system. Recirculation of the flue gas reduces the need for combustion air for complete combustion in the furnace. The combination of the internal gas recirculation and reduced secondary air extends the combustion zone in the furnace, which in turn inhibits the formation of NOx. A NOx limit of 110 ppmvd NOx on a 24-hour average basis and 90 ppmvd on an annual basis was found to be feasible. The study concluded that VLN remains a viable technology for new MWC units but is not technically feasible for an existing unit.

Babcock Power Environmental Study

The Babcock Power Environmental Study was conducted for a Wheelabrator facility in Baltimore, Maryland. The purpose of this study was to provide a feasibility analysis for additional control of NOx emissions from the waste-to-energy facility. The Baltimore MWCs were equipped with an SNCR system. Results from the analysis conducted for the study are provided below for each of the technologies evaluated.

Optimized SNCR

The study analyzed CFD model outputs and found that through adjustments to residence time, NOx emissions levels of 135 ppmvd @7% O_2 on a 24-hour block average and 130 ppmvd @7% O_2 on a 30-day rolling average are achievable.

Advanced-SNCR (ASNCR)

The Babcock Power Environmental study evaluated optimized injector locations. It concluded this option is technically feasible with future CFD and chemical spray modeling where particular attention is paid to injector placement so that there is no risk of chemical impingement on the superheater and boiler surfaces. The study concluded that a reduction of 25 ppmvd @7% O_2 on a 30-day rolling average (i.e., 105 ppmvd) can be realized over the optimized existing SNCR. In discussing the potential retrofit of ASNCR, the report states “based on experience … a 5% improvement in chemical coverage is feasible, leading to a target NOx of 110 ppmvd @7% O_2 on a 24-hour block average and 105 ppmvd @7% O_2 on a 30-day rolling average while the ammonia slip is kept at the 5 ppm range.”

ASNCR NOx control technology may be considered for retrofit on existing MWCs as either a new retrofit technology or a significant upgrade to an existing SNCR. ASNCR is like SNCR in that it utilizes the injection of reagents into the proper temperature zones of the furnace to reduce the flue gas NOx concentration. ASNCR designs may utilize advanced computer modeling techniques to specify SNCR nozzle locations and elevations so that their operation may be optimized across varying furnace conditions. The primary difference between a well-designed SNCR and ASNCR system is that ASNCR would utilize advanced furnace temperature monitoring instrumentation to provide near real time operating furnace temperature profiles. This information allows the control system to modulate which ASNCR injectors are in operation and to automatically adjust the individual injector flow rate in order to optimize the overall NOx emission rate, including the reduction in magnitude of NOx spikes associated with the combustion of a heterogeneous fuel. This advanced system optimizes the NOx reduction chemical reaction across the furnace to achieve high levels of overall NOx reduction while maintaining low ammonia slip.

ASNCR is an effective NOx reduction technology capably of achieving a 70% reduction. Industry literature discusses that for most large MWC EGUs, uncontrolled NOx emission rates are in the range of 300 ppmvd to 350 ppmvd @7% O_2. Based on these values, it would appear that a general range of NOx emissions utilizing ASNCR would be 90 ppmvd to 105 ppmvd.

The Babcock Power Environmental information suggests that ASNCR may be applicable to many MWCs as a retrofit technology, although furnace configuration or other factors could affect the NOx reduction potential.

FGR-SNCR

With this option, Flue Gas Recirculation is incorporated into the SNCR design. The FGR-SNCR option was evaluated using a boiler heat transfer model. In this option, a portion of the flue gas from combustion is recirculated from the fan inlet duct and re-injected back into the furnace through the over-fire air system. FGR is used to replace a portion of the secondary air flow. This reduces use of ambient air, and therefore provides additional NOx emission reduction by reducing O_2 concentration or excess ambient air and combustion temperature, while still maintaining the secondary air gas flow needed for mixing in the furnace.

FGR-ASNCR

It is also possible to combine the FGR technology with the ASNCR technology. The implementation of ASNCR by adding additional independent zones of injection and an acoustic pyrometer can provide additional NOx reduction while controlling the ammonia slip. The FGR-ASNCR system was evaluated using a boiler heat transfer model. The study concluded that FGR-ASNCR is technically feasible from both an arrangement and performance perspective with future CFD modeling.

Hybrid SNCR-SCR

The Hybrid SNCR-SCR option utilizes two treatment stages: a SNCR treatment stage followed by a SCR treatment stage. In a stand-alone SNCR application, the reducing agent is released at higher temperatures to minimize ammonia slip formation. In hybrid applications, the ammonia slip becomes the reducing agent over the catalyst. The hybrid system was not considered to be technically feasible for the Baltimore facility.

DeNOx Catalytic Filter Bags

DeNOx catalytic filter bags can be utilized with ammonia injection to reduce NOx in a similar fashion to traditional SCR catalyst. These combination bags remove both dust and gaseous compounds simultaneously. The DeNOx catalyst was not considered to be technically feasible at the Baltimore facility due to operating temperature requirements.

Tail end SCR Systems

A tail end system positions the SCR downstream of all other air pollution control equipment installed on a unit. A major benefit of this installation location is that many of the flue gas constituents that would be damaging to the catalyst have been removed prior to the SCR reactor inlet. However, the installation location results in flue gas temperatures below the acceptable range for catalytic reduction, and the flue gas consequently must be reheated via natural gas or oil burners or steam coil heaters. Tail end SCR was not found to be technically feasible for a retrofit application in this study. While it is potentially technically feasible, it would require additional detailed evaluations to be performed to confirm feasibility for retrofits.

Implementation Examples of LN™ and ASNCR

The Covanta LN**™** technology was installed at the Montgomery County, Maryland facility in 2009 and has been operational since then. The Montgomery County Resource Recovery Facility in Maryland is currently operating under a NOx RACT requirement which limits NOx emissions to 140 ppmvd @7% O_2 for a 24-hour block average. In 2009 Covanta, under an Agreement with the Northeast Maryland Waste Disposal Authority and the County, completed work on the installation of Covanta's LN™ combustion system upgrade to the SNCR system. Operational data (since the May 1, 2019, NOx RACT effective date) at the facility demonstrate that the units on average are able to achieve a daily average of around 84 ppmvd @7% O_2.

Maryland's NOx RACT also required a NOx 30-day rolling average emission rate of 105 ppmvd @7% O_2 to be met beginning on May 1, 2020. Since that time, the peak 24-hour average recorded has been on the order of 103 ppmvd @7% O_2. The facility is capable, and further demonstrates, meeting a 110 ppmvd 24-hour limit. Information from a Montgomery County Resource Recovery NOx optimization study found that ammonia slip is below 5 ppm for all units with LN™ technology with SNCR and with NOx emissions of 66 ppm and higher.

The Covanta LN**™** is being installed at Covanta Alexandria/Arlington, Virginia and Covanta Fairfax, Virginia. For Covanta Alexandria/Arlington, the permit requires the facility to install the low NOx combustion system on the first unit by the end of the 4th quarter of 2019, the second unit by the end of the 4th quarter of 2020, and the third unit by the end of the 4th quarter of 2021.[13] For Covanta Fairfax, the permit requires the facility to install the low NOx combustion system on the first unit by the end of the 2nd quarter of 2019, the second unit by the end of the 4th quarter of 2019, the third unit by the end of the 4th quarter of 2020, and the fourth unit by the end of the 4th quarter of 2021.[14] Thus, both facilities will be completely utilizing the low NOx technology by the start of 2022.

The Virginia Department of Environmental Quality has determined that Covanta's proprietary Low NOx technology is RACT for Covanta MWCs. The Virginia facilities are permitted to emit 110 ppmvd of NOx on a 24-hour average basis @7% O_2, and 90 ppmvd of NOx on an annual average basis @7% O_2.[15] In addition, the limits of 110 ppmvd @7% O_2 on a daily average and 90 ppmvd @7% O_2 on an annual

[13] Permit issued by the Commonwealth of Virginia to operate a municipal solid waste combustor at Alexandria, Virginia, dated February 2019.

[14] Permit issued by the Commonwealth of Virginia to operate a municipal solid waste combustor at Fairfax, Virginia, dated February 2019.

[15] See footnotes 16 and 17 for sources.

average have been adopted into The Commonwealth of Virginia's SIP as RACT for the 2008 ozone NAAQS for both of these facilities.[16]

Table 2 lists details for facilities that have permitted NOx emission rate limits of 110 ppmvd @7% O_2, 24-hour average. Public information indicates all have been retrofit with the proprietary Covanta Low NOx (LN™) modifications in conjunction with SNCR. The boiler/combustion units are of three different manufacturers and range in rating from 325 tons/hr to 750 tons/hr.

Table 2: List of Facilities with Retrofit NOx Controls Permitted at 110 ppmvd 24-hour Average

Plant Name	State	Combustor Manufacturer	Rating (tons/day)	NOx Control	Permit Short Term NOx Limit*,**	Permit Long Term NOx Limit*,***
Covanta Alexandria/Arlington Energy	VA	Keeler/Dorr-Oliver	325	Covanta LN, SNCR	110	90
Covanta Alexandria/Arlington Energy	VA	Keeler/Dorr-Oliver	325	Covanta LN, SNCR	110	90
Covanta Alexandria/Arlington Energy	VA	Keeler/Dorr-Oliver	325	Covanta LN, SNCR	110	90
Covanta Fairfax Energy	VA	Ogden Martin	750	Covanta LN, SNCR	110	90
Covanta Fairfax Energy	VA	Ogden Martin	750	Covanta LN, SNCR	110	90
Covanta Fairfax Energy	VA	Ogden Martin	750	Covanta LN, SNCR	110	90
Covanta Fairfax Energy	VA	Ogden Martin	750	Covanta LN, SNCR	110	90
Hillsborough County Resource Recovery	FL	Riley w/Martin GMBH Grates	690	Covanta LN, SNCR, FGR	110	90

* ppmvd @7% O_2

** permit short term limit averaging period is 24-hour

*** permit long term limit averaging period is annual

The information in Table 2 indicates that many of the Covanta run facilities, across a wide range of sizes and manufacturers, can be retrofitted with the proprietary Covanta LN™ technology and achieve significant NOx reductions. However, the workgroup understands that the Covanta LN™ technology is not applicable to all MWC configurations operated by Covanta and that not all of the MWCs converted to the Covanta LN™ technology may be able to achieve NOx reduction results similar to the table values. That a number of these units have been retrofitted with the LN™ technology and have been permitted

[16] Submittal to EPA Region III for a SIP revision by the Commonwealth of Virginia entitled, "Statement of Legal and Factual Basis, Covanta Alexandria/Arlington, Permit No. NRO-RACT 71895," February 2019 and "Statement of Legal and Factual Basis, Covanta Fairfax, Permit No. NRO-RACT 71920," February 2019.

at 110 ppmvd @7% O_2 24-hr average supports a proposed 110 ppmvd 24-hr average presumptive NOx rate limit. Furthermore, data on Covanta Fairfax's website (https://www.covanta.com/where-we-are/our-facilities/fairfax) shows the facility is consistently able to achieve a daily average of around 90 ppmvd @7% O_2 for Units 2 and 4.

A number of additional facilities are retrofitted with LN™ but not permitted to 110 ppmvd. These include:

- The Montgomery County facility described previously.
- The Covanta Essex facility in New Jersey has achieved values around 100 ppmvd @7% O_2.[17] This is based on recent stack test data.
- There is limited information available that technology similar to LN™ has been installed on a Covanta operated MWC in the mid-west that is said to be operating at 90 ppmvd @7% O_2 annual average (similar to the annual limits for the units that are now permitted at 110 ppmvd 24-hr). However, the publicly available information indicates that the unit is operating at the low NOx level by contract, not by permit limit.

A North American Waste to Energy paper discussing the retrofit potential of Covanta's proprietary VLN and LN technologies on an existing Covanta operated MWC found that a 100 ppmvd 24-hour limit is feasible. The paper provided an overview of a MWC development and demonstration project and provided NOx and ammonia (NH_3) slip data. The paper discussed the extended operating experience that has been established on the system.

ASNCR technology is being installed at a Baltimore City, MD facility. The schedule for implementing the technology is as follows: permits must be in place by the end of 2021 for the three units, followed by construction in 2022, and the facilities must be on-line in 2023.

Potential NOx Reductions Resulting from Installing Additional Control Technologies

Using the methods described in previous sections, the MWC workgroup estimated that approximately 6,700 tons of NOx could be reduced in the OTR with a 105 ppmvd 30-day average NOx requirement for MWCs. The results are summarized in Table 3. The workgroup also evaluated a 130 ppmvd 30-day average NOx requirement. Not shown in the table, a 130 ppmvd 30-day average limit was estimated to reduce NOx by 3,300 tons per year.

Table 3: Summary of Potential NOx Reductions from MWCs in the OTR

Type of unit	2023 Projected NOx Emissions (tons/yr)	Potential 2023 NOx Reduction (tons/yr) Assuming 105 ppmvd	Percent Reduction from 2023 Projected NOx Emissions
Large MWC	22,992	6,742	29%
Small MWC	1,006	Not estimated	Not estimated
Total	23,998	6,742	28%

[17] Letter from the State of New Jersey to Michael Klein, dated March 14, 2019, in reference to Covanta Energy Group, Inc. Essex County Resource Recovery Facility – Newark Annual Stack Test Program.

An OTR-wide estimate of potential tons of NOx reduced assuming a 24-hour NOx limit of 110 ppmvd was not estimated in this study, however, tons of NOx reduced on an annual basis would be in the range of the reductions shown in column three of Table 3.

Control Costs

As discussed in the Method section, the MWC workgroup researched studies to identify costs associated with the installation and operation of additional NOx control technologies on MWCs in the region. Three studies were found with detailed cost information for MWCs that are similar in configuration to a significant number of large MWCs in the region. The results of cost analyses from these studies are provided in this section.

Results from the Trinity Consultants analysis of installation of a proprietary Covanta Low NOx technology and SCR at Covanta facilities are shown in Table 4. Note that the cost estimate values included in the report, and copied below in Table 4, were based on year 2017 dollars. SCR was estimated to be very costly ($31,000 per ton of NOx reduced), therefore the results for that technology are not presented here. The left column lists types of costs (such as capital or operating costs) and NOx emissions information for the Alexandria/Arlington VA facility. The middle column provides emission information for the baseline technology (SNCR). No costs are provided in this column since SNCR is already in operation at the facility. The right column provides costs associated with installing the Low NOx technology to the MWC and the resulting NOx emissions changes.

Table 4: Cost of Installing Low NOx Technology on an MWC with SNCR (Alexandria/Arlington, VA)

	SNCR (Base)	Low NOx
Capital Costs ($)	-	$1,018,705
Annual Operating Costs ($)	-	$213,773
Annualized Capital Costs ($)	-	$116,533
Projected Lifetime (yr)	-	20
Interest Rates (%)	-	7%
Total Yearly Costs ($)	-	$330,306
Base Case NOx (ppmvd)*	180	180
Controlled NOx (ppmvd)	180	90
Estimated NOx Reduction (%)	0	50
NOx Emission (ton/yr)	165	82.5
Emission Reduction (ton/yr)	0	82.5
Cost effectiveness ($/ton)	**$0.00**	**$4,004**

*This is an “equivalent” NOx emissions rate, rather than a permit level.

The analysis shows that equipping the Covanta unit with Low NOx technology resulted in a 50 percent NOx reduction at a cost of approximately $4,000 per ton of NOx reduced.

The row labeled “Base Case NOx (ppmvd)” shows the permit limit before installation of Covanta's Low NOx Technology and the “Controlled NOx (ppmvd)” is the new annual permit limit after installation of the Low NOx technology. The table shows that NOx emissions were reduced from 180 ppmvd to 90 ppmvd with the installation of the Low NOx technology.[18] The row labeled “NOx Emission (ton/yr)”

[18] Unless stated otherwise, all concentrations listed in this report assume 7% O_2.

shows NOx emissions before and after installation of Covanta's Low NOx technology. The NOx emission reduction in tons per year is calculated to be 82.5 tons per year as shown in the next row. The "Cost effectiveness" value assumes that SNCR was already installed at the facility and thus assigns zero additional cost to the facility.

The total capital investment or "Capital Costs" includes direct and indirect costs. Direct costs are purchased equipment costs and indirect costs are costs associated with installation of equipment and lost revenue due to extended downtime for installation.

The study also estimated direct and indirect costs for annualized expenditures. Direct costs in this category include increased capital expenditures due to the Low NOx technology and increased annual expenses from operating the equipment. Indirect operating costs are annualized capital costs such as administrative charges plus capital recovery (loan interest). Note that control costs are facility-specific, so any costs specified here are examples only.

Table 5 shows a similar analysis for the Covanta Fairfax, Virginia facility. Note that the cost estimate values included in the report, and copied below in Table 5, were based on year 2017 dollars. In the Trinity Consultants analysis for the Fairfax facility, capital costs ($1,564,242) were approximately 50 percent higher than for the Alexandria/Arlington facility. Operating costs ($493,322) were 130 percent higher than those for the Alexandria/Arlington facility. The cost effectiveness ($/ton of NOx reduced) for Fairfax was lower than in the Alexandria/Arlington MWC at $2,888 per ton of NOx reduced. This is because the NOx emissions from the Fairfax MWC are considerably higher than in the example shown in Table 4. While both facilities realized a 50 percent reduction in NOx emissions from the installation of Low NOx technology, the MWC in Fairfax had a 230 ton annual NOx reduction while the Alexandria/Arlington facility realized an 83 ton NOx reduction annually for a capital cost that was 50 percent lower.

Table 5: Cost of Installing Low NOx Technology on an MWC with SNCR (Fairfax, VA)

	SNCR (Base)	**Low NOx**
Capital Costs ($)	-	$1,564,242
Annual Operating Costs ($)	-	$493,322
Annualized Capital Costs ($)	-	$178,938
Projected Lifetime (yr)	-	20
Interest Rates (%)	-	7%
Total Yearly Costs ($)	-	$672,260
Base Case NOx (ppmvd)	180	180
Controlled NOx (ppmvd)	180	90*
Estimated NOx Reduction Factor	0	0.5
Estimated NOx Reduction (%)	0	50
NOx Emission (ton/yr)	465.6	465.6
Projected Controlled NOx Emissions (ton/yr)	465.6	232.8
Emission Reduction (ton/yr)	0	232.8
Cost effectiveness ($/ton)	**$0.00**	**$2,888**

*annual average

Cost Estimate for a 24-Hour NOx Limit of 110 ppmvd using LN™

In this section, the workgroup's estimate of capital and operating costs for using LN technology to achieve a 24-hour NOx limit of 110 ppmvd is presented. Tables 6 and 7 show estimates for the cost of installing and operating LN™ at Covanta facilities. In the far-right columns in the tables, labeled "Low NOx Trinity Consultants Study," costs and cost effectiveness numbers are taken from the Trinity Consulting study of the Alexandria/Arlington and Fairfax, VA Covanta facilities. The analysis evaluated an annual limit of 90 ppmvd for the facilities. The third column labeled "Low NOx Workgroup" provides an estimate developed by the MWC workgroup of dollars per ton of NOx reduced assuming a 24-hour limit using the costs from the Trinity study.

Table 6: Cost of Installing Low NOx Technology on an MWC with SNCR (Alexandria/Arlington, VA)

	SNCR (Base)[1]	**Low NOx – Workgroup[2]**	**Low NOx[3]**
Capital Costs ($)[3]	-	$1,018,705	$1,018,705
Cost Reduction for Assuming 110 ppmvd ($)[4]		$32,627	
Annual Operating Costs ($)	-	$181,146	$213,773[3]
Annualized Capital Costs ($)[3]	-	$116,533	$116,533
Projected Lifetime (yr)	-	20	20
Interest Rates (%)	-	7%	7%
Total Yearly Costs ($)	-	$297,679	$330,306
Base Case NOx (ppmvd)[5]	180	180	180
Controlled NOx (ppmvd)[6]	180	110	90
Estimated NOx Reduction Factor	0.0	0.389	0.5
Estimated NOx Reduction (%)	0	38.89	50
NOx Emission (ton/yr)[5]	165	165	165
Projected Controlled NOx Emissions (tons/yr)	165	100.83	82.5
Emission Reduction (ton/yr)	0	64.17	82.5
Cost effectiveness ($/ton)[7]	**$0.00**	**$4,639**	**$4,004**

[1]SNCR was already installed at both facilities; assume $0 additional cost to facilities
[2]The Workgroup's recommendation and cost estimate
[3]Based on Covanta's "Reasonably Available Control Technology Determination for NOx" for Covanta Alexandria/Arlington, VA
[4]Savings based on $0.89 per pound of NOx reduced (from Babcock report for Wheelabrator Baltimore)
[5]NOx emissions before installation of Covanta's Low NOx Technology
[6] New annual permit limit (@7% O_2)
[7] The Commonwealth of VA has determined that Low NOx Technology is RACT for the Alexandria and Arlington facilities

The O&M costs from the Trinity study assume use of reagent and other substances required to meet the 90 ppmvd annual average limit, as well as maintenance costs. Using these costs to calculate cost effectiveness values ($/ton) for an assumed 110 ppmvd NOx 24-hour average limit could result in higher costs than would be incurred in actual use for the 110 ppmvd limit. This is because reagent and other substances required to meet the 90 ppmvd limit may be higher than that of O&M costs to achieve the 110 ppmvd 24-hour limit. Thus, using the method previously described, the workgroup adjusted the O&M costs, and this is reflected in the "Annual Operating Costs" row in Tables 6 and 7.

The workgroup's estimate of a 110 ppmvd 24-hour NOx limit cost effectiveness is $4,639 per ton of NOx reduced. This is approximately $600 per ton higher than the 90 ppmvd annual NOx limit in the Trinity study. The difference in cost effectiveness (in $/ton of NOx removed) is primarily due to a lower estimated number of tons of NOx removed with the recommended NOx emission rate limit while assuming similar capital expenses associated with both rate limits. Note however that the estimated annual O&M expenses would be somewhat lower for the recommended 110 ppmvd limit primarily due to a reduction in reagent consumption.

Table 7 provides a similar calculation using the Fairfax, VA Covanta cost evaluation from the Trinity study.

Table 7: Cost of Installing Low NOx Technology on an MWC with SNCR (Fairfax, VA)

	SNCR (Base)[1]	**Low NOx – Workgroup**[2]	**Low NOx**[3]
Capital Costs ($)[3]	-	$1,564,242	$1,564,242
Cost Reduction for Assuming 110 ppmvd ($)[4]		$92,079	
Annual Operating Costs ($)	-	$401,243	$493,322[3]
Annualized Capital Costs ($)[3]	-	$178,938	$178,938
Projected Lifetime (yr)	-	20	20
Interest Rates (%)	-	7%	7%
Total Yearly Costs ($)	-	$580,181	$672,260
Base Case NOx (ppmvd)[5]	180	180	180
Controlled NOx (ppmvd)[6]	180	110	90
Estimated NOx Reduction Factor	0.0	0.389	0.5
Estimated NOx Reduction (%)	0	38.89	50
NOx Emission (ton/yr)[5]	465.6	465.6	465.6
Projected Controlled NOx Emissions (tons/yr)	465.6	284.53	232.8
Emission Reduction (ton/yr)	0	181.07	232.8
Cost effectiveness ($/ton)[7]	**$0.00**	**$3,204**	**$2,888**

[1] SNCR was already installed at both facilities; assume $0 additional cost to facilities.
[2] The Workgroup's recommendation and cost estimate.
[3] Based on Covanta's "Reasonably Available Control Technology Determination for NOx" for Covanta Alexandria/Arlington, VA.
[4] Savings based on $0.89 per pound of NOx reduced (from Babcock report for Wheelabrator Baltimore).
[5] NOx emissions before installation of Covanta's Low NOx Technology.
[6] New annual permit limit (@7% O_2).
[7] The Commonwealth of VA has determined that Low NOx Technology is RACT for the Alexandria and Arlington facilities.

The cost per ton of NOx reduced in the 110 ppmvd 24-hour limit case (third column) is $3,204. The method used to develop this estimate is the same as used in Table 6 for the Covanta Alexandria/Arlington facility.

As mentioned previously, the Babcock Power Environmental study for Wheelabrator evaluated four technologies: optimized SNCR, ASNCR, FGR-SNCR, and FGR-ASNCR. The baseline technology in this Wheelabrator facility was SNCR. Costs for converting this Wheelabrator facility to the different technology configurations are provided in Table 8.

The capital costs and annual operating costs shown in Table 8 were taken from the Babcock study for the Wheelabrator Baltimore facility. Note that the cost estimate values included in the report, and copied below in Table 8, were based on year 2019 dollars. "Interest Rates" and "Projected Lifetime" are based on Covanta's NOx RACT Analysis in Virginia for Covanta Fairfax and Covanta Alexandria/Arlington. "Current NOx Emissions" are based on 2023 estimates for NOx emissions from Wheelabrator Baltimore.

Table 8: Costs for Converting a Wheelabrator MWC with SNCR to Lower NOx Technology Configurations

	Optimized SNCR	**ASNCR**	**FGR-SNCR**	**FGR-ASNCR**
Capital Costs ($)[1]	$85,200	$8,665,162	$5,829,591	$12,993,524
Annual Operating Costs ($)	$695,000	$995,000	$815,000	$1,035,000
Annualized Capital Costs ($)	$8,042	$817,930	$550,272	$1,226,497
Projected Lifetime (yr)	20	20	20	20
Interest Rates (%)	7%	7%	7%	7%
Total Yearly Costs ($)	$703,042	$1,812,9300	$1,365,272	$2,261,497
Base Case NOx (ppmvd)	150	150	150	150
Controlled NOx (ppmvd)	135	110	120	105
Estimated NOx Reduction Factor	0.100	0.267	0.20	0.30
Estimated NOx Reduction (%)	10.000	26.7	20	30
Current NOx Emission (tons/yr)	1,104	1,104	1,104	1,104
Projected Controlled NOx Emissions (tons/yr)	993.38	809.42	883.01	772.63
Emission Reduction (tons/yr)	110.38	294.34	220.75	331.13
Cost effectiveness ($/ton)	**$6,370**	**$6,159**	**$6,185**	**$6,830**

In Table 8, the "Base Case NOx" 24-hour permit limit is 150 ppmvd and the "Controlled NOx" limits for technologies are based on 24-hour block averages from Babcock Power Environmental study for Wheelabrator Baltimore.

Cost Summary

Costs evaluated for additional NOx controls ranged from $2,888 to $6,159 per ton of NOx reduced, depending on the technology and averaging period considered. While the costs presented in this section may be generally representative of the costs of upgrading other MWCs in the region with additional technology, further analysis would be required to determine an estimate for specific units. Nonetheless, the workgroup believes the costs reported in this section represent a reasonable estimate for further reducing NOx emissions from MWCs in the OTR.

Non-OTR MWCs

Available public data indicate there are 63 MWC EGU units in non-OTR contiguous states. Most of these 63 non-OTR MWCs would be categorized as large MWCs. The majority of these MWC EGUs are located in Florida (33 units), and the state with the next highest number of MWCs is Minnesota (nine units). Of the 63 non-OTR MWC EGUs, 12 are located in states linked to OTR state air quality. Permit NOx emission rate limits for these non-OTR MWCs (including those in linked states) are predominately within the range of the existing limits for OTR MWCs. While the non-OTR states were not contacted to obtain additional information from regulatory personnel most familiar with the non-OTR MWC, the publicly available information appeared to indicate that the range of configuration and operating characteristics of these non-OTR MWCs were not dissimilar from the range of OTR MWCs. This suggests that these non-OTR MWCs would have emission reduction potentials, on an average MWC unit basis, similar to those estimated for the OTR MWC units. To date, the workgroup has not quantified the emission reduction potential associated with the non-OTR MWCs, but may do so in the future as time and resources allow, as indicated in the section on Additional Research. However, that NOx emission reductions appear to be technically and economically feasible from this class of sources in upwind states should not be forgotten if more detailed analysis of upwind source impact is undertaken. See Additional Research (below) for recommendations on additional actions. OTC estimates the 2018 potential to emit from non-OTR MWCs was 20,506 tons of NOx per year, indicating that non-OTR MWC and OTR MWC NOx emissions each comprise approximately half of total U.S. MWC NOx emissions. See Appendix D for additional detail.

Policy Implications

This pilot study of MWCs in the OTR finds a NOx limit of 105 ppmvd (30-day average) could be achieved with the technologies described in this report in a cost effective manner. In addition, the pilot concludes almost all large MWC facilities can be held to a 110 ppmvd @7% O_2 24-hour NOx limit. The estimated range of cost-effective NOx controls associated with these presumptive limits are in line with a range of values some states have already considered RACT. Thus, states that are updating RACT or NOx permit limits for MWCs in the OTR should consider increasing the stringency of those emissions limits. At the federal level, the workgroup recommends SAS initiate a conversation with EPA on the introduction of similar requirements nationwide.

Additional Research

The Workgroup identified several areas for potential additional research. These are as follows:

- Conduct further research to determine whether any controls can be used on small MWCs. Since the workgroup had limited time to conduct its analysis, the group prioritized large MWCs. Some additional research could yield recommendations for these small units.
- Evaluate how peak day emissions could be reduced with either a 30-day averaging limit or a 24-hour limit.
- Research the potential for additional NOx reductions from non-OTR MWCs.
- Initiate a dialogue with EPA on establishing nationwide MWC standards similar to the ones recommended in this pilot and to the extent possible conduct additional research to support this goal.

Conclusions

MWCs in the OTR are a significant source of NOx emissions: in 2018, MWCs in the region emitted over 22,000 tons of NOx. Significant annual NOx reductions could be achieved from MWCs in the OTR using several different technologies, or combinations of technologies, as described in this report. The MWC workgroup concludes that a NOx control level of 105 ppmvd on a 30-day average basis and a 110 ppmvd on a 24-hour averaging period are likely achievable for most large MWCs in the region and could be viewed as presumptive NOx RACT limits to assist states in the conduct of case-by-case RACT evaluations. This conclusion is based on a review of publicly available information and engineering studies of similar

MWCs in the OTR. Based on a projected 2023 NOx inventory for the large MWCs in the region of approximately 23,000 tons, NOx emissions from MWCs could be reduced by approximately 6,700 tons annually with additional controls achieving a 105 ppmvd level on a 30-day average. Approximately 3,000 tons of NOx could be reduced with a permit limit of 130 ppmvd on a 30-day average. Studies evaluating MWCs similar in design to the large MWCs in the OTR found NOx reductions could be achieved at a cost ranging from approximately $2,900 per ton reduced to approximately $6,200 per ton of NOx reduced. (Note that this range of values is roughly equivalent to a range of $3,350 per ton of NOx reduced to $6,870 per ton of NOx reduced, in 2022 dollars.)

Appendix A: OTR Large MWC Actual and Proposed Emissions

Facility Name	State	Projected 2023 NOx Emissions (tons/yr)	Permit NOx Limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
Covanta Bristol Energy	CT	97	120	130 ppmvd is higher than permit	0	0	-12	97	84
Covanta Bristol Energy	CT	113	150	-13%	-15	-30%	-34	98	79
Covanta Southeastern Connecticut Company	CT	167	150	-13%	-22	-30%	-50	144	117
Covanta Southeastern Connecticut Company	CT	171	150	-13%	-23	-30%	-51	148	120
MIRA	CT	260	146	-11%	-28	-28%	-73	231	187
MIRA	CT	134	146	-11%	-15	-28%	-38	119	96
MIRA	CT	276	146	-11%	-30	-28%	-78	246	199
Wheelabrator Bridgeport	CT	301	150	-13%	-40	-30%	-90	261	211
Wheelabrator Bridgeport	CT	305	150	-13%	-41	-30%	-91	264	213
Wheelabrator Bridgeport	CT	310	150	-13%	-41	-30%	-93	269	217
Wheelabrator Lisbon	CT	117	150	-13%	-16	-30%	-35	101	82
Wheelabrator Lisbon	CT	126	150	-13%	-17	-30%	-38	109	88
Covanta Haverhill	MA	553	150	-13%	-74	-30%	-166	479	387
Covanta Haverhill	MA	586	150	-13%	-78	-30%	-176	508	410
SEMASS Resource Recovery	MA	426	146	-11%	-47	-28%	-120	379	306

Facility Name	State	Projected 2023 NOx Emissions (tons/yr)	Permit NOx Limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
SEMASS Resource Recovery	MA	486	146	-11%	-53	-28%	-136	432	349
SEMASS Resource Recovery	MA	498	146	-11%	-55	-28%	-140	443	358
Wheelabrator Millbury Facility	MA	500	150	-13%	-67	-30%	-150	433	350
Wheelabrator Millbury Facility	MA	472	150	-13%	-63	-30%	-142	409	331
Wheelabrator North Andover	MA	417	150	-13%	-56	-30%	-125	361	292
Wheelabrator North Andover	MA	447	150	-13%	-60	-30%	-134	387	313
Wheelabrator Saugus	MA	405	150	--	--	--	--	405	405
Wheelabrator Saugus	MA	388	150	--	--	--	--	388	388
Montgomery County Resource Recovery	MD	147	140	-7%	-11	-25%	-37	137	110
Montgomery County Resource Recovery	MD	147	140	-7%	-11	-25%	-37	137	110
Montgomery County Resource Recovery	MD	147	140	-7%	-11	-25%	-37	137	110
Wheelabrator Baltimore Refuse	MD	367	150	-13%	-49	-30%	-110	318	257
Wheelabrator Baltimore Refuse	MD	367	150	-13%	-49	-30%	-110	318	257
Wheelabrator Baltimore Refuse	MD	367	150	-13%	-49	-30%	-110	318	257

Facility Name	State	Projected 2023 NOx emissions (ton/yr)	Permit NOx limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
Penobscot Energy Recovery	ME	69.12	230	-43%	-30	-54%	-38	39	32
Penobscot Energy Recovery	ME	103.32	230	-43%	-45	-54%	-56	58	47
Ecomaine	ME	231.9	180	-28%	-64	-42%	-97	167	135
Ecomaine	ME	250.35	180	-28%	-70	-42%	-104	181	146
Wheelabrator Concord Facility	NH	218.09	205	-37%	-80	-49%	-106	138	112
Wheelabrator Concord Facility	NH	205.45	205	-37%	-75	-49%	-100	130	105
Camden Resource Recovery Facility	NJ	84.75	150	-13%	-11	-30%	-25	73	59
Camden Resource Recovery Facility	NJ	110.62	150	-13%	-15	-30%	-33	96	77
Camden Resource Recovery Facility	NJ	112.13	150	-13%	-15	-30%	-34	97	78
Covanta Essex Company	NJ	226.26	150	-13%	-30	-30%	-68	196	158
Covanta Essex Company	NJ	260.01	150	-13%	-35	-30%	-78	225	182
Covanta Essex Company	NJ	300.78	150	-13%	-40	-30%	-90	261	211
Union County Resource Recovery	NJ	204.55	150	-13%	-27	-30%	-61	177	143

Facility Name	State	Projected 2023 NOx emissions (ton/yr)	Permit NOx limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
Union County Resource Recovery	NJ	209.09	150	-13%	-28	-30%	-63	181	146
Union County Resource Recovery	NJ	216.8	150	-13%	-29	-30%	-65	188	152
Wheelabrator Gloucester LP	NJ	137.78	150	-13%	-18	-30%	-41	119	96
Wheelabrator Gloucester LP	NJ	126.77	150	-13%	-17	-30%	-38	110	89
Covanta Babylon Inc	NY	110.79	150	-13%	-15	-30%	-33	96	78
Covanta Babylon Inc	NY	111.78	150	-13%	-15	-30%	-34	97	78
Covanta Hempstead	NY	357.31	150	-13.3%	-48	30%	-107	310	250
Covanta Hempstead	NY	380.28	150	13.3%	-51	30%	-114	330	266
Covanta Hempstead	NY	465.8	150	13.3%	-62	30%	-140	404	326
Covanta Niagara I, LLC	NY	341.73	150	-13%	-46	-30%	-103	296	239
Covanta Niagara I, LLC	NY	378.41	150	-13%	-50	-30%	-114	328	265
Huntington Resource Recovery	NY	443 for all 3 units	150	-13%	-16	-30%	-35	101	82
Huntington Resource Recovery	NY	443 for all 3 units	150	-13%	-15	-30%	-35	101	81
Huntington Resource Recovery	NY	443 for all 3 units	150	-13%	-15	-30%	-34	98	79
Onondaga County Resource Recovery	NY	684.18	150	-13%	-91	-30%	-205	593	479

Facility Name	State	Projected 2023 NOx emissions (ton/yr)	Permit NOx limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
Onondaga County Resource Recovery	NY		150	-13%	0	-30%	0		0
Onondaga County Resource Recovery	NY		150	-13%	0	-30%	0		0
Wheelabrator Hudson Falls	NY	145.81	150	-13%	-19	-30%	-44	126	102
Wheelabrator Hudson Falls	NY	153	150	-13%	-20	-30%	-46	133	107
Wheelabrator Westchester	NY	411.93	150	-13%	-55	-30%	-124	357	288
Wheelabrator Westchester	NY	417.23	150	-13%	-56	-30%	-125	362	292
Wheelabrator Westchester	NY	459.57	150	-13%	-61	-30%	-138	398	322
Covanta Delaware Valley	PA	228.29	180	-28%	-63	-42%	-95	165	133
Covanta Delaware Valley	PA	240.23	180	-28%	-67	-42%	-100	173	140
Covanta Delaware Valley	PA	247.59	180	-28%	-69	-42%	-103	179	144
Covanta Delaware Valley	PA	253.87	180	-28%	-71	-42%	-106	183	148
Covanta Delaware Valley	PA	274.62	180	-28%	-76	-42%	-114	198	160
Covanta Delaware Valley	PA	275.95	180	-28%	-77	-42%	-115	199	161

Facility Name	State	Projected 2023 NOx emissions (ton/yr)	Permit NOx limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
Covanta Plymouth Renewable Energy	PA	440.65	180	-28%	-122	-42%	-184	318	257
Covanta Plymouth Renewable Energy	PA	445.72	180	-28%	-124	-42%	-186	322	260
Harrisburg Facility	PA	83.74	135	-4%	-3	-22%	-19	81	65
Harrisburg Facility	PA	84.22	135	-4%	-3	-22%	-19	81	66
Harrisburg Facility	PA	84.58	135	-4%	-3	-22%	-19	81	66
Lancaster County Resource Recovery	PA	231.02	180	-28%	-64	-42%	-96	167	135
Lancaster County Resource Recovery	PA	232.04	180	-28%	-64	-42%	-97	168	135
Lancaster County Resource Recovery	PA	233.49	180	-28%	-65	-42%	-97	169	136
Wheelabrator Falls	PA	430.12	150	-13%	-57	-30%	-129	373	301
Wheelabrator Falls	PA	451.76	150	-13%	-60	-30%	-136	392	316
York County Resource Recovery	PA	187.75	135	-4%	-7	-22%	-42	181	146
York County Resource Recovery	PA	206.45	135	-4%	-8	-22%	-46	199	161
York County Resource Recovery	PA	207.17	135	-4%	-8	-22%	-46	199	161
Covanta Alexandria/Arlington Energy	VA	75	110	130 ppmvd is higher		-5%	-3	75	72

Facility Name	State	Projected 2023 NOx emissions (ton/yr)	Permit NOx limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
				than permit					
Covanta Alexandria/Arlington Energy	VA	77	110	130 ppmvd is higher than permit		-5%	-4	77	74
Covanta Alexandria/Arlington Energy	VA	75	110	130 ppmvd is higher than permit		-5%	-3	75	72
Covanta Fairfax Energy	VA	250	110	130 ppmvd is higher than permit		-5%	-11	250	239
Covanta Fairfax Energy	VA	250	110	130 ppmvd is higher than permit		-5%	-11	250	239
Covanta Fairfax Energy	VA	250	110	130 ppmvd is higher		-5%	-11	250	239

Facility Name	State	Projected 2023 NOx emissions (ton/yr)	Permit NOx limit (ppmvd)*	130 ppmvd control level estimated NOx reduction (%)	130 ppmvd control level estimated NOx reduction (ton/yr)	105 ppmvd estimated control level NOx reduction (%)	105 ppmvd control level NOx estimated reduction (ton/yr)	2023 projected NOx (ton/yr) at 130 ppmvd	2023 projected NOx (ton/yr) at 105 ppmvd
				than permit					
Covanta Fairfax Energy	VA	250	110	130 ppmvd is higher than permit		-5%	-11	250	239
Total		**22,992**			**(3,293)**		**(6,742)**	**19,699**	**16,250**

* The majority of these limits reflect 7% O_2.

Appendix B: OTR Large MWC Characteristics

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Covanta Bristol Energy	CT	Hartford	Zurn	0.332	Mass burn waterwall	358	SNCR
Covanta Bristol Energy	CT	Hartford	Zurn	0.414	Mass burn waterwall	358	SNCR
Covanta Southeastern Connecticut Company	CT	New London	Deutsche Babcock Anlagen	0.444	Mass burn waterwall	344.5	SNCR
Covanta Southeastern Connecticut Company	CT	New London	Deutsche Babcock Anlagen	0.444	Mass burn waterwall	344.5	SNCR
MIRA	CT	Hartford	CE	0.981	Refuse-derived fuel combustor	675.6 RDF; 236.4 coal	SNCR
MIRA	CT	Hartford	CE	0.981	Refuse-derived fuel combustor	675.6 RDF; 236.4 coal	SNCR
MIRA	CT	Hartford	CE	0.981	Refuse-derived fuel combustor	675.6 RDF; 236.4 coal	SNCR
Wheelabrator Bridgeport	CT	Fairfield	B&W	1.005	Mass burn waterwall	750	SNCR
Wheelabrator Bridgeport	CT	Fairfield	B&W	1.005	Mass burn waterwall	750	SNCR
Wheelabrator Bridgeport	CT	Fairfield	B&W	1.005	Mass burn waterwall	750	SNCR
Wheelabrator Lisbon	CT	New London	B&W	0.377	Mass burn waterwall	281.4	SNCR
Wheelabrator Lisbon	CT	New London	B&W	0.377	Mass burn waterwall	281.4	SNCR

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Covanta Haverhill	MA	Essex	Ogden Martin	1.180	Mass burn waterwall	825	SNCR
Covanta Haverhill	MA	Essex	Ogden Martin	1.180	Mass burn waterwall	825	SNCR
SEMASS Resource Recovery	MA	Plymouth	Riley Stoker	1.190	Refuse-derived fuel combustor	995	
SEMASS Resource Recovery	MA	Plymouth	Riley Stoker	1.190	Refuse-derived fuel combustor	995	
SEMASS Resource Recovery	MA	Plymouth	Riley Stoker	1.129	Refuse-derived fuel combustor	995	SNCR
Wheelabrator Millbury Facility	MA	Worcester	B&W	0.999	Mass burn waterwall	864	SNCR
Wheelabrator Millbury Facility	MA	Worcester	B&W	0.999	Mass burn waterwall	864	SNCR
Wheelabrator North Andover	MA	Essex	Riley Stoker	0.892	Mass burn waterwall	750	SNCR
Wheelabrator North Andover	MA	Essex	Riley Stoker	0.892	Mass burn waterwall	750	SNCR
Wheelabrator Saugus	MA	Essex	Von Roll	1.005	Mass burn waterwall	750	SNCR
Wheelabrator Saugus	MA	Essex	Von Roll	1.005	Mass burn waterwall	750	SNCR
Montgomery County Resource Recovery	MD	Montgomery	Martin	0.794	Mass burn waterwall	600	LoNOx Mod & SNCR
Montgomery County Resource Recovery	MD	Montgomery	Martin	0.794	Mass burn waterwall	600	LoNOx Mod & SNCR
Montgomery County Resource Recovery	MD	Montgomery	Martin	0.794	Mass burn waterwall	600	LoNOx Mod & SNCR
Wheelabrator Baltimore Refuse	MD	Baltimore City	Wheelabrator Frye	1.005	Mass burn waterwall	750	SNCR - Optimized
Wheelabrator Baltimore Refuse	MD	Baltimore City	Wheelabrator Frye	1.005	Mass burn waterwall	750	SNCR - Optimized

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Wheelabrator Baltimore Refuse	MD	Baltimore City	Wheelabrator Frye	1.005	Mass burn waterwall	750	SNCR - Optimized
Penobscot Energy Recovery	ME	Penobscot		0.854	Refuse-derived fuel combustor	360.5	
Penobscot Energy Recovery	ME	Penobscot		0.854	Refuse-derived fuel combustor	360.5	
Comaine	ME	Cumberland	Steinmüller	0.453	Mass burn waterwall	275	SNCR
Regional Waste Systems	ME	Cumberland	Steinmüller	0.453	Mass burn waterwall	275	SNCR
Wheelabrator Concord Facility	NH	Merrimack	B&W	0.456	Mass burn waterwall	287.5	SNCR
Wheelabrator Concord Facility	NH	Merrimack	B&W	0.456	Mass burn waterwall	287.5	SNCR
Camden Resource Recovery Facility	NJ	Camden		0.478	Mass burn waterwall	350	SNCR
Camden Resource Recovery Facility	NJ	Camden		0.478	Mass burn waterwall	350	SNCR
Camden Resource Recovery Facility	NJ	Camden		0.478	Mass burn waterwall	350	SNCR
Covanta Essex Company	NJ	Essex	Foster Wheeler	1.308	Mass burn waterwall	933	SNCR and Low NOx
Covanta Essex Company	NJ	Essex	Foster Wheeler	1.308	Mass burn waterwall	933	SNCR and Low NOx
Covanta Essex Company	NJ	Essex	Foster Wheeler	1.308	Mass burn waterwall	933	SNCR and Low NOx
Union County Resource Recovery	NJ	Union		0.667	Mass burn waterwall	480	SNCR and Low NOx
Union County Resource Recovery	NJ	Union		0.667	Mass burn waterwall	480	SNCR and Low NOx

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Union County Resource Recovery	NJ	Union		0.667	Mass burn waterwall	480	SNCR and Low NOx
Wheelabrator Gloucester LP	NJ	Gloucester		0.334	Mass burn waterwall	287.5	SNCR
Wheelabrator Gloucester LP	NJ	Gloucester		0.334	Mass burn waterwall	287.5	SNCR
Covanta Babylon Inc	NY	Suffolk		0.453	Mass burn waterwall	375	SNCR
Covanta Babylon Inc	NY	Suffolk		0.453	Mass burn waterwall	375	SNCR
Covanta Hempstead	NY	Nassau	Deutsche Babcock Anlagen	1.748	Mass burn waterwall	890	SNCR
Covanta Hempstead	NY	Nassau	Deutsche Babcock Anlagen	1.748	Mass burn waterwall	890	SNCR
Covanta Hempstead	NY	Nassau	Deutsche Babcock Anlagen	1.748	Mass burn waterwall	890	SNCR
Covanta Niagara I, LLC	NY	Niagara	Deutsche Babcock Anlagen	1.683	Mass burn waterwall	1125	SNCR
Covanta Niagara I, LLC	NY	Niagara	Deutsche Babcock Anlagen	1.683	Mass burn waterwall	1125	SNCR
Huntington Resource Recovery	NY	Suffolk			Mass burn waterwall	250	SNCR
Huntington Resource Recovery	NY	Suffolk			Mass burn waterwall	250	SNCR
Huntington Resource Recovery	NY	Suffolk			Mass burn waterwall	250	SNCR

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Onondaga County Resource Recovery	NY	Onondaga		0.680	Mass burn waterwall	330	SNCR
Onondaga County Resource Recovery	NY	Onondaga		0.680	Mass burn waterwall	330	SNCR
Onondaga County Resource Recovery	NY	Onondaga		0.680	Mass burn waterwall	330	SNCR
Wheelabrator Hudson Falls	NY	Washington			Mass burn waterwall	275	
Wheelabrator Hudson Falls	NY	Washington			Mass burn waterwall	275	
Wheelabrator Westchester	NY	Westchester		1.233	Mass burn waterwall	750	SNCR
Wheelabrator Westchester	NY	Westchester		1.233	Mass burn waterwall	750	SNCR
Wheelabrator Westchester	NY	Westchester		1.233	Mass burn waterwall	750	SNCR
Covanta Delaware Valley	PA	Delaware	Westinghouse O-Connor	0.665	Mass burn rotary waterwall	449	
Covanta Delaware Valley	PA	Delaware	Westinghouse O-Connor	0.665	Mass burn rotary waterwall	449	
Covanta Delaware Valley	PA	Delaware	Westinghouse O-Connor	0.665	Mass burn rotary waterwall	449	
Covanta Delaware Valley	PA	Delaware	Westinghouse O-Connor	0.665	Mass burn rotary waterwall	449	
Covanta Delaware Valley	PA	Delaware	Westinghouse O-Connor	0.665	Mass burn rotary waterwall	449	
Covanta Delaware Valley	PA	Delaware	Westinghouse O-Connor	0.665	Mass burn rotary waterwall	449	
Covanta Plymouth Renewable Energy	PA	Montgomery		0.965	Mass burn waterwall	608	SNCR

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Covanta Plymouth Renewable Energy	PA	Montgomery		0.965	Mass burn waterwall	608	SNCR
Harrisburg Facility	PA	Dauphin		0.322	Mass burn waterwall	266	SNCR
Harrisburg Facility	PA	Dauphin		0.322	Mass burn waterwall	266	SNCR
Harrisburg Facility	PA	Dauphin		0.322	Mass burn waterwall	266	SNCR
Lancaster County Resource Recovery	PA	Lancaster		0.619	Mass burn waterwall	400	SNCR
Lancaster County Resource Recovery	PA	Lancaster		0.619	Mass burn waterwall	400	SNCR
Lancaster County Resource Recovery	PA	Lancaster		0.619	Mass burn waterwall	400	SNCR
Wheelabrator Falls	PA	Bucks		1.005	Mass burn waterwall	800	SNCR
Wheelabrator Falls	PA	Bucks		1.005	Mass burn waterwall	800	SNCR
York County Resource Recovery	PA	York	Deltak Blr w/O'Connor Rot Comb	0.468	Mass burn waterwall	449	
York County Resource Recovery	PA	York	Deltak Blr w/O'Connor Rot Comb	0.468	Mass burn waterwall	449	
York County Resource Recovery	PA	York	Deltak Blr w/O'Connor Rot Comb	0.468	Mass burn waterwall	449	
Covanta Alexandria/Arlington Energy	VA	Alexandria City	Keeler/Dorr-Oliver	0.276	Mass burn waterwall	325	
Covanta Alexandria/Arlington Energy	VA	Alexandria City	Keeler/Dorr-Oliver	0.276	Mass burn waterwall	325	

Plant Name	State	County	Manufacturer	Est Daily PTE (tons)	Amended Unit Type, based on part 60 classifications, ERC directory & permits	Tons MSW/day	Permit NOx Control
Covanta Alexandria/Arlington Energy	VA	Alexandria City	Keeler/Dorr-Oliver	0.276	Mass burn waterwall	325	
Covanta Fairfax Energy	VA	Fairfax	Ogden Martin	0.780	Mass burn waterwall	750	SNCR
Covanta Fairfax Energy	VA	Fairfax	Ogden Martin	0.780	Mass burn waterwall	750	SNCR
Covanta Fairfax Energy	VA	Fairfax	Ogden Martin	0.780		750	SNCR
Covanta Fairfax Energy	VA	Fairfax	Ogden Martin	0.780		750	SNCR

Appendix C: OTR Small MWCs

Plant Name	State	Permit NOx Limit ppmvd (24-hour limit)	Unit Type (Part 60 classifications)	Tons MSW/day	2023 Projected NOx Emissions (ton/yr)
Pioneer Valley Resource Recovery	MA	167	Modular Excess Air	136	40.91
Pioneer Valley Resource Recovery	MA	167	Modular Excess Air	136	45.41
Pioneer Valley Resource Recovery	MA	167	Modular Excess Air	136	40.51
Pittsfield Resource Recovery Facility	MA	192	Modular Excess Air	120	17.9
Pittsfield Resource Recovery Facility	MA	192	Modular Excess Air	120	18.8
Pittsfield Resource Recovery Facility	MA	192	Modular Excess Air	120	18.97
MMWAC Resource Recovery Facility	ME	315	Mass burn rotary waterwall*	125	211.28
MMWAC Resource Recovery Facility	ME	315	Mass burn rotary waterwall*	125	202.71
Dutchess Cnty Resource Recovery Facility	NY	170	Mass burn rotary waterwall	228	Missing
Dutchess Cnty Resource Recovery Facility	NY	170	Mass burn rotary waterwall	228	Missing
MacArthur Waste to Energy Facility	NY	170	Mass burn rotary waterwall	242.5	Missing
MacArthur Waste to Energy Facility	NY	170	Mass burn rotary waterwall	242.5	Missing
Oswego County Energy Recovery	NY		Modular starved air	50	199.79

Appendix D: Non-OTR MWCs

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
CA	Mass burn waterwall	400	Ammonia Injection	165	0.2835	438.0
CA	Mass burn waterwall	400	Ammonia Injection	165	0.2835	438.0
CA	Mass burn waterwall w/reciprocating grate		SNCR	205	0.3522	148.9
CA	Mass burn waterwall w/reciprocating grate		SNCR	205	0.3522	148.9
CA	Mass burn waterwall w/reciprocating grate		SNCR	205	0.3522	148.9
FL	Mass burn rotary waterwall	255		170	0.2921	122.3
FL	Mass burn rotary waterwall	255		170	0.2921	122.3
FL	Mass burn waterwall	250	SNCR	205	0.3522	160.4

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
FL	Mass burn waterwall	250	SNCR	205	0.3522	160.4
FL	Mass burn waterwall	460	SNCR	205	0.3522	266.1
FL	Mass burn waterwall	460	SNCR	205	0.3522	266.1
FL	Mass burn waterwall	460	SNCR	205	0.3522	266.1
FL	Mass burn waterwall	690	Covanta LN™, SNCR, FGR	110	0.1890	238.0
FL	Mass burn waterwall	660	SNCR	180	0.3093	372.5
FL	Mass burn waterwall	660	SNCR	180	0.3093	372.5
FL	Mass burn waterwall	660	SNCR & FGR	150	0.2577	310.4
FL	Mass burn waterwall	288	SNCR	205	0.3522	185.1
FL	Mass burn waterwall	288	SNCR	205	0.3522	185.1
FL	Mass burn waterwall	288	SNCR	205	0.3522	185.1

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
FL	Mass burn waterwall	288	SNCR	205	0.3522	185.1
FL	RDF Spreader Stoker	648	SNCR	250	0.4295	568.9
FL	RDF Spreader Stoker	648	SNCR	250	0.4295	568.9
FL	RDF Spreader Stoker	648	SNCR	250	0.4295	568.9
FL	RDF Spreader Stoker	648	SNCR	250	0.4295	568.9
FL	RDF	900	SNCR	250	0.4295	804.3
FL	RDF	900	SNCR	250	0.4295	804.3
FL	Stoker Mass Burn waterwall	1000	SCR	50	0.0859	172.3
FL	Stoker Mass Burn waterwall	1000	SCR	50	0.0859	172.3
FL	Stoker Mass Burn waterwall	1000	SCR	50	0.0859	172.3
FL	Mass burn waterwall	350	SNCR	205	0.3522	216.0

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
FL	Mass burn waterwall	350	SNCR	205	0.3522	216.0
FL	Mass burn waterwall	350	SNCR	205	0.3522	216.0
FL	Mass burn waterwall	1050	SNCR	205	0.3522	675.7
FL	Mass burn waterwall	1050	SNCR	205	0.3522	675.7
FL	Mass burn waterwall	1050	SNCR	205	0.3522	675.7
FL	Mass burn waterwall	836	SNCR	205	0.3522	499.2
FL	Mass burn waterwall	836	SNCR	205	0.3522	499.2
FL	Mass burn waterwall	836	SNCR	205	0.3522	499.2
IN	Mass burn waterwall	726	SNCR	205	0.3522	513.4
IN	Mass burn waterwall	726	SNCR	205	0.3522	513.4
IN	Mass burn waterwall	726	SNCR	205	0.3522	513.4

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
MI	Mass burn waterwall	312.5	SNCR	205	0.3522	192.8
MI	Mass burn waterwall	312.5	SNCR	205	0.3522	192.8
MN	Mass burn waterwall	606	Ammonia Injection	205	0.3522	405.0
MN	Mass burn waterwall	606	Ammonia Injection	205	0.3522	405.0
MN	Stoker mass burn waterwall	100		500	0.8590	175.0
MN	Stoker mass burn waterwall	200	SNCR	150	0.2577	101.4
MN	Stoker mass burn waterwall	100		500	0.8590	175.0
MN	Starved air modular	48		500	0.8590	67.7
MN	Starved air modular	48		500	0.8590	67.7
MN	RDF air swept, traveling grate	393.6		250	0.4295	338.6
MN	RDF air swept, traveling grate	393.6		250	0.4295	338.6

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
OK	Mass burn waterwall	375	SNCR	205	0.3522	216.9
OK	Mass burn waterwall	375	SNCR	205	0.3522	216.9
OK	Mass burn waterwall	375	SNCR & Tertiary Air	205	0.3522	216.9
OR	Mass burn waterwall	275	SNCR	200	0.3436	161.0
OR	Mass burn waterwall	275	SNCR	200	0.3436	161.0
VA	RDF Spreader Stoker	593		250	0.4295	445.9
VA	RDF Spreader Stoker	593		250	0.4295	445.9
VA	RDF Spreader Stoker	593		250	0.4295	445.9
VA	RDF Spreader Stoker	593		250	0.4295	445.9
WA**	Mass burn waterwall	475		165	0.2835	227.6
WA**	Mass burn waterwall	475		165	0.2835	227.6

State	Configuration	Rating (tons/day)	NOx Control	Permit NOx Limit 1*	Est NOx Rate*** (lb/MMBTU)	Estimated Annual PTE (tons NOx/year)
total						20,506

* ppmvd @12% CO_2.

** 8-hour average, all others are 24-hour average.

*** From permit NOx rate and EPA Method 19.

Appendix E: Conversion of NOx Concentration to Mass

Below is an example of the calculation for conversion of NOx from concentration in ppm to lb/MMBtu and then ultimately from lb/MMBtu to lb/hr.

9.3 OTHER CEMS/CERMS CALCULATIONS

9.3.1 Calculation of Emissions in lb/MMBtu

Pollutant emission in units of lb/MMBtu are calculated as follows (see 40 CFR 60 Appendix A, Reference Method 19):

$$E = C_d{}^*R^*F_d{}^*\left[\frac{20.9}{(20.0\text{-}\%O_{2d})}\right]$$

Where:

E	=	Pollutant emission rate in pounds of pollutant per million Btu (lb/MMBtu).
C_d	=	Average pollutant concentration (ppm SO_2, NO_x or CO) recorded by the CEM Data Logger Subsystem, dry and calibration corrected, for a given hour.
R	=	Conversion factor - ppm to lb/scf ($SO_2 = 1.660E^{-7}$, $NO_x = 1.194E^{-7}$, $CO = 7.267E^{-8}$).
F_d	=	O_2 based F-factor (9570 dscf/MMBtu).
$\%O_{2d}$	=	Average dilutent concentration (% O_2) recorded by the CEM data logger subsystem, for a given hour, dry and calibration corrected.

In addition to the above example, more detail on the conversion calculations are provided below. In this example, an MWC with a NOx concentration emission limit of 150 ppm, and design capacity of 382 MMBtu/hr is used:

lb/MMBtu = (1.37*10^-6/460+Ts)*MWp*F-factor/MMBtu*20.9/(20.9-%Oxygen)*(ppm)

Where Ts = 68: Ts = stack gas T

MWp = Molecular weight (of NOx)

MWp NOx = 46

F-factor/MMBtu = 9570 for municipal solid waste in Appendix A EPA test method 19

%Oxygen = 7

0.00000137/528 x 46 x 9570 x (20.9/13.9) x 150 = 0.257 lb/MMBtu

0.257 lb/MMBtu x 382 MMBtu/hr = 98.2 lb/hr NOx

98.2 lb/hr x 24 hr/day x 1 ton/2,000 lb = 1.2 tons per day (tons per summer day)

Ts = stack gas T

T2 = standard T (32F)

1 mole = 22.4 L

ug/m^3 = (moles of pollutant/10^6 moles)*(460+T2)/(460+Ts)

ug/m^3 = 44.64*MWp*(460+T2)/(460+Ts) for 1 ppm

ug/m^3 = (21,962.88*MWp)/(460+Ts)*(ppm) for more than 1 ppm

lb/ft^3 = (21,962.88/460+Ts)*MWp*(m^3/35.31ft^3) *(g/10^6 ug)*(lb/454 g) for 1 ppm lb/ft^3 = 1.37*10^-6*MWp/(460+Ts)*(ppm) for more than 1 ppm

Td = default T = 68 degrees F

Rankin scale where (degrees F + 460 = degrees Rankin) which is used in thermodynamics

lb/MMBtu = (1.37*10^-6/460+Td)*MWp*F-factor/MMBtu*20.9/(20.9-%Oxygen) for 1 ppm

lb/MMBtu = (1.37*10^-6/460+Ts)*MWp*F-factor/MMBtu*20.9/(20.9-%Oxygen)*(ppm) for more than 1 ppm

Appendix F: MWC Technology Descriptions

Municipal waste combustors are intended to reduce the volume of municipal solid waste through combustion of that solid waste. Municipal solid waste is a fuel that tends to be a heterogeneous mixture of heavy and light materials of various combustibility. Most MWCs are designed to recover some of the heat generated from the MSW combustion process through heat absorption by radiant and convective water-cooled and steam-cooled tubing surfaces. MWCs may incorporate the steam generator within the MWC as an integral component, or the steam generator is a separate entity acting as a waste heat recovery device attached to the MWC. The are many designs and configurations of MWC units, often depending upon the intended volume of MSW throughput, characteristics of the design "municipal waste fuel", and the experience and preferences of the owner/operator and engineering/design organization.

The majority of the OTR MWCs can be generalized into three major categories based on their individual municipal solid waste combustion process characteristics. One type of MWC is often referred to as mass burn, where the MSW is combusted in an as-received condition with only the removal of large objects prior to its introduction to the MWC. Most mass burn MWCs are essentially steam generators with MSW as the primary fuel.

The second type of MWC utilizes refuse derived fuel (RDF), a type of municipal solid waste produced by processing municipal solid waste through shredding and size classification to produce low-density fluff RDF (in the OTR), densified RDF or pelletized RDF. The majority of RDF MWCs are essentially steam generators using RDF as the primary fuel.

The third type of MWC is sometimes referred to as a modular MWCs. These units are mass burn (unprepared MSW, other than removal of large objects). However, modular MWCs are generally smaller units that are shop-built rather than field-erected and utilize two combustion chambers. There are generally two types of modular controlled air MWCs, one that utilizes sub-stoichiometric air combustion conditions in the primary chamber (modular starved air MWC) and the other that utilizes excess air combustion conditions in the primary chamber (modular excess air MWC). This type of MWC generally features a secondary combustion chamber with supplemental fuel burners and combustion air supply. The modular MWC combustor does not generally incorporate heat recovery in the combustion chambers themselves, but in many cases the flue gases from the modular MWC are exhausted to a heat recovery steam generator for energy recovery.

Mass Burn MWCs

In the OTR, there are two major sub-categories of mass burn MWCs: mass burn waterwall MWCs and rotary waterwall MWCs.

- Mass Burn Waterwall MWCs

  Mass burn waterwall MWCs have lower furnace primary combustion zones made of waterwall tubes for heat transfer in the combustion zone. For mass burn water wall MWCs, the MSW fuel is typically loaded into charging hoppers and fed to hydraulic rams that push the MSW fuel onto the stoker grate in the furnace for combustion. Most stokers utilize a reciprocating grate action, utilizing either forward or reverse acting grate movement, which moves the combusting MSW fuel across the furnace to allow time for drying and complete combustion. Generally, there will be a large volume of fuel at the front end of the grate that burns down to a small amount of ash at the back of the grate. The grate may have a slightly downward angle from fuel introduction to the ash drop off to help move the MSW fuel through the furnace. The reciprocating action of the grates also tends agitate the MSW fuel, generally causing the MSW fuel to roll and mix. This agitation helps ensure all of the MSW fuel is exposed to the high temperatures in the bed of combusting MSW fuel and helps provide contact with combustion air, resulting in more complete combustion of the MSW fuel as it travels across the furnace. Combustion ash that does not leave the stoker grate as fly ash is dropped off at the end of the stoker through a discharge chute for disposal or further processing.

  Mass burn waterwall MWCs may also incorporate auxiliary fuel burners to help bring the MWCs to temperature to begin combustion of the MSW fuel, to supplement the heat input necessary to attain the steam generator output rating with varying MSW fuel quality, or to ensure sufficient flue gas temperatures are attained for proper emissions control.

  Combustion air is generally introduced to the combustion zone utilizing pressurized air as underfire (primary) air or overfire (secondary) air. At least one proprietary design, however, splits the overfire air into two distinct zones, effectively creating three combustion air introduction zones.

  Underfire air is introduced under the stoker grate, sometimes through a series of plenums that allow for the amount of underfire air introduced to various portions of the grate area to be controlled to enhance combustion based on MSW fuel characteristics. The underfire air travels from the plenums to the combustion zone through holes in the grate to assure good distribution across the grate. Underfire air systems are generally designed to be able to provide up to 70% of the total combustion air requirement, with typical underfire air operating requirements utilizing 50% to 60% of the total combustion air.

  Overfire air is introduced into the furnace above the grate level through multiple ports in the furnace walls. The primary purpose of the overfire air is to provide the amount of air necessary to mix the furnace gasses leaving the grate combustion zone and provide the oxygen required to complete the combustion process. Proper control of the overfire air may also be utilized to provide some control of the NOx emission rate leaving the high temperature zone of the furnace. The amount of overfire air is typically 40% to 50% of the total required combustion air and is somewhat dependent upon MSW fuel quality and NOx emission control requirements.

- Rotary Waterwall MWCs

  A rotary waterwall MWC utilizes a water cooled, tilted, rotating cylindrical combustion chamber. The MSW fuel is typically loaded into charging hoppers and fed to hydraulic rams that push the MSW fuel into the slowly rotating combustion chamber. The rotation of the tilted cylindrical combustion chamber causes the MSW fuel to tumble and advance the length of the cylindrical combustion chamber, ensuring all of the MSW fuel is exposed to high temperatures and combustion air for a sufficient amount of time for drying and complete combustion of the MSW fuel. Combustion ash that does not leave the rotary burner as fly ash is dropped off at the end of the rotary burner through a discharge chute for disposal or further processing.

  Rotary burner MWCs may also incorporate auxiliary fuel burners to help bring the MWCs to temperature to begin combustion of the MSW fuel, to supplement the heat input necessary to attain the steam generator output rating with varying MSW fuel quality, or to ensure sufficient flue gas temperatures are attained for proper emissions control.

  Combustion air for rotary burner MWCs is introduced to the rotating combustion chamber by a pressurized plenum surrounding the rotating combustion chamber. The combustion air enters the rotating combustion chamber through the walls of the chamber, generally through spaces between waterwall tubes. Underfire air is introduced at the bottom of the rotating combustion chamber and through the bed of combusting MSW. Overfire air is introduced into the rotating combustion chamber over the bed of combusting MSW. Dampers are utilized to proportion the total air flow and control the overfire air/underfire air split. Because the waterwall tubes form the floor of the combustion zone and effectively remove heat from that surface, peak combustion temperatures may tend to be lower than experienced with other MWC designs, helping reduce the NOx emissions relative to those other MWC designs. Also, as the watercooled surfaces require lower amounts of initial combustion zone excess air for cooling of combustor components, lower amounts of total excess air may be required for many rotary burner MWCs compared to some other MWC designs. The reduced excess air requirements may also help to reduce base NOx emissions relative to other MWC designs.

RDF MWCs

In contrast to mass burn MWCs, RDF MWCs employ a more complex feeder/spreader system and different combustion bed characteristics. The prepared RDF is ram fed to a feeder hopper, where a conveying device further mixes and fluffs the RDF into a more uniform density as it transports the RDF to fuel/air spreader spouts. Multiple fuel/air spreader spouts located across the furnace and above the stoker grate distribute the RDF evenly across the width of a traveling grate, while the air pressure may be continuously varied to help provide a more uniform fuel bed over the depth of the grate. The traveling grate typically travels from the rear of the furnace to the front in the direction of the fuel distribution. Combustion of the RDF takes place in suspension for the lower density fraction and on the stoker grate for the higher density fraction. The underfire combustion air passing through the traveling grate provides some agitation to the fuel bed to help ensure all the RDF is exposed to high temperatures and sufficient combustion air to ensure more complete combustion as it travels across the furnace. Like the mass burn combustion system, ash from the combustion process that does not leave the grate as fly ash will be dropped off at the end of the stoker through a discharge chute for disposal or further processing.

For RDF burning MWCs, combustion air is generally introduced to the combustion zone utilizing pressurized air as underfire (primary) air or overfire (secondary) air.

Underfire air (sometimes referred to as undergrate air) is introduced under the stoke grate. The underfire air is generally introduced into the steam generator through a single undergrate plenum and relies on enough pressure drop to supply combustion air evenly through all portions of the grate. Underfire air systems are generally designed to be able to provide up to 70% of the total combustion air requirement, with typical underfire air operating requirements utilizing 50% to 60% of the total combustion air.

Overfire air is introduced into the furnace above the grate level through multiple ports in the furnace walls. The primary purpose of the overfire air is to provide enough air to mix the furnace gasses leaving the grate combustion zone to provide the oxygen required to complete the combustion process. Proper control of the overfire air may provide some control of the NOx emission rate leaving the high temperature zone of the furnace. The amount of overfire air is typically 40% to 50% of the total required combustion air, being somewhat dependent upon the RDF fuel quality and NOx emission control requirements.

The fuel/air spreaders generally require approximately 5% of the total air flow requirement at any given load to properly distribute the RDF fuel in the furnace over the grate.

RDF MWCs may also incorporate auxiliary fuel burners to help bring the MWCs to temperature to begin combustion of the RDF, to supplement the heat input necessary to attain the steam generator output rating with varying RDF quality, or to ensure sufficient flue gas temperatures are attained for proper emissions control.

Modular MWCs

Modular MWCs are generally of smaller capacity than mass burn and RDF MWCs and utilize two combustion zones rather than one. The MSW fuel is typically introduced to the MWC without preparation other than removing large objects. MSW fuel is dropped into a chute and is pushed by rams into the first, or primary, combustion chamber and on to a reciprocating grate(s) or moving hearth. Instead of traveling grates or hearths, some modular MWCs may utilize a series of stepped rams to move the combusting MSW fuel across the combustion chamber. The MSW fuel is dried and combusted as it travels across the primary combustion chamber, and any ash not leaving the primary chamber as fly ash is dropped off at the end of the primary combustion chamber into a discharge chute for disposal or further processing.

The combustion zones of modular MWCs generally do not incorporate any heat recovery water or steam walls. Instead, the combustion zones generally consist of refractory lined walls. Heat recovery, if any, occurs in a heat recovery steam generator that is connected to the exhaust of the secondary combustion chamber. The distribution of combustion air is the primary distinction between the designs of modular starved air MWCs and modular excess air MWCs.

Combustion air for modular starved air MWCs is proportioned to provide combustion air to the primary combustion chamber and to the secondary combustion zone, with the amount of air supplied to the primary combustion chamber controlled such that combustion in the primary chamber is sub-stoichiometric (i.e., less oxygen than is necessary to achieve complete combustion). This results in flue gases exiting the primary chamber with high levels of combustibles. The flue gases enter the secondary chamber, where additional air (secondary air) is injected to complete the combustion process. The relatively high amount of secondary air injection also provides a high amount of turbulence to ensure mixing with the combustible portions of the primary combustion chamber flue gases. One of the intended results of the primary chamber sub-stoichiometric combustion is reduced air/flue gas velocity causing less turbulence in the combustion bed, less flue gas particulate carried out from the primary chamber, and lower peak combustion temperatures. However, the modular starved air MWC may reasonably be expected to have higher levels of unburned fuel than other types of MWCs.

Combustion air for modular excess air MWCs is also proportioned between the primary and secondary combustion chambers, but the amount of combustion air suppled to the primary chamber is proportioned to provide combustion conditions at greater than stoichiometric conditions (i.e., more oxygen than is necessary to achieve complete combustion). This may lead to higher levels of particulate carry-out from the primary combustion chamber and a higher degree of MSW fuel burnout.

Modular air MWCs may also incorporate auxiliary fuel burners to help the MWC operate with varying MSW fuel characteristics or to ensure appropriate flue gas temperatures are attained for proper emissions control.

MWC Retrofit NOx Control Technologies

MWCs are intended to combust a municipal waste fuel that tends to be a heterogeneous mixture of heavy and light materials of variable combustibility. Both fuel and thermal NOx is generated by the combustion process, with some limited degree of control possible through variation of the primary/secondary air ratio. The variation in MWC unit design and fuel quality leads to a range of expected uncontrolled NOx emissions, sometimes given as a range of 250 ppmvd @7% O_2 to 300 ppmvd @7% O_2. There are several NOx control options that can be retrofitted to existing MWCs, with applicability and effectiveness dependent upon unit configuration. Not all NOx reduction technologies are applicable to all MWC configurations, and not all technologies are reasonably feasible from an economic standpoint even if they are technologically feasible. Assessments of individual MWCs are necessary to evaluate the technical and economic feasibility of any NOx reduction technology for that MWC. However, the following information provides a limited indication of general applicability and cost effectiveness of various control equipment types.

Combustion Air Control

For the purposes of this document, combustion air control technology for NOx control on MWCs means utilization of low excess air operation or staged combustion, either separately or in combination. For low excess air operation, the overall amount of combustion air in the system is reduced generally through reduction of both underfire and overfire air. For staged combustion, the amount of underfire air is reduced to reduce the air available during the initial stages of combustion, while the amount of overfire air is increased to provide enough air to complete the combustion process. The generally high excess air requirements needed to achieve complete combustion of the non-homogenous MSW fuel provides only limited ability to attain NOx reductions through excess air reduction while still maintaining acceptable MSW fuel burnout, although some NOx rate reduction may be possible at some MWCs. By design, the majority of MWCs incorporate some level of control to proportion underfire and overfire air to optimize combustion quality with NOx generation rate so this technology is more of an operational tuning control technology. However, modifications to existing plant components or system upgrades may be necessary at some facilities to optimize combustion air control for NOx reduction. Industry information indicates that combustion air optimization for NOx control has the potential to reduce NOx emission rates by up to 10% while still maintaining acceptable fuel burnout on many MWCs. Because this "technology" control is already part of most OTR MWCs, it is assumed that optimizing combustion air control is already part of good operating practices. But it should not be overlooked that combustion air control or staging modifications may have potential NOx reduction capabilities at some facilities and may prove to be an important component in a NOx reduction strategy incorporating multiple control components.

Selective Non-Catalytic Reduction

Selective non-catalytic reduction (SNCR) is a retrofit-capable NOx control technology that is widely utilized for existing MWC units, including those located in the OTR. For SNCR, reagents (urea or ammonia) are injected into the MWC furnace at locations in the proper temperature range to drive chemical reactions between the reagents and NOx, resulting in the nitrogen in NOx being reduced to elemental nitrogen (N2) and water vapor. SNCR systems generally include reagent storage facilities, supply of demineralized water, electric power supply, pumps, mixing components, a heated structure to protect the pump skid and mixing/flow control components from colder ambient temperatures, pressurized air supply, pipes and tubing, flow control valves, a control system, communication with steam generator control and instrumentation systems, and penetrations into the steam generator at the proper locations to install SNCR injection nozzles. The effectiveness of NOx control using SNCR will be a function of the MWC's characteristics (such as furnace configuration, combustion excess air requirements, flue gas temperature gradients, etc.) to attain the proper orientation and location of SNCR injector nozzles and the ability to achieve proper reagent atomization and sufficient time for reagent contact and mixing with the flue gas in the proper temperature range. SNCR effectiveness will also be affected by the ability to consistently introduce the appropriate amount of reagents across the MWC's load range and in reaction to changes in MSW fuel characteristics. Literature suggests that SNCR is a technologically feasible NOx control system applicable to many MWCs.

Existing MWC SNCR installations include both urea and ammonia-based systems. Information provided by EPA indicates that for those facilities, the group of MWCs utilizing ammonia for the reagent had a higher average NOx reduction effectiveness than the group of MWCs utilizing urea as the reagent, but that the top of the range of NOx reduction effectiveness was higher for the MWCs utilizing urea as reagent than for the MWCs using ammonia for the reagent. Many factors other than reagent type can influence the NOx reduction effectiveness of any particular SNCR installation, so these values may not be conclusive. There is also some consideration that the use of urea reagents may produce higher levels of nitrous oxide (N_20), a greenhouse gas, than the use of ammonia reagents. Nitrous oxide emissions will depend on the reagent feed rate and the flue gas temperature where the reduction is taking place, with higher levels on nitrous oxide emissions correlating to increased NOx reductions. The EPA indicated that there are commercially available, proprietary additives that can reduce nitrous oxide formation. The impact of the choice which reagent is most appropriate for any given MWC retrofit would be highly unit specific and it is assumed would be part of any state's case by case RACT determination.

The use of properly designed and well-tuned SNCR technology has been demonstrated to achieve approximate 40% to 50% reductions in NOx emission rates with low ammonia slip values at many facilities, including retrofit applications. Compliance with 150 ppmvd @7% O_2 24-hr average NOx emission rate limitations has been demonstrated at many OTR MWC facilities utilizing SNCR as the primary NOx control.

Some historic non-OTR NOx RACT evaluations and cost effectiveness estimates have been identified in EPA's RACT/BACT/LAER Clearinghouse regarding the use of SNCR on MWC units. Two are described below.

- The Lee County Waste to Energy facility (Florida) indicated an estimated cost effectiveness of $2,000/ton (approximately $2,880/ton in 2020 dollars) of NOx reduced utilizing SNCR for control on a 660 ton/day MWC. The permit NOx rate limits were 110 ppmvd 12-month average and 150 ppmvd 24-hour average.
- The Hillsborough County Resource Recovery facility (Florida) indicated an estimated cost effectiveness of $1,000/ton (approximately $1,500/ton in 2020 dollars) of NOx reduced utilizing SNCR for control on a 600 ton/day MWC. The permit NOx rate limits were 90 ppmvd 12-month average and 110 ppmvd 24-hour average.

Some historic industry information suggests a very wide range of NOx reduction cost effectiveness values as a function of the size (input capacity) of MWCs. This information suggests that estimated cost effectiveness values may range from approximately $7,400/ton for small MWCs (100 ton/day and smaller) to approximately $1,900/ton for large MWCs (750 ton/day and larger), based on a 50% NOx reduction and 80% annual capacity factor. Variations in capacity factor, required level of NOx reduction, and other factors would shift the estimated cost effectiveness range. As portions of SNCR can be shared among multiple MWCs at a single facility (reagent preparation, reagent storage, demineralized water supply, pumping/forwarding skids, etc.), the per MWC NOx reduction estimated cost at a multi-MWC facility may be lower.

Flue Gas Recirculation

Flue gas recirculation (FGR) technology can be a stand-alone NOx reduction technology, but as SNCR is already being utilized for many OTR MWCs, for this discussion it will be assumed that a retrofit FGR system would be utilized in combination with the continued use of existing SNCR technology. The equipment and function of the existing SNCR portion of this option is assumed to be unchanged from that of properly tuned existing SNCR technology.

FGR helps reduce NOx emission rates by slightly reducing the average oxygen content in the combustion zone and also by reducing the peak temperatures in the combustion zone. An FGR retrofit would generally require the installation new ductwork, fan, control dampers and damper operators, electric power supply, flue gas injection/mixing nozzles, system controls, and integration with the steam generator controls and instrumentation. Retrofit FGR would generally be designed to extract a portion of the flue gases from ductwork downstream of the steam generator convective passes. Utilizing a fan, the extracted flue gases would be mixed with the secondary air prior to introduction into the combustion zone. As indicated above, by diluting the secondary air with the flue gases, the average amount of excess air available for combustion and average flame temperature are reduced resulting in lower levels of NOx formation. The amount of gas recirculated would be controlled to ensure complete combustion of the MSW fuel.

FGR is listed as an installed equipment at a couple of MWC facilities in the OTR. FGR is potentially a technically feasible retrofit technology for many MWCs. An exception might be a modular MWC not incorporating any heat recovery as that would hamper the ability to reduce flue gas temperatures to a range useful for recirculation to the combustion zone.

Babcock Power Environmental prepared an analysis for potential installation of FGR-SNCR at the Wheelabrator Baltimore MWC facility, which includes three MWCs each with a rating of 625 ton/day. The evaluation predicted the ability to maintain a 120 ppmvd @7% O_2 24-hr NOx rate limit and a 115 ppmvd @7% O_2 30-day NOx rate limit with ammonia slip of approximately 5 ppmvd.

A cost effectiveness estimate was performed using the data provided in the Babcock Power document. Using the cost assumptions for this particular facility (as discussed in the Babcock Power document with a 20-year control life with 6% interest rate), the incremental cost effectiveness was estimated at $3,470/ton of NOx reduced. There could be a significant range in estimated cost effectiveness due to MWC input capacity (and the need for the corresponding difference in amount of recirculated gas). For similar types of MWCs, the range of sizes would require the same level of engineering and design, and the same type of components (potentially varying in size), therefore many of the associated costs are similar. Because the ton/year of NOx mass reduction would vary with the input range of the MWCs, this could lead to a large range in the estimated cost effectiveness. Using the Babcock and Wilcox Wheelabrator Baltimore evaluation as a base input, the estimated FGR cost effectiveness could range from approximately $3,200/ton to $11,000/ton.

Advanced SNCR

Advanced SNCR (ASNCR) NOx control technology may be considered for retrofit on existing MWCs as either a new retrofit technology or a significant upgrade to an existing SNCR. ASNCR is like SNCR in that it utilizes the injection of reagents into the proper temperature zones of the furnace to reduce the flue gas NOx concentration. Both SNCR and ASNCR designs may utilize advanced computer modeling techniques to specify SNCR nozzle locations and elevations so that their operation may be optimized across varying furnace conditions. The primary difference between a well-designed SNCR and ASNCR system is that ASNCR would utilize advanced furnace temperature monitoring instrumentation to provide near real time operating furnace temperature profiles. This information allows the control system to modulate which ASNCR injectors are in operation and to automatically adjust the individual injector flow rate in order to optimize the overall NOx emission rate. This advanced system optimizes the NOx reduction chemical reaction across the furnace to achieve high levels of overall NOx reduction while maintaining low ammonia slip. Further, the ASNCR system utilizing near real time control would tend to reduce the magnitude of emission spikes associated with the combustion of a heterogeneous fuel, helping achieve a lower average emission rate over any particular averaging period.

Babcock and Wilcox (B&W) prepared an analysis for the Wheelabrator Baltimore facility that included the potential use of ASNCR technology for NOx control. The B&W information suggests that ASNCR may be applicable to many MWCs as a retrofit technology, although furnace configuration or other factors could affect the NOx reduction potential.

Babcock Power prepared an analysis for potential installation of ASNCR at the Wheelabrator Baltimore MWC facility. The evaluation predicted the ability to maintain a 110-125 ppmvd @7% O_2 24-hr NOx rate limit and a 105-110 ppmvd @7% O_2 30-day NOx rate limit with ammonia slip of approximately 5 ppmvd.

A cost effectiveness estimate was performed for retrofit of ASNCR control using the data provided in the Babcock Power document. Using the cost assumptions for this particular facility (as discussed in the Babcock Power document and assuming a 20-year control life with 6% interest rate), the incremental cost effectiveness was estimated at $3,883/ton of NOx reduced.

Some industry information indicates that while it is likely that most MWCs could successfully retrofit ASNCR and expect NOx reductions, its ability to achieve significant amounts of NOx reduction in small MWCs is limited due to the reduced space and contact time. These factors are influenced by individual unit design. An insufficient amount of information is available to provide an estimate of the range of cost effectiveness for small MWCs.

Another control option combines ASNCR with FGR. The equipment and function of the ASNCR portion of this option is identical to that of the ASNCR-only technology described above. The FGR part would be identical to the above FGR discussion, where a portion of the flue gases is extracted downstream of the convective passes of the steam generator and those flue gases are injected into the secondary air system using an FGR fan. By diluting the secondary air with flue gases, the average amount of excess air available for combustion is reduced and the average flame temperature is reduced, resulting in lower levels of NOx formation. The lower levels of NOx formed are further reduced by the reaction of the flue gas NOx with the ASNCR reagents, which are enhanced by the high flow rate of the secondary air and recirculated flue gas mixture.

Babcock Power Environmental prepared an analysis for potential installation of FGR-SNCR at the Wheelabrator Baltimore MWC facility. The evaluation predicted the ability to maintain a 105 ppmvd @7% O_2 24-hr NOx rate limit and a 100 ppmvd @7% O_2 30-day NOx rate limit with ammonia slip of approximately 5 ppmvd.

A cost effectiveness estimate for the combined ASNCR and FGR technologies was performed using the data provided in the Babcock Power document. Using the cost assumptions for this particular facility (as discussed in the Babcock Power document with a 20-year control life with 6% interest rate), the incremental cost effectiveness was estimated at $4,695/ton of NOx reduced.

Covanta Proprietary Low-NOx

The Covanta Low-NOx (LN™) is a proprietary NOx reduction technology that is more of a system of related control techniques rather than a single component control technology. The LN™ process modifies the combustion process by diverting a portion of the secondary air and injecting it (tertiary air) at a higher elevation in the furnace. The distribution of combustion air between the primary, secondary, and tertiary levels is controlled to optimize combustion control and reduce NOx emissions by providing additional fuel/air staging for NOx control while still providing enough air for complete combustion. The installation of the LN™ system on a combustion unit already incorporating SNCR may require modifications to the SNCR system to optimize the combined NOx reduction effect of the LN and SNCR technologies. Covanta's website indicates that the propriety LNTM technology has already been installed on many of the MWCs operated by Covanta, with plans to install it on many more. The proprietary aspects of this technology suggest it is unlikely that it can be installed on non-Covanta MWCs.[19]

In addition to the modification of the combustion air systems and potential modification of an existing SNCR system (or installation of a new SNCR system if none existing) as part of an MWC Covanta LN™ retrofit, the Covanta LN™ may require additional modifications to other areas of the combustion zone and related components. Not all existing MWC designs or configurations may be able to incorporate all or any of the components related to the Covanta LN™, and the NOx reduction results may also tend to vary somewhat between units that can accept all of the Covanta LN™ components.

The Covanta LNTM technology was permitted as RACT for retrofit installation and operation in conjunction with SNCR at the Covanta Fairfax facility in Virginia. The permit NOx emission limits are 110 ppmvd @7% O_2 24-hr, and 90 ppmvd @7% O_2 annual. Prior to the LNTM retrofit, the facility's MWCs typically operated with NOx emission rate set-points ranging from 160 ppmvd to 180 ppmvd (dependent upon furnace conditions) in compliance with the permitted 205 ppmvd emission rate limits. Information provided in the RACT analysis for Covanta Fairfax indicated that at that time, the Covanta LNTM technology had been installed in approximately 20 units. The calculated incremental cost effectiveness for Covanta Fairfax was $2,888/ton of NOx removed.

The Covanta LNTM technology was also permitted as RACT for retrofit installation and operation in conjunction with SNCR at the Covanta Alexandria/Arlington facility in Virginia. The permit NOx emission limits are 110 ppmvd @7% O_2 24-hr, and 90 ppmvd @7% O_2 annually. Prior to LNTM retrofit, the facility's MWCs typically operated with NOx emission rate set-points ranging from 160 ppmvd to 180 ppmvd (dependent upon

[19] See footnote 3 for reference.

furnace conditions) in compliance with permitted 205 ppmvd emission rate limits. The calculated incremental cost effectiveness for Covanta Alexandria/Arlington was $4,005/ton of NOx removed.

The proprietary Covanta LNTM technology with SNCR technology has been in operation on the Montgomery County Resource Recovery unit in Maryland for several years. A recent study was performed at the request of MDE to address the potential for any additional NOx rate reduction capability that could be considered RACT. The evaluation noted that the facility has been able to typically control its average 24-hour NOx rate to less than 100 ppm, but that there are some periodic spikes in excess of those values caused by process variations that are outside operator control. The document concludes that an emissions limitation of 140 ppmvd @7% O_2, 24-hr average, is reasonable and can be met with good ammonia slip control.[20]

Covanta Bristol in Connecticut has incorporated the proprietary Covanta LNTM technology on one of its combustion units and has been permitted with a 120 ppmvd @7% O_2 NOx, 24-hr average, emission rate limit.

Selective Catalytic Reduction

Selective catalytic reduction (SCR) is a retrofit-capable NOx reduction technology where ammonia is injected into the flue gases ahead of a catalyst. In the proper temperature range, the nitrogen in the flue gas NOx is reduced to elemental nitrogen by the catalyst. Incorporation of SCR on an existing unit requires installation of a catalyst module in the flue gas ductwork, the installation of an ammonia storage and injection piping and control system, instrumentation, and coordination with steam generator controls to ensure the appropriate amount of ammonia is injected into the flue gas ahead of the catalyst. Since the temperature of the flue gases downstream of the steam generator convective passes may be too low to facilitate chemical reaction in the catalyst, most MWC units also require a means of reheating the flue gas to acceptable levels. This could be accomplished through installation of burners or other heat exchangers in the ductwork ahead of the catalyst module. In some installations, it may also be necessary to upgrade the existing induced draft fan(s) to overcome the draft loss through the catalyst. While this technology is applicable and effective to most MWCs, the space availability and configuration of a given facility may make it infeasible. SCR is also very costly from a capital expense standpoint, and more so in retrofit application, which may render it economically infeasible for retrofit for many existing MWCs. However, the control capability and adaptability of the SCR technology may make it desirable in certain applications.

Babcock Power prepared an analysis for potential installation of SCR at the Wheelabrator Baltimore MWC facility. While the analysis did not provide a site-specific prediction for the achievable NOx emission rate, the evaluation discussed BACT rates for a new MWC facility that incorporated SCR. The discussed NOx emission rates were 50 ppmvd @7% O_2 24-hr NOx rate limit and 45 ppmvd @7% O_2 30-day NOx rate limit, with ammonia slip of approximately 10 ppmvd.

[20] See footnote 4.

A cost effectiveness estimate was performed using the data provided in the Babcock Power document. Using the cost assumptions for the Wheelabrator Baltimore facility (as discussed in the Babcock Power document with a 20-year control life with 6% interest rate), the incremental cost effectiveness was estimated from $10,296/ton to $12,779/ton of NOx reduced, depending upon which flue gas reheating mechanism was chosen.

The RACT evaluation for the Covanta Alexandria/Arlington facility addressed the potential for installing SCR at that site. This evaluation also cited the same new MWC facility SCR installation as Babcock Power did in their Wheelabrator Baltimore facility evaluation, along with the 50 ppmvd @7% O_2 24-hr NOx rate limit and 45 ppmvd @7% O_2 30-day NOx rate limit. The Covanta Alexandria/Arlington evaluation estimated a cost effectiveness of $31,445/ton of NOx removed.

The RACT evaluation for the Covanta Fairfax facility addressed the potential for installing SCR at that site. This evaluation also cited the same new MWC facility SCR installation as Babcock Power used in their Wheelabrator Baltimore facility evaluation, along with the 50 ppmvd @7% O_2 24-hr NOx rate limit and 45 ppmvd @7% O_2 30-day NOx rate limit. The Covanta Fairfax evaluation estimated a cost effectiveness of $15,898/ton of NOx removed.

For Florida's Palm Beach Renewable Energy Facility, which was a new MWC facility, the use of SCR and a 50 ppmvd @7% O_2 NOx (24-hr average) emission rate were considered BACT when the facility was permitted in 2010.

DeNOx Catalytic Filter Bags

DeNOx catalytic filter bags are a product of Gore and are designed to provide both particulate filtration and NOx reduction. The DeNOx filter bags are similar in appearance to the bags utilized for flue gas particulate removal in baghouses, except each bag consists of both a membrane for particulate removal and a PTFE based catalytic felt for NOx and NH3 reduction. In some instances, DeNOx bags can be made to be direct installation replacements for conventional bags in existing particular baghouses.

For retrofit installations where the combustion units already utilize SNCR for NOx control, the existing SNCR system can be operated at higher NSR levels to provide ammonia slip in the combustion flue gasses in order to provide the necessary reagent for catalytic reduction in the filter bags.

No publicly available information was found that discussed an existing installation in the US utilizing the DeNOx catalytic filter bags. However, information was found regarding the retrofit installation of these catalytic filter bags at MWC units located in European countries. That information indicated that addition NOx reductions of up to 60% were achieved on MWCs that were already reasonably well controlled with combustion air controls and SNCR. It should be noted that these subject European MWCs were all small units (less than 250 ton/day rating). No cost information was found for these European installations to enable any assessment of the cost effectiveness for the DeNOx catalytic filter bags.

Some cost information was available regarding DeNOx catalytic filter bag installation through a cost effectiveness evaluation performed by San Joaquin Valley Unified Air Pollution Control District. The cost evaluation was for two mass burn waterwall MWCs at a single facility using a 4% rate of return, 10-year equipment life, and a projected 60 ppmvd @ 12% CO2 NOx emission rate limit (roughly equivalent to 63 ppmvd @ 7% O2). The projected NOx emission rate limit was compared to the then-existing limit of 165 ppmvd @ 12% O2. The cost evaluation presented an estimated annualized capital cost of only about one sixth of the cost for full SCR, but presented an annualized O&M cost that was more than 3 times the annualized O&M cost of full SCR. The evaluation noted that much of the high annualized O&M cost was due to the need to remove high sulfur content components (such as drywall) from the waste fuel stream, as the DeNOx filter bags are susceptible to fouling at high levels of SOx. The San Joaquin evaluation estimated a cost effectiveness in excess of $88,000/ton (2020 $) of NOx removed. This estimated cost value may be lower in retrofit to a facility that has waste fuel quality restrictions or already includes sulfur emission controls.

The above-mentioned NOx control technologies are commercially available and represent a number of choices available to MWC owner/operators and state agencies in the consideration of RACT controls for NOx emissions from MWCs. From a technology standpoint, some technologies may not be technically feasible or provide significant reductions in retrofit due to the design or specific conditions of some individual MWCs. Similarly, individual unit design or operating conditions may cause a technically feasible NOx control to be economically infeasible for any specific MWC. The RACT analysis protocol of specific states would dictate whether any technically feasible NOx control technology, or group of NOx control technologies, could be considered RACT from a cost effectiveness standpoint for and specific MWC unit. For most retrofit considerations, the cost effectiveness estimates for the SCR and DENOx filter bag technology options appear to identify them as not cost-effective from a RACT standpoint. However, the workgroup felt it would be helpful to provide states with some general guidance concerning the relative cost effectiveness of all of the available NOx control technologies.

Additionally, the workgroup recognizes that MWC capacity ratings may have a significant impact on the estimated cost effectiveness of any given MWC retrofit NOx control technology. Some of the issues contributing to this are that design/engineering/modeling costs do not decrease substantially with smaller size, installation may be more difficult with smaller footprint facility and more compact combustors, and less room/time for reagent residence in the proper temperature zone for reaction. Information from EPA shows that generally the estimated magnitude of the cost effectiveness for a given retrofit NOx control technology increases (becomes less cost-effective) from higher rating units to lower rating units. Based on the EPA information, the relative cost effectiveness of several specific MWC retrofit NOx control technologies between several MWC capacity ratings are shown in the following table. For the data in the table, the estimated retrofit cost effectiveness for a 750 ton/day capacity MWC is assumed as the base with the cost effectiveness increases for the small sizes shown as percentage increases above the base.

MWC Combustor Rating (tons/day)	SCR Control Relative Cost Effectiveness	ASNCR Control Relative Cost Effectiveness	SNCR Control Relative Cost Effectiveness
750	100	100	100
400	123	149	131
100	245	463	328

The only cost effectiveness information associated with potential NOx reduction technologies that provides the consistency of same design and same operating characteristics for direct comparison is presented in the Babcock Power NOx control evaluation for the Wheelabrator Baltimore facility. The evaluation provided estimated costs and NOx control capability of several NOx reduction technologies, allowing a reasonable comparison of the impact of the control technologies. The incremental cost effectiveness values in the below table were estimated from the data provided in the Babcock Power document, by assuming a 20-year control life with 6% interest rate, and the cost effectiveness estimates were performed using the 2019 values identified in the Babcock Power report. Note that the baseline comparison for this estimate is compliance with a 150 ppmvd @7% O_2 24-hr average NOx emission rate.

Estimated NOx Control Cost effectiveness

Estimates based on Babcock Power Wheelabrator Baltimore Study

Control Technology	Estimated Achievable 24-hr Avg NOx Rate (ppmvd @7%O2)	Estimated Cost Effectiveness ($/ton)
Estimate Base	150	NA
Optimize Existing SNCR	135	6941
FGR & Existing SNCR	120	3470
ASNCR	110	3883
FGR & ASNCR	105	4695
SCR	50	12779

The above information suggests that for this facility with these NOx control technologies, the most cost effective options are FGR&SNCR, FGR&ASNCR, and ASNCR. The associated controlled NOx emission rates are between 105 ppmvd @7% O_2 and 120 ppmvd @7% O_2, 24-hr average. The range of NOx control estimated cost effectiveness is $3,470/ton to $4,695/ton.

These indications are somewhat in agreement with the RACT analysis conducted by Virginia and Covanta for the Covanta Fairfax and Covanta Alexandria/Arlington facilities. For these Covanta facilities, RACT was selected as Covanta's proprietary LNTM technology and SNCR with predicted NOx emission rate values of 110 ppmvd @7% O2, 24-hr average. The analysis indicated a NOx control cost effectiveness of $2,888/ton for Covanta Fairfax and $4,005/ton for Covanta Alexandria/Arlington. These values are comparable to the range of controlled NOx rate and cost effectiveness estimated for the Wheelabrator Baltimore facility. While cost effectiveness values would vary across MWCs, the control technologies would likely maintain the same relative cost effectiveness positioning.

While any revised RACT is unit-specific based on technical and economic feasibility of marketed control technologies, the limited information above suggests that a revised NOx RACT rate of between 105 ppmvd @7% O_2 and 120 ppmvd @7% O_2, 24-hr average, may be a reasonably achievable target emission rate for many MWCs. The limited information also suggests that NOx reduction cost effectiveness values of $3,000/ton to $5,000/ton may be reasonably representative of the range of related costs to achieve a revised NOx RACT emission rate. Within this cost range, several NOx reduction technologies may be available for consideration to comply with a revised RACT for MWCs.

Appendix G: Method for Estimating Costs for Urea Consumption

The cost estimation for urea consumption for NOx removal was performed in two ways. First, the cost estimate on a per lb of NOx reduction was performed using information presented in the Wheelabrator Baltimore study and specifically the differences between the optimized SNCR and advanced SNCR control options. Using this Wheelabrator Baltimore study information, the incremental NOx reduction cost effectiveness was estimated to be $0.89 per pound of NOx reduced. The second estimation method was based on simple chemical reaction estimates, high efficiency NSR guidance from EPA, and urea cost values from the Wheelabrator Baltimore study. Using this second estimation methodology, the cost effectiveness was estimated to be $1.01 per pound of NOx reduced. Details of the utilized estimation methodologies are included below.

Using the estimated cost effectiveness values and the mass reduction values shown in the workgroup summary document, the estimated annual O&M cost reductions for the two facilities are shown in the following table:

Facility	Workgroup Paper Identified Change In NOx Mass Reduction (tons/yr)	Workgroup Paper Existing Estimated O&M Cost ($/yr)	Estimated O&M Cost Reduction Due To Urea Consumption Based On Wheelabrator Baltimore Study ($/yr)	Estimated O&M Cost Reduction Due To Urea Consumption Based On Chemistry/EPA NSR ($/yr)
Alexandria/Arlington	18.33	213773	32627	37027
Fairfax	51.73	493322	92079	104495

As can be seen in the cost per pound of NOx reduction estimates, there is a $0.12/lb difference between the two methodologies. One possible explanation is that in reality there is no need to have an NSR as high as 2.0 (as was assumed for the chemistry-based estimate) to achieve the target 110 ppmvd @7% O_2 limit when there is improved reagent furnace penetration and mixing with ASNCR. The workgroup has used the Wheelabrator study information for adjusting the estimated O&M costs for the workgroup document.

Incremental Cost Estimation for Urea Consumption Using Wheelabrator Baltimore Study*

From EPA Method 19, eq 19-1: $E = CdFd\ (20.9/(20.9 - \%O_2))$

where: E = pollutant emission rate lb/MMBTU

Cd = pollutant sample concentration dry basis lb/scf

Fd = fuel specific factor volume of dry combustion products per fuel heat content 9570 dscf/MMBTU for municipal waste

Incremental NOx rate reduction: From 135 ppmvd limit to 110 ppmvd limit = 25 ppmvd Cd NOx = 25 ppmvd x (1.194 x 10^-7 (lb/ft^3)/ppm) = 29.9 x 10^-7 lb/ft^3

E = (29.9 x 10^-7 lb/ft^3)(9570 dscf/MMBTU)(20.9/(20.9 – 7)) = 0.0430 lb/MMBTU

Incremental annual NOx mass reduction: 0.0430 lb/MMBTU x 3 boilers x 325 MMBTU/hr/boiler * 8760 hr/yr * 0.92 availability = 337882 lb/yr 168.9 tons/yr

Annual average change in cost per incremental reduction = (995,000$/yr – 695,000$/yr) / (337,882 lb/yr) = 0.8879 $/lb or 1776.20 $/ton

*Ref: WASTE TO ENERGY NOX FEASIBILITY STUDY; PREPARED FOR: WHEELABRATOR TECHNOLOGIES BALTIMORE WASTE TO ENERGY FACILITY BALTIMORE, MARYLAND; BPE PROJECT NO.: 100825; BPE DOCUMENT NO.: 100825-0908400100; FINAL REVISION FEBRUARY 20, 2020

*Study operating assumptions: Three Stirling boilers of 750 tpd capacity each (municipal solid waste at 5200 BTU/lb) ~ 325 MMBTU/hr/boiler

92% annual operating factor

Urea mixture cost $1.19/gal, 50% urea by weight

*Study Control Option – Optimize Existing SNCR - 135 ppmvd 24-hr avg @7% O_2, estimated annual urea consumption cost ~ $695,000/yr, estimated urea consumption 72 gal/hr

*Study Control Option – Advanced SNCR - 110 ppmvd 24-hr avg @7% O_2, estimated urea consumption cost ~ $995,000/yr, estimated urea consumption 105 gal/hr

Incremental Cost Estimation Using Basics

Assumption NOx – 95% NO, 5% NO_2

$2NO + CO(CH_2)_2 + 1/2O_2$ >>> $2N_2 + CO_2 + 2H_2O$

$2NO_2 + 2CO(NH_2)_2 + O_2$ >>> $3N_2 + 2CO_2 + 4H_2O$

Est mix MW (95% NO, 5% NO_2) >>> 30.8 lb

Est urea requirement (per lb/mole NOx) >>>31.54 lb (theoretical NSR)

Theoretical NSR for urea/NOx = 0.5

Hi-efficiency removal operating NSR for urea/NOx - 2.0 (ref Fig 1.7, https://www.epa.gov/sites/production/files/2017-12/documents/sncrcostmanualchapter7thedition20162017revisions.pdf)

Est required urea for high efficiency NSR=2 (per lb/mole of NOx) >>> 126.16 lb urea / 30.8 lb NOx = 4.09 lb

Weight of 50% by weight water/urea – 9.57 lb/gal urea = 4.79 lb urea/lb mixture

Urea/water mixture consumption @ 2.0 NSR – 4.09 lb urea / (4.79 lb urea/gal mixture) = 0.85 gal urea/lb NOx removed

Est water/urea mixture cost range (@ 1.19$/gal from Wheelabrator Baltimore report, 2020 value) 0.85 gal/lb NOx x $1.19/gal = $1.01/lb NOx removed

Exhibit 6

Michigan Department of Environmental Quality
Air Quality Division

EFFECTIVE DATE: August 19, 2011

REVISION DATE: September 16, 2014

ISSUED TO

Detroit Renewable Power

State Registration Number (SRN): M4148

LOCATED AT

5700 Russell Street, Detroit, Michigan 48211

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-M4148-2011a

Expiration Date: August 19, 2016

Administratively Complete ROP Renewal Application Due Between February 19, 2015 and February 19, 2016

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Michigan Air Pollution Control Rule 210(1), this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-M4148-2011a

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

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Wilhemina McLemore, Detroit District Supervisor

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AUTHORITY AND ENFORCEABILITY

For the purpose of this permit, the **permittee** is defined as any person who owns or operates an emission unit at a stationary source for which this permit has been issued. The **department** is defined in Rule 104(d) as the Director of the Michigan Department of Environmental Quality (DEQ) or his or her designee.

The permittee shall comply with all specific details in the permit terms and conditions and the cited underlying applicable requirements. All terms and conditions in this ROP are both federally enforceable and state enforceable unless otherwise footnoted. Certain terms and conditions are applicable to most stationary sources for which an ROP has been issued. These general conditions are included in Part A of this ROP. Other terms and conditions may apply to a specific emission unit, several emission units which are represented as a flexible group, or the entire stationary source which is represented as a source-wide group. Special conditions are identified in Parts B, C, D and/or the appendices.

In accordance with Rule 213(2)(a), all underlying applicable requirements will be identified for each ROP term or condition. All terms and conditions that are included in a PTI, are streamlined or subsumed, or is state only enforceable will be noted as such.

In accordance with Section 5507 of Act 451, the permittee has included in the ROP application a compliance certification, a schedule of compliance, and a compliance plan. For applicable requirements with which the source is in compliance, the source will continue to comply with these requirements. For applicable requirements with which the source is not in compliance, the source will comply with the detailed schedule of compliance requirements that are incorporated as an appendix in this ROP. Furthermore, for any applicable requirements effective after the date of issuance of this ROP, the stationary source will meet the requirements on a timely basis, unless the underlying applicable requirement requires a more detailed schedule of compliance.

Issuance of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**

- Those conditions that are hereby incorporated in a state only enforceable Source-wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R336.1214a(5))**

- Those conditions that are hereby incorporated in federally enforceable Source- wide PTI No. MI-PTI-M4148-2011a pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

1. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as “state only” are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**

2. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**

3. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee’s own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**

4. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities **(R 336.1213(1)(d))**:
   a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
   c. Inspect, at reasonable times, any of the following:
      i. Any stationary source.
      ii. Any emission unit.
      iii. Any equipment, including monitoring and air pollution control equipment.
      iv. Any work practices or operations regulated or required under the ROP.
   d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.

5. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq.,

and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

6. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**

7. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**

8. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

9. Any collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**

10. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

11. Except as provided in Subrules 2, 3, and 4 of Rule 301, states in part; “a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of Rule 301(1)(a) or (b) unless otherwise specified in this ROP.” The grading of visible emissions shall be determined in accordance with Rule 303. **(R 336.1301(1) in pertinent part)**:
    a. A 6-minute average of 20 percent opacity, except for one 6-minute average per hour of not more than 27 percent opacity.
    b. A limit specified by an applicable federal new source performance standard.

12. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
    a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.[1] **(R 336.1901(a))**
    b. Unreasonable interference with the comfortable enjoyment of life and property.[1] **(R 336.1901(b))**

Testing/Sampling

13. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner’s or operator’s expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1). **(R 336.2001)**

14. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**

15. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(4))**

Monitoring/Recordkeeping

16. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate **(R 336.1213(3)(b))**:
    a. The date, location, time, and method of sampling or measurements.
    b. The dates the analyses of the samples were performed.
    c. The company or entity that performed the analyses of the samples.
    d. The analytical techniques or methods used.
    e. The results of the analyses.
    f. The related process operating conditions or parameters that existed at the time of sampling or measurement.

17. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

18. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a responsible official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**

19. A responsible official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604. **(R 336.1213(4)(c))**

20. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**

21. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
    a. For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
    b. For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
    c. For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

22. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following **(R 336.1213(3)(c))**:
    a. Submitting a certification by a responsible official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
    b. Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a responsible official which states that, "based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete". The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.

23. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**

24. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**

25. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a responsible official in a manner consistent with the CAA. **(R 336.1912)**

Permit Shield

26. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
    a. The applicable requirements are included and are specifically identified in the ROP.
    b. The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.

    Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.

27. Nothing in this ROP shall alter or affect any of the following:
    a. The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
    b. The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
    c. The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

   d. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**

28. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
    a. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
    b. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
    c. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
    d. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
    e. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**

29. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

30. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**

31. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**

32. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(9))**

33. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

34. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
    a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
    b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
    c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
    d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

Renewals

35. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(7))**

Stratospheric Ozone Protection

36. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR, Part 82, Subpart F.

37. If the permittee is subject to 40 CFR, Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR, Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term “motor vehicle” as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

38. If subject to Section 112(r) of the CAA and 40 CFR, Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR, Part 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR, Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).

39. If subject to Section 112(r) of the CAA and 40 CFR, Part 68, the permittee shall comply with the requirements of 40 CFR, Part 68, no later than the latest of the following dates as provided in 40 CFR, Part 68.10(a):
    a. June 21, 1999,
    b. Three years after the date on which a regulated substance is first listed under 40 CFR, Part 68.130, or
    c. The date on which a regulated substance is first present above a threshold quantity in a process.

40. If subject to Section 112(r) of the CAA and 40 CFR, Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR, Part 68.

41. If subject to Section 112(r) of the CAA and 40 CFR, Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c)). **(40 CFR, Part 68)**

Emission Trading

42. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan’s State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

Permit To Install (PTI)

43. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule. [2] **(R 336.1201(1))**

44. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA. [2] **(R 336.1201(8), Section 5510 of Act 451)**

45. The terms and conditions of a PTI shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI will be amended to reflect the change of ownership or operational control. The request must include all of the information required by Subrules (1)(a), (b) and (c) of Rule 219. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ. [2] **(R 336.1219)**

46. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months, or has been interrupted for 18 months, the applicable terms and conditions from that PTI shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI. [2] **(R 336.1201(4))**

<u>Footnotes</u>:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA					

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA					

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Permittee shall keep records as outlined in the facility's "Fugitive Dust Management Plan", dated February 2011 and revisions thereto. Any changes to the facility's "Fugitive Dust Management Plan" must be submitted to the Division for approval. If submitted changes have not been rejected within ninety (90) days, they shall be been deemed approved. **(R 336.1213(3))**

2. Permittee shall keep records as outlined in the facility's "Odor Management Plan", dated February 2011 and revisions thereto. Any changes to the facility's Odor Management Plan must be submitted to the Division for approval. If submitted changes have not been rejected within ninety (90) days, they shall be been deemed approved. **(R 336.1213(3))**

3. Permittee shall keep records as outlined in Greater Detroit Resource Recovery Facility's "ABNORMAL CONDITION/STARTUP/SHUTDOWN MALFUNCTION ABATEMENT PLAN", dated February 2011 and revisions thereto. Any changes to the facility's "ABNORMAL CONDITION/STARTUP/SHUTDOWN MALFUNCTION ABATEMENT PLAN" must be submitted to the Division for approval. If submitted changes have not been rejected within ninety (90) days, they shall be been deemed approved.
(R 336.1213(3))

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA			

IX. OTHER REQUIREMENT(S)

1. Permittee shall comply with all applicable provisions of New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart Db. **(R 336.1213)**

2. Permittee shall comply with all applicable provisions of New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Eb. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: {40 CFR Part 62 Subpart FFF, 40 CFR Part 60 Subparts Cb and Db, R 336.1932}. **(R 336.1213, 40 CFR 60 Subpart Eb[3])**

3. Permittee shall comply with all applicable provisions of New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart Cb. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: {40 CFR Part 62 Subpart FFF, 40 CFR Part 60 Subparts Db and Eb, R 336.1932}. **(R 336.1213, 40 CFR 60 Subpart Cb)**

4. Permittee shall comply with all applicable provisions of Federal Implementation Plan, 40 CFR Part 62, Subpart FFF. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: {40 CFR Part 60 Subparts Cb, Db, and Eb, R 336.1932}. **(R 336.1213, 40 CFR 62 Subpart FFF)**

5. Permittee shall comply with all requirements of State Administrative Rule - Michigan Air Pollution Control Rule 932 (R 336.1932). Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: {40 CFR Part 62 Subpart FFF, 40 CFR Part 60 Subparts Cb, Db, and Eb}. **(R 336.1213, R 336.1932)**

6. Permittee shall implement the continuous program of fugitive dust control specified in the Greater Detroit Resource Recovery Facility's "Fugitive Dust Management Plan", dated February 2011 and revisions thereto[2]. **(R 336.1201(3), R 336.1221, R 336.1371)**

7. Permittee shall implement the facility's "Odor Control Management Plan", dated February 2011 and revisions thereto.[1] **(R 336.1201(3), R 336.1901)**

8. Permittee shall implement the Greater Detroit Resource Recovery Facility's "ABNORMAL CONDITION/STARTUP/SHUTDOWN MALFUNCTION ABATEMENT PLAN", dated February 2011 and revisions thereto[2]. **(R 336.1201(3), R 336.1221, R 336.1911)**

9. Permittee shall sweep all plant roadways and paved areas using water when weather permits, such that the fugitive dust emissions from the plant roadways and paved areas are minimized. Said sweeping shall be on a daily basis, or more often if required, except during periods of precipitation events or when waste delivery or residue transport activities are not in operation[2]. **(R 336.1201(3), R 336.1221)**

10. Permittee shall pick up debris on the plant yard and along property line fences on a daily basis or other schedule as approved by the Division except during periods when waste delivery or residue transport activities are not in operation.[1] **(R 336.1201(3), R 336.1901)**

11. Permittee shall be allowed to operate the facility independently as a transfer station, as defined in Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, Act 451 of 1994, as amended, Michigan Compiled Laws (MCL) § 324.11501 et seq. It shall be permissible to process 20,000 tons of solid waste per week, or the quantity of solid waste delivered, which ever is less, to be reloaded to transfer vehicles[2]. **(MCL § 324.11501, R 336.1201(3))**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).
[3]40 CFR 60 Subpart Eb is not directly applicable to this facility. However, certain specific provisions in 40 CFR 60 Subpart Eb become specific applicable requirement in this ROP by either a reference or a requirement from 40 CFR 62 Subpart FFF, 40 CFR 60 Subpart Cb, or Michigan Air Pollution Control Rule 932 adopting by reference the 2000 version of 40 CFR 60 Subpart Cb.

C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUASH-HANDLING	This emission unit pertains to the ash handling system including removal of grate siftings, bottom ash, and flyash from the boilers and air pollution control systems. Grate siftings and bottom ash from each boiler are discharged to a quench trough and then removed by submerged scraper conveyors (SSC). Fly ash from the tubular air heater hoppers, economizer hoppers, and fabric filter hoppers, is discharged to drag-flight conveyors (DFC). The flyash is transported via the DFCs to a surge bin and from there to a fly ash conditioning system (i.e., a pugmill where only water is added to wet the dry material). Wetted fly ash from this system is discharged onto the bottom ash conveyors and transported to the ash/loadout storage building prior to off-site disposal. Fugitive particulate emissions from the ash/loadout building are controlled by a ventilation exhaust filter system.	05/06/1986	
EUFACILITY-WIDE	This emission unit was developed to address applicable requirements in the facility's air permit that have facility wide implications/applications such as potential sources of odor and fugitive dust.		
EULIME-FEEDSYS	This emission unit pertains to the Lime Feed System consisting of a lime storage silo with a baghouse fabric filter particulate control system, two lime slakers each equipped with a grit screen, and one lime slurry tank connecting both lines. The lime slurry from the slurry tank is pumped into each boiler's slurry head tank where the slurry is fed by gravity into the spray dry absorber (SDA).	12/17/1992	

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUMSWPROC-LINE1	This emission unit pertains to each process line converting MSW into Refuse Derived Fuel (RDF) consisting of MSW feed conveyor from tipping floor, magnetic separator, primary shredder controlled by a baghouse fabric filter system, screens, secondary shredder controlled by a cyclone followed by a baghouse fabric filter system, conveyor feed to the RDF storage room.	05/07/1986	FGMSWPROC-LINES
EUMSWPROC-LINE2	This emission unit pertains to each process line converting MSW into Refuse Derived Fuel (RDF) consisting of MSW feed conveyor from tipping floor, magnetic separator, primary shredder controlled by a baghouse fabric filter system, screens, secondary shredder controlled by a cyclone followed by a baghouse fabric filter system, conveyor feed to the RDF storage room.	05/07/1986	FGMSWPROC-LINES
EUMSWPROC-LINE3	This emission unit pertains to each process line converting MSW into Refuse Derived Fuel (RDF) consisting of MSW feed conveyor from tipping floor, magnetic separator, primary shredder controlled by a baghouse fabric filter system, screens, secondary shredder controlled by a cyclone followed by a baghouse fabric filter system, conveyor feed to the RDF storage room.	05/07/1986	FGMSWPROC-LINES
EUBOILER011	This emission unit pertains to one of three identical RDF fired spreader-stoker boilers rated at 520 MMBTU/hr heat input and 390,000 lb/hr steam at 900 psig and 825°F. Air contaminant emissions from the combustion process are controlled by a lime slurry injection from the top of each SDA unit followed by a baghouse fabric filter system prior to exhaust into a single common stack. The facility will use natural gas as the primary auxiliary fuel with No. 2 fuel oil as back-up for boiler start up and shutdown and other conditions as necessary.	05/06/1986-05/01/1995	FGBOILERS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUBOILER012	This emission unit pertains to one of three identical RDF fired spreader-stoker boilers rated at 520 MMBTU/hr heat input and 390,000 lb/hr steam at 900 psig and 825°F. Air contaminant emissions from the combustion process are controlled by a lime slurry injection from the top of each SDA unit followed by a baghouse fabric filter system prior to exhaust into a single common stack. The facility will use natural gas as the primary auxiliary fuel with No. 2 fuel oil as back-up for boiler start up and shutdown and other conditions as necessary.	05/06/1986-12/17/1992	FGBOILERS
EUBOILER013	This emission unit pertains to one of three identical RDF fired spreader-stoker boilers rated at 520 MMBTU/hr heat input and 390,000 lb/hr steam at 900 psig and 825°F. Air contaminant emissions from the combustion process are controlled by a lime slurry injection from the top of each SDA unit followed by a baghouse fabric filter system prior to exhaust into a single common stack. The facility will use natural gas as the primary auxiliary fuel with No. 2 fuel oil as back-up for boiler start up and shutdown and other conditions as necessary.	05/06/1986-04/18/1994	FGBOILERS
EUSTORAGETANK	This emission unit pertains to a 500,000 gallon fixed roof storage tank for the storage of No.2 fuel oil.	01/01/1986	
EUPARTS-WASHER	Any existing or future new cold cleaner placed into operation after 07/01/1979 that is exempt from NSR permitting by Rule 336.1281(h) or Rule 336.1285 (r)(iv).		FGCOLDCLEANERS
EURULE290	Any existing or future emission unit that emits air contaminants which are exempt from the requirements of R 336.1201 pursuant to R 336.1290.		FGRULE290

EUASH-HANDLING
EMISSION UNIT CONDITIONS

DESCRIPTION

This emission unit pertains to the ash handling system including removal of grate siftings, bottom ash, and flyash from the boilers and air pollution control systems. Grate siftings and bottom ash from each boiler are discharged to a quench trough and then removed by submerged scraper conveyors (SSC). Fly ash from the tubular air heater hoppers, economizer hoppers, and fabric filter hoppers, is discharged to drag-flight conveyors (DFC). The flyash is transported via the DFCs to a surge bin and from there to a fly ash conditioning system (i.e., a pugmill where only water is added to wet the dry material). Wetted fly ash from this system is discharged onto the bottom ash conveyors and transported to the ash/loadout storage building prior to off-site disposal. Fugitive particulate emissions from the ash/loadout building are controlled by a ventilation exhaust filter system.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Enclosures, Ash house vent filter

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Visible Emission[a]	No visible emissions, excluding uncombined water vapor[2*]	At all times	EUASH-HANDLING	Section V, VI	**(R 336.1221, R 336.1301(c))**
2. Particulate Matter (PM)[a]	0.10 lb. particulate/1000 lb. of exhaust air	As specified in the applicable test method	EUASH-HANDLING	Section V, VI	**(R 336.1331(1)(a))**

*Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{40 CFR 62 Subpart FFF (§ 62.14106), 40 CRF 60 Subpart Eb (§ 60.55b)[3], R 336.1932, 40 CFR 60 Subpart Cb (§ 60.36b)}**.

[a]The emission limit does not apply to discharges into or within an enclosure or building, or during maintenance and repair of ash conveying systems. However, it does apply to visible emissions discharged to the atmosphere from buildings with ash conveying systems and enclosures of ash conveying systems.
(40 CFR 62.14106((b) and (c)), 40 CFR 60.55b((b) and (c))[3], R 336.1932(1), 40 CFR 60.36b)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA					

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA.

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA.

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. At least once a year (no more than 12 calendar months following the previous performance test and must complete five performance tests in each 5-year calendar period), the permittee shall verify the emission rates of visible fugitive ash from EU-ASHSYSTEM by testing, at the permittee's expense and in accordance with Department requirements. The test shall utilize U.S. EPA Method 22 observations as specified in 40 CFR Part 60 Subpart Eb (§ 60.58b(k)). **(40 CFR 60 Subpart Eb (§ 60.58b(k)) as specified by 40 CFR 62 Subpart FFF (§ 62.14106) and 40 CRF 60 Subpart Eb (§ 60.55b), referenced by R 336.1932(1) and 40 CFR 60 Subpart Cb (§ 60.36b))**

   a) The minimum observation time for the test shall be a series of three one-hour observations. The observation period shall include times when the facility is transferring ash from the combustor unit to the area where ash is stored or loaded into containers or trucks. **(40 CFR 60 Subpart Eb (§ 60.58b(k)(1)))**[3]

   b) The average duration of visible emissions per hour shall be calculated from the three one-hour observations. The average shall be used to determine compliance with 40 CFR 60.55b. **(40 CFR 60 Subpart Eb (§ 60.58b(k)(2)))**[3]

2. Permittee shall conduct particulate matter testing as requested by the Air Quality Division. **(R 336.1213(3))**

   a) Permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 5, or any other methods/protocols as approved by Air Quality Division. **(R 336.2001, R 336.2003, R 336.2004)**

   b) The stack testing shall be at owner's expense, in accordance with Department requirements. Stack testing procedures/protocols, the location of stack testing ports and the emission unit to be tested must have prior approval by the Air Quality Division. All test results shall be submitted to the Air Quality Division in an acceptable format within 60 days following the date the test is completed. **(R 336.2001, R 336.2003, R 336.2004)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Permittee shall perform daily visible emissions (VE) observations on all applicable emission points on EUASH-HANDLING by either a certified or non-certified reader and keep records. If a VE is observed, permittee shall initiate necessary action(s) to determine the cause(s) of the VE and come into compliance with the opacity limit promptly. Permittee shall conduct a US EPA Method 22 visible emissions reading by a non-certified VE reader from any applicable emission points if immediate corrective action is not feasible. **(R 336.1213(3), R 336.1303)**

2. The applicable recordkeeping requirements shall include locations, dates and times of VE observations, name and signature of the reader, cause(s) and actions taken when visible emissions are observed, control equipment inspections, malfunctions, repairs, and corrective actions taken. **(R 336.1213(3))**

3. Permittee shall inspect any roof vent filters, insertable dust filters in wall-mounted exhaust fans, and any other applicable particulate control equipment, at a minimum every two weeks, for damages and repair or replace promptly. **(R 3361213(3))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	**NA**

IX. OTHER REQUIREMENT(S)

1. Permittee shall dispose of collected ash in a manner which minimizes the introduction of air contaminants to the outer air[2]. **(R 336.1221, R336.1370)**

2. Permittee shall inspect and clean the covered ash trucks prior to leaving the site to remove exterior accumulations of ash and dirt by water spray or any other method submitted to and approved by the Division to prevent trackout of ash and dirt onto the public right-of-way[2]. **(R 336.1221, R 336.1370)**

3. Permittee shall further control spillage of excess water (free moisture) from the covered ash trucks by discharging the excess water into the sewer system or any other method submitted to and approved by the Division, prior to leaving the site to prevent spillage of excess water onto the public right-of-way[2]. **(R 336.1221, R 336.1370)**

Footnotes:

[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).
[3]40 CFR 60 Subpart Eb is not directly applicable to this facility. However, certain specific provisions in 40 CFR 60 Subpart Eb become specific applicable requirement in this ROP by either a reference or a requirement from 40 CFR 62 Subpart FFF, 40 CFR 60 Subpart Cb, or Michigan Air Pollution Control Rule 932 adopting by reference the 2000 version of 40 CFR 60 Subpart Cb.

EULIME-FEEDSYS
EMISSION UNIT CONDITIONS

DESCRIPTION

This emission unit pertains to the Lime Feed System consisting of a lime storage silo with a baghouse fabric filter particulate control system, two lime slakers each equipped with a grit screen, and one lime slurry tank connecting both lines. The lime slurry from the slurry tank is pumped into each boiler's slurry head tank where the slurry is fed by gravity into the spray dry absorber (SDA).

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Reverse Air Fabric Filter (Baghouse) at Lime Storage Silo

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Visible Emissions	10% Opacity[2]	6 – minute average	EULIME-FEEDSYS	Section V, VI	**(R336.1201(3), R 336.1301(1)(c))**
2. Particulate Matter	0.02 grains/dry standard cubic feet exhaust gas[2]	As specified in the applicable test method	EULIME-FEEDSYS	Section V, VI	**(R 336.1201(3))**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	**NA**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Permittee shall not load the lime and operate the handling equipment unless the installed fabric filter baghouse is operating properly[2]. **((R 336.1201(3), R 336.1910)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Permittee shall conduct US EPA Method 9 visible emissions reading by a certified or non certified reader per the applicable requirement in Section VI below and/or as requested by the Air Quality Division. **(R 336.1213(3), R 336.1303)**

2. Permittee shall conduct US EPA Method 22 visible emissions reading by a non-certified reader per the applicable requirement in Section VI below and/or as requested by the Air Quality Division. **(R 336.1213(3), R 336.1303)**

3. Permittee shall conduct particulate matter testing as requested by the Air Quality Division. **(R 336.1213(3), R 336.2001)**

   a) Permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 5 or any other methods/protocols as approved by Air Quality Division. **(R 336.2001, R 336.2003, R 336.2004)**

   b) The stack testing shall be at owner's expense, in accordance with Department requirements. Stack testing procedures/protocols, the location of stack testing ports and the emission unit to be tested must have prior approval by the Air Quality Division. All test results shall be submitted to the Air Quality Division in an acceptable format within 60 days following the date the test is completed. **(R 336.2001, R 336.2003, R 336.2004)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Permittee shall conduct visible emissions (VE) observation by a non-certified or certified reader from the baghouse during every loading batch and after commencing the loading of lime into the storage silo at least once during the loading cycle. Permittee shall keep records of the VE readings, dates, and times conducted. **(R 336.1213(3), R 336.1303)**

2. If visible emissions are observed per the above condition VI.1, permittee shall immediately cease the loading operations and conduct inspections of the baghouse to determine possible causes of the visible emissions. Details of the inspections are given in Appendix 3 and details of recordkeeping are given in Appendix 4. **(R 336.1213(3), R 336.1910)**

3. Permittee shall correct the causes of the malfunction immediately before resuming the loading operations. **(R 336.1213(3), R 336.1910)**

4. Permittee shall perform daily visible emissions (VE) observations and keep records on all applicable emission points on EULIME-FEEDSYS by either a certified or non-certified reader. If a VE is observed and immediate corrective action is not feasible, permittee shall conduct a US EPA Method 9 visible emissions reading by a certified VE reader or a US EPA Method 22 visible emissions reading by a non-certified VE reader from the applicable emission point where a US EPA Method 9 reading is not feasible. In addition, permittee shall initiate prompt corrective actions to eliminate the cause(s) of the visible emissions and keep records. **(R 336.1213(3), R 336.1303)**

5. The applicable recordkeeping requirements shall include locations, dates and times of VE observations, name and signature of the reader, and actions taken when visible emissions are observed. **(R 336.1213(3))**

6. Any repairs and corrective actions needed to address the causes of malfunction or failure of the control equipment shall be performed immediately. **(R 336.1213(3), R 336.1910)**

7. Recordkeeping of inspections, cause(s) of control equipment malfunctions or failures, repairs, and corrective actions taken for each control equipment shall be maintained on file for a period of at least five years. **(R 336.1213(3))**

See Appendices {3 & 4}

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVLIME-BAG-FILT	12	54	**(R 336.1201(3))**

IX. OTHER REQUIREMENT(S)

1. Permittee shall not substitute any raw material which would result in an appreciable change in the quality or any appreciable increase in the quantity of the emission of an air contaminant without prior notification to and approval by the Division[2]. **(R336.1201(3))**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

EUSTORAGETANK
EMISSION UNIT CONDITIONS

DESCRIPTION

This emission unit pertains to a 500,000 gallon fixed roof storage tank for the storage of No.2 fuel oil.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA					

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA					

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. True vapor pressure (as defined in R336.1120(i)) of all organic compounds stored, in Kilopascals (kPa) at actual storage conditions. **(R 336.1213(3)(b)(ii))**

2. Readily accessible records showing the dimensions of the storage vessel. **(40 CFR 60.116b(b))**

3. Readily accessible records of the analysis showing the design capacity of the storage vessel. **(40 CFR 60.116b(b))**

See Appendices {3 & 4}

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVSTORAGETANK	NA	NA	**NA**

IX. OTHER REQUIREMENT(S)

1. Permittee shall comply with all applicable provisions of New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Kb. **(R 336.1213(3), 40 CFR 60 Subpart Kb)**

2. Permittee shall not store any volatile organic liquid with a maximum true vapor pressure (as defined in R 336.1120(I)) of more than or equal to 3.5 kilopascals (kPa) at actual storage conditions. **(40 CFR 60.110b(c))**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGMSWPROC-LINES	This process group includes all activities from receipt of MSW in the facility, weighing, delivery of MSW into the MSW Process Building, unloading in the tipping floor area, MSW loading into RDF process conveyor lines at the tipping floor, MSW conveying into process room, MSW screening and processing into RDF, RDF conveying into storage room, RDF loading into 2 boiler feed conveyor lines, and conveying RDF from storage room into the Power Block Building. Refuse Derived Fuel (RDF) processing starts from loaders feeding MSW into 3 lines each consisting of a feed conveyor, magnetic separator, primary shredder - controlled by a baghouse fabric filter system, screens, secondary shredder - controlled by a cyclone and a baghouse fabric filter system, and conveyor feed into the RDF storage room. Fugitive particulate emissions in the tipping floor room and RDF storage room are controlled by ventilation exhaust fans with vent filters.	EUMSWPROC-LINE1 EUMSWPROC-LINE2 EUMSWPROC-LINE3
FGBOILERS011-013	This flexible group pertains to the operations in the Power Block Building including three identical RDF fired spreader-stoker boilers rated at 520 MMBTU/hr heat input and 390,000 lb/hr steam at 900 psig and 825°F. The Power Block Building also operates an electric generator rated at 68 Megawatts per hour (MW/hr). Air contaminant emissions from the combustion process are controlled by a lime slurry injection from the top of each SDA unit followed by a designated baghouse fabric filter system. The air streams from each baghouse fabric filter system are exhausted into a single common stack. The facility will use natural gas as the primary auxiliary fuel with No. 2 fuel oil as back-up for boiler start up and shutdown and other conditions as necessary.	EUBOILER011 EUBOILER012 EUBOILER013

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGCOLDCLEANERS	Any new cold cleaner placed into operation after 07/01/1979 that is exempt from NSR permitting by Rule 336.1281(h) or Rule 336.1285 (r)(iv).	EUPARTS-WASHER
FGRULE290	Any existing or future emission unit that emits air contaminants which are exempt from the requirements of R 336.1201 pursuant to R 336.1290.	

FGMSWPROC-LINES
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

FGMSWPROC-LINES includes all activities from receipt of MSW in the facility, weighing, delivery of MSW into the MSW Process Building, unloading in the tipping floor area, MSW loading into RDF process conveyor lines, RDF processing, storage, loading into 2 boiler feed conveyor lines, and conveying RDF into the Power Block Building. Refuse Derived Fuel (RDF) processing starts from loaders feeding MSW into 3 lines each consisting of a feed conveyor, magnetic separator, primary shredder - controlled by a baghouse fabric filter system, screens, secondary shredder - controlled by a cyclone and a baghouse fabric filter system, and conveyor feed into the RDF storage room. Fugitive particulate emissions in the MSW Process Building are controlled by ventilation exhaust fans with vent filters.

Emission Units:

EUMSWPROC-LINE1, EUMSWPROC-LINE2, EUMSWPROC-LINE3,

POLLUTION CONTROL EQUIPMENT

Baghouses, Cyclones, Roof vent filters

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Particulate Matter	0.0028 lb. particulate/1000 lb. of exhaust gas[2]	As specified in the applicable test method	EUMSWPROC-LINE1 EUMSWPROC-LINE2 EUMSWPROC-LINE3	Section V, VI	**(R 336.1221, R 336.1331, R 336.1201(3))**
2. Visible Emission	No visible emissions, excluding uncombined water vapor[2]	At all times	FGMSWPROC-LINES	Section V, VI	**(R 336.1221, R 336.1301(1)(c), R 336.1201(3))**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Municipal Solid Waste (MSW)	20,000[2] tons/week	Receive or Process into Refuse Derived Fuel (RDF)	FGMSWPROC-LINES	Section V, VI	**(R 336.1221, R 336.1201(3))**
2. Municipal Solid Waste (MSW)	1,043,000[2] tons/year	Receive or Process into Refuse Derived Fuel (RDF)	FGMSWPROC-LINES	Section V, VI	**(R 336.1221, R 336.1201(3))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Permittee shall accept, process, and combust only municipal solid waste (MSW) as defined in 40 CFR 60 Subpart Cb (§ 60.31b) and 40 CFR 62 Subpart FFF (§ 62.14101). **(R 336.1213, 40 CFR 62 Subpart FFF (§ 62.14101), R 336.1932(1), 40 CFR 60.31b, 40 CFR 60.51b[3])**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Permittee shall not operate EUMSWPROC-LINE1, EUMSWPROC-LINE2, or EUMSWPROC-LINE3 unless the designated cyclones and baghouses for the process lines are installed and operating properly.[2] **(R 336.1221, R 336.1201(3), R 336.1910)**

2. Permittee shall not operate FGMSWPROC-LINES unless all of the roof exhaust vent filters are in place and operating properly.[2] **(R 336.1221, R 336.1201(3), R 336.1910)**

3. Permittee shall maintain a negative pressure in the solid waste receiving, processing and storage rooms during facility operations to minimize discharges of odor, dust and other materials. A velometer shall be used to periodically check open doors to ensure that inward airflow is maintained. The doors to the tipping floor shall be kept closed to the maximum extent practicable during refuse receiving periods. Each day when the receipt of solid waste has ceased, the doors to the MSW processing facility shall be kept continuously closed until the next morning when solid waste receiving resumes.[2] **(R 336.1221, R 336.1201(3), R 336.1901)**

4. Permittee shall maintain the differential pressure gauge and associated equipment across baghouses in proper operating condition. **(R 336.1910, 40 CFR 64.7(b))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Permittee shall conduct US EPA Method 9 visible emissions reading by a certified or non certified reader per the applicable requirement in Section VI below and/or as requested by the Air Quality Division. **(R 336.1213(3), R 336.1303)**

2. Permittee shall conduct US EPA Method 22 visible emissions reading by a non-certified reader per the applicable requirement in Section VI below and/or as requested by the Air Quality Division. **(R 336.1213(3), R 336.1303)**

3. Permittee shall determine the particulate matter emissions on EUMSWPROC-LINE1, EUMSWPROC-LINE2, and EUMSWPROC-LINE3 according to U.S. EPA Method 17 or other alternative method as approved by the District Supervisor, Air Quality Division, within 180 days of the issuance of this renewal ROP. If all test results demonstrate compliance with the above particulate matter emission limit and show consistency for all three lines, permittee may request testing of only one line for the succeeding 5-year renewal cycle of the ROP. **(R 336.1213(3), 40 CFR 64.4(e), 40 CFR 64.6(d), R 336.2001, R 336.2003, R 336.2004)**

    a) Permittee shall utilize the methods provided in 40 CFR 60 Appendix A and/or methods and protocols as approved by the Air Quality Division.[2] **(R 336.2001, R 336.2003, R 336.2004)**

    b) The stack testing shall be at owner's expense, in accordance with Department requirements. Stack testing procedures/protocols, the location of stack testing ports and the emission unit to be tested must have prior approval by the Air Quality Division. All test results shall be submitted to the Air Quality Division in an acceptable format within 60 days following the date the test is completed.[2] **(R 336.2001, R 336.2003, R 336.2004)**

    c) Permittee shall record the exit velocity and pressure drop across the primary baghouse and secondary baghouse for each of the associated process line while conducting stack testing per the above requirement. **(40 CFR 64.6(c)(1)(i), R 336.1213(3))**

d) Permittee shall conduct US EPA Method 9 visible emissions reading by a certified reader while conducting stack testing per the above requirement and per the approved protocol. (**40 CFR 64.4(e), 40 CFR 64.6(d), R 336.1213(3))**

See Appendix 5

VI. <u>MONITORING/RECORDKEEPING</u>

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1) Permittee shall keep records of individual supplier information, description of waste, and the amount of MSW received on a daily basis. **(R 336.1213(3))**

2) Permittee shall monitor the negative pressure from the solid waste receiving room at least once per day or in a manner and instrumentation acceptable to the Air Quality Division. At a minimum, Permittee shall use a velometer to monitor and record the pressure drop daily. **(R 336.1213(3), 40 CFR 64.6(c)(1))**

3) Permittee shall monitor and keep records, at least once per day, of the pressure drop across each of the three primary and secondary baghouses. Permittee shall not operate the applicable emission unit if the particulate control equipment pressure drop falls out of the range established during the most recent stack test and/or per the manufacturer's recommended operating pressure drop range. **(R 336.1213(3), 40 CFR 64.6(c)(1)(i))**

4) Permittee shall calibrate and conduct maintenance on the pressure drop monitoring equipment per the manufacturer's recommended maintenance plan or as established in the facility's preventative maintenance plan. **(R 336.1213(3), 40 CFR 64.7(c))**

5) Permittee shall measure pressure drop per condition VI.3 at all times when the applicable processing line is in operation except during periodic preventative maintenance. **(R 336.1213(3), 40 CFR 64.7(c))**

6) Permittee shall formally measure the air flow for the primary and secondary baghouses in EUMSWPROC-LINE1, EUMSWPROC-LINE2, and EUMSWPROC-LINE3 at least once a year to show operational consistency with stack testing parameters. The air flow measurement shall be conducted in conjunction with the yearly boiler air emissions testing by the same stack testing contractor. **(R 336.1213(3), 40 CFR 64.6(c)(1)(i))**

7) Permittee shall conduct inspections, at a minimum, at least once a month to determine the operational condition of the cyclones and the baghouses. For the cyclones, the following items shall be checked during this inspection. **(R 336.1213(3), R 336.1910, 40 CFR 64.6(c)(1)(i))**

   a) Fallout of large diameter particulate matter.
   b) Dents and /or weld failures.
   c) Solids discharge problems.
   d) Integrity of internal components

   For the baghouses, the following items shall be checked during this inspection. **(R 336.1213(3), R 336.1910, 40 CFR 64.6(c)(1)(i))**

   a) Visual inspection of the fabric filter bags.
   b) Security of attachment.
   c) Holes or tears in the fabric filter bag.
   d) Evidence of dust leakage.
   e) Metal housings.
   f) Fans
   g) Blowers
   h) Hopper bottom discharge valve.
   i) Reverse air dampers or pulse jets
   j) Access doors and gaskets.

8. Permittee shall inspect the roof exhaust filters in the ventilators, at a minimum, once per month for damages and replace as required. **(R 336.1213(3), R 336.1910, R 336.1901)**

9. Permittee shall keep records on the inspection dates, inspection results, repairs/replacements conducted, and reasons for any malfunctions or failures on the vent filters, cyclones, and the baghouses.. Details of the inspections are given in Appendix 3 and recordkeeping requirements are included in Appendix 4. **(R 336.1213(3))**

10. Permittee shall adhere to facility's preventive maintenance program for the periodic replacement of the air filters. **(R 336.1213(3))**

11. Permittee shall perform at least one daily visible emissions (VE) observations and keep records on all applicable emission points on FGMSWPROC-LINES by either a certified or non-certified reader. If a VE is observed, permittee shall initiate necessary action(s) to determine the cause(s) of the VE and come into compliance with the opacity limit promptly. If a VE is observed and immediate corrective action is not feasible, permittee shall conduct a US EPA Method 9 visible emissions reading by a certified VE reader, or a US EPA Method 22 visible emissions reading by a non-certified VE reader from the applicable emission point where a US EPA Method 9 reading is not feasible. In addition, permittee shall initiate prompt corrective actions to eliminate the cause(s) of the visible emissions and keep records. **(R 336.1213(3), R 336.1303)**

12. The applicable recordkeeping requirements shall include locations, dates and times of VE observations, name and signature of the reader, and actions taken when visible emissions are observed. **(R 336.1213(3))**

13. Any repairs and corrective actions needed to address the causes of malfunction or failure of the control equipment shall be performed immediately. **(R 336.1213(3), R 336.1910)**

14. Recordkeeping of inspections, cause(s) of control equipment malfunctions or failures, repairs, and corrective actions taken for each control equipment shall be maintained on file for a period of at least five years. **(R 336.1213(3))**

See Appendices {3 & 4}

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. The annual and semiannual reporting shall include the following additional information as part of deviation reporting:

    a. summary information on the number, duration and cause (including unknown cause, if applicable) of exceedances and excursions and the corrective actions taken;

    b. summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than for calibration checks);

    c. a description of the actions taken to implement a QIP during the reporting period, per condition IX.7 below. If a QIP has been completed the report shall include documentation that the plan has been implemented and reduced the likelihood of similar levels of excursions or exceedances occurring. **(R 336.1213(3), 40 CFR 64 (§ 64.9))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
SV100-PRIMBAGHSE	45.1[2]	98.4[2]	**(R 336.1221, R 336.1201(3))**
SV100-SECBAGHSE	45.1[2]	98.4[2]	**(R 336.1221, R 336.1201(3))**
SV200-PRIMBAGHSE	45.1[2]	98.4[2]	**(R 336.1221, R 336.1201(3))**
SV200-SECBAGHSE	45.1[2]	98.4[2]	**(R 336.1221, R 336.1201(3))**
SV300-PRIMBAGHSE	45.1[2]	98.4[2]	**(R 336.1221, R 336.1201(3))**
SV300-SECBAGHSE	45.1[2]	98.4[2]	**(R 336.1221, R 336.1201(3))**

IX. OTHER REQUIREMENT(S)

1. Permittee shall clean the solid waste receiving tipping floor, pit area, and processing equipment on a daily basis, or more often if required, such that odor from these sources is minimized.[2] **(R336.1201(3), R 336.1901)**

2. In the event a visible emission is observed, permittee shall investigate to determine the cause(s) of the VE, effect corrective action to restore the affected emission unit/air pollution control equipment causing the VE to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. **(R 336.1213(3)), 40 CFR64 (§ 64.7(d)))**

3. The permittee shall conduct pressure drop readings and visible emission observations as required in applicable permit conditions in FGMSWPROC-LINES Section VI and record the data. Data collected during malfunctions, repairs, and QA/QC activities shall not be used to satisfy monitoring requirements. **(R 336.1213(3)), 40 CFR 64 (§ 64.6(c)(3), § 64.7(c)))**

4. The permittee shall notify the Southeast Michigan District Office of the AQD for the need to modify the monitoring plan requirements in Section VI if the approved monitoring is found to be inadequate and shall submit a proposed modification to the plan if appropriate. **(R 336.1213(3)), 40 CFR 64 (§ 64.7(e))**

5. The permittee shall, at all times, maintain the monitoring system, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment. **(R 336.1213(3)), 40 CFR 64 (§ 64.7(b)))**

6. The permittee shall comply with all requirements of 40 CFR Part 64. **(R 336.1213(3)), 40 CFR 60 (§ 60.6(c)(3)))**

7. The permittee shall submit a Quality Improvement Plan (QIP) if visible emissions are observed twelve times in a 6-month reporting period, or if pressure drop readings occur outside the range twelve times in a 6-month reporting period. **(R 336.1213(3)), 40 CFR 64 (§ 64.8(a)))**

Footnotes:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).
[3] 40 CFR 60 Subpart Eb is not directly applicable to this facility. However, certain specific provisions in 40 CFR 60 Subpart Eb become specific applicable requirement in this ROP by either a reference or a requirement from 40 CFR 62 Subpart FFF, 40 CFR 60 Subpart Cb, or Michigan Air Pollution Control Rule 932 adopting by reference the 2000 version of 40 CFR 60 Subpart Cb.

FGBOILERS011-013
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

This flexible group pertains to the Power Block operations primarily comprising of three identical RDF fired spreader-stoker boilers rated at 520 MMBTU/hr heat input, 390,000 lb/hr steam at 900 psig, and 825°F. Power Block operates an electric generator with name plate capacity of 68 MWe to convert unsold steam into power for internal consumption and for sale to the grid. Air contaminant emissions from the combustion process are controlled by a lime slurry injection from the top of each SDA unit followed by a baghouse fabric filter system. The air streams from each baghouse are exhausted into a single common stack. The facility will use natural gas as the primary auxiliary fuel with No. 2 fuel oil as back-up for boiler start up and shutdown and other conditions as necessary. The boiler design restricts air flow capacity such that both oil and natural gas cannot be burned simultaneously as the auxiliary fuel. Also included in this flexible group is a cooling tower located on the northwest side of the facility.

Emission Units:

EUBOILER011, EUBOILER012, EUBOILER013

POLLUTION CONTROL EQUIPMENT

Each combustor is equipped with a lime slurry injection into each dry scrubber connected to each baghouse fabric filter system (Three dry scrubbers and Three Baghouses).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Particulate Matter (PM)	a) 0.010 grains/dscf corrected to 7% oxygen[2]. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{R 336.1221, R 336.1201(3), 40 CFR 62 Subpart FFF (§ 62.14103(a)(1)), 40 CFR 60 Subpart Cb (§ 60.33b(a)(1)(i)), 40 CFR 60 Subpart Db (§ 60.43b(d)(1)), and R 336.1932}**.	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **except** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(R 336.1221, R 336.1201(3), 40 CFR 62 Subpart FFF (§ 62.14103(a)(1)), 40 CFR 60 Subpart Cb (§ 60.33b(a)(1)(i)), 40 CFR 60 Subpart Db (§ 60.43b(d)(1), R 336.1932, 40 CFR 62.14109, 40 CFR 60 Subpart Eb (§ 60.58b(a)(1))[3])**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
2. Cadmium	a) 37 micrograms per dry standard cubic meter (µg/dscm) corrected to 7% oxygen.[2] Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{R 336.1201(3), R 336.1901, 40 CFR 62 Subpart FFF (§ 62.14103(a)(2)), 40 CFR 60 Subpart Cb (§ 60.33b(a)(2)(i)), R 336.1932}**. (This emission rate will be supplanted on the <u>earlier</u> of: 1) the amendment of the Federal Implementation Plan (FIP) implementing the EPA's emission guidelines promulgated May 10, 2006; or 2) May 10, 2011.)	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(R 336.1201(3), R 336.1901, 40 CFR 62 Subpart FFF (§ 62.14109 & § 62.14103(a)(2)), R 336.1932(1), 40 CFR 60 Subpart Cb (§ 60.33b(a)(2)(i) & § 60.38b), 40 CFR 60 Subpart Eb (§ 60.58b(a)(1))[3])**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
	b) 35 micrograms per dry standard cubic meter (µg/dscm) corrected to 7% oxygen. (This emission rate will only go into effect for this source on the earlier of: 1) the date when a Federal Implementation Plan (FIP) is revised and becomes effective to implement the EPA's emission guidelines promulgated May 10, 2006; or 2) May 10, 2011.)	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **except** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.			**(40 CFR 62 Subpart FFF (§ 62.14109), 40 CFR 60 Subpart Cb (§ 60.33b(a)(2)(i), § 60.38b, & (§ 60.39b(h)), 71 FR 27324 (May 10, 2006), 40 CFR 60 Subpart Eb (§ 60.58b(a)(1))[3])**
3. Hexavalent Chromium	a) 4.2 µg/dscm corrected to 7% oxygen[2].	Per boiler based on a 2-hour average.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(R 336.1201(3), R 336.1901)**
4. Total Chromium	a) 200 µg/dscm corrected to 7% oxygen[2].	Per boiler based on a 2-hour average.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(R 336.1201(3), R 336.1901)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
5. Lead	a) 0.440 mg/dscm corrected to 7% oxygen.[2] Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{R 336.1201(3), 40 CFR 52 (§ 52.21(j)), 40 CFR 62 Subpart FFF (§ 62.14103(a)(2)), 40 CFR 60 Subpart Cb (§ 60.33b(a)(4), R 336.1932}**. (This emission rate will be supplanted on the <u>earlier</u> of: 1) the amendment of the Federal Implementation Plan (FIP) implementing the EPA's emission guidelines promulgated May 10, 2006; or 2) May 10, 2011.)	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(40 CFR 52 (§ 52.21(j)), R 336.1201(3), 40 CFR 62 Subpart FFF ((§ 62.14109 & § 62.14103(a)(2)), R 336.1932(1), 40 CFR 60 Subpart Cb (§ 60.33b(a)(4) & § 60.38b), 40 CFR 60 Subpart Eb (§ 60.58b(a)(1))[3])**
	b) 0.400 mg/dscm corrected to 7% oxygen. (This emission rate will only go into effect for this source on the earlier of: 1) the date when a Federal Implementation Plan (FIP) is revised and becomes effective to implement the EPA's emission guidelines promulgated May 10, 2006; or 2) May 10, 2011.)	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.			**(40 CFR 62 Subpart FFF (§ 62.14109), 40 CFR 60 Subpart Cb (§ 60.33b(a)(4), § 60.38b, & § 30.39b(h)), 71 FR 27324 (May 10, 2006), 40 CFR 60 Subpart Eb (§ 60.58b(a)(1)[3])**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
6. Mercury	a) 80 µg/dscm corrected to 7% oxygen, or 15 % of the potential mercury emission concentration (85% reduction by weight), corrected to 7% oxygen (dry basis), whichever is less stringent. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{R 336.1201(3), 40 CFR 52.21(j), 40 CFR 62 Subpart FFF (§ 62.14103(a)(3)), 40 CFR 60 Subpart Cb (§ 60.33b(a)(3), R 336.1932}**. (This emission rate will be supplanted on the <u>earlier</u> of: 1) the amendment of the Federal Implementation Plan (FIP) implementing the EPA's emission guidelines promulgated May 10, 2006; or 2) May 10, 2011.)	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(40 CFR 52 (§ 52.21(j)), R 336.1201(3), 40 CFR 62 Subpart FFF ((§ 62.14109 & § 62.14103(a)(3)), R 336.1932(1), 40 CFR 60 Subpart Cb (§ 60.33b(a)(3) & § 60.38b), 40 CFR 60 Subpart Eb (§ 60.58b(a)(1))[3])**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
	b) 50 µg/dscm corrected to 7% oxygen, or 15 % of the potential mercury emission concentration (85% reduction by weight), corrected to 7% oxygen (dry basis), whichever is less stringent. (This emission rate will only go into effect for this source on the earlier of: 1) the date when a Federal Implementation Plan (FIP) is revised and becomes effective to implement the EPA's emission guidelines promulgated May 10, 2006; or 2) May 10, 2011.)	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil** , **except** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.			**(40 CFR 62.14103(a)(3), 40 CFR 62.14109, 40 CFR 60.33b(a)(3), 71 FR 27324 (May 10, 2006), 40 CFR 30.39b(h), 40 CFR 60.58b(a)(1), 40 CFR 60.38b, 40 CFR 62 Subpart FFF)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
7. Dioxins/Furans (CDD/CDF) – total mass basis	a) 30 ng/dscm corrected to 7% oxygen.[2] Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{40 CFR 52.21(j), R 336.1201(3), 40 CFR 62 Subpart FFF (§ 62.14103(c)(2)), 40 CFR 60 Subpart Cb (§ 60.33b(c)(1)(iii), and R 336.1932}**.	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 4-hour ave.)	**(40 CFR 52 (§ 52.21(j)), R 336.1201(3), R 336.1932(1), 40 CFR 62.14103(c)(2), 40 CFR 62.14109, 40 CFR 60.33b(c)(1)(iii), 71 FR 27324 (May 10, 2006), 40 CFR 60.58b(a)(1)[3], 40 CFR 60.38b)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
8. Hydrogen Chloride (HCl)	a) 25 parts per million by volume (ppmv) of exhaust gases (dry basis) corrected to 7% oxygen[2], or 5% of the potential hydrogen Chloride emission concentration (95% reduction by weight or volume), corrected to 7% oxygen (dry basis), whichever is less stringent[2]. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{40 CFR 52 (§ 52.21(j)), R 336.1201(3), R 336.1901, 40 CFR 62 Subpart FFF (§ 62.14103(b)(2)), 40 CFR 60 Subpart Cb (§ 60.33b(b)(3)(ii), and R 336.1932}**.	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(40 CFR 52 (§ 52.21(j)), R 336.1201(3), R 336.1901, R 336.1932(1), 40 CFR 62.14103(b)(2), 40 CFR 62.14109, 40 CFR 60.33b(b)(3)(ii), 71 FR 27324 (May 10, 2006), 40 CFR 60.58b(a)(1)[3], 40 CFR 60.38b)**
	b) 405 parts per million by volume (ppmv) of exhaust gases (dry basis) corrected to 7% oxygen.[2]	Per boiler and applicable during scrubber atomizer unit replacement.			**(R 336.1201(3))**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
9. Sulfur Dioxide (SO_2)	a) 29 ppmv of exhaust gases (dry basis) corrected to 7% oxygen[2], or 15% of the potential Sulfur Dioxide emission concentration (85% reduction by weight or volume), corrected to 7% oxygen (dry basis), whichever is less stringent. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{R 336.1201(3), 40 CFR 52.21(j), 40 CFR 62 Subpart FFF (§ 62.14103(b)(1)), 40 CFR 60 Subpart Cb (§ 60.33b(b)(3)(i), and R 336.1932}**.	Per boiler based on a 24-hour daily geometric mean average except during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (CEMS)	**(40 CFR 52.21(j), R 336.1201(3), R 336.1932(1), 40 CFR 62.14103(b)(1), 40 CFR 62.14109, 40 CFR 60.33b(b)(3)(i), 40 CFR 60.58b(a)(1)[3], 40 CFR 60.38b)**
	b) 359 parts per million by volume (ppmv) of exhaust gases (dry basis) corrected to 7% oxygen.[2]	Per boiler and applicable during scrubber atomizer unit replacement.			**(R 336.1201(3))**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
10. Total Fluoride	a) 5 ppmv of exhaust gases (dry basis) corrected to 7% oxygen[2], or 5% of the potential Fluoride emission concentration (85% reduction by weight or volume), corrected to 7% oxygen (dry basis), whichever is less stringent[2].	Per boiler based on a 2-hour average.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test: 2-hour ave.)	**(40 CFR 52.21(j), R 336.1201(3))**
	b) 9 ppmv of exhaust gases (dry basis) corrected to 7% oxygen [2].	Per boiler and applicable during scrubber atomizer unit replacement.			**(40 CFR 52.21(j), R 336.1201(3))**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
11. Carbon Monoxide (CO)	a) 200 ppmv of exhaust gases (dry basis) corrected to 7% oxygen. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{40 CFR 62 Subpart FFF (§ 62.14104(a)), 40 CFR 60 Subpart Cb (§ 60.34b, and R 336.1932}**.	Per boiler based on a 24-hour block daily arithmetic average except during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (CEMS)	**(40 CFR 62.14104(a), 40 CFR 62.14109, R 336.1932(1), 40 CFR 60.34b, 40 CFR 60.58b(a)(1)[3], 40 CFR 60.38b, R 336.1932)**
	b) 267 ppmv of exhaust gases (dry basis) corrected to 7% oxygen [2].	Per boiler based on a 1-hour block average except during periods of startup or shutdown.			**(R 336.1221, R 336.1201(3))**
	c) 2500 ppmv of exhaust gases (dry basis) corrected to 7% oxygen[2].	Per boiler based on a 3-hour block average during periods of startup or shutdown.			**(R 336.1221, R 336.1201(3))**
12. Volatile Organic Compounds (VOC)	a) 65 ppmv of exhaust gases (dry basis) corrected to 7% oxygen[2]	Per boiler based on a three 1-hour block average.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test)	**(R 336.1702(a), R 336.1201(3))**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
13. Nitrogen Oxides (NOx)	a) 247 ppmv of exhaust gases (dry basis) corrected to 7% oxygen[2]. Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{40 CFR 52.21(j), R 336.1201(3), 40 CFR 62 Subpart FFF (§ 62.14103(d)), 40 CFR 60 Subpart Cb (§ 60.33b(d)), and R 336.1932}**.	Per boiler based on a 1-hour block average except during periods of startup or shutdown.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (CEMS)	**(40 CFR 52.21(j), R 336.1201(3), R 336.1932(1), 40 CFR 62.14103(d), 40 CFR 62.14109, 40 CFR 60.33b(d), 40 CFR 60.58b(a)(1)[3], 40 CFR 60.38b)**

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
14. Visible Emissions (VE)	a) 10% opacity except for uncombined water vapor (6 minute average).[2] Compliance with this term or condition shall be considered compliance with all of the following applicable requirement(s)/limit(s) which have been subsumed under this streamlined requirement: **{40 CFR 52.21(j), R 336.1201(3), 40 CFR 62 Subpart FFF (§ 62.14103(a)(1)), 40 CFR 60 Subpart Cb (§ 60.33b(a)(1)(iii), and R 336.1932}**.	At all times and per boiler while firing **RDF** or a combination of **RDF and natural gas,** or a combination of **RDF and No. 2 Fuel Oil**, **<u>except</u>** during periods of startup, shutdown, and malfunction as explained in 40 CFR 60.58b(a)(1) and referenced by 40 CFR 60.38b.	EUBOILER011, EUBOILER012, EUBOILER013	Section V, VI (Stack Test – COMS)	**(40 CFR 52.21(j), R 336.1201(3), R 336.1932(1), 40 CFR 62.14103(a)(1), 40 CFR 62.14109, 40 CFR 60.33b(a)(1)(iii), 40 CFR 60.58b(a)(1)[3], 40 CFR 60.38b)**
	b) 20% opacity except for uncombined water vapor (6 minute average).[2]	Per boiler and at all times when firing No. 2 Fuel Oil or natural gas.			**(40 CFR 52.21(j), R 336.1201(3), R 336.1301(3))**

II. MATERIAL LIMIT(S)

1. The combined total auxiliary fuels (natural gas and No. 2 Fuel Oil) for EUBOILER011, EUBOILER012, and EUBOILER013 shall not exceed 28,500 MMBtu/yer heat input for starting up a third boiler while operating the other two boilers fired with RDF, based on a 12-month rolling average. If a single fuel is used during the 12-month rolling time period, this limit is equivalent to 28.15 million cubic feet of natural gas or 208,000 gallons of No. 2 fuel oil.[2] **(40 CFR 52.21, R 336.1201(3))**

2. The combined total auxiliary fuels (natural gas and No. 2 Fuel Oil) shall not exceed 10% of the annual capacity factor for all purposes, for each boiler (EUBOILER011, EUBOILER012, and EUBOILER013), calculated on a 12-month rolling average. This condition is necessary to exempt the permittee from the applicability of nitrogen oxide emission limits specified in 40 CFR 60 Subpart Db. **(40 CFR 60.44b(c) & (d), R 336.1213(3))**

3. The steam load to EUBOILER011, EUBOILER012, and EUBOILER013, when firing RDF, shall not exceed 383,000 lb/hr.[2] **(R 336.1201(3)), R 336.1932(1), 40 CFR 62.14104(b), 40 CFR 60.34b(b), 40 CFR 60.53b)**

4. The steam load to EUBOILER011, EUBOILER012, and EUBOILER013, when firing No. 2 fuel oil only or natural gas only, shall not exceed 296,000 lb/hr.[2] **(R 336.1201(3)), R 336.1932(1), 40 CFR 62.14104(b), 40 CFR 60.34b(b), 40 CFR 60.53b)**

5. The steam load to EUBOILER011, EUBOILER012, and EUBOILER013, when firing RDF or natural gas or No. 2 fuel oil only, shall not exceed 110% the highest load level (4-hour arithmetic average) demonstrated during the most recent dioxin/furan testing during which compliance with the emission limit was demonstrated, whichever is most restrictive. Compliance shall be determined on a 4-hour average by a continuous monitoring system, installed and calibrated to be representative of the maximum design capacity.[2] **(R 336.1201(3)), R 336.1932(1), 40 CFR 62.14104(b), 40 CFR 60.34b(b), 40 CFR 60.53b)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Periods of startup or shutdown are defined as the period when the facility commences the process of continuously burning Refuse Derived Fuel (RDF) in a boiler or begins the process of discontinuing the continuous burning of RDF in a boiler, respectively, and does not include any period when the facility is combusting only natural gas or only No. 2 fuel oil. The periods of startup or shutdown shall not exceed three hours per occurrence.[2] In instances of loss of boiler water level or loss of combustion air control, the periods of startup or shutdown shall not exceed fifteen hours. **(R 336.1201(3)), 40 CFR 62 Subpart FFF (§ 62.14109), R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(a)(1)[3])**

2. Permittee shall not fire RDF in any boiler at a combustion zone temperature less than 1800 degrees Fahrenheit, on a 1-hour basis. At no time shall the temperature be less than 1600 degree Fahrenheit. Any time the temperature approaches the minimum temperature or 1600 degrees Fahrenheit, auxiliary fuel, shall be added to the process. In the event that it is not possible to maintain this temperature of at least 1600 degrees Fahrenheit, all RDF feed shall be terminated immediately. Auxiliary fuel shall be used during boiler shutdown process to maintain 1600 degrees Fahrenheit temperature while RDF is still combusting. Compliance with the combustion zone temperature requirements shall be determined by a continuous monitoring system installed and calibrated to be representative of the combustion zone temperature.[2] **(40 CFR 52.21(j), R 336.1201(3))**

3. Permittee shall not operate any boiler with a flue gas oxygen content of less than 4 percent by volume prior to the dry scrubber. Compliance shall be determined on a 1-hour average (dry gas basis), as determined by a continuous monitoring system.[2] **(40 CFR 52.21(j), R 336.1201(3))**

4. The exhaust gas temperature at the fabric filter inlet shall not exceed 400^{o}F or 30 ^{o}F over the maximum demonstrated fabric filter inlet temperature established during the most recent dioxin/furan test which demonstrated compliance with the applicable dioxin/furan limit for municipal combustor, whichever is lower. Compliance with the temperature limitation shall be determined on a 4-hour block arithmetic average.[2] **(40 CFR 52.21(j), 40 CFR 60.34b(b), 40 CFR 60.53b(c)[3], 40 CFR 60.58b(i)(7)[3], R 336.1201(3), R 336.1932, 40 CFR 62.14104(b))**

5. The RDF feed to any boiler shall cease as soon as practicable consistent with the safe operating procedures and the Greater Detroit Resources Recovery Facility "Abnormal Condition Startup/Shutdown Malfunction Abatement Plan", dated February 2011 and revisions thereto, upon initiation of the associated collector bypass. Permittee shall not introduce RDF into a boiler unless the fabric filter for that boiler is installed, on-line, and operating properly, except during emergency conditions which results in any of the following conditions:

   a. A flue gas temperature in excess of 400^{o}F at the inlet to fabric filter; or
   b. A flue gas temperature of less than 200^{o}F at the inlet to the fabric filter; or
   c. A differential pressure across the fabric filter in excess of 10 inches of water.

   Introduction of RDF into the affected boiler, will cease immediately upon initiation of the bypass of the fabric filter. The RDF feed to the boiler shall not restart until the associated collector is back on line and functioning properly. The fabric filter for boiler may be bypassed during start-up in the unit, prior to the introduction of RDF into the boiler. [2] **(R 336.1221, R 336.1201(3), 40 CFR 52.21(j), R 336.1901)**

6. The maximum sulfur content of the fuel oil fired in the boilers shall not exceed 0.3% sulfur content, by weight.[2] **(R 336.1201(3))**

7. The maximum heat input from the combustion of natural gas or No. 2 fuel oil in each boiler shall not exceed 250 million BTUs per hour.[2] **(R 336.1201(3))**

8. Permittee shall not burn any waste oil at the facility.[2] **(R 336.1201(3))**

9. Permittee shall monitor and record the scrubber slurry feed rate on a continuous manner with instrumentation acceptable to the Air Quality Division[2]. **(R 336.1201(3), 40 CFR 52.21(j), R 336.1901)**

10. The lime slurry feed system shall be modulated by interfacing with the sulfur dioxide continuous emission monitor. In the event of a malfunction or failure of the sulfur dioxide continuous emission monitor, the Permittee shall operate the lime slurry feed system such that, at a minimum, 800 pounds per hour of pebble lime shall be added. Once daily, during the period of monitor malfunction or failure, the permittee shall manually determine the slurry density[2]. **(R 336.1201(3), 40 CFR 52.21(j), R 336.1901)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Permittee shall not operate any individual boiler unless its associated dry scrubber and fabric filter collector are installed and operating properly.[2] **(R 336.1201(3), R 336.1910, R 336.1221, 40 CFR 52.21(j), R 336.1901)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Once each calendar year (no less than 9 months and no more than 15 calendar months following the previous performance test), permittee shall verify the particulate matter, cadmium, hexavalent chromium, total chromium, lead, mercury, dioxin/furan, inlet and outlet sulfur dioxide, inlet and outlet fluorides, carbon monoxide, volatile organic compounds and nitrogen oxide emission rates from each boiler, when firing only RDF at the maximum allowable load level rate, by testing, at owner's expense, in accordance with Air Quality Division requirements. Unless the applicable requirement changes, permittee shall verify the inlet and/or outlet Hydrogen Chloride emission rates (based on permittee's choice of compliance determination) and fugitive dust on an annual basis (no more than 12 calendar months following the previous performance test). Permittee must complete five performance tests in each 5-year calendar period. Verification of emission rates/levels includes the submittal of an executive summary and a complete report of the test results.[2] For applicable pollutants, Permittee can utilize continuous emissions monitoring system (CEMS) data in lieu of stack testing. **(R336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

2. When the limit for a pollutant concentration is adjusted to a specific oxygen concentration, the concentration of oxygen will be determined from a sample that was obtained simultaneously with the pollutant sample. **(R336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

3. Stack testing procedures, testing dates, the location of stack testing ports, test methods, and the emission units to be tested must have prior approval by the Air Quality Division. All test results shall be submitted to the Air Quality Division in an acceptable format within 60 days following the date the test is completed.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    a. For the purposes of demonstrating compliance with the particulate matter emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 5, and shall perform three two hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    b. For the purposes of demonstrating compliance with the hydrogen chloride emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 26 or Reference Method 26A, and shall perform three one hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    c. For the purposes of demonstrating compliance with the cadmium emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 29, and shall perform three two hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    d. For the purposes of demonstrating compliance with the lead emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 29, and shall perform three two hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    e. For the purposes of demonstrating compliance with the mercury emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 29, and shall perform three two hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    f. For the purposes of demonstrating compliance with the non-methane hydrocarbons emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 25a, and shall perform three one hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    g. For the purposes of demonstrating compliance with the total fluorides emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 13B, and shall perform three two hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    h. For the purposes of demonstrating compliance with the hexavalent chromium emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and CARB Method M425, and shall perform three two-hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

    i. For the purposes of demonstrating compliance with the dioxins/furans (PCDD and PCDF) emission limits, the permittee shall utilize the methods provided in 40 CFR 60, Appendix A, specifically EPA Reference Methods 1 through 4 and Reference Method 23, and shall perform three four hour runs of the sampling test.[2] **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

4. The permittee's CEMS will be used to verify compliance with the concentration limits for carbon monoxide when firing only RDF at the maximum allowable load level rate. The permittee shall verify the emission rate/level by utilizing data from the permittee's CO continuous emissions monitor and actual air flow data gathered during stack testing. For the one hour block emission limit, three (3) one hour computations will be made, and averaged. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

5. The permittee's CEMS will be used to verify compliance with the concentration limits for oxides of nitrogen when firing only RDF at the maximum allowable load level rate. The permittee shall verify the emission rate/level by utilizing data from the permittee's NOx continuous emissions monitor and actual air flow data gathered during stack testing. For the one hour block emission limit, three (3) one hour computations will be made, and averaged. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

6. The permittee's CEMS will be used to verify compliance with the concentration limits for sulfur dioxide when firing only RDF at the maximum allowable load level rate. The permittee shall verify the emission rate/level by utilizing data from the permittee's SO2 continuous emissions monitor and actual air flow data gathered during stack testing. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

<u>Relative Accuracy Test Audit (RATA)</u>

7. EPA Test Methods 3A, 6C, 7E and 10 are used as the reference test method procedures for the RATA test program. They are conducted in accordance with 40 CFR 60, Appendix B, Performance Specifications 2, 3, 4/4A, and Appendix F. **(40 CFR 60, Appendix B, Performance Specifications 2, 3, 4/4A, and Appendix F, 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b[3], R 336.1213(3))**

8. A sample is continuously extracted from the effluent stack gas stream. A portion of the sample stream is conveyed to each analyzer for the determination of O_2 or CO_2, SO_2, CO and NOx. For each EPA Reference Method determination, the flue gas is sampled at three traverse points. The difference between the reference method sample and the facility's monitor readings are evaluated from a minimum of nine test runs. **(40 CFR 60, Appendix B, Performance Specifications 2, 3, 4/4A, and Appendix F, 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b[3], R 336.1213(3))**

9. Relative accuracies are calculated on a concentration basis (ppm corrected to 7% O_2) for all pollutant parameters. To satisfy the RATA requirements of 40 CFR 60, Appendix B, the relative accuracy must not exceed 20.0 percent of the mean of the reference method or 10.0 percent of the applicable standard for SO_2 and NOx. For CO the relative accuracy must not exceed 10.0 percent of the mean of the reference method or 5.0 percent of the applicable standard for CO. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b[3])**

10. If the permittee elects to comply with sulfur dioxide limits by showing percent reduction and if actual inlet emissions are less than 100 parts per million dry volume, then the relative accuracy criterion for inlet sulfur dioxide continuous emission monitoring systems should be no greater than 20 percent of the mean value of the reference method test data in terms of the units of the emission standard, or 5 parts per million dry volume absolute value the mean difference between the reference method and the continuous emission monitoring systems, whichever is greater. **(R 336.1213(3), 40 CFR 62 Subpart FFF, 40 CFR 62.14109(b), 40 CFR 60.38b, 40 CFR 60.58b(e)(12)[3])**

<u>Particulate Matter and Opacity</u>

11. The procedures and test methods specified in paragraphs 40 CFR 60.58b(c)(1) through (c)(11) shall be used to determine compliance with the emission limits for particulate matter and opacity under 40 CFR 60.52b(a)(1) and (a)(2). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)[3])**

    a. EPA Reference Method 1 shall be used to select sampling site and number of traverse points. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)(1)[3])**

    b. EPA Reference Method 3, 3A or 3B, as applicable, shall be used for gas analysis. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)(2)[3])**

    c. EPA reference Method 5 shall be used for determining compliance with the particulate matter emission limit. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 +/- 14 degrees C. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)(3)[3])**

d. The permittee may request that compliance with the particulate matter emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph (b)(6) of this section. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)(4)[3])**

e. As specified under 60.8 of 40 CFR 60, Subpart A, all performance tests shall consist of three test runs. The average of the particulate matter emission concentrations from the three test runs is used to determine compliance. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)(5)[3])**

f. In accordance with paragraphs 40 CFR 60.58b(c)(7) and (c)(11), EPA Reference Method 9 shall be used for determining compliance with the opacity limit except as provided under 60.11(e)(5) of 40 CFR 60, Subpart A. This allows for the use of the continuous opacity monitor to demonstrate compliance in lieu of Method 9. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(c)(6)[3])**

<u>**Hydrogen Chloride**</u>

12. The procedures and test methods specified in paragraphs 40 CFR 60.58b(f)(1) through (f)(8) shall be used for determining compliance with the hydrogen chloride emission limit under 40 CFR 60.52b(b)(2). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38, 40 CFR 60.58b(f)[3])**

a. EPA Reference Method 26 or 26A, as applicable, shall be used to determine the hydrogen chloride emission concentration. The minimum sampling time for Method 26 shall be 1 hour per run. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(f)(1)[3])**

b. An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 26 test run for hydrogen chloride required by paragraph 40 CFR 60.58b(f)(1). **(R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(f)(2)[3])**

c. Equation 2 of 40 CFR 60.58b(f)(3) shall be used to compute percent reduction in potential hydrogen chloride emissions. **(R 336.1213(3), R 336.1932(1); 40 CFR 62 Subpart FFF, 40 CFR 60.38b; 40 CFR 60.58b(f)(3)[3])**

d. The permittee may request that compliance with the hydrogen chloride emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph 40 CFR 60.58b(b)(6). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(f)(4)[3])**

e. As specified under 60.8 of 40 CFR 60, Subpart A, all performance tests shall consist of three test runs. The average of the hydrogen chloride emission concentrations or percent reductions from the three test runs is used to determine compliance. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(f)(5)[3])**

<u>**Cadmium and Lead**</u>

13. Procedures and test methods specified in paragraph 40 CFR 60.58b(d)(1) and (d)(2) shall be used to determine compliance with the emission limits for cadmium and lead under 40 CFR 60.52b(a)(3) and (4). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)[3])**

a. EPA Reference Method 1 shall be used for determining the location and number of sampling points. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)(i)[3])**

b. EPA reference Method 3, 3A, or 3B, as applicable, shall be used for flue gas analysis. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)(ii)[3])**

c. EPA Reference Method 29 shall be used for determining compliance with the cadmium and lead emission limits. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)(iii)[3])**

d. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 29 test run for cadmium and lead required under paragraph 40 CFR 60.58b(d)(1)(iii). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)(iv)[3])**

e. The permittee may request that compliance with the lead or cadmium emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph 40 CFR 60.58b(b)(6). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)(v)[3])**

f. All performance tests shall consist of a minimum of three test runs conducted under representative full load operating conditions. The average of the cadmium or lead emission concentrations from three test runs or more shall be used to determine compliance. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(1)(vi)[3])**

<u>Mercury</u>

14. Procedures and test methods specified in paragraphs 40 CFR 60.58b(d)(2)(i) through (d)(2)(xi) shall be used to determine compliance with the mercury emission limit under 40 CFR 60.52b(a)(5). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)[3])**

a. EPA Reference Method 1 shall be used for determining the location and number of sampling points. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(i)[3])**

b. EPA reference Method 3, 3A, or 3B, as applicable, shall be used for flue gas analysis. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(ii)[3])**

c. EPA Reference Method 29 shall be used to determine the mercury emission concentration. The minimum sample volume when using Method 29 for mercury shall be 1.7 cubic meters. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(iii)[3])**

d. An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 29 test run for cadmium and lead required under paragraph 40 CFR 60.58b(d)(2)(iii). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(iv)[3])**

e. Equation 1 of 40 CFR 60.58b(d)(2)(v) provides the percent reduction in potential mercury emissions. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(v)[3])**

f. All performance tests shall consist of a minimum of three test runs conducted under representative full load operating conditions. The average of the mercury emission concentrations from three test runs or more shall be used to determine compliance. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(vi)[3])**

g. The permittee may request that compliance with the mercury emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph 40 CFR 60.58b(b)(6). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(d)(2)(vii)[3])**

Dioxins/furans

15. The procedures and test methods specified in paragraphs 40 CFR 60.58b(g)(1) through (g)(9) shall be used for determining compliance with the dioxin/furan emission limit under 40 CFR 60.52b(c). **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)[3])**

    a. EPA Reference Method 1 shall be used for determining the location and number of sampling points. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)(1)[3])**

    b. EPA reference Method 3, 3A, or 3B, as applicable, shall be used for flue gas analysis. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)(2)[3])**

    c. EPA Reference Method 23 shall be used to determine the dioxin/furan emission concentration. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)(3)[3])**

        i. The minimum sample time shall be 4 hours per test run. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)(3)(i)[3])**

        ii. An oxygen (or carbon dioxide) measurement shall be obtained simultaneously with each Method 23 test run for dioxins/furans. **(R 336.1213(3), R336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)(3)(ii)[3])**

    d. As specified under 60.8 of 40 CFR 60, Subpart A, all performance tests shall consist of three test runs. The average of the dioxin/furan emission concentrations from the three test runs is used to determine compliance. **(R 336.1213(3), R 336.1932(1), 40 CFR 62 Subpart FFF, 40 CFR 60.38b, 40 CFR 60.58b(g)(9)[3])**

16. During each performance test of dioxins/furans, permittee shall determine the maximum particulate matter control device inlet temperature and steam load level in accordance with 40 CFR 60.58b(i)(7) and 40 CFR 60.58b(i)(8). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(7), 40 CFR 60.58b(i)(8)[3])**

17. Permittee shall conduct testing for each batch of fuel oil received for sulfur content. **(R336.1213(3)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

For each combustor, the permittee shall install, calibrate, maintain, operate, and monitor on a continuous basis, the following:[2]

Continuous Opacity Monitoring System (COMS)

1. The permittee shall install, calibrate, operate, and maintain a continuous opacity monitoring system (COMS following the baghouse) for measuring opacity and shall follow the methods and procedures specified in paragraphs 40 CFR 60.58b(c)(8)(i) through (c)(8)(iv). The continuous monitoring system shall collect and record data at a minimum of 90% of the operating hours per month in a manner and with instrumentation as approved by the Air Quality Division.[2]

    a) The output of the COMS shall be recorded on a 6-minute average basis.
    b) The COMS shall be installed, evaluated, and operated in accordance with 60.13 of 40 CFR 60, Subpart A.
    c) The COMS shall conform to Performance Specification 1 in Appendix B of 40 CFR 60.
    (R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(c)(8)[3])

Sulfur Dioxide (SO2) Continuous Emission Monitoring System (CEMS)

2. The permittee shall install, calibrate, operate, and maintain a CEMS for sulfur dioxide emissions discharged to the atmosphere and record the output of the system.[2] **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(5)[3])**

3. If the permittee elects to comply with sulfur dioxide limits by showing percent reduction, the permittee shall install, calibrate, maintain, and operate a CEMS for measuring sulfur dioxide emissions and diluent concentrations entering the dry scrubber.[2] **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(4)[3])**

4. EPA Reference Method 19, Section 4.3 shall be used to calculate the daily geometric mean sulfur dioxide emission concentration. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(1)[3])**

5. EPA Reference Method 19, Section 5.4, shall be used to determine the daily geometric average percent reduction in the potential sulfur dioxide emission concentration. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(2)[3])**

6. The permittee may request that compliance with the sulfur dioxide emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph 40 CFR 60.58b(b)(6). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(3)[3])**

7. Compliance with the sulfur dioxide emission limit shall be determined based on:

   a) the 24-hour daily geometric average of the hourly arithmetic average emission concentrations using CEMS outlet data if compliance is based on an emission concentration; **or**
   b) CEMS inlet and outlet data if compliance is based on a percent reduction.
   (40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(6)[3])

8a. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(e)(7)(i) and (e)(7)(ii) for 75% of the operating hours per day for 90% of the operating days per calendar quarter that the affected facility is combusting MSW.[2]

   a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.
   b) Each sulfur dioxide 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(R 336.1213(3), R 336.1932(1)[3])**

8b. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(e)(7)(i) and (e)(7)(ii) for 90% of the operating hours per calendar quarter, and for 95% of the operating hours per calendar year that the affected facility is combusting MSW.[2] **(R 336.1213(3), 40 CFR 62.14109(b), 40 CFR 60.38b, 40 CFR 60.58b(e)(7)[3])**

   a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(7)(i)[3])**
   b) Each sulfur dioxide 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(7)(ii)[3])**

9. The 1-hour arithmetic averages required under paragraph 40 CFR 60.58b(e)(6) of this section shall be expressed in parts per million corrected to 7% oxygen (dry basis) and used to calculate the 24-hour daily geometric average emission concentrations and daily geometric average emission percent reductions. The 1-hour arithmetic averages shall be calculated using the data points required under 60.13(e)(2) of 40 CFR 60, Subpart A. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(8)[3])**

10. All valid CEMS data shall be used in calculating average emission concentrations and percent reductions even if the minimum CEMS data requirements of paragraph 40 CFR 60.58b(e)(7) are not met. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(9)[3])**

11. The procedures of 60.13 of 40 CFR 60, Subpart A shall be followed for the installation, evaluation, and operation of the CEMS. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(10)[3])**

12. The CEMS shall be operated according to Performance Specification 2 in Appendix B of 40 CFR 60. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(12)[3])**

    a) During each Relative Accuracy Test run of the CEMS required by Performance Specification 2 in Appendix B of 40 CFR 60, sulfur dioxide and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the CEMS and the test methods specified in paragraphs 40 CFR 60.58b(e)(12)(i)(A) and (e)(12)(i)(B). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(12)(i)[3])**

        i. For sulfur dioxide, EPA Reference Method 6, 6A, or 6C shall be used. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(12)(i)(A)[3])**

        ii. For oxygen (or carbon dioxide), EPA Reference Method 3, 3A, or 3B, as applicable shall be used. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(12)(i)(B)[3])**

    b) The span value of the CEMS at the inlet to the sulfur dioxide control device (if permittee has elected to use the percent reduction to demonstrate compliance) shall be 125% of the maximum estimated hourly potential sulfur dioxide emissions of the combustor. The span value of the CEMS at the outlet of the sulfur dioxide control device shall be 50% of the maximum estimated hourly potential sulfur dioxide emissions of the combustor. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(e)(12)(ii)[3])**

<u>Nitrogen Oxides (NOx) CEMS</u>

13. EPA Reference Method 19, section 4.1, shall be used for determining the daily arithmetic average nitrogen oxides emission concentration. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(1)[3])**

14. The permittee may request that compliance with the nitrogen oxides emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7 percent oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph 40 CFR 60.58b(b)(6). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(2)[3])**

15. The permittee shall install, calibrate, operate, and maintain a CEMS for measuring nitrogen oxides discharged to the atmosphere, and record the output of the system.[2] **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1**), **40 CFR 60.38b, 40 CFR 60.58b(h)(4)[3])**

16. Following the date that the initial performance test for nitrogen oxides is completed or is required to be completed under 60.8 of 40 CFR 60, Subpart A, compliance with the emission limit for nitrogen oxides required under 40 CFR 60.52b(d) shall be determined based on the 24-hour daily arithmetic average of the hourly emission concentrations using CEMS outlet data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(5)[3])**

17a. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(h)(6)(i) and (h)(6)(ii) for 75% of the operating hours per day for 90% of the operating days per calendar quarter that the affected facility is combusting MSW.[2]

    a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.
    b) Each nitrogen oxides 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(R 336.1213(3), R 336.1932(1))**

17b. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(h)(6)(i) and (h)(6)(ii) for 90% of the operating hours per calendar quarter, and for 95% of the operating hours per calendar year that the affected facility is combusting MSW.[2] **(R 336.1213(3), 40 CFR 62.14109(b), 40 CFR 60.38b, 40 CFR 60.58b(h)(6)[3])**

a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(h)(6)(i)[3])**

b) At a minimum, each nitrogen oxides 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(h)(6)(ii)[3])**

18. The 1-hour arithmetic averages required by paragraph 40 CFR 60.58b(h)(5) of this section shall be expressed as parts per million by volume (dry basis) and used to calculate the 24-hour daily arithmetic average concentrations. The 1-hour arithmetic averages shall be calculated using the data points required under 60.13(e)(2) of 40 CFR 60, Subpart A. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(7)[3])**

19. All valid CEMS data must be used in calculating emission averages even if the minimum CEMS data requirements of paragraph 40 CFR 60.58b(h)(6) are not met. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(8)[3])**

20. The permittee shall operate the CEMS according to Performance Specification 2 in Appendix B of 40 CFR 60 and shall follow the procedures and methods specified in paragraphs 40 CFR 60.58b(h)(10(i) and (h)(10)(ii). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(10)[3])**

a) During each Relative Accuracy Test run of the CEMS required by Performance Specification 2 in Appendix B of 40 CFR 60, nitrogen oxides and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the CEMS and the test methods specified in paragraphs 40 CFR 60.58b(h)(10)(i)(A) and (h)(10)(i)(B). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(10)(i)[3])**

i. For nitrogen oxides, EPA Reference Method 7, 7A, 7C, 7D or 7E shall be used. **(40 CFR 62 Subpart FF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(10)(i)(A)[3])**

ii. For oxygen (or carbon dioxide), EPA Reference Method 3, 3A, or 3B, as applicable shall be used. **(40 CFR 62 Subpart FFF, R 336.1932(1**), **40 CFR 60.38b, 40 CFR 60.58b(h)(10)(i)(B)[3])**

b) The span value of the CEMS shall be 125% of the maximum estimated hourly potential nitrogen oxide emissions of the combustor. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(h)(10)(ii)[3])**

21. When nitrogen oxide emissions data are not obtained because of CEMS system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the administrator or EPA Method 19 to provide, as necessary, valid emissions data for a minimum of 90% of the operating hours per calendar quarter that the affected facility is operated and combusting MSW and for 95% of the operating hours per calendar year that the affected facility is operated and combusting MSW. **(40 CFR 62.14109(b), 40 CFR 60.38b, 40 CFR 60.58b(h)(12)[3])**

<u>Carbon Monoxide (CO) CEMS</u>

22. Compliance with the 3-hr block and 24-hr block Carbon Monoxide emission limits shall be determined using a block arithmetic average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b[3], R 336.1213)**

23. The permittee shall install, calibrate, operate, and maintain a CEMS for measuring carbon monoxide at the combustor outlet and record the output of the system and shall follow the procedures and methods specified in

paragraphs 40 CFR 60.58b(i)(3)(i) through (i)(3)(iii) of this section.[2] **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(3)[3])**

a) CEMS shall be operated according to Performance Specification 4A in Appendix B of 40 CFR 60. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(3)(i)[3])**

b) During each Relative Accuracy Test run of the CEMS required by Performance Specification 4A in Appendix B of 40 CFR 60, carbon monoxide and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the CEMS and the test methods specified in paragraphs 40 CFR 60.58b(i)(3)(ii)(A) and (i)(3)(ii)(B). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(3)(ii)[3])**

   i. For carbon monoxide, EPA Reference Method 10, 10A, or 10B shall be used. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(3)(ii)(A)[3])**

   ii. For oxygen (or carbon dioxide), EPA Reference Method 3, 3A, or 3B, as applicable shall be used. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(3)(ii)(B)[3])**

c) The span value of the CEMS shall be 125% of the maximum estimated hourly potential carbon monoxide emissions of the combustor. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(3)(iii)[3])**

24. The 3-hour block and 24-hour daily arithmetic average, specified in paragraphs 40 CFR 60.58b(i)(2) of this section, shall be calculated from 1-hour arithmetic averages expressed in ppmv corrected to 7% oxygen (dry basis.) The 1-hour arithmetic averages shall be calculated using the data points generated by the CEMS. At least 2 data points shall be used to calculate each 1-hour arithmetic average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(4)[3], R 336.1213)**

25. The permittee may request that compliance with the carbon monoxide emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established as specified in paragraph 40 CFR 60.58b(b)(6). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(5)[3])**

26. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(i)(10)(i) and (i)(10)(ii) for 75% of the operating hours per day for 90% of the operating days per calendar quarter that the affected facility is combusting MSW.[2]

a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.
b) Each carbon monoxide 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(R 336.1213(3), R 336.1932(1))**

27. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(i)(10)(i) and (i)(10)(ii) for 90% of the operating hours per calendar quarter, and for 95% of the operating hours per calendar year that the affected facility is combusting MSW.[2] **(R 336.1213(3), 40 CFR 62.14109(b), 40 CFR 60.38b, 40 CFR 60.58b(i)(10)[3])**

a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(10)(i)[3])**
b) At a minimum, each carbon monoxide 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(10)(ii)[3])**

28. All valid CEMS data must be used in calculating the parameters specified under paragraph 40 CFR 60.58b(i) even if the minimum data requirements of paragraph 40 CFR 60.58b(i)(10) are not met. When carbon monoxide CEMS data are not obtained because of CEMS system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved

by the administrator or EPA Method 10 to provide, as necessary, the minimum valid emission data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(11)[3])**

Oxygen or CO2 CEMS

29. Permittee shall install, calibrate, operate, and maintain a CEMS for measuring the oxygen or carbon dioxide content of the flue gas at each location where carbon monoxide, sulfur dioxide, nitrogen oxides emissions, or particulate matter are monitored and record the output of the system and shall comply with the test procedures and test methods specified in 40 CFR 60.58b(b)(1) through 40 CFR 60.58b(b)(8).[2] **(R 336.213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)[3])**

30. The CEMS shall collect and record oxygen (or carbon dioxide) content data for minimum of 90% of the operating hours per month in a manner and as approved by the Air Quality Division.[2] **(R 336.1213(3))**

31. The span value of the oxygen (or carbon dioxide) monitor shall be 25%. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(1)[3])**

32. The monitor shall be installed, evaluated, and operated in accordance with 60.13 of 40 CFR 60, Subpart A. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(2)[3])**

33. The monitor shall conform to Performance Specification 3 in Appendix B of 40 CFR 60 except for section 2.3 (relative accuracy requirement). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(4)[3])**

34. The quality assurance procedures of Appendix F of 40 CFR 60 except for section 5.1.1 (relative accuracy test audit) shall apply to the monitor. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(5)[3])**

35. If carbon dioxide is selected for use in diluent corrections, the relationship between oxygen and carbon dioxide levels shall be established during the initial performance test according to the procedures and methods specified in paragraphs 40 CFR 60.58b(b)(6)(i)through (b)(6)(iv). This relationship may be reestablished during performance compliance tests. **(40 CFR 62 Subpart FFF, R 336.1932(1)**, **40 CFR 60.38b, 40 CFR 60.58b(b)(6)[3])**

    a) The fuel factor equation in Method 3B shall be used to determine the relationship between oxygen and carbon dioxide at a sampling location. Method 3, 3A, or 3B as applicable, shall be used to determine the oxygen concentration at the same location as the carbon dioxide monitor. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(6)(i)[3])**

    b) Samples shall be taken for at least 30 minutes in each hour. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(6)(ii)[3])**

    c) Each sample shall represent a 1-hour average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(6)(iii)[3])**

    d) A minimum of 3 runs shall be performed. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(6)(iv)[3])**

36. The relationship between carbon dioxide and oxygen that is established in accordance with paragraph 40 CFR 60.58b(b)(6) shall be submitted to the EPA Administrator as part of the initial performance test report and, if applicable, as part of the annual test report if the relationship is reestablished during the annual performance test. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(7)[3])**

37. During a loss of boiler water level control or loss of combustion air control malfunction period as specified in 40 CFR 60.58b(a)(1)(iii), a diluent cap of 14 percent for oxygen or 5% for carbon dioxide may be used in the emissions calculations for sulfur dioxide and nitrogen oxides. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(b)(8)[3])**

General – all CEMS and COMS as applicable:

38. Permittee shall comply with applicable monitoring requirements in 40 CFR 60.13. **(40 CFR 60.13)**

39. Permittee shall comply with the calibration requirements of 40 CFR 60.13(d)(2). **(40 CFR 60.13(d)(2))**

40. Permittee must check the zero and span calibration drifts of installed CEMS at least once daily in accordance with a written procedure and fulfill all applicable requirements as provided in 40 CFR 60.13(d)(1). **(40 CFR 60.13(d)(1))**

41. Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under 40 CFR 60.13(d), all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation as follows:

    a) Opacity: Permittee shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period; **(40 CFR 60.13(e)(1))**
    b) All other emissions except Opacity: Permittee shall complete one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period; **(40 CFR 60.13(e)(2))(40 CFR 60.13(e))**

42. All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of 40 CFR 60 shall be used. **(40 CFR 60.13(f))**

43. Initial data reduction shall be in accordance with **40 CFR 60.13(h)**. Subsequent data reduction shall be in accordance with **R 336.2175**. **(40 CFR 60.13(h), R 336.2175)**

44a. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(i)(10)(i) and (i)(10)(ii) for 75% of the operating hours per day for 90% of the operating days per calendar quarter that the affected facility is combusting MSW.

    a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.
    b) Each carbon monoxide 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(R 336.1213(3), R 336.1932(1))**

44b. At a minimum, valid continuous monitoring system hourly averages shall be obtained as specified in paragraphs 40 CFR 60.58b(i)(10)(i) and (i)(10)(ii) for 90% of the operating hours per calendar quarter, and for 95% of the operating hours per calendar year that the affected facility is combusting MSW. **(R 336.1213(3), 40 CFR 62.14109(b), 40 CFR 60.38b, 40 CFR 60.58b(i)(10)[3])**

    a) At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(10)(i)[3])**
    b) At a minimum, each carbon monoxide 1-hour arithmetic average shall be corrected to 7% oxygen on an hourly basis using the 1-hour arithmetic average of the oxygen (or carbon dioxide) CEMS data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(10)(ii)[3])**

45. All valid CEMS data must be used in calculating the parameters specified under paragraph 40 CFR 60.58b(i) even if the minimum data requirements of paragraph 40 CFR 60.58b(i)(10) are not met. When carbon monoxide CEMS data are not obtained because of CEMS system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the administrator or EPA Method 10 to provide, as necessary, the minimum valid emission data. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.58b(i)(11)[3])**

46. Block averages must have valid hourly block data for each hour of the block period for there to be a valid block average calculation. **(R 336.1213(3))**

47. Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with Procedure 1 in Appendix F 40 CFR 60. (Note, for determining CEMS availability for quarterly reports or minimum daily data collection or otherwise, daily calibration drift tests shall not be considered either outages or hours of operation. A retest of a failed daily calibration drift test or a quarterly accuracy determination that results in the CEMS being offline shall be counted as downtime.) **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b[3])**

Other Monitoring:

48. To determine compliance with load level requirements under 40 CFR 60.53b(b), Permittee shall comply with applicable procedures specified in 40 CFR 60.58b(i)(6)(i) through (i)(6)(iv). **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(6)[3])**

49. Permittee shall install, calibrate, operate, and maintain a steam flow meter. Permittee shall measure steam flow on a continuous basis and record the output of the monitor. Steam flow shall be calculated in 4-hour block arithmetic averages on a monthly basis in a manner acceptable to the Air Quality Division. The continuous monitoring systems shall collect and record steam rate data at a minimum of 90% of the operating hours per month in a manner and with instrumentation as approved by the Air Quality Division.[2] **(R 336.201(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(6)(i)[3])**

50. To determine compliance with the maximum particulate matter control device temperature requirements under 40 CFR 60.53b(c), the permittee shall install, calibrate, operate, and maintain a device for measuring on a continuous basis the temperature of the flue gas stream at the inlet to each particulate matter control device utilized by the affected facility. Temperature shall be calculated in 4-hour block arithmetic averages. The continuous monitoring system shall collect and record temperature data at the fabric filter inlet, a minimum of 90% of the operating hours per month in a manner and with instrumentation as approved by the Air Quality Division.[2] **(R 336.1201(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.38b, 40 CFR 60.58b(i)(7)[3])**

51. Permittee shall install, calibrate, maintain, and operate a device for measuring on a continuous basis the temperature of the flue gas stream prior to the boiler bank inlet/after the superheater and at the combustion zone. Temperature shall be calculated in 4-hour block arithmetic averages. The continuous monitoring systems shall collect and record temperature data prior to the boiler bank, at the inlet/after the superheater, and at the combustion zone, a minimum of 90% of the operating hours per month in a manner and with instrumentation as approved by the Air Quality Division.[2] **(R 336.201(3))**

52. Permittee shall monitor/calculate and keep records of the hourly natural gas and fuel oil (No. 2 fuel oil) feed rates and if both natural gas and No. 2 fuel oil are used as auxiliary fuels in the same 12 month rolling time period, heat input rates (based on the Higher Heating Value of each fuel) to each boiler and hours of operation of each boiler on a monthly basis in a manner acceptable to the Air Quality Division.[2] **(40 CFR 60.44b(c), R 336.1213(3))**

53. Permittee shall monitor and keep records of the atomizer unit replacement data, including dates, affected boiler emission unit, length of time of replacement, and emission rates during replacement. **(R 336.213(3))**

54. Permittee shall maintain records of the information specified below, as applicable, for each affected facility for at least five (5) years and be available for submittal or on site inspection review by EPA or State inspector: **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)[3])**

    a) Calendar date of each record. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(1)[3])**

    b) Emission concentrations and parameters measured using CMS as specified in 40 CFR 60.59b(d)(2)(i) and (d)(2)(ii). **(R 336.1213(3), 40 FR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)[3])**

i. The following shall be available for submittal or on-site review by an inspector: **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(i)[3])**

A. All 6-minute average opacity levels as specified under 40 CFR 60.58b(c). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(i)(A)[3])**

B. All 1-hour average sulfur dioxide concentrations as specified under 40 CFR 60.58b(e). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(i)(B)[3])**

C. All 1-hour average nitrogen oxides emission concentrations as specified under 40 CFR 60.58b(h). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(i)(C)[3])**

D. All 1-hour average carbon monoxide emission concentrations, MSW combustor unit load measurements, and particulate matter control device inlet temperatures as specified under 40 CFR 60.58b(i). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(i)(D)[3])**

ii. The average concentrations and percent reductions, as applicable, specified in paragraphs 40 CFR 60.58b(d)(2)(ii)(A) through (D), shall be computed, recorded, and be available for submittal or on-site review by an inspector. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(ii)[3])**

A. All 24-hour daily geometric average sulfur dioxide emission concentrations and all 24-hour daily geometric average percent reductions in sulfur dioxide emissions as specified under 40 CFR 60.58b(e). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), CFR 60.39b, 40 CFR 60.59b(d)(2)(ii)(A)[3])**

B. All 24-hour daily arithmetic average nitrogen oxides emission concentrations as specified under 40 CFR 60.58b(h). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(ii)(B)[3])**

C. All 4-hour block or 24-hour daily arithmetic average carbon monoxide emission concentrations, as applicable, as specified under 40 CFR 60.58b(i). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(ii)(C)[3])**

D. All 4-hour block arithmetic average combustor load levels and particulate matter control device inlet temperatures as specified under 40 CFR 60.58b(i). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(2)(ii)(D)[3])**

c) Identification of the calendar dates when any of the average emission concentrations, percent reductions (if applicable), operating parameter(s) recorded under paragraphs 40 CFR 60.59b(d)(2)(ii)(A) through (d)(2)(ii)(D) (see above), or the opacity levels recorded under 40 CFR 60.59b(d)(2)(i)(A) are above the applicable limits (see above), with reasons for such exceedances and a description of corrective actions taken. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(3)[3])**

i. This identification shall be completed quarterly, by the 30th day after the end of each calendar quarter. **(R 336.1213(3))**

d. Identification of the calendar dates and times (hours) for which valid hourly data specified in (40 CFR 60.59b(d)(6)(i) through (d)(6)(v)) have not been obtained including reasons for not obtaining the data and a description of the corrective actions taken. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(6)[3])**

i. Sulfur dioxide emissions data. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(6)(i)[3])**

ii. Nitrogen oxide emissions data. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(6)(ii)[3])**

iii. Carbon monoxide emissions data. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(6)(iii)[3])**

iv. Unit load data. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(6)(iv)[3])**

v. Particulate matter control device temperature data. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(6)(v)[3])**

vi. This identification of calendar dates shall be completed quarterly by the 30th day following the end of the calendar quarter. **(R 336.1213(3))**

e. Identification of each occurrence that sulfur dioxide emissions data, nitrogen oxides emissions data, or operational data have been excluded from the calculation of average emission concentrations or parameters, and the reasons for excluding the data. **(R 336.1213(3), 40 CFR 62 Subpart FFF,** R336**.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(7)[3])**

i. This identification shall include all data exclusion due to the failure to have data for an entire block average period. **(R 336.1213(3))**

f. Results of daily drift tests and quarterly accuracy determinations for sulfur dioxide, nitrogen oxides, and carbon monoxide CEMS as required by 40 CFR 60, Appendix F, Procedure 1. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(8)[3])**

g. Test reports documenting the results of the initial performance test and all annual performance tests listed in 40 CFR 60.59b(d)(9)(i) and (d)(9)(ii), shall be recorded along with supporting calculations. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(9)[3])**

i. The results of the initial performance test and all annual performance tests conducted to determine compliance with the particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission limits. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(9)(i)[3])**

ii. For the initial dioxin/furan performance test and all subsequent dioxin/furan performance tests, the maximum demonstrated combustor unit load and maximum demonstrated particulate matter control device temperature (for each particulate matter control device.) **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(9)(ii)[3])**

h. The following records as specified in 40 CFR 60.59b(d)(12)(i) through (d)(12)(iv): **(R 336.1213(3), 40 CFR 62.14109(a), R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(12)[3])**

i. Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have been provisionally certified by ASME or state-equivalent certification program as required by 40 CFR 60.54b(a) including the dates of initial and renewal certifications and documentation of the current certification. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(12)(i)[3])**

ii. Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have been fully certified by ASME or state-equivalent certification program as required by 40 CFR 60.54b(b) including the dates of initial and renewal certifications and documentation of the current certification. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(12)(ii)[3])**

iii. Records showing the names of the municipal waste combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a state-approved equivalent course as required by 40 CFR 60.54b(d) including documentation of training completion. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(12)(iii)[3])**

iv. Records showing when a certified operator is temporarily off site, which shall include: **(40 CFR 62 Subpart FFF, 40 CFR 60.39b, 40 CFR 60.59b(d)(12)(iv)[3])**:

A. If the certified chief facility operator and certified shift supervisor are off site for more than 12 hours, but for 2 weeks or less, and no other certified operator is on site, record the dates that the certified chief facility operator and certified shift supervisor were off site.

B. When all certified chief facility operators and certified shift supervisors are off site for more than 2 weeks and no other certified operator is on site, keep records of:

a. Time of day that all certified persons are off site.

b. The conditions that cause those people to be off site.

c. The corrective actions taken by the owner or operator of the affected facility to ensure a certified chief facility operator or certified shift supervisor is on site as soon as practicable; and

d. Copies of the written reports submitted every 4 weeks that summarize the actions taken by the owner or operator of the affected facility to ensure that a certified chief facility operator or certified shift supervisor will be on site as soon as practicable.

i. Records showing the names of the persons who have completed a review of the operating manual as required by 40 CFR 60.54b(f) including the date of the initial review and subsequent annual reviews. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(d)(13)[3])**

j. Other monitoring, recordkeeping, and emissions calculations to show compliance with any applicable requirement. **(R 336.1213(3))**

55. Permittee shall maintain records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative. **(40 CFR 60.7(b))**

a. For the purposes of the condition above, the definition of startup, shutdown, and malfunction shall be that applicable to 40 CFR Subpart Cb operations. See Appendix 1b. **(R 336.1213(3))**

56. Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part/permit recorded in a “permanent” form suitable for filing and inspection. **(R 336.1213(3), 40 CFR 60.7(f))**

57. Permittee may elect to substitute continuous emission monitoring for stack testing requirements pursuant to 40 CFR 60.58b(c)(10) for PM, 40 CFR 60.58b(d)(4) for Hg, 40 CFR 60.58b(f)(8) for HCl, and/or 40 CFR 60.58b(g)(10) for dioxin/furans. If so, permittee must comply with the provisions of 40 CFR 60.58b(n) through 40 CFR 60.58b(q). **(40 CFR 62 Subpart FFF, 40 CFR 60.58[3])**

58. The permittee shall keep records of the malfunction abatement and preventative maintenance program as specified in the Greater Detroit Resources Recovery Facility “Abnormal Condition Startup/Shutdown

Malfunction Abatement Plan", dated February 2011and revisions thereto.[2] **(R 336.1213(3), R 336.1910, R 336.1911)**

59. Permittee shall record the date, time, and duration of a malfunction event or failure of the sulfur dioxide continuous emission monitor, the amount of pebble lime added per hour, the lime slurry density, and lime slurry flow rate. **(R336.1213(3))**

See Appendices {3 & 4}

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. Permittee shall summarize the hourly auxiliary fuel (natural gas and fuel oil) feed rates, hourly steam flow rates, and hours of operation for each boiler and submit to AQD in an acceptable format and within 30 days following the end of each quarter.[2] **(R 336.1213(3)(c)(i))**

5. Permittee shall submit quarterly excess emissions and monitoring systems performance reports, postmarked by the 30th day following the end of each calendar quarter period.[2] **(R 336.1213(3), 40 CFR 60.7(c), R 336.2170)**

   a) This quarterly excess emissions and monitoring systems performance report will relate to the emission limits monitored by CEMS and COMS, the performance of the CEMS and COMS, and any deviations of applicable requirements as contained in this permit. At a minimum, written reports of excess emissions shall include the following information: **(R 336.1213(3), 40 CFR 60.7(c))**

      i. The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period. **(R 336.1213(3), 40 CFR 60.7(c)(1))**

      ii. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction, the corrective action taken or preventative measures adopted. **(R 336.1213(3), 40 CFR 60.7(c)(2))**

      iii. The date and time identifying each period during which the CMS was inoperative except for zero and span checks and the nature of the system repairs or adjustments. **(R 336.1213(3), 40 CFR 60.7(c)(3))**

      iv. When no excess emissions have occurred or the CMS have not been inoperative, repaired, or adjusted, such information shall be stated in the report. **(R 336.1213(3), 40 CFR 60.7(c)(4))**

   b) The summary report form shall contain the information and be in the format shown in Figure 1 of 40 CFR 60.7(d) or as specified/approved by the Administrator. One summary report form shall be submitted for each pollutant monitored at each affected facility. **(R 336.1213(3), 40 CFR 60.7(d))**

6. Emission test plans and schedules shall meet the requirements of Rules 2001, 2003, and 2004 and have prior approval of the AQD District Supervisor. A complete report of the test results shall be submitted in accordance with AQD requirements. **(R 336.2001, R 336.2002, R 336.2004)**

7. Upon issuance of the permit, Permittee shall submit a semi-annual report, postmarked on or before March 15 (for reporting period July 1 through December 31) and postmarked on or before September 15 (for reporting period January 1 through June 30), (note, this schedule has been altered per 40 CFR 60.59b(l) under the delegated authority to AQD), in compliance with 40 CFR 60.59b(g) that shall include the following: [2] **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)[3])**

   a) A summary of data collected for all applicable pollutants and parameters regulated, as follows: **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(1)[3])**

      i. A list of the particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels achieved during any performance tests performed per 40 CFR 60.59b(d)(9) during the applicable period. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(1)(i)[3])**

      ii. A list of the highest emission level recorded for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, and particulate matter control device inlet temperature based on the data recorded under paragraphs 40 CFR 60.59b(d)(2)(ii)(a) through (d)(2)(ii)(d). **(R 336.1213(3), 40 CFR 62 Subpart FFF; R 336.1932(1), 40 CFR 60.39b; 40 CFR 60.59b(g)(1)(ii)[3])**

      iii. List the highest opacity level measured, based on the data recorded under paragraph 40 CFR 60.59b(d)(2)(i)(A). **(R 336.1213(3), 40 CFR 62 Subpart FFF, R336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(1)(iii)[3])**

      iv. The total number of days that the minimum number of hours of data for sulfur dioxide, nitrogen oxides, carbon monoxide, unit load, and particulate matter control device inlet temperature data were not obtained based on the data recorded under paragraph 40 CFR 60.59b(d)(6) of this section. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(1)(iv)[3])**

      v. The total number of hours that data for sulfur dioxide, nitrogen oxides, carbon monoxide, unit load, and particulate matter control device inlet temperature were excluded from the calculation of average emission concentrations or parameters based on the data recorded under paragraph 40 CFR 60.59b(d)(7) of this section. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(1)(v)[3])**

   b) The summary of data reported under paragraph 40 CFR 60.59b(g)(1) shall also include the types of data specified in 40 CFR 60.59b(g)(1)(i) through (v) for the 12-month period preceding the applicable period reported. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(2)[3])**

   c) The summary of data shall also highlight any emission or parameter levels that did not achieve the emission or parameter limits specified under the applicable requirement. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(g)(3)[3])**

      i. For the purposes of the above condition, “highlight” shall mean to list the deviation or limit/applicable requirement exceeded, the duration of the exceedance or deviation, and the date of the exceedance or deviation. Quarterly emission reports may be incorporated by reference. This report does not need to list the reasons for not achieving the emission or parameter limits or corrective actions taken. **(R 336.1213(3))**

   d) Documentation of periods when all certified chief facility operators and certified shift supervisors are off site for more than 12 hours. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), CFR 60.39b, 40 CFR 60.59b(g)(5)[3])**

8. Upon issuance of the permit, Permittee shall submit a semi-annual report, postmarked on or before March 15 (for reporting period July 1 through December 31) and postmarked on or before September 15 (for reporting period January 1 through June 30), (note, this schedule has been altered per 40 CFR 60.59b(l) under the delegated authority to AQD), that includes the information specified in 40 CFR 60.59b(h)(1) through (h)(5) for

any recorded pollutant or parameter that does not comply with the applicable pollutant or parameter limit.[2] **(R 336.1213(3), 40 CFR 62 Subpart FFF, R336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(h)[3])**

a. The semiannual report shall include information recorded under paragraph 40 CFR 60.59b(d)(3) for sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, particulate matter control device inlet temperature, and opacity. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(h)(1)[3])**

   i. This will be an identification of calendar dates when the average emission concentrations, percent reductions, or operating parameters were exceeded, reasons for exceedances, and a description of corrective action(s) taken. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), R 336.1213(3), 40 CFR 60.59b(d)(3)[3])**

b. For each date recorded as required by paragraph 40 CFR 60.59b(d)(3) and reported as required by 40 CFR 60.59b(h)(1), the semiannual report shall include the sulfur dioxide, nitrogen oxides, carbon monoxide, municipal waste combustor unit load level, particulate matter control device inlet temperature, or opacity data which was in exceedance, as applicable, recorded under paragraphs 40 CFR 60.59b(d)(2)(ii)(A) through (d)(2)(ii)(D) and (d)(2)(i)(A), as applicable, which shall include data for the entire calendar day. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(h)(2)[3])**

c. If the test reports recorded under paragraph 40 CFR 60.59b(d)(9) document any particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels that were above the applicable pollutant limits, the semi-annual report shall include a copy of the test report documenting the emission levels and the corrective actions taken. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(h)(3)[3])**

9. All reports submitted under paragraphs 40 CFR 60.59b(g) and (h), shall be submitted as a paper copy, postmarked on or before the submittal dates specified under these paragraphs, and maintained on-site as a paper copy for a period of 5 years. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(j)[3])**

10. All records specified under paragraphs 40 CFR 60.59b(d) and (e) shall be maintained on site in either paper copy or computer-readable format, unless an alternative format is approved by the Administrator. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(k)[3])**

11. If the permittee would prefer a different annual or semiannual date for submitting the periodic reports required by paragraphs 40 CFR 60.59b(g), and (h), then the dates may be changed by mutual agreement between the owner/operator and the Administrator, in accordance with the procedures specified in 60.19(c) of 40 CFR 60, Subpart A. **(R 336.1213(3), 40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.39b, 40 CFR 60.59b(l)[3])**

12. Permittee shall furnish a written notification of the date construction (or reconstruction as defined under 40 CFR 60.15) of an affected facility is commenced postmarked no later than 30 days after such date. **(40 CFR 60.7(a)(1))**

13. Permittee shall furnish a written notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR 60.14(e). This notice shall be postmarked 60 days (or as soon as practicable) before the change is commenced. **(40 CFR 60.7(a)(4))**

14. If facility proposes to replace components, and the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility, Permittee shall furnish written notification of the proposed replacements, postmarked 60 days (or as soon as practicable) before the construction of the replacement is commenced. **(40 CFR 60.15(d))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
SVBOILER011	102[2]	337.5[2]	**(40 CFR 52.21, R 336.1221, R336.1201(3))**
SVBOILER012	102[2]	337.5[2]	**(40 CFR 52.21, R 336.1221, R336.1201(3))**
SVBOILER013	102[2]	337.5[2]	**(40 CFR 52.21, R 336.1221, R336.1201(3))**

IX. OTHER REQUIREMENT(S)

1. Permittee shall calculate annual capacity factor for combined auxiliary fuel (natural gas and No. 2 fuel oil) using 40 CFR 60.43b(e), for each boiler, for all uses of auxiliary fuel, for the reporting period. The annual capacity factor shall be determined on a 12-month rolling average with a new capacity factor calculated at the end of each month. **(40CFR 60.44b(c), R 336.1213(3))**

2. Permittee shall not operate any boiler unless the malfunction, abatement and preventive maintenance program specified in Greater Detroit Resources Recovery Facility "Abnormal Condition Startup/Shutdown Malfunction Abatement Plan", dated February 2011and revisions thereto, have been implemented and is maintained. **(R336.1201(3), R 336.1910, R 336.1911)**

3. Permittee shall not substitute any fuels or wastes which would result in an appreciable change in the quantity or appreciable change in the quality of the emission of an air contaminant without prior notification to and approval by the Division. **(R336.1201(3))**

4. Permittee shall not fire RDF in more than two of the three boilers at any one time. The Permittee may fire natural gas or No. 2 fuel oil in one boiler while RDF is fired in the other two boilers.[2] **(40 CFR 52.21, R 336.1221, R336.1201(3))**

5. The chief facility operator and each shift supervisor shall obtain and maintain a current provisional operator certificate from either American Society of Mechanical Engineers (ASME) or a state certification program.[2] **(40 CFR 62.14105, R336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(a)[3])**

6. Each chief facility operator and shift supervisor must have completed full certification or must have scheduled a full certification examination with either ASME or a state certification program. **(40 CFR 60.35b, 40 CFR 60.54b(b)[3], R336.1932(1), 40 CFR 62.14105)**

7. The combustors shall not operate unless one of the following persons is on duty and at the affected facility: a fully or provisionally certified chief facility operator; shift supervisor; or control room operator. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(c)[3])**

8. A provisionally certified control room operator on-site may fulfill the requirements of 40 CFR 60.54b(c) to have a certified chief facility operator or shift supervisor (or provisionally certified chief facility operator or shift supervisor) on site at all times for twelve hours or less without notice. A provisionally certified control room operator on-site may fulfill the requirements of 40 CFR 60.54b(c) to have a certified chief facility operator or shift supervisor (or provisionally certified chief facility operator or shift supervisor) on site at all times for more than twelve hours but no more than two weeks without notice or less without further notice, however the period of such fulfillment must be report in the semiannual report under 40 CFR 60.59b(g)(5). Filling in for longer than two weeks requires written notice pursuant to 40 CFR 60.54b(c)(2)(iii).[2] **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(c)(2)[3])**

9. The permittee shall develop and update on a yearly basis a site-specific operating manual that addresses the following: [2] **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(e)[3])**

    a. Summary of applicable Emission Guideline standards
    b. Description of basic combustion theory applicable to a MSW unit
    c. Procedures for receiving, handling and feeding MSW
    d. Procedures for startup, shutdown, and malfunction
    e. Procedures for maintaining proper combustion air levels
    f. Procedures for operating within Emission Guideline standards
    g. Procedures for responding to periodic upset or off-specification conditions
    h. Procedures for minimizing particulate matter carryover
    i. Procedures for handling ash
    j. Procedures for monitoring emissions
    k. Reporting and recordkeeping procedures

10. A current copy of the operating manual referenced above shall be kept at the facility at all times. The manual and records shall be available for inspection upon request. [2] **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(g)[3])**

11. The permittee shall establish a training program to review the operating manual with each person with responsibilities affecting the operation of an affected facility including but not limited to chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load handlers: [2]

    a) by December 19, 1996; **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(f)(1)(iii)[3])**

or

    b) the date prior to the day the person assumes such responsibilities; **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(f)(1)(ii)[3])**

and

    c) annually, following the initial review. **(40 CFR 62 Subpart FFF, R 336.1932(1), 40 CFR 60.35b, 40 CFR 60.54b(f)(2)[3])**

<u>Footnotes</u>:
[1]This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).
[3] 40 CFR 60 Subpart Eb is not directly applicable to this facility. However, certain specific provisions in 40 CFR 60 Subpart Eb become specific applicable requirement in this ROP by either a reference or a requirement from 40 CFR 62 Subpart FFF, 40 CFR 60 Subpart Cb, or Michigan Air Pollution Control Rule 932 adopting by reference the 2000 version of 40 CFR 60 Subpart Cb.

FGCOLDCLEANERS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278 and Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

Emission Unit: EUPARTS-WASHER

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

1. The permittee shall not use cleaning solvents containing more than five percent by weight of the following halogenated compounds: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chloroform, or any combination thereof. **(R 336.1213(2))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Cleaned parts shall be drained for no less than 15 seconds or until dripping ceases. **(R 336.1611(2)(b), R 336.1707(3)(b))**

2. The permittee shall perform routine maintenance on each cold cleaner as recommended by the manufacturer. **(R 336.1213(3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The cold cleaner must meet one of the following design requirements:

   a. The air/vapor interface of the cold cleaner is no more than ten square feet. **(R 336.1281(h))**

   b. The cold cleaner is used for cleaning metal parts and the emissions are released to the general in-plant environment. **(R 336.1285(r)(iv))**

2. The cold cleaner shall be equipped with a device for draining cleaned parts. **(R 336.1611(2)(b), R 336.1707(3)(b))**

3. All new and existing cold cleaners shall be equipped with a cover and the cover shall be closed whenever parts are not being handled in the cold cleaner. **(R 336.1611(2)(a), R 336.1707(3)(a))**

4. The cover of a new cold cleaner shall be mechanically assisted if the Reid vapor pressure of the solvent is more than 0.3 psia or if the solvent is agitated or heated. **(R 336.1707(3)(a))**

5. If the Reid vapor pressure of any solvent used in a new cold cleaner is greater than 0.6 psia; or, if any solvent used in a new cold cleaner is heated above 120 degrees fahrenheit, then the cold cleaner must comply with at least one of the following provisions:

   a. The cold cleaner must be designed such that the ratio of the freeboard height to the width of the cleaner is equal to or greater than 0.7. **(R 336.1707(2)(a))**

b. The solvent bath must be covered with water if the solvent is insoluble and has a specific gravity of more than 1.0. **(R 336.1707(2)(b))**

c. The cold cleaner must be controlled by a carbon adsorption system, condensation system, or other method of equivalent control approved by the AQD. **(R 336.1707(2)(c))**

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For each new cold cleaner in which the solvent is heated, the solvent temperature shall be monitored and recorded at least once each calendar week during routine operating conditions. **(R 336.1213(3))**

2. The permittee shall maintain the following information on file for each cold cleaner: **(R 336.1213(3))**

   a. A serial number, model number, or other unique identifier for each cold cleaner.

   b. The date the unit was installed, manufactured or that it commenced operation.

   c. The air/vapor interface area for any unit claimed to be exempt under Rule 281(h).

   d. The applicable Rule 201 exemption.

   e. The Reid vapor pressure of each solvent used.

   f. If applicable, the option chosen to comply with Rule 707(2).

3. The permittee shall maintain written operating procedures for each cold cleaner. These written procedures shall be posted in an accessible, conspicuous location near each cold cleaner. **(R 336.1611(3), R 336.1707(4))**

4. As noted in Rule 611(2)(c) and Rule 707(3)(c), if applicable, an initial demonstration that the waste solvent is a safety hazard shall be made prior to storage in non-closed containers. If the waste solvent is a safety hazard and is stored in non-closed containers, verification that the waste solvent is disposed of so that not more than 20 percent, by weight, is allowed to evaporate into the atmosphere shall be made on a monthly basis. **(R 336.1213(3), R 336.1611(2)(c), R 336.1707(3)(c))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

FGRULE290
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.

Emission Unit: EURULE290

POLLUTION CONTROL EQUIPMENT

I. EMISSION LIMIT(S)

1. Each emission unit that emits only noncarcinogenic volatile organic compounds or noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone if the total uncontrolled or controlled emissions of air contaminants are not more than 1,000 or 500 pounds per month, respectively. **(R 336.1290(a)(i))**

2. Each emission unit that the total uncontrolled or controlled emissions of air contaminants are not more than 1,000 or 500 pounds per month, respectively, and all the following criteria listed below are met: **(R 336.1290(a)(ii))**

   a. For noncarcinogenic air contaminants, excluding noncarcinogenic volatile organic compounds and noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with initial threshold screening levels greater than or equal to 2.0 micrograms per cubic meter, the uncontrolled or controlled emissions shall not exceed 1,000 or 500 pounds per month, respectively. **(R 336.1290(a)(ii)(A))**

   b. For noncarcinogenic air contaminants, excluding noncarcinogenic volatile organic compounds and noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with initial threshold screening levels greater than or equal to 0.04 microgram per cubic meter and less than 2.0 micrograms per cubic meter, the uncontrolled or controlled emissions shall not exceed 20 or 10 pounds per month, respectively. **(R 336.1290(a)(ii)(B))**

   c. For carcinogenic air contaminants with initial risk screening levels greater than or equal to 0.04 microgram per cubic meter, the uncontrolled or controlled emissions shall not exceed 20 or 10 pounds per month, respectively. **(R 336.1290(a)(ii)(C))**

   d. The emission unit shall not emit any air contaminants, excluding non-carcinogenic volatile organic compounds and noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with an initial threshold screening level or initial risk screening level less than 0.04 microgram per cubic meter. **(R 336.1290(a)(ii)(D))**

3. Each emission unit that emits only noncarcinogenic particulate air contaminants and other air contaminants that are exempted under Rule 290(a)(i) and/or Rule 290(a)(ii), if all of the following provisions are met: **(R 336.1290(a)(iii))**

   a. The particulate emissions are controlled by an appropriately designed and operated fabric filter collector or an equivalent control system which is designed to control particulate matter to a concentration of less than or equal to 0.01 pound of particulate per 1,000 pounds of exhaust gases and which does not have an exhaust gas flow rate more than 30,000 actual cubic feet per minute. **(R 336.1290(a)(iii)(A))**

b. The visible emissions from the emission unit are not more than 5 percent opacity in accordance with the methods contained in Rule 303. **(R 336.1290(a)(iii)(B))**
c. The initial threshold screening level for each particulate air contaminant, excluding nuisance particulate, is more than 2.0 micrograms per cubic meter. **(R 336.1290(a)(iii)(C))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The provisions of Rule 290 apply to each emission unit that is operating pursuant to Rule 290. **(R 336.1290)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall maintain records of the following information for each emission unit for each calendar month using the methods outlined in the DEQ, AQD Rule 290, Permit to Install Exemption Record form (EQP 3558) or an alternative format that is approved by the AQD District Supervisor. **(R 336.1213(3))**

   a. Records identifying each air contaminant that is emitted. **(R 336.1213(3))**

   b. Records identifying if each air contaminant is controlled or uncontrolled. **(R 336.1213(3))**

   c. Records identifying if each air contaminant is either carcinogenic or non-carcinogenic. **(R 336.1213(3))**

   d. Records identifying the ITSL and IRSL, if established, of each air contaminant that is being emitted under the provisions of Rules 290(a)(ii) and (iii). **(R 336.1213(3))**

   e. Material use and calculations identifying the quality, nature, and quantity of the air contaminant emissions in sufficient detail to demonstrate that the actual emissions of the emission unit meet the emission limits outlined in this table and Rule 290. **(R 336.1213(3), R 336.1290(c))**

2. The permittee shall maintain an inventory of each emission unit that is exempt pursuant to Rule 290. This inventory shall include the following information. **(R 336.1213(3))**

   a. The permittee shall maintain a written description of each emission unit as it is maintained and operated throughout the life of the emission unit. **(R 336.1290(b), R 336.1213(3))**

   b. For each emission unit that emits noncarcinogenic particulate air contaminants pursuant to Rule 290(a)(iii), the permittee shall maintain a written description of the control device, including the designed control efficiency and the designed exhaust gas flow rate**.** **(R 336.1213(3))**

3. For each emission unit that emits noncarcinogenic particulate air contaminants pursuant to Rule 290(a)(iii), the permittee shall perform a monthly visible emission observation of each stack or vent during routine operating conditions. This observation need not be performed using Method 9. The permittee shall keep a written record of the results of each observation. **(R 336.1213(3))**

See Appendix 4

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that the requirements identified in the table below are not applicable to the specified emission unit(s) and/or flexible group(s). This determination is incorporated into the permit shield provisions set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii). If the permittee makes a change that affects the basis of the non-applicability determination, the permit shield established as a result of that non-applicability decision is no longer valid for that emission unit or flexible group.

Emission Unit/Flexible Group ID	Non-Applicable Requirement	Justification
FGBOILERS011-013	1. Clean Air Interstate Rule NO_x annual trading program pursuant to Rules 802a, 803, 821, and 830 through 834. 2. Clean Air Interstate Rule NO_x ozone season trading program pursuant to Rules 802a, 803 and 821 through 826. 3. Clean Air Interstate Rule SO_2 annual trading program pursuant to Rule 420.	Per Rule 803(1), the facility, as an existing source, combusts less than 50% fossil fuel (No. 2 fuel oil) as compared to MSW. This renewal ROP contains an enforceable restriction (also in the initial ROP), FGBOILERS011-013(II)(1)(b), that restricts Natural gas or No. 2 fuel oil usage to ≤ 10% based on calculating annual capacity factor when combusting Natural gas or No.2 fuel oil and MSW. Natural gas or No. 2 fuel oil is used as auxiliary fuel for start-up shutdown, malfunction, and to keep combustion temperature from falling below 1600ºF.
FGBOILERS011-013	1. 40 CFR Part 60 Subpart Ea	FGBOILERS011-013 undertook additional installation/replacement work on 5/1/95, 12/1/92, and 4/18/94 respectively to replace an existing 5-stage electrostatic precipitator emission control system (ESP) with a spray/dryer/fabric filter system and a lime injection system that includes lime storage and handling. These changes resulted in significant reductions in emissions and met 40 CFR Part 60 Subpart A (§ 60.14(e)(5)) modification exemption requirements thus excluding the emission units from the applicability requirements of 40 CFR Part 60 Subpart Ea.

APPENDICES

Appendix 1: Abbreviations and Acronyms

The following is an alphabetical listing of abbreviations/acronyms that may be used in this permit.

AQD	Air Quality Division	MM	Million
acfm	Actual cubic feet per minute	MSDS	Material Safety Data Sheet
BACT	Best Available Control Technology	MW	Megawatts
BTU	British Thermal Unit	NA	Not Applicable
°C	Degrees Celsius	NAAQS	National Ambient Air Quality Standards
CAA	Federal Clean Air Act	NESHAP	National Emission Standard for Hazardous Air Pollutants
CAM	Compliance Assurance Monitoring	NMOC	Non-methane Organic Compounds
CEM	Continuous Emission Monitoring	NOx	Oxides of Nitrogen
CFR	Code of Federal Regulations	NSPS	New Source Performance Standards
CO	Carbon Monoxide	NSR	New Source Review
COM	Continuous Opacity Monitoring	PM	Particulate Matter
department	Michigan Department of Environmental Quality	PM-10	Particulate Matter less than 10 microns in diameter
dscf	Dry standard cubic foot	pph	Pound per hour
dscm	Dry standard cubic meter	ppm	Parts per million
EPA	United States Environmental Protection Agency	ppmv	Parts per million by volume
EU	Emission Unit	ppmw	Parts per million by weight
°F	Degrees Fahrenheit	PS	Performance Specification
FG	Flexible Group	PSD	Prevention of Significant Deterioration
GACS	Gallon of Applied Coating Solids	psia	Pounds per square inch absolute
gr	Grains	psig	Pounds per square inch gauge
HAP	Hazardous Air Pollutant	PeTE	Permanent Total Enclosure
Hg	Mercury	PTI	Permit to Install
hr	Hour	RACT	Reasonable Available Control Technology
HP	Horsepower	ROP	Renewable Operating Permit
H_2S	Hydrogen Sulfide	SC	Special Condition
HVLP	High Volume Low Pressure *	scf	Standard cubic feet
ID	Identification (Number)	sec	Seconds
IRSL	Initial Risk Screening Level	SCR	Selective Catalytic Reduction
ITSL	Initial Threshold Screening Level	SO_2	Sulfur Dioxide
LAER	Lowest Achievable Emission Rate	SRN	State Registration Number
lb	Pound	TAC	Toxic Air Contaminant
m	Meter	Temp	Temperature
MACT	Maximum Achievable Control Technology	THC	Total Hydrocarbons
MAERS	Michigan Air Emissions Reporting System	tpy	Tons per year
MAP	Malfunction Abatement Plan	µg	Microgram
MDEQ	Michigan Department of Environmental Quality	VE	Visible Emissions
mg	Milligram	VOC	Volatile Organic Compounds
mm	Millimeter	yr	Year

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 pounds per square inch gauge (psig).

Appendix 1b. Definitions for Terms Used in This Permit

The following are definitions of specific terms used in this ROP to supplement those provided by state and federal rules. Terms not otherwise defined are to be interpreted in a general, common knowledge sense.

MSW

Municipal solid waste or municipal-type solid waste as defined in 40 CFR 60 Subpart Eb (§60.51b) per 40 CFR 60 Subpart Cb (§60.31b) and 40 CFR 62 Subpart FFF (§62.14101).

Emission Guideline(s)

All applicable portions of **40 CFR 60, Subpart Cb** –"Emissions Guidelines and Compliance Times For Large Municipal Waste Combustors That Are Constructed On Or Before September 20, 1994", and the applicable portions of **40 CFR 60, Subpart Eb** – "Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 or For Which Modification or Reconstruction is Commenced After June 19, 1996" referenced therein.

Startup (for purposes of Emission Guideline requirements):

The setting in operation of the affected facility for any purpose. **(40 CFR 60.2)**

The Emission Guideline standards do not apply during period of startup. The duration of startup periods is limited to 3 hours per occurrence. **(40 CFR 60.58b(a)(1)[3])**

During periods of startup, shutdown, or malfunction, monitoring data shall be dismissed or excluded from compliance calculations, but shall be recorded and reported in accordance with the provisions of 40 CFR 60.59b(d)(7). **(40 CFR 60.58b(a)(1)(i)[3])**

The startup period commences when the affected facility begins the continuous burning of municipal solid waste and does not include any warm-up period when the affected facility is combusting fossil fuel or other non-municipal solid waste fuel, and no municipal solid waste is being fed to the combustor. **(40 CFR 60.58b(a)(1)[3])**

Shutdown (for purposes of Emission Guideline requirements):

The cessation of operation of an affected facility for any purpose. **(40 CFR 60.2)**

The Emission Guideline standards do not apply during periods of shutdown. The duration of the shutdown period is limited to 3 hours per occurrence, except as allowed by **40 CFR 60.58b(a)(1)(iii)**[3].

During periods of startup, shutdown, or malfunction, monitoring data shall be dismissed or excluded from compliance calculations, but shall be recorded and reported in accordance with the provisions of 40 CFR 60.59b(d)(7). **(40 CFR 60.58b(a)(1)(i))**[3]

The shutdown period commences at the time MSW is no longer being continuously fed to the unit.

The shutdown period ends and the affected facility is "off line" when the oxygen concentration in the flue gas is sustained at a value greater than or equal to 16%. Note, however, for SO_2 and NO_x, 40 CFR 60.58b(b)(8)[3] allows a diluent cap of 14%. This option is available for definition of shutdown periods for these limits.

When the facility is "off line" it shall not be considered to be operating.

Shutdown (for purposes other than Emission Guideline requirements):

The cessation of operation of a source for any purpose. **(R 336.1119(d))**

The shutdown period commences at the time MSW is no longer being continuously fed to the unit.

When the facility is “off line” it shall not be considered to be operating.

Malfunction (for purposes of Emission Guideline requirements):

“Malfunction” means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal, or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. **(40 CFR 60.2)**

Malfunction (for purposes other than Emission Guideline requirements):

“Malfunction” means any sudden, infrequent and not reasonably preventable failure of a source, process, process equipment, or air pollution control equipment to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. **(R336.1113(d))**

CEM Data Point:

A valid CEM data point is produced when a CEM (except COM) completes a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. **(40 CFR 60.13(e)(2))**

One-Hour Average:

One-hour averages shall be computed from four or more data points equally spaced over each 1-hour period. **(40 CFR 60.13(h))**

At least two data points per hour shall be used to calculate each 1-hour average. **(40 CFR 60.58[3])** [For example, **40 CFR 60.58b(e)(7)(i)**[3]]

If at least two data points are not available to calculate a 1-hour average the period is not considered in determining compliance with a standard.

One-Hour period:

Any 60-minute period commencing on the hour. **(40 CFR 60.2)**

Block Average (General):

A block average is the period that starts on the hour and ends on the hour, and encompasses the same hours each day.

Partial Block Period (for block periods greater than one-hour):

A block period that does not have MSW continuously burning due to start up or shutdown or the unit being off line, or which has an exemption of data use due to startup, shutdown, or malfunction exclusion provisions under the Emission Guidelines. The exemption of data use under the Emission Guidelines may create a partial block period. Emission standards or limitations applicable to block periods are not applicable to partial block periods.

Block Average (for purposes of Emission Guideline requirements):

Four-hour block average or 4-hour block average means the average of all hourly emission concentrations when the affected facility is operating and combusting municipal solid waste measured over 4-hour periods of time from 12:00 midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to 12:00 noon, 12:00 noon to 4 p.m., 4 p.m. to 8 p.m., and 8 p.m. to 12:00 midnight. **(40 CFR 60.51b)**

Twenty Four-hour block average or 24-hour block average means the average of all hourly emission concentrations when the affected facility is operating and combusting municipal solid waste measured over the 24 hour period of time from 12:00 midnight to the following 12:00 midnight. **(40 CFR 60.51b)**

Except for "geometric averages or geometric means", block averages shall be determined by dividing the sum of the hourly averages by the number of hours in a block. In the event there is no valid data (or there is only exempt data) for one of the hours in a block period, then a block average cannot be determined for that block period.

In the event that two valid data points cannot be determined for one or more of the hours in a block period, then a block average cannot be determined for that block period, thus creating a "partial block period".

Block Average (for purposes other than Emission Guideline requirements):

A three hour block average means the average of all hourly emission concentrations or mass emissions measured over three hour periods of time for one of the following time blocks: Midnight to 3:00 AM; 3:00 AM to 6:00 AM; 6:00 AM to 9:00 AM; 9:00 AM to Noon; Noon to 3:00 PM; 3:00 PM to 6:00 PM; 6:00 PM to 9:00 PM, and 9:00 PM to Midnight.

Except for "geometric averages or geometric means", block averages shall be determined by dividing by the sum of the hourly averages by the number of hours in a block. In the event there is no valid data for one of the hours in a block period, then a block average cannot be determined for that block period.

In the event that two valid data points cannot be determined for one or more of the hours in a block period, then a block average cannot be determined for that block period, thus creating a "partial block period".

Daily Geometric Mean/Average

When a "24-hour daily geometric mean" [daily geometric average] is to be determined, this shall be done for a single 24 hour period each day, that being the 24 hour block period that runs from midnight to midnight.

24-hour daily arithmetic average

When a "24-hour daily arithmetic average" is to be determined, this shall be done for a single 24 hour period each day, that being the 24 hour block period that runs from midnight to midnight.

Good Combustion Practices (GCP)

As defined by U.S. EPA (1989), good combustion practices (GCP) for municipal waste combustors are designed to prevent and control air pollutant emissions. GCP incorporates numeric limits for three specific combustor operating parameters: CO emissions, maximum operating load, and minimum temperature of flue gases at the PM control device. Each of these parameters is continuously monitored for each combustor.

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

The following monitoring procedures, methods, or specifications are the details to the monitoring requirements identified and referenced in FGBOILERS011-013, FGMSWPROC-LINES, and EULIME-FEEDSYS. Alternative monitoring procedures, methods, or specifications must be approved by the Air Quality Division.

BAGHOUSE INSPECTIONS

1. Inspections shall be conducted during scheduled outages or downtimes, and immediately or as soon as reasonably possible after observing visible emissions or pressure drops outside the normal range but not less frequently than what is specified in the respective emission unit or flexible group.

2. The operational condition, and if necessary, reasons for failure or malfunction of the bags, metal housings, fans, blowers, hopper bottom discharge valve, reverse air dampers or pulse jets (whichever is applicable), access doors and gaskets shall be determined during the inspection.

3. Any repairs and corrective actions needed to address the causes of malfunction or failure shall be performed promptly.

4. Permittee shall perform as necessary maintenance inspections of the baghouses which shall include visual inspection of the fabric filter bags for security of attachment, holes or tears in the fabric filter bags for security of attachment, holes or tears in the fabric and evidence of dust leakage.

Appendix 4. Recordkeeping

The permittee shall use the following approved formats and procedures for the recordkeeping requirements referenced in EULIME-FEEDSYS and FGMSWPROC-LINES. Alternative formats or procedures must be approved by the Michigan Department of Environmental Quality, Air Quality Division.

BAGHOUSE INSPECTIONS

A. A log of the inspection, cause(s) of malfunction or failure, repairs made and corrective actions taken shall be maintained on file for a period of at least five years. **(R336.1213(3))**

B. Permittee shall keep record of the preventive maintenance inspections. These records shall include the date and time of inspection, name of person making the inspection, identification of unit inspected, condition of unit and description of any corrective action taken. These records shall be maintained for a minimum of five years and made available to the Division upon request. **(R336.1213(3))**

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

The following table lists any PTIs issued since the effective date of previously issued ROP No. 199600235

Permit to Install Number	Description of Equipment	Corresponding Emission Unit(s) or Flexible Group(s)
NA	NA	NA

The following ROP amendments or modifications were issued after the effective date of ROP No. MI-ROP-M4148-2011.

Permit to Install Number	ROP Revision Application Number/Issuance Date	Description of Change	Corresponding Emission Unit(s) or Flexible Group(s)
NA	201400147/ September 16, 2014	Name change to Detroit Renewable Power.	NA

Appendix 7. Emission Calculations

Specific emission calculations to be used with monitoring, testing or recordkeeping data are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible group Special Conditions. Therefore, this appendix is not applicable.

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ Report Certification form (EQP 5736) and MDEQ Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

Exhibit 7

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Molly Joseph Ward
Secretarv of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

June 10, 2016

Mr. Frank Capobianco
Facility Manager
Covanta Fairfax, Inc.
9898 Furnace Road
Lorton, Virginia 22079

Location: Fairfax County
Registration No.: 71920

Dear Mr. Capobianco:

Attached is a renewal Title V permit to operate a municipal solid waste combustion facility pursuant to 9 VAC 5 Chapter 80, Article 1, of the Virginia Regulations for the Control and Abatement of Air Pollution. This permit incorporates provisions from the Prevention of Significant Deterioration (PSD) Permit dated January 12, 1987, as amended February 18, 1988.

In the course of evaluating the application and arriving at a final decision to issue this permit, the Department of Environmental Quality (DEQ) deemed the application complete on April 7, 2016, and solicited written public comments by placing a newspaper advertisement in *The Washington Times* newspaper on April 12, 2016. The thirty-day comment period (provided for in 9 VAC 5-80-270) expired on May 13, 2016.

The permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and civil penalty. Please read all permit conditions carefully.

This permit approval shall not relieve Covanta Fairfax, Inc. of the responsibility to comply with all other local, state and federal permit regulations.

Issuance of this permit is a case decision. The Regulations, at 9 VAC 5-170-200, provide that you may request a formal hearing from this case decision by filing a petition with the Board within 30 days after this permit is mailed or delivered to you. Please consult this and other relevant provisions for additional requirements for such requests. Additionally, as provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal to court by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218

In the event that you receive this permit by mail, three days are added to the period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia, at http://www.courts.state.va.us/courts/scv/rules.html, for additional information including filing dates and the required content of the Notice of Appeal.

If you have any questions concerning this permit, please contact Tom Valentour at (703) 583-3931.

Sincerely,

Thomas A. Faha

Thomas A. Faha
Regional Director

Attachment: Permit

c: Director, OAPP (electronic file submission)
Manager, Data Analysis (electronic file submission)
Chief, Permits and Technical Assessment Branch (3AP11), U.S. EPA, Region III

COMMONWEALTH of VIRGINIA

Molly Joseph Ward
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800
www.deq.virginia.gov

David K. Paylor
Director

Thomas A. Faha
Regional Director

Federal Operating Permit
Article 1

This permit is based upon the requirements of Title V of the Federal Clean Air Act and Chapter 80, Article 1 of the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution. Until such time as this permit is reopened and revised, modified, revoked, terminated or expires, the permittee is authorized to operate in accordance with the terms and conditions contained herein. This permit is issued under the authority of Title 10.1, Chapter 13, §10.1-1322 of the Air Pollution Control Law of Virginia. This permit is issued consistent with the Administrative Process Act and 9 VAC 5-80-50 through 9 VAC 5-80-300 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution of the Commonwealth of Virginia.

Authorization to operate a Stationary Source of Air Pollution as described in this permit is hereby granted to:

Permittee Name:	Covanta Fairfax, Inc.
Facility Name:	Covanta Fairfax
Facility Location:	9898 Furnace Road Lorton, Virginia 22079
Registration Number:	71920

Permit Number	Effective Date	Expiration Date
NRO71920	June 10, 2016	June 9, 2021

Regional Director

June 10, 2016
Signature Date

Permit consists of 55 pages.
Permit Conditions 1 to 157.
Source Test Report Format
Appendix A (Reserved)
Appendix B (Reserved)

Table of Contents

Facility Information

Permittee
Covanta Fairfax, Inc.
445 South Street
Morristown, NJ. 07960

Responsible Official
Frank Capobianco
Facility Manager

Facility
Covanta Fairfax, Inc.
9898 Furnace Road
Lorton, Virginia 22079

Contact Person
Joseph Herrmann
Environmental Specialist
(973) 882-7285

County-Plant Identification Number: 51-059-00560

Facility Description: NAICS 562213/SIC 4953 – Covanta Energy owns and operates a large municipal solid waste combustion facility with energy recovery under an agreement with Fairfax County. The facility maintains four 750 ton per day (nominal) waste combustion units with integrated reciprocating grate stokers and water wall boilers. Each combustor is also equipped with two natural gas-fired auxiliary burners. Products of combustion from each combustor are controlled by good combustion practices, ammonia injection (selective non-catalytic reduction), a combination of spray dyer and fabric filter baghouse, and activated carbon injection to reduce nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM and PM-10), acid gases, metals and complex organics among others. Steam generated by the boilers drive turbines that generate electricity for sale to the local electric company.

The facility operates under the Prevention of Significant Deterioration Permit dated January 12, 1987, as amended February 18, 1988, and a Consent Agreement dated April 3, 1998, implementing Reasonably Available Control Technology. The requirements of the RACT consent agreement have been fulfilled. The facility is also subject to state Rule 4-54 (9 VAC 5-40-7950 et seq.) of the Virginia Air Pollution Control Board's Regulations for the Control and Abatement of Air Pollution. This rule implements various emissions limitations, operating, compliance, and record keeping requirements established by the Emissions Guidelines, Subpart Cb. Rule 4-54 is the approved Clean Air Act Section 111(d)/129 plan for Large Municipal Waste Combustor (MWC) Units regulated under 40 CFR 62, Subpart VV sections 62.11640 through 62.11642 and was approved on October 29, 2004.

Emission Units

Equipment to be operated consists of:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Fuel Burning Equipment (Municipal Waste Combustors (MWC) and Auxiliary Burners)							
001-01 through 004-01	001-004	Ogden-Martin MSW Combustor with Martin-Stoker boiler system (4 MWC units)	343.75 MMBtu (heat input) (each MWC unit)	SNCR (ammonia injection); CY2000	---	NOx	PSD permit, dated January 12, 1987, amended February 18, 1988. NOx RACT Consent Agreement, dated April 3, 1998.
				Flakt spray dryer; CY1988	1, 4, 7 & 10	SO2 & MWC acid gases	
				Flakt fabric filter baghouse; CY1988	3, 6, 9 & 12	MWC metals & PM/PM_{10}	
				Activated carbon injection system	---	Mercury	
001-02 A,B through 004-01 A,B	001-004	Zurn natural gas-fired auxiliary burners (2 each MWC unit)	103.125 MMBtu (heat input) (each MWC unit)	Same as for the MWCs	Same as for the MWCs	Same as for the MWCs	Same as for the MWCs
Cold Solvent Degreasers							
005	n/a	Cold solvent degreasers	n/a	None	---	---	---
Emergency Diesel Generator							
IU-10	008-01	Emergency Diesel Engine Generator Set	435 bhp	None	---	---	---

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

Municipal Waste Combustor (MWC) Equipment– (001-01, 001-02, 002-01, 002-02, 003-01, 003-02, 004-01 and 004-02)

1. **MWC Limitations** – Particulate matter and municipal waste combustor (MWC) metal emissions, including cadmium, lead and mercury, from each MWC furnace shall be controlled by fabric filter baghouses. The fabric filter baghouses shall be provided with adequate access for inspection and shall be in operation when the MWC furnaces are operating.
(9 VAC 5-80-110 and Condition 8 and 9 of 1/12/87 PSD Permit)

2. **MWC Limitations** – Carbon monoxide (CO), nitrogen oxides (NO_x) and volatile organic compound (VOC) emissions from each MWC furnace shall be controlled by furnace design, proper operation, and good combustion practices as listed in Condition 12.
(9 VAC 5-80-110 and Condition 10 of 1/12/87 PSD Permit)

3. **MWC Limitations** – Municipal waste combustor organics (dioxins/furans) shall be controlled by proper operation and good combustion practices as listed in Condition 12.
(9 VAC 5-80-110 and Condition 16 of 1/12/87 PSD Permit)

4. **MWC Limitations** – The approved fuel for each municipal waste combustor (MWC) is municipal solid waste (MSW). A change in the fuel may require a permit to modify and operate. Acceptable municipal solid waste includes household waste, commercial/retail waste, institutional waste, incidental quantities of renovation waste, limited quantities of used pharmaceuticals from approved community/government collection events, and other waste with emission characteristics similar to the acceptable wastes as determined by the permittee and approved by the Regional Air Permit Manager, Northern Regional Office, or a combination thereof as defined in this condition. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, non-manufacturing activities at industrial facilities, and other similar establishments or facilities. Any other waste shall be reviewed in accordance with the approved Material Review Process (MRP). All Commercial/retail waste shall be mixed with other approved fuels prior to charging to the combustor, in order to prevent discreet loads from being charged to the boiler. Institutional waste includes material discarded by schools, non-medical waste discarded by hospitals, material discarded by non-manufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Municipal solid waste does not include hazardous waste, as defined by federal and state waste regulations. In addition, municipal solid waste may not include industrial process or manufacturing waste, used oil, sewage sludge, wood pallets, construction, renovation, and demolition wastes, medical waste, motor vehicles (including motor vehicle parts or vehicle

fluff), unless approved via the approved MRP. The permittee shall monitor the waste delivered to the facility to ensure that only MSW as defined herein is being processed by the facility. This definition of MSW may in the future be expanded to include additional waste types not identified in this condition. To facilitate any revision, the permittee shall submit requests in writing to the Regional Air Permit Manager, Northern Regional Office. Information on waste composition and emissions characterizations shall be included with any submittal. The request and supporting information will be reviewed and evaluated to determine new source review applicability. The permit will be revised in accordance with the procedures established in the appropriate permitting regulations in the Regulations for the Control and Abatement of Air Pollution.
(9 VAC 5-80-110 and Condition 5 and 22 of 1/12/87 PSD Permit)

5. **MWC Limitations** – The approved auxiliary fuel for each MWC is natural gas. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-110 and Condition 11 of 1/12/87 PSD Permit)

6. **MWC Limitations** – The charging rate of each MWC shall not exceed 750 dry tons per day of MSW, adjusted for moisture content. For the purpose of this permit, the moisture adjustment shall be 18 percent by weight, resulting in an effective wet-based limit of 885 tons per day per MWC. Compliance shall be demonstrated based on monitoring conducted in accordance with Condition 21. This limit on charging rate applies on a thirty-day rolling average. The permittee may request the use of alternate moisture content by submitting information to support the use of the alternative. This may consist of an alternative value, or a process or methodology to determine a variable value. The request and supporting information must be submitted to the Air Permit Manager, Northern Regional Office, for consideration and approval prior to use. Appendix A to this permit will serve as the repository of the alternative values and approaches such that changes can be made to the value or approaches without amending the main body of this permit. The permit will be revised in accordance with the procedures established in 9 VAC 5-80-190 as appropriate.
(9 VAC 5-80-110 and Condition 5 of 1/12/87 PSD Permit)

7. **MWC Limitations** – The facility shall process no more than 1,095,000 tons per year of MSW, corrected for moisture. For the purpose of this permit, the moisture adjustment shall be 18 percent by weight, resulting in an effective wet-based limit of 1,292,100 tons per year. Compliance shall be demonstrated based on daily waste monitoring conducted in accordance with Condition 21. The permittee may request the use of alternate moisture content as provided in Condition 6.
(9 VAC 5-80-110 and Condition 5 of 1/12/87 PSD Permit)

8. **MWC Limitations** – The permittee shall operate each MWC at a load level no greater than 110 percent of the maximum demonstrated unit load for that unit. Maximum demonstrated load is defined as the highest 4-hour arithmetic average MWC steam load achieved during four consecutive hours during the most recent dioxin/furan performance test. Exceptions to this requirement are as follows:

   a. During the annual dioxin/furan performance test and the 2 weeks preceding the annual dioxin/furan performance test, the MWC unit load limit is not applicable.

   b. The MWC unit load limit may be waived in accordance with written permission granted by the Air Compliance Manager, Northern Regional Office, for the purpose of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance, or advancing the state-of-the-art for controlling facility emissions.

   c. During calendar years where no performance test for dioxin/furans are required due to the reduced testing schedule as authorized in Condition 76, the affected MWC unit shall conform to the maximum demonstrated MWC unit load level limit as determined during the most recent performance test.

   d. Compliance shall be demonstrated based on data derived from steam flow or feed water flow measurements required in Condition 23.

   (9 VAC 5-80-110 and 9 VAC 5-40-8120 A)

9. **MWC Limitations** – The permittee shall maintain the temperature at the inlet of each fabric filter baghouse to within but no greater than 17 °C of the maximum demonstrated inlet fabric filter baghouse temperature. Maximum demonstrated inlet fabric filter baghouse temperature is defined as the highest 4-hour arithmetic average flue gas temperature measured at the fabric filter baghouse inlet during four consecutive hours during the most recent dioxin/furan performance testing. Exceptions to this requirement are as follows:

   a. During the annual dioxin/furan performance test and the 2 weeks preceding the annual dioxin/furan performance test, the fabric filter baghouse inlet temperature limit is not applicable.

   b. During calendar years where no performance test for dioxin/furans are required due to the reduced testing schedule as authorized in Condition 76, the affected MWC unit shall conform to the fabric filter baghouse inlet temperature limit as determined during the most recent performance test.

c. Compliance shall be demonstrated based on data derived from temperature measurements required in Condition 25. These data shall be maintained on site and made available to Department of Environmental Quality (DEQ) personnel in order to determine compliance status.

(9 VAC 5-80-110 and 9 VAC 5-40-8120 B)

10. **MWC Limitations** – The permittee shall maintain the carbon injection system operating parameters that are the primary indicators of carbon mass feed rate to levels equal to or greater than those documented during the most recent mercury performance test. The permittee has identified gravimetric feed rate as the preferred indicator of carbon mass feed rate. Compliance shall be demonstrated based gravimetric feed rate measurements required in Condition 28. These data shall be maintained on site and made available to DEQ personnel in order to determine compliance status. During the annual dioxin/furan performance test and the two weeks preceding the annual dioxin/furan performance test, the MWC carbon injection rate is not applicable.
(9 VAC 5-80-110, 9 VAC 5-40-8140 J and NSPS Subpart Eb §60.53b (b)(2) and §60.53b (c)(2))

11. **MWC Limitations** – The permittee shall monitor and record the pressure drop across each fabric filter baghouse on a daily basis. These data shall be maintained on site and made available to DEQ personnel in order to determine compliance status.
(9 VAC 5-80-110 and Condition 15 of 1/12/87 PSD Permit)

12. **MWC Limitations** – The permittee shall operate and maintain each MWC unit utilizing methods and techniques consistent with proper operation and good combustion practices, and in a manner consistent with good air pollution control practices of minimizing emissions. For the purpose of this permit, at a minimum, proper operation and good combustion practices shall be demonstrated by the following:

a. Compliance with maximum MWC unit load level in Condition 8,

b. Compliance with the fabric filter baghouse inlet temperature level in Condition 9,

c. Maintaining minimum boiler/furnace temperature of 1800 °F averaged over a four-hour block (as determined by boiler roof-top temperature above 1135 °F, four-hour block average). This condition applies when each MWC unit is combusting MSW and does not apply when each MWC unit is only combusting auxiliary fuel.

d. Maintaining appropriate and stable excess air established to accommodate the variable energy and moisture content of the waste, as confirmed by hourly steam generation data,

e. Compliance with the CO emission standard in Condition 13 and CO emission limit in Condition 15, as confirmed by the CO monitoring system required in Condition 51, and

f. Compliance with the opacity limit in Condition 17, as confirmed by the opacity monitoring systems required in Condition 30.

(9 VAC 5-80-110 and Condition 10 of 1/12/87 PSD Permit)

13. **MWC Limitations (Rule 4-54 Emission Standards)** – Emissions from the operation of each MWC unit shall not exceed the limits specified below:

a. <u>Particulate Matter (PM):</u> 27 milligrams per dry standard cubic meter, corrected to 9 percent oxygen (O_2).
(9 VAC 5-40-7970)

b. <u>Carbon Monoxide (CO):</u> 100 parts per million by volume, corrected to 7 percent O2, dry basis, calculated as a 4-hour block arithmetic average. This 4-hour block average is defined as the average of four consecutive one-hour emission concentrations measured over periods of time from 12:00 midnight to 4 a.m., 4a.m. to 8 a.m., 8 a.m. to 12:00 noon, 12:00 noon to 4 p.m., 4p.m. to 8 p.m., and 8 p.m. to 12:00 midnight. (The 4-hour block average calculation should exclude those hours in which no waste was being combusted for the full hour.)
(9 VAC 5-40-7980 and 9 VAC 5-40-7960 C)

c. <u>Sulfur Dioxide (SO_2):</u> 29 parts per million by volume, or 25 percent of the potential SO_2 emission concentration (75 percent reduction by weight or volume), corrected to 7 percent O_2, dry basis, whichever is less stringent. Compliance with this standard is based on a 24-hour daily geometric mean. This 24-hour daily average is defined as the geometric mean of all hourly average emission concentrations measured over a 24-hour period between 12:00 midnight and the following midnight. (The 24-hour average calculation should exclude those hours in which no waste was being combusted for the full hour.)
(9 VAC 5-40-8020 and 9 VAC 5-40-7960 C)

d. Nitrogen Oxides (NOx): 205 parts per million by volume, corrected to 7 percent O_2, dry basis, based on a 24-hour daily arithmetic average. This 24-hour daily average is defined as the arithmetic average of all hourly average emission concentrations measured over a 24-hour period between 12:00 midnight and the following 12:00 midnight. (The 24-hour average calculation should exclude those hours in which no waste was being combusted for the full hour.)
(9 VAC 5-40-8050 and 9 VAC 5-40-7960 C)

e. Hydrogen Chloride (HCl): 29 parts per million by volume or 5 percent of the potential HCl emission concentration (95 percent reduction by weight or volume), corrected to 7 percent O_2, dry basis, whichever is less stringent.
(9 VAC 5-40-8030)

f. Cadmium: 0.040 milligrams per dry standard cubic meter, corrected to 7 percent O_2.
(9 VAC 5-40-7990)

g. Lead: 0.44 milligrams per dry standard cubic meter, corrected to 7 percent O_2.
(9 VAC 5-40-8000)

h. Mercury: 0.080 milligrams per dry standard cubic meter or 15 percent of the potential mercury emission concentration (85 percent reduction by weight), corrected to 7 percent oxygen, whichever is less stringent.
(9 VAC 5-40-8010)

i. Dioxin/Furan: 30 nanograms per dry standard cubic meter, expressed as total mass dioxins/furans, corrected to 7 percent oxygen.
(9 VAC 5-40-8040)

Compliance with these emission standards shall be determined by continuous emissions monitors (CEMs) or performance tests as detailed throughout this permit. The permittee may request that compliance with these emission standards be determined using carbon dioxide (CO_2) measurements corrected to an equivalent of 7 percent O_2. If authorized to do so, the permittee shall establish the relationship between O_2 and CO_2 levels as specified in Condition 35.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 D)

14. **MWC Limitations** – The emission standards in Condition 13 apply at all times except during periods of startup, shutdown, and malfunction. Duration of startup, shutdown, or malfunction periods are limited to three hours per occurrence, except as provided below:

a. The startup period commences when the MWC unit begins continuous burning of MSW. This does not include any warm-up period when the MWC unit is combusting natural gas and no MSW is being fed to the combustor.

b. Continuous burning is the continuous, semi-continuous, or batch feeding of MSW for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of MSW solely to provide thermal protection of the grate or hearth during the startup period when MSW is not being fed to the grate is not considered to be continuous burning.

c. For the purpose of compliance with the CO emission limit, if a boiler water level control or loss of combustion air control (e.g., loss of combustion air fan, induced draft fan, combustion grate bar failure) is determined to be a malfunction, the duration of the malfunction period is limited to fifteen hours per occurrence.

d. Maintaining minimum boiler/furnace temperature of 1800 °F averaged over a four-hour block (as determined by boiler roof-top temperature above 1135 °F, four-hour block average). This condition applies when each MWC unit is combusting MSW and does not apply when each MWC unit is only combusting auxiliary fuel.

e. The selected parameters that define normal operation for the facility is when the dry inlet O_2 is less than or equal to sixteen percent, or steam flow is greater than or equal to 70,000 pounds per hour. If either of these conditions is not met, and CFI has ceased feeding MSW into the combustor, the combustor shall be considered shut down.

(9 VAC 5-80-110 and 9 VAC 5-40-8100 B.1)

15. **MWC Limitations** – Emissions from the operation of each MWC unit shall not exceed the limits specified below:

SO2	44.4 lbs/hr	176.6 tons/yr
NOx (as NO_2)	206.3 lbs/hr	716.2 tons/yr
CO	158.1 lbs/hr	60.3 tons/yr
PM	7.5 lbs/hr	30.0 tons/yr
Lead	1.7 lbs/hr	6.7 tons/yr

Compliance shall be determined based on CEMS data, compliance with control device operational parameters/limitations, fuel restrictions and steam limits, MWC operational data, results of annual stack tests, record keeping and any other relevant information necessary which can provide credible evidence of emissions performance. Annual emissions shall be calculated on a calendar year basis.
(9 VAC 5-80-110 and Condition 6 of 1/12/87 PSD Permit)

16. **MWC Limitations** – Non criteria pollutant emissions from the operation of each MWC unit shall not exceed the limits specified below:

Cadmium	4.7×10^{-2} lbs/hr	0.19 tons/yr
Mercury	0.33 lbs/hr	1.32 tons/yr
Hydrogen Chloride (HCl)	28.53 lbs/hr	113.6 tons/yr
Total Dioxins & Furans (US EPA Equivalents)	2.0 ng/m^3	2.42×10^{-6} tons/yr
Hydrogen Fluoride (HF)	0.45 lbs/hr	1.78 tons/yr
Sulfuric Acid Mist	7.1 lbs/hr	28.3 tons/yr

Compliance with the limits shall be determined based on compliance with control device operational parameters/limitations, fuel restrictions and steam limits, MWC operational data, results of the annual stack tests, record keeping and any other relevant information necessary which can provide credible evidence of emissions performance. Annual emissions shall be calculated on a calendar year basis.
(9 VAC 5-80-110 and Condition 7 of 1/12/87 PSD Permit)

17. **MWC Limitations** – The permittee shall not cause or permit to be discharged into the atmosphere from each MWC unit any visible emissions in excess of 10 percent opacity during any six-minute period. Compliance shall be demonstrated annually as provided in Condition 71. Continuous opacity monitoring data collected for the purpose of compliance with this condition shall be used as an indicator of proper operation and good combustion practices and as a tool to implement corrective actions as necessary. The permittee may be required to conduct a retest of visible emissions after any corrective actions have been completed.
(9 VAC 5-80-110, 9 VAC 5-40-8060 and Condition 20 of 1/12/87 PSD permit)

18. **MWC Limitations** – The permittee shall not cause or permit to be discharged into the atmosphere visible emissions from combustion ash from an ash conveying system (including conveyor transfer points) in excess of 5 percent of the observation period (9 minutes per 3-hour period) as determined by Reference Method 22 observations as specified in Condition 79, except as provided in a. and b. below:

    a. The emission limit shall not cover visible emissions discharged inside buildings or enclosures of ash conveying systems, however the emission limit shall cover visible emissions discharged to the atmosphere from buildings or enclosures of ash conveying systems.

    b. The emission limit shall not apply during periods of maintenance and repair of the ash handling system.

    (9 VAC 5-80-110 and 9 VAC 5-40-8070)

19. **MWC Limitations** – The Department of Environmental Quality, Northern Regional Office may notify the permittee when meteorological conditions are favorable for the potential buildup of ozone concentrations in the area for more than 24 hours, when they exceed the National Ambient Air Quality Standard (8-hr standard of 0.08 ppm) and when concentrations are no longer expected to exceed the standard. A Code Red ozone day forecast by the local air quality advisory network shall be considered appropriate notification of such an event. After either of these notifications, the permittee shall take reasonable actions to minimize impact of the facility during periods of expected adverse air quality.
(9 VAC 5-80-110 and Condition 24 of 1/12/87 PSD permit)

20. **MWC Monitoring** – The permittee shall monitor and record daily hours of operation of each MWC unit.
(9 VAC 5-80-110 and Condition 18 of 1/12/87 PSD Permit)

21. **MWC Monitoring** – The permittee shall monitor and record the daily mass (in tons) of MSW combusted in each MWC. This shall be accomplished by measuring waste in delivery trucks as each truck passes over scales upon entering the facility, and subtracting the estimated portion of the daily waste stream that is separated for other disposal options prior to transfer to the pit. The sum of the delivery records minus the separated portion for each day divided by four units shall be used to approximate the quantity of waste that is combusted by each MWC over a rolling thirty-day period. The permittee may request or the DEQ may require the use of steam measurements as a surrogate to waste measured across the scale as the method to demonstrate compliance with the waste capacity and throughput limits in Condition 6 and 7. The request and supporting information must be submitted to the Air Permit Manager for consideration and approval prior to use. At a minimum, the submission should contain the approach, calculation methodology, and procedures to verify the correlation between waste combusted and the steam generated. Appendix B to this permit will serve as the repository of the accepted approach, calculation methodology, and procedures to verify the correlation between waste combusted and the steam generated provided the result utilizing the proposed approach does not trigger state or federal new source review applicability. The permit will be revised in accordance with the procedures established in 9 VAC 5-80-190 as appropriate.
(9 VAC 5-80-110, 40 CFR 60.53 and Condition 18 of 1/12/87 PSD Permit)

22. **MWC Monitoring** – The permittee shall continuously monitor temperature within the furnace to ensure proper operation, good combustion practices and compliance with the temperature requirement in Condition 12.
(9 VAC 5-80-110 and Condition 15 of 1/12/87 PSD Permit)

23. **MWC Monitoring** – The permittee shall demonstrate compliance with load level requirements in Condition 8 based on the procedures specified below:

    a. The permittee shall install, calibrate, maintain, and operate a steam flow meter or a feed water flow meter; measure steam (or feed water) flow in thousand pounds per hour on a continuous basis; and record the output of the monitor. Steam (or feed water) flow shall also be calculated in 4-hour block arithmetic averages. Steam flow measurements shall be made prior to any non-emergency steam venting locations.

    b. Measurement devices such as flow nozzles and orifices are not required to be re-calibrated after they are installed.

c. All signal conversion elements associated with steam (or feed water flow) measurements must be calibrated according to the manufacturer's instructions before each dioxin/furan performance test, and at least once per year.

(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

24. **MWC Monitoring** – The permittee shall determine the maximum demonstrated MWC unit load during each performance test during which compliance with the dioxin/furan emission standard specified in Condition 13 is achieved. The maximum demonstrated MWC unit load shall be the highest 4-hour arithmetic average load achieved during four consecutive hours during the most recent test during which compliance with the dioxin/furan emission limit was achieved. The measured MWC unit loads and calculated maximum demonstrated MWC unit loads required by this condition shall be displayed in the performance test report(s) submitted in accordance with Condition 69.
(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

25. **MWC Monitoring** – The permittee shall install, calibrate, maintain, and operate a device for measuring the temperature of the flue gas stream at the inlet to each fabric filter baghouse on a continuous basis. The temperature shall be calculated in 4-hour block arithmetic averages to determine compliance with the maximum fabric filter baghouse, inlet temperature requirements in Condition 9.
(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

26. **MWC Monitoring** – The maximum demonstrated fabric filter baghouse inlet temperature shall be determined during each performance test for dioxins/furans during which compliance with the dioxin/furan emission standard specified in Condition 13 is achieved. The maximum demonstrated fabric filter baghouse inlet temperature shall be the highest 4-hour arithmetic average temperature achieved at the fabric filter baghouse inlet during four consecutive hours during the most recent test during which compliance with the dioxin/furan limit was achieved.
(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

27. **MWC Monitoring** – During the performance tests for mercury, the permittee shall estimate an average carbon mass feed rate (as specified below) based on carbon injection system operating parameters such as the gravimetric feed rate, hopper volume, hopper refill frequency, or other parameters appropriate to the feed system being employed.

    An average carbon mass feed rate in kilograms per hour or pounds per hour shall be estimated during each performance test for mercury emissions based on an 8-hour average. The mercury test occurs over an 8-hour period; three 2-hour test runs plus two hours to allow for port changes. Though mercury sampling is not being conducted during port changes, carbon injection is continuing in order to support required mercury removal. To obtain representative injection rates, the permittee must therefore maintain the same injection rate during port changes as maintained during the test period prior to the port changes.
    (9 VAC 5-80-110, 9 VAC 5-40-8140 J. and EPA document 0106-00-002-002, page 9-1)

28. **MWC Monitoring** – The permittee shall estimate the total carbon usage of the plant (kilograms or pounds) for each calendar quarter by two independent methods, according to the procedures specified below:

    a. The weight of carbon delivered to the plant, adjusted for silo inventory.

    b. Estimate the average carbon mass feed rate in kilograms per hour or pounds per hour for each hour of operation for each carbon injection system based on the operating parameters specified in Condition 10, and sum the results for carbon injection systems at the plant for the total number of hours of operation during the calendar quarter.

    (9 VAC 5-80-110 and 9 VAC 5-40-8140 J)

29. **MWC Monitoring** – The provisions of 40 CFR 60.13 – Monitoring Requirements, shall apply with regard to the emission standards and limits contained in Conditions 13, and 15 - 17, and installation, evaluation and operation of each CEMS required in this section.
    (9 VAC 5-80-110, 9 VAC 5-40-8140 A. and 40 CFR 60.13)

30. **MWC Monitoring** – The permittee shall install, calibrate, maintain and operate a continuous opacity monitor system (COMS) for measuring opacity from each MWC stack in accordance with the provisions listed below:

    a. The COMS shall be installed, evaluated, and operated in accordance with 40 CFR 60.13.

    b. The output of the COMS shall be recorded on a 6-minute block average basis.

    c. The COMS shall conform to Performance Specification 1 in Appendix B of 40 CFR 60.

    (9 VAC 5-80-110, 9 VAC 5-40-8140 B. and Condition 15 of 1/12/87 of PSD Permit)

31. **MWC Monitoring** – The permittee shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) and record the output of the system for measuring the O_2 or CO_2 content of the flue gas at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides are monitored. The monitor shall be installed, evaluated and operated in accordance with 40 CFR 60.13.
(9 VAC 5-80-110, 9 VAC 5-40-8150 B. and Condition 15 of 1/12/87 PSD Permit)

32. **MWC Monitoring** – The span value of the O_2 (or CO_2) monitor shall be 25 percent O_2 (or CO_2).
(9 VAC 5-80-110 and 9 VAC 5-40-8150 B.1)

33. **MWC Monitoring** – All O_2 or CO_2 CEMS shall conform to Performance Specification 3 in appendix B of 40 CFR 60 except for section 2.3 (relative accuracy requirement).
(9 VAC 5-80-110 and 9 VAC 5-40-8150 B.4)

34. **MWC Monitoring** – The procedures of Appendix F of 40 CFR 60 except for section 5.1.1 (relative accuracy test audit) shall apply to the O_2 or CO_2 CEMS.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 B)

35. **MWC Monitoring** – If CO_2 is selected for use in diluent corrections, the relationship between oxygen and carbon dioxide levels shall be established during performance tests according to the procedures and methods as specified below:

a. The fuel factor equation in Reference Method 3B shall be used to determine the relationship between oxygen and carbon dioxide at a sampling location. Reference method 3, 3A, or 3B, as applicable, shall be used to determine the oxygen concentration at the same location as the carbon dioxide monitor.

b. Samples shall be taken for at least 30 minutes in each hour.

c. Each sample shall represent a 1-hour average.

d. A minimum of three runs shall be performed.

(9 VAC 5-80-110 and 9 VAC 5-40-8150 B)

36. **MWC Monitoring** – The permittee shall install, calibrate, maintain, and operate a continuous emissions monitoring systems (CEMS) for measuring sulfur dioxide (SO_2) emissions prior to the spray dryers and discharged from each MWC stack, and record the output of the systems.
(9 VAC 5-80-110, 9 VAC 5-40-8140 D. and Condition 15 of 1/12/87 PSD Permit)

37. **MWC Monitoring** – Compliance with the SO_2 emission standard contained in Condition 13 shall be determined by using the CEMS specified in Condition 36. The CEMS shall be used to calculate a 24-hour daily geometric average emission concentration or a 24-hour daily geometric average percent reduction using Reference Method 19, sections 4.3 and 5.4, as applicable. Compliance with the SO_2 emission limit shall be determined based on the 24-hour daily geometric average of the hourly arithmetic average emission concentrations using CEMS outlet data if compliance is based on an emission concentration or CEMS inlet and outlet data if compliance is based on a percent reduction.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 D)

38. **MWC Monitoring** – At a minimum, valid SO_2 CEMS hourly averages shall be obtained as specified below, for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that each MWC unit is combusting MSW.

   a. At least two data points per hour shall be used to calculate each 1-hour arithmetic average.

   b. Each SO_2 1-hour arithmetic average shall be corrected to 7 percent O_2 on an hourly basis using the 1-hour arithmetic average of the O_2 (or CO_2) CEMS data.

   (9 VAC 5-80-110 and 9 VAC 5-40-8140 D)

39. **MWC Monitoring** – The 1-hour arithmetic averages required under Condition 37 shall be expressed in parts per million corrected to 7 percent O_2 (dry basis) and used to calculate the 24-hour daily geometric average emission concentrations and daily geometric average emission percent reductions. The hourly average shall be calculated based on completion of a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period, as specified in 40 CFR 60.13(e)(2).
(9 VAC 5-40-8140 D)

40. **MWC Monitoring** – All valid SO_2 CEMS data shall be used in calculating average emission concentrations and percent reductions even if the minimum CEMS data requirements of Condition 38 are not met.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 D)

41. **MWC Monitoring** – When SO_2 emissions data are not obtained because of CEMS breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained by using other monitoring systems, as approved in writing by the Air Compliance Manager, Northern Regional Office and U.S. Environmental Protection Agency (EPA), or Reference Method 19 to provide, as necessary, valid emissions data for a minimum of 75 percent of the hours per day that the facility is operated and combusting MSW for 90 percent of the days per calendar quarter that each MWC is operated and combusting MSW.

    Whenever a continuous emission monitor is malfunctioning or will be out of service for calibration, maintenance or repair for a period of twenty four hours or more, surrogate compliance monitoring of the following parameters may be implemented with approval of the DEQ until such time as the emission monitor is back in operation:

For the sulfur dioxide outlet monitor, the permittee shall maintain slurry flow at the rate at which it was being fed prior to the malfunction or out of service period and will record the slurry feed rate twice per hour.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 D)

42. **MWC Monitoring** – The SO_2 CEMS shall be operated according to Performance Specification 2 in appendix B of 40 CFR 60.

    a. During each relative accuracy test run of the continuous emission monitoring system required by Performance Specification 2 in Appendix B of 40 CFR 60, SO_2 and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the CEMS and the test methods specified below.

        (i) For SO_2, Reference Method 6, 6A, or 6C shall be used.

        (ii) For oxygen (or carbon dioxide), Reference Method 3, 3A, or 3B, as applicable, shall be used.

    b. The span value of the CEMS at the inlet to the sulfur dioxide control device shall be 125 percent of the maximum estimated hourly potential SO_2 of the MWC unit. The span value of the CEMS at the outlet of the SO_2 control device shall be 50 percent of the maximum estimated hourly potential SO_2 emissions of the MWC unit.

    (9 VAC 5-80-110 and 9 VAC 5-40-8140 D)

43. **MWC Monitoring** – Quarterly accuracy determinations and daily calibration drift tests on the SO_2 CEMS shall be performed in accordance with Procedure 1 in Appendix F of 40 CFR 60.
    (9 VAC 5-80-110 and 9 VAC 5-40-8140 D.13)

44. **MWC Monitoring** – The permittee shall install, calibrate, maintain, and operate a CEMS for measuring nitrogen oxides (NO_x) discharged from each MWC stack and record the output of the system.
    (9 VAC 5-80-110, 9 VAC 5-40-8140 G. and Condition 15 of 1/12/87 PSD Permit)

45. **MWC Monitoring** – Compliance with the NO_x emissions limits in Condition 13 shall be determined by using the CEMS specified in Condition 44. The CEMS shall be used to calculate a 24-hour daily arithmetic average emission concentration using Reference Method 19, section 4.1. Compliance shall be determined based on the 24-hour daily arithmetic average of the 1-hour arithmetic average emission concentrations, expressed in parts per million by volume (dry basis), using CEMS outlet data. The hourly average shall

be calculated based on completion of a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period, as specified in 40 CFR 60.13(e)(2).
(9 VAC 5-80-110 and 9 VAC 5-40-8140 G)

46. **MWC Monitoring** – At a minimum, valid NOx CEMS hourly averages shall be obtained as specified below for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that each MWC unit is combusting MSW.

    a. At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.

    b. Each NOx 1-hour arithmetic average shall be corrected to 7 percent O_2 on an hourly basis using the 1-hour arithmetic average of the O_2 (or CO_2) CEMS data.

    (9 VAC 5-80-110 and 9 VAC 5-40-8140 G)

47. **MWC Monitoring** – All valid NOx CEMS data must be used in calculating emission averages even if the minimum CEMS data requirements of Condition 46 are not met.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 G)

48. **MWC Monitoring** – When NO_x continuous emissions data are not obtained because of CEMS breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained using other monitoring systems as approved in writing by the Air Compliance Manager, Northern Regional Office and EPA, or Reference Method 19, to provide, as necessary, valid emissions data for a minimum of 75 percent of the hours per day for 90 percent of the days per calendar quarter each MWC unit is operated and combusting MSW.

    Whenever a NOx CEMS continuous emission monitor is malfunctioning or will be out of service for calibration, maintenance or repair for a period of twenty four hours or more, surrogate compliance monitoring of the following parameters may be implemented with approval of the DEQ until such time as the emission monitor is back in operation.

    For the nitrogen oxide monitors, the permittee shall maintain ammonia flow at the rate at which it was being fed prior to the malfunction or out of service period and will record the ammonia feed rate twice per hour.
    (9 VAC 5-80-110 and 9 VAC 5-40-8140 G)

49. **MWC Monitoring** – The permittee shall operate the NOx CEMS according to Performance Specification 2 in Appendix B of 40 CFR 60 and shall follow the procedures and methods below.

a. During each relative accuracy test run of the CEMS required by Performance Specification 2 in Appendix B of 40 CFR 60, NOx and oxygen (or carbon dioxide) data shall be collected concurrently (or within a 30- to 60-minute period) by both the continuous emission monitors and the test methods specified below.

(i) For NOx, Reference Methods 7, 7A, 7C, 7D or 7E shall be used.

(ii) For oxygen (or carbon dioxide), Reference Method 3, 3A, or 3B, as applicable, shall be used.

b. The span value of the CEMS shall be 125 percent of the maximum estimated hourly potential NOx emissions of the MWC unit.

(9 VAC 5-80-110 and 9 VAC 5-40-8140 G)

50. **MWC Monitoring** – Quarterly accuracy determinations and daily calibration drift tests for the NOx CEMS shall be performed in accordance with Procedure 1 in Appendix F of 40 CFR 60.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 G)

51. **MWC Monitoring** – The permittee shall install, calibrate, maintain, and operate a CEMS for measuring CO at the combustor outlet or in the exhaust stack and record the output of the system.
(9 VAC 5-80-110, 9 VAC 5-40-8150 C. and Condition 15 of 1/12/87 PSD Permit)

52. **MWC Monitoring** – Compliance with the CO emissions limit in Condition 13 shall be determined by using the CEMS specified in Condition 51 based on a 4-hour block arithmetic average. The 4-hour block arithmetic average shall be calculated from 1-hour arithmetic averages expressed in parts per million by volume corrected to 7 percent oxygen (dry basis). The 1-hour arithmetic averages shall be calculated using the data points generated by the continuous emission monitoring system.
(9 VAC 5-40-8150 C)

53. **MWC Monitoring** – At a minimum, valid CO CEMS hourly emissions averages shall be obtained as specified below for 75 percent of the operating hours per day for 90 percent of the operating days per calendar quarter that each MWC unit is combusting MSW.

a. At least 2 data points per hour shall be used to calculate each 1-hour arithmetic average.

b. Each CO 1-hour arithmetic average shall be corrected to 7 percent O2 on an hourly basis using the 1-hour arithmetic average of the O2 (or CO2) CEMS data.

(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

54. **MWC Monitoring** – All valid CO CEMS date must be used in calculating emission averages even if the minimum CEMS data requirements of Condition 53 are not met.
(9 VAC 5-40-8150 C)

55. **MWC Monitoring** – When carbon monoxide continuous emission data are not obtained because of continuous emission monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, emissions data shall be obtained using other monitoring systems, as approved in writing by the Regional Air Compliance Manager, Northern Regional Office and EPA, or Reference Method 10 to provide, as necessary, the minimum valid emission data.
(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

56. **MWC Monitoring** – The permittee shall operate the CO CEMS according to Performance Specification 4A in Appendix B of 40 CFR 60 and shall follow the procedures and methods below:

a. During each relative accuracy test run of the CEMS performed in accordance with Performance Specification 4A, CO and O_2 (or CO_2) data shall be collected concurrently (or within a 30- to 60-minute period) by both the CEMS and the test methods specified below:

(i) For carbon monoxide, Reference Method 10, 10A, or 10B.

(ii) For oxygen (or carbon dioxide), Reference Method 3, 3A, or 3B, as applicable.

b. The span value of the CO CEMS shall be 125 percent of the maximum estimated hourly potential CO emissions of the each MWC unit.

(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

57. **MWC Monitoring** – Quarterly accuracy determinations and daily calibration drift tests for the CO CEMS shall be performed in accordance with Procedure 1 in Appendix F of 40 CFR 60.
(9 VAC 5-80-110 and 9 VAC 5-40-8150 C)

58. **MWC Recordkeeping** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Air Compliance Manager, Northern Regional Office. These records shall include, but are not limited to; those provided in Conditions 59 through 66 below and shall include the calendar date for each record. The records shall be maintained onsite in either paper copy or computer-readable format, unless the Air Compliance Manger approves an alternative format, and shall be available on-site for inspection by DEQ for a period of at least five years.
(9 VAC 5-80-110, 9 VAC 5-40-8160 B, 9 VAC 5-40-8160 B.1., 9 VAC 5-40-8160 H and Condition 7 of Part II of 1/12/87 PSD Permit)

59. **MWC Recordkeeping** – The permittee shall record the emission concentrations, parameter data and calculated emission rates measured and determined as specified below:

a. All 6-minute block average opacity levels as specified in Condition 30.

b. All 1-hour average SO_2 emission concentrations as specified in Condition 37.

c. All 1-hour average NOx emission concentrations as specified in Condition 45.

d. All 1-hour average CO emission concentrations as specified in Condition 52.

e. All 24-hour daily geometric average SO_2 emission concentrations and all 24-hour daily geometric average percent reductions in SO2 emissions as specified in Condition 37.

f. All 24-hour daily arithmetic average NOx emission concentrations as specified in Condition 45.

g. All 4-hour block or 24-hour daily arithmetic average CO emission concentrations as specified in Condition 52.

h. All 4-hour block arithmetic average MWC unit load levels and fabric filter inlet temperatures as specified in Condition 9.

(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

60. **MWC Recordkeeping** – The permittee shall record each occurrence:

a. Each calendar date for which the minimum number of hours of any of the data specified in subsections (i) through (v) of this condition have not been obtained including reasons for not obtaining sufficient data and a description of corrective actions taken.
   (i) Sulfur dioxide emissions data;
   (ii) Nitrogen oxides emissions data;
   (iii) Carbon monoxide emissions data;
   (iv) Municipal waste combustor unit load data; and
   (v) Particulate matter control device temperature data.

b. The SO_2 emissions data, NO_x emissions data, or operational data (i.e., CO emissions, unit load, and fabric filter baghouse inlet temperature) that have been excluded from the calculation of average emission concentrations or parameters, and the reasons for excluding the data.

(9 VAC 5-80-110 and 9 VAC 5-40-8160 B.5 & B.6)

61. **MWC Recordkeeping** – The permittee shall record the results of daily drift tests and quarterly accuracy determinations for SO_2, NO_x, and CO CEMS, as required under Appendix F of 40 CFR 60, Procedure 1.
(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

62. **MWC Recordkeeping** – The test reports documenting the results of all annual performance tests listed below, shall be recorded along with supporting calculations.

a. The results of all annual performance tests conducted to determine compliance with the particulate matter, opacity, beryllium, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, hydrogen fluoride, sulfuric acid and fugitive ash emission limits.

b. For all dioxin/furan performance tests, the maximum demonstrated MWC unit load and maximum demonstrated fabric filter baghouse inlet temperature (for each fabric filter baghouse) shall be recorded.

(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

63. **MWC Recordkeeping** – The permittee shall record the following data related to the activated carbon injection system.

a. The average carbon mass feed rate (in kilograms per hour or pounds per hour) estimated as required in Condition 27 during all annual performance tests for mercury emissions, with supporting calculations. The average carbon mass feed rate shall be based on an 8-hour average.

b. The average carbon mass feed rate (in kilograms per hour or pounds per hour) estimated for each hour of operation as required in Condition 28, with supporting calculations.

c. The total carbon usage for each calendar quarter estimated as specified in Condition 28, with supporting calculations.

d. Carbon injection system operating parameter data for the parameter(s) that are the primary indicator(s) of carbon feed rate (e.g., gravimetric feed rate) as specified in Condition 27.

(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

64. **MWC Recordkeeping** – The permittee shall record the calendar dates and parameter data when the average carbon mass feed rates were less than the hourly carbon feed rates estimated during performance tests for mercury, with reasons for such feed rates and a description of corrective actions taken.
(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

65. **MWC Recordkeeping** – The permittee shall record the calendar dates and parameter data when the carbon injection system operating parameter(s) that are the primary indicator(s) of carbon mass feed rate (e.g. gravimetric feed rate) are below the level(s) estimated during the performance tests, with reasons for such occurrences and a description of corrective actions taken.
(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

66. **MWC Recordkeeping** – The permittee shall record and maintain records of the hours of operation of each MWC unit and refuse combusted by each MWC unit.
(9 VAC 5-80-110, 40 CFR 60.53 and Condition 18 of 1/12/87 PSD Permit)

67. **MWC Testing** – In order to facilitate continuing compliance assessments, the permitted facility shall be constructed so as to allow for safe emissions testing and monitoring upon reasonable notice at any time, using appropriate methods. Test ports shall be provided when requested at the appropriate locations in accordance with the applicable performance specifications and test methods (reference 40 CFR Part 60, Appendix B).
(9 VAC 5-80-110 and Condition 12 of 1/12/87 PSD Permit)

68. **MWC Testing** – The procedures and test methods presented in the Conditions 70 through 84 shall be used to demonstrate compliance with the emission standards provided in Conditions 13 and emission limits in Conditions 15 through 18 for particulate matter, cadmium, mercury, lead, hydrogen chloride, dioxin/furan, hydrogen fluoride, sulfuric acid mist, opacity and fugitive ash following the provisions of 40 CFR 60.8, with the exception of Paragraph (a).
(9 VAC 5-80-110, 9 VAC 5-40-8140 A. and 40 CFR 60.8)

69. **MWC Testing** – The permittee shall submit a test protocol at least thirty days prior to the testing required in Conditions 70 through 80. The protocol(s) may contain notification and information related to one or more performance tests. Results of tests shall be reported and data reduced as set forth in 9 VAC 5-50-30. The details of the tests are to be arranged with the Air Compliance Manager, Northern Regional Office. Two copies (one paper copy, and one on removable electronic media) of the test results shall be submitted to the Air Compliance Manager, Northern Regional Office within sixty days after test completion and shall conform to the test report format enclosed with this permit.
(9 VAC 5-80-110, 9 VAC 5-50-30 and Condition 14 of 1/12/87 PSD Permit)

70. **MWC Testing** – The permittee shall conduct an emission test for particulate matter from each MWC each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission standard in Condition 13 and emission limit in Condition 15 using the test methods and procedures provided below:

a. Reference Method 1 shall be used to select sampling site and number of traverse points.

b. Reference Method 3, 3A, or 3B, as applicable, shall be used for gas analysis.

c. Reference Method 5 shall be used for determining compliance with the particulate matter emission standard contained in Condition 13 and emission limit in Condition 15. The minimum sample volume shall be 1.7 cubic meters. The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than 160 +/- 14 °C. An O2 or CO2 measurement shall be obtained simultaneously with each Reference Method 5 run.

d. As specified in 9 VAC 5-40-30, all performance tests shall consist of three test runs. The average of the particulate matter emission concentrations from the three test runs, one of which shall include normal soot-blowing operations, shall be used to determine compliance.

(9 VAC 5-80-110, 9 VAC 5-40-8140 B. and Condition 13 of 1/12/87 PSD Permit)

71. **MWC Testing** – The permittee shall conduct an emission test for opacity from each MWC each calendar year (no more than 12 calendar months following the previous emission test) using Reference Method 9 to demonstrate compliance with the emission limit in Condition 17.
(9 VAC 5-80-110, 9 VAC 5-40-8140 B. and Condition 13 of 1/12/87 PSD Permit)

72. **MWC Testing** – The permittee shall conduct emissions tests for cadmium and lead from each MWC each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission standards in Condition 13 and emission limits in Conditions 15 and 16 using the test methods and procedures provided below:

    a. Reference Method 1 shall be used for determining the location and number of sampling points.

    b. Reference Method 3, 3A, or 3B, as applicable, shall be used for flue gas analysis.

    c. Reference Method 29 shall be used for determining compliance with the cadmium and lead emission standards and limits.

    d. An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Reference Method 29 test run for cadmium and lead.

    e. All performance tests shall consist of a minimum of three test runs conducted under representative full load operating. The average of the cadmium or lead emission concentrations from three test runs or more shall be used to determine compliance.

    (9 VAC 5-80-110, 9 VAC 5-40-8140 C. and Condition 13 of 1/12/87 PSD Permit)

73. **MWC Testing** – The permittee shall conduct an emission test for mercury from each MWC each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission standard in Conditions 13 and emission limit in Condition 16 using the test methods and procedures provided below:

    a. Reference Method 1 shall be used for determining the location and number of sampling points.

    b. Reference Method 3, 3A, or 3B, as applicable, shall be used for flue gas analysis.

    c. Reference Method 29 shall be used to determine the mercury emission concentration. The minimum sample volume when using Reference Method 29 for mercury shall be

1.7 cubic meters.

d. An O2 (or CO2) measurement shall be obtained simultaneously with each Reference Method 29 test run for mercury.

e. The percent reduction in the potential mercury emissions (%PHg) is computed using the following equation:

$$(\%PHg) = \left(\frac{Ei - Eo}{Ei}\right) x\, 100$$

where:

%PHg = percent reduction of the potential mercury emissions achieved.

Ei = potential mercury emission concentration measured at the control device inlet, corrected to 7 percent oxygen (dry basis).

Eo = controlled mercury emission concentration measured at the mercury control device outlet, corrected to 7 percent oxygen (dry basis).

f. All performance tests shall consist of a minimum of three test runs conducted under representative full load operating conditions. The average of the mercury emission concentrations or percent reductions from three test runs or more is used to determine compliance.

(9 VAC 5-80-110, 9 VAC 5-40-8140 C. and Condition 13 of 1/12/87 PSD Permit)

74. **MWC Testing** – The permittee shall conduct and emission test for hydrogen chloride from each MWC each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the hydrogen chloride emission standard in Condition 13 and emission limit in Condition 16 using the test methods and procedures provided below:

a. Reference Method 26 or 26A, as applicable, shall be used to determine the hydrogen chloride emission concentration. The minimum sampling time for Reference Method 26 shall be 1 hour.

b. An O2 (or CO2) measurement shall be obtained simultaneously with each Reference Method 26 test run for hydrogen chloride.

c. The percent reduction in potential hydrogen chloride emissions (% P_{HCl}) is computed using the following equation:

$$(\%PHCl) = \left(\frac{Ei - Eo}{Ei}\right) x\, 100$$

where:
%PHCl = percent reduction of the potential hydrogen chloride emissions achieved.

Ei = potential hydrogen chloride emission concentration measured at the control device inlet, corrected to 7 percent oxygen (dry basis).

Eo = controlled hydrogen chloride emission concentration measured at the mercury control device outlet, corrected to 7 percent oxygen (dry basis).

d. All performance tests shall consist of three test runs under representative full load operating conditions. The average of the hydrogen chloride emission concentrations or percent reductions from the three test runs shall be used to demonstrate compliance.

(9 VAC 5-40-8140 E., 9 VAC 5-80-1180 and Condition 13 of 1/12/87 PSD Permit)

75. **MWC Testing** – The permittee shall conduct an emission test for dioxin/furan each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission standard in Condition 13 and emission limit in Condition 16 using the test methods and procedures provided below:

a. Reference Method 1 shall be used for determining the location and number of sampling points.

b. Reference Method 3, 3A, or 3B, as applicable, shall be used for flue gas analysis.

c. Reference Method 23 shall be used for determining the dioxin/furan emission concentration.

d. The minimum sample time shall be 4 hours per test run.

e. All performance tests shall consist of three test runs under representative full load operating conditions. The average of the dioxin/furan emission concentrations from the three test runs is used to demonstrate compliance.

f. An O2 (or CO2) measurement shall be obtained simultaneously with each Reference Method 23 test run for dioxin/furan.

(9 VAC 5-80-110, 9 VAC 5-40-8140 F. and Condition 13 of 1/12/87 PSD Permit)

76. **MWC Testing** – The permittee may elect to conduct annual performance tests for only one MWC unit per year when performance tests over the previous 2-year period indicate that dioxin/furan emissions are less than or equal to 15 nanograms per dry standard cubic meter (total mass) corrected to 7 percent O_2 for all MWC units. At a minimum, a performance test for dioxin/furan emissions shall be conducted annually (no more than 12 months following the previous performance test) for one MWC unit. Each year, one MWC unit shall be tested, and the other MWC units shall be tested in sequence (e.g., unit 1, unit 2, unit 3 and unit 4, as applicable) in the following years. If each annual performance test continues to indicate a dioxin/furan emission level less than or equal to 15 nanograms per dry standard cubic meter (total mass) corrected to 7 percent O_2, the permittee may continue conducting a performance test on only one MWC per year. If any annual performance test indicates a dioxin/furan emission level greater than 15 nanograms per dry standard cubic meter (total mass) corrected to 7 percent O_2, performance tests thereafter shall be conducted annually on all MWC units until and unless all annual performance tests for all MWC units over a 2-year period indicate a dioxin/furan emission level less than or equal to 15 nanograms per dry standard cubic meter (total mass) corrected to 7 percent O_2.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 F.5)

77. **MWC Testing** – In the event the permittee intends to follow a reduced dioxin/furan testing schedule, notification of the intent to reduce the testing schedule shall be provided in the report required in Condition 81.
(9 VAC 5-80-110 and 9 VAC 5-40-8140 F)

78. **MWC Testing** – The permittee shall conduct emission tests for hydrogen fluoride and sulfuric acid from each MWC each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission limits in Condition 16 using appropriate test methods and procedures.
(9 VAC 5-80-110 and Condition 13 of 1/12/87 PSD Permit)

79. **MWC Testing** – The permittee shall conduct an emission test for fugitive ash on an annual basis (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission limits in Condition 18 using the test methods

and procedures provided below:

a. Reference Method 22 shall be used for determining compliance with the fugitive ash emission limit. The minimum observation time shall be a series of three 1-hour observations. The observation period shall include times when the facility is transferring ash from the MWC unit to the area where ash is stored or loaded into containers or trucks.

b. The average duration of visible emissions per hour shall be calculated from the three 1-hour observations. The average shall be used to determine compliance with the fugitive ash emission limit.

(9 VAC 5-80-110 and 9 VAC 5-40-8140 H)

80. **MWC Testing** – If testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the following methods in accordance with procedures approved by the DEQ as follows:

Pollutant	Test Method (40 CFR Part 60, Appendix A)
VOC	EPA Methods 18, 25, 25a
NO_x	EPA Method 7
SO_2	EPA Method 6
CO	EPA Method 10
Hydrogen Fluoride	EPA Method 26
Sulfuric Acid Mist	EPA Method 8

The table above is only required for those pollutants that have emission limits.
(9 VAC 5-80-110)

81. **MWC Reporting** – The permittee shall submit a semi-annual report including the information specified below, as applicable, according to the schedule provided in Condition 83. The time periods covering each semi-annual period shall be January 1st through June 30th and July 1st through December 31st.

a. A summary of data collected for all pollutants and parameters regulated under Rule 4-54 and this permit, including the information specified below:

(i) A list of the particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, hydrogen fluoride, sulfuric acid mist and fugitive ash emission levels achieved during the performance tests recorded under

Conditions 70-80.

(ii) A list of the highest emission level recorded for 24-hr SO_2, 24-hr NO_x, 4-hr CO, 4-hr MWC unit load level, and 4-hr fabric filter baghouse inlet temperature based on the data recorded under Condition 59.

(iii) List the highest opacity level measured based on the data recorded under Condition 59.

(iv) The total number of days that the minimum number of hours of data for SO_2, NO_x, CO, MWC unit load and fabric filter baghouse inlet temperature data were not obtained based on the data recorded under Condition 60.

(v) The total number of hours that data for SO_2, NO_x, CO, MWC unit load and fabric filter baghouse inlet temperature were excluded from the calculation of average emission concentrations or parameters based on the data recorded under Condition 60.

b. The summary of data reported under a above shall also provide the same types of data for the calendar year proceeding the year being reported, in order to provide a summary of performance over a two year period.

c. The summary of data in a. and b. above shall highlight any emission or parameter levels that did not achieve the emission or parameter limits specified in Article 54 and this permit.

d. A notification of intent to begin the reduced dioxin/furan performance testing schedule specified in Condition 76 during the following calendar year.

(9 VAC 5-80-110 and 9 VAC 5-40 8160 D)

82. **MWC Reporting** – The permittee shall submit a semi-annual report which includes the information specified below for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit specified under Article 54 and this permit, according to the schedule specified in Condition 83. The time periods covering each semi-annual period shall be January 1st through June 30th and July 1st through December 31st.

a. Data concerning exceedances of SO2, NOx, and CO emission standards, MWC unit load level, and fabric filter baghouse inlet temperature, and opacity limits recorded under Condition 59 and 60.

b. If the test reports document any NOx, CO, particulate matter, opacity, cadmium, lead, mercury, dioxins/furans, hydrogen chloride, and fugitive ash emission levels that were above the applicable pollutant limits, include a copy of the test report or portion of that report documenting the emission levels and the corrective actions taken.

c. Data recorded under Conditions 64 and 65 for the carbon injection system operating parameter(s) that are the primary indicator(s) of carbon mass feed rate.

(9 VAC 5-80-110 and 9 VAC 5-40-8160 E)

83. **MWC Reporting** – The permittee shall submit the data reports required in Conditions 81 and 82 no later than March 1st and September 1st of each year following the semiannual period in which the data were collected.
(9 VAC 5-80-110, 9 VAC 5-40-8160 D. and 9 VAC 5-40-8160 E)

84. **MWC Reporting** – All reports identified under Conditions 81 and 82 shall be submitted as a paper copy, postmarked on or before the submittal dates specified, and maintained on-site as paper copies for a period of five years.
(9 VAC 5-80-110 and 9 VAC 5-40-8160 G)

85. **MWC Reporting** – The permittee may request an alternative reporting schedule by submitting a written request to the Air Compliance Manager, Northern Regional Office. An alternative schedule may only begin after the permittee has received written authorization by the Department.
(9 VAC 5-80-110 and 9 VAC 5-40-8160 I)

86. **MWC Reporting** – The permittee shall submit a written report of excess emissions and either a monitoring systems performance report or summary report form, or both, in accordance with 40 CFR 60.7 (c), to the Air Compliance Manager, Northern Regional Office. The reports shall cover each calendar quarter and be postmarked by the 30th day following the end of each calendar quarter. The reports shall include the following information:

a. The magnitude of excess emissions computed in accordance with 9 VAC 5-40-41 B.6., any conversion factors used, and the date and time of commencement and completion of each period of excess emissions;

b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the source. The nature and cause of any malfunction (if known), the corrective action taken or preventative measure adopted;

c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments; and

d. When no excess emissions have occurred or the continuous monitoring system have not been inoperative, repaired or adjusted, such information shall be stated in the report.

(9 VAC 5-80-110 and 40 CFR 60.7(c))

Cold Solvent Degreasing

These requirements in Conditions 87 through 91 apply to the use of cold cleaning machines that process metal parts and contain more than 1 liter of volatile organic compounds.

87. **Limitations** – Immersion cold cleaning machines shall have a freeboard ratio of 0.75 or greater unless the machines are equipped with a cover that are kept closed except when parts are being placed into or being removed from the machines.
(9 VAC 5-80-110 and 9 VAC 5-40-6840 A.)

88. **Limitations** – Immersion cold cleaning machines and remote reservoir cold cleaning machines shall:

    a. Have a permanent, conspicuous label summarizing the operating requirements in Condition 89.

    b. Be equipped with a cover that shall be closed at all times except during cleaning of parts or the addition or removal of solvent. For remote reservoir cold cleaning machines which drain directly into the solvent storage reservoir, a perforated drain with a diameter of not more than six inches shall constitute an acceptable cover.

    (9 VAC 5-80-110 and 9 VAC 5-40-6840 A)

89. **Limitations** – Cold cleaning machines shall be operated in accordance with the following procedures:

    a. Waste solvent shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

b. Cleaned parts shall be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts shall be positioned so that solvent drains directly back to the cold cleaning machine.

c. Flushing or parts using a flexible hose or other flushing device shall be performed only within the freeboard area of the cold cleaning machine. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

d. When the cover is open, the cold cleaning machine shall not be exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between one and two meters (3.3 and 6.6 feet) upwind and at the same elevation as the tank lip.

e. Sponges, fabric, wood, leather, paper products and other absorbent materials shall not be cleaned in cold cleaning machines.

f. When a pump-agitated solvent bath is used, the agitator shall be operated to produce a rolling motion of the solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned. Air agitated solvent baths may not be used.

g. Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately, and the wipe rags or other sorbent material shall be immediately stored in covered containers for disposal or recycling.

h. Work area fans shall be located and positioned so that they do not blow across the opening of the degreaser unit.

i. The permittee shall ensure that the solvent level does not exceed the fill line.

(9 VAC 5-80-110 and 9 VAC 5-40-6840 A)

90. **Limitations** – The permittee shall not use, sell, or offer for sale use in a cold cleaning machine any solvent with a vapor pressure of 1.0 millimeters of mercury (mm Hg) or greater, measured at 20 °C (68 °F) containing volatile organic compounds.
(9 VAC 5-80-110 and 9 VAC 5-40-6840 A.)

91. **Limitations** – The permittee shall maintain for not less than two years and shall provide to DEQ personnel, upon request, the information specified below. An invoice, bill of sale, certificate that corresponds to a number of sales, Material Safety Data Sheet, or other appropriate documentation acceptable to the Regional Air Compliance Manager, Northern

Regional Office, may be used to comply with this section.

a. The name and address of the solvent supplier.

b. The type of solvent including the product or vendor identification number.

c. The vapor pressure of the solvent measured in mm Hg at 20 ° C (68 °F).

(9 VAC 5-80-110 and 9 VAC 5-40-6840 A)

Facility Wide Conditions

92. **MWC Operator Training/Certification** – Each chief facility operator and shift supervisor shall obtain and maintain a current provisional operator training certification from the American Society of Mechanical Engineers as provided in the "Standard for the Qualification and Certification of Resource Recovery Facility Operators" (see 9 VAC 5-20-21) or a board-approved certification program, or shall have completed full certification or scheduled a full certification exam with either the American Society of Mechanical Engineers as provided in the "Standard for the Qualification and Certification of Resource Recovery Facility Operators" (see 9 VAC 5-20-21) or a board-approved certification program. The board-approved certification requirement may be met by obtaining a license from the Board of Waste Management Facility Operators provided the training and licensing is conducted in accordance with Chapter 22.1 (§54.1-2209 et seq.) of Title 54.1 of the Code of Virginia, and with 18VAC155 Chapter 20. Chief facility operators and shift supervisors who receive full certification will no longer be required to maintain provisional certification.
(9 VAC 5-80-110, 9 VAC 5-40-8130 A., 9 VAC 5-40-8130 B., 9 VAC 5-40-8130 I)

93. **MWC Operator Training/Certification** – The permittee shall ensure that the facility is operated at all times with a person on duty who is responsible for the proper operation of the facility and has a license from the Board for Waste Management Facility Operators in the correct classification.
(9 VAC 5-80-110 and 9 VAC 5-40-8130 C)

94. **MWC Operator Training/Certification** – The permittee shall ensure that a fully certified chief facility operator or a fully certified shift supervisor, or provisionally certified chief facility operator or shift supervisor who is scheduled to take the full certification exam, staffs the facility at any time the facility is operated. A provisionally certified control room operator or provisionally certified shift supervisor may temporarily stand in for up to twelve consecutive without any notification to DEQ. A provisionally certified control

room operator or provisionally certified shift supervisor may stand in for up to two consecutive weeks and shall notify the Regional Air Compliance Manager, Northern Regional Office in writing within five business days of the beginning of the stand-in period. A provisionally certified control room operator or provisionally certified shift supervisor may stand in for periods longer than two consecutive weeks if the permittee follows the notification procedures above and demonstrates to DEQ that a good faith effort is being made to ensure that a certified chief facility operator or certified shift supervisor is on site as soon as practicable.
(9 VAC 5-80-110, 9 VAC 5-40-8130 D. and John Seitz memorandum "Municipal Waste Combustor – Control Room Operator stand-in Provisions dated 5/14/1998)

95. **MWC Operator Training/Certification** – All chief facility operators, shift supervisors, and control room operators must complete the board-approved MWC operator training course. This requirement does not apply to chief facility operators, shift supervisors, and control room operators who have obtained full certification from the American Society of Mechanical Engineers prior to August 4, 1999. The permittee may request that the board waive this requirement for chief facility operators, shift supervisors, and control room operators who have obtained provisional certification from the American Society of Mechanical Engineers prior to August 4, 1999.
(9 VAC 5-80-110, 9 VAC 5-40-8110 B. and 9 VAC 5-40-8130 E)

96. **MWC Operator Training/Certification** – The permittee shall develop and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the elements of MWC unit operation specified as follows:

   a. A summary of the applicable standards under this permit;

   b. A description of basic combustion theory applicable to a MWC unit;

   c. Procedures for receiving, handling, and feeding municipal solid waste;

   d. MWC unit startup, shutdown, and malfunction procedures;

   e. Procedures for maintaining proper combustion air supply levels;

   f. Procedures for operating the MWC unit within the standards established under this permit;

   g. Procedures for responding to periodic upset or off-specification conditions;

h. Procedures for minimizing particulate matter carryover;

i. Procedures for handling ash;

j. Procedures for monitoring MWC unit emissions;

k. Operating procedures for all air pollution control equipment;

l. Annual maintenance schedule for air pollution control equipment;

m. Reporting and record keeping procedures.

(9 VAC 5-80-110, 9 VAC 5-40-8130 F. and Part II Condition 9 of 1/12/87 PSD permit)

97. **MWC Operator Training/Certification** – The permittee shall establish a training program to review the operating manual annually with each person who has responsibilities affecting operation of the facility. This includes, but is not limited to, chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load handlers.
(9 VAC 5-80-110 and 9 VAC 5-40-8130 G)

98. **MWC Operator Training/Certification** – The operating manual shall be in a location which is readily accessible to all persons required to undergo training. The operating manual and records of training shall be available for inspection by DEQ upon request.
(9 VAC 5-80-110 and 9 VAC 5-40-8130 H)

99. **MWC Operator Training/Certification** – All air pollution control equipment operators shall be trained and certified in the proper operation of all such equipment. Certification shall consist of a statement of time, place and nature of training provided.
(9 VAC 5-80-110 and Part II Condition 8 of 1/12/87 PSD permit)

100. **MWC Operator Training/Certification** – The permittee shall maintain the following records:

a. Records showing the names of the MWC chief facility operator, shift supervisors, and control room operators who have been provisionally certified by the American Society of Mechanical Engineers or an equivalent board-approved certification program as required by Condition 1 including the dates of initial and renewal certifications and documentation of current certification.

b. Records showing the names of the MWC chief facility operator, shift supervisors, and control room operators who have completed the EPA MWC operator training course or a board-approved equivalent course as required by Condition 4 including documentation of training completion.

c. Air pollution control equipment operator training required in Condition 99.

(9 VAC 5-80-110, 9 VAC 5-40-8160 B. and Part II Condition 8 of 1/12/87 PSD permit)

101. **MWC Operator Training/Certification** – The permittee shall record the names of persons who have completed a review of the operating manual as required by Condition 5 including the date of the initial review and subsequent annual reviews.
(9 VAC 5-80-110 and 9 VAC 5-40-8160 B)

102. **Emergency Diesel Engine Generator (IU-10) Limitations** – Except where this permit is more restrictive than the applicable requirement, the emergency diesel engine generator (IU-10) shall be operated in compliance with the requirements of 40 CFR 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines and 40 CFR 63, Subpart A – General Provisions.
(9 VAC 5-80-110 A, 40 CFR §63.6665, Table 8 of 40 CFR 63, Subpart ZZZZ, and 40 CFR 63, Subpart A)

103. **Emergency Diesel Engine Generator (IU-10) Limitations** – For the emergency diesel engine generator (IU-10), the permittee shall:

a. Change oil and filter every 500 hours of operation or annually, whichever comes first;

b. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and

c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Note 1: Sources have the option to utilize an oil analysis program as described in 40 CFR §63.6625 (i) or (j) in order to extend the specified oil change requirement in Condition 103.a
(Table 2c of 40 CFR 63, Subpart ZZZZ).

Note 2: If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the work practice requirements on the schedule required in this Permit Condition (Table 2c of 40 CFR 63, Subpart ZZZZ), or if performing the work practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The work practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. Sources must report any failure to perform the work practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable.

(9 VAC 5-80-110 A, 40 CFR §63.6603(a), 40 CFR §63.6640 and Table 2c of 40 CFR 63 Subpart ZZZZ)

104. **Emergency Diesel Engine Generator (IU-10) Limitations** – In order for the emergency generator (IU-10) to be considered an emergency stationary reciprocating internal combustion engine (RICE) under 40 CFR 63, Subpart ZZZZ, the operation of the emergency generator (IU-10) is limited to emergency situations as specified in 40 CFR §63.6640(f)(1); maintenance checks and readiness testing for a limited number of hours per year as specified in 40 CFR §63.6640(f)(2)(i); and certain non-emergency situations for a limited number of hours per year as specified in 40 CFR §63.6640(f)(3). If the unit is not operated in accordance with 40 CFR §63.6640(f)(1), §63.6640(f)(2)(i) or §63.6640(f)(3), the emergency generator (IU-10) will not be considered an emergency engine under 40 CFR Part 63, Subpart ZZZZ and must meet the emissions standards and other applicable requirements for a non-emergency engine.
(9 VAC 5-80-110 A and 40 CFR §63.6640 (f))

105. **Emergency Diesel Engine Generator (IU-10) Limitations** – During periods of startup, the permittee shall minimize the time spent at idle for the emergency generator (IU-10) and minimize the generator's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emissions limitations apply.
(9 VAC 5-80-110 A and 40 CFR 63.6625 (h))

106. **Emergency Diesel Engine Generator (IU-10) Limitations** – The permittee shall:

a. Operate and maintain the emergency generator (IU-10) according to the manufacturer's emission-related written operation and maintenance instructions; or

b. Develop and follow its own maintenance plan which must provide to the extent practicable for the maintenance and operation of the emergency generator (IU-10) in a manner consistent with good air pollution control practice for minimizing emissions.

(9 VAC 5-80-110 A, 40 CFR §63.6625(e), 40 CFR 63.6640(a) and Table 6 of 40 CFR 63 Subpart ZZZZ)

107. **Emergency Diesel Engine Generator (IU-10) Monitoring** – The permittee shall install a non-resettable hour meter on the emergency generator (IU-10) if one is not already installed.

(9 VAC 5-80-110 A and 40 CFR §63.6625(f))

108. **Emergency Diesel Engine Generator (IU-10) Recordkeeping** – The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the DEQ. These records shall include but are not limited to:

 a. Records of the maintenance conducted on the emergency generator (IU-10) in order to demonstrate that the engine is operated and maintained according to the maintenance plan required by Condition 106.

 b. Records of the hours of operation of the emergency generator (IU-10) that are recorded on a non-resettable hour meter. The permittee must document how many hours are spent for emergency operation, including what classified the operation as emergency, and how many hours are spent for non-emergency operation, including what classified the operation as non-emergency.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
(9 VAC 5-80-110 A and 40 CFR 63.6655)

109. **Emergency Diesel Engine Generator (IU-10) Notifications** – The permittee shall meet the applicable notification requirements in §63.6645 and in 40 CFR 63, Subpart A as they pertain to the emergency generator (IU-10).
(9 VAC 5-80-110 and 40 CFR 63.6595(c))

110. **Emergency Diesel Engine Generator (IU-10) Reporting** – The permittee shall submit the applicable compliance report in Subpart ZZZZ Table 7 per §63.6650(a). The report shall contain the information required by Table 7, §63.6650(c), (e), and (f), and submitted per the schedule required by §63.6650(b).

Copies of the compliance reports shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-110 and 40 CFR 63.6650).

Insignificant Emission Units

111. **Insignificant Emission Units** - The following emission units at the facility are identified in the application as insignificant emission units under 9 VAC 5-80-720:

Emission Unit No.	Emission Unit Description	Citation (9 VAC 5-80-720)	Pollutant(s) Emitted (9 VAC 5-80-720B)	Rated Capacity (9 VAC 5-80-720C)
IU-1a	Fuel Oil UST	720 B	VOC	500 gallons
IU-1b	Fuel Oil AST	720 B	VOC	1000 gallons
IU-2	MSW Building/Pit	720 B	PM and PM10	N/A
IU-3	Non-ferrous Ash Bldg	720 B	PM and PM10	N/A
IU-4	Residue Ash Bldg	720 B	PM and PM10	N/A
IU-5	Lime Slaker Room	720 B	PM and PM10	N/A
IU-6	Ash Removal	720 B	PM and PM10	N/A
IU-7	Grizzly Scalper	720 B	PM and PM10	N/A
IU-8	Hydraulic Shredder (in MSW Bldg.)	720 B	PM and PM10	N/A
IU-9	HVAC Boiler	720 C	PM, PM10, SO2, NOx, CO & VOCs	0.55 MMBtu/hr (heat input)
IU-11	Lime Storage Silo Vent	720 B	PM and PM10	N/A
IU-12	Dolomitic Lime Silo Vent	720 B	PM and PM10	N/A
IU-13	Carbon Silo Vent	720 B	PM and PM10	N/A
IU-14	Pebble Lime Silo Vent	720 B	PM and PM10	5,089 ft^3 (storage capacity)
IU-15	Used Oil Heater	720 B	PM10, SO2, NOx, CO, VOCs & Lead	175,000 Btu/hr (heat input)

These emission units are presumed to be in compliance with all requirements of the federal Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping, or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110. (9 VAC 5-80-720 and 9 VAC 5-80-110 C, E, and F)

Permit Shield & Inapplicable Requirements

112. **Permit Shield & Inapplicable Requirements** - Compliance with the provisions of this permit shall be deemed compliance with all applicable requirements in effect as of the permit issuance date as identified in this permit. This permit shield covers only those applicable requirements covered by terms and conditions in this permit and the following requirements which have been specifically identified as being not applicable to this permitted facility:

Citation	Title of Citation	Description of Applicability
NSPS Subpart Db (40 CFR Part 60)	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units	Covanta is exempt from this since it is covered by an EPA approved State section 111(d)/129 implementing Subpart Cb.
40 CFR Part 63, Subpart T – 40 CFR Subpart 63.460 – 63.471 and appendices	National Emission Standards for Halogenated Solvent Cleaning for the degreasing operation	Covanta is exempt from this since it does not use halogenated solvents in any of the parts washer
40 CFR 97 Subparts AAAAA-CCCCC	Cross-State Air Pollution Rule	The facility has two steam turbines, each rated at more than 25 MWe; however, each of the MWC units qualifies as a solid waste incineration unit with an average annual fuel consumption of fossil fuel of less than 20 percent (on a Btu basis) for any 3 consecutive calendar years.
40 CFR 63 Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters	40 CFR §63.7491(l) excludes boilers specifically listed as an affected source in any standard(s) established under §129 of the Clean Air Act. Covanta's MWC units are subject to 9 VAC 5-40-7950 et seq. which implements 40 CFR Part 60, Subpart Cb (Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors that are Constructed on or before September 20, 1994), which was developed by EPA under sections 111 and 129 of the Clean Air Act.

Nothing in this permit shield shall alter the provisions of §303 of the federal Clean Air Act, including the authority of the administrator under that section, the liability of the owner for any violation of applicable requirements prior to or at the time of permit issuance, or the ability to obtain information by (i) the administrator pursuant to §114 of the federal Clean Air Act, (ii) the Board pursuant to §10.1-1314 or §10.1-1315 of the Virginia Air Pollution Control Law or (iii) the Department pursuant to §10.1-1307.3 of the Virginia Air Pollution Control Law.
(9 VAC 5-80-140)

General Conditions

113. **Federal Enforceability** – All terms and conditions in this permit are enforceable by the administrator and citizens under the federal Clean Air Act, except those that have been designated as only state-enforceable.
(9 VAC 5-80-110 N)

114. **Permit Expiration** – This permit has a fixed term of five years. The expiration date shall be the date five years from the date of issuance. Unless the owner submits a timely and complete application for renewal to the DEQ consistent with the requirements of 9 VAC 5-80-80, the right of the facility to operate shall be terminated upon permit expiration.
(9 VAC 5-80-80 B, C, and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

115. **Permit Expiration** – The owner shall submit an application for renewal at least six months but no earlier than eighteen months prior to the date of permit expiration.
(9 VAC 5-80-80 B, C, and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

116. **Permit Expiration** – If an applicant submits a timely and complete application for an initial permit or renewal under this section, the failure of the source to have a permit or the operation of the source without a permit shall not be a violation of Article 1, Part II of 9 VAC 5 Chapter 80, until the Board takes final action on the application under 9 VAC 5-80-150.
(9 VAC 5-80-80 B, C, and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

117. **Permit Expiration** – No source shall operate after the time that it is required to submit a timely and complete application under subsections C and D of 9 VAC 5-80-80 for a renewal permit, except in compliance with a permit issued under Article 1, Part II of 9 VAC 5 Chapter 80.
(9 VAC 5-80-80 B, C, and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

118. **Permit Expiration** – If an applicant submits a timely and complete application under section 9 VAC 5-80-80 for a permit renewal but the Board fails to issue or deny the renewal permit before the end of the term of the previous permit, (i) the previous permit shall not expire until the renewal permit has been issued or denied and (ii) all the terms and conditions of the previous permit, including any permit shield granted pursuant to 9 VAC

5-80-140, shall remain in effect from the date the application is determined to be complete until the renewal permit is issued or denied.
(9 VAC 5-80-80 B, C, and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

119. **Permit Expiration** – The protection under subsections F 1 and F 5 (ii) of section 9 VAC 5-80-80 F shall cease to apply if, subsequent to the completeness determination made pursuant section 9 VAC 5-80-80 D, the applicant fails to submit by the deadline specified in writing by the Board any additional information identified as being needed to process the application.
(9 VAC 5-80-80 B, C, and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

120. **Recordkeeping and Reporting** – All records of monitoring information maintained to demonstrate compliance with the terms and conditions of this permit shall contain, where applicable, the following:

a. The date, place as defined in the permit, and time of sampling or measurements.

b. The date(s) analyses were performed.

c. The company or entity that performed the analyses.

d. The analytical techniques or methods used.

e. The results of such analyses.

f. The operating conditions existing at the time of sampling or measurement.

(9 VAC 5-80-110 F)

121. **Recordkeeping and Reporting** – Records of all monitoring data and support information shall be retained for at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.
(9 VAC 5-80-110 F)

122. **Recordkeeping and Reporting** – The permittee shall submit the results of monitoring contained in any applicable requirement to DEQ no later than **March 1** and **September 1** of each calendar year. This report must be signed by a responsible official, consistent with 9 VAC 5-80-80 G, and shall include:

a. The time period included in the report. The time periods to be addressed are January 1 to June 30 and July 1 to December 31.

b. All deviations from permit requirements. For purposes of this permit, deviations include, but are not limited to:

i. Exceedance of emissions limitations or operational restrictions;

ii. Excursions from control device operating parameter requirements, as documented by continuous emission monitoring, periodic monitoring, or compliance assurance monitoring which indicates an exceedance of emission limitations or operational restrictions; or,

iii. Failure to meet monitoring, recordkeeping, or reporting requirements contained in this permit.

c. If there were no deviations from permit conditions during the time period, the permittee shall include a statement in the report that "no deviations from permit requirements occurred during this semi-annual reporting period."

(9 VAC 5-80-110 F)

123. **Annual Compliance Certification** – Exclusive of any reporting required to assure compliance with the terms and conditions of this permit or as part of a schedule of compliance contained in this permit, the permittee shall submit to EPA and DEQ no later than **March 1** each calendar year a certification of compliance with all terms and conditions of this permit including emission limitation standards or work practices. The compliance certification shall comply with such additional requirements that may be specified pursuant to §114(a)(3) and §504(b) of the federal Clean Air Act. This certification shall be signed by a responsible official, consistent with 9 VAC 5-80-80 G, and shall include:

a. The time period included in the certification. The time period to be addressed is January 1 to December 31.

b. The identification of each term or condition of the permit that is the basis of the certification.

c. The compliance status.

d. Whether compliance was continuous or intermittent, and if not continuous, documentation of each incident of non-compliance.

e. Consistent with subsection 9 VAC 5-80-110 E, the method or methods used for determining the compliance status of the source at the time of certification and over the reporting period.

f. Such other facts as the permit may require to determine the compliance status of the source.

One copy of the annual compliance certification shall be submitted to EPA in electronic format only. The certification document should be sent to the following electronic mailing address:

R3_APD_Permits@epa.gov

(9 VAC 5-80-110 K.5)

124. **Permit Deviation Reporting** – The permittee shall notify the DEQ, within four daytime business hours after discovery, of any deviations from permit requirements which may cause excess emissions for more than one hour, including those attributable to upset conditions as may be defined in this permit. In addition, within 14 days of the discovery, the permittee shall provide a written statement explaining the problem, any corrective actions or preventative measures taken, and the estimated duration of the permit deviation. The occurrence should also be reported in the next semi-annual compliance monitoring report pursuant to General Condition 122 of this permit.
(9 VAC 5-80-110 F.2 and 9 VAC 5-80-250)

125. **Failure/Malfunction Reporting** – In the event that any affected facility or related air pollution control equipment fails or malfunctions in such a manner that may cause excess emissions for more than one hour, the owner shall, as soon as practicable but no later than four daytime business hours after the malfunction is discovered, notify the DEQ by facsimile transmission, telephone or telegraph of such failure or malfunction and shall within 14 days of discovery provide a written statement giving all pertinent facts, including the estimated duration of the breakdown. Owners subject to the requirements of 9 VAC 5-40-50 C and 9 VAC 5-50-50 C are not required to provide the written statement prescribed in this paragraph for facilities subject to the monitoring requirements of 9 VAC 5-40-40 and 9 VAC 5-50-40. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the owner shall notify the DEQ.
(9 VAC 5-20-180 C)

126. **Severability** – The terms of this permit are severable. If any condition, requirement or portion of the permit is held invalid or inapplicable under any circumstance, such invalidity or inapplicability shall not affect or impair the remaining conditions, requirements, or portions of the permit.
(9 VAC 5-80-110 G.1)

127. **Duty to Comply** – The permittee shall comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the federal Clean Air Act or the Virginia Air Pollution Control Law or both and is ground for enforcement action; for permit termination, revocation and reissuance, or modification; or, for denial of a permit renewal application.
(9 VAC 5-80-110 G.2)

128. **Need to Halt or Reduce Activity not a Defense** – It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
(9 VAC 5-80-110 G.3)

129. **Permit Modification** – A physical change in, or change in the method of operation of, this stationary source may be subject to permitting under State Regulations 9 VAC 5-80-50, 9 VAC 5-80-1100, 9 VAC 5-80-1605, or 9 VAC 5-80-2000 and may require a permit modification and/or revisions except as may be authorized in any approved alternative operating scenarios.
(9 VAC 5-80-190 and 9 VAC 5-80-260)

130. **Property Rights** – The permit does not convey any property rights of any sort, or any exclusive privilege.
(9 VAC 5-80-110 G.5)

131. **Duty to Submit Information** – The permittee shall furnish to the Board, within a reasonable time, any information that the Board may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Board copies of records required to be kept by the permit and, for information claimed to be confidential, the permittee shall furnish such records to the Board along with a claim of confidentiality.
(9 VAC 5-80-110 G.6)

132. **Duty to Submit Information** – Any document (including reports) required in a permit condition to be submitted to the Board shall contain a certification by a responsible official that meets the requirements of 9 VAC 5-80-80 G.
(9 VAC 5-80-110 K.1)

133. **Duty to Pay Permit Fees** – The owner of any source for which a permit under 9 VAC 5-80-50 through 9 VAC 5-80-300 was issued shall pay permit fees consistent with the requirements of 9 VAC 5-80-310 through 9 VAC 5-80-350. The actual emissions covered by the permit program fees for the preceding year shall be calculated by the owner and submitted to the DEQ by April 15 of each year. The calculations and final amount of emissions are subject to verification and final determination by the Department.
(9 VAC 5-80-110 H and 9 VAC 5-80-340 C)

134. **Fugitive Dust Emission Standards** – During the operation of a stationary source or any other building, structure, facility, or installation, no owner or other person shall cause or permit any materials or property to be handled, transported, stored, used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions may include, but are not limited to, the following:

    a. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;

b. Application of asphalt, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which may create airborne dust; the paving of roadways and the maintaining of them in a clean condition;

c. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods shall be employed during sandblasting or similar operations;

d. Open equipment for conveying or transporting material likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion; and,

e. The prompt removal of spilled or tracked dirt or other materials from paved streets and of dried sediments resulting from soil erosion.

(9 VAC 5-40-90 and 9 VAC 5-50-90)

135. **Startup, Shutdown, and Malfunction** – At all times, including periods of startup, shutdown, and soot blowing, and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Board, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
(9 VAC 5-50-20 E)

136. **Alternative Operating Scenarios** – Contemporaneously with making a change between reasonably anticipated operating scenarios identified in this permit, the permittee shall record in a log at the permitted facility a record of the scenario under which it is operating. The permit shield described in 9 VAC 5-80-140 shall extend to all terms and conditions under each such operating scenario. The terms and conditions of each such alternative scenario shall meet all applicable requirements including the requirements of 9 VAC 5 Chapter 80, Article 1.
(9 VAC 5-80-110 J)

137. **Inspection and Entry Requirements** – The permittee shall allow DEQ, upon presentation of credentials and other documents as may be required by law, to perform the following:

a. Enter upon the premises where the source is located or emissions-related activity is conducted, or where records must be kept under the terms and conditions of the permit.

b. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of the permit.

c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit.

d. Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

(9 VAC 5-80-110 K.2)

138. **Reopening For Cause** – The permit shall be reopened by the Board if additional federal requirements become applicable to a major source with a remaining permit term of three years or more. Such reopening shall be completed no later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 9 VAC 5-80-80 F.

a. The permit shall be reopened if the Board or the administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

b. The permit shall be reopened if the administrator or the Board determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

c. The permit shall not be reopened by the Board if additional applicable state requirements become applicable to a major source prior to the expiration date established under 9 VAC 5-80-110 D.

(9 VAC 5-80-110 L)

139. **Permit Availability** – Within five days after receipt of the issued permit, the permittee shall maintain the permit on the premises for which the permit has been issued and shall make the permit immediately available to DEQ upon request.
(9 VAC 5-80-150 E)

140. **Transfer of Permits** – No person shall transfer a permit from one location to another, unless authorized under 9 VAC 5-80-130, or from one piece of equipment to another.
(9 VAC 5-80-160)

141. **Transfer of Permits** – In the case of a transfer of ownership of a stationary source, the new owner shall comply with any current permit issued to the previous owner. The new owner shall notify the Board of the change in ownership within 30 days of the transfer and shall comply with the requirements of 9 VAC 5-80-200.
(9 VAC 5-80-160)

142. **Transfer of Permits** – In the case of a name change of a stationary source, the owner shall comply with any current permit issued under the previous source name. The owner shall notify the Board of the change in source name within 30 days of the name change and shall comply with the requirements of 9 VAC 5-80-200.
(9 VAC 5-80-160)

143. **Permit Revocation or Termination for Cause** – A permit may be revoked or terminated prior to its expiration date if the owner knowingly makes material misstatements in the permit application or any amendments thereto or if the permittee violates, fails, neglects or refuses to comply with the terms or conditions of the permit, any applicable requirements, or the applicable provisions of 9 VAC 5 Chapter 80 Article 1. The Board may suspend, under such conditions and for such period of time as the Board may prescribe any permit for any grounds for revocation or termination or for any other violations of these regulations.
(9 VAC 5-80-190 C and 9 VAC 5-80-260)

144. **Duty to Supplement or Correct Application** – Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrections. An applicant shall also provide additional information as necessary to address any requirements that become applicable to the source after the date a complete application was filed but prior to release of a draft permit.
(9 VAC 5-80-80 E)

145. **Stratospheric Ozone Protection** – If the permittee handles or emits one or more Class I or II substances subject to a standard promulgated under or established by Title VI (Stratospheric Ozone Protection) of the federal Clean Air Act, the permittee shall comply with all applicable sections of 40 CFR Part 82, Subparts A to F and H.
(40 CFR Part 82, Subparts A-F and H)

146. **Asbestos Requirements** – The permittee shall comply with the requirements of National Emissions Standards for Hazardous Air Pollutants (40 CFR 61) Subpart M, National Emission Standards for Asbestos as it applies to the following: Standards for Demolition and Renovation (40 CFR 61.145), Standards for Insulating Materials (40 CFR 61.148), and Standards for Waste Disposal (40 CFR 61.150).
(9 VAC 5-60-70 and 9 VAC 5-80-110 A.1)

147. **Accidental Release Prevention** – If the permittee has more, or will have more than a threshold quantity of a regulated substance in a process, as determined by 40 CFR 68.115, the permittee shall comply with the requirements of 40 CFR Part 68.
(40 CFR Part 68)

148. **Changes to Permits for Emissions Trading** – No permit revision shall be required under any federally approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.
(9 VAC 5-80-110 I)

149. **Emissions Trading –** Where the trading of emissions increases and decreases within the permitted facility is to occur within the context of this permit and to the extent that the regulations provide for trading such increases and decreases without a case-by-case approval of each emissions trade:

a. All terms and conditions required under 9 VAC 5-80-110, except subsection N, shall be included to determine compliance.

b. The permit shield described in 9 VAC 5-80-140 shall extend to all terms and conditions that allow such increases and decreases in emissions.

c. The owner shall meet all applicable requirements including the requirements of 9 VAC 5-80-50 through 9 VAC 5-80-300.

(9 VAC 5-80-110 I)

State-Only Enforceable Requirements

150. **Tipping Floor Negative Pressure** – The permittee shall ensure that a negative pressure is maintained on the tipping floor and ensure that air from within the building is used as combustion air as means to minimize odors at the facility.
(Condition 21 of 1/12/87 PSD Permit)

151. **Standard for Odor** – The provisions of 9 VAC 5-40-130 et seq., Emission Standards for Odor, Rule 4-2, apply.
(9 VAC 5-40-8080)

152. **Standards for Toxics** – The provisions of 9 VAC 5-60-200 et seq., Emission Standards for Toxic Pollutants, Rule 6-4, apply.
(9 VAC 5-40-8090)

153. **Metals Emissions Control** – Antimony and arsenic emissions from each MWC furnace shall be controlled by fabric filter baghouses. The fabric filter baghouses shall be provided with adequate access for inspection and shall be in operation when the MWC furnaces are operating.
(Condition 9 of 1/12/87 PSD Permit)

154. **Acid Gas Control** – Hydrogen bromide emissions from each MWC furnaces shall be controlled by air pollution control equipment that will reduce emissions by a minimum of 90 percent.
(Condition 10 of 1/12/87 PSD Permit)

155. **Toxics Emission Limits**– Emissions from the operation of each MWC unit shall not exceed the limitations specified below:

Antimony	0.14 lbs/hr	0.55 tons/yr
Arsenic	7.3×10^{-3} lb/hr	0.03 tons/yr
Beryllium	2.0×10^{-4} lbs/hr	7.94×10^{-4} tons/yr
Hydrogen Bromide	1.93 lbs/hr	7.67 tons/yr

Compliance with the limits shall be determined based on compliance with control device operational parameters/limitations contained, fuel and steam restrictions, MWC operational data, results of the annual stack tests, record keeping and any other relevant information necessary which can provide credible evidence of emissions performance. Annual emissions shall be calculated on a calendar year basis.
(Condition 7 of 1/12/87 PSD Permit)

156. **Performance Tests** – The permittee shall conduct emission tests for antimony, arsenic, and hydrogen bromide each calendar year (no more than 12 calendar months following the previous emission test) to demonstrate compliance with the emission limits in Condition 155. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30. The details of the tests are to be arranged with the Air Compliance Manager, Northern Regional Office. The permittee shall submit a test protocol at least thirty days prior to testing using the "Stack Test Protocol – Request for Approval" form attached to this permit. Two copies of the test results, one paper copy and one on electronic removable media, shall be submitted to the Air Compliance Manager, Northern Regional Office within sixty days after the test completion and shall conform to the test report format enclosed with this permit.
(Condition 13 of 1/12/87 PSD Permit)

157. **Record Keeping** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Air Compliance Manager, Northern Regional Office. These records shall include, but are not limited to the annual emissions calculations required in Condition 155 and performance test report required in Condition 156.
(Condition 7 of Part II of 1/12/87 PSD Permit)

SOURCE TESTING REPORT FORMAT

Report Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
   a. Operating rate
   b. Test Methods
   c. Pollutants tested
   d. Test results for each run and the run average
   e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results

1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix

1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

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* Not applicable to visible emission evaluations

APPENDIX A – [Reserved]

APPENDIX B – [Reserved]

Exhibit 8

Removal of Title V Emergency Affirmative Defense Provisions from State Operating Permit Programs and Federal Operating Permit Program
Proposed Rule
EPA-HQ-OAR-2016-0186

Title V Affirmative Defense Provisions in State, Local, and Tribal Part 70 Programs

Table 1 of this document contains a tentative list of state, local, and tribal regulations and statutes that may be affected by the EPA's proposed rulemaking identified above. This list is intended to encompass all affirmative defense provisions contained within EPA-approved part 70 (title V) operating permit programs.[1] Table 2 of this document contains a tentative list of state, local, and tribal EPA-approved title V programs that do not appear to explicitly establish an affirmative defense contrary to the EPA's interpretation of the Clean Air Act (CAA), as reflected in this proposed rulemaking. These lists do ***not*** constitute any type of determination as to the adequacy or inadequacy of any specific program provisions.

As indicated in the proposed rule identified above, the EPA is requesting comment on whether the provisions identified in Table 1 of this document, as well as any additional title V affirmative defense provisions that are not currently identified in Table 1 of this document, may be affected if the proposed rule is finalized. The EPA is presenting and soliciting comment on these lists *for informational purposes only*. For further information, see Section V.A of the preamble to the proposed rule.

Table 1. Part 70 Programs that Appear to Contain Title V Affirmative Defense Provisions

EPA Region	**Permitting Authority**	**Affirmative Defense Provision**
1	Connecticut	RCSA § 22a-174-33(p)(2)
	Maine	06-096 CMR 140(2)(AA)
	Massachusetts	310 CMR 7.00: Appendix C(16)
	Rhode Island	APCR § 29.6.11

[1] This list is not intended to include any affirmative defense provisions contained in state regulations or statutes that are not part of an EPA-approved title V program (including state-only regulations, SIP provisions that are not included within a state's EPA-approved title V program, or statutes that are not included within a state's EPA-approved title V program).

Title V Affirmative Defense Provisions in State, Local, and Tribal Part 70 Programs

EPA Region	Permitting Authority	Affirmative Defense Provision
2	New Jersey	NJAC 7:27-22.3(nn); NJAC 7:27-22.16(l)
	New York	6 NYCRR 201-1.5; 6 NYCRR 201-6.5(c)
	Puerto Rico	Regla 603, Reglamento para el Control de la Contaminacion Atmosferica
	U.S. Virgin Islands	12 Virgin Islands R. & Regs. § 206-71(d)
3	Delaware	7 DAC 1130.6.7
	District of Columbia	DCMR 20-302.7
	Maryland	COMAR 26.11.03.24
	Virginia	9 VAC 5-80-250
	West Virginia	W. Va. CSR § 45-30-5.7
4	Alabama	ADEM Admin. Code r. 335-3-16-.11(2)
	AL—Huntsville	Huntsville Air Pollution Control R. & Regs. § 3.3.8(b)
	AL—Jefferson Co.	Jefferson Co. Air Pollution Control R. & Regs. § 18.11.2
	Florida	F.A.C. 62-213.440(1)(d)5
	Kentucky	401 KAR 52:020, § 24
	Kentucky—Louisville	LMAPCD Regulation 2.16 § 4.7
	Mississippi	11 Miss. Admin. Code Pt. 2, R. 6.3.G
	South Carolina	S.C. Code Regs. 61-62.70 § 70.6(g)
	Tennessee	Tenn. Comp. R. & Regs. 1200-03-09-.02(11)(e)7
	TN—Chattanooga-Hamilton Co.	Chattanooga City Code § 4-57(g)
	TN—Knox Co.	Knox Co. Air Quality Mgmt. Regs. § 25.70.F.7
	TN—Nashville-Davidson Co.	Metropolitan Health Dept., Div. Pollution Control Regs. § 13-3(g)
	TN—Memphis-Shelby Co.	City of Memphis § 16-77; Shelby County § 3-5

Title V Affirmative Defense Provisions in State, Local, and Tribal Part 70 Programs

EPA Region	Permitting Authority	Affirmative Defense Provision
5	Illinois	415 ILCS 5/39.5.7.k
	Indiana	326 IAC 2-7-16
	Michigan	MCL 324.5527
	Minnesota	Minn. R. 7007.1850
	Ohio	OAC 3745-77-07(G)
6	Arkansas	ACA 014.01.93-001 Reg. 26.707
	Louisiana	LAC 33.III.507.J
	New Mexico	20.2.70.304 NMAC
	NM--Albuquerque	20.11.42.12(E) NMAC
	Oklahoma	OAC 252:100-8-6(e)
7	Iowa	567 IAC 22.108(16)
	Kansas	KAR 28-19-512(d)
	Missouri	10 CSR 10-6.065(6)(C)7
	Nebraska	129 NAC Ch. 11
	NE—Lincoln-Lancaster Co.	Lincoln-Lancaster Co. Air Pollution Control Program Art. 2 § 11
	NE—City of Omaha	Omaha Municipal Code § 41-2
8	Colorado	5 CCR 1001-5, Part C, § VII
	Montana	ARM 17.8.1214(5) to (8)
	North Dakota	N.D.A.C. 33-15-14-06.5.g
	South Dakota	ARSD 74:36:05:16.01(18)
	Southern Ute Tribe	Reservation Air Code § 2-117
	Utah	Utah Admin. Code R307-415-6g
	Wyoming	WAQSR Ch. 6, § 3(l)

Title V Affirmative Defense Provisions in State, Local, and Tribal Part 70 Programs

EPA Region	Permitting Authority	Affirmative Defense Provision
9	Arizona	A.A.C. R18-2-306.E
	AZ—Maricopa Co.	Maricopa Co. Air Pollution Control Regs. Rule 130
	AZ—Pima Co.	Pima Co. Code §§ 17.12.180.E, 17.12.185.D
	AZ—Pinal Co.	Pinal Co. AQCD Reg. 3-1-081.E
	CA—Sacramento Metropolitan	Sacramento Metropolitan AQMD Rule 207 § 414
	CA—San Joaquin Valley	San Joaquin Valley Unified APCD Rule 2520 § 13.4
	CA—San Luis Obispo Co.	San Luis Obispo Co. APCD Rule 216 § L.5
	CA—Santa Barbara Co.	Santa Barbara Co. APCD Rule 1303 § F
	CA—South Coast	South Coast AQMD Rule 3002(g)
	CA—Ventura Co.	Ventura Co. APCD Rule 33.9 § D
	CA—Yolo-Solano	Yolo-Solano AQMD Rule 3.8 § 314
	Hawaii	HAR § 11-60.1-16.5
	Nevada	NAC 445B.326
10	Alaska	18 AAC 50.235
	Idaho	IDAPA 58.01.01.332
	Oregon	OAR 340-214-0360
	OR—Lane Regional	LRAPA § 36-040
	Washington (including local air authorities)	WAC 173-401-645
	WA—EFSEC	WAC 463-78-005(2)

Title V Affirmative Defense Provisions in State, Local, and Tribal Part 70 Programs

Table 2. Part 70 Programs that Do Not Appear to Contain Title V Affirmative Defense Provisions

EPA Region	Permitting Authority
1	New Hampshire
	Vermont
3	Pennsylvania
	PA—Allegheny Co.
	PA—Philadelphia Co.
4	Georgia
	North Carolina
	NC—Forsyth Co.
	NC—Mecklenburg Co.
	NC—Western
5	Wisconsin
6	Texas

EPA Region	Permitting Authority
9	CA—Amador Co.
	CA—Amador Co.
	CA—Antelope Valley
	CA—Bay Area
	CA—Butte Co.
	CA—Calaveras Co.
	CA—Colusa Co.
	CA—El Dorado Co.
	CA—Feather River Co.
	CA—Glenn Co.
	CA—Great Basin
	CA—Imperial Co.
	CA—Eastern Kern Co.
	CA—Lake Co.
	CA—Lassen Co.
	CA—Mariposa Co.

EPA Region	Permitting Authority
9	CA—Mendocino Co.
	CA—Modoc Co.
	CA—Mojave Desert
	CA—Monterey Bay
	CA—North Coast
	CA—Northern Sierra
	CA—Northern Sonoma Co.
	CA—Placer Co.
	CA—San Diego Co.
	CA—Shasta Co.
	CA—Siskiyou Co.
	CA—Tehama Co.
	CA—Tuolumne Co.
	NV—Clark Co.
	NV—Washoe Co.

Exhibit 9

September 13, 2022

BY EMAIL

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Re: Petition for Rulemaking to Eliminate Startup, Shutdown, and Malfunction Exemptions in Clean Air Act Section 111 Regulations

Dear Administrator Regan:

Community groups and environmental organizations 350 New Orleans, Air Alliance Houston, Alliance for Affordable Energy, Clean Air Task Force (CATF), Deep South Center for Environmental Justice, Downwinders at Risk, Earthjustice, Environment Texas, Environmental Integrity Project (EIP), Green Army, Healthy Gulf, Ironbound Community Corporation, Natural Resources Defense Council (NRDC), RESTORE, RISE St. James, Sierra Club, and Southern Environmental Law Center (SELC) submit this petition for rulemaking to eliminate startup, shutdown, malfunction and/or maintenance ("SSM") exemptions in Clean Air Act section 111 implementing regulations.

I. INTRODUCTION

Federal regulations implementing section 111 of the Clean Air Act ("the Act") unlawfully allow stationary sources to emit air pollution without consequence during startup, shutdown, and malfunction/maintenance ("SSM") events at levels that far exceed emissions during normal operations,[1] and that harm the health and wellbeing of the communities near the polluting facilities. These fenceline and downwind communities tend to be low-income and communities of color that already experience disproportionate exposure to air pollution. The worst of these SSM pollution events often occur during and around natural disasters, hitting climate-vulnerable communities already pummelled by the disasters themselves with additional air pollution burdens. The Biden Administration has brought environmental justice to the forefront of its agenda, recognizing the injustice of the cumulative environmental impacts that nearby communities face from industrial pollution.[2] To meaningfully protect these communities' right to breathe clean air, EPA must eliminate these SSM loopholes.

Section 111 of the Act requires the EPA Administrator to establish "standards of performance" for new and modified stationary sources of air pollution ("New Source Performance Standards" or "NSPS"). 42 U.S.C. § 7411. The NSPS program regulates a series of harmful air pollutants including particulate matter (PM), sulfur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), hydrogen sulfide (H2S), dioxins/furans, fluorides, and sulfuric acid mist. The types of industrial activities subject to the NSPS include, among others, chemical manufacturing, petroleum refining, oil and gas production, fuel combustion, ferrous metals processing, and battery manufacturing.[3]

The plain text of the Act requires EPA to promulgate standards of performance for new stationary sources that are *continuous*. 42 U.S.C. §§ 7411, 7602(*l*). Yet EPA has not done this.

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[1] *See* Nikolaos Zirogiannis et al, *Understanding Excess Emissions from Industrial Facilities: Evidence from Texas*, 52 ENV. SCI. TECH 2482 (2018).
[2] Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis § 1, Exec. Order 13,990, 86 Fed. Reg. 7,037, 7,037 (Jan. 25, 2021); Protecting the Climate Crisis at Home and Abroad § 219, Exec. Order 14008, 86 Fed. Reg. 7,601, 7629 (Jan. 27, 2021) (stating that the United States must "turn[] disadvantaged communities—historically marginalized and overburdened—into healthy, thriving communities.").
[3] 40 C.F.R. pt. 60.

Instead, EPA has, throughout its regulations implementing section 111 of the Act, carved out blanket exemptions from standards of performance during SSM events. As the D.C. Circuit held in *Sierra Club v. EPA*, 551 F.3d 1019, 1027–28 (D.C. Cir. 2008), SSM exemptions fail to meet the plain text requirement of the Act for continuous application of emissions standards.[4] Nevertheless, at least 23 section 111 subparts contain unlawful loopholes that exempt polluters from standards of performance during SSM events.[5]

EPA must act swiftly to remove all illegal SSM exemptions contained in subparts implementing section 111 of the Clean Air Act. Elimination of these provisions is necessary to bring EPA's regulatory regime into compliance with the Act, and to advance the racial and environmental justice priorities of the Biden administration by "hold[ing] polluters accountable, including those who disproportionately harm communities of color and low-income communities."[6]

II. BACKGROUND

A. The Severe Impacts of SSM Events on Surrounding Communities

The release of high concentrations of air pollution during SSM periods deeply threatens the health and quality of life of surrounding communities. During SSM events, regulated oil, gas, coal, refinery, and petrochemical facilities, as well as other large industrial polluters, release startlingly large quantities of pollutants.[7] The pollutants emitted include various mixes of carbon monoxide, particulate matter, volatile organic compounds, sulfur dioxide, nitrogen oxides, and

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[4] EPA has also promulgated illegal affirmative defenses to civil penalties in several section 111 rules. *See NRDC v. EPA*, 749 F.3d 1055, 1062-64 (D.C. Cir. 2014) (holding such defenses are illegal). We do not address affirmative defense provisions in this petition because EPA has already granted a petition from Sierra Club asking the agency to remove such provisions from its regulations. We note, however, that EPA has not finished its work to remove those affirmative defense provisions and urge that it do so expeditiously.

[5] *See* Exhibit 1 for our inventory of these exemptions. Although we have attempted to locate all the NSPS exemptions, EPA should undertake its own search of the section 111 regulations to ensure every loophole is removed.

[6] Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis § 1, Exec. Order 13,990, 86 Fed. Reg. 7,037, 7,037 (Jan. 25, 2021).

[7] *See, e.g.*, ENVIRONMENTAL INTEGRITY PROJECT, BREAKDOWNS IN AIR QUALITY: AIR POLLUTION FROM INDUSTRIAL MALFUNCTION AND MAINTENANCE IN TEXAS (2016).

more.[8] These "excess emissions" events that occur during SSM periods are "frequent, large in magnitude, last from a few hours to several days (or even weeks) and can exceed a facility's routine annual emissions."[9] Texas, for example,[10] experiences excess emissions events involving release of over 10 tons of a criteria pollutant on a daily basis.[11] In 2020, Texas facilities reported 2,980 breakdown or malfunction air pollution events, from which over 46 million pounds of air pollution were emitted.[12] In Houston alone, petrochemical facilities experience, on average, large excess emission events every six weeks.[13] The impact of these frequent, unregulated emissions on human health is devastating.

Excess emissions events degrade air quality in adjacent and downwind residential communities where people live, work, and play, causing devastating and expensive public health impacts. Children, the elderly, and those with preexisting health conditions are particularly vulnerable to this pollution, as are those experiencing socioeconomic disparities.[14] In Texas these frequent excess emissions events cause an average of 42 elderly deaths per year and cost the state upwards of $241 million annually.[15]

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[8] Britney McCoy et al., *How big is big? How often is often? Characterizing Texas petroleum refining upset air emissions*. 44 Atmos. Environ. 4230 (2010).

[9] Alex J. Hollingsworth et al., *The Health Consequences of Excess Emissions: Evidence from Texas*. 108 J. Env. Econ. Mgmt. 102449 (2021) https://doi.org/10.1016/j.jeem.2021.102449; Cynthia Murphy & David Allen, *Hydrocarbon emissions from industrial release events in the Houston-Galveston area and their impact on ozone formation* 39 Atmos. Environ. 3785 (2005); Britney McCoy et al., *How big is big? How often is often? Characterizing Texas petroleum refining upset air emissions*. 44 Atmos. Environ. 4230 (2010).

[10] Texas is one of the only states that requires collection and publication of data on SSM emissions, in contrast to most other states that do not collect such data. As such, this Petition references examples from Texas, the only state where data on SSM emissions is readily available other than Louisiana.

[11] Alex J. Hollingsworth et al., *The Health Consequences of Excess Emissions: Evidence from Texas*. 108 J. Env. Econ. Mgmt. 102449 (2021) https://doi.org/10.1016/j.jeem.2021.102449. The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for common air pollutants (also known as "criteria air pollutants"), and EPA has done so for ozone, particulate matter, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide.

[12] Environment Texas, *Illegal Air Pollution in Texas, 2020 COVID recession leads to drop in reported emission*, at 4 (Oct. 2021) ("Illegal Air Pollution Report"). While this represents a 54% drop from 2019, the decrease is due to "a recession across the oil, gas, and petrochemical industries caused in part by the COVID19 pandemic." *Id.* Preliminary data from 2021, however, suggests this drop will be short-lived. *Id.*

[13] Mark Collette and Matt Dempsey, "Dangerous Chemicals Create Hidden Dangers in Houston." Houston Chronicle, July 26, 2018. https://www.houstonchronicle.com/news/investigations/article/Dangerous-chemicals-roadblocks-to-information-7420931.php.

[14] Qian Di et al., *Association of Short-Term Exposure to Air Pollution with Mortality in Older Adults*. 318 J. Am. Med. Assoc. 2446, 2452 (2017).

[15] Hollingsworth et. al., at 2.

The exemption of SSM events from the standards of performance for emissions reduction is a serious environmental justice issue. A long history of social, economic, and political disenfranchisement as well as racism indoctrinated into planning and zoning has meant that communities of color disproportionately live, work, and play in areas adjacent to power plants, oil refineries, chemical and petrochemical manufacturers, and other industrial facilities. As a result, fenceline communities—characterized as communities adjacent to often heavily polluting oil, gas, and industrial operations—are predominantly low income and communities of color.[16] These fenceline communities are too frequently exposed to a laundry list of dangerous air pollutants that wealthier, majority-white communities do not experience.[17] Studies into excess emissions from large industrial facilities have found a correlation between the percentage of Black and Hispanic populations and exposure to excess emissions.[18] As a result, exposure to dangerously high levels of toxic, noxious pollution has become an everyday reality for Black, Hispanic, Indigenous, and low-income communities across the United States.

Fenceline communities tend to face additional socioeconomic challenges, including inadequate access to high-quality health care, insufficient support systems, and other environmental burdens, that magnify and complicate the impacts of excess SSM pollution.[19] The cumulative impact of these exposures has left generations of fenceline communities at higher risk for various cancers, birth defects, mutations, respiratory ailments, and other serious health harms.[20] The COVID-19 pandemic has shone a spotlight on the disproportionate health outcomes of communities with unsafe air quality, as exposure to air pollution has contributed to the disparate impact of the disease on racial minorities.[21]

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[16] Gretchen T. Goldman et al., *Assessment of Air Pollution Impacts and Monitoring Data Limitations of a Spring 2019 Chemical Facility Fire*, Environmental Justice 2021, 2 https://doi.org/10.1089/env.2021.0030.
[17] *Id*. These pollutants include benzene, cyclohexane dioxins, ethylene oxide, formaldehyde, hydrogen cyanide, hydrofluoric acid, naphthalene, chloroprene, sulfuric acid, lead, particulate matter, and many more. *Id.*
[18] Zhengyan Li et al., *Racial, ethnic, and income disparities in air pollution: A study of excess emissions in Texas*, 14 PLOS ONE 8 (Aug. 2, 2019).
[19] Gretchen T. Goldman et al., *Assessment of Air Pollution Impacts and Monitoring Data Limitations of a Spring 2019 Chemical Facility Fire*, Environmental Justice 2021, 2, https://doi.org/10.1089/env.2021.0030.
[20] Jill Johnston, et al., *Chemical Exposures, Health and Environmental Justice in Communities Living on the fenceline of industry*, 7 CURRENT ENVTL. HEALTH REP. 48 (2020).
[21] Eric Brandt, *Air Pollution, Racial Disparities, and COVID-19 Mortality*, 146 J. ALLERGY CLINICAL IMMUNOLOGY 61 (2020).

What is more, the communities bearing the brunt of SSM events also face disproportionate risk and vulnerability to climate impacts. While most SSM events do not result from climate-fueled natural disasters, some of the worst excess emission SSM events occur in the wake of these disasters.[22] Hurricane Harvey, which pummeled Houston's low income communities and communities of color especially hard, is an example of such an event. In the aftermath of the natural disaster, fenceline communities not only faced direct effects of the storm—which itself caused extensive property damage, widespread power outages, and brought toxic wastewater into the streets and people's homes—but also the astounding excess emissions from neighboring industrial facilities.[23] Hurricane Harvey is not an isolated event; as the impacts of climate change worsen,[24] the frequency of high-magnitude natural disasters will increase, and with it the occurrence of SSM excess emissions events.[25]

While release of excess emissions far exceeds regularly-applicable standards of performance and other limits, polluters avoid liability through automatic or discretionary SSM exemptions contained in unlawful EPA rules promulgated under the Clean Air Act and in state implementation plans (SIPs) (which are not addressed in this petition).[26] Where SSM exemptions persist, there exists no limit on emissions during SSM events and little to no transparency around community exposure to pollution. The SSM exemptions permit monitoring gaps during these periods that leave residents with little to no information on what noxious substances they have been exposed to.[27] Instead, facilities self-report estimates of their SSM emissions—if they are even required to report anything at all—with no way for the public to gauge their accuracy.

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[22] Susan C. Anenberg & Casey Kalman, *Extreme weather, chemical facilities, and vulnerable communities in the U.S. Gulf Coast: A disastrous combination*, AGU (2019), https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019GH000197.
[23] *Id.*
[24] Krishna A. Rao et al., Technical Summary, Intergovernmental Panel on Climate Change, 35 (2021), https://www.ipcc.ch/report/ar6/wg1/#FullReport ("There is high confidence that average peak wind speeds and the proportion of Category 4–5 [tropical cyclones] will increase with warming and that peak winds of the most intense [tropical cyclones] will increase.").
[25] These compounded climate and industrial events constitute NaTech events. Wendee Nicole, *A Different Kind of Storm: Natech Events in Houston's Fenceline Communities*, (2021) ("Natech events—short for natural hazard–triggered technological disasters—occur when a natural occurrence such as a hurricane or flood leads to infrastructural failures such as a chemical spill or nuclear reactor meltdown.").
[26] U.S. Environmental Protection Agency. State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA's SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls To Amend Provisions Applying to Excess Emissions During Periods of Startup. 2015.
[27] Gretchen T. Goldman et al., *Assessment of Air Pollution Impacts and Monitoring Data Limitations of a Spring 2019 Chemical Facility Fire*, Environmental Justice 2021, 3 https://doi.org/10.1089/env.2021.0030.

SSM loopholes leave fenceline communities with no recourse to put a stop to the repeated pollution spikes. The exemptions allow industrial polluters to release huge amounts of harmful pollution into the lungs of fenceline communities without consequence or any incentive to prevent the problem, even when pollution spikes occur repeatedly. By exempting industrial polluters during these SSM periods, EPA prevents both itself and these communities from taking action to hold polluters accountable for the deadly emissions they spew into the air. EPA must remove these unlawful and devastating exemptions.

B. History of SSM Exemptions

1. Regulatory History of NSPS SSM Exemptions

EPA has afforded polluters unlawful SSM exemptions from the Act's emissions reductions requirements since the 1970s. These loopholes in EPA's own regulations have allowed polluters to contaminate fenceline and downwind communities with harmful emissions during SSM events without any consequences.

In response to a petition from Kennecott Copper Corporation that alleged that the "standards of performance [as promulgated] fail[ed] to provide for excessive emissions during periods of startup, shutdown, and malfunction," EPA promulgated the first SSM exemptions to section 111 standards in 1977.[28] Specifically, the regulation "clarifie[d] that excess emissions during periods of startup, shutdown, and malfunction are not considered a violation of a standard."[29] In place of the standard, EPA stated that source owners or operators were subject only to the "general duty" provision of 40 C.F.R. 60.11(d): "[a]t all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions."[30]

EPA has promulgated at least 97 SSM loopholes that still exist today, each of which violate the Act's clear requirement for continuous emissions reduction.[31] At least 23 of these

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[28] *Standards of Performance for New Stationary Sources*, 42 Fed.Reg. 57,125 (Nov. 1, 1977).
[29] Specifically amending the general provisions of the copper smelter standards. "40 C.F.R. 60.8(c) exempts periods of startup, shutdown, and malfunction from performance tests. By implication this means compliance with numerical emissions limits cannot be determined during periods of startup, shutdown, and malfunction." *Id.*
[30] *Standards of Performance for New Stationary Sources*, 42 Fed.Reg. 57,125 (Nov. 1, 1977).
[31] *See* Exhibit 1 for an inventory of these exemptions.

exemptions are found in EPA's NSPS regulations.[32] These include broad exemptions to opacity standards (60.11(c)) and carbon monoxide standards (60.45(b)(6)(iii), as well as exemptions to standards of performance for petroleum refineries (60.104(a)(1)), glass manufacturing plants (60.292(e)), and the polymer manufacturing industry (60.562-1(b)(1)(ii), (c)(1)(i)(B)), among others. Each of these exemptions violates the Act and contradicts EPA's policy, following the D.C. Circuit's ruling in *Sierra Club v. EPA*, that SSM exemptions are unlawful.

2. *D.C. Circuit Decisions on SSM Exemptions*

In 2008, the D.C. Circuit held that SSM exemptions in Clean Air Act regulations violate the Act's plain text. *Sierra Club v. EPA*, 551 F.3d 1019, 1027–28 (D.C. Cir. 2008). Section 112 of the Act requires EPA to set "emissions standards" for hazardous air pollutants, 42 U.S.C. § 7412, and EPA for many years incorporated SSM exemptions in those standards.[33] 40 C.F.R. Part 63. As with several of the section 111 exemptions,[34] the section 112 SSM provision at issue in *Sierra Club* "exempted [each source] from the numerical limits set for emission control pursuant to section 112" and provided that "only the general duty would apply." *Sierra Club v. EPA*, 551 F.3d at 1022.

The *Sierra Club* court looked to Clean Air Act section 302(k), where "emission standard" is defined as: "a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants *on a continuous basis* …." 42 U.S.C. § 7602(k) (emphasis added). Reading sections 112 and 302(k) together, the court found the plain text of the Act requires that "some section 112 standard apply continuously," and determined that SSM exemptions interrupt this required continuity. *Id.* at 1026.

The court rejected EPA's argument that the "general-duty requirement during SSM events is a lawful interpretation of the statute and a reasonable way to reconcile the need to minimize emissions with the inherent technological limitations during SSM events," *id.* The

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[32] 40 C.F.R. 60; *See* Exhibit 1 for a list of these exemption provisions.
[33] *E.g.*, *National Emission Standards for Hazardous Air Pollutants for Source Categories: General Provisions*, 59 Fed.Reg. 12,408 (Mar. 16, 1994).
[34] *See e.g.*, 40 C.F.R. §§ 60.8(c), 60.11(c); *see also id.* § 60.11(d) ("At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.").

court held that the general duty did not qualify as a "section 112-compliant standard" because EPA acknowledged that it was neither a "separate and independent standard under CAA section 112(d)" nor a "free-standing emission limitation that must independently be in compliance with section 112(h)."[35] *Id.* at 1027-28. The court concluded: "[b]ecause the general duty that applies during SSM events is inconsistent with the plain text of section 112 of the Clean Air Act … the SSM exemption violates the Act's requirement that some section 112 standard apply continuously." *Id.* at 1021.

3. EPA Policy.

Since this D.C. Circuit case ruling, EPA has taken piecemeal actions to align its policy with the court's conclusion that SSM exemptions are unlawful. It has not, however, initiated a broad action to address the exemptions to section 111 standards of performance.

EPA has slowly begun removing SSM exemptions as section 111 regulations are periodically revised, and has repeatedly acknowledged that section 111 obliges the agency to remove SSM exemptions and promulgate standards of performance that require "continuous system of emission reduction."[36] Immediately following the 2008 *Sierra Club* decision, for example, EPA removed an SSM exemption from the NSPS for hospital/medical/infectious waste incinerators established under section 111 and 129 of the Act.[37] In its response to comments on

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[35] Clean Air Act section 112(h) allows EPA to set work practice standards in lieu of numeric standards for harzardous air pollutants in two very limited circumstances.

[36] New Source Performance Standards Review for Nitric Acid Plants; Final rule,'' 77 Fed. Reg. 48433 (August 14, 2012); Standards of Performance for Grain Elevators, 79 Fed. Reg. 39241, 39243 (proposed July 9, 2014); New Source Performance Standards for New Stationary Sources and Emission Guidelines for Existing Sources; Commercial and Industrial Solid Waste Incineration Units, Final rule, 76 Fed. Reg. 15704 (March 21, 2011); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review, 85 Fed. Reg 54178 (Aug. 31, 2020); Review of Standards of Performance for Lead Acid Battery Manufacturing Plants and National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources Technology Review, 87 Fed. Reg. 10134 (Feb. 23, 2022); *see also* State Implementation Plans: Response to Petition for Rulemaking, 80 Fed. Reg. at 33890 n. 44 (June 12, 2015) (EPA has eliminated SSM exemptions in federal rules as those rules come up for review and acknowledged that the D.C. Circuit's reasoning in *Sierra Club* holding that exemptions are "inconsistent with the [Act]… applies equally" to all SSM exemptions, including section 111 exemptions.)

[37] EPA, Standards of Performance for New Stationary Sources and Emissions Guidelines for Existing Sources: Hospital/Medical/Infectious Waste Incinerators, 74 Fed. Reg. 51,368, 51,393 § III.F (Oct. 6, 2009). EPA explained: "In the event that sources, despite their best efforts, fail to comply with applicable standards during SSM events (as defined by the rule), EPA will determine an appropriate response based on, among other things, the good faith efforts of the source to minimize emissions during SSM periods, including preventative and corrective actions, as well as root cause analyses to ascertain and rectify excess emissions." Upheld in Medical *Waste Institute and Energy Recovery Council v. EPA*, 645 F.3d 420 (D.C. Cir. 2011). EPA subsequently removed exemptions it inadvertantly failed to eliminate in that first action. Federal Plan Requirements for Hospital/Medical/Infectious Waste Incinerators

its recent NSPS and National Emission Standards for Hazardous Air Pollutants ("NESHAP") for the oil and gas sector, the EPA stated "the reasoning in the D.C. Circuit's decision in *Sierra Club v. EPA* applies equally to section 111," and rejected comments that claimed NSPS provisions can include SSM exemptions.[38] EPA emphasized that "there is nothing in the NSPS provisions of the [Act] that would lead the EPA to treat SSM events differently."[39] Despite EPA's acknowledgement that these loopholes are unlawful, EPA's NSPS still contain at least 23 unlawful SSM exemptions.

III. EPA MUST REMOVE ALL SSM EXEMPTIONS FROM SECTION 111 REGULATIONS.

Many of EPA's regulations setting standards of performance for categories of stationary sources under section 111 include unlawful SSM exemptions. These exemptions are inconsistent with the Act's requirement that a standard of performance apply continuously and with the D.C. Circuit's decision in *Sierra Club*. EPA itself has repeatedly recognized that NSPS SSM exemptions are unlawful. Because these loopholes impose devastating impacts on already-overburdened communities, we request EPA remove all NSPS exemptions immediately.

A. Standards of performance under Clean Air Act section 111 require "continuous emission reduction."

The Clean Air Act unambiguously requires the EPA Administrator to promulgate standards of performance that require continuous emission reduction. Sections 111 and 302 of the Act both define "standard of performance." *See* 42 U.S.C. §§ 7411(a)(1), 7602(*l*).[40] Section

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Constructed on or Before December 1, 2008 and Standards of Performance for New Stationary Sources; Proposed Rule, 77 Fed. Reg. 24272, 24279 (April 23, 2012), final rule at 78 Fed. Reg. 28052 (May 13, 2013).

[38] Final Response to Public Comments on Proposed Rule: Oil and Natural Gas Sector New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, 76 Fed. Reg. 52,738, 183 &187 (proposed August 23, 2011) (to be codified at 40 C.F.R. pt. 60 and 63), https://www.regulations.gov/document/EPA-HQ-OAR-2010-0505-4546.

[39] *Id*. at 188.

[40] Section 111's definition is:

> [A] standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

302 defines it as "a requirement of *continuous emission reduction*, including any requirement relating to the operation or maintenance of a source to assure *continuous emission reduction*." 42 U.S.C. § 7602(*l*) (emphasis added). Plainly, this definition mandates that a standard of performance apply continuously.

The definitions in section 302, the Act's general definitions section, apply to section 111, for they apply "[w]hen used in this chapter," meaning the entirety of the Clean Air Act (Chapter 85 of Title 42). *See McEvoy v. IEI Barge Services, Inc.,* 622 F.3d 671, 675 (7th Cir. 2010). When Congress wanted to limit the application of section 302's general definitions, it did so expressly, as it did in section 302(j). 42 U.S.C. § 7602(j) ("Except as otherwise expressly provided, the terms 'major stationary source' and 'major emitting facility'" have certain meanings). Thus, Congress' choice not to limit the Act-wide definition of "standard of performance" in any way means that Act-wide definition applies to standards of performance promulgated under section 111. *See Salinas v. United States R.R. Retirement Board*, 141 S. Ct. 691, 698 (2021) (citations omitted).

Further, sections 111 and 302 must be read together to the extent they do not conflict, and there is no conflict between both sections' definitions of "standard of performance" that would eliminate section 302(*l*)'s express continuity requirement. *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000) (courts should "interpret the Act as a "symmetrical and coherent regulatory scheme … and fit, if possible, all parts into an harmonious whole.").

To the contrary, numerous section 111 subsections explicitly require continuity. Section 111(j)(1)(a) only allows waiver from any section 111 requirement with a demonstration that the proposed alternative system of curbing emissions "will achieve *greater continuous emission reduction* than that required ... under the standards of performance which would otherwise apply…." 42 U.S.C. § 7411(j)(1)(a) (emphasis added). Section 111(g)(4) requires revision of standards of performance if a Governor shows that "a new, innovative, or improved technology

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42 U.S.C. § 7411(a)(1). Section 302's is:

> The term "standard of performance" means a requirement of continuous emission reduction, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction.

Id. § 7602(*l*).

or process which achieves *greater continuous emission reduction* has been adequately demonstrated for any category of stationary sources." *Id.* § 7411(g)(4) (emphasis added). And section 111(h)(1) requires alternative work practice standards under section 111 to reflect the "best technological system of *continuous emission reduction*." *Id.* § 7411(h)(1) (emphasis added). Congress could not have plausibly intended to mandate that alternatives to standards of performance—or work practice standards—achieve continuous emission reduction and, at the same time, forego mandating that the original standards of performance themselves achieve continuous reduction.

Similarly, "there is a presumption that a given term is used to mean the same thing throughout a statute." *Mohamad v. Palestinian Authority*, 566 U.S. 449, 456 (2012) (citation and internal punctuation omitted). Nowhere does the Clean Air Act indicate that standards of performance need not require continuous emission reduction. As discussed immediately above, several subsections of section 111 instead explicitly require continuous reduction. Moreover, the terms "emission limitation" and "standard for emission" are found within Section 111's definition of "standard of performance," 42 U.S.C. § 7411(a)(1), and section 302(k) in turn defines"emission limitation" and "emission standard" as requirements that "limit[] the quantity, rate, or concentration of emissions of air pollutants on a continuous basis." *Id.* § 7602(k).

Thus, similar to how the D.C. Circuit read sections 112 and 302(k) together to hold that Congress "has required that there must be continuous section 112-compliant standards," *Sierra Club*, 551 F.3d at 1026, reading sections 111 and 302 together demands the same conclusion: the Act requires continuous section 111-compliant standards of performance. In sum, as EPA has repeatedly recognized when removing the unlawful exemptions from section 111 regulations, *see supra notes* 36-40, the bottomline conclusion of the *Sierra Club* decision—holding SSM exemptions unlawful—applies equally to section 111 regulations.

B. The NSPS general duty provision is not a valid standard of performance.

Like the section 112 regulation *Sierra Club* vacated, EPA's general NSPS regulation includes a general duty provision to, "to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions." 40 C.F.R. § 60.11(d). And as the D.C. Circuit found in *Sierra Club*, a general duty provision is not a valid standard of performance because it does not meet the definition of standard of performance, nor could it be a design, equipment, work practice, or operational standard established under Section 111(h). *See Sierra Club v. EPA*, 551 F.3d at 1027.

To begin with, the general duty provision does not meet the definition of standard of performance because it does not require continuous emission reduction. Further, the section 111 definition of "standard of performance" requires that the standard "reflects the degree of emission limitation achievable through the application of the best system of emission reduction which ... the Administrator determines has been adequately demonstrated." 42 U.S.C. § 7411(a)(1). The general duty provision, however, does not purport to be the "best" of anything—just a generic call for following "good air pollution control practice."

The general duty provision is also not a design, equipment, work practice, or operational standard under section 111(h). In Section 111(h), Congress built in an exception to EPA's duty to promulgate standards of performance under section 111:

> … if in the judgment of the Administrator, it is not feasible to prescribe or enforce a standard of performance, [they] may instead promulgate a design, equipment, work practice, or operational standard, or combination thereof, which reflects *the best technological system of continuous emission reduction* … the Administrator determines has been adequately demonstrated."

42 U.S.C. § 7411(h)(1) (emphasis added). Section 111 further defines "technological system of continuous emission reduction" as "(A) a technological process for production or operation by any sources which is inherently low-polluting, or (B) a technological system for *continuous reduction* of the pollution generated by a source before such pollution is emitted into the ambient air, including precombustion cleaning or treatment of fuels." 42 U.S.C. § 7411(a)(7). The NSPS general duty provision was not established pursuant to Section 111(h), is not a "technological" process or system, and does not ensure continuous reduction of emissions.

Further demonstration that the general duty provision cannot salvage section 111 SSM exemptions comes from the D.C. Circuit's discussion of the very similar exception in section 112(h), 42 U.S.C. § 7412(h). In *Sierra Club*, EPA argued that the section 112 general duty provision sufficed to make the emissions standard continuous despite the exemption from the emissions standard itself. The D.C. Circuit rejected this argument, recognizing that the general duty did not meet section 112 criteria nor did EPA purport to set the general duty provision pursuant to the 112(h) criteria on a "(1) design or (2) source specific basis," *Sierra Club*, 551 F.3d at 1028 (citing §§ 7412(h)(2)(A), (B)). The court explained that "[b]ecause the general duty is the only standard that applies during SSM events, and accordingly no section 112 standard governs these events—the SSM exemption violates the Act's requirement that some section 112 standard apply continuously." *Id.* at 1027. The same reasoning holds true for section 111 exemptions. The general duty does not constitute a section 111-compliant standard and was not established under section 111(h). Because the section 111 exemptions leave only the general duty during SSM events, no section 111 standard "governs these events." *Id.*

C. EPA must remove the unlawful SSM exemptions.

EPA has acted outside its statutory authority in promulgating unlawful SSM exemptions from NSPS established under section 111. To provide uniformity in national policy and swiftly address the environmental injustice of excess SSM emissions events concentrated in disadvantaged communities, EPA must eliminate all SSM exemptions from the NSPS through a single rulemaking.

We note that EPA has received multiple petitions seeking the related relief of removing SSM exemptions from NESHAP promulgated under section 112 and removing affirmative defense provisions from NSPS and NESHAP. Indeed, EPA granted environmental groups' petition to remove affirmative defense provisions in NSPS and NESHAP in 2014,[41] and has long delayed action on environmental groups' petition for rulemaking pending since 2009 requesting removal of NESHAP exemptions.[42] We do not renew those petitions here, but note that EPA could efficiently coordinate the relief sought by this petition with many or most of the actions that those separate petitions request. EPA also recently granted petitions on the newest type of malfunction exemption (*e.g.*, "force majeure event" exemption) in the work practice standards in the Petroleum Refinery and Ethylene Production Rules.[43] We continue to call for EPA to remove these and similar exemptions through all pending rulemaking or reconsideration processes as expeditiously as possible.

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[41] Ltr. From J. McCabe, Acting EPA Administrator, to S. Johnson (Nov. 19, 2014) (attached as Exhibit 2); *see* Petition to Revise Air Emission Regulations Containing Affirmative Defense (Jun. 17, 2014) (attached as Exhibit 3).
[42] Petition to EPA for MACT rulemaking (Jan. 9, 2009) (attached as Exhibit 4).
[43] Ltr. From J. Goffman Principal Dep. Ass't Adm'r to Earthjustice on Petroleum Refinery Sector Rule (Apr. 19, 2022) (attached as Exhibit 5); Ltr. From J. Goffman, Principal Dep. Ass't Adm'r to Earthjustice on Ethylene Production Rule (Apr. 19, 2022) (attached as Exhibit 6).

We emphasize here that for the many rules for which EPA has not even begun the process or for which it has delayed rulemaking for years, the most efficient and effective approach for EPA to take to bring its regulations into compliance with the law and to provide vital public health and welfare protections to communities—especially overburdened communities facing cumulative impacts from multiple types of sources that can rely on various SSM exemptions—is to remove all remaining NSPS and NESHAP loopholes through a single rulemaking. This would ensure EPA finally and fully complies with *Sierra Club v. EPA*, and *NRDC v. EPA* without any further agency delay – after years of stalling action to implement judicial rulings that require EPA to remove blatantly unlawful provisions from these regulations. By contrast, waiting to eliminate the SSM exemptions and affirmative defense provisions through case-by-case rulemakings when each subpart is revised under the Clean Air Act's periodic review and revision provisions, as EPA has been doing to date, would mean that many communities have to wait years or even decades longer for relief from dangerous SSM emissions.[44]

The same legal reasoning applies to each of these unlawful provisions no matter the source category: every SSM exemption and affirmative defense violates the Clean Air Act. There is a strong public interest in EPA following the law and, through a unified rulemaking, prioritizing the removal of all illegal provisions from core Clean Air Act requirements that are essential to protect public health and welfare. We therefore urge EPA to immediately initiate rulemaking to remove all SSM exemptions and affirmative defense provisions to comply with the Act and begin to address the environmental injustices that occur with each unregulated SSM excess-emission event.

[44] The Office of Inspector General recently highlighted the longstanding agency delay in fulfilling these review obligations, finding that the agency has 93 overdue section 112 rulemakings, almost half of which are overdue by more than five years. EPA Ofc. of Insp. Gen., The EPA Needs to Develop a Strategy to Complete Overdue Residual Risk and Technology Reviews and to Meet the Statutory Deadlines for Upcoming Reviews, Report No. 22-E-0026 (Mar. 30, 2022), https://www.epa.gov/office-inspector-general/report-epa-needs-develop-strategy-complete-overdue-residual-risk-and-0.

IV. CONCLUSION

For the reasons discussed above, we petition EPA to initiate a single rulemaking to remove all unlawful SSM regulatory exemptions from its regulations implementing section 111 of the Clean Air Act.

Thank you for your time and consideration of this Petition.

Sincerely,

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Exhibit 1 – Inventory of Existing Section 111 and Section 112 SSM Exemptions

Exhibit 2 - Ltr. From J. McCabe, Acting EPA Administrator, to S. Johnson (Nov. 19, 2014)

Exhibit 3 - Petition to Revise Air Emission Regulations Containing Affirmative Defense (Jun. 17, 2014)

Exhibit 4 - Petition to EPA for MACT rulemaking (Jan. 14, 2009)

Exhibit 5 - Ltr. From J. Goffman Principal Dep. Ass't Adm'r to Earthjustice on Petroleum Refinery Sector Rule (Apr. 19, 2022)

Exhibit 6 - Ltr. From J. Goffman, Principal Dep. Ass't Adm'r to Earthjustice on Ethylene Production Rule (Apr. 19, 2022)

EXHIBIT 1

Inventory of Existing Section 111 and Section 112 SSM Exemptions

Attached as Native File

EXHIBIT 2

Ltr. from J. McCabe, Acting EPA Administrator, to S. Johnson

(Nov. 19, 2014)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 19 2014

OFFICE OF
AIR AND RADIATION

Mr. Seth L. Johnson
Earthjustice
1625 Massachusetts Avenue, NW
Washington, D.C. 20036-2212

Dear Mr. Johnson:

The United States Environmental Protection Agency received your administrative petition for rulemaking dated June 17, 2014, and supplement thereto dated October 6, 2014, requesting that the EPA revise certain regulations promulgated under Clean Air Act (CAA) sections 111, 112 and 129 to delete the affirmative defense against civil penalties.

As you acknowledge in your petition and petition supplement, the EPA has already begun to take action to ensure that rules promulgated under the CAA are consistent with Natural Resources Defense Council v. EPA, 749 F.3d 1055 (D.C. Cir. 2014) (vacating the affirmative defense in the CAA section 112(d) rule establishing emission standards for Portland cement kilns). The EPA takes decisions from Federal courts very seriously, and so will continue to take actions consistent with the court opinion. As you know, the EPA has already issued a proposal to remove the affirmative defense from one of the CAA section 111 regulations listed in your petition - the new source performance standards regulation at 40 CFR part 60, subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution). In addition, the EPA recently withdrew proposals to include an affirmative defense in CAA section 112 regulations at 40 CFR part 63, subparts DDD, NNN and XXX (regulations for Mineral Wool Production, Wool Fiberglass Manufacturing and Ferroalloys, respectively). As Earth Justice's administrative petition requests that the EPA continue on its current course, we do not feel that an EPA response to your administrative petition is necessary to evidence the EPA's commitment to removing affirmative defenses from the remaining rules that are the subject of your petition. However, because a formal response to your petition may limit or resolve the issues in the petition for judicial review you recently filed challenging affirmative defenses in various CAA rules (Sierra Club v. EPA, No. 14-1110, (D.C. Circuit 2014)), the EPA grants your petition for rulemaking. The EPA will continue the ongoing process of removing affirmative defenses from the remaining rules that are the subject of your petition as expeditiously as practicable.

If you have any questions, please contact Debra Dalcher of my staff at (919) 541-2443.

Sincerely,

Janet G. McCabe
Acting Assistant Administrator

cc: James Pew
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EXHIBIT 3

Petition to Revise Air Emission Regulations Containing Affirmative Defense

(Jun. 17, 2014)

VIA CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

June 17, 2014

Gina McCarthy
Administrator
Environmental Protection Agency
1101A EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

RE: Petition to Revise Air Emissions Regulations Containing Affirmative Defense

Dear Administrator McCarthy:

This is a petition under *Oljato Chapter of Navajo Tribe v. Train*, 515 F.2d 654 (D.C. Cir. 1975), and for rulemaking. The party submitting this petition is Sierra Club, 85 Second St., 2nd Floor, San Francisco, CA 94105, (415) 977-5500. By this petition, Sierra Club requests that EPA revise the regulations it promulgated under sections 111, 112, and 129 of the Clean Air Act to delete the affirmative defense against civil penalties that it included in them. Those regulations are listed below for your convenience.

I. BACKGROUND

Although the Clean Air Act directs district courts, not EPA, to determine the amount of civil penalties, if any, to assess when a stationary source of air pollution violates an emission standard, 42 U.S.C. §7604(a); *see also id.* §7413(e) (providing list of factors district court must consider in determining what penalties to assess), EPA has been inserting into many of its regulations an affirmative defense against civil penalties when plants claim a violation of emission standards resulted from a malfunction and they meet certain EPA-created conditions. EPA first inserted the affirmative defense into the regulations governing emissions of hazardous air pollutants from Portland cement manufacturing plants. *See* 75 Fed. Reg. 54,970 (Sept. 9, 2010); *see also* 78 Fed. Reg. 10,006 (Feb. 12, 2013) (reaffirming and slightly amending affirmative defense). Several environmental organizations, including Sierra Club, challenged EPA's insertion and retention of the affirmative defense in the cement plants rule. *See Natural Res. Def. Council ("NRDC") v. EPA*, No. 10-1371, 2014 WL 1499825 (D.C. Cir. Apr. 18, 2014).

The agency has since inserted the affirmative defense into the following rules promulgated under Clean Air Act §§111, 112, and 129, 42 U.S.C. §§7411, 7412, and 7429, that govern emissions from numerous categories of sources:

New Source Performance Standards (§111 only):

- Subpart Da: Electric Utility Steam Generating Units
  - 40 C.F.R. §60.48Da
  - 77 Fed. Reg. 9304 (Feb. 16, 2012)
- Subpart Ga: Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After October 14, 2011
  - 40 C.F.R. §60.74a
  - 77 Fed. Reg. 48,433 (Aug. 14, 2012)
- Subpart BBa: Kraft Pulp Mill Affected Sources for Which Construction, Reconstruction, or Modification Commenced After May 23, 2013
  - 40 C.F.R. §60.286a
  - 79 Fed. Reg. 18,952 (Apr. 4, 2014)
- Subpart OOOO: Crude Oil and Natural Gas Production, Transmission and Distribution
  - 40 C.F.R. §60.5415
  - 78 Fed. Reg. 58,416 (Sept. 23, 2013); 77 Fed. Reg. 49,490 (Aug. 16, 2012)

Incinerator New Source Performance Standards & Emission Guidelines (§§111, 129):

- Subpart CCCC: Commercial and Industrial Solid Waste Incineration Units (new)
  - 40 C.F.R. §60.2120
  - 78 Fed. Reg. 9112 (Feb. 7, 2013); 76 Fed. Reg. 15,704 (Mar. 21, 2011)
- Subpart DDDD: Commercial and Industrial Solid Waste Incineration Units (existing)
  - 40 C.F.R. §60.2685
  - 78 Fed. Reg. 9112 (Feb. 7, 2013); 76 Fed. Reg. 15,704 (Mar. 21, 2011)
- Subpart LLLL: New Sewage Sludge Incineration Units
  - 40 C.F.R. §60.4861
  - 76 Fed. Reg. 15,372 (Mar. 21, 2011)
- Subpart MMMM: Existing Sewage Sludge Incineration Units
  - 40 C.F.R. §60.5181
  - 76 Fed. Reg. 15,372 (Mar. 21, 2011)

National Emission Standards for Hazardous Air Pollutants (§112):

- Subpart N: Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks
  - 40 C.F.R. §63.342
  - 77 Fed. Reg. 58,220 (Sept. 19, 2012)

- Subpart S: Pulp and Paper Industry
  - 40 C.F.R. §63.456
  - 77 Fed. Reg. 55,698 (Sept. 11, 2012)
- Subpart U: Group I Polymers and Resins
  - 40 C.F.R. §63.480
  - 76 Fed. Reg. 22,566 (Apr. 21, 2011)
- Subpart X: Secondary Lead Smelting
  - 40 C.F.R. §63.552
  - 77 Fed. Reg. 556 (Jan. 5, 2012)
- Subpart Y: Marine Tank Vessel Tank Loading Operations
  - 40 C.F.R. §63.562
  - 76 Fed. Reg. 22,566 (Apr. 21, 2011)
- Subpart HH: Oil and Natural Gas Production Facilities
  - 40 C.F.R. §63.762
  - 77 Fed. Reg. 49,490 (Aug. 16, 2012)
- Subpart II: Shipbuilding and Ship Repair (Surface Coating)
  - 40 C.F.R. §63.781
  - 76 Fed. Reg. 72,050 (Nov. 21, 2011)
- Subpart JJ: Wood Furniture Manufacturing Operations
  - 40 C.F.R. §63.800
  - 76 Fed. Reg. 72,050 (Nov. 21, 2011)
- Subpart KK: Printing and Publishing Industry
  - 40 C.F.R. §63.820
  - 76 Fed. Reg. 22,566 (Apr. 21. 2011)
- Subpart CCC: Steel Pickling—HCl Process Facilities and Hydrochloric Acid Regeneration Plants
  - 40 C.F.R. §63.1155
  - 77 Fed. Reg. 58,220 (Sept. 19, 2012)
- Subpart GGG: Pharmaceuticals Production
  - 40 C.F.R. §63.1250
  - 76 Fed. Reg. 22,566 (Apr. 21, 2011)
- Subpart HHH: Natural Gas Transmission and Storage Facilities
  - 40 C.F.R. §63.1272
  - 77 Fed. Reg. 49,490 (Aug. 16, 2012)
- Subpart JJJ: Group IV Polymers and Resins
  - 40 C.F.R. §63.1310
  - 79 Fed. Reg. 17,340 (Mar. 27, 2014)
- Subpart MMM: Pesticide Active Ingredient Production
  - 40 C.F.R. §63.1360
  - 79 Fed. Reg. 17,340 (Mar. 27, 2014)
- Subpart PPP: Polyether Polyols Production
  - 40 C.F.R. §63.1420
  - 79 Fed. Reg. 17,340 (Mar. 27, 2014)

- Subpart TTT: Primary Lead Smelting
    - 40 C.F.R. §63.1551
    - 76 Fed. Reg. 70,834 (Nov. 15, 2011)
- Subpart DDDDD: Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters
    - 40 C.F.R. §63.7501
    - 78 Fed. Reg. 7138 (Jan. 31, 2013); 76 Fed. Reg. 15,608 (Mar 21, 2011)
- Subpart UUUUU: Coal- and Oil-Fired Electric Utility Steam Generating Units
    - 40 C.F.R. §63.10001
    - 77 Fed. Reg. 9304 (Feb. 16, 2012)
- Subpart JJJJJJ: Industrial, Commercial, and Institutional Boilers Area Sources
    - 40 C.F.R. §63.11226
    - 78 Fed. Reg. 7488 (Feb. 1, 2013); 76 Fed. Reg. 15,554 (Mar. 21, 2011)
- Subpart VVVVVV: Chemical Manufacturing Area Sources
    - 40 C.F.R. §63.11501
    - 77 Fed. Reg. 75,740 (Dec. 21, 2012)
- Subpart HHHHHHH: Polyvinyl Chloride and Copolymers Production
    - 40 C.F.R. §63.11895
    - 77 Fed. Reg. 22,848 (Apr. 17, 2012)

II. GROUNDS FOR PETITION

On April 18, 2014, the D.C. Circuit ruled that EPA lacked authority to promulgate the affirmative defense in the cement rule and vacated it. *NRDC v. EPA*, No. 10-1371, 2014 WL 1499825, at *7-9 (D.C. Cir. Apr. 18, 2014). The affirmative defense in that rule is indistinguishable from the affirmative defense in the rules listed above. Thus, EPA's insertion of the affirmative defense into the rules for the source categories listed above contravenes the D.C. Circuit's binding caselaw, which was decided after those rules were promulgated.

Accordingly, EPA must remove the affirmative defense from those rules. EPA has already acknowledged that the affirmative defense has no place in air regulations like these because of the *NRDC* decision. For example, in the recent pre-publication version of its proposal for the rule governing air toxics emissions from refineries, EPA declined to include the affirmative defense "[i]n light of *NRDC*." EPA, *Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards* 333 (signed by Administrator on May 15, 2014), epa.gov/ttn/atw/petrefine/20140515fr.pdf. Just as EPA is removing the affirmative defense from rules that are under development, it should also remove it from the rules listed above, where rule development has already concluded. It is identically illegal in all of them, and should not be shielded by happenstance from removal in some of them.

III. PROMPT RESPONSE REQUESTED

As indicated above, this petition raises a purely legal issue. Further, there is no dispute that the affirmative defense is unlawful: EPA has already publicly recognized as much by declining to insert it in the refineries rule proposal.

Moreover, removing the affirmative defense from the rules listed above can be done easily. The affirmative defense is entirely distinct from the emission standards it purports to apply to for each source category. *See NRDC*, 2014 WL 1499825, at *9 (vacating parts of rule relating to affirmative defense but upholding remainder of rule); *see also* Final Brief of Respondents 52, *NRDC*, No. 10-1371 (D.C. Cir. Aug. 23, 2013) (affirmative defense is "an ancillary provision related to implementation" of emission standards, not part of emission standards as Clean Air Act defines them) (attached as Ex.A). Thus, the impact of the *NRDC* decision on the rules at issue is clear without any need for further examination: the affirmative defense in each of these rules is unlawful, is severable from the remaining provisions of each rule, and must be removed. EPA's course on the standards for refineries demonstrates the simplicity of the issue: within four weeks of receiving the *NRDC* decision, EPA simply chose not to insert the affirmative defense. Thus, EPA's own action suggests that the affirmative defense sits on top of emission standards without affecting how they were calculated, and that it can be removed with a minimum of time or difficulty.

Because EPA need not review or evaluate any new technical information, but only must affirm the legal reality it has already acknowledged, EPA can rule on this petition swiftly.

Accordingly, Sierra Club requests that EPA rule within 30 days and promptly begin taking the necessary steps to remove the unlawful affirmative defense from the rules containing it.[1]

If you have any questions, please do not hesitate to contact me at (202) 667-4500.

Sincerely,

Seth L. Johnson
Attorney for Sierra Club

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[1] Some of the regulations listed above are the subject of currently pending litigation. *See, e.g.*, *Am. Chemistry Council v. EPA*, No. 14-1083 (D.C. Cir. filed May 27, 2014) (challenging NESHAP Subpart JJJ: Group IV Polymers and Resins, Subpart MMM: Pesticide Active Ingredient Production, and Subpart PPP: Polyether Polyols Production); *Am. Petroleum Inst. v. EPA*, No. 13-1108 (D.C. Cir. filed Apr. 3, 2013) (challenging NSPS Subpart OOOO: Crude Oil and Natural Gas Production, Transmission and Distribution); *Nat'l Ass'n for Surface Finishing*, No. 12-1459 (D.C. Cir. filed Nov. 19, 2012) (challenging NESHAP Subpart N: Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks); *Am. Petroleum Inst. v. EPA*, No. 12-1405 (D.C. Cir. filed Oct. 16, 2012) (challenging NESHAP Subpart HH: Oil and Natural Gas Production Facilities and Subpart HHH: Natural Gas Transmission and Storage Facilities); *Ass'n of Battery Recyclers v. EPA*, No. 12-1373 (D.C. Cir. filed Sept. 17, 2012) (challenging NESHAP Subpart X: Secondary Lead Smelting); *Mexichem Specialty Resins v. EPA*, No. 12-1260 (D.C. Cir. filed June 14, 2012) (challenging NESHAP Subpart HHHHHHH: Polyvinyl Chloride and Copolymers Production); *Am. Chemistry Council v. EPA*, No. 11-1141 (D.C. Cir. filed May 17, 2011) (challenging NESHAP Subpart JJJJJJ: Industrial, Commercial, and Institutional Boilers Area Sources); *Am. Forest & Paper Ass'n v. EPA*, No. 11-1125 (D.C. Cir. filed Apr. 29, 2011) (challenging incinerator NSPS Subpart CCCC: Commercial and Industrial Solid Waste Incineration Units (new) and Subpart DDDD: Commercial and Industrial Solid Waste Incineration Units (existing)); *U.S. Sugar Corp. v. EPA*, No. 11-1108 (D.C. Cir. filed Apr. 14, 2011) (challenging NESHAP Subpart DDDDD: Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters). Voluntary vacatur of the affirmative defense in these rules would be appropriate, in the interest of efficiency.

EXHIBIT 4

Petition to EPA for MACT Rulemaking

(Jan. 14, 2009)

January 14, 2009

Stephen L. Johnson
Administrator,
Environmental Protection Agency
1101A EPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

BY FIRST CLASS MAIL, FAX, AND EMAIL

To the Honorable Stephen L. Johnson:

On behalf of the Natural Resources Defense Council and Sierra Club ("Environmental Petitioners"), we submit this petition for rulemaking pursuant to the Clean Air Act, 42 U.S.C. §§ 7401-7661, and the Administrative Procedure Act, 5 U.S.C. § 553(e). EPA must amend its Clean Air Act regulations for numerous categories of sources of hazardous air pollutants. National Emission Standards for Hazardous Air Pollutants (NESHAPs), codified in parts 61 and 63 of volume 40 of the Code of Federal Regulations, to correct the failure of numerous part 61 and part 63 standards to comply with the Clean Air Act ("CAA") and controlling precedent of the United States Court of Appeals for the District of Columbia Circuit. As discussed below, these regulations all violate Clean Air Act § 112, 42 U.S.C. § 7412. In addition, Environmental Petitioners hereby petition EPA to undertake a comprehensive assessment of its existing regulations under 40 C.F.R. part 61 and part 63 — including and in addition to those identified herein — to ensure that each standard fully complies with the Act and governing judicial rulings.

A. GOVERNING STATUTORY AUTHORITY AND JUDICIAL PRECEDENT

Under section 112(d) of the Clean Air Act, EPA must establish emission standards for each category or subcategory of major sources of hazardous air pollutants listed in the statute. 42 U.S.C. § 7412(d)(1). Section 112(d)(2) provides that emission standards

> shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section . . . that the Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable . . . through application of measures, processes, methods, systems or techniques including, but not limited to . . . process changes, substitution of materials or other modifications.

§ 7412(d)(2).

"In addition to this general guidance, the statute includes minimum stringency requirements for emission standards that apply <u>without regard to either costs or the other factors</u>

and methods listed in section 7412(d)(2)." *National Lime Ass'n v. EPA*, 233 F.3d 625, 629 (D.C. Cir. 2000) (emphasis added). For new sources, "[t]he maximum degree of reduction in emissions that is deemed achievable . . . shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source." § 7412(d)(3). Emission standards for existing sources "shall not be less stringent" than "the average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information)." § 7412(d)(3)(A). Once EPA has set the minimum stringency standards required by section 112(d)(3), which the Agency refers to as "floors," it may then consider the factors enumerated in section 112(d)(1) (e.g., cost) when determining whether more stringent "beyond-the-floor" standards are achievable.

The D.C. Circuit has repeatedly held that EPA has a "clear statutory obligation to set emission standards for each listed HAP," regardless of whether the best-performing sources in a given category are currently using air pollution control technology to limit their emissions. *National Lime*, 233 F.3d at 634; *Mossville Environmental Action Now v. EPA*, 370 F.3d 1232 (D.C. Cir. 2004); *Sierra Club v. EPA*, 479 F.3d 875 (D.C. Cir. 2007). In *National Lime*, the Sierra Club challenged EPA's refusal to set standards for HCl, mercury, and total hydrocarbons emitted by cement manufacturing plants. EPA argued that it had not found any plants using control technologies for those pollutants. The court found that EPA has a "clear statutory obligation to set emission standards for each listed HAP" and that "[n]othing in the statute even suggests that EPA may set emission levels only for those listed HAPs controlled with technology." *Id.* at 633-634. *See also Mossville Environmental Action Now*, 370 F.3d at 1242 (same); *Sierra Club*, 479 F.3d at 878 (same).

The D.C. Circuit has also held that EPA must set emission floors that reflect the emission levels that the best-performing sources in each category actually achieve. In *Cement Kiln*, EPA set out to set floors that would be "achievable" for every source that used a chosen "MACT" technology. 255 F.3d at 861. EPA argued that the floor requirements in § 112(d)(3) were merely a "gloss" on the beyond-the-floor requirements in § 112(d)(2) and that floors under § 112(d)(3) therefore had to satisfy EPA's notions of achievability. *Id.* The Court rejected EPA's statutory interpretation, holding that floors must reflect the emission levels that the best sources actually achieve, not what EPA views as "achievable. *Id.*

In *Cement Kiln*, EPA had set floors based on the performance of the worst-performing plant in the Agency's database that used the same technology as the best-performing plants — a methodology EPA referred to as "the MACT approach." Although EPA admitted in the record that it adopted this approach to ensure "achievable" floors, the agency also claimed the MACT approach yielded a reasonable estimate of the relevant best sources' actual emission levels. Because many factors other than the application of technology affect sources' actual emission levels, however, the Court rejected that claim as well. 255 F.3d at 862-865. It is EPA's obligation to demonstrate — not merely assert — that its floor approach yields an accurate reflection of the best sources' emission levels.

EPA argued that, because it lacked data and because deriving an accurate picture of the best sources' emission levels from the MACT approach is difficult, the agency should be excused from setting valid floors. 255 F.3d at 865. The Court rejected that line of argument as well:

> Even accepting the proposition that factors affecting source performance — either design features of the control itself (such as the type of fabric used) or non-MACT variables (such as waste composition or use of additional controls) — are difficult to quantify *when defining the MACT control*, nothing in the statute requires the Agency to use the MACT approach. Section 7412(d)(3) requires only that EPA set floors at the emission level achieved by the best-performing sources. If EPA cannot meet this requirement using the MACT methodology, it must devise a different approach capable of producing floors that satisfy the Clean Air Act.

Id. (emphasis in original).

Despite the clarity of the D.C. Circuit's decisions construing it in *National Lime* and *Cement Kiln*, EPA chose to ignore them in the following years. It continued to issue § 112 regulations that failed to include standards for each listed HAP, that set unlawful "no control" standards, and that failed to satisfy § 112(d)(3)'s floor requirements. Again and again, EPA forced public interest groups to challenge its rules and forced the D.C. Circuit to review the same unlawful statutory interpretation and rulemaking approach.

In *Mossville Environmental Action Now*, environmental groups challenged EPA regulations for PVC plastic plants that failed to set standards for any HAP except vinyl chloride. The D.C. Circuit confirmed that EPA has "a 'clear statutory obligation to set standards for each listed HAP' that the source category emits." 370 F.3d at 1242 (*quoting National Lime*, 233 F.3d at 634). The Court found unpersuasive EPA's belated attempt to claim in litigation that its vinyl chloride standard was a "surrogate" for all the other HAPs that PVC plants emit. 370 F.3d at 1242-1243. The agency had not even identified the HAPs for which vinyl chloride was allegedly a surrogate, far less explain why vinyl chloride was a reasonable surrogate for those unidentified pollutants, prompting the Court to note that it could not the agency's claim "under any standard." *Id.* at 1243.

In *Northeast Maryland Waste Disposal Authority*, the D.C. Circuit addressed yet another refusal by EPA to implement the Clean Air Act's mandatory floor provisions — in that instance under the virtually identical language of § 129's provisions for solid waste incinerators. For existing units, EPA had based floors on the emission limits in State air permits and regulations. 358 F.3d at 953-954. The agency claimed that these regulatory limits were reasonable "estimates" of the best sources' performance, but failed to demonstrate that claim with record evidence. *Id.* The agency also complained that it could not set accurate floors for existing units using the actual emissions data it had. 358 F.3d at 954. The Court rejected both of those arguments, making clear that it is EPA's obligation to set floors that accurately reflect the relevant best sources' emission levels and that EPA could not avoid that obligation by claiming that its data were inadequate. *Id.*

For new units, EPA had, once again, adopted the MACT approach of picking a technology and then setting floors at a level it deemed achievable by all units that used that technology. Again, EPA offered the alternative arguments that its floors must be "achievable" and that the levels it designated as achievable with the chosen technology also happened to accurately reflect the emission level actually achieved by the single best source. 358 F.3d at 954-955. Confronting a rehash of the same arguments it rejected in *Cement Kiln*, the D.C. Circuit rejected them again:

> This is precisely the rationale we rejected in *Cement Kiln*. ... EPA has once again improperly invoked achievability (incorrectly relying on the emission variability of *all* [municipal waste combustors] that use the technology rather than on the variability of the *best performing* unit) to gloss over the actual achievement requirement.

358 F.3d at 955 (emphasis in original). The Court also rejected EPA's claim that its floors were estimates of the best unit's performance, finding that EPA had failed to show that its MACT approach yielded accurate estimates. *Id.*

Apparently dissatisfied with the D.C. Circuit's decisions, however, EPA attempted to circumvent them yet again. In its § 112 standards for brick kilns, EPA once again set "no control" standards for many of the HAPs these sources emit. *Sierra Club*, 479 F.3d at 879-880. Where the agency set standards at all, it attempted to set floors at levels that it regarded as "achievable" rather than the level actually achieved by the best performing sources "simply by redefining 'best performing' to mean those sources with emission levels achievable by all sources." *Id.* at 880-881. Again EPA invoked the alleged difficulty of accounting for variability to excuse its failure to respect § 112's floor language. *Id.* at 881-882. Again, EPA claimed that the performance of a technology reasonably estimates the emission level of the best sources, even where it is undisputed that other factors affect sources' emission level. *Id.* at 882-883. Again EPA insisted that it could set "no control" floors if it does not think that controls are viable. *Id.* at 883. Faced with arguments that it already had rejected repeatedly, the D.C. Circuit confirmed that "section 7412(d)(3) requires floors based on the emission level actually achieved by the best performers (those with the lowest emission levels). *Id.* at 880. It also found it necessary to remind EPA of its role in a constitutional democracy:

> If the Environmental Protection Agency disagrees with the Clean Air Act's requirements for setting emission standards, it should take its concerns to Congress. If EPA disagrees with this court's interpretation of the Clean Air Act, it should seek rehearing en banc or file a petition for a writ of certiorari. In the meantime, it must obey the Clean Air Act as written by Congress and interpreted by this court.

Id. at 884.

In light of the D.C. Circuit's decisions, it is plain that many of the § 112 regulations EPA has issued are flatly unlawful. They fail to include standards for each HAP that a category emits, fail to satisfy § 112(d)(3)'s floor requirements, or both. Accordingly, Environmental Petitioners petition EPA to amend the following regulations and issue new ones that fully comply with Clean Air Act § 112. *See Kennecott Utah Copper Corp. v. Department of Interior*, 88 F.3d 1191, 1213 (D.C. Cir. 1996) ("a claim that agency action was violative of statute may be raised outside a statutory limitations period, by filing a petition for amendment or rescission of the agency's regulations, and challenging the denial of that petition").

B. LEGALLY DEFICIENT REGULATIONS REQUIRING REVISION

1. Aerospace Manufacturing and Rework Facilities

Surface-coating processes in the aerospace industry produce emissions of HAPs including chromium, cadmium, methylene chloride, toluene, xylene, methyl ethyl ketone, ethylene glycol, and glycol ethers. 60 Fed. Reg. 45,948, 45,948 (Sept. 1, 1995) ("Aerospace NESHAP"). The Aerospace NESHAP fails to regulate HAP emissions from at least ten different emission points: four non-coating-related operations; four coating-related operations; wastewater; and storage tanks.

EPA argues that control of organic HAP emissions from the four non-coating-related operations that EPA declines to regulate (chemical milling, metal finishing, electrodeposition, and composite processing) is "not feasible because no demonstrated control measures could be identified." 59 Fed. Reg. 29,216, 29,239 (June 6, 1994) ("Aerospace Proposal"). EPA has a "clear statutory obligation to set emission standards for each listed HAP," regardless of whether the best-performing sources in a given category are currently using air pollution control technology to limit their emissions. *National Lime*, 233 F.3d at 634. Moreover, the Agency must regulate emissions from all the emission points that it determines are part of the affected source. Neither EPA's claims about the relative significance of HAP emissions from the four non-coating-related operations, nor the agency's failure to identify control measures, justify its refusal to set emission standards for the HAPs emitted from these operations.

EPA also argues that it need not regulate the non-coating operations because their emissions constitute less than 1% of the total organic HAP emissions from aerospace facilities. EPA lacks authority simply to declare that sources of HAP emissions are not worth controlling. In addition, EPA refuses to regulate four coating-related operations: adhesives, adhesive bonding primers, sealants, and specialty coatings. EPA argues that the organic HAP emissions from these processes are "relatively small." Aerospace Proposal, 59 Fed. Reg. at 29,239. EPA also argues that many of the coatings in use are already applied using efficient techniques, and thus there is little room to reduce emissions further. *Id.* EPA discusses the possibility of using coatings with lower organic HAP content, but asserts that it lacked data on organic HAP content of coatings at the time of the proposal, and it did not have time to collect any. *Id.* EPA also refuses to set standards for HAP emissions from wastewater and storage tanks, claiming that none of the facilities in its database were deliberately controlling emissions from these points at the time of proposal. The Agency also speculates that other requirements in the rule might result in reduction of wastewater and storage tank emissions. *Id.*

None of EPA's excuses are even remotely relevant to the agency's well established obligation to set emission standards for each HAP. EPA must set emission standards for each HAP emitted by a source category, regardless of whether the best-performing sources are currently using pollution control technology. It cannot fulfill its obligation by setting standards for some parts of the source category and not others. Moreover, a lack of data to quantify the effects of non-technology factors on emissions does not excuse the failure to set a floor. *Sierra Club*, 479 F.3d at 882.

Finally, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

2. Asphalt Processing and Asphalt Roofing Manufacturing

Asphalt processing and asphalt roofing manufacturing facilities are major sources of formaldehyde, hexane, hydrogen chloride (HCl), phenol, polycyclic organic matter (POM), and toluene. 66 Fed. Reg. 58,610, 58,610 (Nov. 21, 2001). Because it failed to set an emission standard for HCl, EPA must reopen the Asphalt NESHAP. , 68 Fed. Reg. 24,562, 24,564 (May 7, 2003).

HCl is emitted only by those sources using a chlorinated catalyst in their blowing stills. Asphalt roofing manufacturing plants must use a catalyst if they use certain low-quality asphalt flux feedstocks. Asphalt Proposal, 66 Fed. Reg. at 58619. Of the 91 blowing stills for which EPA had data at the time of the proposed rule, 37 use a chloride-based catalyst. *Id.* EPA acknowledges in the proposed rule that "[w]ell over 12 percent of blowing stills do not use a catalyst." *Id.* Thus, the best-performing sources emit no HCl at all. EPA is required to set a floor that reflects the emission level of the best-performing sources.

In determining a floor for HCl emissions, EPA considered two potential bases for the standard: at-the-stack controls and prohibiting use of a chlorinated catalyst. *Id.* It rejected the former because none of the sources was currently using a control device. It rejected the latter because doing so would require all manufacturers to use higher-quality asphalt flux feedstock, and it asserts that higher-quality feedstock is not consistently available to all sources: "control of HCl emissions through substitution of higher quality asphalt flux is not an achievable means of control, because such higher quality flux is not consistently or reliably available . . . ." *Id.* EPA's justification for its failure to set an emission standard for HCl has been rejected by the D.C. Circuit. EPA has a "clear statutory obligation to set emission standards for each listed HAP." *National Lime*, 233 F.3d at 634. Assertions that "changes in non-technology factors were not 'appropriate' or 'viable'" cannot justify for a "no control" floor. *Sierra Club*, 479 F.3d at 883.

Finally, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

3. Surface Coating of Automobiles and Light-Duty Trucks

The NESHAP for surface coating of automobiles and light-duty trucks regulates only emissions of organic HAPs, although EPA acknowledges that facilities in this source category may emit inorganic HAPs as well. 69 Fed. Reg. 22,602 (Apr. 26, 2004). Coatings used in surface coating operations can contain lead, manganese, and chromium compounds. 67 Fed. Reg. 78,612, 78,620 (Dec. 24, 2002). EPA argues that these inorganic HAPs are unlikely to be emitted because they are in the coating solids and remain on the surface to which they are applied, but admits that these HAPs may be emitted when coatings are spray-applied: "[D]uring spray application, inorganic compounds become airborne, and they . . . [may] enter the air and become susceptible to transport . . . outside into the ambient air." *Id.* Furthermore, EPA confirms that facilities "that use spray application techniques sometimes apply coatings that contain inorganic HAP compounds, including small quantities of chromium oxide." *Id.*

Because EPA has a statutory obligation to set emission standards for each listed HAP emitted by each category of major sources, EPA must reopen the Auto and Light-Duty Truck NESHAP and set emission standards for inorganic HAPs emitted by these sources.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

4. Cellulose Products Manufacturing

The NESHAP for cellulose products manufacturing addresses emissions from two source categories, miscellaneous viscose processes and cellulose ethers production. 67 Fed. Reg. 40,044 (June 11, 2002). The HAPs emitted by viscose processes include carbon disulfide (CS_2), carbonyl sulfide, and toluene. 65 Fed. Reg. 52,166, 52,168 (Aug. 28, 2000). EPA identifies four different types of emission points in the viscose processes category: equipment leaks, wastewater emissions, CS_2 unloading and storage operations, and process vents. "Because none of the ten viscose process operations control CS_2 emissions from equipment leaks or wastewater," EPA set a floor of "no control" for those emission points, and declined to adopt beyond-the-floor standards. *Id.* at 52172. Similarly, EPA set "no control" standards for four emission points in the cellulose ether production category: storage vessels, equipment leaks, wastewater emissions, and process vents. *Id.* at 52,175. These operations emit HAPs including ethylene oxide, methanol, methyl chloride, and propylene oxide. *Id.* at 52,168.

It is well established that "no control" standards are unlawful. EPA must, at a minimum, set floors for each HAP that a source category emits and those floors must reflect the average emission level actually achieved by the best performing sources, those with the lowest emissions. EPA must reopen the cellulose products manufacturing rule and set emission standards for equipments leaks and wastewater in the viscose processes source category and for storage vessels in the ether production source category.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

5. Engine Test Cells/Stands

Engine test cells/stands emit HAPs including toluene, benzene, mixed xylenes, and 1,3-butadiene. 68 Fed. Reg. 28,774, 28,774 (May 27, 2003). EPA divides engine test cells/stands into four subcategories: (1) Engine test cells/stands used for testing internal combustion engines with rated power of 25 hp or more, (2) engine test cells/stands used for testing internal combustion engines with rated power of less than 25 hp, (3) engine test cells/stands used for testing combustion turbine engines, and (4) engine test cells/stands used for testing rocket engines. *Id.* at 28,779. Additionally, it divides each subcategory into existing and new/reconstructed sources. Of the eight resulting subcategories, EPA sets emission standards for only one (new/reconstructed sources used for testing internal combustion engines with rated power of 25 hp or more) and adopts "no control" standards for the remaining seven. Because "no control" standards are unlawful, EPA must reopen the engine test cells/stands rule and promulgate the missing standards.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

6. Flexible Polyurethane Foam Fabrication Operations

EPA identifies two subcategories of flexible polyurethane foam fabrication operations: loop slitter HAP-based adhesive use and flame lamination. 68 Fed. Reg. 18,062, 18,063 (Apr. 14, 2003). HAP emissions from the flame lamination process include HCN, TDI, and HCl. 66 Fed. Reg. 41,718, 41,720 (Aug. 8, 2001). Because it failed to set emission standards for existing sources in the flame lamination subcategory, EPA must reopen its rule.

EPA attempts to justify its failure to set emission standards by arguing that three of the alleged five best performing sources do not use control technology. That argument is irrelevant. EPA must set emission standards regardless of whether existing sources are using control technology, and those standards must reflect the average emission level actually achieved by the relevant best performing sources, those with the lowest emissions.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

7. Flexible Polyurethane Foam Production

The NESHAP for flexible polyurethane foam production regulates HAP emissions from facilities that produce slabstock, molded, or rebond flexible polyurethane foam. The rule covers emissions from four types of emission points at slabstock foam facilities: storage vessels, equipment leaks, HAP auxiliary blowing agent use, and equipment cleaning. 61 Fed. Reg. 68,406, 68,410 (Dec. 27, 1996). The HAPs emitted at these points include toluene diisocyanate (TDI) and methylene chloride. EPA reports that the International Agency for Research on Cancer has classified TDI as a possible human carcinogen, EPA, Technology Transfer Network Air Toxics Website: 2,4-Toluene diisocyanate, http://www.epa.gov/ttn/atw/hlthef/toluene2.html, and EPA recognizes that TDI presents health concerns "even at relatively low concentrations." 63 Fed. Reg. 53,980, 53,990 (Oct. 7, 1998).

However, claiming that no facilities in its database deliberately control TDI emissions from the foam production line, EPA set a floor of "no control," for these emissions, and declined to adopt a beyond-the-floor standard.

It is well established that "no control" standards are unlawful. EPA has a "clear statutory obligation to set emission standards for each listed HAP" emitted by a source category, regardless of whether a particular HAP is currently controlled with technology. *National Lime*, 233 F.3d at 634. EPA must reopen the rule and set an emission standard for TDI emissions from the slabstock foam production line.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

8. Friction Materials Manufacturing Facilities

Friction materials manufacturing facilities emit HAPs including n-hexane, toluene, and trichloroethylene. The NESHAP for friction materials manufacturing does not address fugitive emissions, even though the agency acknowledges that they account for approximately 259 tons of HAP emissions each year, almost forty percent of the category's total baseline HAP emissions. 67 Fed. Reg. 64,498, 64,501, 64,503 (Oct. 18, 2002).

EPA attempts to justify its failure to control fugitive HAP emissions by arguing that they occur in later process equipment, such as extruders, granulators, dryers, hot presses, and curing ovens, and that none of the sources in EPA's database currently use technology to control emissions from these pieces of equipment. EPA determined that the floor for these emission points is no control, and declined to adopt beyond-the-floor standards because it does not consider them cost effective. *Id.*

It is well established that "no control" standards are unlawful. EPA has a statutory obligation to set emission standards for each HAP emitted by a source category, regardless of whether a particular HAP is currently controlled with technology. *National Lime*, 233 F.3d at 634. EPA must reopen the rule and set a standard for emissions from the process equipment listed above.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

9. Generic Maximum Achievable Control Technology I: Acrylic and Modacrylic Fiber (AMF) Production

Acrylic and modacrylic fiber (AMF) production facilities is emit acrylonitrile (AN) as well as dimethylformamide, cyanide compounds, vinyl chloride, vinyl bromide, vinylidine chloride, and vinyl acetate. National Emission Standards for Hazardous Air Pollutants: Generic Maximum Achievable Control Technology; Proposed Rule, 63 Fed. Reg. 55,178, 55,191 (June 29, 1999). However, EPA set emission standards only for AN and only for pollutant streams containing AN. The rule does not include standards for HAPs other than AN or any standards at all for pollutant streams that do not contain AN. Because it is well established that EPA must set standards for each HAP that AMF facilities emit, the agency's rule is flatly unlawful.

EPA argues that its rule does not address emissions of other HAPs because other HAPs, if present, "would only be associated with those pollutant streams containing AN *with the exception of raw material storage*." *Id.* (emphasis added). Even if true, that claim would not excuse EPA from setting standards for the other HAPs emitted from pollutant streams containing AN. Nor would it excuse EPA from setting standards for all the HAPs emitted from raw material storage.

The rule also fails to control AN emissions from solution polymerization processes at existing sources. EPA claimed it could not identify a control system that could be applied to the solution process, and it concluded that it will "reexamine the applicability of various control system options for spinning operations using the solution process during the residual risk analysis phase of these standards." 64 Fed. Reg. 34,854, 34,862 (June 29, 1999). However, as discussed above, EPA has a statutory obligation to set emission standards for each HAP emitted by a source category, and it cannot fulfill its obligation by setting standards for some parts of the source category and not others. EPA must reopen the rule and set an emission standard for AN and other HAP emissions from spinning lines using the solution process at existing sources.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

10. Generic Maximum Achievable Control Technology II: Carbon Black Production

Carbon black production facilities emit HAPs including carbon disulfide, carbonyl sulfide, and hydrogen cyanide. Although EPA sets emission standards for one emission point in carbon black production facilities—process vents from the main unit filter—it fails to set standards for another, process vents after the main unit filter. 65 Fed. Reg. 76,408, 76,423 (Dec. 6, 2000); 67 Fed. Reg. 46,258 (July 12, 2002). EPA acknowledges that the best-performing source "reported process modifications that reduce the residual HAP levels in the process after the main unit filter by 98 weight-percent." Nevertheless, EPA determined that the floor for both existing and new sources is no control because "this facility's level of control does not correspond to a control type." 65 Fed. Reg. at 76,423.

It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources. Here, EPA must set emission standards for new sources that are at least as stringent as the emission level achieved by the single best-performing source. Additionally, EPA must set emission standards for existing sources that are at least as stringent as the average emission limitation achieved by the best-performing five sources (because the source category contains fewer than thirty sources), regardless of whether the average emission limitation corresponds to the use of a particular technology. *Cement Kiln*, 255 F.3d at 861. Thus, EPA must reopen the rule and promulgate emission standards for process vents after the main unit filter in both new and existing sources.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

11. Generic Maximum Achievable Control Technology II: Ethylene Production

Ethylene production facilities emit HAPs including benzene, 1,3 butadiene, toluene, naphthalene, hexane, and xylene. Although the NESHAP for ethylene production controls HAP emissions from some emission points, it fails to control emissions from ethylene cracking furnaces. EPA determined that ethylene cracking furnaces "are expected to have relatively low HAP emissions," but it still considered standards for this emission point because "HAP emissions can result from incomplete combustion, and natural and refinery gas combustion has been shown to result in emissions of formaldehyde." 65 Fed. Reg. at 76,432. Claiming it did not identify any control technologies currently in use to control HAP emissions from ethylene cracking furnaces, however, the Agency set the floor at no control and did not identify any beyond-the-floor options. *Id.* at 76,433.

It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources. EPA must reopen the rule and set emission standards for the HAP emissions from ethylene cracking furnaces.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

12. Generic Maximum Achievable Control Technology II: Cyanide Chemicals Manufacturing

Cyanide chemicals manufacturing facilities emit HAPs including cyanide compounds (hydrogen cyanide and sodium cyanide), acrylonitrile, and acetonitrile. EPA identifies five HAP emission points in these facilities: process vents, storage vessels, equipment leaks, transfer operations, and wastewater treatment operations. For wastewater treatment operations in existing sources, EPA fails to set any emission standards. 65 Fed. Reg. at 76,418. EPA argues that a numerical emission standard would be impracticable because the performance of biological treatment systems varies from site to site. However, EPA did not set a work practice finding or make the findings that § 112(h) requires if the agency wishes to set work practice standards in lieu of emission standards. Instead, EPA argues oddly that it would be difficult to set a work practice standard "based on the median of the top five of these facilities that would both be achievable across the source category and consistent with continued compliance with effluent discharge permits." *Id.* at 76,419.

The D.C. Circuit has held that EPA must set standards for each HAP and that these standards must reflect the average emission level achieved by the best-performing sources, regardless of what the Agency judges to be "achievable." across the source category. *Cement Kiln*, 255 F.3d at 861. Emission levels between the wastewater treatment operations at different facilities within this category vary. Two of the top five sources in the category treat their process wastewater with technology that removes approximately 95% of HAPs. EPA must set standards for each HAP emitted by wastewater treatment operations, and those standards must, at a minimum, reflect the emission levels achieved by the relevant best performers.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

13. Hazardous Organic NESHAP

The hazardous organic NESHAP (HON) regulates organic HAP emissions from the synthetic organic chemical manufacturing industry (SOCMI), as well as equipment leaks in several other processes. Besides equipment leaks, the HON addresses four different kinds of emission points: process vents, storage vessels, transfer racks, and wastewater streams. EPA divides each of these emission points into two subcategories: Group 1 and Group 2. Group 1 emission points are subject to emission controls; Group 2 emission points are not. 59 Fed. Reg. 19,402, 19,405 (Apr. 22, 1994).

EPA does not claim that the emission standards it did set, for Group 1 emission points, reflect the emission level actually achieved by the relevant best performing sources. To the contrary, it states

> The information the EPA used in determining the source-wide floor consisted of the estimates of the number and characteristics of the model emission points, the emission control requirements currently in place for each point based on information available to the EPA, and the expected control efficiencies for the control technology. To determine the source-wide floor for existing sources at proposal, the EPA examined the supporting information to identify the emission characteristics of the emission points which had at least 12 percent of the points controlled by the reference control technology. This analysis was done for each kind of emission point.

59 Fed. Reg.

The agency claims that it lacked time to collect the data necessary to set floors that would satisfy this statutory requirement. That excuse is irrelevant. EPA has a statutory obligation to set emission standards for each HAP emitted by a source category, and those standards must, at a minimum, reflect the emission level actually achieved by the relevant best performing sources. Accordingly, EPA must reopen the rule, issue emission standards for each HAP emitted by Group 2 emission points and revise the emission standards for Group 1 emission points to reflect the statutorily required minimum stringency.

14. Hydrochloric Acid Production

Hydrochloric acid (HCl) production facilities emit HAPs including HCl and chlorine. EPA identifies the emission points at these facilities as process vents, storage tanks, transfer operations, equipment leaks, and wastewater. 66 Fed. Reg. 48,174, 48,176 (Sept. 18, 2001).

Although EPA sets emission limitations or work practice standards for four of the five emission points, it fails to regulate HAP emissions from wastewater. For both new and existing sources, EPA set the MACT floor for wastewater was "no emission reduction," claiming did not identify any add-on controls, process modifications, or other pollution-prevention measures currently in use to control HAP emissions from wastewater. *Id.* at 48,181.

"No control" standards contravene EPA's "clear statutory obligation to set emission standards for each listed HAP." *National Lime*, 233 F.3d at 634. EPA found that wastewater is part of the affected source at HCl production facilities. 68 Fed. Reg. 19,076, 19,079 (Apr. 17, 2003). Therefore, the Agency must reopen the rule and set emission standards for wastewater.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

15. Surface Coating of Large Appliances

The NESHAP for surface coating of large appliances fails to regulate emissions of inorganic HAPs. 67 Fed. Reg. 48,254 (July 23, 2002). EPA found that some specialty coatings used in this source category contain such inorganic HAPs as chromium, cobalt, lead, and manganese compounds. 65 Fed. Reg. 81,134, 81,137 (Dec. 22, 2000). The Agency speculates that these inorganic HAPs are not emitted into the ambient air; instead, they remain on the surfaces being coated, or they are deposited onto the floors, walls, and grates of the spray booths in which they are applied. EPA concludes that "inorganic HAP emission levels are expected to be very low, and have not been quantified." *Id.*

If inorganic HAPs are emitted from surface coating operations, EPA must set standards for them. Neither EPA's claim that inorganic HAP emissions have not been quantified nor its speculation that they inorganic HAPs are "expected" to be emitted low levels excuses the agency from this statutory requirement. EPA must reopen the rule and set the missing standards. *National Lime*, 233 F.3d at 634 (emphasis added).

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

16. Lime Manufacturing Plants

The lime manufacturing industry emits HAPs including hydrogen chloride (HCl), metals such antimony, arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, and selenium, and organic HAPs. The NESHAP for lime manufacturing fails to regulate emissions of HCl based on EPA's claims that "HCl is a 'health threshold pollutant,' and that HCl levels emitted from lime kilns are below the threshold value within an ample margin of safety." 69 Fed. Reg. 394, 397 (Jan. 5, 2004).

Section 112(d)(4) of the Clean Air Act provides that EPA may consider threshold levels with respect to "pollutants for which a health threshold has been established." 42 U.S.C.

§ 7412(d)(4). The language of the statute indicates that the health threshold exception applies only when the scientific community has already accepted a pollutant's health threshold. By allowing EPA to issue standards under § 112(d)(4) only when health threshold has been established, Congress made clear that there must be an established threshold below which no adverse health effects will occur. In particular, it did not intend EPA to invoke § 112(d)(4) for a HAP unless there is no risk that that HAP will cause cancer. "EPA presumptively applies section 112(d)(4) only to HAP's that are not carcinogens because Congress clearly intended that carcinogens be considered nonthreshold pollutants." 63 Fed. Reg. 18,754, 18,765 (Apr. 15, 1998). HCl does not pass this test. EPA has admitted that it does not know whether HCl causes cancer. Further, for non-cancer risk, the level on which EPA relied is merely the lowest observable adverse effects level (LOAEL), *i.e.*, a level at which adverse effects do occur. Because HCl may be a carcinogen, and because a health threshold for HCl has not been definitively established, EPA must regulate HCl emissions from the lime manufacturing industry.

The rule also fails to regulate mercury emissions. In its proposed rule, EPA argues that it has no way of establishing an "achievable" floor standard for mercury "since no source controls mercury emissions using a means of control that can be duplicated by other sources." 67 Fed. Reg. 78,046, 78,057 (Dec. 20, 2002). EPA reiterates this argument in the preamble to the rule: "The only control technique would reflect control of the raw materials and/or fossil fuels. This control is not duplicable or replicable." 69 Fed. Reg. at 398. As discussed above, EPA must set standards based on the emission reductions that the best-performing sources actually achieve, regardless of what the Agency considers to be "achievable." *Cement Kiln*, 255 F.3d at 861. EPA must reopen the rule and set emission standards for HCl and mercury.

EPA violates the Clean Air Act by failing to set emission standards for the organic HAP that lime plants emit. EPA offers no rationale for that failure.

Finally, the standards that EPA does set fail to reflect the emission level actually achieved by the relevant best performing sources. Accordingly, they must be revised to satisfy § 112's minimum stringency requirements.

17. Manufacturing of Nutritional Yeast

Rather than basing floors for the nutritional yeast category on the emission levels achieved by the relevant best performing sources, EPA based them on limits derived from Wisconsin's and Maryland's Reasonably Available Control Technology standards (the RACT approach). 66 Fed. Reg. 27,876, 27,879 (Oct. 19, 1998). EPA does not even claim that the RACT approach yields floors that accurately reflect the relevant best sources' emission levels. Nor would any such claim be plausible. EPA admits that the five facilities with the RACT limits on which its floor is based were, in reality, achieving lower emission levels than the RACT limits required. Indeed, EPA requested "comments and data that support a potentially lower MACT emission limit. This information should also allow us to determine if new sources can achieve an even more stringent MACT, based on the best-performing source." *Id.* at 55,820.

Because EPA failed to show that RACT limits provide an accurate estimate of the relevant best sources performance and because the record shows that they do not provide an accurate estimate, the agency's reliance on those limits to set floors was unlawful. The agency must reopen the rule and set floors for this category that accurately reflect the average emission level achieved by the best performing sources, as required by the Clean Air Act.

Additionally, EPA's rule fails to control emissions from wastewater. EPA concluded that "the MACT floor for wastewater emissions is no control." It declined to adopt beyond-the-floor standards because it determined that non-air quality health and environmental impacts, energy impacts, and costs were "unreasonably high." Nutritional Yeast NESHAP, 66 Fed. Reg. at 27,880. Further, EPA argued that "levels of acetaldehyde in wastewater are already reduced by process changes upstream." *Id.* at 27,881.

It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources. Nor is it relevant that one HAP may be reduced to some extent by upstream operations. Because wastewater operations are a source of HAP emissions, EPA must set standards for each HAP these emission points emit, and those standards must, at a minimum, reflect the emission level that the relevant best sources achieve. EPA must reopen the rule and set emission standard for each HAP emitted from wastewater operations.

18. Marine Tank Vessel Loading Operations

EPA divides the marine tank vessel loading operations category into several subcategories. The Agency fails to regulate HAP emissions from two of these subcategories—existing major source terminals that emit less than 10 tons per year of any individual HAP and less than 25 tons per year of combined HAPs from loading of marine tank vessels, and existing offshore terminals (major source terminals located 0.5 miles or more from shore). For both subcategories, EPA set a floor of "no control," claiming that too few sources in its database control emissions from marine tank vessel loading. 60 Fed. Reg. 48,388, 48,395 (Sept. 19, 1995). These "no control" standards contravene EPA's "clear statutory obligation to set emission standards for each listed HAP." *National Lime*, 233 F.3d at 634. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources.

EPA's exemption of sources with actual emissions of less than 10 tons per year of individual HAPs and 25 tons per of combined HAPs also contravenes § 112's definition of major source, which requires MACT standards for any source with the "potential" to emit 10 tons per year or more of any single HAP or 25 tons per year or more of any combination of HAPs. Under this definition, it is irrelevant whether some sources' actual emissions fall below those levels. EPA must reopen the rule and set emission standards based on the emission reductions that the best-performing sources actually achieve, regardless of how many of these sources currently use technology to control HAP emissions.

Finally, the standards EPA did set fail to reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise them to satisfy § 112's minimum stringency requirements.

19. Mercury Cell Chloro-Alkali Plants

Mercury cell chloro-alkali plants emit HAPs including mercury, hydrogen chloride (HCl), and chlorine. 68 Fed. Reg. 70,903, 70,904 (Dec. 19, 2003). EPA's unlawful requirements for mercury emissions are subject to a pending petition for review in the D.C. Circuit and a petition for administrative reconsideration with the agency. In addition, EPA's rule unlawfully fails to include emission standards for HCl and chlorine. *Id.* at 70,906. The Agency claims that HCl and chlorine are "health threshold pollutants" and that the levels emitted by these sources are below the threshold. *Id.* The Agency claims to utilize its authority under section 112(d)(4) of the Clean Air Act not to regulate these HAPs. *Id.*

By allowing EPA to issue standards under § 112(d)(4) only when health threshold has been established, Congress made clear that there must be an established threshold below which no adverse health effects will occur. In particular, it did not intend EPA to invoke § 112(d)(4) for a HAP unless there is no risk that that HAP will cause cancer. "EPA presumptively applies section 112(d)(4) only to HAP's that are not carcinogens because Congress clearly intended that carcinogens be considered nonthreshold pollutants." 63 Fed. Reg. 18,754, 18,765 (Apr. 15, 1998). HCl does not pass this test. EPA has admitted that it does not know whether HCl causes cancer. Further, for non-cancer risk, the level on which EPA relied is merely the lowest observable adverse effects level (LOAEL), *i.e.*, a level at which adverse effects do occur. Because HCl may be a carcinogen and because a health threshold for HCl has not been definitively established, EPA must regulate HCl emissions from mercury cell chloro-alkali plants.

20. Mineral Wool Production

Mineral wool production facilities emit carbonyl sulfide (COS). 64 Fed. Reg. 29,489, 29,490 (June 1, 1999). Yet EPA fails to set emission limits on COS at existing facilities. Id. at 29,491. Because EPA has a statutory obligation to set emission standards for each HAP that mineral wool production facilities emit, its failure to set standards for COS emitted by these facilities is unlawful. See, e.g., National Lime, 233 F.3d at 634. Accordingly, EPA must reopen its regulations for mineral wool facilities and set COS emission standards.

Mineral wool production facilities also emit phenol, formaldehyde, and other organic HAPs. Mineral Wool NESHAP, 64 Fed. Reg. at 29,490. EPA fails to set standards for any HAP except formaldehyde, claiming that formaldehyde is a surrogate for phenol emissions at these facilities. *Id.* at 29,491. Even if that claim were true, EPA does not claim that formaldehyde, or any other pollutant, is a surrogate for the other organic HAPs that mineral wool facilities emit. Accordingly, EPA's failure to set emission standards for such other organic HAPs is unlawful.

To justify its refusal to set standards for phenol, EPA argues that "when the formaldehyde limit is met through use of an incinerator, phenol emissions are also reduced by the same incinerator." 62 Fed. Reg. 25,370, 25,376 (May 8, 1997). Failure to set specific standards for phenol is unlawful, however, unless EPA shows that formaldehyde is a valid surrogate for phenol. Merely claiming that both are reduced by the same incinerator does not suffice. EPA also must show that the only factor affecting phenol emissions is the use of an incinerator to control formaldehyde. EPA makes no such claim. Further, it admits that some ovens are controlled with technologies other than an incinerator, and does not claim that the use of such other unspecified technology is the only factor affecting phenol emissions at those facilities. To comply with the CAA, EPA must provide an adequate explanation of why formaldehyde is an appropriate surrogate for or each HAP emitted by mineral wool facilities, or set emission limits for each HAP individually.

Finally, EPA's formaldehyde standards do not reflect the actual formaldehyde emission levels achieved by the relevant best sources. Accordingly, EPA must revise these standards to satisfy § 112(d)'s minimum stringency requirements.

21. Oil and Natural Gas Production

EPA fails to regulate major-source glycol dehydration units with actual annual average natural gas throughputs of less than 85 thousand m^3/day or with actual average benzene emissions lower than 0.90 Mg/yr. 64 Fed. Reg. 32,609, 32,613 (June 17, 1999). For these units, EPA sets the MACT floor at no control and determines that a beyond-the-floor regulation is not cost effective. *Id.* EPA justifies this by claiming that it "could not determine any level of emission control for [such units]." 63 Fed. Reg. 6288, 6293 (Feb. 6, 1998). It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources. To comply with the Clean Air Act, EPA must set emission standards for each HAP emitted by glycol dehydration units.

Further, the standards that EPA did set fail to reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency requirements.

22. Petroleum Refineries

The HAPs emitted by petroleum refineries include 2,2,4-Trimethylpentane, methyl tert butyl ether, benzene naphthalene, cresols/cresylic acid, phenol, ethylbenzene, toluene, hexane, and xylenes. 60 Fed. Reg. 43,244, 43,245 (Aug. 18, 1995). EPA sets no control or monitoring requirements for wastewater streams located at refineries with total annual benzene loading of less than 10 megagrams per year. *Id.* at 43,247-48.

It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources. EPA lacks authority to exempt any emission point from emission standards. EPA must set emission standards for all emissions points at the source, including wastewater streams with annual benzene loading less than 10 megagrams per year.

For refineries with total annual benzene loading of more than 10 megagrams per year, EPA only regulates benzene emissions. *Id.* EPA must set standards for each HAP that a category emits. EPA does not claim that benzene is a surrogate for the other HAPs emitted from wastewater streams, far less demonstrate that it is a reasonable one. Accordingly, EPA must reopen the refineries rule and set emission standards for all the HAPs that are emitted from wastewater streams.

Further, EPA's benzene standards do not reflect the actual benzene emission levels achieved by the relevant best performing units. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency requirements.

EPA sets no control or monitoring requirements for miscellaneous process vents with VOC emissions less than 33 kilograms per day for existing sources and 6.8 kilograms per day for new sources. 60 Fed. Reg. at 43,247. EPA also states that no controls or inspections are required for so-called Group 2 storage vessels, which are all vessels that do not have a design storage capacity and a maximum true vapor pressure above the values specified in the regulation. *Id.* It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources. EPA must reopen the rule and set an emission standard for these vents and storage vessels.

Further, EPA completely exempts hydrogen plant vents from any control requirements, even those that emit more than 33 kilograms per day of VOCs. 63 Fed. Reg. 31,358, 31,359 (1998). In justifying this exemption, EPA claims that implementing controls would be too costly. However, the CAA "includes minimum stringency requirements for emission standards that apply without regard to either costs or the other factors and methods listed in section 7412(d)(2)." *National Lime*, 233 F.3d at 629. EPA must reopen this rule to set emission standards for hydrogen plant vents.

23. Phosphoric Acid Manufacturing and Phosphate Fertilizers Production

The HAPs emitted by these facilities include hydrogen fluoride, arsenic, beryllium, cadmium, chromium, manganese, mercury, and nickel. EPA fails to set emission standards for any of these HAPs, and claims particulate matter is a surrogate for all metal HAPs, including mercury. Proposed Rule, 61 Fed. Reg. 68,429, 68,435 (Dec. 27, 1996).

EPA's failure to set emission standards for specific HAPs is unlawful absent a valid showing that particulate matter is a reasonable surrogate for each one of them. EPA provides no evidence showing why particulate matter is a valid surrogate for any metal HAP emitted by this category. In particular, the agency fails to show that controlling PM is the only means by which facilities achieve reductions in emissions of metal HAPs, as D.C. Circuit precedent requires. Further, particulate matter is plainly not an appropriate surrogate for mercury, as EPA itself has recognized repeatedly. Accordingly, EPA's failure to set emission standards for mercury and the other metal HAPs is unlawful.

In addition, EPA's PM standards do not reflect the actual PM emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

EPA also fails to set emission standards for hydrogen fluoride output in dryers and metal HAP emitted by various process lines. 64 Fed. Reg. 31,358, 31,361 (June 10, 1999). If HF and metal HAPs are emitted by these processes, the agency must set emissions standards for them, and those standards must, at a minimum, reflect the average emission level achieved by the relevant best performing sources. Accordingly, EPA must reopen the phosphoric acid manufacturing and phosphate fertilizers production rule, and set all of the emission standards required by the Clean Air Act.

24. Polyether Polyols Production

Polyether polyols production facilities emit several organic HAPs, including ethylene oxide, propylene oxide, hexane, and toluene. 64 Fed. Reg. 29,419, 29,420 (June 1, 1999). EPA fails to set standards for nonepoxide organic HAPs from vents at facilities where the total vent output of nonepoxide organic HAPs is less than 11,800 kilograms per year. *Id* at 29,425. Because EPA must set an emission standard for each listed HAP at each major source in this category, and lacks authority to exempt any sources, the agency's rule violates the Clean Air Act and must be reopened and corrected. *See National Lime*, 233 F.3d at 634.

In addition, the standards EPA did set, for vents at facilities with a total organic HAP output greater than 11,800 kilograms per year, do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

25. Polymers and Resins I

According to EPA, manufacturers of Group I polymers and resins emit organic HAPs including n-hexane, styrene, 1,3-butadiene, acrylonitrile, methyl chloride, hydrogen chloride, carbon tetrachloride, chloroprene, and toluene. 60 Fed. Reg. 30,801, 30,801 (June 12, 1995). For the butyl rubber (BR), halobutyl rubber (HBR), epichlorohydrin elastomers (EPI), Hypalon (HYP), neoprene (NEO), nitrile butadiene rubber (NBR), nitrile butadiene latex (NBL), polysulfide rubber (PSR), and styrene butadiene latex (SBL) subcategories, EPA fails to set emission standards for HAPs emitted through back-end processes at existing sources. 61 Fed. Reg. 46,906, 46,910 (Sept. 5, 1996). For the BR, EPI, HBR, HYP, NEO, NBL, NBR, and SBL subcategories, EPA fails to control HAPs emitted through back-end processes at new sources. *Id.* at 46,911. And, for the EPR, BR, and HBR subcategories at existing sources, EPA exempts halogenated vent streams that were controlled by flare or boiler before June 12, 1995. *Id.* at 46,910.

EPA lacks authority to exempt any emission points or to decline to set emission standards for any HAP. Accordingly, EPA must reopen the rule and set emission standards for each HAP and emission point in these subcategories, as mandated by the CAA.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Therefore, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

26. Polymers and Resins III

Manufacturers of Group III polymers and resins emit organic HAPs, including formaldehyde, methanol, phenol, xylene, and toluene. 65 Fed. Reg. 3275, 3276 (Jan. 20, 2000). Yet EPA sets no emission standards for HAPS emitted by storage vessels and continuous process vents at existing sources. *Id.* at 3279. EPA argues that because, for continuous process vents, only one existing source uses control technology at the time of proposal, it is not required to set an emission standard. National Emission Standards for Group 3 Polymers and Resins; Proposed Rule, 63 Fed. Reg. 68,831, 68,843 (Dec. 14, 1998). To the contrary, EPA has a "clear statutory obligation to set emission standards for each listed HAP," even if the best-performing sources are not using control technology to limit their emissions. *National Lime*, 233 F.3d at 634. Accordingly, EPA must reopen the rule and set an emission standard for storage vessels and continuous process vents at existing sources.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

27. Polymers & Resins IV

EPA acknowledges that many organic HAPs are emitted during the manufacture of Group IV polymers and resins. 61 Fed. Reg. 48,208, 48,208 (Sept. 12, 1996). However, EPA fails to set emission standards for HAPs released into the air through wastewater from facilities using the ASA/AMSAN process. *Id.* at 48,212. EPA also fails to set emission standards for HAPs emitted from equipment leaks at facilities with a PET–TPA continuous high viscosity multiple end finisher. *Id.* at 48,212-13. For new SAN Batch facilities, EPA fails to set emission standards for HAPs emitted through wastewater. *Id.* at 48,213.

EPA has a "clear statutory obligation to set emission standards for each listed HAP" emitted by a source category, regardless of whether a particular HAP is currently controlled with technology. *National Lime*, 233 F.3d at 634. EPA must reopen the rule and set an emission standard for wastewater in the ASA/AMSAN process and new SAN Batch facilities, as well as equipment leaks at facilities using PET–TPA continuous high viscosity multiple end finisher.

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

27. Primary Lead Smelting

Primary lead smelters emit arsenic, antimony, cadmium, lead, and other metal HAPs. 64 Fed. Reg. 30,193, 30,194 (June 4, 1999). EPA's rule, however, provides an emission standards for only one HAP, lead. The agency claims that lead is a surrogate for all the others, including volatile metals like mercury, acid gases, and volatile organic compounds.

EPA's failure to set standards for the HAPs other than lead, absent a showing that lead is a valid surrogate for those HAPs, is unlawful. In particular, EPA must show that lead control "is the only means by which facilities 'achieve' reductions" in the pollutants for which it allegedly serves as a surrogate. *National Lime Ass'n*, 233 F.3d at 639. In the primary lead smelting rule, EPA does not even so claim. EPA must reopen the rule and either provide a valid explanation for why lead is a reasonable surrogate for all the other HAPs that primary lead smelters emit, including volatile metals like mercury, acid gases, and volatile organic compounds, or issue emission standards for additional HAPs.

Further, EPA's PM standard does not reflect the emission level achieved by the relevant best performing sources. Accordingly, the agency must reopen the rule and set floors for PM in accordance with Clean Air Act § 112(d)(3).

28. Publicly Owned Treatment Works (POTW)

EPA fails to regulate HAP emissions of non-industrial POTW as required by section 112 of the Clean Air Act, 42 U.S.C. § 7412. 64 Fed. Reg. 57,572, 57,575 (Oct. 26, 1999). EPA must issue standards for each HAP that these facilities emit, and such standards must not be less stringent than emission level actually achieved by the relevant best performing sources.

Of the five non-industrial POTW sources EPA considers to be best controlled, only one uses control devices with the intent of removing HAP emissions. 63 Fed. Reg. at 66,090. EPA claims the remaining four do not implement any control technology designed to remove HAP emissions. *Id.* EPA further claims "[c]omputation of an arithmetic average of the performance among the one POTW treatment plant with HAP emission controls and the four POTW treatment plants without controls would be meaningless because there is no continuum of performance among the sources." *Id.* The agency further argues that using either the median or the mode, based on control technology, would result in a MACT floor of no control. *Id.* Based on those arguments, EPA set the floor at no control. *Id.*

It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources — *i.e.*, those with the lowest emissions — regardless of whether sources are using technology to control their emissions.

EPA further argues that pretreatment by dischargers is the only viable option for controlling HAP emissions to achieve a meaningful HAP reduction at a reasonable cost that EPA has identified. POTW Proposal, 63 Fed. Reg. at 66,090. However, section 112 of the Clean Air Act "includes minimum stringency requirements for emission standards that apply without regard to either costs or the other factors and methods." *National Lime*, 233 F.3d at 629. EPA must set emissions standards for existing non-industrial POTW.

With respect to industrial POTW, EPA argues oddly that under each "industrial discharger's MACT, the POTW provides air pollution control, generally under a contractual agreement." 64 Fed. Reg. at 57575. EPA further states that, under its rule, whatever the discharger's requirements are will become directly enforceable against the POTW. *Id.* Under Clean Air Act § 112, standards covering HAP emissions from industrial POTW's must include standards for each HAP emitted by such facilities and must reflect the emission level actually achieved by the relevant best performing sources. Contrary to EPA's argument, the existing controls for the dischargers do not satisfy this requirement regardless of whether they are reflected in a contract between the discharger and the industrial POTW and regardless of whether they are directly enforceable against the POTW. EPA must reopen the POTW rule to set standards for industrial POTW that fully satisfy the Clean Air Act.

29. Pulp and Paper Mills.

EPA failed to regulate emissions of HCl from new and existing sources used in chemical recovery processes at pulp and paper mills. Because EPA has not satisfied its "'clear statutory obligation to set emission standards for each listed HAP,'" *Sierra Club*, 479 F.3d at 883 (quoting *National Lime*, 233 F.3d at 634), the agency must reopen the standards and set MACT floors for HCl emissions.

EPA attempts to justify its failure to regulate HCl emissions by arguing that "no further control is necessary because HCl is a 'health threshold pollutant,' and HCl levels emitted from recovery furnaces are below the threshold value within an ample margin of safety." 63 Fed. Reg. at 18,765. Section 112(d)(4) of the Clean Air Act provides "[w]ith respect to pollutants for which a health threshold has been established, the Administrator may consider such threshold, with an ample margin of safety, when establishing emission standards under this section." 42 U.S.C. § 7412(d)(4). Thus it does not allow EPA to decline to set emission standards, as the agency did here, but only to consider established health thresholds, with an ample margin of safety, "when establishing emission standards." *Id.* For this reason alone, EPA's rule is unlawful and must be reopened.

Further, § 112(d)(4) does not apply at all to pollutants such as HCl for which a health threshold has not been established. EPA itself has recognized that § 112(d)(4) applies "only to HAP's that are not carcinogens because Congress clearly intended that carcinogens be considered nonthreshold pollutants." 63 Fed. Reg. at 18,765.

EPA has acknowledged repeatedly that it does not know whether HCl is carcinogenic, HCl is not a pollutant for which a health threshold has been established. In 2006, for example, EPA stated "the data are inadequate to make a determination as to whether HCl is carcinogenic in either humans or animals, so EPA has not developed an assessment for the carcinogenicity of HCl." 71 Fed. Reg. 76518, 76542 (December 20, 2006). Because EPA does not know whether or not HCl causes cancer, it cannot plausibly claim that HCl is a threshold pollutant. Significantly, the agency has admitted that the purpose of § 112(d)(4)'s "established health threshold" requirement is to ensure that EPA does not issue standards under § 112(d)(4) unless there is "no risk" of adverse health effects. *NRDC v. EPA*, 489 F.3d 1250 (D.C. Cir. 2007), EPA Br. at 53-54 (*quoting* 5 Legislative History at 8516).

EPA's attempts to rely on its statements about HCl in previous rules are unfounded and, indeed, merely weaken its arguments further. In the 1998 rule on which the agency primarily relies, the agency states that is classifying HCl as a "Group D pollutant" — i.e., one for which EPA lacks data about carcinogenicity — for the purposes of that rule only. It bears emphasis that because classification as a Group D pollutant merely underscores that EPA does not know whether a pollutant can or cannot cause cancer, it cannot possibly support a finding that that pollutant is a threshold pollutant with respect to cancer. But even if such a classification somehow supported EPA's position, the agency made clear in the 1998 rule that it was making that classification "[f]or the purposes of this action" only. 63 Fed. Reg. 18754, 18766 (April 15, 1998) (emphasis added). Thus, it does not even purport to support making such a classification in other actions.

Nor has EPA identified a threshold for non-cancer effects. The threshold EPA claims to have identified as the RfC — i.e., the long term threshold — must be a level below which no adverse health effects occur. The level that EPA claims is a threshold does not purport to meet that requirement. To the contrary, the 1998 rulemaking makes clear that it was: (1) "based on a single animal study which only used one dose"; (2) looked only at respiratory effects, not effects on other bodily systems; and (3) identified only a lowest observed adverse effects level (LOAEL) at which adverse effects did occur, not a threshold below which adverse effects do not occur. 63 Fed. Reg. 18766-18767 (*citing* EPA, 1995, Integrated Risk Information System (IRIS) RfC for HCl), Ex. __ hereto.

Effectively acknowledging that exposure to HCl does damage people's health, EPA has argued that

> The existence of a threshold for noncancer effects of HCl is established by general toxicological principles, i.e., that organisms are able to repair some amount of corrosive tissue damage of the type caused by HCl. If the damage does not exceed an organism's ability to repair it, then no adverse effects will occur.

71 Fed. Reg. at 76542. Thus, EPA stakes out a position truly astonishing for an agency tasked with protecting public health and the environment: that it does not matter if pollution damages Americans' lung tissue so long the damage does not exceed our ability to repair it. Apart from the ethical issues that sort of argument raises, it is beyond obvious that Congress did not intend EPA to invoke § 112(d)(4) when doing so would lead to tissue damage — whether that damage was permanent or repairable. As EPA has conceded elsewhere, Congress intended EPA to invoke § 112(d)(4) only when there is "no risk" of adverse health effects. Damage to an "organism's" tissue — *e.g.* the lung tissue of a child — is an adverse health effect

In direct violation of § 112's well established mandate to set standards for each listed HAP that a category emits, EPA also failed to set emissions standards for pulp and paper mills' mercury emissions. It is undisputed that pulp and paper mills emit mercury. EPA notes that "[a]lmost all metals appearing on the section 112(b) list," including mercury, are emitted by pulp and paper combustion sources, but the rule regulates only PM HAP emissions and/or total gaseous organic HAP emissions.

In addition, EPA failed to set standards for dioxins. EPA does not mention dioxins anywhere in the rule, but kraft recovery furnaces do emit dioxins, according to EPA's Source Category Listing for Section 112(d)(2) Rulemaking Pursuant to Section 112(c)(6) Requirements. 63 Fed. Reg. 17,838, 17,848 tbl.1 (Apr. 10, 1998). EPA uses methanol as a surrogate to regulate total gaseous organic HAP emissions from kraft recovery furnaces. The agency does not claim that it is using methanol as a surrogate for dioxins. Such a claim would fail because, as EPA has acknowledged,

> Wet and dry air pollution control systems are generally not considered to be dioxin/furan control systems because their primary function is to remove metals and/or total chlorine from the combustion gas. They generally do not remove dioxin/furans from the incinerator flue gas unless they are used in tandem with carbon injection systems or carbon beds.

69 Fed. Reg. at 21,214. By failing to set dioxin standards, EPA violated its "'clear statutory obligation to set emission standards for each listed HAP.'" *Sierra Club*, 479 F.3d at 883 (quoting *National Lime*, 233 F.3d at 634). EPA must reopen the standards and set MACT floors for dioxin emissions.

Where EPA set standards at all, they fail to satisfy § 112(d)(3)'s floor requirements. EPA's PM standard for existing NDCE and DCE recovery furnaces does not reflect "the emission level actually achieved by the best performers (those with the lowest emission levels)." *Sierra Club*, 479 F.3d at 880. Instead, EPA selected floors equivalent to a new source performance standard (NSPS) promulgated in 1978. EPA does not even claim that this NSPS limit reflects the performance of the relevant best sources. To the contrary, EPA defends its floor approach by arguing that the floors "reasonably reflect the level of performance achievable in practice by the average of the best-performing 12 percent of sources." CITE. Thus, the record makes clear that EPA's floors reflect an emission level that the agency regards as "achievable" through the use of a chosen control technology rather than the level actually achieved by the relevant best sources. This is precisely the floor approach rejected repeatedly as unlawful by the D.C. Circuit. *Sierra Club*, 479 F.3d at 880; *Cement Kiln*, 255 F.3d at 861.

Further, the record indicates that the NSPS limit does not reflect the best sources' emission level. As a "number of commenters" pointed out to EPA during the rulemaking, "the technology reflected in the NSPS . . . is an old technology and . . . numerous sources are achieving emissions reductions well beyond the NSPS." EPA does not dispute this point, but insists that its floors reflect what is "achievable in practice by the average of the best-performing 12 percent of sources." EPA's unlawful achievability argument cannot excuse its failure to set floors reflecting the best sources' emission level.

EPA attempts to defend its floor approach for NDCE recovery furnaces by arguing that it has long-term PM emission data for only 8 of the 128 NDCE recovery furnaces operating at U.S. kraft and soda pulp mills. Seven of the eight furnaces "consistently met the NSPS limit" of 0.10 g/dscm of flue gas corrected to 8 percent oxygen. Emissions from these seven sources "ranged from 0.002 to 0.10 g/dscm." If the information from these eight sources is the only data that EPA considers adequate for setting a MACT floor, then EPA must begin by identifying the best-performing 12 percent of these sources—in this case, a single source. Monthly emissions from the best-performing source "varied from 0.002 to 0.025 g/dscm." The highest emission level recorded by the best-performing source is merely one-quarter of EPA's chosen floor. Alternatively, if EPA believes that it needs more data to set a lawful floor, the agency must gather such data. It is up to EPA to devise a floor approach capable of satisfying section 112's floor requirements. *Cement Kiln*, 255 F.3d at 865. Regardless of which approach it takes, EPA cannot avoid its obligation to set a floor that reflects "the emission level actually *achieved* by the best performers." *Sierra Club*, 479 F.3d at 880.

EPA's defense of its floor approach for DCE recovery furnaces is equally unavailing. EPA has long-term emission data for only four of the eighty-three DCE recovery furnaces operating at U.S. kraft and soda pulp mills. The agency concludes that data from these sources "show an ability to achieve the NSPS level." EPA argues that "[t]he combination" of these four DCE recovery furnaces and three additional furnaces subject to the NSPS limit indicates that "greater than 6 percent of DCE recovery furnaces are capable of meeting the NSPS PM limit on a long-term basis with ESP's." Once again, EPA makes clear that its floor reflects an emission level that the agency regards as achievable through the use of a chosen control technology rather than the level actually achieved by the relevant best sources. Because the D.C. Circuit has repeatedly rejected this floor approach as unlawful, EPA must reopen the standard and set a MACT floor reflecting the emission level actually achieved by the relevant best performers.

Nor do EPA's PM floors for new NDCE and DCE recovery furnaces reflect the emission levels actually achieved by the relevant best performer. In setting the floor, EPA identified the best performing of the eight NDCE recovery furnaces for which it had long-term PM emission data. Monthly emissions from this source "varied from 0.002 to 0.025 g/dscm" corrected to 8 percent oxygen over a six-year period. "Taking the variability of the data into consideration," EPA selected a MACT floor of 0.034 g/dscm, a 36 percent increase over the highest recorded emission level from the best-performing source. Although the D.C. Circuit has recognized that "'a given control can experience operational variability,'" EPA's chosen floor must "reasonably estimate[] the actual variability of the best-performing source," *Sierra Club*, 479 F.3d at 881-882; *see also Northeast Maryland Waste Disposal Authority v. EPA*, 358 F.3d 936, 954 (D.C. Cir. 2004) ("EPA must 'demonstrate with substantial evidence—not mere assertions' that the chosen floors 'represent "a reasonable estimate of the performance of the [best-performing] units."'" (quoting *Cement Kiln*, 255 F.3d at 866) (alteration in original)). EPA does not even claim that its chosen floor reflects the actual performance of the best source.

EPA failed to set any standard at all for total gaseous organic HAP emissions for existing NDCE recovery furnaces. Initially, EPA argued that too few NDCE recovery furnaces ("approximately 5 percent") were using dry ESP systems; nearly all the remaining furnaces were using less effective wet ESP systems. After a commenter "provided a list of 13 NDCE recovery furnaces equipped with dry ESP systems, which is a sufficient number of recovery furnaces to define the MACT floor," EPA declined once again to set a standard. This time it argued that adopting a MACT floor based on the performance of the best technology currently in use "would create disincentives that would discourage possible conversion to [an] even more promising gasification technology." Neither of these rationales can excuse the agency's failure to set a standard. The D.C. Circuit has repeatedly held that EPA has a "clear statutory obligation to set emission standards for each listed HAP," *Sierra Club*, 479 F.3d at 883. Moreover, "'[s]ection 7412(d)(3) requires only that EPA set floors at the emission level achieved by the best-performing sources. If EPA cannot meet this requirement using the [maximum achievable control technology] methodology, it must devise a different approach capable of producing floors that satisfy the Clean Air Act.'" *Sierra Club*, 479 F.3d at 882 (quoting *Cement Kiln*, 255 F.3d at 865). EPA must reopen the standard, identify the best-performing sources—which it made no effort to do here—and set a MACT floor reflecting the emission level actually achieved by the relevant best performers.

For total gaseous organic HAP emissions from new NDCE and DCE recovery furnaces, EPA failed to set a MACT floor reflecting "the emission control that is achieved in practice by the best controlled similar source." § 7412(d)(3). Instead, EPA first chose a particular control technology to "represent the best-controlled source for total gaseous organic HAP emissions." It then selected as the MACT floor an emission level that it regards as "achievable" through the use of the chosen control technology. EPA does not even claim, however, that its chosen floor reflects "the emission level actually *achieved*" by the single best source. Further, any such claim would be at odds with the record. EPA had emission data from three sources equipped with the chosen control technology—a dry ESP system—but the agency based its floor on data from the worst-performing of these sources. ("The methanol emission level corresponds to the highest three-run average obtained for a dry ESP system on an NDCE recovery furnace plus an additional amount to account for the variability in the dry ESP system data set and the lack of long-term data." CITE.) EPA must reopen the standard and set a MACT floor reflecting the emission level actually achieved by the best-performing similar source.

EPA failed to set any standard at all for total gaseous organic HAP emissions from existing DCE recovery furnaces. The DCE recovery furnace system includes a black liquor oxidation (BLO) system; forty-six of the forty-eight pulp mills with DCE recovery furnaces also have BLO systems. Forty-two of the BLO systems are air-based; only two of these systems control gaseous organic HAP emissions with technology. EPA attempts to justify its floor of "no control" by arguing that "the two air-based BLO units with controlled emissions represent less than 6 percent of DCE recovery furnace systems." This justification is unavailing. EPA has a "'clear statutory obligation to set emission standards for each listed HAP,' which does not allow it to 'avoid setting standards for HAPs not controlled with technology.'" *Sierra Club*, 479 F.3d at 883 (quoting *National Lime Ass'n v. EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000)). Moreover, "'[s]ection 7412(d)(3) requires only that EPA set floors at the emission level achieved by the best-performing sources. If EPA cannot meet this requirement using the MACT methodology, it must devise a different approach capable of producing floors that satisfy the Clean Air Act.'" *Sierra Club*, 479 F.3d at 882 (quoting *Cement Kiln*, 255 F.3d at 865). EPA must reopen the standard, identify the best-performing sources, and set a MACT floor reflecting the emission level that those sources actually achieve.

For PM emissions from existing lime kilns, EPA failed to set a MACT floor reflecting "the emission level actually *achieved* by the best performers (those with the lowest emission levels)." *Sierra Club*, 479 F.3d at 880. Instead, the agency first chose a particular control technology—ESP—and then identified an emission level that it considers "achievable by the technology that represents the MACT floor." EPA does not even claim that its chosen floor reflects "the emission level actually *achieved*" by the relevant best performers. Further, any such claim would be at odds with the record. Rather than attempting to identify the average of the best-performing 12 percent of sources, EPA points to a wide range of emission levels that, based on available data from compliance tests, lime kilns equipped with ESP "can achieve." EPA chose as the MACT floor the highest emission level recorded by a lime kiln using ESP. The agency attempts to justify its choice by citing a need to "[a]ccount for . . . variability" in the data, but it does not claim that its chosen emission level reflects the variability experienced by the best-performing sources. EPA must reopen the standard, identify the best-performing sources, and set a MACT floor reflecting the emission level that those sources actually achieve.

For PM emissions from new lime kilns, EPA failed to set a MACT floor reflecting the emission level actually achieved by the relevant best performer. EPA has long-term data for only 4 of the estimated 192 lime kilns operating at U.S. kraft and soda mills. Monthly emissions from the best-performing of these four lime kilns "varied from 0.002 to 0.018 g/dscm" corrected to 10 percent oxygen over a seven-year period. Thus, EPA does not even know — and made no serious effort to determine — what emission level the single best kiln is achieving. Further, EPA selected a MACT floor of 0.023 g/dscm, a 28 percent increase over the highest of the four emission tests it had. The agency argues that "the variability in the data" justifies its choice, but it does not even claim that its chosen floor reflects the actual variability of the best-performing source. Although the D.C. Circuit has recognized that "'a given control can experience operational variability,'" EPA's chosen floor must "reasonably estimate[] the actual variability of the best-performing source," *Sierra Club*, 479 F.3d at 881-882; *see also Northeast Maryland Waste Disposal Authority v. EPA*, 358 F.3d 936, 954 (D.C. Cir. 2004) ("EPA must 'demonstrate with substantial evidence—not mere assertions' that the chosen floors 'represent "a reasonable estimate of the performance of the [best-performing] units."'" (quoting *Cement Kiln*, 255 F.3d at 866) (alteration in original)). EPA must either provide evidence as to how a 28 percent increase over the highest emission level recorded in seven years could accurately reflect the best performer's actual variability, or it must choose another standard that can satisfy this requirement.

EPA failed to set any standard at all for gaseous organic HAP emissions from new and existing lime kilns and smelt dissolving tanks. EPA argues that gaseous organic HAP emissions from lime kilns and smelt dissolving tanks are "primarily attributable" to the use of HAP-contaminated process waters, and "[t]hese process waters are being regulated as part of the final NESHAP for noncombustion sources at pulp and paper mills." EPA has a statutory duty to set emission standards for each HAP emitted from lime kilns and smelt dissolving tanks, and such standards must, at a minimum, match the emission levels actually achieved by the relevant best sources. It is irrelevant whether emissions from lime kilns and smelt dissolving tanks are primarily attributable to wastewater from other processes or whether those other processes are regulated. It is undisputed that lime kilns and smelt dissolving tanks are sources, and EPA must set emission standards for these sources that fully satisfy the Clean Air Act. EPA must reopen the standards and set MACT floors for gaseous organic HAP emissions from new and existing lime kilns and smelt dissolving tanks.

For PM emissions from existing smelt dissolving tanks, EPA failed to set MACT floors reflecting "the emission level actually *achieved* by the best performers (those with the lowest emission levels)." *Sierra Club*, 479 F.3d at 880. Instead, EPA selected floors equivalent to a new source performance standard (NSPS) promulgated in 1976. EPA does not even claim that this NSPS limit reflects the performance of the relevant best sources. To the contrary, EPA argues that "no long-term PM emission data are available for SDT's equipped with wet scrubbers that are subject to the NSPS limit [but] the prevalence of wet scrubbers . . . and the high PM removal efficiencies achieved with this technology are sufficient to establish wet scrubbers as the proposed MACT floor PM control technology" for existing sources. Thus, the record makes clear that EPA's floor reflects an emission level that the agency regards as achievable through the use of a chosen control technology rather than the level actually achieved by the relevant best performers. This is precisely the floor approach rejected repeatedly as unlawful by the D.C. Circuit in *Sierra Club* and *Cement Kiln*.

Further, the record indicates that the NSPS limit does not reflect the best sources' emission level. Although EPA has no long-term emission data from sources equipped with wet scrubbers and subject to the NSPS limit, it does have long-term data from three sources subject to a state permit limit 40 percent lower than the NSPS. In setting the MACT floor, EPA cannot ignore data from these sources, which achieve emission reductions well beyond the NSPS. EPA must reopen the standard and set a MACT floor reflecting the emission level actually achieved by the best-performing sources. If the agency believes that it needs more data to set a lawful floor, then it must gather such data. It is up to EPA to devise a floor approach capable of satisfying section 112's floor requirements. *Cement Kiln*, 255 F.3D at 865.

For PM emissions from new smelt dissolving tanks, EPA failed to set a MACT floor reflecting the emission level actually achieved by the relevant best performer. Rather than identifying the best-performing similar source, EPA identified a particular control technology—high-efficiency wet scrubbers used by three sources subject to a state permit limit more stringent than the national new source performance standard—to "represent the best-performing PM control systems." EPA then set the MACT floor at the same emission level as the state permit limit. It does not even claim that this floor reflects the performance of the relevant best source. Instead, EPA attempts to justify its floor approach by arguing that smelt dissolving tanks equipped with high-efficiency wet scrubbers "can achieve" the state permit limit it has adopted as the MACT floor. This is precisely the floor approach rejected repeatedly as unlawful by the D.C. Circuit in *Sierra Club* and*Cement Kiln*.

Further, the record indicates that the state permit limit does not reflect the best source's emission level. EPA reviews long-term emission data from three sources subject to the state permit level—rather than the single best-performing source—and reports that "[c]ollectively," monthly emissions from the three sources "varied from 0.0045 to 0.055 kg/Mg" of black liquor solids fired over a two- to six-year period. The agency adopted a MACT floor of 0.06 kg/Mg of black liquor solids fired; the only explanation it provides is that smelt dissolving tanks equipped with high-efficiency wet scrubbers "can achieve" that emission level. EPA must reopen the standard and set a MACT floor reflecting the emission level actually achieved by the best-performing similar source.

For PM emissions from existing sulfite pulp mills, EPA failed to set a MACT floor reflecting "the emission level actually *achieved* by the best performers (those with the lowest emission levels)." *Sierra Club*, 479 F.3d at 880. To begin with, EPA selected a particular technology—fiber-bed demister systems—as the "best-performing control technology." In setting the MACT floor, the agency considered only data from sources equipped with that technology. EPA's floors must reflect the emission level achieved by the best performing sources (those with the lowest emissions) not a level achieved by sources using a chosen control technology. *Sierra Club*, 479 F.3d at 880.

EPA does not even claim that its floor reflects the emission level actually achieved by the relevant best performers. Because there are fewer than thirty sources in the subcategory, EPA must set a MACT floor reflecting the "average emission limitation achieved by the best performing 5 sources." Rather than identifying the best-performing five sources, EPA selected a floor that it considers achievable through the use of a technology that "at least five sources are equipped with." Further, the record indicates that the floor does not reflect the best sources' emission level. EPA considered data from only two sources, both of which use fiber-bed demister systems. Emissions from these sources "ranged from 0.005 to 0.088 g/dscm" corrected to 8 percent oxygen over a six- to seven-year period. EPA selected a MACT floor of 0.092 g/dscm, arguing only that it must "account for variability in the data." EPA must reopen the standard, identify the best-performing sources, and set a MACT floor reflecting the emission level that those sources actually achieve.

For PM emissions from new sulfite pulp mills, EPA failed to set a MACT floor reflecting the emission level actually achieved by the relevant best performer. To begin with, EPA considered only data from sources equipped with fiber-bed demister systems, its chosen "MACT floor control technology." Because EPA must set a floor reflecting the performance of the source with the lowest emission levels, not the best performer using a particular technology, it cannot decline to consider data from sources using other technologies.

Monthly emissions from "the best-performing sulfite combustion unit equipped with a fiber-bed demister system" ranged from 0.009 to 0.039 g/dscm corrected to 8 percent oxygen over a six-year period. EPA selected a MACT floor of 0.046 g/dscm, an 18 percent increase over the highest emission level recorded by the best-performing source. The agency argues that "the variability in the data" justifies its choice, but it does not even claim that its chosen floor reflects the actual variability of the best-performing source. EPA's chosen floor must "reasonably estimate[] the actual variability of the best-performing source," *Sierra Club*, 479 F.3d at 881-882; *see also Northeast Maryland Waste Disposal Authority v. EPA*, 358 F.3d 936, 954 (D.C. Cir. 2004) ("EPA must 'demonstrate with substantial evidence—not mere assertions' that the chosen floors 'represent "a reasonable estimate of the performance of the [best-performing] units."'" (quoting *Cement Kiln*, 255 F.3d at 866) (alteration in original)). EPA must either provide evidence as to how an 18 percent increase over the highest emission level recorded in six years could accurately reflect the best performer's actual variability—rather than the emission level that the agency believes is achievable through the use of a particular control technology—or it must choose another standard that can satisfy this requirement.

EPA failed to set any standard at all for PM emissions from new and existing chemical recovery combustion units at stand-alone semichemical pulp mills. EPA attempts to justify its failure to set a standard by arguing that "insufficient PM data . . . are available to establish MACT floors for PM." This argument is unavailing. EPA has a "'clear statutory obligation to set emission standards for each listed HAP.'" *Sierra Club v. EPA*, 479 F.3d 875, 883 (D.C. Cir. 2007) (quoting *National Lime Ass'n v. EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000)). It is up to EPA to devise a floor approach capable of satisfying section 112's floor requirements. CITE CKRC, 255 F.3D at 865. EPA must reopen the standards, collect the necessary data, and set MACT floors for new and existing sources.

EPA also failed to set standards for total gaseous organic HAP emissions from new and existing semichemical pulp mills. EPA defends its failure to set floors by arguing that "none of the existing semichemical mills are currently controlling gaseous organic HAP emissions from semichemical combustion sources." Again, this argument fails. The D.C. Circuit has repeatedly held that EPA has a "'clear statutory obligation to set emission standards for each listed HAP,' which does not allow it to 'avoid setting standards for HAPs not controlled with technology.'" *Sierra Club*, 479 F.3d at 883 (quoting *National Lime*, 233 F.3d at 634). Instead of setting floors, EPA adopts beyond-the-floor standards "based on the use of" a particular control technology. EPA cannot rely on beyond-the-floor standards to satisfy its obligation to "'set floors at the emission level achieved by the best-performing sources.'" *Sierra Club*, 479 F.3d at 882 (quoting *Cement Kiln*, 255 F.3d at 865). EPA must reopen the standards and set MACT floors for new and existing sources.

EPA's "bubble compliance alternative" is contrary to the Clean Air Act and must be removed from the rule. The bubble compliance alternative allows kraft and soda pulp mills "to set PM emissions limits for each existing process unit in the chemical recovery system at the mill such that, if these limits are met, the total emissions from all existing process units are less than or equal to a mill-specific bubble limit." 66 Fed. Reg. at 3184. The mill-specific bubble limit is calculated based on the promulgated emission standards for each process unit. Because the standards for individual process units are unlawful for the reasons given above, any plant specific bubble limits are unlawful as well. Further, the bubble compliance alternative allows mill owners to set PM emission limits for some process units that are less stringent than the promulgated standards, as long as they are able to offset the excess emissions with PM emission reductions elsewhere in the chemical recovery system. This compliance alternative is plainly contrary to the section 112(d)(3), which requires EPA to set emission standards for existing sources that "shall not be less stringent . . . than the average emission limitation achieved by the best performing 12 percent of the existing sources."

EPA's site-specific alternative emission standard for Weyerhaeuser Paper Company's Cosmopolis, Washington, sulfite pulp mill is contrary to the Clean Air Act and must be removed from the rule. The alternative standard allows Weyerhaeuser "to reduce HAP metals emissions from an onsite emission source called a hog fuel dryer in lieu of complying with the HAP metals standard for existing sulfite combustion units." 68 Fed. Reg. at 7708. EPA promulgated the alternative standard rather than developing a MACT standard for the hog fuel dryer, which "is not regulated under a NESHAP and appears to be unique." *Id.* EPA may not excuse Weyerhaeuser from complying with the HAP metals standard for existing sulfite combustion units, and it must develop a MACT standard for the hog fuel dryer. EPA cannot satisfy its obligation to establish emission standards "for each category or subcategory of major sources" by regulating some emission points and not others. § 112(d)(1).

EPA defends its Weyerhaeuser loophole by arguing that it "achieves greater emissions reductions of the same HAP metals and does so by controlling a source otherwise unregulated under subpart MM or any other NESHAP." This argument is irrelevant. EPA lacks authority to exempt the Weyerhaeuser plant or any other plant from MACT standards. Further, the agency is required to develop a MACT standard for the hog fuel dryer, in keeping with its "'clear statutory obligation to set emission standards for each listed HAP.'" *Sierra Club*, 479 F.3d at 883 (quoting

National Lime, 233 F.3d at 634). EPA also attempts to rely on its defective bubble compliance alternative, which as promulgated does not even apply to sulfite combustion units, to suggest that it is not required to regulate individual emission points such as the hog fuel dryer. It argues that "EPA typically develops MACT standards for a series of aggregated plant operations, not for individual emission points," and that the Weyerhaeuser exemption is "an alternative means of complying with" the PM MACT limit in the rule. That argument fails for the reasons discussed in the previous section. Finally, EPA argues that even if it were to develop a MACT standard for the hog fuel dryer, the standard "would likely be some type of beyond-the-floor, given the absence of this emission point at other facilities," and "EPA would thus be compelled to consider the cost, non-air quality environmental and health impacts and energy requirements of a standard (as required by section 112(d)(2)), and would not be obligated to promulgate a standard based upon consideration of those factors." EPA must set a floor for the hog fuel dryer even if it is unique. Further, that EPA must consider cost and other factors in setting beyond-the-floor standards and may conclude that such standards are not achievable does not excuse the agency from determining the maximum degree of reduction that is achievable.

30. Secondary Lead Smelters

EPA fails to set emission standards for organic HAP output from existing reverberatory, rotary, and electric furnaces that are not collocated with blast furnaces. 62 Fed. Reg. 32,210, 32,211 (June 13, 1997). EPA claims that "[r]otary furnaces, electric furnaces, and reverberatory furnaces not collocated with blast furnaces have relatively low potentials for organic HAP emissions and no standards are being proposed to limit organic HAP emissions from these furnace configurations." 59 Fed. Reg. 29,750, 29,761 (June 9, 1994). EPA then claims that there is not any justification for a more stringent standard than no control, due to the small amounts of organic HAPs emitted by these sources. This is contrary to the CAA. EPA has a "clear statutory obligation to set emission standards for *each* listed HAP." *National Lime*, 233 F.3d at 634 (emphasis added).

In addition, the standards EPA did set do not reflect the actual emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise these standards to satisfy § 112(d)(3)'s minimum stringency provisions.

31. Stationary Combustion Turbines

Stationary Combustion Turbines are a major source of HAP emissions such as formaldehyde, toluene, benzene, and acetaldehyde. 69 Fed. Reg. 10,511, 10,512 (Mar. 5, 2004). EPA set emission standards only for formaldehyde, claiming "formaldehyde is an appropriate and valid surrogate for each of the organic HAP[s] that can be controlled by a catalyst, and . . . the standard for such organic HAP[s] can be reasonably expressed in terms of formaldehyde emissions measure after exiting any control device." *Id.* at 10,522. However, EPA does not show, as it must, that controlling formaldehyde is the only means by which facilities achieve reductions in the other organic HAPs. Accordingly, EPA must reopen the rule and either explain why formaldehyde is a valid surrogate for all the other organic HAPs that stationary combustion turbines emit or set emission standards for those other HAPs.

In addition, EPA's formaldehyde standard does not reflect the formaldehyde emission level achieved by the relevant best performing sources. Accordingly, even if formaldehyde is a reasonable surrogate for all the other organic HAPs that primary lead smelters emit, the agency must reopen the rule and set floors for formaldehyde in accordance with Clean Air Act § 112(d)(3).

Further, stationary combustion turbines emit metal HAPs, which will not be controlled at all by the standard. 69 Fed. Reg. at 10,530. EPA argues that controlling metal HAPs is not required since no combustion turbines or similar sources used technology to control these HAPs prior to promulgation of the rule, and EPA does not believe it would be practical or cost effective to require control. However, EPA has a "clear statutory obligation to set emission standards for each listed HAP," regardless of whether the best-performing sources in a given category are currently using air pollution control technology to limit their emissions. *See National Lime*, 233 F.3d at 634. EPA must set a control for these metal HAPs, regardless of whether sources are currently using control technology.

Finally, EPA failed to set any standards for the acid gases that stationary combustion turbines emit. Thus, EPA must reopen the rule to set these standards as well.

32. Taconite Iron Ore Processing

For the regulation of taconite iron ore processing, EPA failed to set an emissions standard for mercury, formaldehyde, hydrogen chloride, and hydrogen fluoride. 68 Fed. Reg. 61,867, 61,869 (Oct. 30, 2003). Mercury from the ore is volatilized as the taconite pellets at these facilities are heated in the furnace. 67 Fed. Reg. 77,561, 77,571 (Dec. 18, 2002). Claiming that it had not identified any preexisting controls at existing sources, the agency asserted that it could set the no emission reduction floors. *Id.* EPA also refused to set standards for the formaldehyde, hydrochloric acid, and hydrofluoric acid emitted by indurating furnaces, claiming that it is not aware of any feasible control technology for reducing formaldehyde at these levels without further increasing exhaust temperature and thus burning more fuel. 67 Fed. Reg. at 77,570-77,571. *Id.*

It is well established that "no control" floors are unlawful. EPA must set standards for each HAP that a category emits, and these standards must, at a minimum, reflect the average emission level actually achieved by the best performing sources — *i.e.*, those with the lowest emissions — regardless of whether sources are using technology to control their emissions. Because EPA must set standards for each HAP a source category emits, regardless of whether it is currently controlled with a technology, *National Lime*, 233 F.3d at 634, EPA's refusal to set standards for these HAPs is unlawful and the agency must reopen its rule to set standards for each of them at levels that, at a minimum, reflect the average formaldehyde emission level actually achieved by the relevant best performing sources.

Although EPA set standards for PM as a surrogate for non-mercury metal HAP emissions, those standards do not reflect the actual PM emission levels achieved by the relevant best performing sources. Accordingly, EPA must revise them to satisfy § 112(d)(3)'s minimum stringency provisions.

33. Wet Formed Fiberglass Mat Production

In this standard, EPA uses formaldehyde as a surrogate for total HAP emissions. 67 Fed. Reg. 17,823, 17,826 (Apr. 11, 2002). Other HAPs emitted by these facilities include methanol and vinyl acetate. *Id.* at 17,824. In justifying its use of formaldehyde as a surrogate, EPA says that "formaldehyde by thermal oxidation will also result in control of vinyl acetate and methanol." *Id.* Even if this is true, EPA does not show, as it must, that control of formaldehyde is the only means by which sources achieve reductions in the other HAPs that wet formed fiberglass mat production facilities emit.

In addition, even if formaldehyde were a valid surrogate for all the other HAPs that wet formed fiberglass mat production facilities emit, EPA's formaldehyde standard does not reflect the formaldehyde emission level achieved by the relevant best sources.

For all of the above reasons, EPA must reopen its rule and, for all the HAPs that wet formed fiberglass mat production facilities emit, set standards that fully comply with the Clean Air Act.

34. Wool Fiberglass Manufacturing

In the summary of the Wool Fiberglass Manufacturing, EPA lists three organic HAPs emitted by these facilities, formaldehyde, phenol, and methanol. 64 Fed. Reg. 31,695, 31,695 (June 14, 1999). However, EPA set a standard only for formaldehyde, claiming that formaldehyde is a surrogate for the remaining organic HAPs. 62 Fed. Reg. 15,228, 15,239 (Mar. 31, 1997). Nowhere in the rule does EPA show that control of formaldehyde is the only means by which sources achieve reductions in the other organic HAPs that wool fiberglass manufacturing facilities emit. Further, EPA does not even claim that formaldehyde is a valid surrogate for the non-organic HAPs that wool fiberglass manufacturing facilities emit, such as metals and acid gases.

In addition, even if formaldehyde were a valid surrogate for all the other HAPs that wool fiberglass manufacturing facilities emit, EPA's formaldehyde standard does not reflect the formaldehyde emission level achieved by the relevant best sources.

For all of the above reasons, EPA must reopen its rule and, for all the HAPs that wool fiberglass manufacturing facilities emit, set standards that fully comply with the Clean Air Act.

C. STARTUP, SHUTDOWN, AND MALFUNCTION EXEMPTION

In the General Provisions governing all air toxics regulations in Part 63 of the Code of Federal Regulations, EPA included a blanket exemption from emission limits during periods of startup, shutdown, and malfunction (SSM). It provided "[t]he non-opacity emission standards set forth in this part shall apply at all times <u>except</u> during periods of startup, shutdown, and malfunction, and as otherwise specified in an applicable subpart." 40 C.F.R. § 63.6(f)(1) (emphasis added). It further provided "[t]he opacity and visible emission standards set forth in this part must apply at all times <u>except</u> during periods of startup, shutdown, and malfunction and as otherwise specified in an applicable subpart." 40 C.F.R. § 63.6(h)(1) (emphasis added).

The D.C. Circuit has vacated EPA's SSM exemption as unlawful. *Sierra Club v. EPA*, D.C. Cir. No. 02-1135 (December 19, 2008). It held that Clean Air Act § 112 and § 302(k), read together, require "continuous section 112-compliant standards." *Id.*, slip op. at 15. Therefore, the SSM exemption "violates the CAA's requirement that some section 112 standard apply continuously." *Id.*

The D.C. Circuit's vacatur of the SSM exemption renders this exemption null and void in every Part 63 regulation that contains it. Thus, once the mandate issues in *Sierra Club*, no source subject to a Part 63 regulation will be exempted from compliance with emission standards during SSM. If any source subject to a Part 63 regulation fails to comply with emission standards during SSM, it will have violated such standards. To conform its specific Part 63 regulations to governing law and to avoid misleading the public, however, the agency must now to delete the SSM exemption from all such regulations in which it appears. *Sierra Club* makes clear that any exemption from continuous compliance with § 112 emission standards violates Clean Air Act.

In some instances EPA's Part 63 regulations for specific source categories include specific SSM provisions in addition to or instead of the SSM exemption in the General Provisions. Because *Sierra Club* holds that the Clean Air Act requires continuous compliance with § 112 emission standards, it makes clear that any exemption from such standards during periods of SSM is unlawful. Therefore, EPA must delete any provision in any specific Part 63 regulation that provides any SSM exemption from continuous compliance with § 112 emission standards.

CONCLUSION

Pursuant to the Clean Air Act and the Administrative Procedure Act, Environmental Petitioners hereby petition the Administrator to reopen EPA's Clean Air Act § 112 regulations for each source category discussed above to:

1. ensure that such regulations include emission standards for each listed hazardous air pollutant the category emits and that such standards fully comply with the Clean Air Act;
2. eliminate unlawful exemptions and alternative standards promulgated under Clean Air Act § 112(d)(4);
3. eliminate unlawful or invalid use of surrogates; and,
4. delete all SSM exemptions from any Part 63 regulation in which any such exemption appears.

Environmental Petitioners further petition the Administrator to undertake a comprehensive assessment of all of its existing part 61 and part 63 regulations — including and in addition to those identified herein — to ensure that each standard fully complies with the Act and governing judicial rulings.

EPA is required by law to give this petition prompt consideration. Environmental Petitioners request a substantive response to this petition within 180 calendar days. In the absence of an affirmative response, Environmental Petitioners will be compelled to consider litigation to achieve the agency actions requested.

Respectfully submitted,

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(202) 667-4500

Attorney for Sierra Club

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Attorney for NRDC

EXHIBIT 5

Ltr. from J. Goffman Principal Dep. Ass’t Adm’r to Earthjustice on Petroleum Refinery Sector Rule

(Apr. 19, 2022)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

April 19, 2022

OFFICE OF
AIR AND RADIATION

Ms. Emma C. Cheuse
Earthjustice
1001 G. Street, NW, Suite 1000
Washington, D.C. 20001
echeuse@earthjustice.org

Mr. James S. Pew
Earthjustice
1001 G. Street, NW, Suite 1000
Washington, D.C. 20001
jpew@earthjustice.org

Dear Ms. Cheuse and Mr. Pew:

This letter concerns the U.S. Environmental Protection Agency's (EPA) reconsideration of the final rule, "Residual Risk and Technology Review of the National Emission Standards for Hazardous Air Pollutants: Petroleum Refinery Sector Rule" (85 FR 6064, February 4, 2020).

On April 6, 2020, Earthjustice submitted a petition for reconsideration of the final rule pursuant to Clean Air Act section 307(d)(7)(B) on behalf of Air Alliance Houston, California Communities Against Toxics, Clean Air Council, Coalition For A Safe Environment, Community In-Power & Development Association, Del Amo Action Committee, Environmental Integrity Project, Louisiana Bucket Brigade, Sierra Club, Texas Environmental Justice Advocacy Services, and Utah Physicians for a Healthy Environment.

EPA previously denied the April 6, 2020, petition for reconsideration (85 FR 67665, October 26, 2020). After further consideration, EPA will be undertaking reconsideration on provisions related to work practice standards for pressure relief devices and emergency flaring.

EPA intends to issue a *Federal Register* notice initiating public review and comment on the issues described in this letter. We are continuing to review all issues raised in the petition for reconsideration and may choose to initiate reconsideration of additional issues in the future. If you have any questions regarding the reconsideration process, please contact Ms. Angie Carey at (919) 541-2187 or by email at *carey.angela@epa.gov*.

Thank you for your continued interest in this rule. I appreciate the opportunity to be of service and trust the information provided is helpful.

Sincerely,

Joseph Goffman
Principal Deputy Assistant Administrator

EXHIBIT 6

Ltr. from J. Goffman, Principal Dep. Ass’t Adm’r to Earthjustice on Ethylene Production Rule

(Apr. 19, 2022)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

April 19, 2022

OFFICE OF
AIR AND RADIATION

Ms. Emma Cheuse
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Mr. Brendan Mascarenhas
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Mr. David Friedman
Vice President, Regulatory Affairs
American Fuel & Petrochemical Manufacturers
1800 M Street NW
Suite 900 North
Washington, D.C. 20036
DFriedman@afpm.org

Dear Ms. Cheuse and Messrs. Mascarenhas and Friedman:

The U.S. Environmental Protection Agency (EPA) received two petitions for administrative reconsideration of the final rule, "National Emission Standards for Hazardous Air Pollutants: Generic Maximum Achievable Control Technology Standards Residual Risk and Technology Review for Ethylene Production" (85 FR 40386, July 6, 2020), submitted pursuant to section 307(d)(7)(B) of the Clean Air Act.

On September 4, 2020, Earthjustice submitted a petition on behalf of RISE St. James, Louisiana Bucket Brigade, Louisiana Environmental Action Network, Texas Environmental Justice Advocacy Services, Air Alliance Houston, Community In-Power & Development Association, Clean Air Council, Center for Biological Diversity, Environmental Integrity Project, and Sierra Club. On September 11, 2020, the American Chemistry Council (ACC) and American Fuel & Petrochemical Manufacturers (AFPM) also submitted a joint petition.

With this letter, EPA is informing you that it will grant reconsideration on at least one issue raised in each of the submitted petitions. The Agency will reconsider the provisions related to the work practice standards for pressure relief devices and emergency flaring raised in the petition submitted by Earthjustice and the provisions related to the work practice standards for degassing of floating roof storage vessels raised in the joint ACC/AFPM petition.

EPA intends to issue a *Federal Register* notice initiating public review and comment on the issues described in this letter. We are continuing to review all issues raised in the petitions for reconsideration and may choose to initiate reconsideration of additional issues in the future. If you have any questions regarding the reconsideration process, please contact Mr. Andrew Bouchard at (919) 541-4036 or by email at *bouchard.andrew@epa.gov.*

Thank you for your continued interest in this rule. I appreciate the opportunity to be of service and trust the information provided is helpful.

Sincerely,

Joseph Goffman
Principal Deputy Assistant Administrator

Exhibit 10

KEEP PERMIT AT SITE **CONTROL NO. B - 07121**

Larry Hogan
Governor

State of Maryland

Horacio Tablada
Secretary

DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[ ] Construction Permit

Part 70
[X] Operating Permit

PERMIT NO.	24-031-1718	DATE ISSUED	JUN 2 0 2022
PERMIT FEE	To be paid in accordance with COMAR 26.11.02.19B	EXPIRATION DATE	October 31, 2026

LEGAL OWNER & ADDRESS

Northeast MD Waste Disposal Authority
(NMWDA)
100 S. Charles Street, Tower II, Suite 402
Baltimore, MD 21201-2705
Attn: Mr. Andrew Kays Executive Director

SITE

Montgomery County Resource Recovery Facility
(MCRRF)
21204 Martinsburg Road
Dickerson, MD 20842
Montgomery County
AI # 17118

SOURCE DESCRIPTION

The facility consists of three (3) waste combustion trains, each with a separate air pollution control system, storage silos, and dry lime injection systems.

This Permit supersedes Part 70 Operating Permit No. 24-031-01718 issued on January 1, 2019.

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

MDE/ARMA/PER.009 (REV. 10-08-03) (NOT TRANSFERABLE)

MONTGOMERY COUNTY RESOURCE RECOVERY FACILITY
21204 MARTINSBURG ROAD
DICKERSON, MD 20842
PART 70 OPERATING PERMIT NO. 24-031- 1718

(11) Opacity CEM allowance for unscheduled downtime and downtime for scheduled maintenance and performance checks required by regulation shall be in accordance with TM 90-01. **[Authority: 111(d) plan-COMAR 26.11.08.08B(3)]**

(12) The HCl CEMS data will be used by the Department for informational purposes only until certification procedures are approved by the Department. **[Authority: PTC 15-1718-2-0132 N]**

(13) The HCl CEMS shall comply with the following: **[Authority: COMAR 26.11.03.06C(3)-Periodic monitoring]**

(a) The requirements in paragraphs (7) and (10); except as noted in (b) and (c) below (as applicable)

(b) The 1-hour arithmetic averages shall be used to calculate a 3-hour block average.

(c) At a minimum, valid CEMS data shall be obtained for 75 percent of the hours per day for 75 percent of the days per month the affected facility is operating and combusting MSW.

(d) The Permittee shall perform four (4) cylinder gas audits (CGAs) annually in addition to daily calibrations that include zero and span checks.

(e) Upon the installation of certified HCl CEMS the Permittee shall complete a RATA and three (3) CGAs annually, pursuant to the applicable provisions of 40 CFR Part 60, Appendix F.

(14) In order to ensure that the MWC units are in continuous compliance with the prescribed HCl standards, the Permittee shall implement the most recent "HCl Control Plan" approved by MDE-ARA.

(15) The Permittee shall install HCl CEMS on the inlet and outlet of each MWC unit and have them operational and certified by June 30, 2022. Once the HCl CEMS are operational, the requirements in paragraphs (12), (13)(b), (c) and (d) and (14) above shall no longer be applicable.

B. Annual Emission Limits:

Same as A above.

Exhibit 11

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AIR QUALITY PROGRAM

TITLE V/STATE OPERATING PERMIT

Issue Date: September 2, 2016 Effective Date: September 2, 2016

Expiration Date: September 2, 2021

In accordance with the provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and 25 Pa. Code Chapter 127, the Owner, [and Operator if noted] (hereinafter referred to as permittee) identified below is authorized by the Department of Environmental Protection (Department) to operate the air emission source(s) more fully described in this permit. This Facility is subject to all terms and conditions specified in this permit. Nothing in this permit relieves the permittee from its obligations to comply with all applicable Federal, State and Local laws and regulations.

The regulatory or statutory authority for each permit condition is set forth in brackets. All terms and conditions in this permit are federally enforceable applicable requirements unless otherwise designated as "State-Only" or "non-applicable" requirements.

TITLE V Permit No: 23-00004

Federal Tax Id - Plant Code: 76-0531017-1

Owner Information

Name: COVANTA DELAWARE VALLEY LP
Mailing Address: 10 HIGHLAND AVE
CHESTER, PA 19013-2231

Plant Information

Plant: COVANTA DELAWARE VALLEY LP/DELAWARE VALLEY RES REC
Location: 23 Delaware County 23001 Chester City
SIC Code: 4953 Trans. & Utilities - Refuse Systems

Responsible Official

Name: ALEX PISCITELLI
Title: FACILITY MANAGER
Phone (610) 497 - 8100

Permit Contact Person

Name: STEVE JENNESS
Title: ENVIRONMENTAL ENGINEER
Phone: (610) 497 - 8100

[Signature] ____

JAMES D. REBARCHAK, SOUTHEAST REGION AIR PROGRAM MANAGER

SECTION A. Table of Contents

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Section B. General Title V Requirements

Section C. Site Level Title V Requirements

Section D. Source Level Title V Requirements

Note: These same sub-sections are repeated for each source!

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SECTION A. Site Inventory List

Source ID	Source Name	Capacity/Throughput	Fuel/Material
101	ROTARY COMBUSTER 1		
102	ROTARY COMBUSTER 2		
103	ROTARY COMBUSTER 3		
104	ROTARY COMBUSTER 4		
105	ROTARY COMBUSTER 5		
106	ROTARY COMBUSTER 6		
107	VEHICLE TRAFFIC ON ROADS	N/A	DUST
108	COOLING TOWER		
110	LIME STORAGE SILO		
111	ASH HANDLING		
112	COLD DEGREASERS (2)	N/A	SOLVENT
113	EMERGENCY ENGINE		
114	EMERGENCY FIRE PUMP ENGINE		
C01A	BAGHOUSE - PULSE JET FABRIC FILTER		
C02	SPRAY DRYER ABSORBER		
C03	BAGHOUSE - PULSE JET FABRIC FILTER		
C04	SPRAY DRYER ABSORBER		
C05	BAGHOUSE - PULSE JET FABRIC FILTER		
C06	SPRAY DRYER ABSORBER		
C07	BAGHOUSE - PULSE JET FABRIC FILTER		
C08	SPRAY DRYER ABSORBER		
C09	BAGHOUSE - PULSE JET FABRIC FILTER		
C10	SPRAY DRYER ABSORBER		
C108	COOLING TOWER MIST ELIMINATORS		
C11	BAGHOUSE - PULSE JET FABRIC FILTER		
C12	SPRAY DRYER ABSORBER		
FML01	NATURAL GAS PIPELINE		
FML02	MUNICIPAL WASTE STORAGE PIT		
S01	COMBUSTOR 1 STACK		
S02	COMBUSTOR 2 STACK		
S03	COMBUSTOR 3 STACK		
S04	COMBUSTOR 4 STACK		
S05	COMBUSTOR 5 STACK		
S06	COMBUSTOR 6 STACK		
S110	LIME STORAGE STACK		
S113	EMERGENCY ENGINE STACK		
S114	EMERGENCY FIRE PUMP ENGINE STACK		
Z01	ROAD DUST EMISSIONS		
Z108	COOLING TOWER FUGITIVES		
Z111	ASH HANDLING FUGITIVES		

SECTION A. Site Inventory List

Source ID	Source Name	Capacity/Throughput	Fuel/Material
Z112	DEGREASER FUGITIVES		

PERMIT MAPS

INC 101 → CNTL C02 → CNTL C01A → STAC S01
FML FML02 → INC 101
FML FML01 → INC 101

INC 102 → CNTL C04 → CNTL C03 → STAC S02
FML FML01 → INC 102
FML FML02 → INC 102

INC 103 → CNTL C06 → CNTL C05 → STAC S03
FML FML02 → INC 103
FML FML01 → INC 103

INC 104 → CNTL C08 → CNTL C07 → STAC S04
FML FML02 → INC 104
FML FML01 → INC 104

INC 105 → CNTL C10 → CNTL C09 → STAC S05
FML FML01 → INC 105
FML FML02 → INC 105

PERMIT MAPS

INC 106 → CNTL C12 → CNTL C11 → STAC S06

FML FML01 → INC 106

FML FML02 → INC 106

PROC 107 → STAC Z01

PROC 108 → CNTL C108 → STAC Z108

PROC 110 → STAC S110

PROC 111 → STAC Z111

PROC 112 → STAC Z112

PROC 113 → STAC S113

PROC 114 → STAC S114

SECTION B. General Title V Requirements

#001 [25 Pa. Code § 121.1]

Definitions

Words and terms that are not otherwise defined in this permit shall have the meanings set forth in Section 3 of the Air Pollution Control Act (35 P.S. § 4003) and 25 Pa. Code § 121.1.

#002 [25 Pa. Code § 127.512(c)(4)]

Property Rights

This permit does not convey property rights of any sort, or any exclusive privileges.

#003 [25 Pa. Code § 127.446(a) and (c)]

Permit Expiration

This operating permit is issued for a fixed term of five (5) years and shall expire on the date specified on Page 1 of this permit. The terms and conditions of the expired permit shall automatically continue pending issuance of a new Title V permit, provided the permittee has submitted a timely and complete application and paid applicable fees required under 25 Pa. Code Chapter 127, Subchapter I and the Department is unable, through no fault of the permittee, to issue or deny a new permit before the expiration of the previous permit. An application is complete if it contains sufficient information to begin processing the application, has the applicable sections completed and has been signed by a responsible official.

#004 [25 Pa. Code §§ 127.412, 127.413, 127.414, 127.446(e) & 127.503]

Permit Renewal

(a) An application for the renewal of the Title V permit shall be submitted to the Department at least six (6) months, and not more than 18 months, before the expiration date of this permit. The renewal application is timely if a complete application is submitted to the Department's Regional Air Manager within the timeframe specified in this permit condition.

(b) The application for permit renewal shall include the current permit number, the appropriate permit renewal fee, a description of any permit revisions and off-permit changes that occurred during the permit term, and any applicable requirements that were promulgated and not incorporated into the permit during the permit term.

(c) The renewal application shall also include submission of proof that the local municipality and county, in which the facility is located, have been notified in accordance with 25 Pa. Code § 127.413. The application for renewal of the Title V permit shall also include submission of compliance review forms which have been used by the permittee to update information submitted in accordance with either 25 Pa. Code § 127.412(b) or § 127.412(j).

(d) The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information during the permit renewal process. The permittee shall also promptly provide additional information as necessary to address any requirements that become applicable to the source after the date a complete renewal application was submitted but prior to release of a draft permit.

#005 [25 Pa. Code §§ 127.450(a)(4) & 127.464(a)]

Transfer of Ownership or Operational Control

(a) In accordance with 25 Pa. Code § 127.450(a)(4), a change in ownership or operational control of the source shall be treated as an administrative amendment if:

(1) The Department determines that no other change in the permit is necessary;

(2) A written agreement has been submitted to the Department identifying the specific date of the transfer of permit responsibility, coverage and liability between the current and the new permittee; and,

(3) A compliance review form has been submitted to the Department and the permit transfer has been approved by the Department.

SECTION B. General Title V Requirements

(b) In accordance with 25 Pa. Code § 127.464(a), this permit may not be transferred to another person except in cases of transfer-of-ownership which are documented and approved to the satisfaction of the Department.

#006 [25 Pa. Code § 127.513, 35 P.S. § 4008 and § 114 of the CAA]

Inspection and Entry

(a) Upon presentation of credentials and other documents as may be required by law for inspection and entry purposes, the permittee shall allow the Department of Environmental Protection or authorized representatives of the Department to perform the following:

(1) Enter at reasonable times upon the permittee's premises where a Title V source is located or emissions related activity is conducted, or where records are kept under the conditions of this permit;

(2) Have access to and copy or remove, at reasonable times, records that are kept under the conditions of this permit;

(3) Inspect at reasonable times, facilities, equipment including monitoring and air pollution control equipment, practices, or operations regulated or required under this permit;

(4) Sample or monitor, at reasonable times, substances or parameters, for the purpose of assuring compliance with the permit or applicable requirements as authorized by the Clean Air Act, the Air Pollution Control Act, or the regulations promulgated under the Acts.

(b) Pursuant to 35 P.S. § 4008, no person shall hinder, obstruct, prevent or interfere with the Department or its personnel in the performance of any duty authorized under the Air Pollution Control Act.

(c) Nothing in this permit condition shall limit the ability of the EPA to inspect or enter the premises of the permittee in accordance with Section 114 or other applicable provisions of the Clean Air Act.

#007 [25 Pa. Code §§ 127.25, 127.444, & 127.512(c)(1)]

Compliance Requirements

(a) The permittee shall comply with the conditions of this permit. Noncompliance with this permit constitutes a violation of the Clean Air Act and the Air Pollution Control Act and is grounds for one (1) or more of the following:

(1) Enforcement action

(2) Permit termination, revocation and reissuance or modification

(3) Denial of a permit renewal application

(b) A person may not cause or permit the operation of a source, which is subject to 25 Pa. Code Article III, unless the source(s) and air cleaning devices identified in the application for the plan approval and operating permit and the plan approval issued to the source are operated and maintained in accordance with specifications in the applications and the conditions in the plan approval and operating permit issued by the Department. A person may not cause or permit the operation of an air contamination source subject to 25 Pa. Code Chapter 127 in a manner inconsistent with good operating practices.

(c) For purposes of Sub-condition (b) of this permit condition, the specifications in applications for plan approvals and operating permits are the physical configurations and engineering design details which the Department determines are essential for the permittee's compliance with the applicable requirements in this Title V permit.

#008 [25 Pa. Code § 127.512(c)(2)]

Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

SECTION B. General Title V Requirements

#009 [25 Pa. Code §§ 127.411(d) & 127.512(c)(5)]

Duty to Provide Information

(a) The permittee shall furnish to the Department, within a reasonable time, information that the Department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit.

(b) Upon request, the permittee shall also furnish to the Department copies of records that the permittee is required to keep by this permit, or for information claimed to be confidential, the permittee may furnish such records directly to the Administrator of EPA along with a claim of confidentiality.

#010 [25 Pa. Code §§ 127.463, 127.512(c)(3) & 127.542]

Reopening and Revising the Title V Permit for Cause

(a) This Title V permit may be modified, revoked, reopened and reissued or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay a permit condition.

(b) This permit may be reopened, revised and reissued prior to expiration of the permit under one or more of the following circumstances:

(1) Additional applicable requirements under the Clean Air Act or the Air Pollution Control Act become applicable to a Title V facility with a remaining permit term of three (3) or more years prior to the expiration date of this permit. The Department will revise the permit as expeditiously as practicable but not later than 18 months after promulgation of the applicable standards or regulations. No such revision is required if the effective date of the requirement is later than the expiration date of this permit, unless the original permit or its terms and conditions has been extended.

(2) Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator of EPA, excess emissions offset plans for an affected source shall be incorporated into the permit.

(3) The Department or the EPA determines that this permit contains a material mistake or inaccurate statements were made in establishing the emissions standards or other terms or conditions of this permit.

(4) The Department or the Administrator of EPA determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

(c) Proceedings to revise this permit shall follow the same procedures which apply to initial permit issuance and shall affect only those parts of this permit for which cause to revise exists. The revision shall be made as expeditiously as practicable.

(d) Regardless of whether a revision is made in accordance with (b)(1) above, the permittee shall meet the applicable standards or regulations promulgated under the Clean Air Act within the time frame required by standards or regulations.

#011 [25 Pa. Code § 127.543]

Reopening a Title V Permit for Cause by EPA

As required by the Clean Air Act and regulations adopted thereunder, this permit may be modified, reopened and reissued, revoked or terminated for cause by EPA in accordance with procedures specified in 25 Pa. Code § 127.543.

#012 [25 Pa. Code § 127.541]

Significant Operating Permit Modifications

When permit modifications during the term of this permit do not qualify as minor permit modifications or administrative amendments, the permittee shall submit an application for significant Title V permit modifications in accordance with 25 Pa. Code § 127.541.

SECTION B. General Title V Requirements

#013 [25 Pa. Code §§ 121.1 & 127.462]

Minor Operating Permit Modifications

The permittee may make minor operating permit modifications (as defined in 25 Pa. Code §121.1), on an expedited basis, in accordance with 25 Pa. Code §127.462 (relating to minor operating permit modifications).

#014 [25 Pa. Code § 127.450]

Administrative Operating Permit Amendments

(a) The permittee may request administrative operating permit amendments, as defined in 25 Pa. Code §127.450(a).

(b) Upon final action by the Department granting a request for an administrative operating permit amendment covered under §127.450(a)(5), the permit shield provisions in 25 Pa. Code § 127.516 (relating to permit shield) shall apply to administrative permit amendments incorporated in this Title V Permit in accordance with §127.450(c), unless precluded by the Clean Air Act or the regulations thereunder.

#015 [25 Pa. Code § 127.512(b)]

Severability Clause

The provisions of this permit are severable, and if any provision of this permit is determined by the Environmental Hearing Board or a court of competent jurisdiction, or US EPA to be invalid or unenforceable, such a determination will not affect the remaining provisions of this permit.

#016 [25 Pa. Code §§ 127.704, 127.705 & 127.707]

Fee Payment

(a) The permittee shall pay fees to the Department in accordance with the applicable fee schedules in 25 Pa. Code Chapter 127, Subchapter I (relating to plan approval and operating permit fees).

(b) Emission Fees. The permittee shall, on or before September 1st of each year, pay applicable annual Title V emission fees for emissions occurring in the previous calendar year as specified in 25 Pa. Code § 127.705. The permittee is not required to pay an emission fee for emissions of more than 4,000 tons of each regulated pollutant emitted from the facility.

(c) As used in this permit condition, the term "regulated pollutant" is defined as a VOC, each pollutant regulated under Sections 111 and 112 of the Clean Air Act and each pollutant for which a National Ambient Air Quality Standard has been promulgated, except that carbon monoxide is excluded.

(d) Late Payment. Late payment of emission fees will subject the permittee to the penalties prescribed in 25 Pa. Code § 127.707 and may result in the suspension or termination of the Title V permit. The permittee shall pay a penalty of fifty percent (50%) of the fee amount, plus interest on the fee amount computed in accordance with 26 U.S.C.A. § 6621(a)(2) from the date the emission fee should have been paid in accordance with the time frame specified in 25 Pa. Code § 127.705(c).

(e) The permittee shall pay an annual operating permit administration fee according to the fee schedule established in 25 Pa. Code § 127.704(c) if the facility, identified in Subparagraph (iv) of the definition of the term "Title V facility" in 25 Pa. Code § 121.1, is subject to Title V after the EPA Administrator completes a rulemaking requiring regulation of those sources under Title V of the Clean Air Act.

(f) This permit condition does not apply to a Title V facility which qualifies for exemption from emission fees under 35 P.S. § 4006.3(f).

#017 [25 Pa. Code §§ 127.14(b) & 127.449]

Authorization for De Minimis Emission Increases

(a) This permit authorizes de minimis emission increases from a new or existing source in accordance with 25 Pa. Code §§ 127.14 and 127.449 without the need for a plan approval or prior issuance of a permit modification. The permittee shall provide the Department with seven (7) days prior written notice before commencing any de minimis emissions increase that would result from either: (1) a physical change of minor significance under § 127.14(c)(1); or

SECTION B. General Title V Requirements

(2) the construction, installation, modification or reactivation of an air contamination source. The written notice shall:

(1) Identify and describe the pollutants that will be emitted as a result of the de minimis emissions increase.

(2) Provide emission rates expressed in tons per year and in terms necessary to establish compliance consistent with any applicable requirement.

The Department may disapprove or condition de minimis emission increases at any time.

(b) Except as provided below in (c) and (d) of this permit condition, the permittee is authorized during the term of this permit to make de minimis emission increases (expressed in tons per year) up to the following amounts without the need for a plan approval or prior issuance of a permit modification:

(1) Four tons of carbon monoxide from a single source during the term of the permit and 20 tons of carbon monoxide at the facility during the term of the permit.

(2) One ton of NOx from a single source during the term of the permit and 5 tons of NOx at the facility during the term of the permit.

(3) One and six-tenths tons of the oxides of sulfur from a single source during the term of the permit and 8.0 tons of oxides of sulfur at the facility during the term of the permit.

(4) Six-tenths of a ton of PM10 from a single source during the term of the permit and 3.0 tons of PM10 at the facility during the term of the permit. This shall include emissions of a pollutant regulated under Section 112 of the Clean Air Act unless precluded by the Clean Air Act or 25 Pa. Code Article III.

(5) One ton of VOCs from a single source during the term of the permit and 5.0 tons of VOCs at the facility during the term of the permit. This shall include emissions of a pollutant regulated under Section 112 of the Clean Air Act unless precluded by the Clean Air Act or 25 Pa. Code Article III.

(c) In accordance with § 127.14, the permittee may install the following minor sources without the need for a plan approval:

(1) Air conditioning or ventilation systems not designed to remove pollutants generated or released from other sources.

(2) Combustion units rated at 2,500,000 or less Btu per hour of heat input.

(3) Combustion units with a rated capacity of less than 10,000,000 Btu per hour heat input fueled by natural gas supplied by a public utility, liquefied petroleum gas or by commercial fuel oils which are No. 2 or lighter, viscosity less than or equal to 5.82 c St, and which meet the sulfur content requirements of 25 Pa. Code § 123.22 (relating to combustion units). For purposes of this permit, commercial fuel oil shall be virgin oil which has no reprocessed, recycled or waste material added.

(4) Space heaters which heat by direct heat transfer.

(5) Laboratory equipment used exclusively for chemical or physical analysis.

(6) Other sources and classes of sources determined to be of minor significance by the Department.

(d) This permit does not authorize de minimis emission increases if the emissions increase would cause one or more of the following:

(1) Increase the emissions of a pollutant regulated under Section 112 of the Clean Air Act except as authorized in Subparagraphs (b)(4) and (5) of this permit condition.

(2) Subject the facility to the prevention of significant deterioration requirements in 25 Pa. Code Chapter 127, Subchapter D and/or the new source review requirements in Subchapter E.

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(3) Violate any applicable requirement of the Air Pollution Control Act, the Clean Air Act, or the regulations promulgated under either of the acts.

(4) Changes which are modifications under any provision of Title I of the Clean Air Act and emission increases which would exceed the allowable emissions level (expressed as a rate of emissions or in terms of total emissions) under the Title V permit.

(e) Unless precluded by the Clean Air Act or the regulations thereunder, the permit shield described in 25 Pa. Code § 127.516 (relating to permit shield) shall extend to the changes made under 25 Pa. Code § 127.449 (relating to de minimis emission increases).

(f) Emissions authorized under this permit condition shall be included in the monitoring, recordkeeping and reporting requirements of this permit.

(g) Except for de minimis emission increases allowed under this permit, 25 Pa. Code § 127.449, or sources and physical changes meeting the requirements of 25 Pa. Code § 127.14, the permittee is prohibited from making physical changes or engaging in activities that are not specifically authorized under this permit without first applying for a plan approval. In accordance with § 127.14(b), a plan approval is not required for the construction, modification, reactivation, or installation of the sources creating the de minimis emissions increase.

(h) The permittee may not meet de minimis emission threshold levels by offsetting emission increases or decreases at the same source.

#018 [25 Pa. Code §§ 127.11a & 127.215]

Reactivation of Sources

(a) The permittee may reactivate a source at the facility that has been out of operation or production for at least one year, but less than or equal to five (5) years, if the source is reactivated in accordance with the requirements of 25 Pa. Code §§ 127.11a and 127.215. The reactivated source will not be considered a new source.

(b) A source which has been out of operation or production for more than five (5) years but less than 10 years may be reactivated and will not be considered a new source if the permittee satisfies the conditions specified in 25 Pa. Code § 127.11a(b).

#019 [25 Pa. Code §§ 121.9 & 127.216]

Circumvention

(a) The owner of this Title V facility, or any other person, may not circumvent the new source review requirements of 25 Pa. Code Chapter 127, Subchapter E by causing or allowing a pattern of ownership or development, including the phasing, staging, delaying or engaging in incremental construction, over a geographic area of a facility which, except for the pattern of ownership or development, would otherwise require a permit or submission of a plan approval application.

(b) No person may permit the use of a device, stack height which exceeds good engineering practice stack height, dispersion technique or other technique which, without resulting in reduction of the total amount of air contaminants emitted, conceals or dilutes an emission of air contaminants which would otherwise be in violation of this permit, the Air Pollution Control Act or the regulations promulgated thereunder, except that with prior approval of the Department, the device or technique may be used for control of malodors.

#020 [25 Pa. Code §§ 127.402(d) & 127.513(1)]

Submissions

(a) Reports, test data, monitoring data, notifications and requests for renewal of the permit shall be submitted to the:

Regional Air Program Manager
PA Department of Environmental Protection
(At the address given on the permit transmittal letter,
or otherwise notified)

SECTION B. General Title V Requirements

(b) Any report or notification for the EPA Administrator or EPA Region III should be addressed to:

Office of Air Enforcement and Compliance Assistance (3AP20)
United States Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

(c) An application, form, report or compliance certification submitted pursuant to this permit condition shall contain certification by a responsible official as to truth, accuracy, and completeness as required under 25 Pa. Code § 127.402(d). Unless otherwise required by the Clean Air Act or regulations adopted thereunder, this certification and any other certification required pursuant to this permit shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

#021 [25 Pa. Code §§ 127.441(c) & 127.463(e); Chapter 139; & 114(a)(3), 504(b) of the CAA]

Sampling, Testing and Monitoring Procedures

(a) The permittee shall perform the emissions monitoring and analysis procedures or test methods for applicable requirements of this Title V permit. In addition to the sampling, testing and monitoring procedures specified in this permit, the Permittee shall comply with any additional applicable requirements promulgated under the Clean Air Act after permit issuance regardless of whether the permit is revised.

(b) The sampling, testing and monitoring required under the applicable requirements of this permit, shall be conducted in accordance with the requirements of 25 Pa. Code Chapter 139 unless alternative methodology is required by the Clean Air Act (including §§ 114(a)(3) and 504(b)) and regulations adopted thereunder.

#022 [25 Pa. Code §§ 127.511 & Chapter 135]

Recordkeeping Requirements

(a) The permittee shall maintain and make available, upon request by the Department, records of required monitoring information that include the following:

(1) The date, place (as defined in the permit) and time of sampling or measurements.

(2) The dates the analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of the analyses.

(6) The operating conditions as existing at the time of sampling or measurement.

(b) The permittee shall retain records of the required monitoring data and supporting information for at least five (5) years from the date of the monitoring sample, measurement, report or application. Supporting information includes the calibration data and maintenance records and original strip-chart recordings for continuous monitoring instrumentation, and copies of reports required by the permit.

(c) The permittee shall maintain and make available to the Department upon request, records including computerized records that may be necessary to comply with the reporting, recordkeeping and emission statement requirements in 25 Pa. Code Chapter 135 (relating to reporting of sources). In accordance with 25 Pa. Code Chapter 135, § 135.5, such records may include records of production, fuel usage, maintenance of production or pollution control equipment or other information determined by the Department to be necessary for identification and quantification of potential and actual air contaminant emissions. If direct recordkeeping is not possible or practical, sufficient records shall be kept to provide the needed information by indirect means.

SECTION B. General Title V Requirements

#023 [25 Pa. Code §§ 127.411(d), 127.442, 127.463(e) & 127.511(c)]

Reporting Requirements

(a) The permittee shall comply with the reporting requirements for the applicable requirements specified in this Title V permit. In addition to the reporting requirements specified herein, the permittee shall comply with any additional applicable reporting requirements promulgated under the Clean Air Act after permit issuance regardless of whether the permit is revised.

(b) Pursuant to 25 Pa. Code § 127.511(c), the permittee shall submit reports of required monitoring at least every six (6) months unless otherwise specified in this permit. Instances of deviations (as defined in 25 Pa. Code § 121.1) from permit requirements shall be clearly identified in the reports. The reporting of deviations shall include the probable cause of the deviations and corrective actions or preventative measures taken, except that sources with continuous emission monitoring systems shall report according to the protocol established and approved by the Department for the source. The required reports shall be certified by a responsible official.

(c) Every report submitted to the Department under this permit condition shall comply with the submission procedures specified in Section B, Condition #020(c) of this permit.

(d) Any records, reports or information obtained by the Department or referred to in a public hearing shall be made available to the public by the Department except for such records, reports or information for which the permittee has shown cause that the documents should be considered confidential and protected from disclosure to the public under Section 4013.2 of the Air Pollution Control Act and consistent with Sections 112(d) and 114(c) of the Clean Air Act and 25 Pa. Code § 127.411(d). The permittee may not request a claim of confidentiality for any emissions data generated for the Title V facility.

#024 [25 Pa. Code § 127.513]

Compliance Certification

(a) One year after the date of issuance of the Title V permit, and each year thereafter, unless specified elsewhere in the permit, the permittee shall submit to the Department and EPA Region III a certificate of compliance with the terms and conditions in this permit, for the previous year, including the emission limitations, standards or work practices. This certification shall include:

(1) The identification of each term or condition of the permit that is the basis of the certification.

(2) The compliance status.

(3) The methods used for determining the compliance status of the source, currently and over the reporting period.

(4) Whether compliance was continuous or intermittent.

(b) The compliance certification shall be postmarked or hand-delivered no later than thirty days after each anniversary of the date of issuance of this Title V Operating Permit, or on the submittal date specified elsewhere in the permit, to the Department and EPA in accordance with the submission requirements specified in condition #020 of this section.

#025 [25 Pa. Code § 127.3]

Operational Flexibility

The permittee is authorized to make changes within the Title V facility in accordance with the following provisions in 25 Pa. Code Chapter 127 which implement the operational flexibility requirements of Section 502(b)(10) of the Clean Air Act and Section 6.1(i) of the Air Pollution Control Act:

(1) Section 127.14 (relating to exemptions)

(2) Section 127.447 (relating to alternative operating scenarios)

(3) Section 127.448 (relating to emissions trading at facilities with federally enforceable emissions caps)

(4) Section 127.449 (relating to de minimis emission increases)

SECTION B. General Title V Requirements

(5) Section 127.450 (relating to administrative operating permit amendments)

(6) Section 127.462 (relating to minor operating permit amendments)

(7) Subchapter H (relating to general plan approvals and operating permits)

#026 [25 Pa. Code §§ 127.441(d), 127.512(i) and 40 CFR Part 68]

Risk Management

(a) If required by Section 112(r) of the Clean Air Act, the permittee shall develop and implement an accidental release program consistent with requirements of the Clean Air Act, 40 CFR Part 68 (relating to chemical accident prevention provisions) and the Federal Chemical Safety Information, Site Security and Fuels Regulatory Relief Act (P.L. 106-40).

(b) The permittee shall prepare and implement a Risk Management Plan (RMP) which meets the requirements of Section 112(r) of the Clean Air Act, 40 CFR Part 68 and the Federal Chemical Safety Information, Site Security and Fuels Regulatory Relief Act when a regulated substance listed in 40 CFR § 68.130 is present in a process in more than the listed threshold quantity at the Title V facility. The permittee shall submit the RMP to the federal Environmental Protection Agency according to the following schedule and requirements:

(1) The permittee shall submit the first RMP to a central point specified by EPA no later than the latest of the following:

(i) Three years after the date on which a regulated substance is first listed under § 68.130; or,

(ii) The date on which a regulated substance is first present above a threshold quantity in a process.

(2) The permittee shall submit any additional relevant information requested by the Department or EPA concerning the RMP and shall make subsequent submissions of RMPs in accordance with 40 CFR § 68.190.

(3) The permittee shall certify that the RMP is accurate and complete in accordance with the requirements of 40 CFR Part 68, including a checklist addressing the required elements of a complete RMP.

(c) As used in this permit condition, the term "process" shall be as defined in 40 CFR § 68.3. The term "process" means any activity involving a regulated substance including any use, storage, manufacturing, handling, or on-site movement of such substances or any combination of these activities. For purposes of this definition, any group of vessels that are interconnected, or separate vessels that are located such that a regulated substance could be involved in a potential release, shall be considered a single process.

(d) If the Title V facility is subject to 40 CFR Part 68, as part of the certification required under this permit, the permittee shall:

(1) Submit a compliance schedule for satisfying the requirements of 40 CFR Part 68 by the date specified in 40 CFR § 68.10(a); or,

(2) Certify that the Title V facility is in compliance with all requirements of 40 CFR Part 68 including the registration and submission of the RMP.

(e) If the Title V facility is subject to 40 CFR Part 68, the permittee shall maintain records supporting the implementation of an accidental release program for five (5) years in accordance with 40 CFR § 68.200.

(f) When the Title V facility is subject to the accidental release program requirements of Section 112(r) of the Clean Air Act and 40 CFR Part 68, appropriate enforcement action will be taken by the Department if:

(1) The permittee fails to register and submit the RMP or a revised plan pursuant to 40 CFR Part 68.

(2) The permittee fails to submit a compliance schedule or include a statement in the compliance certification required under Condition #24 of Section B of this Title V permit that the Title V facility is in compliance with the requirements of Section 112(r) of the Clean Air Act, 40 CFR Part 68, and 25 Pa. Code § 127.512(i).

SECTION B. General Title V Requirements

#027 [25 Pa. Code § 127.512(e)]

Approved Economic Incentives and Emission Trading Programs

No permit revision shall be required under approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this Title V permit.

#028 [25 Pa. Code §§ 127.516, 127.450(d), 127.449(f) & 127.462(g)]

Permit Shield

(a) The permittee's compliance with the conditions of this permit shall be deemed in compliance with applicable requirements (as defined in 25 Pa. Code § 121.1) as of the date of permit issuance if either of the following applies:

(1) The applicable requirements are included and are specifically identified in this permit.

(2) The Department specifically identifies in the permit other requirements that are not applicable to the permitted facility or source.

(b) Nothing in 25 Pa. Code § 127.516 or the Title V permit shall alter or affect the following:

(1) The provisions of Section 303 of the Clean Air Act, including the authority of the Administrator of the EPA provided thereunder.

(2) The liability of the permittee for a violation of an applicable requirement prior to the time of permit issuance.

(3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act.

(4) The ability of the EPA to obtain information from the permittee under Section 114 of the Clean Air Act.

(c) Unless precluded by the Clean Air Act or regulations thereunder, final action by the Department incorporating a significant permit modification in this Title V Permit shall be covered by the permit shield at the time that the permit containing the significant modification is issued.

SECTION C. Site Level Requirements

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §121.7]
Prohibition of air pollution.
No person may permit air pollution as that term is defined in the Air Pollution Control Act (35 P.S. Section 4003).

 # 002 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions
No person may permit the emission into the outdoor atmosphere of fugitive air contaminant from a source other than the following:

(a) construction or demolition of buildings or structures;
(b) grading, paving and maintenance of roads and streets;
(c) use of roads and streets. Emissions from material in or on trucks, railroad cars and other vehicular equipment are not considered as emissions from use of roads and streets;
(d) clearing of land;
(e) stockpiling of materials;
(f) open burning operations, as specified in 25 Pa. Code § 129.14;
(g) blasting in open pit mines. Emissions from drilling are not considered as emissions from blasting;
(h) coke oven batteries, provided the fugitive air contaminants emitted from any coke oven battery comply with the standards for visible fugitive emissions in 25 Pa. Code §§ 123.44 and 129.15 (relating to limitations of visible fugitive air contaminants from operation of any coke oven battery; and coke pushing operations); and
(i) sources and classes of sources other than those identified in (a)-(h), above, for which the permittee has obtained a determination from the Department that fugitive emissions from the source, after appropriate control, meet the following requirements:
(1) the emissions are of minor significance with respect to causing air pollution; and
(2) the emissions are not preventing or interfering with the attainment or maintenance of any ambient air quality standard.

 # 003 [25 Pa. Code §123.2]
Fugitive particulate matter
A person may not permit fugitive particulate matter to be emitted into the outdoor atmosphere from a source specified in Condition #002 (relating to prohibition of certain fugitive emissions) if such emissions are visible at the point the emissions pass outside the person's property.

 # 004 [25 Pa. Code §123.31]
Limitations
A person may not permit the emission into the outdoor atmosphere of any malodorous air contaminants from any source in such a manner that the malodors are detectable outside the property of the person on whose land the source is being operated.

 # 005 [25 Pa. Code §123.41]
Limitations
A person may not permit the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is either of the following:

(1) Equal to or greater than 20% for a period or periods aggregating more than three minutes in any 1 hour.

(2) Equal to or greater than 60% at any time.

 # 006 [25 Pa. Code §123.42]
Exceptions
The limitations of 25 Pa. Code §123.41 (relating to limitations) shall not apply to a visible emission in any of the following instances:

(a) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations.

(b) When the emission results from sources specified in Condition #002 of this Section.

SECTION C. Site Level Requirements

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Except as provided in Condition #002 of Section C and Condition #001 of Section D for Source ID 111, no fugitive emissions shall be emitted into the outdoor atmosphere from any building or enclosure associated with the combustor(s) at any time.

(b) The VOC emissions from the entire facility shall not exceed 50.0 tons in any 12 consecutive month period.

 # 008 [25 Pa. Code §129.14]

Open burning operations

No person may permit the open burning of material in the Southeast Air Basin except where the open burning operations result from:

(a) a fire set to prevent or abate a fire hazard, when approved by the Department and set by or under the supervision of a public officer;
(b) any fire set for the purpose of instructing personnel in fire fighting, when approved by the Department;
(c) a fire set for the prevention and control of disease or pests, when approved by the Department;
(d) a fire set in conjunction with the production of agricultural commodities in their unmanufactured state on the premises of the farm operation;
(e) a fire set for the purpose of burning domestic refuse, when the fire is on the premises of a structure occupied solely as a dwelling by two families or less and when the refuse results from the normal occupancy of the structure;
(f) a fire set solely for recreational or ceremonial purposes; or
(g) a fire set solely for cooking food.

II. TESTING REQUIREMENTS.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) All test procedures shall be submitted to the Regional Air Quality Manager sixty (60) days prior to any test, but no later than the time frame as established in the Department's Compliance Assurance Policy on Municipal Waste Incinerators and latest amendments.

(b) At least thirty (30) days prior to the test, the Air Quality Manager shall be informed of the date and time of the test.

(c) Within sixty (60) days after the source test(s), two (2) copies of the complete test report shall be submitted to the Regional Air Quality Manager for approval.The test report shall include all operating conditions for all tests required by this Operating Permit and indicate the amount of waste combusted, classification of wastes, amount of each type of waste, Btu content of wastes, and composition of wastes.

(d) If at any time the Department has cause to believe that air contaminant emissions from any source(s) listed in Section A, of this Permit, may be in excess of the limitations specified in this Permit, or established pursuant to, any applicable rule or regulation contained in 25 Pa. Code Article III, the permittee shall be required to conduct whatever tests deemed necessary by the Department to determine the actual emission rate(s).

(e) Such testing shall be conducted in accordance with the provisions of 25 Pa. Code Chapter 139, when applicable, and in accordance with any restrictions or limitations established by the Department at such time as it notifies the permittee that testing is required.

III. MONITORING REQUIREMENTS.

 # 010 [25 Pa. Code §123.43]

Measuring techniques

Visible emissions may be measured using either of the following:

(a) a device approved by the Department and maintained to provide accurate opacity measurements; and
(b) observers, trained and qualified to measure plume opacity with the naked eye or with the aid of any devices approved by the Department.

SECTION C. Site Level Requirements

 # 011 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.
(a) The permittee shall monitor the facility, once per operating day, for the following:

(1) odors which may be objectionable (as per 25 Pa. Code §123.31);
(2) visible emissions (as per 25 Pa. Code §§123.41 and 123.42); and
(3) fugitive particulate matter (as per 25 Pa. Code §§ 123.1 and 123.2).

(b) Objectionable odors, fugitive particulate emissions, and visible emissions that are caused or may be caused by operations at the site shall:

(1) be investigated;
(2) be reported to the facility management, or individual(s) designated by the permittee;
(3) have appropriate corrective action taken (for emissions that originate on-site); and
(4) be recorded in a permanent written log.

IV. RECORDKEEPING REQUIREMENTS.

 # 012 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.
(a) The permittee shall maintain a file containing all records and other data that are required to be collected pursuant to the various provisions of this Operating Permit. This file shall include, but not be limited to:

(1) all air pollution control system performance evaluations;
(2) records of calibration checks; and
(3) records of adjustments and maintenance performed on all equipment which is subject to this operating permit.

(b) The permittee shall keep daily, monthly and 12 consecutive month records of the quantities and classification of all solid waste combusted and accepted at this facility in a format approved by the Department.

(c) The permittee shall maintain records of all monitoring of fugitive emissions, visible emissions and odors, including those that deviate from the conditions found in this permit. The record of deviations shall contain, at a minimum, the following items:

(1) date, time, and location of the incident(s);
(2) the cause of the event; and
(3) the corrective action taken, if necessary, to abate the situation and prevent future occurrences.

V. REPORTING REQUIREMENTS.

 # 013 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.
(a) The permittee shall, within two (2) hours, of becoming knowledgeable, of any occurrence, notify the Department, at (484) 250-5920, of any malfunction of the source(s) or associated air pollution control devices listed in Section A, of this permit, or any forced shutdown of either combustor(s) because of noncompliance with the conditions of this operating permit, results in, or is reasonably expected to result in, the emission of air contaminants in excess of the limitations specified in this permit, or regulation contained in 25 Pa. Code Article III.

(b) The permittee shall immediately upon becoming knowledgeable, of any occurrence, notify the Department at (484) 250-5920 of any malfunction(s) which occur at this Title V facility, and pose(s) an imminent danger to public health, safety, welfare and the environment, and would violate permit conditions if the source were to continue to operate after the malfunction.

(c) A written report shall be submitted to the Department within two (2) working days following the notification of the incident, and shall describe, at a minimum, the following:

(1) the malfunction(s);

SECTION C. Site Level Requirements

(2) the emission(s);
(3) the duration; and
(4) any corrective action taken.

(d) The permittee shall submit an annual certificate of compliance, due by April 1st of each year, for the period covering January 1 through December 31 of the previous year. This certificate of compliance shall document compliance with all permit terms and conditions set forth in this Title V permit as required under condition #24 of section B of this permit; and

 # 014 [25 Pa. Code §135.21]
Emission statements
The permittee shall submit by March 1, of each year, an annual emission statement for the preceding calendar year.

 # 015 [25 Pa. Code §135.3]
Reporting
(a) The permittee shall submit by March 1, of each year, a source report for the preceding calendar year. The report shall include information from all previously reported sources, new sources which were first operated during the preceding calendar year, and sources modified during the same period which were not previously reported, including those sources listed in the Miscellaneous Section of this permit.

(b) The permittee may request an extension of time from the Department for the filing of a source report, and the Department may grant the extension for reasonable cause.

VI. WORK PRACTICE REQUIREMENTS.

 # 016 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions
A person responsible for any source specified in Condition #002, above, shall take all reasonable actions to prevent particulate matter from becoming airborne. These actions shall include, but not be limited to, the following

(a) use, where possible, of water or suitable chemicals, for control of dust in the demolition of buildings or structures, construction operations, the grading of roads, or the clearing of land;

(b) application of asphalt, water, or other suitable chemicals, on dirt roads, material stockpiles and other surfaces which may give rise to airborne dusts;

(c) paving and maintenance of roadways; and

(d) prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or by other means.

 # 017 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) The sources and air pollution control devices listed in this permit shall be operated and maintained in a manner consistent with good operating and maintenance practices, and in accordance with manufacturer's specifications.

(b) The permittee shall immediately, upon discovery, implement measures, which may include the application for the installation of an air cleaning device(s), if necessary, to reduce the air contaminant emissions to within applicable limitations, if at any time the operation of the source(s) identified in Section A, of this permit, is causing the emission of air contaminants in excess of the limitations specified in, or established pursuant to, 25 Pa. Code Article III or any other applicable rule promulgated under the Clean Air Act.

VII. ADDITIONAL REQUIREMENTS.

 # 018 [25 Pa. Code §127.512]
Operating permit terms and conditions.
The permittee may not modify any air contaminant system identified in Sections A or G, of this permit, prior to obtaining Department approval, except those modifications authorized by Condition #017(g), of Section B, of this permit.

VIII. COMPLIANCE CERTIFICATION.

SECTION C. Site Level Requirements

No additional compliance certifications exist except as provided in other sections of this permit including Section B (relating to Title V General Requirements).

IX. COMPLIANCE SCHEDULE.

No compliance milestones exist.

*** Permit Shield In Effect ***

SECTION D. Source Level Requirements

Source ID: 101 Source Name: ROTARY COMBUSTER 1

Source Capacity/Throughput:

INC 101 → CNTL C02 → CNTL C01A → STAC S01

FML FML01 → INC 101

FML FML02 → INC 101

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Nitrogen Oxide (NOx) emissions per combustor, expressed as NO2, shall not exceed any of the following:

(1) 180 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average using CEMs;
(2) 88.56 lbs/hr; and
(3) 0.42 lbs/MMBtu.

(b) The above NOx limits are a result of controlled combustion. This control was determined by the Department as being Reasonably Available Control Technology (RACT) for emissions of NOx (66 FR 54699 and 40 C.F.R. §52.2063).

(c) The NOx emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down, provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

 # 002 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The following annual ambient concentrations, expressed in micro-grams/cubic meter (UG/DSCM), shall not be exceeded. To demonstrate compliance with the following annual ambient concentrations, the permittee shall calculate the concentrations using the actual stack emission rates and exhaust parameters from each stack test specified for the combustor(s), and the dispersion modeling techniques used in the application, as approved by the Department. A certification shall be supplied to the Department stating compliance with maximum allowable ambient concentrations with every stack test report.

PCDD & PCDF, expressed as 2,3,7,8 TCDD equalivents* 0.30 x 10E-7
Arsenic and Compounds 0.23 x 10E-3
Beryllium and Compounds 0.42 x 10E-3
Cadmium and Compounds 0.56 x 10E-3
Nickel and Compounds 0.33 x 10E-2
Hexavalent Chromium and Compounds 0.83 x 10E-4
Lead and Compounds 0.09
Mercury and Compounds 0.024
Hydrogen Chloride 7.0
Benzo(a)pyrene 0.59 x 10E-3

(b) Ambient air quality analysis shall be redone if there is a modification in emission limits or for any parameter that exceeds the applicable stack test limitation during any stack test series.

(c) The permittee may be required to resume full modeling if the Department determines that a decrease in either volumetric flow rate and/or stack temperature has a significant adverse impact on the ambient concentration.

* Polychlorinated dibenzo-p-dioxins ("PCDD") and polychlorinated dibenzofurans ("PCDF") expressed as 2, 3, 7, 8

SECTION D. Source Level Requirements

tetrachlorinated dibenzo-p-dioxins ("TCDD") equivalents using toxicity equivalents factors ("TEFS") as described in the Department's BAT and calculated according to PADEP approved method.

 # 003 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) VOC emissions, expressed as total hydrocarbons, shall not exceed 37.6 pounds per hour as an aggregate emission rate for the six (6) combustors. This VOC emission limit is a determination of RACT for VOC emissions (66 FR 54699 and 40 C.F.R. §52.2063).

(b) Compliance with this limitation shall be based on the average of three (3) consecutive test runs.

(c) This emissions cap does not provide any relief from obtaining a plan approval for any future physical change or change in the method of operation of any of the combustors. Future applicability determinations must consider the baseline actual emissions of the emissions units and not the cap. The latter is true even if the company does not request a change in the compliance cap. Furthermore, by accepting this cap and agreeing to consider the six combustors as one emissions unit for NSR/PSD purposes, any future applicability determinations must involve all six combustors, e.g. should major NSR/PSD be triggered for any one combustor or process change, BACT/LAER is required for all six combustors.

 # 004 [25 Pa. Code §127.512]
Operating permit terms and conditions.
SO2 emissions, per combustor, shall not exceed any of the following:

(a) 68.45 lbs/hr; and

(b) 29 ppmdv, corrected to 7% oxygen, or shall be reduced by no less than 80% (by weight) on a 24-hour block geometric average using CEMs, whichever is less stringent.

 # 005 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) The toxic metal emissions per combustor shall not exceed any of the following:

(1) Emission concentration, measured in ug/dscm and corrected to 7% oxygen:

Arsenic and Compounds 7.2
Beryllium and Compounds 0.2
Cadmium and Compounds 15.8
Hexavalent Chromium and Compounds 2.3
Nickel and Compounds 25.0
Lead and Compounds 166.0
Mercury and Compounds 50 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight),whichever is less stringent.

(2) Emission rate (lbs/hr) was based on an exhaust rate of 68,679 dscfm, at 7% oxygen.

Arsenic and Compounds 0.00185
Beryllium and Compounds 0.000051
Cadmium and Compounds 0.00406
Hexavalent Chromium and Compounds 0.000591
Nickel and Compounds 0.00643
Lead and Compounds 0.0423
Mercury and Compounds 0.029

(b) Compliance with the emission concentration limits shall be documented through stack tests for each combustor. The results shall be based on ppmdv or ug/dscm, as appropriate, and corrected to 7% oxygen.

 # 006 [25 Pa. Code §127.512]

SECTION D. Source Level Requirements

Operating permit terms and conditions.

(a) Visible air contaminants from any combustor stack shall not be emitted in such a manner that the opacity (measured by CEMS) of the emissions is equal to or greater than

(1) 10% for a period aggregating more than three (3) minutes in any one (1) hour; or
(2) 30% at any time.

(b) The above visible emission limitations do not apply in either of the following instances:

(1) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations; or
(2) when the emission results from sources specified in 25 Pa. Code §123.1(a).

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total mass dioxin/furan emissions per combustor shall not exceed 30 nanograms per dry standard cubic meter (total mass), corrected to 7% oxygen.

(b) Compliance with this emission limitation shall be based on the average of three (3) consecutive test runs.

 # 008 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Carbon monoxide emissions per combustor shall not exceed any of the folloiwng:

(1) 100 ppmdv, corrected to 7% oxygen, calculated as a 24-hour block arithmetic average using CEMs; and
(2) 29.95 lbs/hr.

(b) The CO emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down. Provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

(c) Compliance with the CO limit shall be determined using a 24-hour block arithmetic average. The 24-hour block arithmetic average shall be calculated from one (1) hour arithmetic averages expressed in ppmdv, corrected to 7% oxygen.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Hydrochloric acid (HCl) emissions per combustor shall be reduced by not less than 95% (by weight), on a 24-hour daily arithmetic basis. This reduction requirement shall be waived if the exhaust concentrations are less than 25 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average, and 36.58 lbs/hr.

 # 010 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The Department reserves the right to establish and impose more stringent limits than those stated in this permit, based on the test results from each stack test performed, the CEM results and the dispersion modeling techniques as approved by the Department.

(b) Start-up of the combustor commences with the introduction of municipal waste to an empty combustor and does not include any warm up period when the combustor is combusting only a fossil fuel or any other auxiliary fuel, approved by the Department, and no municipal waste is being combusted.

(c) Shutdown of the combustor commences with the cessation of charging municipal waste for the express purpose of shutting down the combustor.

 # 011 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total particulate matter (PM) emissions per combustor shall not exceed 5.80 lbs/hr and 0.010 gr/dscf, corrected to 7% oxygen.

(b) PM-10 emissions per combustor shall not exceed 0.012 gr/dscf, corrected to 7% oxygen, and 6.96 lbs/hr.

SECTION D. Source Level Requirements

(c) Compliance with the above emission limits shall be based on the average of three (3) consecutive test runs.

Throughput Restriction(s).

 # 012 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Each combustor shall not be operated to exceed 161,000 lbs steam/hr, or 110% of the maximum demonstrated steam load during the most recent annual dioxin/furan performance test, whichever is less, except during the dioxin/furan performance test and the two (2) weeks preceding this test, when the steam load limitations do not apply.

(b) Only the following types of waste are permitted to be burned in the combustors:

(1) municipal waste, as defined in 25 Pa. Code § 287.1;
(2) municipal-like residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit; and
(3) residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit.

(c) The residual waste (Form R waste list) accepted at the facility shall not exceed the following on a daily basis:

(1) 10% of the total amount of waste, by weight; or
(2) 500 tons

(d) The daily amount of residual waste and total amount of waste must be documented in accordance with the conditions of the Department's Waste Permit No. 400593.

(e) Any changes to the waste streams or types of waste shall be approved by the Department.

Control Device Efficiencies Restriction(s).

 # 013 [25 Pa. Code §127.503]

Application information.

Emissions from each combustor shall be controlled by individual dry acid gas scrubbers and pulse-jet cleaning type fabric collectors.

 # 014 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Compliance with the parameters set forth in the Conditions below assures compliance with the toxic metal emission limits in Condition #005 of this Section.

(a) Each combustor shall be operated to maintain the combustion gases temperature greater than 1800°F for at least one (1) second, calculated on an hourly average (1-hour block arithmetic). The temperature sensor shall be located at the furnace roof position approved by the Department for each combustor. The temperature at this location shall be maintained at greater than 850°F, (a Department approved reference temperature which corresponds to 1800°F for at least one second). Each combustor auxiliary burners shall be controlled automatically to maintain the combustion gases at the aforementioned temperature whenever refuse is being incinerated. In the event that furnace combustion gas flow rates change significantly from any previous alternate location verification test, or at the Department's request, the permittee shall perform a new alternative location verification and retention test.

(b) The flue gas temperature, measured at the particulate matter control device inlet and averaged arithmeticly in 4-hour block, shall not exceed 300°F or 30°F above the maximum demonstrated particulate matter control device temperature, as defined in 40 C.F.R. §60.51b, whichever is lower, except during the annual dioxin/furan or mercury performance test and the 2 weeks preceding the annual dioxin/furan or mercury performance test, when the particulate matter control device inlet flue gas temperature limitation of 300°F is applicable.

(c) The above temperature limits apply and remain enforceable at all times, until and unless the Department grants a waiver

SECTION D. Source Level Requirements

in writing for the purpose of evaluating system performance, testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

II. TESTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The permittee shall conduct annual performance test on each of the combustors for the the following pollutants:

(1) total particulate matter, and PM-10 (including particle sizing);
(2) arsenic and compounds (expressed as arsenic);
(3) cadmium and compounds (expressed as cadmium);
(4) hexavalent chromium and compounds (expressed as chromium);
(5) nickel and compounds (expressed as nickel);
(6) lead and compounds (expressed as lead);
(7) beryllium and compounds (expressed as beryllium);
(8) mercury and compounds (expressed as mercury);
(9) PCDD and PCDF (expressed as 2,3,7,8 TCDD equivalents calculated according to the Department approved method and as total dioxin and furan);
(10) VOC (expressed as total hydrocarbons);
(11) PAH, including Benzo(a)pyrene;
(12) NOx;
(13) SO2;
(14) HCl;
(15) CO; and
(16) Visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111)

(b) If the emissions of PM, or PM10, or any of the toxic metals from any one of the combustors equal to or exceed 80% of the emission limitations, that combustor(s) shall be tested semiannually for each of the pollutants that equals to or exceeds 80% of the emission limitations. Testing frequency can revert back to annually when the tested emissions are less than 80% of the emission limitations for a consecutive period of 24-months, plus the permittee notifies the Department of such testing schedule reversion.

(c) Performance testing for SO2, NOx, CO, and HCl may be substituted by CEM data to demonstrate compliance with the emission limitations. The permittee shall perform SO2, NOx, CO, HCl CEMS performance audit for each combustor during each annual performance test.

(d) The amount of waste incinerated during a stack test shall be an adequate representation of the waste load to be processed by the facility.

(e) Unless approved by the Department prior to the testing, the following procedures and test methods shall be used to determine compliance with the emission limits:

(1) EPA reference method 1, for the sampling sites and traverse points.
(2) EPA reference method 3 or 3A, for the gas analysis.
(3) EPA reference methods 5, 201A/202 for PM and PM10. Both the front half and back half catches are to be analyzed and reported. However, only the front half catch is to be utilized in determining compliance.
(4) EPA reference method 9, for opacity.
(5) EPA reference method 29, for cadmium, lead and mercury, with a minimum sample volume to be 1.7 cubic meters for mercury. The percent weight reduction for mercury emissions shall be computed using the mercury concentrations measured at the inlet and outlet of the control device, corrected to 7% oxygen, (dry basis).
(6) EPA reference method 26, or 26A, for HCl.
(7) EPA reference method 19, for SO2.
(8) EPA reference method 6, 6A, or 6C, for the RATA tests on the SO2 CEMS.
(9) EPA reference method 19, for NOx.

SECTION D. Source Level Requirements

(10) EPA reference method 7, 7A, 7C, 7D, or 7E, for the RATA test on the NOx CEMS.
(11) EPA reference method 10, 10A, or 10B, for CO.
(12) EPA reference method 23, for Dioxins/furans.
(13) EPA reference method 22, for visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111).

(f) Each combustor shall be equipped with test ports so that periodic measurement of the 1800°F for one (1) second residence time requirement can be conducted at the Department's request.

III. MONITORING REQUIREMENTS.

 # 016 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The Department approved Continuous Emission Monitors (CEMs) shall be operated and maintained in accordance with 25 Pa. Code Chapter 139, the Department's "Continuous Source Monitoring Manual (CSM Manual)" (Revision No.5 - March 1993), and latest amendments ("CSM Manual") for the following:

(1) CO monitored both upstream and downstream of the air pollution control equipment;
(2) SO2 monitored upstream and downstream of the air pollution control equipment;
(3) NOx monitored downstream of the air pollution control equipment;
(4) HCL monitored downstream of the air pollution control equipment; and
(5) Opacity of the exhaust gases.

(b) The following operating parameters shall be monitored and recorded continuously using the Department approved continuous monitoring system (CMS) for each combustor at the locations, if specified:

(1) Oxygen, at both upstream and downstream of the air pollution control equipment;
(2) Temperature of the gases exiting the combustor monitored at the furnace roof position approved by the Department;
(3) Temperature of the gases at the inlet of each baghouse for the combustors.
(4) The lime slurry injection rate to the dry acid gas scrubber; and
(5) The steam load for each combustor in lb/hr and calculated in 4-hour block arithmetic averages.

(c) The permittee shall replace all thermocouples, at the furnace roof position of each combustor, on a quarterly basis with those that have been certified in accordance with NIST (National Institute of Standards and Testing).

(d) The premittee shall monitor and record supplemental fuel usage on a monthly basis.

(e) The permittee shall ensure that the Data Acquisition System maintains an uninterruptible power supply until the combustors are in a "process down" mode of operation.

(f) The selected parameters that define "normal operations" for CEM reporting purposes are when the dry inlet O2 is less than or equal to 18.0% and the steam flow is greater than or equal to 50,000 lbs/hr. If either of the conditions is not met, the CEM reports the combustor as “process down” for that minute.

(g) The Department reserves the right to require the permittee to install, operate and maintain an uninterruptible power supply (UPS) for the continuous monitoring system at the facility. The requirement to install a UPS will be based on power outages and the loss of data and the affect on the CEM system.

 # 017 [25 Pa. Code §139.111]
Municipal waste incinerator monitoring requirements.

The CEMS and CMS shall be operated and maintained to achieve the following data availability standards:

(a) Carbon Monoxide (CO) and Temperature: 100% valid hours/day, where a valid hour is defined as greater than or equal to 90% valid readings/hour (54 minutes).

(b) Opacity and oxygen (O2): Greater than or equal to 95% valid hours/day, where a valid hour is defined as greater than or

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equal to 75% valid readings/hour (45 minutes).

(c) Hydrochloric Acid (HCl), Sulfur dioxide (SO2), and Nitrogen oxides (NOx): Greater than or equal to 90% valid hours/month, where a valid hour is defined as greater than or equal to 75% valid readings/hour (45 minutes).

IV. RECORDKEEPING REQUIREMENTS.

 # 018 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall maintain, on-site, the following records for a minimum of five (5) years, in either paper copy, or computer-readable format, unless an alternative format is approved by the Department.

(a) the calendar date of each record.

(b) all emission averages from the continuous monitoring systems, which include: all one (1) hour average SO2, NOx, CO, and HCl emission concentrations, combustor unit load measurements, and PM control device inlet temperatures.

(c) all block geometric or arithmetic average concentrations, and percent reductions, as applicable, for SO2, NOx, CO, HCl, combustor unit load level, and PM control device inlet temperatures.

(d) identification of the calendar dates when any of the average emissions, percent reductions, or operating parameters recorded for SO2, NOx, CO, HCl, combustor unit load levels, particulate matter control device inlet temperature, or opacity, are above the applicable limits, with reasons for such exceedances and a description of the corrective action taken.

(e) identification of the calendar dates when the minimum hours of any of the data for SO2, NOx, CO, HCl emissions data, combustor unit load, PM control device inlet temperature and/or opacity have not been obtained, the reason for not obtaining sufficient data, and a description of corrective action taken.

(f) the results of the daily drift tests and quarterly accuracy determinations for the SO2, NOx, CO, HCl CEMs.

(g) results of all performance tests, including supporting calculations, along with maximum demonstrated unit load, and maximum PM control device inlet temperature.

(h) the names of the combustor chief facility operator, shift supervisors, and control room operators who have been fully certified, or provisionally certified, by the American Society of Mechanical Engineers (ASME) or an equivalent State-approved certification, including the dates of initial and renewal certifications and documentation of current certification. This subcondition does not apply to those individuals who have obtained full certification from the ASME on or before August 23, 1999.

(i) the names of the combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course, including documentation of training completion. Those chief facility operators, shift supervisors and control room operators who have obtained full certification prior to August 23, 1999, do not need to be recertified.

(j) the supplemental fuel usage.

V. REPORTING REQUIREMENTS.

 # 019 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall submit, to both the USEPA and the Department, semiannual reports that shall include the following information :

(1) A list of PM, lead, cadmium, opacity, mercury, dioxin/furans, and fugitive ash emission levels achieved during the performance tests.

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(2) A list of the highest emission level recorded for SO2, NOx, CO, HCl, municipal waste combustor unit load level, and PM control device inlet temperature based on the data recorded using CMS.

(3) The highest opacity level measured and recorded.

(4) The total number of hours per calendar quarter and hours per calendar year that valid data for SOx, NOx, CO, HCl, municipal waste combustor unit load, or PM control device inlet temperature data were not obtained.

(5) The total number of hours that data for SO2, NOx, CO, HCl, combustor load, and PM control device inlet temperature were excluded from the calculation of average emission concentrations of parameters.

(b) The semiannual reports shall include information from the preceding calendar year for the year being reported, in order to provide the Department with a summary of the performance of this facility over a 2-year period.

(c) The semiannual report shall include the following information for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit:

(1) SO2, NOx, CO, HCl, combustor load level, PM control device inlet temperature, and opacity.

(2) Any exceedance of the applicable levels for the following: PM, opacity, mercury, cadmium, lead, dioxin/furans, and fugitive ash. A copy of the test report documenting the emission levels and the corrective action taken, shall accompany the report.

(d) The semiannual reports shall be submitted as a paper copy, postmarked on or before August 1 and February 1 following the proceeding 6-month period ending each December and June, respectively.

(e) Temperature values submitted in each quarterly report shall consist of actual temperature values plus 950°F, the difference measured at the surrogate location and the demonstrated 1800°F for one (1) second retention time location.

(f) All CEM reports, including CEMS violations, shall be submitted to the Department within thirty (30) days after each quarter, unless otherwise approved the Department. The Department reserves the right to require the report submissions with a format acceptable to the Department.

(g) The permittee shall submit the following reports:

(1) a semi annual deviation report, due by October 1, of each year, for the period covering January 1 through June 30 of the same year. Note: The annual certification of compliance fulfills the obligation for the second deviation reporting period (July 1 through December 31 of the previous year).

(2) For those contaminants monitored by a Department certified CEMS for which the Department's Enforcement Policy - Continuous Emission Monitoring System (CEMS) established penalties for excess emissions, the aforementioned notification and reporting requirements shall be waived.

VI. WORK PRACTICE REQUIREMENTS.

 # 020 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) Combustor Operation Requirements

(1) No solid waste shall be charged into the combustor(s) until equilibrium has been attained in the furnace zones and the temperature of the combustion gases reach 1800°F (based upon a surrogate temperature of 850°F as displayed on the facility CEMs) for one (1) second of retention time when the combustor is empty. All control equipment shall be operational and functioning properly prior to the introduction of solid waste into the combustor(s).

(2) During the process of all planned shut downs of each combustor, auxiliary burners shall be used to ensure that the temperature of the combustion gases does not drop below 1600°F while any waste material is still being incinerated. All

control equipment shall be operational and functioning properly until all of the solid waste is incinerated.

(3) The charging of waste to each combustor shall automatically cease through the use of an interlock system, if:

(A) The combustor temperature measured at the furnace roof, at the Department approved location, drops below 650°F, (a Department approved reference temperature which corresponds to 1600°F), for a 15-minute period, or,
(B) The CO emissions exceed 600 ppmv, corrected to 7% oxygen on a dry basis for a period of fifteen (15) minutes (this requirement is waived during the startup periods), or
(C) The flue gas oxygen (as measured at the oxygen monitor upstream of the control device) level drops below 3% (wet basis or equivalent dry) for a 15-minute period, or,
(D) The opacity of the exhaust gases is equal to or greater than 10% for a period of 15 minutes.

(4) An adequate spare parts inventory shall be maintained to ensure timely repairs of major component malfunctions.

(b) Operator Training and Certification Requirements

(1) All personnel involved with the operation and maintenance of the combustors, associated pollution control equipment and monitoring equipment shall complete the comprehensive training program as specified in 40 C.F.R. §§60.56a and 60.54b, and according to the schedules specified in 40 CFR §60.39b(c)(4). This program includes operator training to identify waste material and actions to be taken to correct conditions which result from the initiation of the interlock system.

(2) Each facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the Amercian Society of Mechanical Engineers (ASME) or a state certification program, and each shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers or a State Certification program.

(3) Except as provided in subcondition (i) below, each combustor shall not be operated at any time unless one of the following people is on duty at the source:

(A) A fully certified chief facility operator,
(B) A provisionally certified chief facility operator who is scheduled to take the full certification exam,
(C) A fully certified shift supervisor, or
(D) A provisionally certified shift supervisor who is scheduled to take the full certification exam.

(4) Stand-In Provisions

(A) If one of the persons, listed in Condition (b)(3) above, must leave the facility during their operating shift, a provisionally certified control room operator who is on-site, may stand in.
(B) A provisionally certified control room operator may stand in when the chief facility operator or shift supervisor is off-site for more than twelve (12) hours (a normal work shift), but less than two (2) weeks for normal off-site activities including: attending meetings, conferences, training, work travel, temporary reassignment, personal vacation, sick leave, family leave or similar activities. The permittee shall notify the Department, in writing, (by facsimile), within 24 hours, that the stand-in period will exceed twelve (12) hours (a normal work shift).

(5) In the event that the medical conditions, temporary eassignment, job transfer, resignation, dismissal or other circumstances beyond the permittee's control results in or is expected to result in the absence of the chief facility operator or shift supervisor for a period exceeding two (2) weeks, the permittee shall notify the Department in writing and identify what conditions resulted in such absence and what corrective actions have been taken to correct such absence. At the Department's request, the permittee shall prepare written status summary reports demonstrating that a good faith effort has been made and continues to be made to correct the conditions resulting in the absence of the chief facility operator or shift supervisor.

(6) A provisionally certified operator who is newly promoted or recently transferred to a shift supervisor position or a chief facility operator position at the municipal waste combustion unit may perform the duties of the certified chief facility operator or certified shift supervisor without notice to, or approval by, the Department for up to six months before taking the ASME QRO certification exam.

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(7) The permittee shall review the operating manual with each person who has responsibilities affecting the operation of this facility including, but not limited to: chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load operators.

(8) The operating manual review shall include, but not be limited to: operator training to identify waste materials referred to as large non-combustible bulky materials, combustible bulky materials, unacceptable waste, as defined in this permit, and action to be taken to correct conditions which result from abnormal/emergency operation, running and/or shutdown that would cause the initiation of the interlock system.

(9) Each operator shall undergo initial training the date prior to the day the person assumes responsibilities affecting the combustor unit operation, and annually thereafter.

(10) The operating manual shall be kept in a readily accessible location for all persons required to undergo training, and be available to the USEPA and/or the Department upon request.

(11) The permittee shall keep and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the following:

(A) a summary of the applicable standards under this Operating Permit;
(B) a description of basic combustion theory applicable to the combustor(s);
(C) procedures for handling, receiving, and feeding municipal solid waste;
(D) combustor startup, shutdown, and malfunction provisions;
(E) procedures for maintaining proper combustion air supply levels;
(F) procedures for operating the combustors within the standards established under this Operating Permit;
(G) procedures for responding to periodic upset or off-specification conditions;
(H) procedures for minimizing particulate matter carryover;
(I) procedures for ash handling;
(J) procedures for monitoring combustion emissions;
(K) procedures for reporting and recordkeeping;
(L) procedures for responding to emergency situations; and
(M) procedures for monitoring the degree of waste burnout.

(c) Waste Management

(1) The following wastes or materials shall be removed from the tipping room floor for appropriate disposal:

(A) Unacceptable waste, visible hazardous materials, and visible unapproved residual waste as defined by 25 Pa. Code § 287.1 of the Bureau of Waste Management Regulations;
(B) Large non-combustible bulky materials, including visible automotive batteries;
(C) Combustible bulky materials.

(2) The amount of solid waste material stored in the tipping room shall be less than the amount of solid waste material which can be reasonably incinerated within 120 hours of its delivery. If there is reason to believe that the combustor(s) are not capable of incinerating the solid waste material specified in the time frame above, the Department shall be notified in accordance with the malfunction reporting condition of this permit. No additional waste material shall be accepted and all the solid waste material shall be removed, if needed, to prevent the escape of odor beyond the property line. No air shall be exhausted to the outdoor atmosphere from this building during such an occurence without being treated in the combustor(s) unless otherwise authorized by the Department.

(3) Except recyclable materials, open storage of solid waste outside of a building is prohibited.

(4) All wastes or materials which can be airborne or spilled shall be transported in closed containers or tarped trucks.

(d) Tipping Area Management

(1) The tipping area shall be operated at a negative pressure, when any combustor is in operation. The air passing

SECTION D. Source Level Requirements

through all natural draft openings surrounding the tipping floor, including the MWC charging area, shall flow inward continuously.

(2) To ensure negative pressure on the tipping area, at a minimum, the permittee shall:

(A) limit the number of open entrance and exit doors to the tipping floor to one in each direction;
(B) close all truck delivery doors to the tipping floor between 8:00 pm and 5:00 am every day and all day on Sunday;
(C) use and maintain plastic flaps or other equivalent shielding to reduce the effective opening area on any open truck delivery door to the tipping floor; and
(D) on a daily basis, inspect and log that all roof vents over the tipping floor and combustor charging chutes are closed and that all tipping floor doors and openings not in use that day are closed.

(e) The permittee shall operate and maintain a telephone dial-up telemetry system which has been approved by the Department, and is consistent with the "Air Quality Compliance Assurance Policy for Municipal Waste Incinerators", July 1989, as revised (CAP for MWI).

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The combustors are subject to the Department's Air Quality Compliance Assurance Policy (CAP) for Municipal Waste Incinerators finalized and signed by the Department on July 12, 1989, and it's latest amendments.

(b) The combustors are subject to the provisions of EPA approved State section 111(d)/129 plan implementing 40 C.F.R. 60 subpart Cb for Large Municipal Waste Combustors, dated April 27, 1998 (67 FR 68935).

(c) The design, construction, and operation of each combustor as stated in the Plan Approval Application, in accordance with the Department's BAT for MWI and its subsequent amendments issued up to the issuance of the Plan Approval and the conditions of the Plan Approval shall be adhered to. Department approval must be obtained prior to modification of any of the design, construction, and operation of each combustor.

(d) The combustors are not subject to the provisions of 40 C.F.R. 60 Subpart Db as per 40 C.F.R. §60.40b(k).

***** Permit Shield in Effect. *****

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Source ID: 102 Source Name: ROTARY COMBUSTER 2

Source Capacity/Throughput:

INC 102 → CNTL C04 → CNTL C03 → STAC S02

FML FML01 → INC 102

FML FML02 → INC 102

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Nitrogen Oxide (NOx) emissions per combustor, expressed as NO2, shall not exceed any of the following:

(1) 180 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average using CEMs;
(2) 88.56 lbs/hr; and
(3) 0.42 lbs/MMBtu.

(b) The above NOx limits are a result of controlled combustion. This control was determined by the Department as being Reasonably Available Control Technology (RACT) for emissions of NOx (66 FR 54699 and 40 C.F.R. §52.2063).

(c) The NOx emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down, provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

 # 002 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The following annual ambient concentrations, expressed in micro-grams/cubic meter (UG/DSCM), shall not be exceeded. To demonstrate compliance with the following annual ambient concentrations, the permittee shall calculate the concentrations using the actual stack emission rates and exhaust parameters from each stack test specified for the combustor(s), and the dispersion modeling techniques used in the application, as approved by the Department. A certification shall be supplied to the Department stating compliance with maximum allowable ambient concentrations with every stack test report.

PCDD & PCDF, expressed as 2,3,7,8 TCDD equalivents* 0.30 x 10E-7
Arsenic and Compounds 0.23 x 10E-3
Beryllium and Compounds 0.42 x 10E-3
Cadmium and Compounds 0.56 x 10E-3
Nickel and Compounds 0.33 x 10E-2
Hexavalent Chromium and Compounds 0.83 x 10E-4
Lead and Compounds 0.09
Mercury and Compounds 0.024
Hydrogen Chloride 7.0
Benzo(a)pyrene 0.59 x 10E-3

(b) Ambient air quality analysis shall be redone if there is a modification in emission limits or for any parameter that exceeds the applicable stack test limitation during any stack test series.

(c) The permittee may be required to resume full modeling if the Department determines that a decrease in either volumetric flow rate and/or stack temperature has a significant adverse impact on the ambient concentration.

* Polychlorinated dibenzo-p-dioxins ("PCDD") and polychlorinated dibenzofurans ("PCDF") expressed as 2, 3, 7, 8

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tetrachlorinated dibenzo-p-dioxins ("TCDD") equivalents using toxicity equivalents factors ("TEFS") as described in the Department's BAT and calculated according to PADEP approved method.

 # 003 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) VOC emissions, expressed as total hydrocarbons, shall not exceed 37.6 pounds per hour as an aggregate emission rate for the six (6) combustors. This VOC emission limit is a determination of RACT for VOC emissions (66 FR 54699 and 40 C.F.R. §52.2063).

(b) Compliance with this limitation shall be based on the average of three (3) consecutive test runs.

(c) This emissions cap does not provide any relief from obtaining a plan approval for any future physical change or change in the method of operation of any of the combustors. Future applicability determinations must consider the baseline actual emissions of the emissions units and not the cap. The latter is true even if the company does not request a change in the compliance cap. Furthermore, by accepting this cap and agreeing to consider the six combustors as one emissions unit for NSR/PSD purposes, any future applicability determinations must involve all six combustors, e.g. should major NSR/PSD be triggered for any one combustor or process change, BACT/LAER is required for all six combustors.

 # 004 [25 Pa. Code §127.512]
Operating permit terms and conditions.
SO2 emissions, per combustor, shall not exceed any of the following:

(a) 68.45 lbs/hr; and

(b) 29 ppmdv, corrected to 7% oxygen, or shall be reduced by no less than 80% (by weight) on a 24-hour block geometric average using CEMs, whichever is less stringent.

 # 005 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) The toxic metal emissions per combustor shall not exceed any of the following:

(1) Emission concentration, measured in ug/dscm and corrected to 7% oxygen:

Arsenic and Compounds 7.2
Beryllium and Compounds 0.2
Cadmium and Compounds 15.8
Hexavalent Chromium and Compounds 2.3
Nickel and Compounds 25.0
Lead and Compounds 166.0
Mercury and Compounds 50 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight),whichever is less stringent.

(2) Emission rate (lbs/hr) was based on an exhaust rate of 68,679 dscfm, at 7% oxygen.

Arsenic and Compounds 0.00185
Beryllium and Compounds 0.000051
Cadmium and Compounds 0.00406
Hexavalent Chromium and Compounds 0.000591
Nickel and Compounds 0.00643
Lead and Compounds 0.0423
Mercury and Compounds 0.029

(b) Compliance with the emission concentration limits shall be documented through stack tests for each combustor. The results shall be based on ppmdv or ug/dscm, as appropriate, and corrected to 7% oxygen.

 # 006 [25 Pa. Code §127.512]

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Operating permit terms and conditions.

(a) Visible air contaminants from any combustor stack shall not be emitted in such a manner that the opacity (measured by CEMS) of the emissions is equal to or greater than

(1) 10% for a period aggregating more than three (3) minutes in any one (1) hour; or
(2) 30% at any time.

(b) The above visible emission limitations do not apply in either of the following instances:

(1) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations; or
(2) when the emission results from sources specified in 25 Pa. Code §123.1(a).

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total mass dioxin/furan emissions per combustor shall not exceed 30 nanograms per dry standard cubic meter (total mass), corrected to 7% oxygen.

(b) Compliance with this emission limitation shall be based on the average of three (3) consecutive test runs.

 # 008 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Carbon monoxide emissions per combustor shall not exceed any of the folloiwng:

(1) 100 ppmdv, corrected to 7% oxygen, calculated as a 24-hour block arithmetic average using CEMs; and
(2) 29.95 lbs/hr.

(b) The CO emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down. Provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

(c) Compliance with the CO limit shall be determined using a 24-hour block arithmetic average. The 24-hour block arithmetic average shall be calculated from one (1) hour arithmetic averages expressed in ppmdv, corrected to 7% oxygen.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Hydrochloric acid (HCl) emissions per combustor shall be reduced by not less than 95% (by weight), on a 24-hour daily arithmetic basis. This reduction requirement shall be waived if the exhaust concentrations are less than 25 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average, and 36.58 lbs/hr.

 # 010 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The Department reserves the right to establish and impose more stringent limits than those stated in this permit, based on the test results from each stack test performed, the CEM results and the dispersion modeling techniques as approved by the Department.

(b) Start-up of the combustor commences with the introduction of municipal waste to an empty combustor and does not include any warm up period when the combustor is combusting only a fossil fuel or any other auxiliary fuel, approved by the Department, and no municipal waste is being combusted.

(c) Shutdown of the combustor commences with the cessation of charging municipal waste for the express purpose of shutting down the combustor.

 # 011 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total particulate matter (PM) emissions per combustor shall not exceed 5.80 lbs/hr and 0.010 gr/dscf, corrected to 7% oxygen.

(b) PM-10 emissions per combustor shall not exceed 0.012 gr/dscf, corrected to 7% oxygen, and 6.96 lbs/hr.

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(c) Compliance with the above emission limits shall be based on the average of three (3) consecutive test runs.

Throughput Restriction(s).

 # 012 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) Each combustor shall not be operated to exceed 161,000 lbs steam/hr, or 110% of the maximum demonstrated steam load during the most recent annual dioxin/furan performance test, whichever is less, except during the dioxin/furan performance test and the two (2) weeks preceding this test, when the steam load limitations do not apply.

(b) Only the following types of waste are permitted to be burned in the combustors:

(1) municipal waste, as defined in 25 Pa. Code § 287.1;
(2) municipal-like residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit; and
(3) residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit.

(c) The residual waste (Form R waste list) accepted at the facility shall not exceed the following on a daily basis:

(1) 10% of the total amount of waste, by weight; or
(2) 500 tons

(d) The daily amount of residual waste and total amount of waste must be documented in accordance with the conditions of the Department's Waste Permit No. 400593.

(e) Any changes to the waste streams or types of waste shall be approved by the Department.

Control Device Efficiencies Restriction(s).

 # 013 [25 Pa. Code §127.503]
Application information.
Emissions from each combustor shall be controlled by individual dry acid gas scrubbers and pulse-jet cleaning type fabric collectors.

 # 014 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Compliance with the parameters set forth in the Conditions below assures compliance with the toxic metal emission limits in Condition #005 of this Section.

(a) Each combustor shall be operated to maintain the combustion gases temperature greater than 1800°F for at least one (1) second, calculated on an hourly average (1-hour block arithmetic). The temperature sensor shall be located at the furnace roof position approved by the Department for each combustor. The temperature at this location shall be maintained at greater than 850°F, (a Department approved reference temperature which corresponds to 1800°F for at least one second). Each combustor auxiliary burners shall be controlled automatically to maintain the combustion gases at the aforementioned temperature whenever refuse is being incinerated. In the event that furnace combustion gas flow rates change significantly from any previous alternate location verification test, or at the Department's request, the permittee shall perform a new alternative location verification and retention test.

(b) The flue gas temperature, measured at the particulate matter control device inlet and averaged arithmeticly in 4-hour block, shall not exceed 300°F or 30°F above the maximum demonstrated particulate matter control device temperature, as defined in 40 C.F.R. §60.51b, whichever is lower, except during the annual dioxin/furan or mercury performance test and the 2 weeks preceding the annual dioxin/furan or mercury performance test, when the particulate matter control device inlet flue gas temperature limitation of 300°F is applicable.

(c) The above temperature limits apply and remain enforceable at all times, until and unless the Department grants a waiver

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in writing for the purpose of evaluating system performance, testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

II. TESTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The permittee shall conduct annual performance test on each of the combustors for the the following pollutants:

(1) total particulate matter, and PM-10 (including particle sizing);
(2) arsenic and compounds (expressed as arsenic);
(3) cadmium and compounds (expressed as cadmium);
(4) hexavalent chromium and compounds (expressed as chromium);
(5) nickel and compounds (expressed as nickel);
(6) lead and compounds (expressed as lead);
(7) beryllium and compounds (expressed as beryllium);
(8) mercury and compounds (expressed as mercury);
(9) PCDD and PCDF (expressed as 2,3,7,8 TCDD equivalents calculated according to the Department approved method and as total dioxin and furan);
(10) VOC (expressed as total hydrocarbons);
(11) PAH, including Benzo(a)pyrene;
(12) NOx;
(13) SO2;
(14) HCl;
(15) CO; and
(16) Visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111)

(b) If the emissions of PM, or PM10, or any of the toxic metals from any one of the combustors equal to or exceed 80% of the emission limitations, that combustor(s) shall be tested semiannually for each of the pollutants that equals to or exceeds 80% of the emission limitations. Testing frequency can revert back to annually when the tested emissions are less than 80% of the emission limitations for a consecutive period of 24-months, plus the permittee notifies the Department of such testing schedule reversion.

(c) Performance testing for SO2, NOx, CO, and HCl may be substituted by CEM data to demonstrate compliance with the emission limitations. The permittee shall perform SO2, NOx, CO, HCl CEMS performance audit for each combustor during each annual performance test.

(d) The amount of waste incinerated during a stack test shall be an adequate representation of the waste load to be processed by the facility.

(e) Unless approved by the Department prior to the testing, the following procedures and test methods shall be used to determine compliance with the emission limits:

(1) EPA reference method 1, for the sampling sites and traverse points.
(2) EPA reference method 3 or 3A, for the gas analysis.
(3) EPA reference methods 5, 201A/202 for PM and PM10. Both the front half and back half catches are to be analyzed and reported. However, only the front half catch is to be utilized in determining compliance.
(4) EPA reference method 9, for opacity.
(5) EPA reference method 29, for cadmium, lead and mercury, with a minimum sample volume to be 1.7 cubic meters for mercury. The percent weight reduction for mercury emissions shall be computed using the mercury concentrations measured at the inlet and outlet of the control device, corrected to 7% oxygen, (dry basis).
(6) EPA reference method 26, or 26A, for HCl.
(7) EPA reference method 19, for SO2.
(8) EPA reference method 6, 6A, or 6C, for the RATA tests on the SO2 CEMS.
(9) EPA reference method 19, for NOx.

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(10) EPA reference method 7, 7A, 7C, 7D, or 7E, for the RATA test on the NOx CEMS.
(11) EPA reference method 10, 10A, or 10B, for CO.
(12) EPA reference method 23, for Dioxins/furans.
(13) EPA reference method 22, for visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111).

(f) Each combustor shall be equipped with test ports so that periodic measurement of the 1800°F for one (1) second residence time requirement can be conducted at the Department's request.

III. MONITORING REQUIREMENTS.

 # 016 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The Department approved Continuous Emission Monitors (CEMs) shall be operated and maintained in accordance with 25 Pa. Code Chapter 139, the Department's "Continuous Source Monitoring Manual (CSM Manual)" (Revision No.5 - March 1993), and latest amendments ("CSM Manual") for the following:

(1) CO monitored both upstream and downstream of the air pollution control equipment;
(2) SO2 monitored upstream and downstream of the air pollution control equipment;
(3) NOx monitored downstream of the air pollution control equipment;
(4) HCL monitored downstream of the air pollution control equipment; and
(5) Opacity of the exhaust gases.

(b) The following operating parameters shall be monitored and recorded continuously using the Department approved continuous monitoring system (CMS) for each combustor at the locations, if specified:

(1) Oxygen, at both upstream and downstream of the air pollution control equipment;
(2) Temperature of the gases exiting the combustor monitored at the furnace roof position approved by the Department;
(3) Temperature of the gases at the inlet of each baghouse for the combustors.
(4) The lime slurry injection rate to the dry acid gas scrubber; and
(5) The steam load for each combustor in lb/hr and calculated in 4-hour block arithmetic averages.

(c) The permittee shall replace all thermocouples, at the furnace roof position of each combustor, on a quarterly basis with those that have been certified in accordance with NIST (National Institute of Standards and Testing).

(d) The premittee shall monitor and record supplemental fuel usage on a monthly basis.

(e) The permittee shall ensure that the Data Acquisition System maintains an uninterruptible power supply until the combustors are in a "process down" mode of operation.

(f) The selected parameters that define "normal operations" for CEM reporting purposes are when the dry inlet O2 is less than or equal to 18.0% and the steam flow is greater than or equal to 50,000 lbs/hr. If either of the conditions is not met, the CEM reports the combustor as “process down” for that minute.

(g) The Department reserves the right to require the permittee to install, operate and maintain an uninterruptible power supply (UPS) for the continuous monitoring system at the facility. The requirement to install a UPS will be based on power outages and the loss of data and the affect on the CEM system.

 # 017 [25 Pa. Code §139.111]
Municipal waste incinerator monitoring requirements.

The CEMS and CMS shall be operated and maintained to achieve the following data availability standards:

(a) Carbon Monoxide (CO) and Temperature: 100% valid hours/day, where a valid hour is defined as greater than or equal to 90% valid readings/hour (54 minutes).

(b) Opacity and oxygen (O2): Greater than or equal to 95% valid hours/day, where a valid hour is defined as greater than or

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equal to 75% valid readings/hour (45 minutes).

(c) Hydrochloric Acid (HCl), Sulfur dioxide (SO2), and Nitrogen oxides (NOx): Greater than or equal to 90% valid hours/month, where a valid hour is defined as greater than or equal to 75% valid readings/hour (45 minutes).

IV. RECORDKEEPING REQUIREMENTS.

 # 018 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall maintain, on-site, the following records for a minimum of five (5) years, in either paper copy, or computer-readable format, unless an alternative format is approved by the Department.

(a) the calendar date of each record.

(b) all emission averages from the continuous monitoring systems, which include: all one (1) hour average SO2, NOx, CO, and HCl emission concentrations, combustor unit load measurements, and PM control device inlet temperatures.

(c) all block geometric or arithmetic average concentrations, and percent reductions, as applicable, for SO2, NOx, CO, HCl, combustor unit load level, and PM control device inlet temperatures.

(d) identification of the calendar dates when any of the average emissions, percent reductions, or operating parameters recorded for SO2, NOx, CO, HCl, combustor unit load levels, particulate matter control device inlet temperature, or opacity, are above the applicable limits, with reasons for such exceedances and a description of the corrective action taken.

(e) identification of the calendar dates when the minimum hours of any of the data for SO2, NOx, CO, HCl emissions data, combustor unit load, PM control device inlet temperature and/or opacity have not been obtained, the reason for not obtaining sufficient data, and a description of corrective action taken.

(f) the results of the daily drift tests and quarterly accuracy determinations for the SO2, NOx, CO, HCl CEMs.

(g) results of all performance tests, including supporting calculations, along with maximum demonstrated unit load, and maximum PM control device inlet temperature.

(h) the names of the combustor chief facility operator, shift supervisors, and control room operators who have been fully certified, or provisionally certified, by the American Society of Mechanical Engineers (ASME) or an equivalent State-approved certification, including the dates of initial and renewal certifications and documentation of current certification. This subcondition does not apply to those individuals who have obtained full certification from the ASME on or before August 23, 1999.

(i) the names of the combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course, including documentation of training completion. Those chief facility operators, shift supervisors and control room operators who have obtained full certification prior to August 23, 1999, do not need to be recertified.

(j) the supplemental fuel usage.

V. REPORTING REQUIREMENTS.

 # 019 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall submit, to both the USEPA and the Department, semiannual reports that shall include the following information :

(1) A list of PM, lead, cadmium, opacity, mercury, dioxin/furans, and fugitive ash emission levels achieved during the performance tests.

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(2) A list of the highest emission level recorded for SO2, NOx, CO, HCl, municipal waste combustor unit load level, and PM control device inlet temperature based on the data recorded using CMS.

(3) The highest opacity level measured and recorded.

(4) The total number of hours per calendar quarter and hours per calendar year that valid data for SOx, NOx, CO, HCl, municipal waste combustor unit load, or PM control device inlet temperature data were not obtained.

(5) The total number of hours that data for SO2, NOx, CO, HCl, combustor load, and PM control device inlet temperature were excluded from the calculation of average emission concentrations of parameters.

(b) The semiannual reports shall include information from the preceding calendar year for the year being reported, in order to provide the Department with a summary of the performance of this facility over a 2-year period.

(c) The semiannual report shall include the following information for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit:

(1) SO2, NOx, CO, HCl, combustor load level, PM control device inlet temperature, and opacity.

(2) Any exceedance of the applicable levels for the following: PM, opacity, mercury, cadmium, lead, dioxin/furans, and fugitive ash. A copy of the test report documenting the emission levels and the corrective action taken, shall accompany the report.

(d) The semiannual reports shall be submitted as a paper copy, postmarked on or before August 1 and February 1 following the proceeding 6-month period ending each December and June, respectively.

(e) Temperature values submitted in each quarterly report shall consist of actual temperature values plus 950°F, the difference measured at the surrogate location and the demonstrated 1800°F for one (1) second retention time location.

(f) All CEM reports, including CEMS violations, shall be submitted to the Department within thirty (30) days after each quarter, unless otherwise approved the Department. The Department reserves the right to require the report submissions with a format acceptable to the Department.

(g) The permittee shall submit the following reports:

(1) a semi annual deviation report, due by October 1, of each year, for the period covering January 1 through June 30 of the same year. Note: The annual certification of compliance fulfills the obligation for the second deviation reporting period (July 1 through December 31 of the previous year).

(2) For those contaminants monitored by a Department certified CEMS for which the Department's Enforcement Policy - Continuous Emission Monitoring System (CEMS) established penalties for excess emissions, the aforementioned notification and reporting requirements shall be waived.

VI. WORK PRACTICE REQUIREMENTS.

 # 020 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) Combustor Operation Requirements

(1) No solid waste shall be charged into the combustor(s) until equilibrium has been attained in the furnace zones and the temperature of the combustion gases reach 1800°F (based upon a surrogate temperature of 850°F as displayed on the facility CEMs) for one (1) second of retention time when the combustor is empty. All control equipment shall be operational and functioning properly prior to the introduction of solid waste into the combustor(s).

(2) During the process of all planned shut downs of each combustor, auxiliary burners shall be used to ensure that the temperature of the combustion gases does not drop below 1600°F while any waste material is still being incinerated. All

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control equipment shall be operational and functioning properly until all of the solid waste is incinerated.

(3) The charging of waste to each combustor shall automatically cease through the use of an interlock system, if:

(A) The combustor temperature measured at the furnace roof, at the Department approved location, drops below 650°F, (a Department approved reference temperature which corresponds to 1600°F), for a 15-minute period, or,
(B) The CO emissions exceed 600 ppmv, corrected to 7% oxygen on a dry basis for a period of fifteen (15) minutes (this requirement is waived during the startup periods), or
(C) The flue gas oxygen (as measured at the oxygen monitor upstream of the control device) level drops below 3% (wet basis or equivalent dry) for a 15-minute period, or,
(D) The opacity of the exhaust gases is equal to or greater than 10% for a period of 15 minutes.

(4) An adequate spare parts inventory shall be maintained to ensure timely repairs of major component malfunctions.

(b) Operator Training and Certification Requirements

(1) All personnel involved with the operation and maintenance of the combustors, associated pollution control equipment and monitoring equipment shall complete the comprehensive training program as specified in 40 C.F.R. §§60.56a and 60.54b, and according to the schedules specified in 40 CFR §60.39b(c)(4). This program includes operator training to identify waste material and actions to be taken to correct conditions which result from the initiation of the interlock system.

(2) Each facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the Amercian Society of Mechanical Engineers (ASME) or a state certification program, and each shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers or a State Certification program.

(3) Except as provided in subcondition (i) below, each combustor shall not be operated at any time unless one of the following people is on duty at the source:

(A) A fully certified chief facility operator,
(B) A provisionally certified chief facility operator who is scheduled to take the full certification exam,
(C) A fully certified shift supervisor, or
(D) A provisionally certified shift supervisor who is scheduled to take the full certification exam.

(4) Stand-In Provisions

(A) If one of the persons, listed in Condition (b)(3) above, must leave the facility during their operating shift, a provisionally certified control room operator who is on-site, may stand in.
(B) A provisionally certified control room operator may stand in when the chief facility operator or shift supervisor is off-site for more than twelve (12) hours (a normal work shift), but less than two (2) weeks for normal off-site activities including: attending meetings, conferences, training, work travel, temporary reassignment, personal vacation, sick leave, family leave or similar activities. The permittee shall notify the Department, in writing, (by facsimile), within 24 hours, that the stand-in period will exceed twelve (12) hours (a normal work shift).

(5) In the event that the medical conditions, temporary eassignment, job transfer, resignation, dismissal or other circumstances beyond the permittee's control results in or is expected to result in the absence of the chief facility operator or shift supervisor for a period exceeding two (2) weeks, the permittee shall notify the Department in writing and identify what conditions resulted in such absence and what corrective actions have been taken to correct such absence. At the Department's request, the permittee shall prepare written status summary reports demonstrating that a good faith effort has been made and continues to be made to correct the conditions resulting in the absence of the chief facility operator or shift supervisor.

(6) A provisionally certified operator who is newly promoted or recently transferred to a shift supervisor position or a chief facility operator position at the municipal waste combustion unit may perform the duties of the certified chief facility operator or certified shift supervisor without notice to, or approval by, the Department for up to six months before taking the ASME QRO certification exam.

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(7) The permittee shall review the operating manual with each person who has responsibilities affecting the operation of this facility including, but not limited to: chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load operators.

(8) The operating manual review shall include, but not be limited to: operator training to identify waste materials referred to as large non-combustible bulky materials, combustible bulky materials, unacceptable waste, as defined in this permit, and action to be taken to correct conditions which result from abnormal/emergency operation, running and/or shutdown that would cause the initiation of the interlock system.

(9) Each operator shall undergo initial training the date prior to the day the person assumes responsibilities affecting the combustor unit operation, and annually thereafter.

(10) The operating manual shall be kept in a readily accessible location for all persons required to undergo training, and be available to the USEPA and/or the Department upon request.

(11) The permittee shall keep and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the following:

(A) a summary of the applicable standards under this Operating Permit;
(B) a description of basic combustion theory applicable to the combustor(s);
(C) procedures for handling, receiving, and feeding municipal solid waste;
(D) combustor startup, shutdown, and malfunction provisions;
(E) procedures for maintaining proper combustion air supply levels;
(F) procedures for operating the combustors within the standards established under this Operating Permit;
(G) procedures for responding to periodic upset or off-specification conditions;
(H) procedures for minimizing particulate matter carryover;
(I) procedures for ash handling;
(J) procedures for monitoring combustion emissions;
(K) procedures for reporting and recordkeeping;
(L) procedures for responding to emergency situations; and
(M) procedures for monitoring the degree of waste burnout.

(c) Waste Management

(1) The following wastes or materials shall be removed from the tipping room floor for appropriate disposal:

(A) Unacceptable waste, visible hazardous materials, and visible unapproved residual waste as defined by 25 Pa. Code § 287.1 of the Bureau of Waste Management Regulations;
(B) Large non-combustible bulky materials, including visible automotive batteries;
(C) Combustible bulky materials.

(2) The amount of solid waste material stored in the tipping room shall be less than the amount of solid waste material which can be reasonably incinerated within 120 hours of its delivery. If there is reason to believe that the combustor(s) are not capable of incinerating the solid waste material specified in the time frame above, the Department shall be notified in accordance with the malfunction reporting condition of this permit. No additional waste material shall be accepted and all the solid waste material shall be removed, if needed, to prevent the escape of odor beyond the property line. No air shall be exhausted to the outdoor atmosphere from this building during such an occurence without being treated in the combustor(s) unless otherwise authorized by the Department.

(3) Except recyclable materials, open storage of solid waste outside of a building is prohibited.

(4) All wastes or materials which can be airborne or spilled shall be transported in closed containers or tarped trucks.

(d) Tipping Area Management

(1) The tipping area shall be operated at a negative pressure, when any combustor is in operation. The air passing

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through all natural draft openings surrounding the tipping floor, including the MWC charging area, shall flow inward continuously.

(2) To ensure negative pressure on the tipping area, at a minimum, the permittee shall:

(A) limit the number of open entrance and exit doors to the tipping floor to one in each direction;
(B) close all truck delivery doors to the tipping floor between 8:00 pm and 5:00 am every day and all day on Sunday;
(C) use and maintain plastic flaps or other equivalent shielding to reduce the effective opening area on any open truck delivery door to the tipping floor; and
(D) on a daily basis, inspect and log that all roof vents over the tipping floor and combustor charging chutes are closed and that all tipping floor doors and openings not in use that day are closed.

(e) The permittee shall operate and maintain a telephone dial-up telemetry system which has been approved by the Department, and is consistent with the "Air Quality Compliance Assurance Policy for Municipal Waste Incinerators", July 1989, as revised (CAP for MWI).

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The combustors are subject to the Department's Air Quality Compliance Assurance Policy (CAP) for Municipal Waste Incinerators finalized and signed by the Department on July 12, 1989, and it's latest amendments.

(b) The combustors are subject to the provisions of EPA approved State section 111(d)/129 plan implementing 40 C.F.R. 60 subpart Cb for Large Municipal Waste Combustors, dated April 27, 1998 (67 FR 68935).

(c) The design, construction, and operation of each combustor as stated in the Plan Approval Application, in accordance with the Department's BAT for MWI and its subsequent amendments issued up to the issuance of the Plan Approval and the conditions of the Plan Approval shall be adhered to. Department approval must be obtained prior to modification of any of the design, construction, and operation of each combustor.

(d) The combustors are not subject to the provisions of 40 C.F.R. 60 Subpart Db as per 40 C.F.R. §60.40b(k).

***** Permit Shield in Effect. *****

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Source ID: 103 Source Name: ROTARY COMBUSTER 3

Source Capacity/Throughput:

INC 103 → CNTL C06 → CNTL C05 → STAC S03

FML FML01 → INC 103

FML FML02 → INC 103

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Nitrogen Oxide (NOx) emissions per combustor, expressed as NO2, shall not exceed any of the following:

(1) 180 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average using CEMs;
(2) 88.56 lbs/hr; and
(3) 0.42 lbs/MMBtu.

(b) The above NOx limits are a result of controlled combustion. This control was determined by the Department as being Reasonably Available Control Technology (RACT) for emissions of NOx (66 FR 54699 and 40 C.F.R. §52.2063).

(c) The NOx emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down, provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

 # 002 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The following annual ambient concentrations, expressed in micro-grams/cubic meter (UG/DSCM), shall not be exceeded. To demonstrate compliance with the following annual ambient concentrations, the permittee shall calculate the concentrations using the actual stack emission rates and exhaust parameters from each stack test specified for the combustor(s), and the dispersion modeling techniques used in the application, as approved by the Department. A certification shall be supplied to the Department stating compliance with maximum allowable ambient concentrations with every stack test report.

PCDD & PCDF, expressed as 2,3,7,8 TCDD equalivents* 0.30 x 10E-7
Arsenic and Compounds 0.23 x 10E-3
Beryllium and Compounds 0.42 x 10E-3
Cadmium and Compounds 0.56 x 10E-3
Nickel and Compounds 0.33 x 10E-2
Hexavalent Chromium and Compounds 0.83 x 10E-4
Lead and Compounds 0.09
Mercury and Compounds 0.024
Hydrogen Chloride 7.0
Benzo(a)pyrene 0.59 x 10E-3

(b) Ambient air quality analysis shall be redone if there is a modification in emission limits or for any parameter that exceeds the applicable stack test limitation during any stack test series.

(c) The permittee may be required to resume full modeling if the Department determines that a decrease in either volumetric flow rate and/or stack temperature has a significant adverse impact on the ambient concentration.

* Polychlorinated dibenzo-p-dioxins ("PCDD") and polychlorinated dibenzofurans ("PCDF") expressed as 2, 3, 7, 8

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tetrachlorinated dibenzo-p-dioxins ("TCDD") equivalents using toxicity equivalents factors ("TEFS") as described in the Department's BAT and calculated according to PADEP approved method.

 # 003 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) VOC emissions, expressed as total hydrocarbons, shall not exceed 37.6 pounds per hour as an aggregate emission rate for the six (6) combustors. This VOC emission limit is a determination of RACT for VOC emissions (66 FR 54699 and 40 C.F.R. §52.2063).

(b) Compliance with this limitation shall be based on the average of three (3) consecutive test runs.

(c) This emissions cap does not provide any relief from obtaining a plan approval for any future physical change or change in the method of operation of any of the combustors. Future applicability determinations must consider the baseline actual emissions of the emissions units and not the cap. The latter is true even if the company does not request a change in the compliance cap. Furthermore, by accepting this cap and agreeing to consider the six combustors as one emissions unit for NSR/PSD purposes, any future applicability determinations must involve all six combustors, e.g. should major NSR/PSD be triggered for any one combustor or process change, BACT/LAER is required for all six combustors.

 # 004 [25 Pa. Code §127.512]

Operating permit terms and conditions.

SO2 emissions, per combustor, shall not exceed any of the following:

(a) 68.45 lbs/hr; and

(b) 29 ppmdv, corrected to 7% oxygen, or shall be reduced by no less than 80% (by weight) on a 24-hour block geometric average using CEMs, whichever is less stringent.

 # 005 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The toxic metal emissions per combustor shall not exceed any of the following:

(1) Emission concentration, measured in ug/dscm and corrected to 7% oxygen:

Arsenic and Compounds 7.2
Beryllium and Compounds 0.2
Cadmium and Compounds 15.8
Hexavalent Chromium and Compounds 2.3
Nickel and Compounds 25.0
Lead and Compounds 166.0
Mercury and Compounds 50 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight),whichever is less stringent.

(2) Emission rate (lbs/hr) was based on an exhaust rate of 68,679 dscfm, at 7% oxygen.

Arsenic and Compounds 0.00185
Beryllium and Compounds 0.000051
Cadmium and Compounds 0.00406
Hexavalent Chromium and Compounds 0.000591
Nickel and Compounds 0.00643
Lead and Compounds 0.0423
Mercury and Compounds 0.029

(b) Compliance with the emission concentration limits shall be documented through stack tests for each combustor. The results shall be based on ppmdv or ug/dscm, as appropriate, and corrected to 7% oxygen.

 # 006 [25 Pa. Code §127.512]

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Operating permit terms and conditions.

(a) Visible air contaminants from any combustor stack shall not be emitted in such a manner that the opacity (measured by CEMS) of the emissions is equal to or greater than

(1) 10% for a period aggregating more than three (3) minutes in any one (1) hour; or
(2) 30% at any time.

(b) The above visible emission limitations do not apply in either of the following instances:

(1) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations; or
(2) when the emission results from sources specified in 25 Pa. Code §123.1(a).

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total mass dioxin/furan emissions per combustor shall not exceed 30 nanograms per dry standard cubic meter (total mass), corrected to 7% oxygen.

(b) Compliance with this emission limitation shall be based on the average of three (3) consecutive test runs.

 # 008 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Carbon monoxide emissions per combustor shall not exceed any of the folloiwng:

(1) 100 ppmdv, corrected to 7% oxygen, calculated as a 24-hour block arithmetic average using CEMs; and
(2) 29.95 lbs/hr.

(b) The CO emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down. Provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

(c) Compliance with the CO limit shall be determined using a 24-hour block arithmetic average. The 24-hour block arithmetic average shall be calculated from one (1) hour arithmetic averages expressed in ppmdv, corrected to 7% oxygen.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Hydrochloric acid (HCl) emissions per combustor shall be reduced by not less than 95% (by weight), on a 24-hour daily arithmetic basis. This reduction requirement shall be waived if the exhaust concentrations are less than 25 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average, and 36.58 lbs/hr.

 # 010 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The Department reserves the right to establish and impose more stringent limits than those stated in this permit, based on the test results from each stack test performed, the CEM results and the dispersion modeling techniques as approved by the Department.

(b) Start-up of the combustor commences with the introduction of municipal waste to an empty combustor and does not include any warm up period when the combustor is combusting only a fossil fuel or any other auxiliary fuel, approved by the Department, and no municipal waste is being combusted.

(c) Shutdown of the combustor commences with the cessation of charging municipal waste for the express purpose of shutting down the combustor.

 # 011 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total particulate matter (PM) emissions per combustor shall not exceed 5.80 lbs/hr and 0.010 gr/dscf, corrected to 7% oxygen.

(b) PM-10 emissions per combustor shall not exceed 0.012 gr/dscf, corrected to 7% oxygen, and 6.96 lbs/hr.

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(c) Compliance with the above emission limits shall be based on the average of three (3) consecutive test runs.

Throughput Restriction(s).

 # 012 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Each combustor shall not be operated to exceed 161,000 lbs steam/hr, or 110% of the maximum demonstrated steam load during the most recent annual dioxin/furan performance test, whichever is less, except during the dioxin/furan performance test and the two (2) weeks preceding this test, when the steam load limitations do not apply.

(b) Only the following types of waste are permitted to be burned in the combustors:

(1) municipal waste, as defined in 25 Pa. Code § 287.1;
(2) municipal-like residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit; and
(3) residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit.

(c) The residual waste (Form R waste list) accepted at the facility shall not exceed the following on a daily basis:

(1) 10% of the total amount of waste, by weight; or
(2) 500 tons

(d) The daily amount of residual waste and total amount of waste must be documented in accordance with the conditions of the Department's Waste Permit No. 400593.

(e) Any changes to the waste streams or types of waste shall be approved by the Department.

Control Device Efficiencies Restriction(s).

 # 013 [25 Pa. Code §127.503]

Application information.

Emissions from each combustor shall be controlled by individual dry acid gas scrubbers and pulse-jet cleaning type fabric collectors.

 # 014 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Compliance with the parameters set forth in the Conditions below assures compliance with the toxic metal emission limits in Condition #005 of this Section.

(a) Each combustor shall be operated to maintain the combustion gases temperature greater than 1800°F for at least one (1) second, calculated on an hourly average (1-hour block arithmetic). The temperature sensor shall be located at the furnace roof position approved by the Department for each combustor. The temperature at this location shall be maintained at greater than 850°F, (a Department approved reference temperature which corresponds to 1800°F for at least one second). Each combustor auxiliary burners shall be controlled automatically to maintain the combustion gases at the aforementioned temperature whenever refuse is being incinerated. In the event that furnace combustion gas flow rates change significantly from any previous alternate location verification test, or at the Department's request, the permittee shall perform a new alternative location verification and retention test.

(b) The flue gas temperature, measured at the particulate matter control device inlet and averaged arithmeticly in 4-hour block, shall not exceed 300°F or 30°F above the maximum demonstrated particulate matter control device temperature, as defined in 40 C.F.R. §60.51b, whichever is lower, except during the annual dioxin/furan or mercury performance test and the 2 weeks preceding the annual dioxin/furan or mercury performance test, when the particulate matter control device inlet flue gas temperature limitation of 300°F is applicable.

(c) The above temperature limits apply and remain enforceable at all times, until and unless the Department grants a waiver

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in writing for the purpose of evaluating system performance, testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

II. TESTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The permittee shall conduct annual performance test on each of the combustors for the the following pollutants:

(1) total particulate matter, and PM-10 (including particle sizing);
(2) arsenic and compounds (expressed as arsenic);
(3) cadmium and compounds (expressed as cadmium);
(4) hexavalent chromium and compounds (expressed as chromium);
(5) nickel and compounds (expressed as nickel);
(6) lead and compounds (expressed as lead);
(7) beryllium and compounds (expressed as beryllium);
(8) mercury and compounds (expressed as mercury);
(9) PCDD and PCDF (expressed as 2,3,7,8 TCDD equivalents calculated according to the Department approved method and as total dioxin and furan);
(10) VOC (expressed as total hydrocarbons);
(11) PAH, including Benzo(a)pyrene;
(12) NOx;
(13) SO2;
(14) HCl;
(15) CO; and
(16) Visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111)

(b) If the emissions of PM, or PM10, or any of the toxic metals from any one of the combustors equal to or exceed 80% of the emission limitations, that combustor(s) shall be tested semiannually for each of the pollutants that equals to or exceeds 80% of the emission limitations. Testing frequency can revert back to annually when the tested emissions are less than 80% of the emission limitations for a consecutive period of 24-months, plus the permittee notifies the Department of such testing schedule reversion.

(c) Performance testing for SO2, NOx, CO, and HCl may be substituted by CEM data to demonstrate compliance with the emission limitations. The permittee shall perform SO2, NOx, CO, HCl CEMS performance audit for each combustor during each annual performance test.

(d) The amount of waste incinerated during a stack test shall be an adequate representation of the waste load to be processed by the facility.

(e) Unless approved by the Department prior to the testing, the following procedures and test methods shall be used to determine compliance with the emission limits:

(1) EPA reference method 1, for the sampling sites and traverse points.
(2) EPA reference method 3 or 3A, for the gas analysis.
(3) EPA reference methods 5, 201A/202 for PM and PM10. Both the front half and back half catches are to be analyzed and reported. However, only the front half catch is to be utilized in determining compliance.
(4) EPA reference method 9, for opacity.
(5) EPA reference method 29, for cadmium, lead and mercury, with a minimum sample volume to be 1.7 cubic meters for mercury. The percent weight reduction for mercury emissions shall be computed using the mercury concentrations measured at the inlet and outlet of the control device, corrected to 7% oxygen, (dry basis).
(6) EPA reference method 26, or 26A, for HCl.
(7) EPA reference method 19, for SO2.
(8) EPA reference method 6, 6A, or 6C, for the RATA tests on the SO2 CEMS.
(9) EPA reference method 19, for NOx.

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(10) EPA reference method 7, 7A, 7C, 7D, or 7E, for the RATA test on the NOx CEMS.
(11) EPA reference method 10, 10A, or 10B, for CO.
(12) EPA reference method 23, for Dioxins/furans.
(13) EPA reference method 22, for visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111).

(f) Each combustor shall be equipped with test ports so that periodic measurement of the 1800°F for one (1) second residence time requirement can be conducted at the Department's request.

III. MONITORING REQUIREMENTS.

 # 016 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The Department approved Continuous Emission Monitors (CEMs) shall be operated and maintained in accordance with 25 Pa. Code Chapter 139, the Department's "Continuous Source Monitoring Manual (CSM Manual)" (Revision No.5 - March 1993), and latest amendments ("CSM Manual") for the following:

(1) CO monitored both upstream and downstream of the air pollution control equipment;
(2) SO2 monitored upstream and downstream of the air pollution control equipment;
(3) NOx monitored downstream of the air pollution control equipment;
(4) HCL monitored downstream of the air pollution control equipment; and
(5) Opacity of the exhaust gases.

(b) The following operating parameters shall be monitored and recorded continuously using the Department approved continuous monitoring system (CMS) for each combustor at the locations, if specified:

(1) Oxygen, at both upstream and downstream of the air pollution control equipment;
(2) Temperature of the gases exiting the combustor monitored at the furnace roof position approved by the Department;
(3) Temperature of the gases at the inlet of each baghouse for the combustors.
(4) The lime slurry injection rate to the dry acid gas scrubber; and
(5) The steam load for each combustor in lb/hr and calculated in 4-hour block arithmetic averages.

(c) The permittee shall replace all thermocouples, at the furnace roof position of each combustor, on a quarterly basis with those that have been certified in accordance with NIST (National Institute of Standards and Testing).

(d) The premittee shall monitor and record supplemental fuel usage on a monthly basis.

(e) The permittee shall ensure that the Data Acquisition System maintains an uninterruptible power supply until the combustors are in a "process down" mode of operation.

(f) The selected parameters that define "normal operations" for CEM reporting purposes are when the dry inlet O2 is less than or equal to 18.0% and the steam flow is greater than or equal to 50,000 lbs/hr. If either of the conditions is not met, the CEM reports the combustor as “process down” for that minute.

(g) The Department reserves the right to require the permittee to install, operate and maintain an uninterruptible power supply (UPS) for the continuous monitoring system at the facility. The requirement to install a UPS will be based on power outages and the loss of data and the affect on the CEM system.

 # 017 [25 Pa. Code §139.111]
Municipal waste incinerator monitoring requirements.

The CEMS and CMS shall be operated and maintained to achieve the following data availability standards:

(a) Carbon Monoxide (CO) and Temperature: 100% valid hours/day, where a valid hour is defined as greater than or equal to 90% valid readings/hour (54 minutes).

(b) Opacity and oxygen (O2): Greater than or equal to 95% valid hours/day, where a valid hour is defined as greater than or

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equal to 75% valid readings/hour (45 minutes).

(c) Hydrochloric Acid (HCl), Sulfur dioxide (SO2), and Nitrogen oxides (NOx): Greater than or equal to 90% valid hours/month, where a valid hour is defined as greater than or equal to 75% valid readings/hour (45 minutes).

IV. RECORDKEEPING REQUIREMENTS.

 # 018 [25 Pa. Code §127.511]

Monitoring and related recordkeeping and reporting requirements.

The permittee shall maintain, on-site, the following records for a minimum of five (5) years, in either paper copy, or computer-readable format, unless an alternative format is approved by the Department.

(a) the calendar date of each record.

(b) all emission averages from the continuous monitoring systems, which include: all one (1) hour average SO2, NOx, CO, and HCl emission concentrations, combustor unit load measurements, and PM control device inlet temperatures.

(c) all block geometric or arithmetic average concentrations, and percent reductions, as applicable, for SO2, NOx, CO, HCl, combustor unit load level, and PM control device inlet temperatures.

(d) identification of the calendar dates when any of the average emissions, percent reductions, or operating parameters recorded for SO2, NOx, CO, HCl, combustor unit load levels, particulate matter control device inlet temperature, or opacity, are above the applicable limits, with reasons for such exceedances and a description of the corrective action taken.

(e) identification of the calendar dates when the minimum hours of any of the data for SO2, NOx, CO, HCl emissions data, combustor unit load, PM control device inlet temperature and/or opacity have not been obtained, the reason for not obtaining sufficient data, and a description of corrective action taken.

(f) the results of the daily drift tests and quarterly accuracy determinations for the SO2, NOx, CO, HCl CEMs.

(g) results of all performance tests, including supporting calculations, along with maximum demonstrated unit load, and maximum PM control device inlet temperature.

(h) the names of the combustor chief facility operator, shift supervisors, and control room operators who have been fully certified, or provisionally certified, by the American Society of Mechanical Engineers (ASME) or an equivalent State-approved certification, including the dates of initial and renewal certifications and documentation of current certification. This subcondition does not apply to those individuals who have obtained full certification from the ASME on or before August 23, 1999.

(i) the names of the combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course, including documentation of training completion. Those chief facility operators, shift supervisors and control room operators who have obtained full certification prior to August 23, 1999, do not need to be recertified.

(j) the supplemental fuel usage.

V. REPORTING REQUIREMENTS.

 # 019 [25 Pa. Code §127.511]

Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall submit, to both the USEPA and the Department, semiannual reports that shall include the following information :

(1) A list of PM, lead, cadmium, opacity, mercury, dioxin/furans, and fugitive ash emission levels achieved during the performance tests.

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(2) A list of the highest emission level recorded for SO2, NOx, CO, HCl, municipal waste combustor unit load level, and PM control device inlet temperature based on the data recorded using CMS.

(3) The highest opacity level measured and recorded.

(4) The total number of hours per calendar quarter and hours per calendar year that valid data for SOx, NOx, CO, HCl, municipal waste combustor unit load, or PM control device inlet temperature data were not obtained.

(5) The total number of hours that data for SO2, NOx, CO, HCl, combustor load, and PM control device inlet temperature were excluded from the calculation of average emission concentrations of parameters.

(b) The semiannual reports shall include information from the preceding calendar year for the year being reported, in order to provide the Department with a summary of the performance of this facility over a 2-year period.

(c) The semiannual report shall include the following information for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit:

(1) SO2, NOx, CO, HCl, combustor load level, PM control device inlet temperature, and opacity.

(2) Any exceedance of the applicable levels for the following: PM, opacity, mercury, cadmium, lead, dioxin/furans, and fugitive ash. A copy of the test report documenting the emission levels and the corrective action taken, shall accompany the report.

(d) The semiannual reports shall be submitted as a paper copy, postmarked on or before August 1 and February 1 following the proceeding 6-month period ending each December and June, respectively.

(e) Temperature values submitted in each quarterly report shall consist of actual temperature values plus 950°F, the difference measured at the surrogate location and the demonstrated 1800°F for one (1) second retention time location.

(f) All CEM reports, including CEMS violations, shall be submitted to the Department within thirty (30) days after each quarter, unless otherwise approved the Department. The Department reserves the right to require the report submissions with a format acceptable to the Department.

(g) The permittee shall submit the following reports:

(1) a semi annual deviation report, due by October 1, of each year, for the period covering January 1 through June 30 of the same year. Note: The annual certification of compliance fulfills the obligation for the second deviation reporting period (July 1 through December 31 of the previous year).

(2) For those contaminants monitored by a Department certified CEMS for which the Department's Enforcement Policy - Continuous Emission Monitoring System (CEMS) established penalties for excess emissions, the aforementioned notification and reporting requirements shall be waived.

VI. WORK PRACTICE REQUIREMENTS.

 # 020 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) Combustor Operation Requirements

(1) No solid waste shall be charged into the combustor(s) until equilibrium has been attained in the furnace zones and the temperature of the combustion gases reach 1800°F (based upon a surrogate temperature of 850°F as displayed on the facility CEMs) for one (1) second of retention time when the combustor is empty. All control equipment shall be operational and functioning properly prior to the introduction of solid waste into the combustor(s).

(2) During the process of all planned shut downs of each combustor, auxiliary burners shall be used to ensure that the temperature of the combustion gases does not drop below 1600°F while any waste material is still being incinerated. All

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control equipment shall be operational and functioning properly until all of the solid waste is incinerated.

(3) The charging of waste to each combustor shall automatically cease through the use of an interlock system, if:

(A) The combustor temperature measured at the furnace roof, at the Department approved location, drops below 650°F, (a Department approved reference temperature which corresponds to 1600°F), for a 15-minute period, or,
(B) The CO emissions exceed 600 ppmv, corrected to 7% oxygen on a dry basis for a period of fifteen (15) minutes (this requirement is waived during the startup periods), or
(C) The flue gas oxygen (as measured at the oxygen monitor upstream of the control device) level drops below 3% (wet basis or equivalent dry) for a 15-minute period, or,
(D) The opacity of the exhaust gases is equal to or greater than 10% for a period of 15 minutes.

(4) An adequate spare parts inventory shall be maintained to ensure timely repairs of major component malfunctions.

(b) Operator Training and Certification Requirements

(1) All personnel involved with the operation and maintenance of the combustors, associated pollution control equipment and monitoring equipment shall complete the comprehensive training program as specified in 40 C.F.R. §§60.56a and 60.54b, and according to the schedules specified in 40 CFR §60.39b(c)(4). This program includes operator training to identify waste material and actions to be taken to correct conditions which result from the initiation of the interlock system.

(2) Each facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the Amercian Society of Mechanical Engineers (ASME) or a state certification program, and each shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers or a State Certification program.

(3) Except as provided in subcondition (i) below, each combustor shall not be operated at any time unless one of the following people is on duty at the source:

(A) A fully certified chief facility operator,
(B) A provisionally certified chief facility operator who is scheduled to take the full certification exam,
(C) A fully certified shift supervisor, or
(D) A provisionally certified shift supervisor who is scheduled to take the full certification exam.

(4) Stand-In Provisions

(A) If one of the persons, listed in Condition (b)(3) above, must leave the facility during their operating shift, a provisionally certified control room operator who is on-site, may stand in.
(B) A provisionally certified control room operator may stand in when the chief facility operator or shift supervisor is off-site for more than twelve (12) hours (a normal work shift), but less than two (2) weeks for normal off-site activities including: attending meetings, conferences, training, work travel, temporary reassignment, personal vacation, sick leave, family leave or similar activities. The permittee shall notify the Department, in writing, (by facsimile), within 24 hours, that the stand-in period will exceed twelve (12) hours (a normal work shift).

(5) In the event that the medical conditions, temporary eassignment, job transfer, resignation, dismissal or other circumstances beyond the permittee's control results in or is expected to result in the absence of the chief facility operator or shift supervisor for a period exceeding two (2) weeks, the permittee shall notify the Department in writing and identify what conditions resulted in such absence and what corrective actions have been taken to correct such absence. At the Department's request, the permittee shall prepare written status summary reports demonstrating that a good faith effort has been made and continues to be made to correct the conditions resulting in the absence of the chief facility operator or shift supervisor.

(6) A provisionally certified operator who is newly promoted or recently transferred to a shift supervisor position or a chief facility operator position at the municipal waste combustion unit may perform the duties of the certified chief facility operator or certified shift supervisor without notice to, or approval by, the Department for up to six months before taking the ASME QRO certification exam.

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(7) The permittee shall review the operating manual with each person who has responsibilities affecting the operation of this facility including, but not limited to: chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load operators.

(8) The operating manual review shall include, but not be limited to: operator training to identify waste materials referred to as large non-combustible bulky materials, combustible bulky materials, unacceptable waste, as defined in this permit, and action to be taken to correct conditions which result from abnormal/emergency operation, running and/or shutdown that would cause the initiation of the interlock system.

(9) Each operator shall undergo initial training the date prior to the day the person assumes responsibilities affecting the combustor unit operation, and annually thereafter.

(10) The operating manual shall be kept in a readily accessible location for all persons required to undergo training, and be available to the USEPA and/or the Department upon request.

(11) The permittee shall keep and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the following:

(A) a summary of the applicable standards under this Operating Permit;
(B) a description of basic combustion theory applicable to the combustor(s);
(C) procedures for handling, receiving, and feeding municipal solid waste;
(D) combustor startup, shutdown, and malfunction provisions;
(E) procedures for maintaining proper combustion air supply levels;
(F) procedures for operating the combustors within the standards established under this Operating Permit;
(G) procedures for responding to periodic upset or off-specification conditions;
(H) procedures for minimizing particulate matter carryover;
(I) procedures for ash handling;
(J) procedures for monitoring combustion emissions;
(K) procedures for reporting and recordkeeping;
(L) procedures for responding to emergency situations; and
(M) procedures for monitoring the degree of waste burnout.

(c) Waste Management

(1) The following wastes or materials shall be removed from the tipping room floor for appropriate disposal:

(A) Unacceptable waste, visible hazardous materials, and visible unapproved residual waste as defined by 25 Pa. Code § 287.1 of the Bureau of Waste Management Regulations;
(B) Large non-combustible bulky materials, including visible automotive batteries;
(C) Combustible bulky materials.

(2) The amount of solid waste material stored in the tipping room shall be less than the amount of solid waste material which can be reasonably incinerated within 120 hours of its delivery. If there is reason to believe that the combustor(s) are not capable of incinerating the solid waste material specified in the time frame above, the Department shall be notified in accordance with the malfunction reporting condition of this permit. No additional waste material shall be accepted and all the solid waste material shall be removed, if needed, to prevent the escape of odor beyond the property line. No air shall be exhausted to the outdoor atmosphere from this building during such an occurence without being treated in the combustor(s) unless otherwise authorized by the Department.

(3) Except recyclable materials, open storage of solid waste outside of a building is prohibited.

(4) All wastes or materials which can be airborne or spilled shall be transported in closed containers or tarped trucks.

(d) Tipping Area Management

(1) The tipping area shall be operated at a negative pressure, when any combustor is in operation. The air passing

SECTION D. Source Level Requirements

through all natural draft openings surrounding the tipping floor, including the MWC charging area, shall flow inward continuously.

(2) To ensure negative pressure on the tipping area, at a minimum, the permittee shall:

(A) limit the number of open entrance and exit doors to the tipping floor to one in each direction;
(B) close all truck delivery doors to the tipping floor between 8:00 pm and 5:00 am every day and all day on Sunday;
(C) use and maintain plastic flaps or other equivalent shielding to reduce the effective opening area on any open truck delivery door to the tipping floor; and
(D) on a daily basis, inspect and log that all roof vents over the tipping floor and combustor charging chutes are closed and that all tipping floor doors and openings not in use that day are closed.

(e) The permittee shall operate and maintain a telephone dial-up telemetry system which has been approved by the Department, and is consistent with the "Air Quality Compliance Assurance Policy for Municipal Waste Incinerators", July 1989, as revised (CAP for MWI).

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The combustors are subject to the Department's Air Quality Compliance Assurance Policy (CAP) for Municipal Waste Incinerators finalized and signed by the Department on July 12, 1989, and it's latest amendments.

(b) The combustors are subject to the provisions of EPA approved State section 111(d)/129 plan implementing 40 C.F.R. 60 subpart Cb for Large Municipal Waste Combustors, dated April 27, 1998 (67 FR 68935).

(c) The design, construction, and operation of each combustor as stated in the Plan Approval Application, in accordance with the Department's BAT for MWI and its subsequent amendments issued up to the issuance of the Plan Approval and the conditions of the Plan Approval shall be adhered to. Department approval must be obtained prior to modification of any of the design, construction, and operation of each combustor.

(d) The combustors are not subject to the provisions of 40 C.F.R. 60 Subpart Db as per 40 C.F.R. §60.40b(k).

***** Permit Shield in Effect. *****

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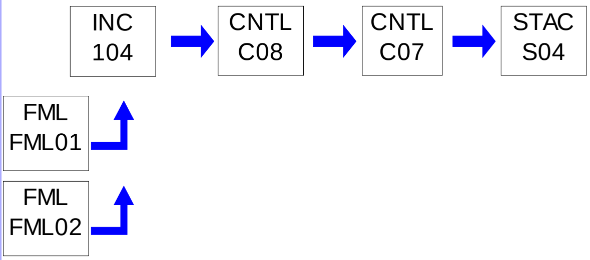
Source ID: 104 Source Name: ROTARY COMBUSTER 4

Source Capacity/Throughput:



I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Nitrogen Oxide (NOx) emissions per combustor, expressed as NO2, shall not exceed any of the following:

(1) 180 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average using CEMs;
(2) 88.56 lbs/hr; and
(3) 0.42 lbs/MMBtu.

(b) The above NOx limits are a result of controlled combustion. This control was determined by the Department as being Reasonably Available Control Technology (RACT) for emissions of NOx (66 FR 54699 and 40 C.F.R. §52.2063).

(c) The NOx emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down, provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

 # 002 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The following annual ambient concentrations, expressed in micro-grams/cubic meter (UG/DSCM), shall not be exceeded. To demonstrate compliance with the following annual ambient concentrations, the permittee shall calculate the concentrations using the actual stack emission rates and exhaust parameters from each stack test specified for the combustor(s), and the dispersion modeling techniques used in the application, as approved by the Department. A certification shall be supplied to the Department stating compliance with maximum allowable ambient concentrations with every stack test report.

PCDD & PCDF, expressed as 2,3,7,8 TCDD equalivents* 0.30 x 10E-7
Arsenic and Compounds 0.23 x 10E-3
Beryllium and Compounds 0.42 x 10E-3
Cadmium and Compounds 0.56 x 10E-3
Nickel and Compounds 0.33 x 10E-2
Hexavalent Chromium and Compounds 0.83 x 10E-4
Lead and Compounds 0.09
Mercury and Compounds 0.024
Hydrogen Chloride 7.0
Benzo(a)pyrene 0.59 x 10E-3

(b) Ambient air quality analysis shall be redone if there is a modification in emission limits or for any parameter that exceeds the applicable stack test limitation during any stack test series.

(c) The permittee may be required to resume full modeling if the Department determines that a decrease in either volumetric flow rate and/or stack temperature has a significant adverse impact on the ambient concentration.

* Polychlorinated dibenzo-p-dioxins ("PCDD") and polychlorinated dibenzofurans ("PCDF") expressed as 2, 3, 7, 8

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tetrachlorinated dibenzo-p-dioxins ("TCDD") equivalents using toxicity equivalents factors ("TEFS") as described in the Department's BAT and calculated according to PADEP approved method.

 # 003 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) VOC emissions, expressed as total hydrocarbons, shall not exceed 37.6 pounds per hour as an aggregate emission rate for the six (6) combustors. This VOC emission limit is a determination of RACT for VOC emissions (66 FR 54699 and 40 C.F.R. §52.2063).

(b) Compliance with this limitation shall be based on the average of three (3) consecutive test runs.

(c) This emissions cap does not provide any relief from obtaining a plan approval for any future physical change or change in the method of operation of any of the combustors. Future applicability determinations must consider the baseline actual emissions of the emissions units and not the cap. The latter is true even if the company does not request a change in the compliance cap. Furthermore, by accepting this cap and agreeing to consider the six combustors as one emissions unit for NSR/PSD purposes, any future applicability determinations must involve all six combustors, e.g. should major NSR/PSD be triggered for any one combustor or process change, BACT/LAER is required for all six combustors.

 # 004 [25 Pa. Code §127.512]
Operating permit terms and conditions.
SO2 emissions, per combustor, shall not exceed any of the following:

(a) 68.45 lbs/hr; and

(b) 29 ppmdv, corrected to 7% oxygen, or shall be reduced by no less than 80% (by weight) on a 24-hour block geometric average using CEMs, whichever is less stringent.

 # 005 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) The toxic metal emissions per combustor shall not exceed any of the following:

(1) Emission concentration, measured in ug/dscm and corrected to 7% oxygen:

Arsenic and Compounds 7.2
Beryllium and Compounds 0.2
Cadmium and Compounds 15.8
Hexavalent Chromium and Compounds 2.3
Nickel and Compounds 25.0
Lead and Compounds 166.0
Mercury and Compounds 50 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight),whichever is less stringent.

(2) Emission rate (lbs/hr) was based on an exhaust rate of 68,679 dscfm, at 7% oxygen.

Arsenic and Compounds 0.00185
Beryllium and Compounds 0.000051
Cadmium and Compounds 0.00406
Hexavalent Chromium and Compounds 0.000591
Nickel and Compounds 0.00643
Lead and Compounds 0.0423
Mercury and Compounds 0.029

(b) Compliance with the emission concentration limits shall be documented through stack tests for each combustor. The results shall be based on ppmdv or ug/dscm, as appropriate, and corrected to 7% oxygen.

 # 006 [25 Pa. Code §127.512]

SECTION D. Source Level Requirements

Operating permit terms and conditions.

(a) Visible air contaminants from any combustor stack shall not be emitted in such a manner that the opacity (measured by CEMS) of the emissions is equal to or greater than

(1) 10% for a period aggregating more than three (3) minutes in any one (1) hour; or
(2) 30% at any time.

(b) The above visible emission limitations do not apply in either of the following instances:

(1) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations; or
(2) when the emission results from sources specified in 25 Pa. Code §123.1(a).

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total mass dioxin/furan emissions per combustor shall not exceed 30 nanograms per dry standard cubic meter (total mass), corrected to 7% oxygen.

(b) Compliance with this emission limitation shall be based on the average of three (3) consecutive test runs.

 # 008 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Carbon monoxide emissions per combustor shall not exceed any of the folloiwng:

(1) 100 ppmdv, corrected to 7% oxygen, calculated as a 24-hour block arithmetic average using CEMs; and
(2) 29.95 lbs/hr.

(b) The CO emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down. Provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

(c) Compliance with the CO limit shall be determined using a 24-hour block arithmetic average. The 24-hour block arithmetic average shall be calculated from one (1) hour arithmetic averages expressed in ppmdv, corrected to 7% oxygen.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Hydrochloric acid (HCl) emissions per combustor shall be reduced by not less than 95% (by weight), on a 24-hour daily arithmetic basis. This reduction requirement shall be waived if the exhaust concentrations are less than 25 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average, and 36.58 lbs/hr.

 # 010 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The Department reserves the right to establish and impose more stringent limits than those stated in this permit, based on the test results from each stack test performed, the CEM results and the dispersion modeling techniques as approved by the Department.

(b) Start-up of the combustor commences with the introduction of municipal waste to an empty combustor and does not include any warm up period when the combustor is combusting only a fossil fuel or any other auxiliary fuel, approved by the Department, and no municipal waste is being combusted.

(c) Shutdown of the combustor commences with the cessation of charging municipal waste for the express purpose of shutting down the combustor.

 # 011 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total particulate matter (PM) emissions per combustor shall not exceed 5.80 lbs/hr and 0.010 gr/dscf, corrected to 7% oxygen.

(b) PM-10 emissions per combustor shall not exceed 0.012 gr/dscf, corrected to 7% oxygen, and 6.96 lbs/hr.

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(c) Compliance with the above emission limits shall be based on the average of three (3) consecutive test runs.

Throughput Restriction(s).

 # 012 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Each combustor shall not be operated to exceed 161,000 lbs steam/hr, or 110% of the maximum demonstrated steam load during the most recent annual dioxin/furan performance test, whichever is less, except during the dioxin/furan performance test and the two (2) weeks preceding this test, when the steam load limitations do not apply.

(b) Only the following types of waste are permitted to be burned in the combustors:

(1) municipal waste, as defined in 25 Pa. Code § 287.1;
(2) municipal-like residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit; and
(3) residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit.

(c) The residual waste (Form R waste list) accepted at the facility shall not exceed the following on a daily basis:

(1) 10% of the total amount of waste, by weight; or
(2) 500 tons

(d) The daily amount of residual waste and total amount of waste must be documented in accordance with the conditions of the Department's Waste Permit No. 400593.

(e) Any changes to the waste streams or types of waste shall be approved by the Department.

Control Device Efficiencies Restriction(s).

 # 013 [25 Pa. Code §127.503]

Application information.

Emissions from each combustor shall be controlled by individual dry acid gas scrubbers and pulse-jet cleaning type fabric collectors.

 # 014 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Compliance with the parameters set forth in the Conditions below assures compliance with the toxic metal emission limits in Condition #005 of this Section.

(a) Each combustor shall be operated to maintain the combustion gases temperature greater than 1800°F for at least one (1) second, calculated on an hourly average (1-hour block arithmetic). The temperature sensor shall be located at the furnace roof position approved by the Department for each combustor. The temperature at this location shall be maintained at greater than 850°F, (a Department approved reference temperature which corresponds to 1800°F for at least one second). Each combustor auxiliary burners shall be controlled automatically to maintain the combustion gases at the aforementioned temperature whenever refuse is being incinerated. In the event that furnace combustion gas flow rates change significantly from any previous alternate location verification test, or at the Department's request, the permittee shall perform a new alternative location verification and retention test.

(b) The flue gas temperature, measured at the particulate matter control device inlet and averaged arithmeticly in 4-hour block, shall not exceed 300°F or 30°F above the maximum demonstrated particulate matter control device temperature, as defined in 40 C.F.R. §60.51b, whichever is lower, except during the annual dioxin/furan or mercury performance test and the 2 weeks preceding the annual dioxin/furan or mercury performance test, when the particulate matter control device inlet flue gas temperature limitation of 300°F is applicable.

(c) The above temperature limits apply and remain enforceable at all times, until and unless the Department grants a waiver

in writing for the purpose of evaluating system performance, testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

II. TESTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The permittee shall conduct annual performance test on each of the combustors for the the following pollutants:

(1) total particulate matter, and PM-10 (including particle sizing);
(2) arsenic and compounds (expressed as arsenic);
(3) cadmium and compounds (expressed as cadmium);
(4) hexavalent chromium and compounds (expressed as chromium);
(5) nickel and compounds (expressed as nickel);
(6) lead and compounds (expressed as lead);
(7) beryllium and compounds (expressed as beryllium);
(8) mercury and compounds (expressed as mercury);
(9) PCDD and PCDF (expressed as 2,3,7,8 TCDD equivalents calculated according to the Department approved method and as total dioxin and furan);
(10) VOC (expressed as total hydrocarbons);
(11) PAH, including Benzo(a)pyrene;
(12) NOx;
(13) SO2;
(14) HCl;
(15) CO; and
(16) Visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111)

(b) If the emissions of PM, or PM10, or any of the toxic metals from any one of the combustors equal to or exceed 80% of the emission limitations, that combustor(s) shall be tested semiannually for each of the pollutants that equals to or exceeds 80% of the emission limitations. Testing frequency can revert back to annually when the tested emissions are less than 80% of the emission limitations for a consecutive period of 24-months, plus the permittee notifies the Department of such testing schedule reversion.

(c) Performance testing for SO2, NOx, CO, and HCl may be substituted by CEM data to demonstrate compliance with the emission limitations. The permittee shall perform SO2, NOx, CO, HCl CEMS performance audit for each combustor during each annual performance test.

(d) The amount of waste incinerated during a stack test shall be an adequate representation of the waste load to be processed by the facility.

(e) Unless approved by the Department prior to the testing, the following procedures and test methods shall be used to determine compliance with the emission limits:

(1) EPA reference method 1, for the sampling sites and traverse points.
(2) EPA reference method 3 or 3A, for the gas analysis.
(3) EPA reference methods 5, 201A/202 for PM and PM10. Both the front half and back half catches are to be analyzed and reported. However, only the front half catch is to be utilized in determining compliance.
(4) EPA reference method 9, for opacity.
(5) EPA reference method 29, for cadmium, lead and mercury, with a minimum sample volume to be 1.7 cubic meters for mercury. The percent weight reduction for mercury emissions shall be computed using the mercury concentrations measured at the inlet and outlet of the control device, corrected to 7% oxygen, (dry basis).
(6) EPA reference method 26, or 26A, for HCl.
(7) EPA reference method 19, for SO2.
(8) EPA reference method 6, 6A, or 6C, for the RATA tests on the SO2 CEMS.
(9) EPA reference method 19, for NOx.

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(10) EPA reference method 7, 7A, 7C, 7D, or 7E, for the RATA test on the NOx CEMS.
(11) EPA reference method 10, 10A, or 10B, for CO.
(12) EPA reference method 23, for Dioxins/furans.
(13) EPA reference method 22, for visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111).

(f) Each combustor shall be equipped with test ports so that periodic measurement of the 1800°F for one (1) second residence time requirement can be conducted at the Department's request.

III. MONITORING REQUIREMENTS.

 # 016 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The Department approved Continuous Emission Monitors (CEMs) shall be operated and maintained in accordance with 25 Pa. Code Chapter 139, the Department's "Continuous Source Monitoring Manual (CSM Manual)" (Revision No.5 - March 1993), and latest amendments ("CSM Manual") for the following:

(1) CO monitored both upstream and downstream of the air pollution control equipment;
(2) SO2 monitored upstream and downstream of the air pollution control equipment;
(3) NOx monitored downstream of the air pollution control equipment;
(4) HCL monitored downstream of the air pollution control equipment; and
(5) Opacity of the exhaust gases.

(b) The following operating parameters shall be monitored and recorded continuously using the Department approved continuous monitoring system (CMS) for each combustor at the locations, if specified:

(1) Oxygen, at both upstream and downstream of the air pollution control equipment;
(2) Temperature of the gases exiting the combustor monitored at the furnace roof position approved by the Department;
(3) Temperature of the gases at the inlet of each baghouse for the combustors.
(4) The lime slurry injection rate to the dry acid gas scrubber; and
(5) The steam load for each combustor in lb/hr and calculated in 4-hour block arithmetic averages.

(c) The permittee shall replace all thermocouples, at the furnace roof position of each combustor, on a quarterly basis with those that have been certified in accordance with NIST (National Institute of Standards and Testing).

(d) The premittee shall monitor and record supplemental fuel usage on a monthly basis.

(e) The permittee shall ensure that the Data Acquisition System maintains an uninterruptible power supply until the combustors are in a "process down" mode of operation.

(f) The selected parameters that define "normal operations" for CEM reporting purposes are when the dry inlet O2 is less than or equal to 18.0% and the steam flow is greater than or equal to 50,000 lbs/hr. If either of the conditions is not met, the CEM reports the combustor as “process down” for that minute.

(g) The Department reserves the right to require the permittee to install, operate and maintain an uninterruptible power supply (UPS) for the continuous monitoring system at the facility. The requirement to install a UPS will be based on power outages and the loss of data and the affect on the CEM system.

 # 017 [25 Pa. Code §139.111]
Municipal waste incinerator monitoring requirements.

The CEMS and CMS shall be operated and maintained to achieve the following data availability standards:

(a) Carbon Monoxide (CO) and Temperature: 100% valid hours/day, where a valid hour is defined as greater than or equal to 90% valid readings/hour (54 minutes).

(b) Opacity and oxygen (O2): Greater than or equal to 95% valid hours/day, where a valid hour is defined as greater than or

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equal to 75% valid readings/hour (45 minutes).

(c) Hydrochloric Acid (HCl), Sulfur dioxide (SO2), and Nitrogen oxides (NOx): Greater than or equal to 90% valid hours/month, where a valid hour is defined as greater than or equal to 75% valid readings/hour (45 minutes).

IV. RECORDKEEPING REQUIREMENTS.

 # 018 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall maintain, on-site, the following records for a minimum of five (5) years, in either paper copy, or computer-readable format, unless an alternative format is approved by the Department.

(a) the calendar date of each record.

(b) all emission averages from the continuous monitoring systems, which include: all one (1) hour average SO2, NOx, CO, and HCl emission concentrations, combustor unit load measurements, and PM control device inlet temperatures.

(c) all block geometric or arithmetic average concentrations, and percent reductions, as applicable, for SO2, NOx, CO, HCl, combustor unit load level, and PM control device inlet temperatures.

(d) identification of the calendar dates when any of the average emissions, percent reductions, or operating parameters recorded for SO2, NOx, CO, HCl, combustor unit load levels, particulate matter control device inlet temperature, or opacity, are above the applicable limits, with reasons for such exceedances and a description of the corrective action taken.

(e) identification of the calendar dates when the minimum hours of any of the data for SO2, NOx, CO, HCl emissions data, combustor unit load, PM control device inlet temperature and/or opacity have not been obtained, the reason for not obtaining sufficient data, and a description of corrective action taken.

(f) the results of the daily drift tests and quarterly accuracy determinations for the SO2, NOx, CO, HCl CEMs.

(g) results of all performance tests, including supporting calculations, along with maximum demonstrated unit load, and maximum PM control device inlet temperature.

(h) the names of the combustor chief facility operator, shift supervisors, and control room operators who have been fully certified, or provisionally certified, by the American Society of Mechanical Engineers (ASME) or an equivalent State-approved certification, including the dates of initial and renewal certifications and documentation of current certification. This subcondition does not apply to those individuals who have obtained full certification from the ASME on or before August 23, 1999.

(i) the names of the combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course, including documentation of training completion. Those chief facility operators, shift supervisors and control room operators who have obtained full certification prior to August 23, 1999, do not need to be recertified.

(j) the supplemental fuel usage.

V. REPORTING REQUIREMENTS.

 # 019 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall submit, to both the USEPA and the Department, semiannual reports that shall include the following information :

(1) A list of PM, lead, cadmium, opacity, mercury, dioxin/furans, and fugitive ash emission levels achieved during the performance tests.

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(2) A list of the highest emission level recorded for SO2, NOx, CO, HCl, municipal waste combustor unit load level, and PM control device inlet temperature based on the data recorded using CMS.

(3) The highest opacity level measured and recorded.

(4) The total number of hours per calendar quarter and hours per calendar year that valid data for SOx, NOx, CO, HCl, municipal waste combustor unit load, or PM control device inlet temperature data were not obtained.

(5) The total number of hours that data for SO2, NOx, CO, HCl, combustor load, and PM control device inlet temperature were excluded from the calculation of average emission concentrations of parameters.

(b) The semiannual reports shall include information from the preceding calendar year for the year being reported, in order to provide the Department with a summary of the performance of this facility over a 2-year period.

(c) The semiannual report shall include the following information for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit:

(1) SO2, NOx, CO, HCl, combustor load level, PM control device inlet temperature, and opacity.

(2) Any exceedance of the applicable levels for the following: PM, opacity, mercury, cadmium, lead, dioxin/furans, and fugitive ash. A copy of the test report documenting the emission levels and the corrective action taken, shall accompany the report.

(d) The semiannual reports shall be submitted as a paper copy, postmarked on or before August 1 and February 1 following the proceeding 6-month period ending each December and June, respectively.

(e) Temperature values submitted in each quarterly report shall consist of actual temperature values plus 950°F, the difference measured at the surrogate location and the demonstrated 1800°F for one (1) second retention time location.

(f) All CEM reports, including CEMS violations, shall be submitted to the Department within thirty (30) days after each quarter, unless otherwise approved the Department. The Department reserves the right to require the report submissions with a format acceptable to the Department.

(g) The permittee shall submit the following reports:

(1) a semi annual deviation report, due by October 1, of each year, for the period covering January 1 through June 30 of the same year. Note: The annual certification of compliance fulfills the obligation for the second deviation reporting period (July 1 through December 31 of the previous year).

(2) For those contaminants monitored by a Department certified CEMS for which the Department's Enforcement Policy - Continuous Emission Monitoring System (CEMS) established penalties for excess emissions, the aforementioned notification and reporting requirements shall be waived.

VI. WORK PRACTICE REQUIREMENTS.

 # 020 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) Combustor Operation Requirements

(1) No solid waste shall be charged into the combustor(s) until equilibrium has been attained in the furnace zones and the temperature of the combustion gases reach 1800°F (based upon a surrogate temperature of 850°F as displayed on the facility CEMs) for one (1) second of retention time when the combustor is empty. All control equipment shall be operational and functioning properly prior to the introduction of solid waste into the combustor(s).

(2) During the process of all planned shut downs of each combustor, auxiliary burners shall be used to ensure that the temperature of the combustion gases does not drop below 1600°F while any waste material is still being incinerated. All

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control equipment shall be operational and functioning properly until all of the solid waste is incinerated.

(3) The charging of waste to each combustor shall automatically cease through the use of an interlock system, if:

(A) The combustor temperature measured at the furnace roof, at the Department approved location, drops below 650°F, (a Department approved reference temperature which corresponds to 1600°F), for a 15-minute period, or,
(B) The CO emissions exceed 600 ppmv, corrected to 7% oxygen on a dry basis for a period of fifteen (15) minutes (this requirement is waived during the startup periods), or
(C) The flue gas oxygen (as measured at the oxygen monitor upstream of the control device) level drops below 3% (wet basis or equivalent dry) for a 15-minute period, or,
(D) The opacity of the exhaust gases is equal to or greater than 10% for a period of 15 minutes.

(4) An adequate spare parts inventory shall be maintained to ensure timely repairs of major component malfunctions.

(b) Operator Training and Certification Requirements

(1) All personnel involved with the operation and maintenance of the combustors, associated pollution control equipment and monitoring equipment shall complete the comprehensive training program as specified in 40 C.F.R. §§60.56a and 60.54b, and according to the schedules specified in 40 CFR §60.39b(c)(4). This program includes operator training to identify waste material and actions to be taken to correct conditions which result from the initiation of the interlock system.

(2) Each facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the Amercian Society of Mechanical Engineers (ASME) or a state certification program, and each shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers or a State Certification program.

(3) Except as provided in subcondition (i) below, each combustor shall not be operated at any time unless one of the following people is on duty at the source:

(A) A fully certified chief facility operator,
(B) A provisionally certified chief facility operator who is scheduled to take the full certification exam,
(C) A fully certified shift supervisor, or
(D) A provisionally certified shift supervisor who is scheduled to take the full certification exam.

(4) Stand-In Provisions

(A) If one of the persons, listed in Condition (b)(3) above, must leave the facility during their operating shift, a provisionally certified control room operator who is on-site, may stand in.
(B) A provisionally certified control room operator may stand in when the chief facility operator or shift supervisor is off-site for more than twelve (12) hours (a normal work shift), but less than two (2) weeks for normal off-site activities including: attending meetings, conferences, training, work travel, temporary reassignment, personal vacation, sick leave, family leave or similar activities. The permittee shall notify the Department, in writing, (by facsimile), within 24 hours, that the stand-in period will exceed twelve (12) hours (a normal work shift).

(5) In the event that the medical conditions, temporary eassignment, job transfer, resignation, dismissal or other circumstances beyond the permittee's control results in or is expected to result in the absence of the chief facility operator or shift supervisor for a period exceeding two (2) weeks, the permittee shall notify the Department in writing and identify what conditions resulted in such absence and what corrective actions have been taken to correct such absence. At the Department's request, the permittee shall prepare written status summary reports demonstrating that a good faith effort has been made and continues to be made to correct the conditions resulting in the absence of the chief facility operator or shift supervisor.

(6) A provisionally certified operator who is newly promoted or recently transferred to a shift supervisor position or a chief facility operator position at the municipal waste combustion unit may perform the duties of the certified chief facility operator or certified shift supervisor without notice to, or approval by, the Department for up to six months before taking the ASME QRO certification exam.

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(7) The permittee shall review the operating manual with each person who has responsibilities affecting the operation of this facility including, but not limited to: chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load operators.

(8) The operating manual review shall include, but not be limited to: operator training to identify waste materials referred to as large non-combustible bulky materials, combustible bulky materials, unacceptable waste, as defined in this permit, and action to be taken to correct conditions which result from abnormal/emergency operation, running and/or shutdown that would cause the initiation of the interlock system.

(9) Each operator shall undergo initial training the date prior to the day the person assumes responsibilities affecting the combustor unit operation, and annually thereafter.

(10) The operating manual shall be kept in a readily accessible location for all persons required to undergo training, and be available to the USEPA and/or the Department upon request.

(11) The permittee shall keep and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the following:

(A) a summary of the applicable standards under this Operating Permit;
(B) a description of basic combustion theory applicable to the combustor(s);
(C) procedures for handling, receiving, and feeding municipal solid waste;
(D) combustor startup, shutdown, and malfunction provisions;
(E) procedures for maintaining proper combustion air supply levels;
(F) procedures for operating the combustors within the standards established under this Operating Permit;
(G) procedures for responding to periodic upset or off-specification conditions;
(H) procedures for minimizing particulate matter carryover;
(I) procedures for ash handling;
(J) procedures for monitoring combustion emissions;
(K) procedures for reporting and recordkeeping;
(L) procedures for responding to emergency situations; and
(M) procedures for monitoring the degree of waste burnout.

(c) Waste Management

(1) The following wastes or materials shall be removed from the tipping room floor for appropriate disposal:

(A) Unacceptable waste, visible hazardous materials, and visible unapproved residual waste as defined by 25 Pa. Code § 287.1 of the Bureau of Waste Management Regulations;
(B) Large non-combustible bulky materials, including visible automotive batteries;
(C) Combustible bulky materials.

(2) The amount of solid waste material stored in the tipping room shall be less than the amount of solid waste material which can be reasonably incinerated within 120 hours of its delivery. If there is reason to believe that the combustor(s) are not capable of incinerating the solid waste material specified in the time frame above, the Department shall be notified in accordance with the malfunction reporting condition of this permit. No additional waste material shall be accepted and all the solid waste material shall be removed, if needed, to prevent the escape of odor beyond the property line. No air shall be exhausted to the outdoor atmosphere from this building during such an occurence without being treated in the combustor(s) unless otherwise authorized by the Department.

(3) Except recyclable materials, open storage of solid waste outside of a building is prohibited.

(4) All wastes or materials which can be airborne or spilled shall be transported in closed containers or tarped trucks.

(d) Tipping Area Management

(1) The tipping area shall be operated at a negative pressure, when any combustor is in operation. The air passing

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through all natural draft openings surrounding the tipping floor, including the MWC charging area, shall flow inward continuously.

(2) To ensure negative pressure on the tipping area, at a minimum, the permittee shall:

(A) limit the number of open entrance and exit doors to the tipping floor to one in each direction;
(B) close all truck delivery doors to the tipping floor between 8:00 pm and 5:00 am every day and all day on Sunday;
(C) use and maintain plastic flaps or other equivalent shielding to reduce the effective opening area on any open truck delivery door to the tipping floor; and
(D) on a daily basis, inspect and log that all roof vents over the tipping floor and combustor charging chutes are closed and that all tipping floor doors and openings not in use that day are closed.

(e) The permittee shall operate and maintain a telephone dial-up telemetry system which has been approved by the Department, and is consistent with the "Air Quality Compliance Assurance Policy for Municipal Waste Incinerators", July 1989, as revised (CAP for MWI).

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The combustors are subject to the Department's Air Quality Compliance Assurance Policy (CAP) for Municipal Waste Incinerators finalized and signed by the Department on July 12, 1989, and it's latest amendments.

(b) The combustors are subject to the provisions of EPA approved State section 111(d)/129 plan implementing 40 C.F.R. 60 subpart Cb for Large Municipal Waste Combustors, dated April 27, 1998 (67 FR 68935).

(c) The design, construction, and operation of each combustor as stated in the Plan Approval Application, in accordance with the Department's BAT for MWI and its subsequent amendments issued up to the issuance of the Plan Approval and the conditions of the Plan Approval shall be adhered to. Department approval must be obtained prior to modification of any of the design, construction, and operation of each combustor.

(d) The combustors are not subject to the provisions of 40 C.F.R. 60 Subpart Db as per 40 C.F.R. §60.40b(k).

***** Permit Shield in Effect. *****

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Source ID: 105 Source Name: ROTARY COMBUSTER 5

Source Capacity/Throughput:

INC 105 → CNTL C10 → CNTL C09 → STAC S05

FML FML01 → INC 105

FML FML02 → INC 105

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Nitrogen Oxide (NOx) emissions per combustor, expressed as NO2, shall not exceed any of the following:

(1) 180 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average using CEMs;
(2) 88.56 lbs/hr; and
(3) 0.42 lbs/MMBtu.

(b) The above NOx limits are a result of controlled combustion. This control was determined by the Department as being Reasonably Available Control Technology (RACT) for emissions of NOx (66 FR 54699 and 40 C.F.R. §52.2063).

(c) The NOx emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down, provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

 # 002 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The following annual ambient concentrations, expressed in micro-grams/cubic meter (UG/DSCM), shall not be exceeded. To demonstrate compliance with the following annual ambient concentrations, the permittee shall calculate the concentrations using the actual stack emission rates and exhaust parameters from each stack test specified for the combustor(s), and the dispersion modeling techniques used in the application, as approved by the Department. A certification shall be supplied to the Department stating compliance with maximum allowable ambient concentrations with every stack test report.

PCDD & PCDF, expressed as 2,3,7,8 TCDD equalivents* 0.30 x 10E-7
Arsenic and Compounds 0.23 x 10E-3
Beryllium and Compounds 0.42 x 10E-3
Cadmium and Compounds 0.56 x 10E-3
Nickel and Compounds 0.33 x 10E-2
Hexavalent Chromium and Compounds 0.83 x 10E-4
Lead and Compounds 0.09
Mercury and Compounds 0.024
Hydrogen Chloride 7.0
Benzo(a)pyrene 0.59 x 10E-3

(b) Ambient air quality analysis shall be redone if there is a modification in emission limits or for any parameter that exceeds the applicable stack test limitation during any stack test series.

(c) The permittee may be required to resume full modeling if the Department determines that a decrease in either volumetric flow rate and/or stack temperature has a significant adverse impact on the ambient concentration.

* Polychlorinated dibenzo-p-dioxins ("PCDD") and polychlorinated dibenzofurans ("PCDF") expressed as 2, 3, 7, 8

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tetrachlorinated dibenzo-p-dioxins ("TCDD") equivalents using toxicity equivalents factors ("TEFS") as described in the Department's BAT and calculated according to PADEP approved method.

 # 003 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) VOC emissions, expressed as total hydrocarbons, shall not exceed 37.6 pounds per hour as an aggregate emission rate for the six (6) combustors. This VOC emission limit is a determination of RACT for VOC emissions (66 FR 54699 and 40 C.F.R. §52.2063).

(b) Compliance with this limitation shall be based on the average of three (3) consecutive test runs.

(c) This emissions cap does not provide any relief from obtaining a plan approval for any future physical change or change in the method of operation of any of the combustors. Future applicability determinations must consider the baseline actual emissions of the emissions units and not the cap. The latter is true even if the company does not request a change in the compliance cap. Furthermore, by accepting this cap and agreeing to consider the six combustors as one emissions unit for NSR/PSD purposes, any future applicability determinations must involve all six combustors, e.g. should major NSR/PSD be triggered for any one combustor or process change, BACT/LAER is required for all six combustors.

 # 004 [25 Pa. Code §127.512]

Operating permit terms and conditions.

SO_2 emissions, per combustor, shall not exceed any of the following:

(a) 68.45 lbs/hr; and

(b) 29 ppmdv, corrected to 7% oxygen, or shall be reduced by no less than 80% (by weight) on a 24-hour block geometric average using CEMs, whichever is less stringent.

 # 005 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The toxic metal emissions per combustor shall not exceed any of the following:

(1) Emission concentration, measured in ug/dscm and corrected to 7% oxygen:

Arsenic and Compounds 7.2
Beryllium and Compounds 0.2
Cadmium and Compounds 15.8
Hexavalent Chromium and Compounds 2.3
Nickel and Compounds 25.0
Lead and Compounds 166.0
Mercury and Compounds 50 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight),whichever is less stringent.

(2) Emission rate (lbs/hr) was based on an exhaust rate of 68,679 dscfm, at 7% oxygen.

Arsenic and Compounds 0.00185
Beryllium and Compounds 0.000051
Cadmium and Compounds 0.00406
Hexavalent Chromium and Compounds 0.000591
Nickel and Compounds 0.00643
Lead and Compounds 0.0423
Mercury and Compounds 0.029

(b) Compliance with the emission concentration limits shall be documented through stack tests for each combustor. The results shall be based on ppmdv or ug/dscm, as appropriate, and corrected to 7% oxygen.

 # 006 [25 Pa. Code §127.512]

SECTION D. Source Level Requirements

Operating permit terms and conditions.

(a) Visible air contaminants from any combustor stack shall not be emitted in such a manner that the opacity (measured by CEMS) of the emissions is equal to or greater than

(1) 10% for a period aggregating more than three (3) minutes in any one (1) hour; or
(2) 30% at any time.

(b) The above visible emission limitations do not apply in either of the following instances:

(1) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations; or
(2) when the emission results from sources specified in 25 Pa. Code §123.1(a).

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total mass dioxin/furan emissions per combustor shall not exceed 30 nanograms per dry standard cubic meter (total mass), corrected to 7% oxygen.

(b) Compliance with this emission limitation shall be based on the average of three (3) consecutive test runs.

 # 008 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Carbon monoxide emissions per combustor shall not exceed any of the folloiwng:

(1) 100 ppmdv, corrected to 7% oxygen, calculated as a 24-hour block arithmetic average using CEMs; and
(2) 29.95 lbs/hr.

(b) The CO emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down. Provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

(c) Compliance with the CO limit shall be determined using a 24-hour block arithmetic average. The 24-hour block arithmetic average shall be calculated from one (1) hour arithmetic averages expressed in ppmdv, corrected to 7% oxygen.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Hydrochloric acid (HCl) emissions per combustor shall be reduced by not less than 95% (by weight), on a 24-hour daily arithmetic basis. This reduction requirement shall be waived if the exhaust concentrations are less than 25 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average, and 36.58 lbs/hr.

 # 010 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The Department reserves the right to establish and impose more stringent limits than those stated in this permit, based on the test results from each stack test performed, the CEM results and the dispersion modeling techniques as approved by the Department.

(b) Start-up of the combustor commences with the introduction of municipal waste to an empty combustor and does not include any warm up period when the combustor is combusting only a fossil fuel or any other auxiliary fuel, approved by the Department, and no municipal waste is being combusted.

(c) Shutdown of the combustor commences with the cessation of charging municipal waste for the express purpose of shutting down the combustor.

 # 011 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total particulate matter (PM) emissions per combustor shall not exceed 5.80 lbs/hr and 0.010 gr/dscf, corrected to 7% oxygen.

(b) PM-10 emissions per combustor shall not exceed 0.012 gr/dscf, corrected to 7% oxygen, and 6.96 lbs/hr.

SECTION D. Source Level Requirements

(c) Compliance with the above emission limits shall be based on the average of three (3) consecutive test runs.

Throughput Restriction(s).

 # 012 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Each combustor shall not be operated to exceed 161,000 lbs steam/hr, or 110% of the maximum demonstrated steam load during the most recent annual dioxin/furan performance test, whichever is less, except during the dioxin/furan performance test and the two (2) weeks preceding this test, when the steam load limitations do not apply.

(b) Only the following types of waste are permitted to be burned in the combustors:

(1) municipal waste, as defined in 25 Pa. Code § 287.1;
(2) municipal-like residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit; and
(3) residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit.

(c) The residual waste (Form R waste list) accepted at the facility shall not exceed the following on a daily basis:

(1) 10% of the total amount of waste, by weight; or
(2) 500 tons

(d) The daily amount of residual waste and total amount of waste must be documented in accordance with the conditions of the Department's Waste Permit No. 400593.

(e) Any changes to the waste streams or types of waste shall be approved by the Department.

Control Device Efficiencies Restriction(s).

 # 013 [25 Pa. Code §127.503]

Application information.

Emissions from each combustor shall be controlled by individual dry acid gas scrubbers and pulse-jet cleaning type fabric collectors.

 # 014 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Compliance with the parameters set forth in the Conditions below assures compliance with the toxic metal emission limits in Condition #005 of this Section.

(a) Each combustor shall be operated to maintain the combustion gases temperature greater than 1800°F for at least one (1) second, calculated on an hourly average (1-hour block arithmetic). The temperature sensor shall be located at the furnace roof position approved by the Department for each combustor. The temperature at this location shall be maintained at greater than 850°F, (a Department approved reference temperature which corresponds to 1800°F for at least one second). Each combustor auxiliary burners shall be controlled automatically to maintain the combustion gases at the aforementioned temperature whenever refuse is being incinerated. In the event that furnace combustion gas flow rates change significantly from any previous alternate location verification test, or at the Department's request, the permittee shall perform a new alternative location verification and retention test.

(b) The flue gas temperature, measured at the particulate matter control device inlet and averaged arithmeticly in 4-hour block, shall not exceed 300°F or 30°F above the maximum demonstrated particulate matter control device temperature, as defined in 40 C.F.R. §60.51b, whichever is lower, except during the annual dioxin/furan or mercury performance test and the 2 weeks preceding the annual dioxin/furan or mercury performance test, when the particulate matter control device inlet flue gas temperature limitation of 300°F is applicable.

(c) The above temperature limits apply and remain enforceable at all times, until and unless the Department grants a waiver

SECTION D. Source Level Requirements

in writing for the purpose of evaluating system performance, testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

II. TESTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The permittee shall conduct annual performance test on each of the combustors for the the following pollutants:

(1) total particulate matter, and PM-10 (including particle sizing);
(2) arsenic and compounds (expressed as arsenic);
(3) cadmium and compounds (expressed as cadmium);
(4) hexavalent chromium and compounds (expressed as chromium);
(5) nickel and compounds (expressed as nickel);
(6) lead and compounds (expressed as lead);
(7) beryllium and compounds (expressed as beryllium);
(8) mercury and compounds (expressed as mercury);
(9) PCDD and PCDF (expressed as 2,3,7,8 TCDD equivalents calculated according to the Department approved method and as total dioxin and furan);
(10) VOC (expressed as total hydrocarbons);
(11) PAH, including Benzo(a)pyrene;
(12) NOx;
(13) SO2;
(14) HCl;
(15) CO; and
(16) Visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111)

(b) If the emissions of PM, or PM10, or any of the toxic metals from any one of the combustors equal to or exceed 80% of the emission limitations, that combustor(s) shall be tested semiannually for each of the pollutants that equals to or exceeds 80% of the emission limitations. Testing frequency can revert back to annually when the tested emissions are less than 80% of the emission limitations for a consecutive period of 24-months, plus the permittee notifies the Department of such testing schedule reversion.

(c) Performance testing for SO2, NOx, CO, and HCl may be substituted by CEM data to demonstrate compliance with the emission limitations. The permittee shall perform SO2, NOx, CO, HCl CEMS performance audit for each combustor during each annual performance test.

(d) The amount of waste incinerated during a stack test shall be an adequate representation of the waste load to be processed by the facility.

(e) Unless approved by the Department prior to the testing, the following procedures and test methods shall be used to determine compliance with the emission limits:

(1) EPA reference method 1, for the sampling sites and traverse points.
(2) EPA reference method 3 or 3A, for the gas analysis.
(3) EPA reference methods 5, 201A/202 for PM and PM10. Both the front half and back half catches are to be analyzed and reported. However, only the front half catch is to be utilized in determining compliance.
(4) EPA reference method 9, for opacity.
(5) EPA reference method 29, for cadmium, lead and mercury, with a minimum sample volume to be 1.7 cubic meters for mercury. The percent weight reduction for mercury emissions shall be computed using the mercury concentrations measured at the inlet and outlet of the control device, corrected to 7% oxygen, (dry basis).
(6) EPA reference method 26, or 26A, for HCl.
(7) EPA reference method 19, for SO2.
(8) EPA reference method 6, 6A, or 6C, for the RATA tests on the SO2 CEMS.
(9) EPA reference method 19, for NOx.

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(10) EPA reference method 7, 7A, 7C, 7D, or 7E, for the RATA test on the NOx CEMS.
(11) EPA reference method 10, 10A, or 10B, for CO.
(12) EPA reference method 23, for Dioxins/furans.
(13) EPA reference method 22, for visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111).

(f) Each combustor shall be equipped with test ports so that periodic measurement of the 1800°F for one (1) second residence time requirement can be conducted at the Department's request.

III. MONITORING REQUIREMENTS.

 # 016 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The Department approved Continuous Emission Monitors (CEMs) shall be operated and maintained in accordance with 25 Pa. Code Chapter 139, the Department's "Continuous Source Monitoring Manual (CSM Manual)" (Revision No.5 - March 1993), and latest amendments ("CSM Manual") for the following:

(1) CO monitored both upstream and downstream of the air pollution control equipment;
(2) SO2 monitored upstream and downstream of the air pollution control equipment;
(3) NOx monitored downstream of the air pollution control equipment;
(4) HCL monitored downstream of the air pollution control equipment; and
(5) Opacity of the exhaust gases.

(b) The following operating parameters shall be monitored and recorded continuously using the Department approved continuous monitoring system (CMS) for each combustor at the locations, if specified:

(1) Oxygen, at both upstream and downstream of the air pollution control equipment;
(2) Temperature of the gases exiting the combustor monitored at the furnace roof position approved by the Department;
(3) Temperature of the gases at the inlet of each baghouse for the combustors.
(4) The lime slurry injection rate to the dry acid gas scrubber; and
(5) The steam load for each combustor in lb/hr and calculated in 4-hour block arithmetic averages.

(c) The permittee shall replace all thermocouples, at the furnace roof position of each combustor, on a quarterly basis with those that have been certified in accordance with NIST (National Institute of Standards and Testing).

(d) The premittee shall monitor and record supplemental fuel usage on a monthly basis.

(e) The permittee shall ensure that the Data Acquisition System maintains an uninterruptible power supply until the combustors are in a "process down" mode of operation.

(f) The selected parameters that define "normal operations" for CEM reporting purposes are when the dry inlet O2 is less than or equal to 18.0% and the steam flow is greater than or equal to 50,000 lbs/hr. If either of the conditions is not met, the CEM reports the combustor as “process down” for that minute.

(g) The Department reserves the right to require the permittee to install, operate and maintain an uninterruptible power supply (UPS) for the continuous monitoring system at the facility. The requirement to install a UPS will be based on power outages and the loss of data and the affect on the CEM system.

 # 017 [25 Pa. Code §139.111]
Municipal waste incinerator monitoring requirements.

The CEMS and CMS shall be operated and maintained to achieve the following data availability standards:

(a) Carbon Monoxide (CO) and Temperature: 100% valid hours/day, where a valid hour is defined as greater than or equal to 90% valid readings/hour (54 minutes).

(b) Opacity and oxygen (O2): Greater than or equal to 95% valid hours/day, where a valid hour is defined as greater than or

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equal to 75% valid readings/hour (45 minutes).

(c) Hydrochloric Acid (HCl), Sulfur dioxide (SO2), and Nitrogen oxides (NOx): Greater than or equal to 90% valid hours/month, where a valid hour is defined as greater than or equal to 75% valid readings/hour (45 minutes).

IV. RECORDKEEPING REQUIREMENTS.

 # 018 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall maintain, on-site, the following records for a minimum of five (5) years, in either paper copy, or computer-readable format, unless an alternative format is approved by the Department.

(a) the calendar date of each record.

(b) all emission averages from the continuous monitoring systems, which include: all one (1) hour average SO2, NOx, CO, and HCl emission concentrations, combustor unit load measurements, and PM control device inlet temperatures.

(c) all block geometric or arithmetic average concentrations, and percent reductions, as applicable, for SO2, NOx, CO, HCl, combustor unit load level, and PM control device inlet temperatures.

(d) identification of the calendar dates when any of the average emissions, percent reductions, or operating parameters recorded for SO2, NOx, CO, HCl, combustor unit load levels, particulate matter control device inlet temperature, or opacity, are above the applicable limits, with reasons for such exceedances and a description of the corrective action taken.

(e) identification of the calendar dates when the minimum hours of any of the data for SO2, NOx, CO, HCl emissions data, combustor unit load, PM control device inlet temperature and/or opacity have not been obtained, the reason for not obtaining sufficient data, and a description of corrective action taken.

(f) the results of the daily drift tests and quarterly accuracy determinations for the SO2, NOx, CO, HCl CEMs.

(g) results of all performance tests, including supporting calculations, along with maximum demonstrated unit load, and maximum PM control device inlet temperature.

(h) the names of the combustor chief facility operator, shift supervisors, and control room operators who have been fully certified, or provisionally certified, by the American Society of Mechanical Engineers (ASME) or an equivalent State-approved certification, including the dates of initial and renewal certifications and documentation of current certification. This subcondition does not apply to those individuals who have obtained full certification from the ASME on or before August 23, 1999.

(i) the names of the combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course, including documentation of training completion. Those chief facility operators, shift supervisors and control room operators who have obtained full certification prior to August 23, 1999, do not need to be recertified.

(j) the supplemental fuel usage.

V. REPORTING REQUIREMENTS.

 # 019 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall submit, to both the USEPA and the Department, semiannual reports that shall include the following information :

(1) A list of PM, lead, cadmium, opacity, mercury, dioxin/furans, and fugitive ash emission levels achieved during the performance tests.

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(2) A list of the highest emission level recorded for SO2, NOx, CO, HCl, municipal waste combustor unit load level, and PM control device inlet temperature based on the data recorded using CMS.

(3) The highest opacity level measured and recorded.

(4) The total number of hours per calendar quarter and hours per calendar year that valid data for SOx, NOx, CO, HCl, municipal waste combustor unit load, or PM control device inlet temperature data were not obtained.

(5) The total number of hours that data for SO2, NOx, CO, HCl, combustor load, and PM control device inlet temperature were excluded from the calculation of average emission concentrations of parameters.

(b) The semiannual reports shall include information from the preceding calendar year for the year being reported, in order to provide the Department with a summary of the performance of this facility over a 2-year period.

(c) The semiannual report shall include the following information for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit:

(1) SO2, NOx, CO, HCl, combustor load level, PM control device inlet temperature, and opacity.

(2) Any exceedance of the applicable levels for the following: PM, opacity, mercury, cadmium, lead, dioxin/furans, and fugitive ash. A copy of the test report documenting the emission levels and the corrective action taken, shall accompany the report.

(d) The semiannual reports shall be submitted as a paper copy, postmarked on or before August 1 and February 1 following the proceeding 6-month period ending each December and June, respectively.

(e) Temperature values submitted in each quarterly report shall consist of actual temperature values plus 950°F, the difference measured at the surrogate location and the demonstrated 1800°F for one (1) second retention time location.

(f) All CEM reports, including CEMS violations, shall be submitted to the Department within thirty (30) days after each quarter, unless otherwise approved the Department. The Department reserves the right to require the report submissions with a format acceptable to the Department.

(g) The permittee shall submit the following reports:

(1) a semi annual deviation report, due by October 1, of each year, for the period covering January 1 through June 30 of the same year. Note: The annual certification of compliance fulfills the obligation for the second deviation reporting period (July 1 through December 31 of the previous year).

(2) For those contaminants monitored by a Department certified CEMS for which the Department's Enforcement Policy - Continuous Emission Monitoring System (CEMS) established penalties for excess emissions, the aforementioned notification and reporting requirements shall be waived.

VI. WORK PRACTICE REQUIREMENTS.

 # 020 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) Combustor Operation Requirements

(1) No solid waste shall be charged into the combustor(s) until equilibrium has been attained in the furnace zones and the temperature of the combustion gases reach 1800°F (based upon a surrogate temperature of 850°F as displayed on the facility CEMs) for one (1) second of retention time when the combustor is empty. All control equipment shall be operational and functioning properly prior to the introduction of solid waste into the combustor(s).

(2) During the process of all planned shut downs of each combustor, auxiliary burners shall be used to ensure that the temperature of the combustion gases does not drop below 1600°F while any waste material is still being incinerated. All

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control equipment shall be operational and functioning properly until all of the solid waste is incinerated.

(3) The charging of waste to each combustor shall automatically cease through the use of an interlock system, if:

(A) The combustor temperature measured at the furnace roof, at the Department approved location, drops below 650°F, (a Department approved reference temperature which corresponds to 1600°F), for a 15-minute period, or,
(B) The CO emissions exceed 600 ppmv, corrected to 7% oxygen on a dry basis for a period of fifteen (15) minutes (this requirement is waived during the startup periods), or
(C) The flue gas oxygen (as measured at the oxygen monitor upstream of the control device) level drops below 3% (wet basis or equivalent dry) for a 15-minute period, or,
(D) The opacity of the exhaust gases is equal to or greater than 10% for a period of 15 minutes.

(4) An adequate spare parts inventory shall be maintained to ensure timely repairs of major component malfunctions.

(b) Operator Training and Certification Requirements

(1) All personnel involved with the operation and maintenance of the combustors, associated pollution control equipment and monitoring equipment shall complete the comprehensive training program as specified in 40 C.F.R. §§60.56a and 60.54b, and according to the schedules specified in 40 CFR §60.39b(c)(4). This program includes operator training to identify waste material and actions to be taken to correct conditions which result from the initiation of the interlock system.

(2) Each facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the Amercian Society of Mechanical Engineers (ASME) or a state certification program, and each shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers or a State Certification program.

(3) Except as provided in subcondition (i) below, each combustor shall not be operated at any time unless one of the following people is on duty at the source:

(A) A fully certified chief facility operator,
(B) A provisionally certified chief facility operator who is scheduled to take the full certification exam,
(C) A fully certified shift supervisor, or
(D) A provisionally certified shift supervisor who is scheduled to take the full certification exam.

(4) Stand-In Provisions

(A) If one of the persons, listed in Condition (b)(3) above, must leave the facility during their operating shift, a provisionally certified control room operator who is on-site, may stand in.
(B) A provisionally certified control room operator may stand in when the chief facility operator or shift supervisor is off-site for more than twelve (12) hours (a normal work shift), but less than two (2) weeks for normal off-site activities including: attending meetings, conferences, training, work travel, temporary reassignment, personal vacation, sick leave, family leave or similar activities. The permittee shall notify the Department, in writing, (by facsimile), within 24 hours, that the stand-in period will exceed twelve (12) hours (a normal work shift).

(5) In the event that the medical conditions, temporary eassignment, job transfer, resignation, dismissal or other circumstances beyond the permittee's control results in or is expected to result in the absence of the chief facility operator or shift supervisor for a period exceeding two (2) weeks, the permittee shall notify the Department in writing and identify what conditions resulted in such absence and what corrective actions have been taken to correct such absence. At the Department's request, the permittee shall prepare written status summary reports demonstrating that a good faith effort has been made and continues to be made to correct the conditions resulting in the absence of the chief facility operator or shift supervisor.

(6) A provisionally certified operator who is newly promoted or recently transferred to a shift supervisor position or a chief facility operator position at the municipal waste combustion unit may perform the duties of the certified chief facility operator or certified shift supervisor without notice to, or approval by, the Department for up to six months before taking the ASME QRO certification exam.

(7) The permittee shall review the operating manual with each person who has responsibilities affecting the operation of this facility including, but not limited to: chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load operators.

(8) The operating manual review shall include, but not be limited to: operator training to identify waste materials referred to as large non-combustible bulky materials, combustible bulky materials, unacceptable waste, as defined in this permit, and action to be taken to correct conditions which result from abnormal/emergency operation, running and/or shutdown that would cause the initiation of the interlock system.

(9) Each operator shall undergo initial training the date prior to the day the person assumes responsibilities affecting the combustor unit operation, and annually thereafter.

(10) The operating manual shall be kept in a readily accessible location for all persons required to undergo training, and be available to the USEPA and/or the Department upon request.

(11) The permittee shall keep and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the following:

(A) a summary of the applicable standards under this Operating Permit;
(B) a description of basic combustion theory applicable to the combustor(s);
(C) procedures for handling, receiving, and feeding municipal solid waste;
(D) combustor startup, shutdown, and malfunction provisions;
(E) procedures for maintaining proper combustion air supply levels;
(F) procedures for operating the combustors within the standards established under this Operating Permit;
(G) procedures for responding to periodic upset or off-specification conditions;
(H) procedures for minimizing particulate matter carryover;
(I) procedures for ash handling;
(J) procedures for monitoring combustion emissions;
(K) procedures for reporting and recordkeeping;
(L) procedures for responding to emergency situations; and
(M) procedures for monitoring the degree of waste burnout.

(c) Waste Management

(1) The following wastes or materials shall be removed from the tipping room floor for appropriate disposal:

(A) Unacceptable waste, visible hazardous materials, and visible unapproved residual waste as defined by 25 Pa. Code § 287.1 of the Bureau of Waste Management Regulations;
(B) Large non-combustible bulky materials, including visible automotive batteries;
(C) Combustible bulky materials.

(2) The amount of solid waste material stored in the tipping room shall be less than the amount of solid waste material which can be reasonably incinerated within 120 hours of its delivery. If there is reason to believe that the combustor(s) are not capable of incinerating the solid waste material specified in the time frame above, the Department shall be notified in accordance with the malfunction reporting condition of this permit. No additional waste material shall be accepted and all the solid waste material shall be removed, if needed, to prevent the escape of odor beyond the property line. No air shall be exhausted to the outdoor atmosphere from this building during such an occurence without being treated in the combustor(s) unless otherwise authorized by the Department.

(3) Except recyclable materials, open storage of solid waste outside of a building is prohibited.

(4) All wastes or materials which can be airborne or spilled shall be transported in closed containers or tarped trucks.

(d) Tipping Area Management

(1) The tipping area shall be operated at a negative pressure, when any combustor is in operation. The air passing

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through all natural draft openings surrounding the tipping floor, including the MWC charging area, shall flow inward continuously.

(2) To ensure negative pressure on the tipping area, at a minimum, the permittee shall:

(A) limit the number of open entrance and exit doors to the tipping floor to one in each direction;
(B) close all truck delivery doors to the tipping floor between 8:00 pm and 5:00 am every day and all day on Sunday;
(C) use and maintain plastic flaps or other equivalent shielding to reduce the effective opening area on any open truck delivery door to the tipping floor; and
(D) on a daily basis, inspect and log that all roof vents over the tipping floor and combustor charging chutes are closed and that all tipping floor doors and openings not in use that day are closed.

(e) The permittee shall operate and maintain a telephone dial-up telemetry system which has been approved by the Department, and is consistent with the "Air Quality Compliance Assurance Policy for Municipal Waste Incinerators", July 1989, as revised (CAP for MWI).

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The combustors are subject to the Department's Air Quality Compliance Assurance Policy (CAP) for Municipal Waste Incinerators finalized and signed by the Department on July 12, 1989, and it's latest amendments.

(b) The combustors are subject to the provisions of EPA approved State section 111(d)/129 plan implementing 40 C.F.R. 60 subpart Cb for Large Municipal Waste Combustors, dated April 27, 1998 (67 FR 68935).

(c) The design, construction, and operation of each combustor as stated in the Plan Approval Application, in accordance with the Department's BAT for MWI and its subsequent amendments issued up to the issuance of the Plan Approval and the conditions of the Plan Approval shall be adhered to. Department approval must be obtained prior to modification of any of the design, construction, and operation of each combustor.

(d) The combustors are not subject to the provisions of 40 C.F.R. 60 Subpart Db as per 40 C.F.R. §60.40b(k).

***** Permit Shield in Effect. *****

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Source ID: 106 Source Name: ROTARY COMBUSTER 6

Source Capacity/Throughput:

INC 106 → CNTL C12 → CNTL C11 → STAC S06

FML FML01 → INC 106

FML FML02 → INC 106

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Nitrogen Oxide (NOx) emissions per combustor, expressed as NO2, shall not exceed any of the following:

(1) 180 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average using CEMs;
(2) 88.56 lbs/hr; and
(3) 0.42 lbs/MMBtu.

(b) The above NOx limits are a result of controlled combustion. This control was determined by the Department as being Reasonably Available Control Technology (RACT) for emissions of NOx (66 FR 54699 and 40 C.F.R. §52.2063).

(c) The NOx emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down, provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

 # 002 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The following annual ambient concentrations, expressed in micro-grams/cubic meter (UG/DSCM), shall not be exceeded. To demonstrate compliance with the following annual ambient concentrations, the permittee shall calculate the concentrations using the actual stack emission rates and exhaust parameters from each stack test specified for the combustor(s), and the dispersion modeling techniques used in the application, as approved by the Department. A certification shall be supplied to the Department stating compliance with maximum allowable ambient concentrations with every stack test report.

PCDD & PCDF, expressed as 2,3,7,8 TCDD equalivents* 0.30 x 10E-7
Arsenic and Compounds 0.23 x 10E-3
Beryllium and Compounds 0.42 x 10E-3
Cadmium and Compounds 0.56 x 10E-3
Nickel and Compounds 0.33 x 10E-2
Hexavalent Chromium and Compounds 0.83 x 10E-4
Lead and Compounds 0.09
Mercury and Compounds 0.024
Hydrogen Chloride 7.0
Benzo(a)pyrene 0.59 x 10E-3

(b) Ambient air quality analysis shall be redone if there is a modification in emission limits or for any parameter that exceeds the applicable stack test limitation during any stack test series.

(c) The permittee may be required to resume full modeling if the Department determines that a decrease in either volumetric flow rate and/or stack temperature has a significant adverse impact on the ambient concentration.

* Polychlorinated dibenzo-p-dioxins ("PCDD") and polychlorinated dibenzofurans ("PCDF") expressed as 2, 3, 7, 8

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tetrachlorinated dibenzo-p-dioxins ("TCDD") equivalents using toxicity equivalents factors ("TEFS") as described in the Department's BAT and calculated according to PADEP approved method.

 # 003 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) VOC emissions, expressed as total hydrocarbons, shall not exceed 37.6 pounds per hour as an aggregate emission rate for the six (6) combustors. This VOC emission limit is a determination of RACT for VOC emissions (66 FR 54699 and 40 C.F.R. §52.2063).

(b) Compliance with this limitation shall be based on the average of three (3) consecutive test runs.

(c) This emissions cap does not provide any relief from obtaining a plan approval for any future physical change or change in the method of operation of any of the combustors. Future applicability determinations must consider the baseline actual emissions of the emissions units and not the cap. The latter is true even if the company does not request a change in the compliance cap. Furthermore, by accepting this cap and agreeing to consider the six combustors as one emissions unit for NSR/PSD purposes, any future applicability determinations must involve all six combustors, e.g. should major NSR/PSD be triggered for any one combustor or process change, BACT/LAER is required for all six combustors.

 # 004 [25 Pa. Code §127.512]

Operating permit terms and conditions.

SO_2 emissions, per combustor, shall not exceed any of the following:

(a) 68.45 lbs/hr; and

(b) 29 ppmdv, corrected to 7% oxygen, or shall be reduced by no less than 80% (by weight) on a 24-hour block geometric average using CEMs, whichever is less stringent.

 # 005 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The toxic metal emissions per combustor shall not exceed any of the following:

(1) Emission concentration, measured in ug/dscm and corrected to 7% oxygen:

Arsenic and Compounds 7.2
Beryllium and Compounds 0.2
Cadmium and Compounds 15.8
Hexavalent Chromium and Compounds 2.3
Nickel and Compounds 25.0
Lead and Compounds 166.0
Mercury and Compounds 50 or 15 percent of the potential mercury emission concentration (85-percent reduction by weight),whichever is less stringent.

(2) Emission rate (lbs/hr) was based on an exhaust rate of 68,679 dscfm, at 7% oxygen.

Arsenic and Compounds 0.00185
Beryllium and Compounds 0.000051
Cadmium and Compounds 0.00406
Hexavalent Chromium and Compounds 0.000591
Nickel and Compounds 0.00643
Lead and Compounds 0.0423
Mercury and Compounds 0.029

(b) Compliance with the emission concentration limits shall be documented through stack tests for each combustor. The results shall be based on ppmdv or ug/dscm, as appropriate, and corrected to 7% oxygen.

 # 006 [25 Pa. Code §127.512]

SECTION D. Source Level Requirements

Operating permit terms and conditions.

(a) Visible air contaminants from any combustor stack shall not be emitted in such a manner that the opacity (measured by CEMS) of the emissions is equal to or greater than

(1) 10% for a period aggregating more than three (3) minutes in any one (1) hour; or
(2) 30% at any time.

(b) The above visible emission limitations do not apply in either of the following instances:

(1) when the presence of uncombined water is the only reason for failure of the emission to meet the limitations; or
(2) when the emission results from sources specified in 25 Pa. Code §123.1(a).

 # 007 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total mass dioxin/furan emissions per combustor shall not exceed 30 nanograms per dry standard cubic meter (total mass), corrected to 7% oxygen.

(b) Compliance with this emission limitation shall be based on the average of three (3) consecutive test runs.

 # 008 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Carbon monoxide emissions per combustor shall not exceed any of the folloiwng:

(1) 100 ppmdv, corrected to 7% oxygen, calculated as a 24-hour block arithmetic average using CEMs; and
(2) 29.95 lbs/hr.

(b) The CO emission limit applies at all times when municipal wastes are combusted, except during periods of start-up, and shut-down. Provided that the duration of the start-up or shut-down does not exceed three (3) hours per occurrence.

(c) Compliance with the CO limit shall be determined using a 24-hour block arithmetic average. The 24-hour block arithmetic average shall be calculated from one (1) hour arithmetic averages expressed in ppmdv, corrected to 7% oxygen.

 # 009 [25 Pa. Code §127.512]

Operating permit terms and conditions.

Hydrochloric acid (HCl) emissions per combustor shall be reduced by not less than 95% (by weight), on a 24-hour daily arithmetic basis. This reduction requirement shall be waived if the exhaust concentrations are less than 25 ppmdv, corrected to 7% oxygen, on a 24-hour block arithmetic average, and 36.58 lbs/hr.

 # 010 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) The Department reserves the right to establish and impose more stringent limits than those stated in this permit, based on the test results from each stack test performed, the CEM results and the dispersion modeling techniques as approved by the Department.

(b) Start-up of the combustor commences with the introduction of municipal waste to an empty combustor and does not include any warm up period when the combustor is combusting only a fossil fuel or any other auxiliary fuel, approved by the Department, and no municipal waste is being combusted.

(c) Shutdown of the combustor commences with the cessation of charging municipal waste for the express purpose of shutting down the combustor.

 # 011 [25 Pa. Code §127.512]

Operating permit terms and conditions.

(a) Total particulate matter (PM) emissions per combustor shall not exceed 5.80 lbs/hr and 0.010 gr/dscf, corrected to 7% oxygen.

(b) PM-10 emissions per combustor shall not exceed 0.012 gr/dscf, corrected to 7% oxygen, and 6.96 lbs/hr.

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(c) Compliance with the above emission limits shall be based on the average of three (3) consecutive test runs.

Throughput Restriction(s).

 # 012 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) Each combustor shall not be operated to exceed 161,000 lbs steam/hr, or 110% of the maximum demonstrated steam load during the most recent annual dioxin/furan performance test, whichever is less, except during the dioxin/furan performance test and the two (2) weeks preceding this test, when the steam load limitations do not apply.

(b) Only the following types of waste are permitted to be burned in the combustors:

(1) municipal waste, as defined in 25 Pa. Code § 287.1;
(2) municipal-like residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit; and
(3) residual waste, as permitted in the Department's Waste Permit No. 400593, and the Miscellaneous Section of this permit.

(c) The residual waste (Form R waste list) accepted at the facility shall not exceed the following on a daily basis:

(1) 10% of the total amount of waste, by weight; or
(2) 500 tons

(d) The daily amount of residual waste and total amount of waste must be documented in accordance with the conditions of the Department's Waste Permit No. 400593.

(e) Any changes to the waste streams or types of waste shall be approved by the Department.

Control Device Efficiencies Restriction(s).

 # 013 [25 Pa. Code §127.503]
Application information.
Emissions from each combustor shall be controlled by individual dry acid gas scrubbers and pulse-jet cleaning type fabric collectors.

 # 014 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Compliance with the parameters set forth in the Conditions below assures compliance with the toxic metal emission limits in Condition #005 of this Section.

(a) Each combustor shall be operated to maintain the combustion gases temperature greater than 1800°F for at least one (1) second, calculated on an hourly average (1-hour block arithmetic). The temperature sensor shall be located at the furnace roof position approved by the Department for each combustor. The temperature at this location shall be maintained at greater than 850°F, (a Department approved reference temperature which corresponds to 1800°F for at least one second). Each combustor auxiliary burners shall be controlled automatically to maintain the combustion gases at the aforementioned temperature whenever refuse is being incinerated. In the event that furnace combustion gas flow rates change significantly from any previous alternate location verification test, or at the Department's request, the permittee shall perform a new alternative location verification and retention test.

(b) The flue gas temperature, measured at the particulate matter control device inlet and averaged arithmeticly in 4-hour block, shall not exceed 300°F or 30°F above the maximum demonstrated particulate matter control device temperature, as defined in 40 C.F.R. §60.51b, whichever is lower, except during the annual dioxin/furan or mercury performance test and the 2 weeks preceding the annual dioxin/furan or mercury performance test, when the particulate matter control device inlet flue gas temperature limitation of 300°F is applicable.

(c) The above temperature limits apply and remain enforceable at all times, until and unless the Department grants a waiver

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in writing for the purpose of evaluating system performance, testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions.

II. TESTING REQUIREMENTS.

 # 015 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The permittee shall conduct annual performance test on each of the combustors for the the following pollutants:

(1) total particulate matter, and PM-10 (including particle sizing);
(2) arsenic and compounds (expressed as arsenic);
(3) cadmium and compounds (expressed as cadmium);
(4) hexavalent chromium and compounds (expressed as chromium);
(5) nickel and compounds (expressed as nickel);
(6) lead and compounds (expressed as lead);
(7) beryllium and compounds (expressed as beryllium);
(8) mercury and compounds (expressed as mercury);
(9) PCDD and PCDF (expressed as 2,3,7,8 TCDD equivalents calculated according to the Department approved method and as total dioxin and furan);
(10) VOC (expressed as total hydrocarbons);
(11) PAH, including Benzo(a)pyrene;
(12) NOx;
(13) SO2;
(14) HCl;
(15) CO; and
(16) Visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111)

(b) If the emissions of PM, or PM10, or any of the toxic metals from any one of the combustors equal to or exceed 80% of the emission limitations, that combustor(s) shall be tested semiannually for each of the pollutants that equals to or exceeds 80% of the emission limitations. Testing frequency can revert back to annually when the tested emissions are less than 80% of the emission limitations for a consecutive period of 24-months, plus the permittee notifies the Department of such testing schedule reversion.

(c) Performance testing for SO2, NOx, CO, and HCl may be substituted by CEM data to demonstrate compliance with the emission limitations. The permittee shall perform SO2, NOx, CO, HCl CEMS performance audit for each combustor during each annual performance test.

(d) The amount of waste incinerated during a stack test shall be an adequate representation of the waste load to be processed by the facility.

(e) Unless approved by the Department prior to the testing, the following procedures and test methods shall be used to determine compliance with the emission limits:

(1) EPA reference method 1, for the sampling sites and traverse points.
(2) EPA reference method 3 or 3A, for the gas analysis.
(3) EPA reference methods 5, 201A/202 for PM and PM10. Both the front half and back half catches are to be analyzed and reported. However, only the front half catch is to be utilized in determining compliance.
(4) EPA reference method 9, for opacity.
(5) EPA reference method 29, for cadmium, lead and mercury, with a minimum sample volume to be 1.7 cubic meters for mercury. The percent weight reduction for mercury emissions shall be computed using the mercury concentrations measured at the inlet and outlet of the control device, corrected to 7% oxygen, (dry basis).
(6) EPA reference method 26, or 26A, for HCl.
(7) EPA reference method 19, for SO2.
(8) EPA reference method 6, 6A, or 6C, for the RATA tests on the SO2 CEMS.
(9) EPA reference method 19, for NOx.

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(10) EPA reference method 7, 7A, 7C, 7D, or 7E, for the RATA test on the NOx CEMS.
(11) EPA reference method 10, 10A, or 10B, for CO.
(12) EPA reference method 23, for Dioxins/furans.
(13) EPA reference method 22, for visible emissions of fugitive combustion ash from the ash conveying system (Source ID 111).

(f) Each combustor shall be equipped with test ports so that periodic measurement of the 1800°F for one (1) second residence time requirement can be conducted at the Department's request.

III. MONITORING REQUIREMENTS.

 # 016 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The Department approved Continuous Emission Monitors (CEMs) shall be operated and maintained in accordance with 25 Pa. Code Chapter 139, the Department's "Continuous Source Monitoring Manual (CSM Manual)" (Revision No.5 - March 1993), and latest amendments ("CSM Manual") for the following:

(1) CO monitored both upstream and downstream of the air pollution control equipment;
(2) SO2 monitored upstream and downstream of the air pollution control equipment;
(3) NOx monitored downstream of the air pollution control equipment;
(4) HCL monitored downstream of the air pollution control equipment; and
(5) Opacity of the exhaust gases.

(b) The following operating parameters shall be monitored and recorded continuously using the Department approved continuous monitoring system (CMS) for each combustor at the locations, if specified:

(1) Oxygen, at both upstream and downstream of the air pollution control equipment;
(2) Temperature of the gases exiting the combustor monitored at the furnace roof position approved by the Department;
(3) Temperature of the gases at the inlet of each baghouse for the combustors.
(4) The lime slurry injection rate to the dry acid gas scrubber; and
(5) The steam load for each combustor in lb/hr and calculated in 4-hour block arithmetic averages.

(c) The permittee shall replace all thermocouples, at the furnace roof position of each combustor, on a quarterly basis with those that have been certified in accordance with NIST (National Institute of Standards and Testing).

(d) The premittee shall monitor and record supplemental fuel usage on a monthly basis.

(e) The permittee shall ensure that the Data Acquisition System maintains an uninterruptible power supply until the combustors are in a "process down" mode of operation.

(f) The selected parameters that define "normal operations" for CEM reporting purposes are when the dry inlet O2 is less than or equal to 18.0% and the steam flow is greater than or equal to 50,000 lbs/hr. If either of the conditions is not met, the CEM reports the combustor as “process down” for that minute.

(g) The Department reserves the right to require the permittee to install, operate and maintain an uninterruptible power supply (UPS) for the continuous monitoring system at the facility. The requirement to install a UPS will be based on power outages and the loss of data and the affect on the CEM system.

 # 017 [25 Pa. Code §139.111]
Municipal waste incinerator monitoring requirements.

The CEMS and CMS shall be operated and maintained to achieve the following data availability standards:

(a) Carbon Monoxide (CO) and Temperature: 100% valid hours/day, where a valid hour is defined as greater than or equal to 90% valid readings/hour (54 minutes).

(b) Opacity and oxygen (O2): Greater than or equal to 95% valid hours/day, where a valid hour is defined as greater than or

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equal to 75% valid readings/hour (45 minutes).

(c) Hydrochloric Acid (HCl), Sulfur dioxide (SO2), and Nitrogen oxides (NOx): Greater than or equal to 90% valid hours/month, where a valid hour is defined as greater than or equal to 75% valid readings/hour (45 minutes).

IV. RECORDKEEPING REQUIREMENTS.

 # 018 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall maintain, on-site, the following records for a minimum of five (5) years, in either paper copy, or computer-readable format, unless an alternative format is approved by the Department.

(a) the calendar date of each record.

(b) all emission averages from the continuous monitoring systems, which include: all one (1) hour average SO2, NOx, CO, and HCl emission concentrations, combustor unit load measurements, and PM control device inlet temperatures.

(c) all block geometric or arithmetic average concentrations, and percent reductions, as applicable, for SO2, NOx, CO, HCl, combustor unit load level, and PM control device inlet temperatures.

(d) identification of the calendar dates when any of the average emissions, percent reductions, or operating parameters recorded for SO2, NOx, CO, HCl, combustor unit load levels, particulate matter control device inlet temperature, or opacity, are above the applicable limits, with reasons for such exceedances and a description of the corrective action taken.

(e) identification of the calendar dates when the minimum hours of any of the data for SO2, NOx, CO, HCl emissions data, combustor unit load, PM control device inlet temperature and/or opacity have not been obtained, the reason for not obtaining sufficient data, and a description of corrective action taken.

(f) the results of the daily drift tests and quarterly accuracy determinations for the SO2, NOx, CO, HCl CEMs.

(g) results of all performance tests, including supporting calculations, along with maximum demonstrated unit load, and maximum PM control device inlet temperature.

(h) the names of the combustor chief facility operator, shift supervisors, and control room operators who have been fully certified, or provisionally certified, by the American Society of Mechanical Engineers (ASME) or an equivalent State-approved certification, including the dates of initial and renewal certifications and documentation of current certification. This subcondition does not apply to those individuals who have obtained full certification from the ASME on or before August 23, 1999.

(i) the names of the combustor chief facility operator, shift supervisors, and control room operators who have completed the EPA municipal waste combustor operator training course or a State-approved equivalent course, including documentation of training completion. Those chief facility operators, shift supervisors and control room operators who have obtained full certification prior to August 23, 1999, do not need to be recertified.

(j) the supplemental fuel usage.

V. REPORTING REQUIREMENTS.

 # 019 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall submit, to both the USEPA and the Department, semiannual reports that shall include the following information :

(1) A list of PM, lead, cadmium, opacity, mercury, dioxin/furans, and fugitive ash emission levels achieved during the performance tests.

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(2) A list of the highest emission level recorded for SO2, NOx, CO, HCl, municipal waste combustor unit load level, and PM control device inlet temperature based on the data recorded using CMS.

(3) The highest opacity level measured and recorded.

(4) The total number of hours per calendar quarter and hours per calendar year that valid data for SOx, NOx, CO, HCl, municipal waste combustor unit load, or PM control device inlet temperature data were not obtained.

(5) The total number of hours that data for SO2, NOx, CO, HCl, combustor load, and PM control device inlet temperature were excluded from the calculation of average emission concentrations of parameters.

(b) The semiannual reports shall include information from the preceding calendar year for the year being reported, in order to provide the Department with a summary of the performance of this facility over a 2-year period.

(c) The semiannual report shall include the following information for any recorded pollutant or parameter that does not comply with the pollutant or parameter limit:

(1) SO2, NOx, CO, HCl, combustor load level, PM control device inlet temperature, and opacity.

(2) Any exceedance of the applicable levels for the following: PM, opacity, mercury, cadmium, lead, dioxin/furans, and fugitive ash. A copy of the test report documenting the emission levels and the corrective action taken, shall accompany the report.

(d) The semiannual reports shall be submitted as a paper copy, postmarked on or before August 1 and February 1 following the proceeding 6-month period ending each December and June, respectively.

(e) Temperature values submitted in each quarterly report shall consist of actual temperature values plus 950°F, the difference measured at the surrogate location and the demonstrated 1800°F for one (1) second retention time location.

(f) All CEM reports, including CEMS violations, shall be submitted to the Department within thirty (30) days after each quarter, unless otherwise approved the Department. The Department reserves the right to require the report submissions with a format acceptable to the Department.

(g) The permittee shall submit the following reports:

(1) a semi annual deviation report, due by October 1, of each year, for the period covering January 1 through June 30 of the same year. Note: The annual certification of compliance fulfills the obligation for the second deviation reporting period (July 1 through December 31 of the previous year).

(2) For those contaminants monitored by a Department certified CEMS for which the Department's Enforcement Policy - Continuous Emission Monitoring System (CEMS) established penalties for excess emissions, the aforementioned notification and reporting requirements shall be waived.

VI. WORK PRACTICE REQUIREMENTS.

 # 020 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) Combustor Operation Requirements

(1) No solid waste shall be charged into the combustor(s) until equilibrium has been attained in the furnace zones and the temperature of the combustion gases reach 1800°F (based upon a surrogate temperature of 850°F as displayed on the facility CEMs) for one (1) second of retention time when the combustor is empty. All control equipment shall be operational and functioning properly prior to the introduction of solid waste into the combustor(s).

(2) During the process of all planned shut downs of each combustor, auxiliary burners shall be used to ensure that the temperature of the combustion gases does not drop below 1600°F while any waste material is still being incinerated. All

control equipment shall be operational and functioning properly until all of the solid waste is incinerated.

(3) The charging of waste to each combustor shall automatically cease through the use of an interlock system, if:

(A) The combustor temperature measured at the furnace roof, at the Department approved location, drops below 650°F, (a Department approved reference temperature which corresponds to 1600°F), for a 15-minute period, or,
(B) The CO emissions exceed 600 ppmv, corrected to 7% oxygen on a dry basis for a period of fifteen (15) minutes (this requirement is waived during the startup periods), or
(C) The flue gas oxygen (as measured at the oxygen monitor upstream of the control device) level drops below 3% (wet basis or equivalent dry) for a 15-minute period, or,
(D) The opacity of the exhaust gases is equal to or greater than 10% for a period of 15 minutes.

(4) An adequate spare parts inventory shall be maintained to ensure timely repairs of major component malfunctions.

(b) Operator Training and Certification Requirements

(1) All personnel involved with the operation and maintenance of the combustors, associated pollution control equipment and monitoring equipment shall complete the comprehensive training program as specified in 40 C.F.R. §§60.56a and 60.54b, and according to the schedules specified in 40 CFR §60.39b(c)(4). This program includes operator training to identify waste material and actions to be taken to correct conditions which result from the initiation of the interlock system.

(2) Each facility operator and shift supervisor shall obtain and maintain a current provisional operator certification from either the Amercian Society of Mechanical Engineers (ASME) or a state certification program, and each shall have completed full certification or shall have scheduled a full certification exam with either the American Society of Mechanical Engineers or a State Certification program.

(3) Except as provided in subcondition (i) below, each combustor shall not be operated at any time unless one of the following people is on duty at the source:

(A) A fully certified chief facility operator,
(B) A provisionally certified chief facility operator who is scheduled to take the full certification exam,
(C) A fully certified shift supervisor, or
(D) A provisionally certified shift supervisor who is scheduled to take the full certification exam.

(4) Stand-In Provisions

(A) If one of the persons, listed in Condition (b)(3) above, must leave the facility during their operating shift, a provisionally certified control room operator who is on-site, may stand in.
(B) A provisionally certified control room operator may stand in when the chief facility operator or shift supervisor is off-site for more than twelve (12) hours (a normal work shift), but less than two (2) weeks for normal off-site activities including: attending meetings, conferences, training, work travel, temporary reassignment, personal vacation, sick leave, family leave or similar activities. The permittee shall notify the Department, in writing, (by facsimile), within 24 hours, that the stand-in period will exceed twelve (12) hours (a normal work shift).

(5) In the event that the medical conditions, temporary eassignment, job transfer, resignation, dismissal or other circumstances beyond the permittee's control results in or is expected to result in the absence of the chief facility operator or shift supervisor for a period exceeding two (2) weeks, the permittee shall notify the Department in writing and identify what conditions resulted in such absence and what corrective actions have been taken to correct such absence. At the Department's request, the permittee shall prepare written status summary reports demonstrating that a good faith effort has been made and continues to be made to correct the conditions resulting in the absence of the chief facility operator or shift supervisor.

(6) A provisionally certified operator who is newly promoted or recently transferred to a shift supervisor position or a chief facility operator position at the municipal waste combustion unit may perform the duties of the certified chief facility operator or certified shift supervisor without notice to, or approval by, the Department for up to six months before taking the ASME QRO certification exam.

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(7) The permittee shall review the operating manual with each person who has responsibilities affecting the operation of this facility including, but not limited to: chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel, and crane/load operators.

(8) The operating manual review shall include, but not be limited to: operator training to identify waste materials referred to as large non-combustible bulky materials, combustible bulky materials, unacceptable waste, as defined in this permit, and action to be taken to correct conditions which result from abnormal/emergency operation, running and/or shutdown that would cause the initiation of the interlock system.

(9) Each operator shall undergo initial training the date prior to the day the person assumes responsibilities affecting the combustor unit operation, and annually thereafter.

(10) The operating manual shall be kept in a readily accessible location for all persons required to undergo training, and be available to the USEPA and/or the Department upon request.

(11) The permittee shall keep and update on a yearly basis a site-specific operating manual that shall, at a minimum, address the following:

(A) a summary of the applicable standards under this Operating Permit;
(B) a description of basic combustion theory applicable to the combustor(s);
(C) procedures for handling, receiving, and feeding municipal solid waste;
(D) combustor startup, shutdown, and malfunction provisions;
(E) procedures for maintaining proper combustion air supply levels;
(F) procedures for operating the combustors within the standards established under this Operating Permit;
(G) procedures for responding to periodic upset or off-specification conditions;
(H) procedures for minimizing particulate matter carryover;
(I) procedures for ash handling;
(J) procedures for monitoring combustion emissions;
(K) procedures for reporting and recordkeeping;
(L) procedures for responding to emergency situations; and
(M) procedures for monitoring the degree of waste burnout.

(c) Waste Management

(1) The following wastes or materials shall be removed from the tipping room floor for appropriate disposal:

(A) Unacceptable waste, visible hazardous materials, and visible unapproved residual waste as defined by 25 Pa. Code § 287.1 of the Bureau of Waste Management Regulations;
(B) Large non-combustible bulky materials, including visible automotive batteries;
(C) Combustible bulky materials.

(2) The amount of solid waste material stored in the tipping room shall be less than the amount of solid waste material which can be reasonably incinerated within 120 hours of its delivery. If there is reason to believe that the combustor(s) are not capable of incinerating the solid waste material specified in the time frame above, the Department shall be notified in accordance with the malfunction reporting condition of this permit. No additional waste material shall be accepted and all the solid waste material shall be removed, if needed, to prevent the escape of odor beyond the property line. No air shall be exhausted to the outdoor atmosphere from this building during such an occurence without being treated in the combustor(s) unless otherwise authorized by the Department.

(3) Except recyclable materials, open storage of solid waste outside of a building is prohibited.

(4) All wastes or materials which can be airborne or spilled shall be transported in closed containers or tarped trucks.

(d) Tipping Area Management

(1) The tipping area shall be operated at a negative pressure, when any combustor is in operation. The air passing

SECTION D. Source Level Requirements

through all natural draft openings surrounding the tipping floor, including the MWC charging area, shall flow inward continuously.

(2) To ensure negative pressure on the tipping area, at a minimum, the permittee shall:

(A) limit the number of open entrance and exit doors to the tipping floor to one in each direction;
(B) close all truck delivery doors to the tipping floor between 8:00 pm and 5:00 am every day and all day on Sunday;
(C) use and maintain plastic flaps or other equivalent shielding to reduce the effective opening area on any open truck delivery door to the tipping floor; and
(D) on a daily basis, inspect and log that all roof vents over the tipping floor and combustor charging chutes are closed and that all tipping floor doors and openings not in use that day are closed.

(e) The permittee shall operate and maintain a telephone dial-up telemetry system which has been approved by the Department, and is consistent with the "Air Quality Compliance Assurance Policy for Municipal Waste Incinerators", July 1989, as revised (CAP for MWI).

VII. ADDITIONAL REQUIREMENTS.

 # 021 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The combustors are subject to the Department's Air Quality Compliance Assurance Policy (CAP) for Municipal Waste Incinerators finalized and signed by the Department on July 12, 1989, and it's latest amendments.

(b) The combustors are subject to the provisions of EPA approved State section 111(d)/129 plan implementing 40 C.F.R. 60 subpart Cb for Large Municipal Waste Combustors, dated April 27, 1998 (67 FR 68935).

(c) The design, construction, and operation of each combustor as stated in the Plan Approval Application, in accordance with the Department's BAT for MWI and its subsequent amendments issued up to the issuance of the Plan Approval and the conditions of the Plan Approval shall be adhered to. Department approval must be obtained prior to modification of any of the design, construction, and operation of each combustor.

(d) The combustors are not subject to the provisions of 40 C.F.R. 60 Subpart Db as per 40 C.F.R. §60.40b(k).

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 107 Source Name: VEHICLE TRAFFIC ON ROADS

Source Capacity/Throughput: N/A DUST

PROC 107	→	STAC Z01

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions
No person may permit the emission into the outdoor atmosphere of a fugitive air contaminant from a source other than the following:

(a) Grading, paving, and maintenance of roads and streets.
(b) Use of roads and streets. Emissions from material in or on trucks, railroad cars, and other vehicular equipment are not considered as emissions from use of roads and streets.
(c) Stockpiling of materials.

 # 002 [25 Pa. Code §123.2]
Fugitive particulate matter
A person may not permit fugitive particulate matter to be emitted into the outdoor atmosphere from this source, if such emissions are visible at the point the emissions pass outside the person's property.

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

No additional record keeping requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 003 [25 Pa. Code §123.1]
Prohibition of certain fugitive emissions
The permittee shall take all reasonable actions to prevent particulate matter from becoming airborne from this source. These actions shall include, but not be limited to, the following:

(a) Application of asphalt, water, or other suitable chemicals, on dirt roads, material stockpiles and other surfaces which may give rise to airborne dusts.
(b) Paving and maintenance of roadways.

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(c) Prompt removal of earth or other material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or by other means.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 108 Source Name: COOLING TOWER

Source Capacity/Throughput:

PROC 108 → CNTL C108 → STAC Z108

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) PM10 emissions from the cooling tower shall not exceed 2.39 tons per year on a 12-month rolling sum.

(b) The total dissolved solids (TDS) concentration in the circulating water shall not exceed 2,780 ppm, by weight.

Throughput Restriction(s).

 # 002 [25 Pa. Code §127.512]
Operating permit terms and conditions.
The cooling tower is permitted to use Chester Water Authority (CWA) water and/or DELCORA secondary effluent as makeup water.

Control Device Efficiencies Restriction(s).

 # 003 [25 Pa. Code §127.512]
Operating permit terms and conditions.
If DELCORA secondary effluent is used, the conductivity of the makeup water, measured at Permeate, shall not exceed 200 uS/cm on a daily average basis to be considered the TDS removal efficiency of 95%.

II. TESTING REQUIREMENTS.

 # 004 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The permittee shall measure cirlculating water TDS concentration at the inlet of the cooling tower water once per calendar quarter.

(b) The permittee shall record the circulating water conductivity measured at the inlet of the cooling tower at the same time when the above samples are taken.

(c) The TDS concentrations shall be measured using methods and/or procedures approved by the Department.

(d) The data of conductivity vs TDS concentration collected may be used for re-establishing the conductivity limit in the future, when the Department believes that an adjustment is necessary.

III. MONITORING REQUIREMENTS.

 # 005 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall operate and maintain devices that continuously monitor and record the following:

(a) The amount of cooling tower circulating water on a monthly basis, or the rated capacity of the pump in gallons per hour and pump operating hours on a monthly basis.

(b) The circulating water conductivity, measured at the inlet of the cooling tower, averaged daily and monthly.

(c) The makeup water conductivity, measured at Permeate, on a daily average.

SECTION D. Source Level Requirements

IV. RECORDKEEPING REQUIREMENTS.

 # 006 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) The permittee shall keep the following records for 5 years:

(1) The PM10 emissions on a monthly basis calculated using the following equation, and 12-month rolling sum:

E = Q (gal/month) x 8.34 (lb/gal) x Drift rate (0.001%) x TDS (ppmw in circulating water) x 53 % mass (smaller than PM10)

Where:

E = Emissions in pounds per month (lb/month)
Q = Circulating water rate (gallons per month)
1 gallon of water = 8.34 lb
% mass smaller than PM10 = 53%

(2) The circulating water conductivity readings on a daily average and monthly average.

(3) The amount of circulating water in gallons per month either recorded directly or calculated through the rated capacity of the pump and monthly operating hours.

(4) The date and the TDS concentrations in ppmw measured each quarter and the conductivities readings at each time of sampling. The purpose of these records is to establish a basis of the conductivity vs TDS concentration.

(5) The makeup water conductivity measured at Permeate as daily average.

(b) The permittee may use TDS concentration of 2,780 ppmw to calculate the PM emissions, if the monthly rolling average conductivity is below 4,000 uS/cm.

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 007 [25 Pa. Code §127.512]
Operating permit terms and conditions.

(a) The permittee shall operate the ultrafiltration system and reverse osmosis unit in accordance with the manufacturer's specifications and good air pollution control practices.

(b) The drift eliminators shall be installed, operated, and maintained in accordance with the manufacturer's specifications and good air pollution control practices.

(c) The drift eliminators shall not be modified or repaired without the Department's prior written approval, if the modification or repair will result in change of the eliminators' removal efficiency.

(d) The conductivity of the cooling tower circulating water shall be maintained below 4,000 uS/cm on a monthly average.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 110 Source Name: LIME STORAGE SILO

Source Capacity/Throughput:

PROC 110 → STAC S110

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §123.13]
Processes
Particulate matter emissions from the exhausts associated with the lime silo(s) shall not exceed 0.02 gr/dscf.

Control Device Efficiencies Restriction(s).

 # 002 [25 Pa. Code §127.512]
Operating permit terms and conditions.
The silo fabric filer equipment will be operated below prescribed manufacturer operating pressures during offloading. Compliance with this operating pressure limit deemed compliance with the particulate matter emission limit in Condition #001 for this source.

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

III. MONITORING REQUIREMENTS.

 # 003 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

(a) A silo area operator must be present when the silo is being filled.

(b) The silo area operator shall

(1) Monitor the loading operating pressure and observe the silo stack for visible emissions during the silo loading.

(2) Record the silo loading

(i) date;
(ii) visible emissions observed;
(iii) the loading operating pressure;
(iv) correct actions taken, if any; and
(v) initial each record.

IV. RECORDKEEPING REQUIREMENTS.

 # 004 [25 Pa. Code §127.511]
Monitoring and related recordkeeping and reporting requirements.

The permittee shall keep the following records for each silo loading operation:

(a) date;
(b) visible emissions observed;
(c) the loading operating pressure;
(d) correct actions taken, if any; and
(e) initial each record.

SECTION D. Source Level Requirements

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 005 [25 Pa. Code §127.512]
Operating permit terms and conditions.

If visible emissions present during silo loading, the permittee shall

(a) investigate the incident;

(b) take corrective actions; and

(c) record the date of the incident and specify the corrective actions taken.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 111 Source Name: ASH HANDLING

Source Capacity/Throughput:

PROC 111 → STAC Z111

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Visible emissions of fugitive combustion ash from the ash conveying system shall not be in excess of 5% of the observation period (9 minutes per 3-hour period), as determined by EPA Reference Method 22, except as described below:

(a) the emission limit does not apply to visible emissions discharged inside buildings or enclosures; and

(b) the emission limit does not apply during the maintenance and repair of ash handling systems.

II. TESTING REQUIREMENTS.

 # 002 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Testing requirements for this source (Ash Handling) are specified in Section E - Combustors, Source Group 1.

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

 # 003 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Recodkeeping requirements for this source (Ash Handling) are specified in Section E - Combustors, Source Group 1.

V. REPORTING REQUIREMENTS.

 # 004 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Reporting requirements for this source (Ash Handling) are specified in Section E - Combustors, Source Group 1.

VI. WORK PRACTICE REQUIREMENTS.

 # 005 [25 Pa. Code §127.512]
Operating permit terms and conditions.
(a) The ash removal equipment including the ash extractors and fly ash conveyors shall be enclosed.

(b) The ash shall be loaded in an enclosed area or handled wet in closed containers.

VII. ADDITIONAL REQUIREMENTS.

No additional requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 112 Source Name: COLD DEGREASERS (2)

Source Capacity/Throughput: N/A SOLVENT

PROC 112 → STAC Z112

I. RESTRICTIONS.

No additional requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

III. MONITORING REQUIREMENTS.

No additional monitoring requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

IV. RECORDKEEPING REQUIREMENTS.

 # 001 [25 Pa. Code §129.63]
Degreasing operations

(a) The permittee shall maintain the following information:

(1) The name and address of the solvent supplier.
(2) The type of solvent including the product or vendor identification number.
(3) The vapor pressure of the solvent measured in mm hg at 20°C (68°F).

(b) An invoice, bill of sale, certificate that corresponds to a number of sales, Material Safety Data Sheet (MSDS), or other appropriate documentation acceptable to the Department may be used for compliance status.

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 002 [25 Pa. Code §129.63]
Degreasing operations

(a) The immersion cold cleaning machines shall have a freeboard ratio of 0.50 or greater.

(b) The immersion cold cleaning machines shall:

(1) Have a permanent, conspicuous label summarizing the operating requirements in paragraph (c), below. In addition, the label shall include the following discretionary good operating practices:

(A) Cleaned parts should be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts should be positioned so that solvent drains directly back to the cold cleaning machine.
(B) When a pump-agitated solvent bath is used, the agitator should be operated to produce a rolling motion of the solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned.

SECTION D. Source Level Requirements

(C) Work area fans should be located and positioned so that they do not blow across the opening of the degreaser unit.

(2) Be equipped with a cover that shall be closed at all times except during cleaning of parts or the addition or removal of solvent. For remote reservoir cold cleaning machines which drain directly into the solvent storage reservoir, a perforated drain with a diameter of not more than 6 inches shall constitute an acceptable cover.

(c) The cold cleaning machines shall be operated in accordance with the following procedures:

(1) Waste solvent shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.
(2) Flushing of parts using a flexible hose or other flushing device shall be performed only within the cold cleaning machine. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.
(3) Sponges, fabric, wood, leather, paper products and other absorbent materials may not be cleaned in the cold cleaning machine.
(4) Air agitated solvent baths may not be used.
(5) Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately.

(d) The permittee may not use any solvent with a vapor pressure of 1.0 millimeter of mercury (mm Hg) or greater and containing greater than 5% VOC by weight, measured at 20°C (68°F) containing VOCs.

(e) The permittee shall obtain the following written information from the solvent provider:

(1) The name and address of the solvent supplier.
(2) The type of solvent including the product or vendor identification number.
(3) The vapor pressure of the solvent measured in mm hg at 20°C (68°F).

VII. ADDITIONAL REQUIREMENTS.

 # 003 [25 Pa. Code §127.512]
Operating permit terms and conditions.

To avoid being subject to the requirements of 40 CFR Part 63 Subpart T, the permittee shall not use any solvent, in the degreasers, containing methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5) or chloroform (CAS No. 67-66-3), or any combination of these halogenated HAP solvents, in a total concentration greater than 5 percent by weight, as a cleaning and/or drying agent.

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 113 Source Name: EMERGENCY ENGINE

Source Capacity/Throughput:

PROC 113	→	STAC S113

I. RESTRICTIONS.

Emission Restriction(s).

 # 001 [25 Pa. Code §127.512]
Operating permit terms and conditions.
Nitrogen Oxides (NOx) emissions from this engine shall not exceed 100lb/hr, 1000 lb/day, 2.75 tons per ozone season, and 6.6 tons per year on a 12-month rolling sum.

 # 002 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4205]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?
As per 40 CFR §§60.4205(b) and 60.4202(a)(2), the emissions from the engine shall not exceed the following in grams per HP-Hour over the entire life of the engine:

(a) 3.0 for NOx + HC
(b) 2.6 for CO
(c) 0.15 for PM

 # 003 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4206]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?
The permittee must operate and maintain the engine to achieve the emission standards as required in 40 CFR § 60.4205(b) over the entire life of the engine.

Fuel Restriction(s).

 # 004 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4207]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?
The permittee must use diesel fuel that meets the following per-gallon standards:

(1) Sulfur content: 15 ppm maximum;

(2) Cetane index or aromatic content:

(i) A minimum cetane index of 40; or

(ii) A maximum aromatic content of 35 volume percent.

Operation Hours Restriction(s).

 # 005 [25 Pa. Code §127.512]
Operating permit terms and conditions.
The operation of the engine shall not exceed 500 hours per year.

 # 006 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4211]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?
In order for this engine to be considered an emergency engine, the engine shall be operated in accordance with the

SECTION D. Source Level Requirements

requirements specified in 40 CFR §60.4211(f).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

III. MONITORING REQUIREMENTS.

 # 007 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4209]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

The emergency engine must be equipped with a non-resettable hour meter.

IV. RECORDKEEPING REQUIREMENTS.

 # 008 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4214]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

The permittee must keep the following records for the engine:

(a) Reason that the engine was in operation; and
(b) Time of each operation of the engine.

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 009 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4211]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) As per 40 CFR §60.4211(a), the permittee shall

(1) Operate and maintain the engine and control device according to the manufacturer's emission-related written instructions;

(2) Change only those emission-related settings that are permitted by the manufacturer; and

(3) Meet the requirements of 40 CFR Parts 89 and 1068 that apply.

(b) The engine must be installed and configured according to the manufacturer's emission-related specifications.

VII. ADDITIONAL REQUIREMENTS.

 # 010 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4200]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Am I subject to this subpart?

(a) Source ID 113 is an emergency stationary CI RICE purchased and installed in 2011.

Manufacturer: Cummins Inc.

SECTION D. Source Level Requirements

Model No.: QSL9-G2 NR3
EPA Certification No.: CEX-STATCI-11-21 (Date issued: 10/14/2010)
EPA Diesel Engine Family: BCEXL0540AAB
Engine nameplate HP: 364
Displacement: 8.9 liters
Emission control device: Turbocharged and CAC

(b) The permittee fulfilled the requirement of 40 CFR §60.4211(c) by purchasing an engine certified to the emission standards in 40 CFR §60.4205(b).

 # 011 [40 CFR Part 60 Standards of Performance for New Stationary Sources §40 CFR 60.4218]
Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
What parts of the General Provisions apply to me?

The permittee shall comply with the General Provisions in 40 CFR §§60.1 through 60.19 that apply.

***** Permit Shield in Effect. *****

SECTION D. Source Level Requirements

Source ID: 114 Source Name: EMERGENCY FIRE PUMP ENGINE

Source Capacity/Throughput:

PROC 114	→	STAC S114

I. RESTRICTIONS.

Operation Hours Restriction(s).

 # 001 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6640]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
How do I demonstrate continuous compliance with the emission limitations, operating limitations, and other requirements?
The permittee must operate the emergency stationary RICE according to the requirements specified in 40 CFR §63.6640(f).

II. TESTING REQUIREMENTS.

No additional testing requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

III. MONITORING REQUIREMENTS.

 # 002 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6625]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
What are my monitoring, installation, operation, and maintenance requirements?
The permittee must install a non-resettable hour meter if one is not already installed.

IV. RECORDKEEPING REQUIREMENTS.

 # 003 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6655]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
What records must I keep?
(a) The permittee must keep records of the maintenance conducted on the stationary RICE.

(b) The permittee must keep records of the hours of operation of the engine recorded through the non-resettable hour meter. The permittee must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.

V. REPORTING REQUIREMENTS.

No additional reporting requirements exist except as provided in other sections of this permit including Section B (Title V General Requirements).

VI. WORK PRACTICE REQUIREMENTS.

 # 004 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6602]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
What emission limitations must I meet if I own or operate an existing stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions?
(a) Except during periods of startup, the permittee shall

(1) Change oil and filter every 500 hours of operation or annually, whichever comes first.

SECTION D. Source Level Requirements

(2) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary;

(3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

(b) During periods of startup, the permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.

 # 005 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6605]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
What are my general requirements for complying with this subpart?

(a) The permittee must be in compliance with the requirements in 40 CFR 63 Subpart ZZZZ that apply to this enigne at all times.

(b) At all times the permittee must operate and maintain this engine and monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions.

 # 006 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6625]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
What are my monitoring, installation, operation, and maintenance requirements?

The permittee shall operate and maintain the stationary RICE according to the manufacturer's emission-related written instructions or develop an own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

VII. ADDITIONAL REQUIREMENTS.

 # 007 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6585]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
Am I subject to this subpart?

The engine (manufactured by Cummins Engine Company, Inc. Model No. NT-855 F 3) is subject to the provisions of 40 CFR 63 Subpart ZZZZ.

 # 008 [40 CFR Part 63 NESHAPS for Source Categories §40 CFR 63.6665]
Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
What parts of the General Provisions apply to me?

The permittee must comply with the general provisions of 40 CFR 63 Subpart A that apply.

***** Permit Shield in Effect. *****

SECTION E. Alternative Operation Requirements.

No Alternative Operations exist for this Title V facility.

SECTION F. Emission Restriction Summary.

Source Id	Source Description
101	ROTARY COMBUSTER 1

Emission Limit			Pollutant
7.200	UG/DSCM	7% O2	Arsenic Coumpounds
0.200	UG/DSCM	7% O2	Beryllium Compounds
29.950	Lbs/Hr	7% O2 dry basis	CO
100.000	PPMV	7% O2 dry basis 24-hr block arithmetic average	CO
15.800	UG/DSCM	7% O2	Cadmium Compounds
2.300	UG/DSCM	7% O2	Chromium Compounds
30.000	UG/DSCM	7% O2	Furan
25.000	PPMV	7% O2 dry basis on a 24 hr daily arithmetic average or 95% weight reduction	Hydrogen Chloride (Anhydrous)
36.580	Lbs/Hr	7% O2 dry basis	Hydrogen Chloride (Anhydrous)
166.000	UG/DSCM	7% O2	Lead
50.000	UG/DSCM	7% O2, or 85% weight reduction	Mercury Compounds
25.000	UG/DSCM	7% O2	Nickel Compounds
0.010	gr/DRY FT3	7% O2 dry basis	PM10
5.800	Lbs/Hr		PM10
29.000	PPMV	or 80% reduction, 7% O2 dry basis	SOX
68.450	Lbs/Hr	7% O2 and dry basis, per combustor and	SOX
0.010	gr/DRY FT3	7% O2	TSP
0.020	gr/DRY FT3	Lime Silo	TSP
5.800	Lbs/Hr	7% O2	TSP
37.600	Lbs/Hr	Aggregate of 6 combustors	VOC

Source Id	Source Description
102	ROTARY COMBUSTER 2

Emission Limit			Pollutant
7.200	UG/DSCM	7% O2	Arsenic Coumpounds
0.200	UG/DSCM	7% O2	Beryllium Compounds
29.950	Lbs/Hr	7% O2 dry basis	CO
100.000	PPMV	7% O2 dry basis 24-hr block arithmetic average	CO
15.800	UG/DSCM	7% O2	Cadmium Compounds
2.300	UG/DSCM	7% O2	Chromium Compounds
30.000	UG/DSCM	7% O2	Furan
25.000	PPMV	7% O2 dry basis on a 24 hr daily arithmetic average or 95% weight reduction	Hydrogen Chloride (Anhydrous)
36.580	Lbs/Hr	7% O2 dry basis	Hydrogen Chloride (Anhydrous)
166.000	UG/DSCM	7% O2	Lead
50.000	UG/DSCM	7% O2, or 85% weight reduction	Mercury Compounds
25.000	UG/DSCM	7% O2	Nickel Compounds
0.010	gr/DRY FT3	7% O2 dry basis	PM10
5.800	Lbs/Hr		PM10
29.000	PPMV	or 80% reduction, 7% O2 dry basis	SOX
68.450	Lbs/Hr	7% O2 and dry basis, per combustor and	SOX
0.010	gr/DRY FT3	7% O2	TSP
0.020	gr/DRY FT3	Lime Silo	TSP

SECTION F. Emission Restriction Summary.

Source Id	Source Description

5.800	Lbs/Hr	7% O2	TSP
37.600	Lbs/Hr	Aggregate of 6 combustors	VOC

103 ROTARY COMBUSTER 3

Emission Limit			Pollutant
7.200	UG/DSCM	7% O2	Arsenic Coumpounds
0.200	UG/DSCM	7% O2	Beryllium Compounds
29.950	Lbs/Hr	7% O2 dry basis	CO
100.000	PPMV	7% O2 dry basis 24-hr block arithmetic average	CO
15.800	UG/DSCM	7% O2	Cadmium Compounds
2.300	UG/DSCM	7% O2	Chromium Compounds
30.000	UG/DSCM	7% O2	Furan
25.000	PPMV	7% O2 dry basis on a 24 hr daily arithmetic average or 95% weight reduction	Hydrogen Chloride (Anhydrous)
36.580	Lbs/Hr	7% O2 dry basis	Hydrogen Chloride (Anhydrous)
166.000	UG/DSCM	7% O2	Lead
50.000	UG/DSCM	7% O2, or 85% weight reduction	Mercury Compounds
25.000	UG/DSCM	7% O2	Nickel Compounds
0.010	gr/DRY FT3	7% O2 dry basis	PM10
5.800	Lbs/Hr		PM10
29.000	PPMV	or 80% reduction, 7% O2 dry basis	SOX
68.450	Lbs/Hr	7% O2 and dry basis, per combustor and	SOX
0.010	gr/DRY FT3	7% O2	TSP
0.020	gr/DRY FT3	Lime Silo	TSP
5.800	Lbs/Hr	7% O2	TSP
37.600	Lbs/Hr	Aggregate of 6 combustors	VOC

104 ROTARY COMBUSTER 4

Emission Limit			Pollutant
7.200	UG/DSCM	7% O2	Arsenic Coumpounds
0.200	UG/DSCM	7% O2	Beryllium Compounds
29.950	Lbs/Hr	7% O2 dry basis	CO
100.000	PPMV	7% O2 dry basis 24-hr block arithmetic average	CO
15.800	UG/DSCM	7% O2	Cadmium Compounds
2.300	UG/DSCM	7% O2	Chromium Compounds
30.000	UG/DSCM	7% O2	Furan
25.000	PPMV	7% O2 dry basis on a 24 hr daily arithmetic average or 95% weight reduction	Hydrogen Chloride (Anhydrous)
36.580	Lbs/Hr	7% O2 dry basis	Hydrogen Chloride (Anhydrous)
166.000	UG/DSCM	7% O2	Lead
50.000	UG/DSCM	7% O2, or 85% weight reduction	Mercury Compounds
25.000	UG/DSCM	7% O2	Nickel Compounds
0.010	gr/DRY FT3	7% O2 dry basis	PM10

SECTION F. Emission Restriction Summary.

Source Id	Source Description

5.800	Lbs/Hr		PM10
29.000	PPMV	or 80% reduction, 7% O2 dry basis	SOX
68.450	Lbs/Hr	7% O2 and dry basis, per combustor and	SOX
0.010	gr/DRY FT3	7% O2	TSP
0.020	gr/DRY FT3	Lime Silo	TSP
5.800	Lbs/Hr	7% O2	TSP
37.600	Lbs/Hr	Aggregate of 6 combustors	VOC

105 ROTARY COMBUSTER 5

Emission Limit			Pollutant
7.200	UG/DSCM	7% O2	Arsenic Coumpounds
0.200	UG/DSCM	7% O2	Beryllium Compounds
29.950	Lbs/Hr	7% O2 dry basis	CO
100.000	PPMV	7% O2 dry basis 24-hr block arithmetic average	CO
15.800	UG/DSCM	7% O2	Cadmium Compounds
2.300	UG/DSCM	7% O2	Chromium Compounds
30.000	UG/DSCM	7% O2	Furan
25.000	PPMV	7% O2 dry basis on a 24 hr daily arithmetic average or 95% weight reduction	Hydrogen Chloride (Anhydrous)
36.580	Lbs/Hr	7% O2 dry basis	Hydrogen Chloride (Anhydrous)
166.000	UG/DSCM	7% O2	Lead
50.000	UG/DSCM	7% O2, or 85% weight reduction	Mercury Compounds
25.000	UG/DSCM	7% O2	Nickel Compounds
0.010	gr/DRY FT3	7% O2 dry basis	PM10
5.800	Lbs/Hr		PM10
29.000	PPMV	or 80% reduction, 7% O2 dry basis	SOX
68.450	Lbs/Hr	7% O2 and dry basis, per combustor and	SOX
0.010	gr/DRY FT3	7% O2	TSP
0.020	gr/DRY FT3	Lime Silo	TSP
5.800	Lbs/Hr	7% O2	TSP
37.600	Lbs/Hr	Aggregate of 6 combustors	VOC

106 ROTARY COMBUSTER 6

Emission Limit			Pollutant
7.200	UG/DSCM	7% O2	Arsenic Coumpounds
0.200	UG/DSCM	7% O2	Beryllium Compounds
29.950	Lbs/Hr	7% O2 dry basis	CO
100.000	PPMV	7% O2 dry basis 24-hr block arithmetic average	CO
15.800	UG/DSCM	7% O2	Cadmium Compounds
2.300	UG/DSCM	7% O2	Chromium Compounds
30.000	UG/DSCM	7% O2	Furan
25.000	PPMV	7% O2 dry basis on a 24 hr daily arithmetic average or 95% weight reduction	Hydrogen Chloride (Anhydrous)

SECTION F. Emission Restriction Summary.

Source Id	Source Description

36.580	Lbs/Hr	7% O2 dry basis	Hydrogen Chloride (Anhydrous)
166.000	UG/DSCM	7% O2	Lead
50.000	UG/DSCM	7% O2, or 85% weight reduction	Mercury Compounds
25.000	UG/DSCM	7% O2	Nickel Compounds
0.010	gr/DRY FT3	7% O2 dry basis	PM10
5.800	Lbs/Hr		PM10
29.000	PPMV	or 80% reduction, 7% O2 dry basis	SOX
68.450	Lbs/Hr	7% O2 and dry basis, per combustor and	SOX
0.010	gr/DRY FT3	7% O2	TSP
0.020	gr/DRY FT3	Lime Silo	TSP
5.800	Lbs/Hr	7% O2	TSP
37.600	Lbs/Hr	Aggregate of 6 combustors	VOC

110 LIME STORAGE SILO

Emission Limit		Pollutant
0.020	gr/CF	PM10

113 EMERGENCY ENGINE

Emission Limit		Pollutant
2.600	GRAMS/HP-Hr	CO
3.000	GRAMS/HP-Hr	NOX
0.150	GRAMS/HP-Hr	PM10

Site Emission Restriction Summary

Emission Limit			Pollutant
50.000	Tons/Yr	12-month rolling sum	VOC

SECTION G. Miscellaneous.

The Department has determined that the emissions from the following activity, excluding those indicated as site level requirements, in Section C, of this permit, do not require additional limitations, monitoring, or recordkeeping:

4,000 gal. fuel oil storage tank
3,000 gal. nitrogen tank
5,200 gal. sodium hypochlorite tank
4,200 gal sulfuric acid tank
300 hp emergency diesel fire pump
2,500 gal diesel tank

_____
The following is a list of wastes approvable for burning at American Ref-Fuel, as noted in the Department's Waste Permit No. 400593:

FORM "R" Residual Wastes Requiring Chemical Analyses

Acidic Chemicals (pH<6) (RWC 301)
Basic Chemicals (pH>8) (RWC 302)
Combustible Chemicals (RWC 303)
Chemical Salts (RWC 304)
Carbon residues (decoloring, filtering) (RWC 305)
Surface Coating (solid, semi-solid paints, polishes, adhesives, ink) (RWC 306)
Filter Aids (only combustible filter aids) (RWC 307)
Filter Media (RWC 308)
Spent dyes (RWC 309)
Detergents, cleaning agents (RWC 310)
Off-spec products, intermediates (RWC 311)
Wood wastes (treated wood) (RWC 403)
Halogenated plastics (PVC, teflon, CPE) (RWC 409)
Agricultural wastes (fertilizers, feed supplements) (RWC 411)
Oil-contaminated waste (spent absorbent, oily rags) (RWC 503)
Spent catalyst (RWC 505)
Spill residues (RWC 506)
On-site generated used oil
Empty containers (processed by a Department approved procedure)

FORM "S" Residual Wastes with Chemical Analyses Waived

Leather scrap wastes
Textile wastes (yarn, fabric, fiber, and elastic)
Carbon filters and carbon residues *
Cosmetic wastes ***
Finished wood waste (painted, stained, non-treated)
Markers and paint stick shavings *
Pharmaceutical waste ***
Photographic waste **
Spent cleaning rags, excluding rags containing solvent *
Glass reinforced plastics
Carpet/fabric scrap waste
Cured resin waste
Foam type waste
Food waste
Fresh air intake filters
Gasket waste (unused)
Labels/packing waste
Non-halogenated plastic waste (polyethlene, polystyrene, polyurathane)
Rubber elastomer waste (including waste tires, whole and processed)
Screen waste
Shingle scrap waste

SECTION G. Miscellaneous.

Styrofoam waste *
Thermal insulation waste
Personal protective equipment (unused or uncontaminated)
Untreated wood, sawdust and shavings (must be from untreated wood)
Empty containers
Linoleum waste
Plant waste
Nylon material waste
Packing/shipping material waste
Paper, cardboard waste

* no more than 10% per truckload, unless a Form S for the generator is approved.
** no more than 5% per truckload, unless a Form S for the generator is approved.
*** Subject to specific Form S approval.

_____
May 2006. APS: 570425, AUTH: 615122. The Department renewed the operating permit for this facility and has made a change in the name of the facility from American Ref-Fuel Company of Delaware Valley, L.P. to Covanta Delaware Valley, L.P. (the federal tax ID remained the same). The following changes have taken place since the permit was last amended on 8-22-2002:

- Source 112, two (2) cold cleaning machines have been added.
- Reference to the combustion efficiency interlock for the combustors has been removed from the permit due to an earlier installation of a CEM for CO.

The facility is not subject to CAM, because the controlled sources either have applicable federal regulations that were proposed after November 15, 1990, or the emissions are monitored by CEMS. Both of these exemptions are qualified by as defined in 40 CFR §63.2(b)(i).

_____
November, 2006. APS: 570425, AUTH: 650636. Minor permit modification to combustors to clarify wording found in the BAT that the combustors are subject to.

December 3, 2010 - AUTH: 861896. OP Renewal.

_____
March 2008. APS: 570425, AUTH: 782425. The Department amended this permit to address a discrepancy between the applicable state BAT policy and the federal regulation for dioxin/furan testing.

_____
January 20, 2009, (APS: 570425; AUTH: 782425) TVOP amendment.

_____
December 2, 2010, (APS: 570425; AUTH 861896) TVOP renewal.

_____
March 30, 2015 (AUTH ID 1067453) TVOP amendment to incorporate Plan Approval No. 23-0004A.

_____
Nov. 6, 2015 (AUTH ID: 1099034) TVOP renewal, and incorporate an emergency engine (Source ID EG01) (RFD No. 2567).

****** End of Report ******

Exhibit 12

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

JONATHAN P. STEVERSON
INTERIM SECRETARY

PERMITTEE

Hillsborough County
Public Works Department
332 N Falkenburg Rd.
Tampa, Florida 33619

Authorized Representative: Ms. Kimberly Byer
Director, Solid Waste Management Division

Air Permit No. 0570261-018-AC (PSD-FL-369E)
Hillsborough County Resource Recovery Facility
Standard Industrial Classification Code No. 4953
Permit Expires: December 31, 2015

Mercury (Hg) Monitoring Requirements - Unit 4
Hillsborough County, Florida

PROJECT

This is the final air construction permit that authorizes removal of the requirement to continuously monitor mercury (Hg) emissions from Unit 4 following multi-year demonstration of very low emission rates. This existing plant is a mass-burn municipal waste combustor (MWC) plant categorized under Standard Industrial Classification No. 4953. This existing plant is located in Hillsborough County at 350 North Falkenburg Road in Tampa, Florida. The UTM Coordinates are: Zone 17, 368.2 km East and 3092.7 km North; Latitude: 27° 57' 14" North and Longitude: 82° 40' 22" West.

This final permit is organized into the following sections: Section 1 (General Information) and Section 2 (Permit Revisions). As noted in the Final Determination provided with this final permit, no changes were made to the draft version of this permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality. A copy of this permit modification shall be filed with the Air Permit No. 0570261-010-AC (PSD-FL-369B) and shall become part of the permit

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Sincerely,

For:

Jeffery F. Koerner, Deputy Director
Division of Air Resource Management

JFK/dlr/aal

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit Revision) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Kimberly Byer, Hillsborough County: byerk@hillsboroughcounty.org
Glenn Hoag, Covanta Hillsborough: ghoag@covantaenergy.com
Stephanie Allois, Covanta Energy: sallois@covantaenergy.com
Steve Morgan, DEP SWD: steve.morgan@dep.state.fl.us
Danielle Henry, DEP SWD: danielle.d.henry@dep.state.fl.us
Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us (for reading file)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

FACILITY DESCRIPTION

This existing facility consists of: four municipal solid waste combustors (Unit Nos. 1, 2, 3 and 4) with auxiliary burners; lime storage and processing facilities; ash storage and processing facilities; cooling towers; and, ancillary support equipment.

The total capacity of the Hillsborough County Resource Recovery Facility is 1,800 tons/day (TPD) of municipal solid waste fuel. The gross nominal electric generating capacity of the facility is 47 megawatts (MW).

The facility is owned by Hillsborough County and is currently operated by Covanta Hillsborough, Inc. a subsidiary of Covanta Energy Corporation.

FACILITY REGULATORY CLASSIFICATION

- This facility is a major source of hazardous air pollutants (HAP).
- This facility does not operate units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.

PROPOSED PROJECT

The project is to remove construction permit conditions related to mercury (Hg) continuous monitoring for Unit 4. Since startup of Unit 4, the operator has conclusively demonstrated that the unit is a low Hg emitter. Unit 4 consistently emits an order of magnitude less Hg in terms of short term emissions than permitted and two orders of magnitude less Hg in terms of annual emissions than originally projected.

The following permit conditions are revised as indicated. ~~Strikethrough~~ is used to denote the deletion of text. Double-underlines are used to denote the addition of text. All changes are emphasized with yellow highlight in the electronic document.

Permit Being Modified: Permit No. 0570261-010-AC/PSD-FL-369B

Revises and Replaces Previous Modification: Permit No. 0570261-013-AC/PSD-FL-369C

Affected Emissions Units: Municipal Waste Combustor & Auxiliary Burners - Unit 4 (E.U. ID No. 107)

The affected Specific Conditions are **B.19.**, **B.26.**, **B.30.**, **B.32.**, **B.33**. and **B.35**., from Section III of Permit 0570261-010-AC/PSD-FL-369B. The previously modified versions of these conditions as given in Section 2 of Air Permit Modification 0570261-013-AC/PSD-FL-369C are hereby revised and replaced as follows:

B.19. Mercury (Hg): Emissions of Hg shall not exceed 28 μg/dscm or an emissions reduction of 85 percent shall be achieved as demonstrated during the required annual stack test. During the first two years of operation, emissions of Hg shall not exceed 0.022 lb/hr as measured during quarterly stack tests to provide reasonable assurance that 12-month emissions are less than the applicable PSD threshold of 200 lb/yr.

~~After the certification of the Hg-CEMS or the Hg-CASS as described in **Specific Condition 35.,** the owner or operator may demonstrate compliance with all Hg limits in this permit with data collected during an annual stack test or from the Hg-CEMS or the Hg-CASS.~~

~~*{Permitting Note: If the Hg-CEMS is certified prior to the end of the first two years of operation, the permittee may use the CEMS in lieu of the remaining quarterly tests.}*~~

B.26. Subsequent Compliance Testing: Annual compliance stack tests for NO_X, CO, SO_2, HCl, PM/PM_{10}, lead, cadmium, dioxins/furans, and ammonia shall be conducted during each federal fiscal year (October 1st to September 30th). Data collected from the reference method during the required RATA tests for CO, NO_X, and SO_2 may be used to satisfy the annual testing requirement provided the notification requirements and emission testing requirements for performance and compliance tests of this permit are satisfied.

~~Prior to the certification of the Hg-CEMS or the Hg-CASS as described in **Specific Condition 35.**,~~ Performance tests for Hg emissions shall be conducted quarterly during the first two years of operation then on a calendar year basis to demonstrate compliance with the concentration/reduction standards.

~~After the certification of the Hg-CEMS or the Hg-CASS as described in **Specific Condition 35.,** the owner or operator may demonstrate compliance with all Hg limits in this permit with data collected from the Hg-CEMS or the Hg-CASS.~~

[Rules 62-297.310(7)(a) and (b), and 62-296.416, F.A.C., and 40 CFR 60.8 and 60.58b]

B.30. CEM Systems: The permittee shall install, calibrate, maintain, and operate continuous emission monitoring systems (CEMS) to measure and record the emissions of CO, NO_X, Hg and SO_2 from Unit 4 in a manner sufficient to demonstrate continuous compliance with the CEMS emission standards of this subsection. All continuous monitoring systems ~~other than the Hg CEMS~~ shall be installed and functioning within the required performance specifications by the time of the initial performance tests. ~~The Hg CEMS shall be installed and functioning within the required performance specifications by the end of the third year of operation as specified in **Specific Condition 35**.~~

a. *CO Monitor:* The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A and shall comply with all requirements of 40 CFR 60.58b. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The required RATA tests shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

b. *NO_X Monitor:* The NO_X monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 2 and shall comply with all requirements of 40 CFR 60.58b. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semiannually to the Compliance Authority. The required RATA tests shall be performed using EPA Method 7E in Appendix A of 40 CFR 60. The NO_X monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

c. *SO_2 Monitor:* The SO_2 monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 2 and shall comply with all requirements of 40 CFR 60.58b. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F. The required RATA tests shall be performed using EPA Method 6C in Appendix A of 40 CFR 60. The SO_2 monitor span values shall be set appropriately, considering the expected range of emissions and corresponding emission standards.

d. *Diluent Monitor:* A continuous emission monitoring system for measuring the oxygen content of the flue gas at each location where carbon monoxide, sulfur dioxide, nitrogen oxides emissions are monitored shall be installed, calibrated, maintained, and operated in accordance with the requirements of 40 CFR 60.58b.

~~e. *Mercury Monitor:* A mercury monitor (Hg CEMS) shall be installed, certified and operated as described in **Specific Condition 35.** below.~~

B.32. CEMS/COMS Certification and Initial Startup: Each CEMS/COMS, other than the Hg CEMS, required by this permit shall be installed prior to startup. Within 60 calendar days of achieving the maximum production rate, but no later than 180 calendar days after initial startup, the owner or operator shall certify each CEMS/COMS. Upon certification of each CEMS/COMS, the owner or operator shall demonstrate compliance with all applicable standards as specified in this permit. The Hg CEMS shall be installed and functioning within the required performance specifications within the first three years of operation as specified in **Specific Condition 35**. [Rules 62-4.070(3), 62-210.800, 62-210.200(BACT) and 62-297.520, F.A.C.; 40 CFR 60.7(a), 60.13(b), and 60.58b, and Appendix B]

B.33. CEMS Data Requirements: The CEMS shall express the results in the units of the applicable standard and in accordance with 40 CFR 60 subparts A, and Eb.

a. *Data Exclusion*: Except for monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, each CEMS shall monitor and record emissions during all operations including episodes of startups, shutdowns, and malfunctions. Limited amounts of CEMS emissions data (other than mercury data) recorded during some of these episodes may be excluded from the corresponding compliance demonstration subject to the provisions of **Specific Conditions 28. and 29.** in this subsection. The permittee shall minimize the duration of data excluded for such episodes to the extent practicable.

b. *Availability*: Monitor availability for each CEMS used to demonstrate compliance shall be 95% or greater in any calendar quarter. Monitor availability shall be reported in the quarterly excess emissions report. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit, except as otherwise authorized by the Compliance Authority. The monitor availability requirements of this condition do not apply to the Hg CEMS~~ for the first two years of operation of the CEM system. (This is consistent with the Hg CEMS availability requirement of subpart Eb.) For the Hg-CEMS, the monitor availability for the 2nd year of operation of the Hg-CEMS shall be 80% annually and for the 3rd year of operation of the Hg-CEMS~~

~~shall be 90% annually, with a goal to achieve 95% annually afterwards unless the permittee indicates that the monitor is incapable of achieving these data availability requirements.~~ If the Hg-CEMS is requested by the permittee to be used for compliance under 40 CFR 60, Subpart Eb then the applicable % monitor availability from 40 CFR 60, Subpart Eb must be met.

B.35. Mercury Continuous Emissions Monitoring System (Hg-CEMS): Within 36 months of commencing operation, the owner or operator shall install and certify a mercury CEMS demonstrated to meet the requirements in Performance Specification 12A (PS-12A), "Specifications and Test Procedures for Total Vapor Phase Mercury Continuous Monitoring Systems in Stationary Sources," or that has passed verification tests conducted under the auspices of the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) Program. If the vendor provides to the Department verification of certification difficulties such that the CEMS cannot be certified by the certification deadline, and every reasonable effort has been made to do so, the Department shall grant a reasonable extension of time to certify the CEMS. After certification the owner or operator will begin reporting Hg mass emissions data. The owner or operator shall adhere to the calibration drift and quarterly performance evaluation procedures and ongoing data quality assurance procedures in 40 CFR Part 60, Appendix F or 40 CFR Part 75, Appendix B. The mass emissions shall be estimated based on the actual data collected no later than 10 days following the end of the month. The mercury monitoring data results shall be submitted quarterly. The CEMS shall only be used as the method of compliance if the owner or operator, at a minimum, meets the requirements of 40 CFR 60.58b(n). Prior to use of the Hg-CEMS as the method to demonstrate compliance, the owner or operator shall submit written notice to the Department, and receive approval for missing data substitution and a data calculation approach plans.

Hg-CEMS Field Test. The permittee shall field test/operate the application of a Hg-CEMS on Unit 4 for three years (i.e. 36 months) ~~1 year (12 months)~~. After the 3 ~~1~~ years of field testing/operation of the Hg-CEMS, the permittee may remove the Hg-CEMS if it is demonstrated Hg emissions are substantially less than the applicable emission standard of 28 micrograms per dry standard cubic meter corrected to 10 percent oxygen (µg/dscm @10% O_2) and the PSD Significant Emission Rate of 200 pounds per year (lb/year), ~~keep or replace the Hg-CEMS with a mercury continuous automated sampling system (Hg-CASS) such as a sorbent trap system.~~ The permittee shall provide the Department with its review and justification if the Hg-CEMS is removed ~~replaced with a Hg-CASS~~.

~~Hg emissions data shall be made available upon request by the Department.~~

~~The Compliance Authority shall be copied on all notifications and reports.~~

[Rules 62-4.070(1) and (3), and 62-212.400(12) (Source Obligation, escape PSD), F.A.C., 40 CFR 60.58b, and, Hillsborough County Environmental Protection Commission Local Ordinance 1-3.53.1(f), *Municipal Solid Waste Incinerators* (for Hg monitoring)]

{Permitting Note: The field testing/operation of the Hg-CEMS occurred February 2012 through May 2015. The results demonstrated that annual emissions are approximately two orders of magnitude less than the PSD threshold of 200 lb Hg/year and short-term emissions are continuously less (by an order of magnitude) than the emission standard of 28 µg/dscm @10% O_2.}

Exhibit 13

COVANTA
Powering Today. Protecting Tomorrow.

Covanta Essex Company
183 Raymond Boulevard
Newark, NJ 07105
Tel: 973-344-0900
Fax: 973-344-4999

June 25, 2021

Via e-mail only

Mr. Anthony Fontana, Chief
NJ Department of Environmental Protection
Bureau of Solid Waste Permitting
P.O. Box 420, Mail Code: 401-02C
401 East State Street, 2nd Floor, West Wing
Trenton, NJ 08625-0420

Subject: Essex County Resource Recovery Facility
Facility ID No. 133546
15-Day Report for Incident Reported on June 4, 2021
Case Number: 21-06-04-1829-17

Dear Mr. Fontana:

On behalf of Covanta Essex Company, the following incident report has been prepared as a follow up report for the incident that was reported to the NJDEP Hotline on June 4, 2021. The report includes a summary of the incident along with information related to the determination as to whether the solid waste is hazardous and provides an explanation of the corrective measures taken to achieve compliance and prevent this from happening in the future. Approval for an extension to the deadline for submitting this report until June 25, 2021 was granted by Tom Byrne via email on June 15, 2021.

If there are any questions regarding this submittal, please do not hesitate to contact me at 973-817-7322.

Sincerely,

Patricia Earls
New Jersey Regional Environmental Manager

Via e-mail
cc: R. Gandhi – NJDEP, Bureau of Solid Waste Compliance & Enforcement
G. Lugo – NJDEP, Bureau of Solid Waste Compliance & Enforcement
T. Byrne – NJDEP Bureau of Solid Waste Permitting
K. Beccia – NJDEP Bureau of Solid Waste Permitting
M. Bendorf – NJDEP Bureau of Solid Waste Permitting
R. Gomez – NJDEP Bureau of Hazardous Waste Compliance & Enforcement

"I certify that I am authorized to represent and serve as signatory on behalf of the person to whom this NOV is issued. I also certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including fines or imprisonment or both, for submitting false, inaccurate or incomplete information."

David Blackmore
Facility Manager

6/25/21
Date

Summary of Incident

The filter bags that were accidentally disposed of offsite were from the last two modules in the Unit 1 baghouse. Each module has 304 filter bags so a total of 608 used filter bags were placed in the dumpster that was picked up by our third-party hauler on June 1, 2021. Per the work order instructions for the driver, the dumpster was required to have been brought to our tipping floor for processing in our boilers but was instead accidentally taken to the DART Transfer Station on Doremus Avenue in Newark, NJ. From there the waste was loaded onto rail cars and taken to the APEX Landfill in Ohio.

Determination on Whether the Solid Waste is Hazardous

Our normal practice for disposing of used filter bags once they are removed from the baghouse compartment, is to double bag them in plastic trash bags, seal the bags, and place them into a dumpster located underneath the baghouse in order to minimize exposure to the environment. The dumpster is then brought to the tipping floor of the facility and processed in our boilers. This practice follows EPA guidance referenced in the October 10, 2014 letter from the EPA which includes an interpretation from the EPA relative to the management of spent baghouse filters from waste to energy facilities. This guidance makes it unnecessary to characterize the bags when they are handled in accordance with our normal procedure described above. The EPA guidance letter is included as an attachment to this report.

In this case, because the used filter bags picked up on June 1, 2021 were inadvertently taken offsite despite our instructions to take them to the tipping floor, there was a concern by Covanta Essex Company that hazardous waste was potentially disposed of incorrectly which prompted us to report this incident to the NJDEP Hotline, Case #21-06-04-1829-17, on June 4, 2021 once it was confirmed that they were disposed of offsite. 40 CFR 262.11(d)(1) allows us to use generator process knowledge rather than testing to determine whether the waste exhibits one or more hazardous characteristics. Therefore, information is being provided based on our process knowledge which indicates that the used filter bags have the potential to exhibit a hazardous waste characteristic if they were actually subjected to testing.

On June 8, 2021, a letter was submitted to APEX Environmental, LLC, who is the owner of the landfill in Ohio, which included analytical information on the fly ash that was on the used filter bags which was derived from historical laboratory test results of fly ash samples at the Covanta Essex facility. That letter has been included as an Attachment to this report.

Corrective Measures Taken to Achieve Compliance

To prevent this from happening in the future, Covanta Essex Company has modified section API-3 of Volume IX of the Operations and Maintenance Manual to include the procedure for the disposal of used bag filters which prohibits the use of any third-party contractors for this task under section C.1. Instead, only employees of the Covanta Essex facility will be responsible for taking the used filter bags that have been double bagged and sealed to the tipping floor for processing in the MWC units at the facility. A revised section API-3 is included as an Attachment to this report.

Finally, in addition to the regular scaling out of all refuse hauler trucks, ash hauler trucks, and metal hauler trucks, all other hauler trucks leaving the site for any reason will be required to stop at the scale house for authorization to leave prior to departing from the site. This will prevent any unauthorized removal of waste from the site.

Attachment 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 10 2014

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

Mr. Thomas S. Burack, Commissioner
State of New Hampshire
Department of Environmental Services
P.O. Box 95
29 Hazen Drive
Concord, New Hampshire 03302-0095

Dear Commissioner Burack:

I am responding to your June 13, 2013 letter seeking an interpretation from the Environmental Protection Agency (EPA) relative to the management of spent baghouse filters from waste-to-energy (WTE) facilities and the applicability of the EPA's statutory interpretation published in the Federal Register (FR) on February 3, 1995 (See 60 FR 6666), "Determination of Point at Which RCRA Subtitle C Jurisdiction Begins for Municipal Waste Combustion Ash at Waste-to-Energy Facilities."

Specifically, your request results from inspections at two New Hampshire municipal waste combustion WTE facilities (Wheelabrator - Concord and Wheelabrator - Claremont) during 2010. During the facility inspections, New Hampshire staff observed that spent air pollution control baghouse filters were removed from service, double-bagged in plastic bags, removed from the baghouse facility, hand-carried back into the combustion building, and then placed into the feed hopper to be burned in the boilers. According to your letter, these spent baghouse filters could contain concentrations of lead and cadmium, such that they could exhibit the toxicity characteristic for lead and cadmium.

Disposing of these spent baghouse filters generally occurs once every 3-5 years when the facility replaces all of their baghouse filters in a baghouse compartment or when they replace the baghouse filters for all compartments in the facility at once. In addition, the EPA notes that the municipal waste combustor will continue to be subject to Clean Air Act emissions standards, and the burning of the baghouse filters is not expected to significantly impact emissions from the combustor.

At issue is whether EPA's 1995 interpretation applies to spent baghouse filters, in addition to ash. EPA's interpretation states that the point at which ash generated at a WTE facility becomes subject to jurisdiction under the Resource Conservation and Recovery Act (RCRA) is the point at which the ash leaves the facility's combustion building (including connected air pollution equipment). Of particular concern is whether or not that interpretation specifically addresses spent baghouse filters. Accordingly, you pose three questions described in pertinent part below:

Question 1: Does the EPA consider Wheelabrator's spent baghouse filters to be fly ash subject to the interpretation at 60 FR 6666?

Question 2: At what point does the facility need to determine whether the spent baghouse filters are hazardous wastes (i.e., at what point would RCRA hazardous waste jurisdiction begin)?

Question 3: Would a hazardous waste permit be needed for the double-bagged spent baghouse filters to be burned in the facility's boiler?

In assessing the specific situation you pose, the EPA has determined that the answer most consistent with the statutory interpretation is that spent baghouse filters which are removed from the air pollution control equipment, double bagged to ensure containment, then removed from the baghouse building and directly transferred to the waste feed area and inserted into the combustor are still "constructively" within the resource recovery facility and thus, would remain excluded from Subtitle C control. Thus, materials transferred to the waste combustion unit as soon as possible have not left the resource recovery facility and therefore the operator does not have to determine whether the filters become subject to hazardous waste regulations.

While the focus of EPA's 1995 interpretation was on the handling of ash, the Agency also stated that, "EPA believes that it is reasonable to conclude that Congress intended to exempt all handling of any hazardous waste within the building, including the handling of hazardous ash." See 60 FR 6668. Thus, the question for the Agency is whether the spent baghouse filters have left the "resource recovery facility," which is defined in EPA's interpretation as the combustion building, including connected air pollution control equipment.

Supporting EPA's determination are several statements from the FR notice you cite. First, the resource recovery facility includes "pollution control devices that are integral components of the combustion process." 60 FR 6668. Further, ash from the control devices reconveyed back to the combustion building has not left the resource recovery facility and by virtue of the containment and direct movement of the spent baghouse filters to the combustion tipping area "does not come into contact with the environment." Id. In addition, there are certain situations in which the ash could be "constructively" considered to be within a combustion building. As stated at 60 FR 6668/9:

> A few WTE facilities may exist where the combustion device is not housed within a building. In these instances, the combustion device (including air pollution control equipment and proximate areas for handling ash) may constructively constitute a combustion building, within the meaning discussed above. Thus, if fly ash and bottom ash were handled in enclosed systems that operate in the same manner as they would if a building existed and the fly ash and bottom ash were mixed in an enclosed unit proximate to the combustion device, that management activity would be considered to take place within a combustion building as described above.

The EPA considers spent baghouse filters that are managed as discussed above, similarly, remain constructively within the combustion building. Thus, a determination as to whether RCRA Subtitle C applies is not required for those materials and a hazardous waste permit would not be needed. The EPA emphasizes that this interpretation is limited to the immediate burning of the baghouse filters, and is not related to any other materials generated by a WTE facility that may not necessarily be managed within the resource recovery facility. Similarly, if the spent baghouse filters are managed in any location that is not in or "constructively" considered to be within a combustion building, then the operator would need to make a hazardous waste determination at that point.

Finally, state RCRA programs may always be more stringent than their federal counterpart. Therefore, New Hampshire's program may choose a different determination if it so desires.

Should you have any questions to my letter, please contact Betsy Devlin of my staff at (703) 308-7906 or devlin.betsy@epa.gov.

Sincerely,

Barnes Johnson

Barnes Johnson, Director
Office of Resource Conservation and Recovery

cc: Susan Shinkman
Mary-Kay Lynch
James Owens

Attachment 2

COVANTA
Powering Today. Protecting Tomorrow.

Covanta Essex Company
183 Raymond Boulevard
Newark, NJ 07105
Tel: 973-344-0900
Fax: 973-344-4999

June 8, 2021

Mr. David Cieply,
VP of Landfill Operations
APEX Environmental LLC
11 County Road 78
Amsterdam, OH 43903

Subject: Response to Information Request from APEX Environmental LLC

Dear Mr. Cieply:

The Attachment provided with this letter is our response to your emails earlier today including the following:

1) Any analytical you might have on the Ash either current or previous. If absolutely none available, would be great to run a quick sample for metals.
2) Product information (I know it's fly ash but more detail if possible)
3) Generator Process
4) Volume disposed of or delivered
5) The date/time last week of when it was discovered and then when it was "confirmed" (yesterday, early afternoon?).
6) Also, when NJDEP was first notified.

If you have any further questions or need additional information please reach out to Patricia Earls of my staff at 973-817-7322 or pearls@covanta.com. Covanta Essex would like to be included in subsequent communications with Ohio EPA or other agencies as determined necessary by APEX.

Sincerely,

David Blackmore
Facility Manager

Response to Information Request from APEX Environmental LLC – June 8, 2021

Response to Item 1:

Analytical on Fly Ash

Covanta Essex has estimated the total amount of eight RCRA metals in the container by evaluating the amount of fly ash on a typical baghouse bag and applying historical knowledge of heavy metal content. The following table summarizes those results.

Contaminant	US EPA hazardous waste number	Average concentration as parts per million (ppm)	Estimated weight of metal contaminant as pounds (Lbs)	Estimated maximum soluble concentration as mg/L	TC limit as mg/L
Arsenic	D004	105	0.1	5.3	5
Barium	D005	640	0.8	32	100
Cadmium	D006	182	0.2	9.1	1
Chromium	D007	142	0.2	7.1	5
Lead	D008	1900	2.3	95	5
Mercury	D009	15	0.02	0.75	0.2
Selenium	D010	62	0.07	3.1	1
Silver	D011	8	0.01	0.4	5

The average concentration values as ppm are derived from historical laboratory test results of fly ash samples at the Covanta Essex facility. The estimated weight of each metal contaminant is based on the average concentration applied to the total amount of flyash estimated tp be present with the 608 filter bags (maximum possible number of filter bags that could be in the roll-off container). Covanta Essex does not have analytical data from USEPA Method 1311 (Toxicity Characteristic Leaching Procedure, TCLP) for the flyash however the above table includes a worst-case estimate that assumes all metal dissolves from the TCLP test. Those results indicate the potential for flyash in filter bags to exhibit the toxicity characteristic.

Response to Item 2:

Product Information

Covanta Essex generates combined ash from the combustion of municipal solid waste (MSW). Combined ash is comprised of bottom ash and fly ash with flyash being the residue affixed to the filter bags. Flyash at Covanta Essex is comprised of inerts carried over from the combustion process, calcium salts, unreacted lime, and carbon from the air pollution control process along with trace metals. The attached Safety Data Sheet (SDS) is for combined ash which includes flyash as a component. The range of constituents considers fly ash as a separate residue.

Our combined ash is sampled hourly as required by our Solid Waste Operating Permit and a monthly composite of the collected combined ash is tested in accordance with USEPA Method 1311 (TCLP) to demonstrate that it is not hazardous waste. Results to date for the Covanta Essex facility have all been non-hazardous.

Response to Item 3:

Generator Process
The Essex County Resource Recovery Facility located in Newark, New Jersey consists of three identical processing trains, each consisting of the following components: waste feed, waste combustion (boiler), residue (ash) discharge, an air pollution control (APC) system for flue-gas emissions control, and flue for gas exhaust. The boilers are mass burn, waterwall design. Each boiler is permitted to produce 247,500 lb/hr of steam. The facility is limited to processing 985,500 tons per year of municipal solid waste (MSW).

At the exit of each boiler, flue gas is split into two equal paths (A and B). Each path includes a cyclone for removal of large particulate prior to entering the scrubber. The paths recombine after the scrubbers prior to entering the baghouse. Lime slurry is injected into the scrubbers to chemically react with acid gases, primarily HCl and SO_2, to form chlorine and sulfur salts, which are predominantly collected in the baghouse. Particulate and heavy metal collection also occurs in the baghouse. Aqueous ammonia is injected into the furnace of the boiler to chemically react with NOx, primarily NO (nitrogen oxide), to form nitrogen salts, which are predominantly collected in the baghouse. Powdered Activated Carbon (PAC) is injected at the inlet of the cyclones to adsorb mercury, which is then collected in the baghouse.

Filter bags are replaced on a nominal 4 year frequency with new filter bags. Each baghouse consists of 10 modules, each of which contain 304 filter bags. One module is replaced at a time. Once the used filter bags are removed from the baghouse compartment, they are double bagged in plastic trash bags, the bags are sealed, and they are placed into a dumpster located underneath the baghouse. The filter bags that are the subject of this event were from the last two modules in the Unit 1 baghouse. Eight other modules were previously removed however, the completion of the bag replacement effort was interrupted for a nominal 1-week period. The 608 used filter bags were placed in the dumpster that was picked up by our third party hauler on 6/1/21. Per the work order instructions for the driver, the dumpster was required to have been brought to our tipping floor for processing in our boilers but was instead accidentally taken to the DART Transfer Station on Doremus Avenue in Newark, NJ.

Response to Item #4

Volume Disposed of Or Delivered
As described above, the filter bags on two of the baghouse modules were replaced which was a total of 608 filter bags. Therefore, there were 608 used filter bags weighing approximately 3500 lbs in the dumpster that was taken to the transfer station. The total weight of material in the dumpster was 3.09 tons.

Response to Item #5

Timeline of discovery of issue and confirmation of dumpster contents

Date	Activity
May 24-26	2 modules of filter bags were removed and placed in plastic bags, tied and marked for visual identification
June 1	Driver incorrectly removed the roll-off dumpster container from the Essex facility
June 3	A review of video tape by a shift supervisor identified the truck and dumpster leaving the facility
June 3	Covanta initially contacts Action Carting who is affiliated with the DART Transfer station notifying them of a potential issue
June 4	Covanta contacts Dominic Ferrara, Transfer Station Manager for DART to determine if load could still be on site. Covanta then contacts Neil Rogers of IWS for further information on destination of waste. Covanta also contacts APEX Landfill to discuss issue.
June 4	Initial notification provided to NJDEP
June 7	Continuing review of video tape at facility and transfer station confirmed that the container with filter bags did leave the Covanta Essex property. IWS/APEX was notified of confirmation.

Response to Item #6

First notification provided to NJDEP

As stated above, the initial notification of this incident was provided to NJDEP via the NJDEP Hotline on Friday, June 4, 2021 at approximately 6:30 pm while the investigation continued. The notification was also followed up by a phone call from Mr. Robert Gomez of the NJDEP Hazardous Waste Enforcement division to Patricia Earls of Covanta Essex Company.

COVANTA
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Municipal Solid Waste Combined Ash

Safety Data Sheet

Section 1: Identification of the substance or mixture and of the supplier

Product Name:	Municipal Solid Waste Combined Ash (MSW Combined Ash)
Intended Use:	Residue of Combustion
Manufacturer:	Covanta Energy, LLC 445 South St. Morristown NJ, 07960
Emergency Health and Safety Number:	800-424-9300 - CHEMTREC
SDS Information:	862-345-5001

Section 2: Hazard(s) Identification

Classification
H331 – Acute Toxicity – Inhalation - Category 4
H314 – Skin Corrosion/Irritation - Category 1
H317 - Sensitization – Skin – Category 1
H318 – Eye Damage/Irritation - Category 1
H341 – Germ Cell Mutagenicity – Category 2
H350 – Carcinogenicity - Category 1A
H361 – Toxic to Reproduction – Category 1A

Label Elements

Harmful if inhaled. (H331)
Causes severe skin burns and eye damage. (H314)
May cause an allergic skin reaction. (H317)
Suspected of causing genetic effects (H341)
May cause cancer. (H350)
May damage fertility or the unborn child. (H360)

Precautionary Statement(s):

Obtain special instructions before use. (P201)
Do not handle until all safety precautions have been read and understood. (P202)
Do not breathe dust. (P260)
Wash thoroughly after handling. (P264)
Use only outdoors or in well ventilated area. (P721)
Contaminated work clothing should not be allowed out of the workplace. (P270)

Wear protective gloves/protective clothing/eye protection/face protection. (P280)
IF exposed or concerned: Get medical advice/attention. (P308 + P313)
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. (P301 + P330 + P331)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.(P305 + P351 + P338)
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water (or shower). P303 + P361 + P353)
Take off contaminated clothing and wash it before reuse. (P362 + P364))
IF INHALED: Remove person to fresh air and keep comfortable for breathing. (P304 + P340)
Immediately call a POISON CENTER/doctor. (P310)
Absorb spillage to prevent material damage. (P390)
Dispose of contents/container to approved disposal facility. (P501)

Section 3: Composition / Information on Ingredients

Component	CASRN	Concentration (% by weight)
Aluminum Oxide**	1334-28-1	0.9 – 15.3
Antimony Oxide	1309-64-4	0.02 – 0.6
Barium Oxide**	1304-28-5	0.02 – 0.5
Cadmium Oxide	1306-19-0	0 – 0.2
Calcium Oxide**	1305-78-8	8 - 52
Chromium (III) Oxide	1308-38-9	0.04 – 0.4
Copper Oxide**	1317-38-0	0.04 – 4
Iron Oxide	1345-25-1	0.3 – 29
Lead Oxide**	1317-36-7	0.03 – 0.9
Magnesium Oxide	1309-48-4	1.0 – 6
Manganese Oxide	1344-43-0	0.01 – 0.3
Nickel Oxide	1313-99-1	0.01 – 0.2
Phosphorous Pentoxide	1314-56-3	0.2 – 3
Potassium Oxide	12136-45-7	0.8 – 4
Silicon Dioxide*	7631-86-9	4 – 56
Sodium Oxide**	1313-59-3	2 - 13
Titanium Dioxide	13463-67-7	0.2 – 3
Zinc Oxide	1314-13-2	0.1 – 3
Chlorine – Total**	7782-50-5	0.1 – 29
Carbon – Total**	7440-44-0	0.3 – 18
Sulfur – Total**	7704-34-9	0.2 – 7

*Crystalline silica is not detected in fly ash but bottom ash may have up to 7% crystalline silica in a large granular form that does not typically appear during air monitoring.
**The XRF analysis provides elemental results but these elements generally exist as sulfates, chlorides and carbonates. Calcium is presented as CaO, however this ash generally consists of calcium hydroxide, calcium carbonate and calcium sulfate.

Section 4: First Aid Measures

Eye Contact: Immediately move victim away from exposure and into fresh air. For direct contact, remove contact lenses if present and easy to do. Immediately hold eyelids apart and flush the affected eye(s) with clean water for at least 30 minutes. Seek immediate medical attention.

Skin Contact: Immediately flush affected area(s) with large amounts of water while removing contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse.

Inhalation (Breathing): Immediately move victim away from exposure and into fresh air If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): ***DO NOT INDUCE VOMITING*** If victim has any breathing difficulties, call for emergency help immediately. If victim is conscious and alert, immediately rinse mouth with water and dilute the ingested material by giving a glass of milk or water to drink; ½ glass for children under 5. Call a physician or poison center. If possible, do not leave victim unattended.

Most important symptoms and effects

Acute: May cause a rash and severe irritation and burns of the nose, throat, digestive and respiratory tract.
Chronic: None known.

Section 5: Fire-Fighting Measures

Extinguishing Media: Use extinguishing agent suitable for type of surrounding fire.

Specific hazards arising from the chemical

Unusual Fire & Explosion Hazards: Hazardous combustion/decomposition products may be released by this material when exposed to heat or fire. Use caution and wear protective clothing, including respiratory protection.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion.

Special Protective Actions for Firefighters: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant. (See Section 8.)

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits.

Section 6: Accidental Release Measures

Personal Precautions: Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down-wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stay upwind and away from spill/release. Wear appropriate protective equipment, including respiratory protection, as conditions warrant. (See Section 8.) For small spills, sweep spill and place in suitable container for later disposal. See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

Methods for Containment and Clean-Up: Sweep spill and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

Section 7: Handling and Storage

Precautions for safe handling: Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment. (See section 8.) Do not breathe dust.

Do not enter confined spaces without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in dry, well-ventilated areas. Store only in approved containers. Keep away from any incompatible material. (See Section 10.) Protect container(s) against physical damage.

Section 8: Exposure Controls / Personal Protection

Component	ACGIH TWA	OSHA PEL TWA	Other
Aluminum Oxide**	Not Determined	15 mg/m^3 (total dust) 5 mg/m^3 (respirable)	---
Antimony Trioxide**	Low as possible	0.5 mg/m^3	0.5 mg/m^3 (NIOSH)
Barium Oxide**	0.5 mg/m^3	0.5 mg/m^3	Barium Sulfate 5mg/m^3 (ACGIH)
Cadmium Oxide (as Cd)	0.01 mg/m^3 0.002 mg/m^3 (respirable)	0.05 mg/m^3	----
Calcium Oxide**	2 mg/m^3	5 mg/m^3	---
Chromium Oxide (as Cr III)	0.5 mg/m^3 (inhalable)	0.5 mg/m^3	---
Copper Oxide**	0.1 mg/m3 (as Cu dust) 0.2 mg/m3 (as Cu fume	0.1 mg/m3 (as Cu fume)	---
Iron Oxide	5 mg/m^3 (respirable)	10 mg/m^3 (fume) 15 mg/m^3 (total dust) 5 mg/m^3 (respirable)	---
Lead Oxide**	0.05 mg/m3 (as lead)	0.05 mg/m3 (as lead)	---
Magnesium Oxide	10 mg/m^3 (inhalable)	15 mg/m^3 (fume – total particulate)	---
Manganese Oxide (as Mn)	0.02 mg/m^3 (respirable) 0.1 mg/m^3(inhalable)	0.5 mg/m^3	---
Nickel Oxide (as Ni)	0.2 mg/m^3	1 mg/m^3	---
Phosphorous Pentoxide**	Not determined	Not determined	---
Potassium Oxide**	Not determined	Not determined	---
Silicon Dioxide*	Note below.	Note below.	---
Sodium Oxide**	Not determined	Not determined	---
Titanium Dioxide	10 mg/m^3	15 mg/m^3 (total dust)	---
Zinc Oxide**	2mg/m^3 (respirable) 10mg/m^3 (respirable)	15 mg/m^3 (total) 5 mg/m^3 (respirable fraction)	---
Chlorine-Total**	0.5 ppm (TWA) 1 ppm (STEL)	1 ppm (CEIL)	---
Sulfur-Total**	Not determined	Not determined	---

*Crystalline silica is not detected in fly ash but bottom ash may have up to 7% crystalline silica in a large granular form that does not typically appear during air monitoring.
**XRF analysis provides elemental results but these elements generally exist as sulfates, chlorides and carbonates. Calcium is presented as CaO, however this ash generally consists of calcium hydroxide, calcium carbonate and calcium sulfate.
Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Personal Protective Equipment

Eye/Face Protection: The use of eye protection (such as safety goggles) is recommended when there is potential contact to the eye. Depending on conditions of use, additional equipment may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Leather gloves are applicable but users should check with manufacturers to confirm the breakthrough performance of their products. Depending on exposure and use conditions, additional protection may be necessary to prevent skin contact including use of items such as boots, aprons, arm covers, hoods or coveralls.

Respiratory Protection: A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Gray solid
Physical Form:	Solid
Odor:	None
Odor Threshold:	No data available
pH:	8 – 12
Vapor Pressure:	No data available
Vapor Density (air=1):	No data available
Initial Boiling Point/Range:	Not applicable
Melting/Freezing Point:	Not applicable
Solubility in Water:	Negligible
Partition Coefficient (n-octanol/water) (Kow):	No data available
Density:	No data available
Evaporation Rate (nBuAc=1):	Not applicable
Flash Point:	Not flammable
Lower Explosive Limits (vol % in air):	Not flammable
Upper Explosive Limits (vol % in air):	Not flammable
Auto-ignition Temperature:	Not flammable

Section 10: Stability and Reactivity

Reactivity: Stable under normal ambient and anticipated conditions of use.

Chemical Stability: Stable under normal ambient and anticipated conditions of use.

Possibility of hazardous reactions: Hazardous reactions not anticipated.

Conditions to Avoid: None known.

Materials to Avoid (Incompatible Materials): Strong oxidizers.

Hazardous Decomposition Products: Oxides of carbon and sulfur.

Hazardous Polymerization: Not known to occur.

Section 11: Toxicological Information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Harmful if inhaled	-----	ATE = 2.5 mg/l
Skin Absorption	Not expected to be hazardous	----	None
Ingestion (Swallowing)	Not expected to be hazardous	----	None

Aspiration Hazard: Not an aspiration hazard.

Skin Corrosion/Irritation: Corrosive. Contact may cause severe irritation, skin burns, and permanent skin damage.

Serious Eye Damage/Irritation: Corrosive. Contact may cause severe irritation, eye burns, and permanent eye damage.

Signs and Symptoms: Overexposure can result in severe irritation and burns of the nose, throat, and respiratory tract.

Skin Sensitization: May cause an allergic skin reaction.

Respiratory Sensitization: Not expected to be a respiratory sensitizer.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Carcinogenicity: Minor components have been identified as carcinogens. (See below.)

Inorganic lead compounds have been identified as a carcinogen by IARC (2A). It is also identified as reasonably anticipated to be a human carcinogen by NTP.

Antimony trioxide has been identified as a possible carcinogen due to the lung effects seen in female rats. It has been identified as a carcinogen by NTP and IARC.

Cadmium and cadmium compounds cause cancer of the lung. Also, positive associations have been observed between exposure to cadmium and cadmium compounds and cancer of the kidney and of the prostate. It has been identified as a carcinogen by NTP, IARC and OSHA.

Titanium Dioxide has demonstrated carcinogenic effects in laboratory animals. These effects have not been noted in epidemiological studies. IARC has classified it as a 2B carcinogen.

Germ Cell Mutagenicity: Cadmium compounds are suspected of causing genetic effects.

Reproductive Toxicity: Inorganic lead and cadmium compounds have been determined to cause reproductive and developmental toxicity.

Section 12: Ecological Information

Not evaluated

Section 13: Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" or “characteristic” hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

Container contents should be completely used and containers should be emptied prior to discard. Container residues and rinsates could be considered to be hazardous wastes.

Section 14: Transport Information

U.S. Department of Transportation (DOT)
Shipping Name: Municipal Solid Waste Combined Ash
UN Number: N/A
Packing Group: N/A
Hazard Class: N/A
Emergency Response Guide: N/A

Section 15: Regulatory Information

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	Concentration (%)[1]	de minimis
Aluminum Oxide	0.9 – 15.3	1%
Antimony Compounds	0.02 – 0.6	1%
Barium Compounds	0.02- 0.5	1%
Cadmium Compounds	0 – 0.2	0.1%
Chromium (III) Compounds	0.04 – 0.4	1%
Copper Compounds	0.04 – 4%	1%
Lead Compounds	0.03 – 0.9	0.1%
Manganese Compounds	0.01 – 0.3	1%
Nickel Compounds	0.01 – 0.2	0.1%
Zinc Compounds	0.1 – 3	1%

California Proposition 65:
Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the warning requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Type of Toxicity
Antimony Trioxide	Cancer
Cadmium and cadmium compounds	Cancer
Lead and inorganic lead compounds	Cancer
Titanium Dioxide (airborne unbound particles – respirable size)	Cancer

National Chemical Inventories
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA

International Hazard Classification

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) soon to be called the Hazardous Products Regulations (HPR) and the SDS contains information required by the Regulations.

WHMIS Hazard Class:
E – Corrosive
D2A – Very toxic material at concentrations >0.1%

Section 16: Other Information

Date of Issue:	09-Jun-2016
Status:	Final
Previous Issue Date:	New SDS
Revised Sections or Basis for Revision:	New SDS
SDS Number:	2016001

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Workplace Hazardous Materials Information System (Canada); XRF = X-Ray Fluorescence

Disclaimer of Expressed and implied Warranties:
The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Attachment 3

WASTE FLOW CONTROL PLAN

Revision 7, April 2015
Revision 8, June 2021

VOLUME IX, CHAPTER 3

Approved by:________________________________ **Date:** ______________________

ESSEX COUNTY RESOURCE RECOVERY FACILITY
WASTE FLOW CONTROL PLAN

Revision 8, June 2021

Waste Flow Control

The following contains a discussion of the waste delivery and flow path through the facility. Included in this discussion are measures utilized to minimize the processing of prohibited waste, to handle incoming waste flow during periods of emergencies and/or equipment breakdown or shutdown, and to describe the management of internally generated plant wastes.

A. Waste Deliveries

A.1 Permitted Waste Types

The following solid waste materials, as identified by waste ID numbers and defined in N.J.A.C 7:26-2.13(g) may be accepted for disposal:

TYPE 10 Municipal Waste (household, commercial and institutional)

TYPE 23 Vegetative Waste (except bulk quantities)

TYPE 25 Animal and Food Processing Waste (small quantities only, not large quantities or full truck loads)

TYPE 27 Dry Industrial Waste (except asbestos and asbestos containing wastes; dry non-hazardous pesticides; contaminated soils; hazardous waste; radioactive waste; and Type 27 from districts which have complied with an Industrial Waste Survey.

A.2 Prohibited Waste Types

The following solid and liquid waste materials, as identified by waste ID numbers and defined in N.J.A.C 7:26-2.13(g) and (h), regulated medical waste classes as defined in N.J.A.C 7:26-3A.6(a), and bulk recyclables as defined in N.J.A.C. 7:26A are specifically prohibited from disposal at the facility:

TYPE 12 Dry Sewage Sludge
TYPE 13 Bulky Wastes
TYPE 23 Vegetative Waste (Bulk quantities)
TYPE 25 Animal and Food Processing Waste (Large quantities or full truck loads)
TYPE 27 Dry Industrial Wastes
TYPE 72 Bulk liquid and Semi-Liquids
TYPE 73 Septic Tank Clean-out Wastes
TYPE 74 Liquid Sewage Sludge
Regulated Medical Waste (RMW), all classes, N.J.A.C 7:26-3A.6 (a)
Bulk Recyclables N.J.A.C. 7:26A

A.3. Waste Flow

On-site traffic control is maintained to provide for orderly vehicular movement on the Facility grounds. Lane delineations, signals, signs, barriers ensure a controlled flow of traffic delivering waste to the Facility through the scales to the tipping floor, then leaving the tipping floor and exiting the Facility through the scale. Trucks carrying ash residue, recovered metals, unprocessible wastes, bypass wastes and/or chemical deliveries are similarly controlled and directed to minimize waste delivery traffic. Signs are posted indicating the maximum speed limit. A Facility traffic flow is represented in Appendix 1.

The control of prohibited waste is a multi—layered approach incorporating the cooperation of customers, the haulers, and Covanta Essex. One mechanism is through the guidance of the Essex County Solid Waste Management Plan, through which the company has determined which industrial wastes are prohibited at the Essex County Resource Recovery Facility.

In order to minimize prohibited waste from entering the facility, a HAULERS HANDBOOK (**copy attached as Appendix 2a**) has been developed which outlines and explains the waste acceptance criteria at the facility. This Handbook has been sent to all registered haulers utilizing the facility. The Handbook will be provided to new haulers. An abstract (as provided in Appendix 2) to the handbook pertaining to waste acceptance will be available at the scale house.

In addition, signs have been prominently posted on the facility's access road to indicate which wastes are acceptable. The signs read as follows:

THIS FACILITY RECEIVES AND BURNS ONLY HOUSEHOLD WASTE, COMMERCIAL WASTE AND INDUSTRIAL WASTE THAT DOES NOT CONTAIN HAZARDOUS WASTE – AS IDENTIFIED UNDER RCRA. INSPECTIONS WILL BE DONE TO ENSURE COMPLIANCE.

THIS FACILITY IS NOT PERMITTED TO ACCEPT BULKY WASTE. INSPECTIONS WILL BE PERFORMED TO ENSURE COMPLIANCE.

The first review of the paperwork and delivery vehicles is provided by the facility's scale house personnel. The origin and disposal (O&D) form, shown in Appendix 3, carried by the hauler denotes the origin and waste type of the material being delivered. At this time, the delivery vehicle is also checked for weight, proper registration, decals and is automatically scanned for radioactivity. If the review of documents and vehicle requirements proves satisfactory, the load information is entered into the scale house computer and the truck is released to proceed to the tipping bay. The scales are integrated into a computerized weighing system and weights of each load are recorded. Any problems encountered are brought to the attention of the appropriate supervisor.

If a delivery vehicle arrives at the facility's scale house and the O&D form indicates that it is a full truck load of Type 25 waste, the driver will be notified that the truck will be prohibited from dumping the load for processing at the facility and must be diverted to another location. The driver will receive instructions based on a previously determined agreement with the hauling company for delivering the waste to one of Covanta's New Jersey transfer stations which are permitted to accept Type 25 waste.

A.4. Tipping Floor Inspections:

Once the load has exited the scale and proceeded to the tipping floor (the waste receiving area), the load is subject to a visual inspection. Inspections are performed on a random basis by trained plant personnel. The purposes of the inspection are twofold: 1) to identify and remove prohibited or unprocessible materials prior to initiation of processing and 2) to ensure that the waste delivery vehicle is properly registered and decaled.

Under the visual inspection program, a truck being inspected will be observed for proper decals and for prohibited or unprocessible waste types as the truck unloads onto the tipping bay floor. For palletized loads of waste materials, a random sampling of the waste material will be checked against the approval paperwork (see Section D). With the inspection program, any hauler may be requested to unload contents of their truck on the tipping floor for visual inspection of waste. Once the inspection is completed, the acceptable portion of the load is pushed into the refuse pit by use of heavy equipment. Prohibited or unprocessible materials are handled as described below in Section 4. If the entire portion of the load is acceptable, the truck is released and returned to the scale house to weigh out.

Inspections will be conducted where they will least interfere with existing operational demands and flow of truck traffic. This provides for use of the tipping floor relative to the distribution of waste in the bunker and provides flexibility with regard to activities on the tipping floor.

All inspections will be recorded and these records will be used to evaluate carrier compliance and performance. An example of an inspection form in provided in Appendix 4. The enforcement of the inspection program is conducted primarily by Covanta Essex personnel. Regularly scheduled inspections by the NJDEP Solid Waste Enforcement Division also serve as a spot check of the inspection program.

A.5 Procedure for Removing Prohibited or Unprocessible Waste:

If prohibited or unprocessible waste is identified during the visual inspection, it will be separated or isolated as required.

If bulk recyclables as defined in N.J.A.C. 7:26A are identified, the vehicle will be reloaded and the material will be rejected. Class A materials consist of metals, glass, plastics and corrugated cardboard. Class B, C, and D materials would also not be acceptable at the facility due to the fact that they fit the description of ID 13, ID 23 (bulk) and ID 72.

If suspected hazardous waste, regulated medical waste (RMW) or prohibited dry industrial (Type 27) is identified, Tipping Hall personnel will initiate action to ensure proper handling of the material. If practicable and can be done safely, this material is separated from the acceptable portion of waste. If the generator can be identified and the NJDEP grants approval, the prohibited material can be rejected to the original generator. If the generator is not positively identified, the material will be secured and moved to the secured prohibited waste storage area (identified in Appendix 5) that is located a safe distance from the active disposal area. Arrangements for identification and disposal will be handled through qualified vendors.

In the case of bulky waste, the waste will be separated manually or by the use of a front-end loader. The bulky waste either be immediately rejected to the hauler or placed into the bulk storage/transport container. This container is routinely delivered to the authorized bulk acceptance site. The container is stored on the south side of the tipping floor next to Bay 15. (See Appendix 5 for arrangement drawing).

If a visual inspection spots an unidentifiable industrial container in the refuse pit, it can be removed with the overhead crane and lowered to the extended bucket of the front-end loader. The container will be separated using all necessary precautions and moved to the unprocessible waste storage area as identified in Appendix 5. Upon the identification of a bulky item in the refuse pit, the item will be picked-up by the overhead crane and deposited on the charging deck. Bulky items would be removed as described above. Depending on pit level, the bulky shear remains an option for size reduction of bulky items.

If a visual inspection indicates a small quantity of Type 25 waste in the load on the floor, the front end loader operator will be notified and the load would be pushed into the pit immediately by the front end loader. After the load has been removed from the tipping floor, a bleach solution will be applied to the affected tipping floor area and front end loader bucket for disinfection.

A.6. Special Waste

The Facility offers secured destruction for a variety of materials including Treated Regulated Medical Waste, APHIS waste, pharmaceuticals, health care products, documents and non-hazardous industrial wastes.

a. Treated Regulated Medical Waste is material which is sterilized and then destroyed beyond recognition. After successfully completing this destruction process, this material is classified as ID 10. These generators are audited prior to issuing approval. After approval is received by the generator, each load is accompanied by a letter stating the treatment of the material. A procedure for handling this material **is attached as Appendix 7** and facility's copy is also filed in the Safety Manual, Volume VI of the O&M Manual.

b. Animal and Plant Health Inspection Services (APHIS) waste generated from international sources. These loads may originate from the numerous airports or shipping ports located in the area. A separate procedure for handling **(attached here as Appendix 8)** APHIS wastes is located in the Safe Operating Procedures (SOP) Manual.

c. Pharmaceuticals, Health Care Products & Industrial Wastes are accepted at the Facility for assured destruction. This material is screened for acceptability prior to approval and receipt at the Facility. Details of the Special Waste Program are provided in Appendix 6. These materials, typically containerized and non-putrescible in nature, lend themselves to **temporary (for a period no longer than seventy-two hours) storage prior to processing.** Storage of containerized waste materials will be limited to the area denoted in Appendix 5. A procedure for handling this type of material is located in the Safety Manual, Volume 10 of the O&M Manual. Provided in Appendix 6 is Plant Specific Operating Procedure #42 Handling Special Waste Deliveries.

B. Refuse Flow By—Pass Procedure

Since the majority of the potential equipment malfunctions or emergencies are not expected to affect waste flow, the Facility will first utilize the capacity of the waste pit to handle incoming waste flow in the event of an unplanned malfunction or outage. The bunker is designed to store an estimated 14,000 tons of refuse, enough for approximately four days of operation.

In the event that the Facility is unable to accept and dispose of Acceptable Waste whether as a result of scheduled downtime for maintenance or otherwise and the permits do not authorize use of the Facility (or a portion thereof) for transfer operations (or if the permits do authorize such use, such as transfer facilities are not operational), the Essex County Utilities Authority (ECUA) will arrange for Alternate Disposal Facilities to be available for disposal of such Acceptable Waste. After being informed by Covanta Essex that waste is unable to be accepted at the Facility, the ECUA would in turn call individual municipalities and contracted haulers to redirect to the appropriate by-pass site. The haulers are instructed as to the proper procedures to follow under this condition. They will be supplied with routes from Covanta Essex and from their respected origin sites to the by-pass location. Covanta Essex will supply the ECUA with updates as to when waste acceptance will resume.

During a short term situation which may affect the acceptance of waste into the tipping hall (i.e., pit fire, two cranes down, truck accident) no waste will be kept on the floor, other than what has been thrown—down for routine inspections, without seeking approval from the NJDEP. Space restrictions inside the facility limit staging of trucks in case of short term outages to road “A”, which leads to the tipping hall, as shown in appendix 4.

During a situation which may affect the acceptance of waste into the tipping hall (i.e., bunker (pit) fire, hazardous material release, trucking accident) the refuse trucks will first be held at the entrance gate. The trucks in line will remain in place. If it appears that the situation will not be solved quickly, NJDEP will be consulted as part of the decision making process.

C. Plant Waste Management -All Sources

Management of internally generated facility waste is best categorized in terms of waste disposal methods. The Essex facility has the capacity to safely process certain amounts and types of waste materials. Other waste types, including recyclables, will be handled through off-site disposal.

C.1. <u>INTERNAL DISPOSAL</u>

a. Use of incineration for waste types ID 10 non— recyclable trash, ID 23 vegetative waste (except for leaves), ID 25 animal and food processing waste, and ID 27 (dry industrial waste) allowed by the Solid Waste Permit.

b. Use of process design and water balance to absorb normally generated industrial wastewater for wetting of ash. The storm water retention system is also used to provide water for low quality use.

c. **Waste bulk liquid oils generated from equipment maintenance will be disposed off site to Class D used oil facilities in the State of New Jersey, or other similarly licensed facilities located outside of the State of New Jersey.**

d. **Use of incineration for waste oil debris and solids generated from spills, equipment maintenance and housekeeping.**

e. Use of incineration for disposal of various sump contents.

f. Used filter bags from the boiler baghouses

1) When disposing of used filter bags from any of the boiler baghouses, bags must be shaken, blown or pulsed prior to removal to remove as much loose ash residue as possible.
2) Bags are to be removed from the cell plate and placed into sealed containers (double plastic bags or fiber drums) within the baghouse compartment or within an enclosure that prevents direct release of ash to the environment. During removal of bags, procedures must be in place to avoid the emission or spillage of any loose ash into the environment.
3) The baghouse module qualifies as "preventing a release" if the filter bags are immediately rolled up and placed in plastic bags or drums.
4) The sealed containers containing the used baghouse filter bags are to be transported to the tipping floor and discharged into the refuse pit as soon as possible. The transporting of bags to the tipping floor shall only be performed by facility personnel. Third-party contractors shall not be used for this task.
5) The container or bag that the used filter bags are placed into should be marked with a red X using spray paint or similar markings to allow for easy identification by the refuse crane operator once placed in the refuse pit.

C.2. <u>EXTERNAL DISPOSAL</u>

a. Use of solid waste disposal contractor for waste Types ID 13 (bulky waste), through the appropriate transfer station.

b. Use of sanitary sewer system for sanitary/gray discharge and "upset condition" industrial wastewater (with approval from PVSC).

c. Use of recycling contractor for designated Essex County recyclables including newspapers, glass containers, aluminum, old corrugated containers, office paper and ferrous scrap.

d. Use of appropriately licensed vendors for:

1) waste degreaser (D001);
2) spent batteries;
3) fluorescent lamps/bulbs and other mercury containing devices;
4) spent phosphoric acid sludge (D002).

e. Use of one or combination of the following methods for non—hazardous empty drum disposal: (1) return to supplier; (2) establishment of reuse procedure; and/or (3) deheading of container and crushing prior to recycling disposal as ferrous scrap.

f. Use of contract for Essex County ash residue disposal. Ash will be loaded and transported 24 hours per day, six days a week. **Ash residue and recovered metals (contained in truck bodies or containers) can be stored on the tipping floor during Sundays only.**

WASTE FLOW CONTROL PLAN

APPENDIX 1

(Appendix 1)

UNACCEPTABLE/UNPROCESSIBLE WHICH CANNOT BE ACEPTED AT THE ESSEX COUNTY RESOURCE RECOVERY FACILITY.

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE SOLID WASTE MANAGEMENT PLAN OF ESSEX COUNTY REGULATES THE PERMIT OF THE ESSEX COUNTY RESOURCE RECOVERY FACILITY TO ACCEPT ONLY HOUSEHOLD, NON-HAZARDOUS INDUSTRIAL/COMMERCIAL WASTE, CERTAIN VEGETATIVE WASTE (LEAVES ARE EXCLUDED), AND ANIMAL AND FOOD PROCESSING WASTE (EXCEPT LARGE QUANTITIES OR FULL LOADS). UNACCEPTABLE/UNPROCESSIBLE WASTE WHICH CANNOT BE RECEIVED INCLUDES ALL HAZARDOUS WASTE, CERTAIN NON-HAZARDOUS WASTES AND ALL MEDICAL/INFECTIOUS WASTES.

UNACCEPTABLE NON-HAZARDOUS INCLUDE BUT ARE NOT LIMITED TO:

BATTERIES such as dry cells, mercury batteries, vehicle batteries.

WHITE GOODS such as refrigerators, stoves, dishwashers, washers and dryers.

BULKY GOODS such as bed springs, mattresses, air conditioners, hot water heaters, water storage tanks, furnaces, oil storage tanks, any compressed storage tank, children swing sets, vehicle frame parts, crank cases, transmissions, engines, lawn equipment, snow blowers, bikes, file cabinets, metal furniture, clean fill, metal piping, fuel containers.

LARGE QUANTITIES OR FULL TRUCK LOADS OF TYPE 25 WASTE

UNACCEPTABLE MEDICAL/INFECTIOUS WASTES INCLUDE BUT ARE NOT LIMITED TO:

SURGICAL AND OBSTETICAL WASTES

PATHOLOGICAL WASTES such as human tissue, human anatomical parts.

BIOLOGICAL WASTES such as excretions, suctionings, secretions, disposable medical supplies that have come into contact with such wastes.

BLOOD SOILED MATERIALS

RENAL DIALYSIS WASTES such as tubing and needles.

UN-AUTOCLAVED OR UNSTERILIZED serums or vaccines, lab waste, sharp instruments such as hypodermic needles intravenous needles and tubing.

UNACCEPTABLE HAZARDOUS WASTE INCLUDING BUT NOT LIMITED TO:

DRUMS OR OTHER LARGE ENCLOSED STEEL, METAL OR PLASTIC DRUMS OR OTHER LARGE ENCLOSED STEEL, METAL OR PLASTIC CONTAINERS.

BULK SLUDGES OR WET SOLIDS NOT CHARACTERISTIC TO MUNICIPAL WASTE.

LARGE AMOUNTS OF LIQUIDS OR OIL SOAKED SOLIDS OR SORBENTS, EXCEPT FOR SOLIDS OR SORBENTS CONTAINING OILY RESIDUE WHICH HAVE BEEN CERTIFIED BY THE GENERATOR OF THE WASTE TO BE NON-HAZARDOUS.

MILITARY ORDINANCE OR OTHER EXPLOSIVES.

PRESSURIZED CONTAINERS.

ANY SUSPECT CLOSED INDUSTRIAL PACKAGING.

COVANTA ESSEX COMPANY

WASTE FLOW CONTROL AND LITTER PLAN

APPENDIX 2

(APPENDIX 2) VISUAL INSPECTION SHEET

DATE:_________________
INSPECTOR:____________________ *MUST OBSERVE A MINIMUM OF 15 TRUCKS PER DAY

NAME OF HAULER	VEHICLE #/TRAILER #	RESULTS		FOLLOW-UP/COMMENTS
		GOOD	BAD	

COVANTA ESSEX COMPANY
WASTE FLOW CONTROL AND LITTER PLAN
APPENDIX 2

COVANTA ESSEX SECTION REPORT

INSPECTION TYPE: THROWDOWN VISUAL (INTO PIT)

BAY ASSIGNMENT: 2 3 4 5 6 7 8 9 10 11 12 13 14 15 CIRCLE BAY # ASSIGNED

INSPECTOR:	VEHICLE DATA:		COMPANY VEHICLE #	
DATE:	TYPE OF VEHICLE	DEP STICKER #	TRUCK #	NJ DEP # *(Painted)*
TIME:	TRUCK			
HAULER:	ROLL-OFF		LIC PLATE # FRONT	REAR
TAG#:	TRANSFER			
WASTE TYPE:	ACCT. #			

UNACCEPTABLE WASTE TYPES AND IDENTIFIERS

POTENTIALLY HAZARDOUS:

LIQUID SOAKED DEBRIS _____

EXPLOSIVES _____

INDUSTRIAL CONTAINERS _____

RADIOACTIVE MATERIAL _____

DRY/POWDERED MATERIAL _____

PRESSURIZED VESSELS _____

WARNING LABELS _____

MOTORS _____

PAINTS _____

WET SOLIDS _____

UNUSUAL ODOR _____

REGULATED MEDICAL WASTE:

CULTURES AND STOCKS (CLASS 1) _____

PATHOLOGICAL WASTE (CLASS 2) _____

HUMAN BLOOD & BLOOD PRODUCTS (CLASS 3) _____

SHARPS (CLASS 4) _____

ANIMAL WASTE (CLASS 5) _____

ISOLATION WASTE (CLASS 6) _____

UNUSED SHARPS (CLASS 7) _____

RECYCLABLES:

ALUMINUM ____ CARDBOARD _____ PLASTIC ___ GLASS ___ BULK LOAD (100%) ____

BULKY WASTE (TYPE 13):

APPLIANCES _____
TAR PAPER/SHINGLES _____
METAL PRODUCTS _____
CEILING TILES _____

SHEET ROCK _____
BALES _____
BED SPRINGS _____
RUBBER PRODUCTS _____

C & D WASTE _____
AUTO PARTS _____
OTHER (SEE COMMENTS) _____

TYPE 27 - UNACCEPTABLE PORTIONS BASE ON P.M.K. SURVEY (SEE COMMENTS)

NJDEPE PROHIBITED WASTE _____
NON-RESPONDENT/INSUFFICIENT TO SURVEY _____
HAZARDOUS IMPACT ON EMISSIONS _____

HAZARDOUS WASTE _____
HAZ. EFFECT ON ASH _____
NON-COMBUSTIBLES _____

OVERALL RESULTS:

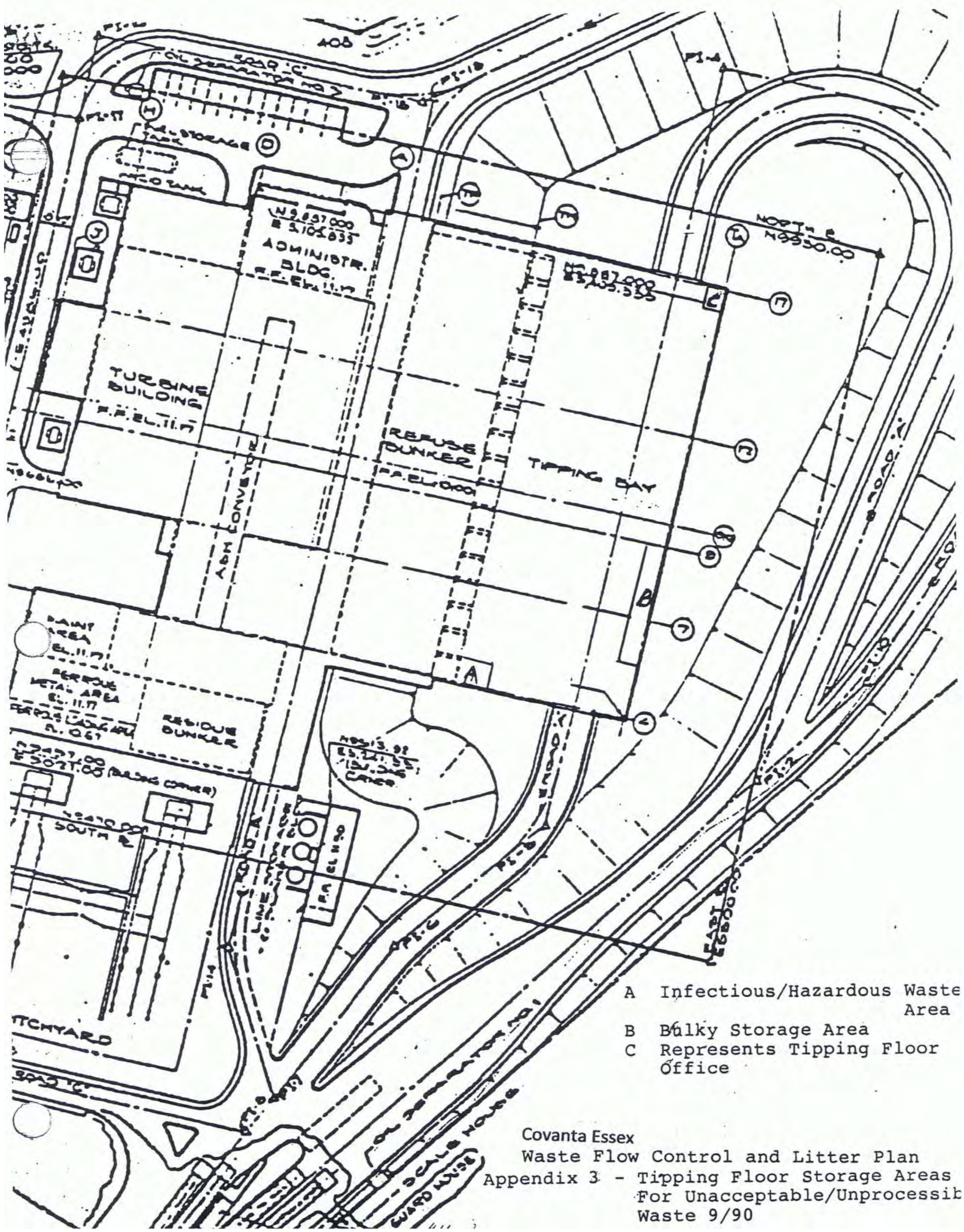
ACCEPTABLE LOAD _____ UNACCEPTABLE LOAD _____ DRIVER SAFETY VIOLATION _____

COMMENTS:

FOR REJECTED LOADS CONTACT ONE OF THE FOLLOWING INDIVIDUALS IMMEDIATELY UPON REJECTION:

1) TONY FLURI/FUEL HANDLING LEAD TECH.		
2) SHIFT SUPERVISOR ON DUTY		
3) OPERATIONS MANAGER		

*NOTE: CONTACT IN THE ORDER LISTED / CHECK BOX OF THE INDIVIDUAL THAT WAS CONTACTED



A Infectious/Hazardous Waste Area

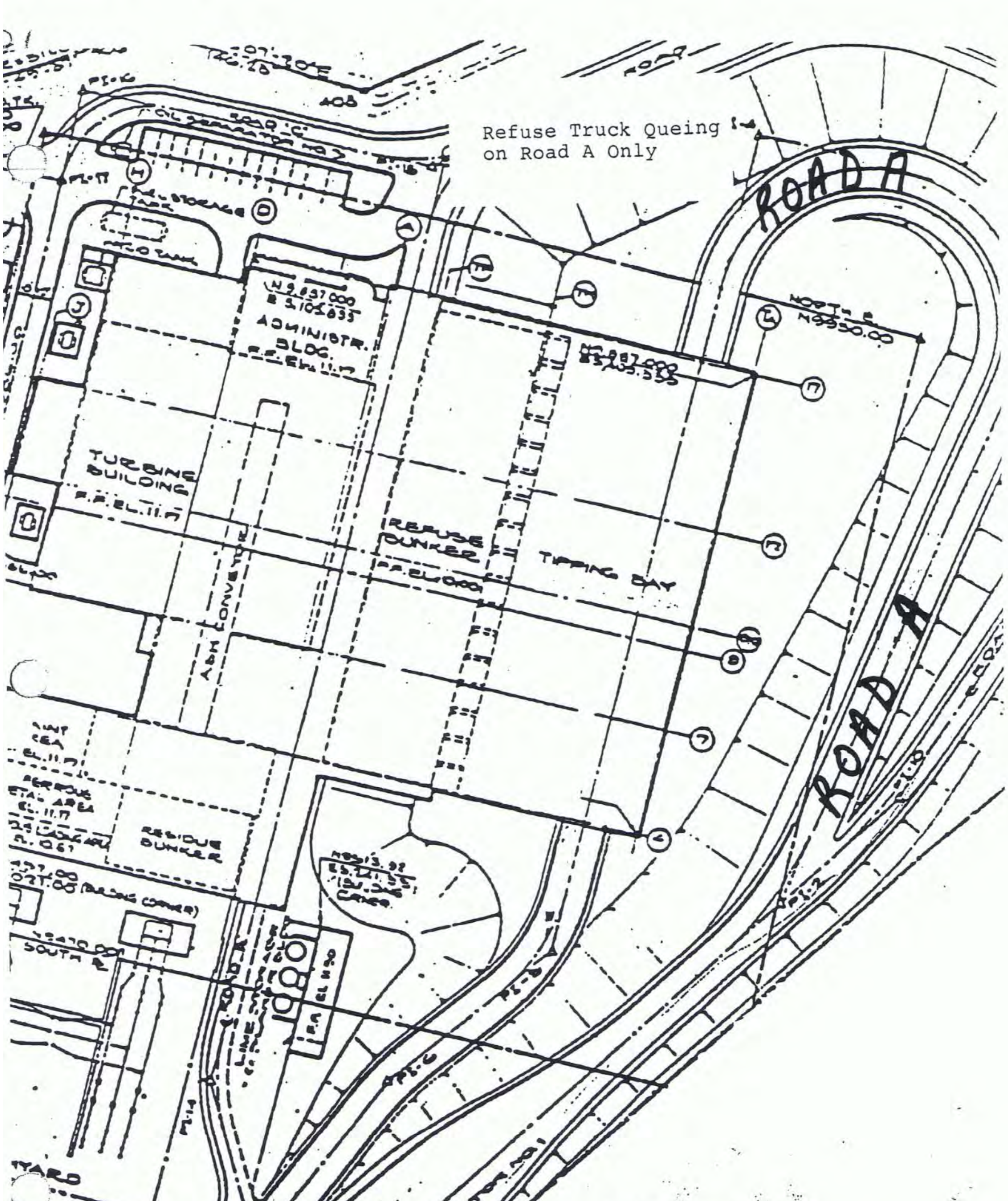
B Bulky Storage Area

C Represents Tipping Floor Office

Covanta Essex

Waste Flow Control and Litter Plan

Appendix 3 - Tipping Floor Storage Areas For Unacceptable/Unprocessib Waste 9/90



Covanta Essex

Waste Flow Control and Litter Plan
Appendix 4 - ARF On-Site Refuse Truck Queing 9/90

Exhibit 14

COVANTA
Powering Today. Protecting Tomorrow.

Covanta Essex Company
183 Raymond Boulevard
Newark, NJ 07105
Tel: 973-344-0900
Fax: 973-344-4999

January 10, 2022

Mr. Anthony Fontana, Chief
NJ Department of Environmental Protection
Bureau of Solid Waste Permitting
P.O. Box 420
Mail Code: 401-02C
401 East State Street
2nd Floor, West Wing
Trenton, NJ 08625-0420

Subject: Application for a Solid Waste Facility Permit Renewal
Covanta Essex Company
Essex County Resource Recovery Facility
Program Interest Number: 133546
Permit No. RRF200001
Response to Technical Notice of Deficiency

Dear Mr. Fontana:

On behalf of Covanta Essex Company, the following responses are being provided to the questions and comments received in the Technical Notice of Deficiency letter dated November 10, 2021 and received on November 15, 2021 regarding the above referenced permit application. An extension to respond to these comments by January 10, 2022 was granted by the Department in a letter dated December 9, 2021. The comments and responses are provided below:

- Comment No. 1
  Section 3.0 Updated Engineering Design and Site Modifications
  Section 3.2.1 Fabric Filter Baghouse Project, Environmental Impact of Change
  The comment requests a comparison to be provided, which includes but is not limited to a calculation of the percent reduction of particulate matter PM10 and PM2.5, lead, cadmium, mercury, arsenic, beryllium, chromium, and nickel emissions from November 2016 through November 2019 compared to the previous permit renewal review period (2006-2010) in order to demonstrate environmental benefit of the fabric filter baghouse upgrade.

  Covanta Response:
  Please see Table 1 below showing the requested information:

Table 1

	2006-2010 Average Actual Results	2016- 2019 Average Actual Results	% Reduction of Actuals
	(with ESP)	(with Baghouse)	
	Avg of All Boilers	Avg of All Boilers	Avg of All Boilers
Mercury (ug/dscm7)	9.59	1.24	87.04%
Mercury (lb/hr)	0.00333	0.000485	85.44%
Lead (ug/dscm7)	144.52	2.43	98.32%
Lead (lb/hr)	0.04774	0.00088	98.16%
Cadmium (ug/dscm7)	10.9	0.26	97.64%
Cadmium (lb/hr)	0.00378	0.0000933	97.53%
Arsenic (ug/dscm7)	0.87	0.14	83.74%
Arsenic (lb/hr)	0.000293	0.0000515	82.42%
Beryllium (ug/dscm7)	0.04	0.02	46.56%
Beryllium (lb/hr)	0.0000121	0.00000707	41.57%
Chromium (ug/dscm7)	2.23	1.57	29.43%
Chromium (lb/hr)	0.000757	0.000566	25.23%
Nickel (ug/dscm7)	4.08	1.86	54.49%
Nickel (lb/hr)	0.00147	0.000674	54.15%
PM-2.5 (lb/hr)*	5.33	3.28	38.46%
PM-10 (lb/hr)	5.33	3.53	33.77%

*Note the facility was not required to perform stack testing for PM2.5 until 2014 so PM-2.5 emissions were assumed to be equal to PM-10 emissions.

- Comment No. 2
  Section 3.2.2 Removal of Phosphoric Acid Fly Ash Treatment, Environmental Impact of Change – Please provide the monthly totals (in gallons) of phosphoric acid that was used by the ECRRF from 2015 through December 2017 (when the phosphoric acid treatment was discontinued) to further demonstrate the environmental benefit of the discontinuation of the phosphoric acid fly ash treatment system. In addition, please include a calculation of the estimated yearly reduction of truck traffic as a result of the discontinuation of the phosphoric fly ash treatment.

  Covanta Response:
  Please see Table 2 below showing the monthly total in gallons of phosphoric acid used by the ECRRF from January 2015 through December 2017.

Table 2

Month, Year	Total Phosphoric Acid Usage (gallons)
January, 2015	14,519
February, 2015	10,107
March, 2015	12,658
April, 2015	16,279
May, 2015	16,315
June, 2015	17,870
July, 2015	18,168
August, 2015	16,968
September, 2015	15,783
October, 2015	15,232
November, 2015	13,678
December, 2015	11,080
January, 2016	13,364
February, 2016	11,706
March, 2016	11,704
April, 2016	12,500
May, 2016	8,506
June, 2016	5,956
July, 2016	6,868
August, 2016	6,540
September, 2016	6,272
October, 2016	6,264
November, 2016	3,267
December, 2016	6,007
January, 2017	6,017
February, 2017	4,409
March, 2017	4,695
April, 2017	15
May, 2017	30
June, 2017	398
July, 2017*	2,184
August, 2017	11
September, 2017	77
October, 2017	0
November, 2017	0
December, 2017	0

* Additional phosphoric acid usage to empty out the storage tank

Records of deliveries of phosphoric acid were reviewed for the 5 years prior to the removal of the system. The number of deliveries of phosphoric acid received each year is shown in Table 3 below. Please note that this analysis through 2016 was also included with the application for the minor modification of the Solid Waste Facility Operating permit submitted on September 20, 2017.

Table 3 – Phosphoric Acid Deliveries 2012 – 2016 (trucks/month)

	2012	2013	2014	2015	2016	2017
January	5	4	4	5	4	2
February	4	4	3	3	3	2
March	4	4	4	4	5	2
April	6	6	4	4	3	0
May	5	5	5	6	4	0
June	5	4	5	5	1	0
July	5	5	5	5	2	0
August	4	5	4	5	1	0
September	5	5	5	4	2	0
October	5	5	5	5	2	0
November	2	5	4	4	1	0
December	3	5	5	3	2	0
TOTAL	53	57	53	53	30	6

Based on the delivery records, a maximum of 57 truck deliveries were received per calendar year over the last 5 years. The number of deliveries in 2016 were lower than normal due to lower usage of phosphoric acid which began to decrease as each baghouse was brought on line. Based on this data, it is estimated that between 53 and 57 truck trips per year were eliminated as a result of the removal of the phosphoric acid fly ash treatment system.

- Comment #3

  Section 4.0 – Updated Operations and Maintenance (O&M) Manual

  Section SD-2 at 5.3 – "Tipping Floor" of the O&M Manual shall be updated to state that an adequate number of trained and qualified operations technicians should continually inspect the tipping floor during all hours of waste receiving, not just during the hours of 10:30 am to 03:00 pm.

  Covanta Response:

  Section 5.3 of System Description SD-2 of the O&M Manual has been revised as requested and the entire revised section is included in Attachment 1 to this response letter. Note that Section 3.7 Bulky Waste Shear and Section 4.5 Bulky Waste Shear were also removed as this equipment was permanently removed from service in 1993.

- Comment #4

  Section 4.0 – Updated Operations and Maintenance (O&M) Manual

  Section OP-3 at 3.I.1 – "Precautions and Limitations (Cont')" of the O&M manual shall be updated to remove the mention of an electrostatic precipitator and include appropriate information regarding the baghouse equipment. This Section shall also be updated to include opacity provisions to comply with what is stated in Covanta Essex's Title V Air Permit (e.g. 10% opacity for 6 minutes).

  Covanta Response:

  Section 3.0 subsection I.1 of Section OP-3 of the O&M manual has been revised to remove references to an electrostatic precipitator and to add the appropriate information regarding the baghouse equipment as requested. Additional references to an electrostatic precipitator have also been removed from Section 3.0. The entire revised section is included in Attachment 2 to this response letter.

- Comment #5

  Please update the O&M manual to include the corrective measures taken to achieve compliance regarding the recent spent baghouse disposal incident as described in your letter dated June 25, 2021 to Stephan Szardenings of the Bureau of Hazardous Waste Compliance and Enforcement. This shall include, but not be limited to, prohibiting the use of any third-party contractors for the disposal of used bag filters and requiring all hauler trucks leaving the site for any reason to stop at the scale house for authorization to leave prior to leaving the site.

  Covanta Response:

  As stated in the June 25, 2021 letter submitted to the Bureau of Solid Waste Permitting, to prevent recurrence of this event in the future, Covanta Essex Company has modified Section API-3 of Volume IX of the Operations and Maintenance Manual to include the procedure for the disposal of used bag filters. This procedure, which prohibits the use of any third-party contractors for this task, is incorporated as a new paragraph f under Section C.1. Only employees of Covanta Essex will be responsible for taking the used filter bags that have been double bagged and sealed to the tipping floor for processing in the MWC units at the facility. Also, in addition to the regular scaling out of all refuse hauler trucks, ash hauler trucks, and metal hauler trucks, all other hauler trucks leaving the site for any reason will be required to stop at the scale house for authorization to leave prior to departing from the site. This will prevent unauthorized removal of waste from the site. This requirement has also been added as a new paragraph g under Section C.2. The revised Section API-3 is included in Attachment 3 to this response letter.

- Comment #6

  Covanta Essex Company Submittals in Response to Administrative Consent Order (ACO) EA ID #NEA 200001-07736 – Please provide an updated O&M Manual that includes all added protocols and procedures regarding enhanced iodine waste detection and removal at the ECRRF. The prohibition of iodine containing waste shall be expressly prohibited through language in the O&M Manual. Please include in the O&M Manual all forms, procedures, and protocols that have been submitted by Covanta Essex and recommended by Tetra Tech in response to the Department's ACO. The O&M Manual shall be updated to include, but not limited to, the following items:

a. An example of the informational flyers that are distributed by Covanta Essex to the Essex County Utilities Authority, Department of Sanitation of New York, and commercial haulers. Include frequency with which Covanta Essex distributes these flyers.

b. A description of Covanta Essex's updated hospital outreach program.

c. A description of Covanta Essex's updated procedures regarding Essex County Solid Waste Advisory Committee (SWAC) outreach, including the website link that has been created by Covanta Essex that lists all waste types that are prohibited from being accepted at the facility.

d. A description of Covanta Essex's updated procedures regarding outreach via invoicing. Please provide an example copy of this new invoice in the O&M Manual. Also, please include in the O&M Manual that all Essex County customers will be provided this website link via the ECUA SWAC.

e. A description and copy of the Covanta Essex Purple Plume Prevention Plan. The description shall include a provision that the plan shall be reviewed on a yearly basis to assess whether further improvements or enhancements could be made.

f. A description of the Covanta Essex Virtual Drive-By Procedure.

g. A copy of the "Covanta Essex Hospital Load Inspection Procedure." In addition, Section 2.c.ii of this Procedure shall be updated to include the following language: "The waste will be raked as thinly as possible so that most of the waste is visible." Also include a copy of the Covanta Essex Hospital Waste Load Inspection Form.

h. A copy of the modified Covanta Material Characterization Forms for Type 27 waste approvals and an updated description of the Type 27 waste approval process.

i. A copy of the updated solid waste inspection throwdown form. Also, the O&M Manual shall be updated to include the new inspection frequency and protocols – including the increased frequency to inspect a minimum of 10% of all waste loads per day and to include iodine containing waste as unacceptable waste. These inspections shall be truly randomized.

j. A description of the installation of high-definition digital cameras at appropriate locations throughout the facility – Please include: the number of cameras, the location of the cameras, and who is responsible for monitoring the cameras. Diagrams showing the locations of the cameras shall also be included in the O&M Manual.

k. A description of any new training programs, including training on monitoring truck deliveries and unloading, how to identify iodine-containing waste and the proper action to take if this waste is received at the facility, training on the use of digital cameras by tipping floor attendants, and any randomly staged drills. Include the frequency of these training programs.

l. A copy of the purple plume response procedures provided to Control Room Operators on response steps to be taken during a purple plume event.

m. A provision that signs at the truck entrance to the Covanta Essex facility will clearly indicate iodine as a prohibited waste.

Covanta Response:

An additional section has been added to Volume IX of the O&M Manual entitled Purple Plume Mitigation Plan (Plan). The section is numbered as API-3A and includes all forms, procedures, and protocols to prevent the delivery of iodinated waste to Covanta Essex as well as procedures and training to prevent processing of any iodinated waste delivered to Covanta Essex and deposited in the tipping floor area. The Plan is based on all forms, procedures, and protocols that have been submitted by Covanta Essex and recommended by Tetra Tech in response to the Department's ACO. The revised section API-3A is included in Attachment 4 to this response.

- Comment #7

  Section 6.0 – Changes in Environmental Impacts from Facility Operations

  Section 6.3.1 – Bypass Waste Summary – For the 2015-2019 review period, please provide the disposal facilities where the bulky/unprocessible waste was transported to. In addition, according to the Requirement Number 123 of Covanta Essex's SWF Permit, "The information submitted shall include, but not be limited to the following: ...the weight of unprocessible solid waste removed for alternate disposal, and the facility receiving that waste for disposal." Please include the facility receiving the unprocessible waste for disposal on future SWF Monthly Operations Reports submitted by Covanta Essex. Simply stating, "The facility does not determine where unprocessible waste is delivered to," is not sufficient.

  Covanta Response:

  Between January 1, 2015 and December 31, 2019, all bulky/unprocessible waste collected on the tipping floor was picked up by a third-party hauler and was delivered to the following disposal facilities:

Destination	Tons Delivered (1/1/15 – 12/31/19)
HMDC Solid Waste Baler 100 Baler Blvd. North Arlington, NJ 07031	227.95 tons
Waste Management Julia Street Transfer Station 864 Julia Street Elizabeth, NJ 07201	242.60
IWS Transfer Station 375 Route 1 & 9 South Jersey City, NJ 07304	8.46 tons

- Comment #8

  Section 6.0 – Changes in Environmental Impacts from Facility Operations

  Section 6.3.11 – Ash Residue Generation and Characterization – Please provide the following information for this section:

  a. Monthly totals for the 2015-2019 review period for the amount of ash residue that was transported to the Gloucester County Solid Waste Complex Landfill and to the Covanta Metals Marketing, LLC facility.
  b. A summary of the ash processing system that takes place at the Covanta Metals Marketing, LLC facility and describe any environmental benefits of sending the ash to this facility as compared to the Gloucester County Solid Waste Complex Landfill.
  c. Monthly summaries of TCLP results for the 2015-2019 review period.

  Covanta Response:

  a. The monthly totals for the 2015-2019 review period of ash residue transported to the Gloucester County Solid Waste Complex Landfill are presented in Table 4 below. During this period, there was no ash residue transported to the Covanta Metals Marketing, LLC facility. The delivery of ash residue to the Covanta Metals Marketing, LLC facility did not begin until May, 2020.

Table 4 – Ash Residue Disposal (2015-2019)

Year	Destination	Tons Transported
2015	Gloucester County Solid Waste Complex Landfill	81,871
2016	Gloucester County Solid Waste Complex Landfill	185,924
2017	Gloucester County Solid Waste Complex Landfill	198,224
2018	Gloucester County Solid Waste Complex Landfill	192,459
2019	Gloucester County Solid Waste Complex Landfill	187,262

b. The following describes the ash processing system that takes place at the Covanta Metals Marketing, LLC facility in Fairless Hills, PA.

Covanta Metals Management ("CMM") operates a metals and aggregate recovery facility on a portion of Keystone Industrial Port Complex ("KIPC") which primarily comprises approximately 13 acres located at 500 Middle Drive, Fairless Hills, PA. The CMM facility is permitted under PADEP General Permit WMGM061SE001 for metal recovery and the processing, recovery, and beneficial use of aggregates from energy-from-waste (EfW) ash residue.

The CMM Facility includes two (2) metal recovery areas and an aggregate and metals recovery area (referred to as Total Ash Processing System ("TAPS")). In the TAPS facility, ash residue from EfW facilities is processed to recover metals (ferrous and non-ferrous) and aggregates for beneficial use. Recovered metals are sent to off-site metals recyclers and aggregate meeting the requirements of the General Permit is beneficially reused in asphalt production.

c. The monthly summaries of TCLP results for the 2015-2019 review period is presented in Table 5 below. Note that the results presented below are a summary of the monthly results based on the statistical analysis of 10 monthly aliquots of each monthly composite combined ash sample.

Table 5 – TCLP Monthly Summary Results (2015-2019)

Sample Month, Year	TCLP Concentration Results (mg/l)				
	Cadmium	Chromium	Lead	Mercury	Selenium
January, 2015	0.050^U	0.050	0.050^U	0.00040^U	0.082
February, 2015	0.050^U	0.051	0.050^U	0.00040^U	0.064
March, 2015	0.050^U	0.054	0.050^U	0.00040^U	0.074
April, 2015	0.050^U	0.050^U	0.050^U	0.00040^U	0.128
May, 2015	0.050^U	0.050^U	0.050^U	0.00040^U	0.067
June, 2015	0.060	0.050^U	0.050^U	0.00045	0.091
July, 2015	0.099	0.050^U	0.050^U	0.00094	0.060

Sample Month, Year	TCLP Concentration Results (mg/l)				
	Cadmium	Chromium	Lead	Mercury	Selenium
August, 2015	0.050^U	0.050^U	0.050^U	0.00040^U	0.114
September, 2015	0.078	0.050	0.050^U	0.00062	0.116
October, 2015	0.050^U	0.050^U	0.050^U	0.00040^U	0.112
November, 2015	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
December, 2015	0.050^U	0.050^U	0.050^U	0.00040^U	0.051
January, 2016	0.050^U	0.051	0.050^U	0.00040^U	0.084
February, 2016	0.050^U	0.050^U	0.050^U	0.00040^U	0.096
March, 2016	0.050^U	0.051	0.050^U	0.00040^U	0.080
April, 2016	0.050^U	0.050^U	0.135	0.00040^U	0.050^U
May, 2016	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
June, 2016	0.055	0.050^U	0.050^U	0.00040^U	0.050^U
July, 2016	0.055	0.050^U	0.050^U	0.00040^U	0.050^U
August, 2016	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
September, 2016	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
October, 2016	0.050^U	0.050^U	0.090	0.00040^U	0.050^U
November, 2016	0.050^U	0.050^U	0.050^U	0.00040^U	0.075
December, 2016	0.050^U	0.050^U	0.183	0.00040^U	0.092
January, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
February, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
March, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
April, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.063
May, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.052
June, 2017	0.050^U	0.050^U	0.050^U	0.00044	0.074
July, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.078
August, 2017	0.050^U	0.052	0.050^U	0.00040^U	0.133
September, 2017	0.050^U	0.050^U	0.050^U	0.00040^U	0.057
October, 2017	0.050^U	0.050^U	0.051	0.00040^U	0.060
November, 2017	0.050^U	0.050^U	0.051	0.00040^U	0.055
December, 2017	0.050^U	0.054	0.308	0.00040^U	0.069
January, 2018	0.050^U	0.071	0.050^U	0.00040^U	0.133
February, 2018	0.050^U	0.051	0.071	0.00040^U	0.104
March, 2018	0.050^U	0.086	0.064	0.00040^U	0.133
April, 2018	0.050^U	0.050^U	0.799	0.00040^U	0.058
May, 2018	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
June, 2018	0.050^U	0.050^U	0.050^U	0.00040^U	0.114
July, 2018	0.050^U	0.050^U	0.050^U	0.00040^U	0.050^U
August, 2018	0.050^U	0.050^U	0.050^U	0.00040^U	0.079
September, 2018	0.050^U	0.050^U	0.286	0.00040^U	0.083
October, 2018	0.050^U	0.050^U	0.066	0.00040^U	0.097
November, 2018*	NA	NA	NA	NA	NA
December, 2018	0.050^U	0.050^U	0.050^U	0.00040^U	0.061
January, 2019	0.073	0.050^U	0.050^U	0.00040^U	0.050^U
February, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.057
March, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.060
April, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.050

Sample Month, Year	TCLP Concentration Results (mg/l)				
	Cadmium	Chromium	Lead	Mercury	Selenium
May, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.056
June, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.061
July, 2019	0.070	0.050^U	0.050^U	0.00040^U	0.079
August, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.112
September, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.084
October, 2019	0.050^U	0.050^U	0.050^U	0.00040^U	0.076
November, 2019	0.050^U	0.062	0.050^U	0.00040^U	0.072
December, 2019	0.050^U	0.050^U	0.077	0.00040^U	0.059

* As previously discussed among Covanta and NJDEP representatives and as set forth in the letter dated December 28, 2018 submitted by Covanta to Mr. Anthony Fontana of the Bureau of Solid Waste Permitting, the November 2018 ash samples were deemed not representative and therefore not subjected to Toxicity Characteristic Leaching Procedure (TCLP) analysis.

U: The analyte was not detected in the sample. Value shown is the calculated Reporting Limit (RL) which is the lowest quantifiable reporting limit that can be achieved when an analysis is performed under ordinary conditions.

If you have any questions regarding these responses, please do not hesitate to contact me.

Sincerely,

Pat Earl

Patricia Earls
New Jersey Regional Environmental Manager

cc: Kimberly Beccia, Bureau of Solid Waste Permitting
Tom Byrne, Bureau of Solid Waste Permitting
Gina Lugo, Bureau of Solid Waste Compliance & Enforcement
Rajendra Gandhi, Bureau of Solid Waste Compliance & Enforcement
Jeffrey Meyer, Bureau of Air Compliance & Enforcement - Northern

APPLICANT'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I understand that, in addition to criminal penalties, I may be liable for a civil administrative penalty pursuant to N.J.A.C. 7:26-5 and that submitting false information may be grounds for denial, revocation or termination of any solid waste facility permit or vehicle registration for which I may be seeking approval or now hold.

David Blackmore	
Print/Type Applicant/Owner Name	Signature of Applicant/Owner
6/10/22	Facility Manager
Date	Title
David Blackmore	
Print/Type App./Operator Name	Signature of Applicant/Operator
6/10/22	Facility Manager
Date	Title
Print/Type Co-Applicant Name	Signature of Co-Applicant
Date	Title

Attachment 1

COVANTA
ENERGY
for a cleaner world

COVANTA ESSEX COMPANY

ESSEX RESOURCE RECOVERY FACILITY

REFUSE RECEIVING & HANDLING SYSTEM

SYSTEM DESCRIPTION NO. 2

VOLUME I

REVISED, MAY 1990
REVISED, SEPTEMBER 1990
REVISED, JANUARY 1994
REVISED, MAY 1995
REVISED, SEPTEMBER 2003
REVISED, MAY 2009
REVISED, MAY 2011
REVISED, JANUARY 2022

APPROVED BY: [signature] **DATE:** 1/16/22

RECORD OF CHANGES

Change #	Date	Affected Pages	Purpose
1	5/90	2, 5-8, 19,21,23,24	Correct Errors
		All page numbers	Changed to SD2-#reference
2	9/90	4, 7, 8,15,19,21	Correct Errors
3	1/94	10, 11, 12,13,14,15, 16, 18, 22,23,24,25 26, 27, 28	Correct Errors
4	5/95	Addition of Section 5.0	Addition
5	9/03	All	Review & correct errors
6	5/09	All	Review, add waste diversion project description
7	5/11	All	Review for Solid Waste Permit Renewal
8	1/22	All	Incorporate changes outlined in Technical NOD response for Solid Waste Permit Renewal

Table of Contents

1.0 System Function

The tipping floor operates 6 days a week. Approximately 250-400 refuse trucks are processed at the facility per day.

The facility receives approximately 18,000 to 20,000 tons over a six day period each week. This is to ensure that sufficient quantities of refuse are available to support boiler operation when refuse is not being received. The main objective of this system is to provide a 3-4 day supply of refuse. This is accomplished by storing the refuse in various sections of the refuse bunker. Refuse inventory typically ranges from 5,000 to 15,000 tons. The secondary objective is to facilitate the diversion of 100 to 300 tons per day to alternate facilities.

2.0 Main Flow Path

Tipping Operation for Trucks Delivering MSW

The refuse flow path begins when trucks carrying refuse enter the facility from the south (Figure 1). The trucks proceed to the scales after they have entered the facility. The scales measure the weight of the truck and the refuse load. Once the trucks have been weighed, they go to the tipping bay. There they are directed to an unloading bay by the tipping floor operator. The trucks maneuver on the large tipping floor to align with one of the tipping ports and unload the refuse.

Two refuse cranes are used to transfer refuse within the refuse bunker or to the refuse feed charging hopper. In order to help stabilize furnace performance mixing of the refuse is performed within the bunker. This helps to make the refuse more uniform in combustion characteristics. The refuse feed charging hopper stores refuse and guides it to the upper feed chute. The upper feed chute fills with refuse and maintains an air seal between the atmosphere and the furnace.

From the upper feed chute refuse falls to the lower feed chute. The lower feed chute directs refuse to the ram feeder. A shut-off damper is positioned between the upper and the lower feed chutes to seal the boiler during start up and shut down.

Waste Diversion Operation

Waste which will be diverted to other facilities will be temporarily stored near refuse Bays 7, 8 and 9. This pile will be stocked 10’ – 15’ in height and 10’ – 40’ in length. Each Bay is approximately 17’ in width.

2.1 Minor Flow path

The minor flow paths included in the Refuse Receiving & Handling System include:

Cooling Water System
Fire Protection System

Cooling Water System

Cooling water is used to cool the lower feed chute, since it is exposed to the heat from the furnace. Water from the closed cooling water system enters both sides of the lower feed chute. Cooling water is regulated by a flow regulating valve CC-139. Water flows through side wall water jacket and cools the lower feed chute. Water from the side walls is piped to the rear jacket of the chute and is then discharged from the chute to the cooling water surge tank through return piping mounted on both sides of the lower feed chute. The chute coolers are not pressure vessels and water should not exceed 15 psig.

Fire Protection System

Two fire stations are provided above the refuse bunker to extinguish fires which may start in the refuse bunker or the feed chute. The stations are equipped with water cannons for directing water to the burning refuse. The tipping floor is equipped with an overhead sprinkler system. A sprinkler system is also installed above the bunker and the crane to protect the units and their festoon cabling.

3.0 Component Description

The components included in this system include:

- Scales
- Tipping Bay
- Waste Diversion Operation
- Refuse Bunker
- Overhead Refuse Crane
- Orange Peel Grapple
- Refuse Feed Charging Hopper

3.1 Scales – Tipping Floor Operation

Function

The function of the truck scales is to provide the scale operator with a gross, net, or tare weight of a truck. The weight of the refuse dumped at the plant site is required for billing and reporting purposes.

Description

Two 100-ton, 60'x 10', truck scales, for incoming trucks are located to the southeast of the tipping bay next to the scale house. Two 100-ton scales for outgoing empty refuse trucks and for those loaded with ash, ferrous, and bulk removal are also provided.

The scale is equipped with a scale house operator's console that contains a digital display for each scale. The digital display has a 120,000 lb capacity with weight increments of 10 pounds and an automatic zero. The instruments are solid state integrated circuits. The display is composed of at least six digits 3/4 inches in height. The scale is also equipped with digital TARE entry switches to match the weight display. A Gross-Net switch is also provided to select the read out display to be either gross weight or net weight. In the Net position, the value set on the Tare switches is subtracted from the gross weight and the net weight will appear on the display. All trucks are weighed for both tare and gross weights at this facility.

3.1a. Scale – Waste Diversion

A 70'x10' above grade scale will be utilized to weigh trailers prior to and after loading operation. Scale will be located along the east wall of the tipping floor.

Operational Data

Scale Design Data – Tipping Floor Operation
Manufacturer: Weigh-tronics, Inc & Fairbanks Scale
Capacity: 60 Ton (3)

Scale Design Data – Waste Diversion Operation
Manufacturer:
Capacity:

3.2 Tipping Bay

Function

The function of the tipping bay is to provide ample space for refuse trucks to maneuver, unload and exit. The tipping floor will also provide an area for a temporary storage pile of material to be diverted to other licensed facilities.

Description

The tipping bay, shown in Figure 2 is located adjacent to the refuse bunker and is accessed through two roll-up doors, one located on the northern roadway and one located on the southern. The floor area is 272 feet long by 112 feet wide. The tipping floor can handle up to 16 trucks at one time, though the average number of trucks for any given time is expected to be less, usually about 6-8. The tipping bay is under a slight negative pressure to ensure that no odors escape the building.

A separate high cycle door will be added to the entrance area at the northeast corner of the tipping bay to allow transfer trailers access to the waste diversion area of the floor.

3.3 Refuse Bunker

Function

The function of the refuse bunker (pit) is to store large quantities of refuse for use in the boiler.

Description

The refuse bunker, shown in Figure 4, is a large storage area located adjacent to the tipping floor. It is approximately 69 feet wide by 269 feet long by 95 feet deep. The refuse bunker has a storage capacity of approximately 16,000 tons which is approximately a 5 to 6 day supply of refuse with all three boilers operating at maximum continuous rating (MCR). Refuse cranes are mounted above the refuse bunker to transfer refuse within the pit and to transfer it to the refuse feed charge hoppers.

3.4 Refuse Cranes

Function

The function of the refuse cranes is to transport and mix refuse within the refuse bunker and to deliver refuse to the refuse charging feed hopper.

Description

Two, 100% capacity refuse cranes, shown in Figure 5, are located above the refuse bunker, at elevation 101'-1". The cranes are sized to hold approximately 8.5 tons. This is based on the following assumptions and calculations:

Crane Capacity = 12.00 tons (grapple weight) + 8.5 tons (trash weight) = 20.5 tons

The refuse cranes consist of the following components:

- Bridge Drive System
- Trolley Drive System
- Holding/Closing Hoist Drive System
- Six Tine Orange peel Grapple
- Railways
- Motors
- Motor Brakes
- Circuit Switches
- Festoon System
- Auxiliary Hoist

Bridge Drive System

The bridge drive system is used to position the crane on the rails above the refuse bunker. It uses two motor drive assemblies. The drive assemblies, shown in Figure 5, are located on the east and west end of the bridge. They consist of a magnatorque brake, a 40 HP motor, a motor brake, and a gear case connected to a drive wheel by a shaft. The bridge drive has a maximum speed of 250 feet per minute (fpm).

Trolley Drive System

The trolley drive system positions the grapple over the refuse bunker. The trolley is driven by a 30 HP motor connected to a gear box to two drive wheels via a drive shaft. The drive is slowed by motor and magnatorque brakes. The trolley drive system has a maximum speed of 250 fpm.

Holding and Closing Hoist Drive System

There is a drive system and drum for each of these two functions. The hoist drive system is driven by a 200 HP motor connected by a coupled drive shaft to the drum by a reduction gear. Magnatorque and motor brakes act on the shaft to reduce speed. The holding hoist drive is used for raising and lowering the grapple. The holding/closing hoist has a maximum speed of 250 fpm. The closing drive is used to open or close the grapple. To move the grapple vertically, and maintain the open or closed position, both lines must be moved simultaneously.

Each drive assembly is made up of the following components: motor, motor brake, magnetorque brake, gearbox, and drive shaft(s).

--Motor

All motors are 480 volt, 3 phase AC. They are synchronous motors connected to the drive shaft via a coupling to enable easy removal.

Inspection

Motors should be clean to allow proper cooling. The holding and closing motors are equipped with separate blowers which should also be inspected.

--Motor Brake

This is the On-Off brake. It is opened by an electromagnetic solenoid and closed by a spring. Electricity to the solenoid is supplied whenever the motor is energized, thus releasing the brake when movement is desired. During all movement the brake is off.

The brakes contain a self-adjustment mechanism which consists of a stack of spacer plates enclosed in a housing through which the rod that connects the brake jaws passes. As the brake lining wears, the rod moves further through the spacer plate housing each time the brake is released. When the stroke length reaches a certain point, the spacer nearest the brake wheel automatically drops from the stop on the end of the brake rod. The next time the brake is set, the stop butts against the remaining spacers and the brake stroke is shortened by the width of one spacer. This cycle repeats throughout the life of the liner.

Inspection

Check brake pads for wear and that all bolts and fittings are tight.

--Magnetorque Brake

This brake, shown in Figure 6, is the speed control brake. Electromagnetic poles in the brake oppose rotation when the speed needs to be reduced. The larger the difference between the desired speed and the actual speed, the more current will be supplied to the brake, and the more counter-torque will be applied. The brake allows for an infinite range of speed control.

--Gear box

The gear box controls the ratio of the motor speed to the drum or shaft speed.

Inspection

An oil level must be maintained in the gear box. This level should be checked every shift for each gear box. Inspect the box seals for leaks and report any excessive leaks.

--Drive Shafts

Drive shafts contain couplings between components to allow removal of components without affecting the position of connected shafts. Check at least once per day during walkdown.

-Circuit Breakers

Circuit breakers are installed to provide over current protection to the electrical equipment on the cranes. They also provide positive electrical isolation during outages.

The 480 volt supply is transformed from the 4160 volt switch gear SG-904 and SG-906 for the north and south cranes, respectively. 480 volts is sent from transformers TR-912 and TR-913 to the main disconnects (HC-DS1 and HC-DS2) in the crane switch gear area. This breaker then feeds the five functions: bridge, trolley, holding, closing, and auxiliary hoist motors. Any time these components require maintenance or any time a crane inspection is being performed, this switch must be locked off.

-Refuse Crane Operational Limit Switches

Function

The functions of the refuse crane limits are, primarily, to automatically slowdown or stop a crane component before reaching the limit of its travel. Various limit switches are employed by the automatic crane operating system.

Description

The sections which follow will describe the various types of limit switches used on the P & H overhead refuse crane.

--Mechanically Activated Toggle or Flop-Type Switches

This type of switch, mounted to the rail support, is actuated by contact made with a piece of metal attached to the moving part (bridge or trolley platform) which is to be limited. The switch is either on or off. When the switch if off there is no limit applied. Throughout most of the operating range of the bridge or trolley the switch will be off. However, as the edge of the rails is approached the metal plate will contact the limit switch and flip it to the "on" position. When the switch is on, a relay in the control circuit for the motor will cause the motor to either slowdown or stop completely.

These switches, shown in Figure 8 are rugged and reliable. Normal operational inspection should be limited to checking the tightness of the mounting bolts and visually verifying the proper "on" or "off" position. Do not flop the switch unless a problem is suspected, as mistakenly leaving the switch in the wrong position will cause it to be destroyed on the next pass of the crane, or no trolley movement possibly creating delays to crane operations when needed.

--Electro-Magnetic, Proximity "Go" Switches

This type of switch is mounted on the moving object to be slowed or stopped. A metal plate fixed to the rail support structure will actuate this switch without making contact. This is done through the use of a magnetic core in the switch which will move the switch from the "off" to the "on" position when an iron plate is next to (or in the same "proximity") as a switch.

The switches which limit bridge and trolley movement can be found on an arm hanging over the side of either component. They are spaced so as to pass freely and without contact between the iron actuator plates. It is extremely important that when working on or inspecting a refuse crane none of the switches or actuator plates be stepped on or moved in any way.

Operational inspection should include a check to ensure that all the mounting bolts of the plates and the switches are tight, and that the electrical connections to the switches are tight and in the proper location, and switches aren't covered with iron filings giving false readings.

In addition to providing for slowdown or stop functions the proximity switch can be used to determine the position of the bridge or trolley for automatic operation. This is done by placing a metal plate on one of the wheels and attaching a proximity switch close to the wheel such that when the wheel makes a revolution it will activate the switch which acts as a counter. By knowing the distance around the outside of each wheel and multiplying this by the number of turns counted by the switch, the location of the bridge or trolley can be determined. Other positioning proximity switches used in automatic operation are mounted similarly to the slowdown and stop switches. These switches reset the wheel counter if there is any wheel slippage.

--Rotational Gear Type Limit Switches

In order to determine the position of the grapple during crane operations rotational switches (Figure 3) attached to the grapple closing drum shaft. With the grapple close to the desired limit position the switch can be set. Whenever the drum rotations return to this point the switch is turned "on". When "on" the switch will limit drum rotation by slowing or stopping the motor.

--Mechanical Grapple Stop Limit Bar

The only function of this device is to stop motion of the grapple upwards so that it does not contact the holding or closing drums or the trolley platform. The switch (Figure 5) operates on a counterweight system, and is very similar to a breaker. Two of the three AC power feed cables to each of the holding and closing drum motor are fed into the switch housing to a contact. As long as the contact switch is closed power will flow out to the motor. One contact for each of the four switches in the cubicle is attached to an operating bar which extends out of one side of the cubicle. Attached to the free end of this bar is a counterweight mechanism. When the counterweight is allowed to move freely the operating bar will rotate and the switch contacts will be opened, disconnecting power to the motors.

During normal operation the switch counterweight is held in the closed position by the weight of the crane limit bar which is attached to the switch counter weight by a cable. The weight of the crane limit bar holds the contact switch shut. However, if the grapple were to come up high enough to contact the limit bar, the cable between the bar and the switch counterweight will slacken and the switch will open.

--Anti-Collision Bridge Limits

Each bridge has a device mounted on it which sends a signal to the other bridge to determine how close the bridges are. If the bridges get too close together, a red alarm warning light goes on in both refuse crane cabs. If the bridges are close they will not travel toward one another.

-Switch Functions

This section will describe the functions of the various switches for each of the various crane functions.

--Bridge

The main concern with the bridge function is to slowdown and stop the bridge motion before the bumpers hit the mechanical stops at either the east or west edge of the rail. To accomplish this there is a set of electrical proximity limit switches at each of the rail, east and west. As the bridge hits the first switch, the motor is slowed down. The second switch stops the motor. Both types of switches are provided for redundant protection. One center lane located approximately 1/2 way on the bridge will allow the bridge to come all the way to the back to the north or south wall to allow for crane maintenance.

--Trolley

The trolley limits are similar to that of the bridge with a few minor differences. A set of mechanical limits is mounted on the east and west sides of one of the trolley rails. As the trolley moves in either the east or west direction, it operates the first switch which slows down the motor speed. When the trolley platform reaches the second switch the power to the trolley motor is cut off, and the platform will coast to a stop.

On the cab side of each bridge rail, two long pieces of metal stock are mounted beneath the rail to actuate proximity switches mounted on the platform. The first plate going south actuates the slowdown function and the second the stop function, only in combination with grapple height. The function of these limits is to protect the festoon power supply cables which are draped along the south side bridge rail. If the grapple were in the raised position it could make contact and damage these festoons at the east end of trolley travel. When the grapple is not at a high position these proximity limits switches will not effect operation. At the west side of each trolley rail, two more metal plate proximity switch actuators are mounted. These are called the hopper slowdown and stop limits due to their location. Finally, there is a short plate mounted in the middle of the trolley rail which functions to reset the automatic control system trolley location.

--Holding Drum

A gear rotational limit switch is attached to each end of the holding drum. One end of the drum has the upper limit switch which stops the upward motion of the grapple before it hits the mechanical grapple stop.

The other end of the drum has the Trolley Festoon Zone Upper Limit Switch which works in conjunction with the trolley limits. This end also has the upper slowdown switch to slowdown the upward movement of the grapple when it is getting close to the Bridge.

In addition the mechanical limit bar protects both the holding and closing drums from being struck by the grapple by cutting power to the motors.

-Festoon System

The cranes are provided with a festoon system used to gather in and let out electrical wire the full distance of the refuse crane's travel. The system consists of railways with rollers to guide the gathering and letting out of electrical wire to the crane. Shock cords are provided with each of the loops to prevent snapping the wires on full extension of the crane, which should be inspected during the walk down.

-Auxiliary Hoist{tc \l 3 "-Auxiliary Hoist"}

The auxiliary hoist is located on the refuse crane bridge. It provides the operator with a service crane to pick out small to medium size non-combustible materials. The auxiliary hoist can travel at a maximum speed of 80 fpm and has a capacity of 3 tons.

Refuse Crane Operating Data

Manufacturer: P & H
Lifting Capacity: 20.5 tons
(with grapple): (16 yds grapple)
Grapple Capacity: 8.5 tons
Maximum Speeds:
Bridge: 250 fpm
Trolley: 250 fpm
Hoist: 250 fpm
Auxiliary Hoist: 80 fpm
Lift: 103ft 6in.
CMAA Classification: Class F
Auxiliary Hoist Capacity: 3 Tons

-Railways

Each of the railways provide guides and support track for the bridge and trolleys and are equipped with hydraulic bumpers on the corners of the unit. The bumpers each have sufficient energy absorbing capacity to stop a fully loaded crane when traveling at full rated speed without causing damage to the bumpers. Stops are provided on each of the bridge girders for contact with the bumpers.

3.5 Six Tine Orange Peel Grapple

One grapple, shown in Figure 8, is installed per refuse crane assembly. Each 16 cubic, yard, grapple weighs 12.0 tons has a capacity of 8.5 tons, per load. The grapple consists of the following components:

Equalizing bar
Guide rollers
Upper and Lower Sheave
Press Rod
Tines
Lower sheave
Holding/Closing line assembly.

-Equalizing Bar

The equalizing bar ensures that equal tension is maintained on all lines when lifting a load. The bar pivots around a center pin connected to the grapple. Any slight unevenness of the cable length will be nullified by the equalizing bar. In addition, the equalizing bar allows the grapple to rotate if the load is off-center. If the equalizing bar is severely uneven, though it could cause the cables to wrap on the drum unevenly and cause the cables to break.

-Guide rollers

The guide rollers are located on the equalizing bar and the upper sheave to keep the hoist ropes in position and reduce wear which would otherwise occur on the top of the upper sheave platform.

-Upper Sheave

The upper sheave assembly is pinned to the top of each press rod and is located beneath the equalizing bar. It contains the sheaves (pulleys) through which the wire rope for the closing line passes, and the guide rollers for the closing lines.

-Press Rods

The press rods are provided for support and to act as a pivot between the upper sheave assembly and the tines. The press rod is used to direct the tine motion by maintaining a fixed distance between the upper sheave assembly pin and the tine pin.

-Tines

The tines are pinned to the press rods and the lower sheave assembly and are used to grab refuse from the pile. There are six, symmetric, tines which make the orange peel grapple. The angle of the tines ensures good penetration for digging.

-Lower Sheave Assembly

The lower sheave assembly is pinned to the tines and contains the sheaves through which closing line wire rope is fastened. The lower sheave assembly drops to its lowest position as the closing lines are let out. Since the tines are connected to the press rod which is fixed to the upper sheave, the tines rotate out and become vertical.

-Holding and Closing Lines

The holding and closing lines are wrapped around their respective hoist drums and are let out or taken in to operate the grapple. There are two separate cables for each drum. The holding lines are attached to the top of the grapple and will move the grapple vertically. The closing lines are passed through the grapple and wound around the sheaves. Each closing line enters through the upper sheave assembly plate straight down to the first lower sheave. The cables passes around this sheave and back up to the upper sheave. Finally, the cable loops back down through the second lower sheave and is attached to the closing equalizing bar located between the upper sheaves. All cables are connected to the grapple by a wire rope socket. Holding and closing drums each have a sufficient number of wraps to allow the grapple to operate to the lowest pit level.

3.6 Crane Operator Control Room

Function

The function of the crane operator control room is to provide a safe and convenient location for the crane operator to manipulate the refuse crane.

Description

The crane operator control rooms are located at the top of the refuse bunker at elevation 85 feet. There are two control rooms, one each at the north and south ends of the refuse bunker. The control rooms contain the controls for the refuse cranes and the auxiliary hoist. The control rooms are equipped with hinged windows on the front and sides to provide the operator with a clear view of the refuse bunker. They are environmentally conditioned and pressurized to minimize odor and dust collection.

3.7 Bulky Waste Shear - DELETED

4.0 Controls Description

4.1 Scales

As a refuse truck enters the plant it must be weighed in order to properly bill the contractor. The truck stops on the scale and the weight indicator records the trucks actual weight.

This function is controlled by the scale house computers located at the scale house.

Transfer trailers for waste diversion will be weighed in and out at the tipping floor area on a separate scale. Scale weights will be electronically registered.

4.2 Tipping Bay

The utility operator controls the dumping of refuse into the refuse bunker. He guides the refuse trucks to the appropriate tipping port by using hand signals or telling the driver when he stops at the entrance door. He will also direct the appropriate quantity of trash (100-300 TPD) to be staged on the tipping floor in front of bays 7, 8 or 9 for diversion.

4.3 Refuse Bunker

The refuse cranes are used to move the refuse from the receiving bay doors directly into the charging hopper or into the storage pit for later use. The amount of refuse sent into the boiler charging hopper depends on the boiler load, rate of burning and quality of the refuse. Because the refuse boilers burn the trash at a controlled rate, the charging hoppers only need to be fed as they require more fuel. The remainder of the trash from the receiving bay door is stored on the side of the refuse bunker until needed as fuel. It is very important for the crane operator to monitor the level of fuel in the charging hopper.

A video camera that is located above the charging hopper sends a signal to a television monitor in the crane operator's station. By watching the monitor, the level in the charging hopper can be observed and the hopper refilled as required. The operator should continually check the monitor and maintain the charging hopper level.

-Bunker Management

The goal of bunker management is to coordinate the operation of both cranes to maintain an adequate flow of refuse into the hoppers and keep the refuse storage pit stackable.

The crane operator is responsible for carrying out the pit plan and keeping the CRO constantly informed of changes in the bunker and maintaining an area for truck discharge. Proper management will allow the maximum amount of refuse to come into the facility. To accomplish this, maintaining an open tipping trench (the area of the pit which receives refuse from the trucks) is vital. Refuse should be moved from the trench to the west side of the pit or into the hoppers.

If two cranes are operating to clear the trench, both cranes should operate on their sides of the bunker. If only one crane is operating, it should be used to charge the hoppers and clear the entire trench area.

In general, pit management plan will be developed each day to accommodate the particular refuse conditions. The following is a guide to how this plan is developed.

-Shift Responsibilities

During the day shift two cranes are in operation to maintain the flow of refuse. Typically, during two crane operation with all three boilers on-line, the south crane will feed hopper three and the north will feed hoppers one and two. The south crane must continually move refuse to the north to ensure even pit stacking. The cranes work in conjunction with the front-end loader to move the trash from the tipping bay. Refuse not fed directly to the hoppers should be stacked along the middle of the wall, adjacent to charging hoppers two and three. While stacking it is important to ensure that the trash is stored level enough to evenly to prevent collapse. It is also necessary to maintain as many tipping port chutes clear as possible.

During the evening shift, after the refuse trucks have finished unloading all of the trash, refuse should be taken from the trench and the wall next to the hoppers. Good mixing of refuse should be performed. If the trash in the bunker is squared-off and neatly stacked, it is easier for the crane operator to handle the following day's deliveries.

During the weekend refuse is received on Saturday only. Therefore, the crane operator should pick the refuse evenly from the bunker. Focus on clearing the trench as low as possible. Dig one end wall pile down to the base of the bunker on alternate weekends to keep the refuse from sitting at the base of the pit for long periods of time. This will prevent excessive decomposition of refuse which occurs over time. The decomposition will cause methane and heat to be produced, which increases the chance of a bunker fire.

-Maintaining Good Fuel Flow

The crane operator is also responsible for the mixture of trash that is fed to the furnace. Throughout the period of a day, many trucks dump refuse into the bunker. Although a large portion of the material is combustible, some is not. To the extent that bulky waste is observed in the pit, the crane operator will endeavor to remove it from the fuel supply. In order to maintain optimum firing conditions, the refuse that is passed into the pit and eventually into the charging hopper must be inspected and mixed by the operator before being dropped directly into the hopper.

The proper mixture of trash will promote stable, uninterrupted, and proper furnace firing conditions. This mixture should consist of heavy and light refuse, paper, metal, and wet and dry refuse. It may be difficult for a crane operator to know exactly what is in the crane grapple, but mixing and fluffing the trash will give the operator a good indication of what will go into the charging hopper.

The **mixing** of refuse is accomplished during the process of stacking and storing the refuse. By watching what is discarded into the refuse storage pit through the tipping port, the crane operator can decide on the quality of the load. For example, too much dry paper will burn too fast, while too much metal will not burn at all. By taking the load and spreading it out around the storage pit, the tipping port can be cleared of trash, and the refuse can be mixed in the bunker to obtain a good refuse mixture.

Fluffing the refuse is another method of mixing the refuse. Fluffing the refuse is accomplished by picking the load from the pit, elevating the load a few feet from the pile, and dropping the load back into the pile. This allows some of the trash to land away from the grapple tines and gives the grapple a less compacted pile from which to grab the trash. This is especially important where digging down a storage pile. The refuse under the pile is compressed, and often a full grapple load will be difficult to obtain without fluffing the pile.

4.4 Crane

During operation, the crane operator uses joy sticks mounted on the operator's chair to position the crane over the refuse bunker, retrieves a load and deposits the load in one of the charging feed hoppers or in another section of the refuse bunker.

The grapple is operated to pick and drop loads with two sets of cables or wire rope. The holding line, which attaches directly to the top of the grapple, through an equalizing bar, positions the grapple height. The closing line will operate to open and close the grapple lines when it is moving and the holding line is stationary.

To pick a load, the opened grapple must be lowered onto the pile. To do this both the holding and closing cable joy sticks are moved to the lower position and the drums pay out cable. The grapple will hit the pile and the tines will penetrate the refuse. Stop both cables, and then carefully move only the closing cable up. This will shorten the distance between the upper and lower sheaves and close the bucket. Stop closing the grapple when the closing cables begin to lift the grapple. Take up the slack on the holding cables. Both cables should now lift the grapple together. If the closing cable is closed too fast, it will snap tight and try to lift the full load. This will often result in breaking a cable.

At this point, the fully closed and loaded bucket should be lifted by positioning both the holding and closing lines to the hoist (up) position.

NOTE: If only the holding line is raised, this will OPEN the grapple by causing slack in the closing line.

The grapple can then be positioned as desired by moving the trolley and bridge with the joy stick. When in position, the normal dumping method is to maintain the height with the holding lines and slacken (lower) the closing lines. This will cause the tines to spread and the refuse to fall.

-Crane Safety

The equipment used can be very dangerous to persons who are careless. Because of these dangers, forming safe and intelligent work habits is as important as knowing the equipment. Some of the primary objectives a crane operator should meet in training are to recognize and correct dangerous conditions and avoid unsafe acts. The following subsections list some general rules of safety to be followed when operating the crane and its auxiliary process refuse-handling equipment.

The following rules for safety of the crane and its auxiliary equipment should be followed at all times.

1. Never operate a crane under the influence of drugs or alcohol.

2. Never operate the crane when tired.

3. Avoid becoming distracted from the crane when it is in motion.

4. Practical jokes are not tolerated.

5. The bucket of the crane should not be used as an elevator for anyone. No one should ride on the crane at any time.

6. Never block out safety devices, such as limit switches, in order to allow operation of the crane in a manner not intended by the manufacturer.

7. Whenever leaving chair power down the crane.

8. Never rely on limits. They're there as backups not primary protection.

-Process Operations

During the crane operation, a few safety rules should be acknowledged. These rules can be broken down into preoperational, operational, and post operational safety rules.

-Preoperation Precautions

1. Only properly designated persons should operate the cranes.

2. Always inspect the crane thoroughly before operating the crane.

3. Before climbing on the crane to check it, power down the crane by opening the circuit breaker to the crane.

4. While changing shifts, communicate with the previous operator about any necessary information regarding the condition and operation of the crane.

-Walk down Inspection

Inspect the following:

1. All brake linings and gaps.

2. Bridge and trolley for obstructions.

3. All bridge and trolley wheels.

4. Motor leads and festoon cables.

5. Gear boxes for oil leaks.

6. Lubrication and grease lines for leakage.

7. Drum bearings and shaft coupling for integrity.

8. Wire rope for frays and breaks.

9. Bucket or grapple for cracks or wear.

-Preoperation Inspection

1. Do visual inspection of cables and grapple by bringing grapple close to cab.

2. Run trolley and bridge east/west and north/south to listen or see any abnormal noises or operations.

-Operational Precautions

1. Always keep both hands on the joy stick controls at all times when in the crane operator's seat.

2. In order to stop the crane due to an emergency hit the emergency stop button.

3. In emergency conditions, do not panic.

4. In emergency situations, always stay in constant communication with the control room.

5. Perform only as many functions at a time as you can handle; do not try to do too much.

6. In an emergency condition, once the crane has stopped all motion, immediately power down the unit.

7. Always know the location of all cranes in and out of service.

8. Always make sure the load is free from all obstructions before lifting or traveling.

9. Check all electrical operation limit switches and report any abnormalities to the supervisor immediately.

10. Avoid sudden starts and stops.

11. Stopping the crane by bumping into the runway stops is not permitted.

12. If the electrical power fails, place all controllers in the OFF position until power is restored to prevent sudden and unexpected movement when the power is restored.

-Post operation Precautions

1. Before leaving the crane operators seat, always power down the unit.

2. When parking the crane on the service bay area, allow the crane holding and closing lines some slack.

3. While changing shifts, communicate with the relief crew any conditions about the operation and condition of the crane.

4. Always clear the load from the bucket before spotting the crane.

5. Before leaving the crane operator control room, always properly secure the crane.

6. Repairs and adjustments should be made only by properly designated and authorized personnel.

-Crane Operator Conduct

1. The operator shall respond to signals from a person directing the lift, or an appointed signal person. When a signal person is not available, the crane operator is responsible for the lifts. However, the crane operator shall obey a stop signal at all times, no matter who gives it.

2. Each operator shall be responsible for those operations under the operator's direct control. Whenever the operator has a question about safety, the operator shall consult with the supervisor before handling the loads.

3. All cranes should be secured when being left unattended. Set the bridge parking brake, power down the unit and controls, and leave the hoist lines slacked while the unit is not operating.

4.5 Bulky Waste Shear - DELETED

5.0 Truck Traffic Abatement Plan

The goal of this plan is to assist facility personnel in reducing on-site refuse truck waiting times to the lowest practical duration. The facility uses this all inclusive plan which incorporates coordination of the scale house, tipping bay personnel, and refuse crane operation, along with the maintenance of all the related equipment. The objectives of this section will be monitored by plant management and supervisors to ensure that the objectives are met and in order to identify problem areas quickly and to then institute corrective action, where necessary.

The facility is approved to receive refuse trucks 24 hours 6 days per week. Operational history indicates that peak hours are generally between 10:30 AM and 2:00 PM. In order to minimize truck queuing times throughout the day and specifically during the peak receiving time, the following guidelines have been instituted.

5.1 Refuse Pit

During the evening hours, the crane operators are required to ensure the refuse pit is in good order for acceptance of refuse during the early morning rush (06:00 a.m. to 07:00 a.m.). The objective is for the trench to be dug down throughout the evening in order to attain a target level of greater than 20′ below the tipping floor elevation by 6:00 a.m. This is a critical element of the plan and must be strived for in order to minimize truck traffic. Without the trench in good condition by 06:00 a.m., it may fill up quickly causing the tipping floor traffic to back up.

5.2 Scale House

During the peak period, an additional scale house clerk can be called in if needed to help facilitate smooth traffic flow through both the inbound and outbound scales. Security personnel may also assist in traffic abatement during peak periods. If any abnormal traffic should occur, security personnel will immediately notify the Shift Supervisor, who will then coordinate all traffic flow between the scale house and tipping floor until the traffic subsides. The Operations Manager will regularly review the truck queue time reports generated by the scale house personnel to ensure traffic flow issues are not occurring on a regular basis. Truck drivers will be given copies of the attached, or subsequent, handout entitled "Truck Driver Safety Guide" to assist them with safe and efficient maneuverability while on site.

5.3 Tipping Floor

Proper staffing of both the tipping floor and the refuse cranes is another important item. Throughout the day, both refuse cranes remain in service at all times to ensure the trench remains in acceptable condition. The tipping floor is staffed with an adequate number of trained and qualified operations technicians at all times to continually inspect the tipping floor during all hours of waste receiving. This will provide optimum coverage of all the necessary areas. One technician will be located in the tipping bay office at the incoming door to the tipping floor and will provide bay assignments. A second technician will work the floor and loader, performing refuse inspections and moving the trash from the floor to the bunker, assisting in truck traffic control. At least two front end loaders will be available during peak hours. To the extent practical, trailers delivering waste will be scheduled to arrive during off-peak hours in an effort to further minimize on-site truck congestion. At the discretion of the tipping floor technicians, trailers may be queued on the tipping floor for a short period of time to allow packer trucks to cycle through quickly. After one to two cycles of packer trucks, the trailers will then be allowed to off-load. Transfer trailers will also be positioned on the tipping floor in a manner which will reduce backups; approximately 20′ minimum passage space will be provided at all times by trailers which are in the process of unloading. As the trailers unload, they will be directed to position their vehicle such that clearance will be maintained for other trucks to pass. (See Figure 5-1.) The transfer trailers will also be instructed to depart quickly after unloading to avoid additional delays. Any transfer trailer operators which are found to be hindering flow through the tipping floor will be specifically addressed by tipping floor personnel.

Utilization of the waste diversion process will also assist with minimized turn times for deliveries. Transfer trailers for load-out will be staged to insure minimal delay when load-out is planned. Typically, transfer trailers for waste diversion will be loaded only during off peak hours.

5.4 Maintenance of Refuse Handling Equipment

The maintenance of both the refuse cranes and the front end loaders is a vital part of the truck traffic abatement plan. This maintenance program is designed to ensure that this equipment is always available for use during the peak time. The Maintenance Department performs daily walk downs of the refuse cranes at 05:30 a.m. Monday through Friday. Any corrective maintenance can then either be performed immediately or scheduled for an off-peak time depending on its urgency. The Operations Department performs minor preventive maintenance to the refuse cranes daily on the evening shift. Any discrepancies are reviewed with the Maintenance Department the following morning. The front end loaders are walked down daily by the Operations Department prior to 08:00 a.m. to ensure they are in good working order. Included with the walk downs is the refueling of the machines. Any discrepancies are immediately attended to by Operations, Maintenance, or an outside contractor, if necessary. There is an established preventive maintenance program performed on a routine basis by an outside heavy equipment contractor. This program consists of scheduled minor and major maintenance for both the front end loaders.

5.5 Contingency

In the unlikely event that the facility experiences equipment failure or malfunction that could result in major tipping floor delays, the facility will take the steps necessary to minimize truck waiting times. Any waste being brought to the site from outside Essex County will be reduced to the extent practicable. Essex County will be notified that an emergency condition exists and that diversion of a percentage of refuse trucks from the facility may be required. The County will be provided with updates on the problem as it is being resolved to assist in the earliest possible resumption of normal activity.

References

Flow Diagrams

None

Control Logic Diagrams

None

Electrical Diagrams

None

Vendor Manuals

Deutsch Babcock Anlangen - Operating Instructions

Vendor Drawings

Harnischfeger P & H Operations Manual CB-29777

Figure 1 Site Plan

Figure 2 Tipping Bay

Figure 3 Refuse Bunker

Figure 4 Refuse Crane

Figure 5 Holding/Closing Drive System

Figure 5-1 Transfer Truck Unloading

Figure 6 Magnetorque Brake

Figure 7 Orange Peel Grapple

Figure 8 Limit Switches

Attachment 2

COVANTA
ENERGY
for a cleaner world

ESSEX RESOURCE RECOVERY FACILITY

BOILER: FURNACE COMBUSTION and GAS PATH

OPERATING PROCEDURE NO. 3

VOLUME III

REVISED, SEPTEMBER 1990
REVISED, JANUARY 1994
REVISED, OCTOBER 2000
REVISED, MARCH 2011
REVISED, JUNE 2013
REVISED, JANUARY 2022

APPROVED BY: [signature] **DATE:** 1/10/22

Record of Changes

Change #	Date	Affected Pages	Purpose
1	9/90	All	Change page #s to OP3-#
2	1/94	All	Update Manual
3	10/00	No changes	Review
4	3/11	All	Review
5	6/13	OP3-22 – OPS-31	Change ARS 1-1D
6	1/2022	All	Remove reference to ESP and update opacity information

Table of Contents

Boiler: Furnace Combustion and Gas Path

1.0 Purpose of Procedure

The purpose of this procedure is to provide plant personnel with standardized operating methods for the most common activities and foreseeable abnormal operating conditions encountered with the Boiler: Furnace Combustion and Gas Path.

Caution:

No one document can effectively foresee all operating conditions. Therefore, this document should be used as a guide. It is not intended that this document replace good operating judgement. If there are any questions pertaining to an activity outlined in this document, consult with the shift supervisor or the operations supervisor.

2.0 References

2.1 Flow Diagrams

Ford Bacon Davis

674001	Rev 3	Combustion Air Boiler No. 1-B-100
674002	Rev 3	Refuse, Furnace & Flue Gas Boiler No. 1
674025	Rev 2	I.D. Fan

2.2 Control Logic Diagrams

Not Available

2.3 Electrical Diagrams

Not Available

2.4 Vendor Manuals

Deutsche Babcock Anlagen Operation Manual

2.5 Vendor Drawings

Deutsche Babcock Anlagen
315-0355.00 B Boiler Start up Diagram

3.0 Precautions and Limitations

A. The main control document for starting the boiler: Steam Generation Operating Procedure No. 7.

B. Increase boiler steam load slowly to ensure that the combustion systems can supply the required fuel and air requirements without overshooting the maximum rating.

C. Do not exceed the furnace temperature of 750F until there is an indication of steam flow through the superheater.

D. The control room operator must be informed prior to the opening of a boiler access or inspection door while there is fire in the boiler. The control room operator must ensure that the ID fan is properly maintaining negative furnace draft during such an operation.

E. Secure primary air flow to any undergrate windbox when on-line inspection of the windboxes (i.e., to clean siftings plug) is performed.

F. Do not key communications radios in the vicinity of the ID fan drive units. This may cause the drive to trip or malfunction.

G. Monitor flame pattern during each shift. Balance air flow to ensure that the flame does not impinge on either the front or the rear walls.

H. Control refuse combustion so as not to exceed the following NJDEP emissions limits:

1. **Temperature**: Maintain the temperature one (1) second downstream of the secondary air injection point at 1136^0 F or greater.

   Note: Should temperatures go below this level, auxiliary oil burners must be started.

2. **Oxygen**: Maintain the oxygen in the flue gas exiting the boiler at no less than 3%.

3. **Opacity**: Limit of 10% for a 6 minute block average.

3.0 Precautions and Limitations (Cont')

4. **Nitrous Oxides**: Maintain NO_x emissions less than 300 ppm on a one (1) hour average when there is an equipment malfunction and < 155 ppmdv for 24-hour average.

5. **Maximum Load Level:** Maximum load (4-hour average) shall not exceed 110 percent of the maximum load (4-hour average), demonstrated during the most recent dioxin/furan compliance test.

6. **Flue Gas Temperature:** Maximum flue gas temperature at the ESP inlet (4-hour average) shall not exceed 17 degrees C (30° F) above the maximum demonstrated temperature (4-hour average) observed during the most recent dioxin/furan compliance test. Compliance shall be determined through continuous monitoring and 4-hour block averages.

I. Per the NJDEP regulations, the following conditions require that you **stop feeding refuse to the boiler.**

1. Failure of a baghouse which results in an opacity reading exceeding 10% for any 6 minute period. Note if only one of the baghouse modules fails and can be isolated from service so that there is no excess opacity, waste feeding to the boiler can resume.

J. Take action to ensure that the scrubber system is repaired immediately should the sulfur dioxide ($S0_2$) emissions:

1. Exceed 94 ppmdv SO_2 average and not achieve 70% removal SO_2 removal (average) during any one (1) hour period.

2. Exceed 29 ppmdv SO_2 average for a 24-hour geometric and less than 75% removal.

K. Within one (1) hour after charging and igniting refuse on start up, the temperature of the flue gas, three second downstream of the secondary air injection point, must be 1136°F.

Boiler: Furnace Combustion and Gas Path

4.0 Prerequisites

A. Electrical Distribution system in service per Operating Procedure No. 11.

B. Instrument air system in service per Service Air Operating Procedure No. 19.

C. Chemical feed system ready for service per Water Treatment Operating Procedure No. 15.

D. All required tank and pump levels established and all piping system charged.

E. Auxiliary steam system in service per Main Steam & Auxiliary Steam Operating Procedure No. 8.

F. Boiler filled with water and ready for operation per Boiler: Steam Generating Operating Procedure No. 7.

G. Boiler Ash Removal System ready for operation per Ash Removal Operating Procedure No. 21.

H. Scrubber ready for operation per Acid Gas Removal (Scrubber) Operating Procedure No. 5.

I. Closed Cooling water flow to refuse feed chute established per Closed Cooling Water Operating No. 18.

J. Oil is available to the ignition burners and temperature control burners per Fuel Oil Operating Procedure No. 4.

K. Baghouse in service per Environmental Systems Operating Procedure No. 6.

L. Sootblower system ready for service per Boiler: Steam Generating Operating Procedure No. 7.

M. Prior to charging refuse on start up, the furnace must be at least 938^0 F at a point 3 seconds downstream of the secondary air injection point.

N. Establish drum level in the boiler drum.

Boiler: Furnace Combustion and Gas Path

5.0 Prestart Checklist

A. Cooling water is supplied to the refuse feed chute.

B. Feed chute, ram feeder, and roller grate free of any bulky parts.

C. Feed chute isolation damper shut.

D. All components of the system ready for operation.

E. All valves and dampers are in the position of the valve line-up checklist.

F. Verify an adequate supply of refuse is available.

G. Verify the furnace temperature monitoring system is in working order and available for service.

H. Verify all access doors and ductwork are closed and all personnel are clear of the boiler.

I. Visually check and verify that the roller grates are ready for service, all work completed, tools removed, and all moving parts are well lubricated.

6.0 Start Up Instructions

6.1 Start the ID Fan System

	Operator Actions	Location	Comments
A.	Manually close fan damper FV-355.	DCS	HIC-355
B.	Start ID Fan	DCS	HS-351
C.	Monitor vibration and oil level as the fan comes up to speed.	DCS	VI-350AA/AB VI-350BA/BB Speed-SI-351
D.	Set the furnace draft set point to -0.2" H_2O to prepare for oil fire purge.		
E.	Monitor vibration.	DCS	VI-351A/B
F.	One hour after start up, roving operator should check local oil level and temperature.		

6.2 Primary Air Fan Start

Operator Actions		Location	Comments
Note: The ID fan must be running in order to start this fan.			
A.	After starting the ID fan and the furnace pressure conditions have stabilized; Start the primary air fan.		
B.	Close or verify closed inlet damper.	DCS	PV-360 ZL-360
C.	Depress start pushbutton	DCS	HS-360
D.	Check the ID fan inlet damper to maintain -0.2" H_2O and minimum speed		

6.3 Starting the Roller Grates

Operator Actions		Location	Comments
Note: The roller grates can start individually or as a group.			
A.	Start all roller grate lube oil pumps either individually or with the master start.	DCS	HS-348
B.	Start all roller grates either individually or with the master start.	DCS	HS-354
C.	Set the roller grates to maximum for purge and oil firing.	DCS	SIC-354 A-F
D.	During trash start up adjust the speeds as specified by combustion controls.	DCS	

6.4 Secondary Air Fan Start

Operator Actions		Location	Comments
Note:			
The ID fan must be running before starting this fan.			
A.	Close or verify closed inlet damper.	DCS ZL-356	FV-356
B.	Depress start pushbutton	DCS	HS-350
C.	Adjust the ID fan damper to maintain draft set point -0.2" H_2O and minimum fan speed.		

Boiler: Furnace Combustion and Gas Path

6.5 Furnace Purge and Burner Start up

	Operator Actions	Location	Comments
A.	Start ID Fan per section 6.1		
B.	Start PA fan per section 6.2		
C.	Start roller grates per section 6.3.		
D.	Open the ID fan Damper to approx. 10%.	DCS	PIC-365
E.	Start the Temp. & Ign. burner control air fan per Fuel Firing Operating Procedure No. 4.		
F.	Start the Cold Start up burner air fan per Fuel Firing Operating Procedure No. 4.		
G.	Start the purge. -Timer starts to count down from 780 seconds.	DCS	Purge
H.	After the purge is completed the ignition ready timer starts, counting down from 480 seconds.		
I.	Start the oil burners per Fuel Oil Procedure No. 4.		
J.	Heat up the boiler to operating temperature (1136^{0}F) per the Boiler: Steam Generating Procedure No. 7.		
K.	During heat up start the ram feeder per section 6.6.		

6.6 Ram Feeder Start up

	Operator Actions	Location	Comments
A.	Verify the hydraulic skid valve line up.	L	
B.	Start the forward hydraulic pump in speed 1	C	
C.	Start the reverse hydraulic pump in speed 2. -Set the speed at 75% to 100%	C	
D.	Test ram strokes in various forward speeds to assure proper operation.	C/L	

6.7 Starting a Refuse Fire

Operator Actions	Location	Comments
Caution:		
Do not feed refuse until the temperature 3 seconds downstream of the secondary air injection is 938^0F or more.		
-Ensure that all environmental monitors are operating. -Ensure the precipitator & the scrubber are operating.		
A. Allow the ram feeder to retract and take to HOLD to stop movement.		
B. Ensure both refuse cranes have full loads of dry refuse and are in front of the boiler charging hopper.		
C. Open the feed chute damper.	C	LSLL-342
D. Open the ID fan damper to allow for increased draft when charging.	C	FV-355
E. As soon as damper is open charge both scoops of trash to hopper and get two more. Continue to charge hopper to normal level.		
F. Adjust ID fan set point -0.2" H_2O.	DCS	PIC-365
G. Start the ram feeder at minimum forward speed (in short stroke) to slowly charge the refuse.	DCS	HS-3475
H. Start the secondary air fan per section 6.7.		

6.7 Starting a Refuse Fire (Cont')

Operator Actions	Location	Comments

I. As trash moves down the grate, Increase the ram feeder, roller grate, and primary & secondary air to control CO, CO_2, and temperature

K. As the refuse fire improves, begin to cut back on the oil burners at a steam flow of approx. 150,000 lb./hr.

-Continue to reduce oil burners until they can be shut down.

-Continue to adjust air flow set points, ram feeder speed and roller grate speeds according to combustion controls. Place in cascade once boiler is stable.

L. At 180,000 lb./hr. steam flow, set the furnace power controller to cascade, all ram feeder, roller grate, air dampers should be in cascade mode.

Caution:

Within 1 hour of burning refuse the temperature 3 second downstream of the secondary air injection must be at least 1136°F.

M. Bring boiler load up to desired lb./hr. for Trash quality to maintain proper O_2, CO, and temperature requirements.

6.8 Running Checklist

	Operator Actions	Location	Comments
A.	Maintain temperatures, 0_2, and CO within specifications (See Precautions & Limitations)		
B.	Maintain fire line between roller grates three & four, depending on refuse quality.		

6.9 Shutdown Instructions

7.0 Normal Shutdown

	Operator Actions	Location	Comments
A.	Start Cold Start up burner Air Fan	DCS	HS-401
B.	Stop the refuse supply to the Feed Chute per the Refuse Receiving & Handling OP No. 2.	L	Crane
C.	Start Cold Start up burners per Fuel Oil OP No. 4.		
D.	If necessary, start Temp. & Ign. fan & burners per Fuel Oil OP No. 4.		
F.	As trash burns out, decrease primary air flow to maintain oxygen and carbon monoxide levels until all refuse is burned.	DCS	HIC-361A-F
G.	During primary air flow adjustments adjust the secondary air flow to maintain 25% to 35% of primary air flow, keeping temperature, O_2 and CO within limits.	DCS	FIC-356
H.	Maintain ID fan, primary air fan, and secondary air fan for 30 minutes **after** fires have been removed from the boiler. Do not exceed boiler cool down limits.		
I.	Consult supervisor for shut down plan.		
J.	Operate burners to maintain complete combustion until all trash is burned.	DCS	
K	Operate roller grates at least until all the trash is off of them.		

7.1 Normal Shutdown

Operator Actions	Location	Comments
A. If it is necessary to cool the boiler as quickly as possible: Maintain the ID fan, primary air fan, and secondary air fan for as long as necessary.		

Boiler: Furnace Combustion and Gas Path

Summary of Alarms

Number	Title
1.	Master Fuel Trip.
2.	Primary Air Fan Trip.
3.	ID Fan Trip.
4.	Secondary Air Fan Trip.
5.	Roller Grate Trouble.
6.	Ram Feeder Trouble.

Alarm Response Sheet 1
NUMBER 1

Alarm Title: Master Fuel Trip (Hardwire / Boiler Trip)

A. Possible causes of alarm

1.
2. Steam Drum Lo-Lo level at -9”
3. Excess furnace draft at +6” H2O
4. High Steam Temperature at 850F for 30 seconds

B. Automatic Actions

1. The Ram feeder stops.
2. On the boiler hardwire trip panel (xx-CP-960, located in the bailey room), the associated trip light is lit.
3. FV – 276 (Fuel oil trip valve) for the associated boiler trips.
4. The associated alarms come in on the alarm screen in the Control Room.

C. Immediate Operator Action

Control Room Operator

1. Notify the shift supervisor.
2. Use the alarm summary screen to determine the cause of the trip, respond IAW written procedure and by direction of the shift supervisor.
3. After correcting the cause of the boiler trip, reset the master fuel trip relay(s) located in the associated trip relay panel (CP 960).
4. Restart tripped components as able.

Assistant Control Room Operator

Go as directed by the CRO / Shift Supervisor to stabilize the plant and clear trip alarm conditions.

D. Follow up Actions

Control Room Operator

1. Start boiler fans as necessary, ID fan first, then other fans. (*Note: There have been instances when power has been lost to the associated MCC panel (MCC 901/902/903) upon starting an ID fan if the panel’s other components (boiler feed pump, plant air compressor) are also running. Consider swapping one of these components if this condition exists prior to starting the ID fan*).
2. Check furnace temperature then light burners or start the ram feeder as able. *Minimum temperature for feeding waste to boiler =* ***938F****. Furnace temperature below* ***750F*** *requires purging the boiler prior to lighting burners*.

Assistant Control Room Operator

1. Assist CRO as needed to restore the boiler to operation.
2. Monitor the tripped components which were restarted.
3. Perform LOTOs as needed / directed to support maintenance.

E. Consequences

Loss of the flame and temperature could lead to cold CO formation. Safely recover from the trip as soon as possible to minimize the chance for environmental excursions.

Alarm Response Sheet 1A

Alarm Title: Master Fuel Trip due to Steam Drum lo-lo Level

Discussion: At -9" in the steam drum as read by at least 2 out of 3 hardwire trip switches 1/2/3-LLL078A/B/C the boiler undergoes a Master fuel trip to protect the internal components of the boiler steam drum.

A. Possible causes of alarm

1. Electrical problem resulting in sudden loss of proper level indication, e.g., loss of BFP motor(s)
2. Loss of control of boiler's Feed Regulation Valve (FRV)
3. Motor or control fault resulting in boiler level "swings"
4. Major tube failure.

B. Automatic Actions

1. Primary, Secondary and Burner fans trip.
2. Ram feeder stops
3. FV-276 closes
4. Alarms come in on Control Room alarm screen
5. The light for boiler steam drum lo-lo level trip is lit on CP-960.

C. Immediate Operator Action (Note: For loss of level resulting from a major boiler tube failure, please refer to Plant Specific SOP #17K, Boiler Emergency Shutdown Catastrophic Tube Failure)

Control Room Operator

1. Notify the shift supervisor.
2. Use the alarm summary screen to verify trip of boiler due to lo-lo steam drum level.
3. Ensure that all affected equipment is secured. Ensure that all fans' dampers are closed; once dampers closed, check that all fans have permissive met for start as seen on the boiler control screen. If a permissive is not met, direct the ACRO to the equipment to investigate and inform the shift supervisor.
4. After correcting the cause of the boiler trip, reset the master fuel trip relay located in the associated trip relay panel (CP-960)
5. Restart tripped components as able.

Assistant Control Room Operator

1. Go to the tripped ID fan to prepare for restoration of fan, if able, unless directed otherwise by the shift supervisor or CRO. Prior to starting ID fan, ensure that the area around the fan is "all clear" and inform the CRO. (**Note: ID fan running is a permissive to clear both the master fuel trip <u>and</u> to restart the primary air fan.)**
2. Following restoration of the ID fan, continue assisting the CRO as directed in the restoration of affected equipment and boiler.

D. Follow up Actions

Control Room Operator

1. Continue restoration of plant.

2. Assist the Shift Supervisor, as directed, to gather information for any incident reports needed, including log sheets, trends, etc.
3. Align plant as directed by shift supervisor to prepare for any corrective maintenance needed.

Assistant Control Room Operator

1. Continue to assist, as needed, with restoration of the plant and any applicable maintenance walk down / LOTO related work.

E. Consequences

1. Loss of water level in the steam drum without operator action could result in uncovering of steam drum lower components and subsequent damage to them due to loss of the water for cooling.

Alarm Response Sheet 1B

Alarm Title: Master Fuel Trip due to Excess Furnace Draft

Discussion: At +6"furnace draft, as read by at least 2 out of 3 hardwire trip switches 1/2/3-PAH365A/B/C, the boiler undergoes a Master fuel trip to protect the internal components of the boiler steam drum.

A. Possible causes of alarm

1. Explosion caused by material in boiler's MSW
2. Sudden high pressure
3. Motor or control fault resulting in high furnace pressure, e.g., ID fan damper going shut
4. Major tube failure in furnace causing high pressure as steam expands quickly due to flashing.

B. Automatic Actions

1. Primary, Secondary and Burner fans trip.
2. Ram feeder stops
3. FV-276 closes
4. Alarms come in on Control Room alarm screen
5. The light for boiler furnace high pressure trip is lit on CP-960.

C. Immediate Operator Action
Control Room Operator

1. Notify the shift supervisor.
2. Use the alarm summary screen to verify trip of boiler due to high furnace pressure.
3. Ensure that all affected equipment is secured. Ensure that all fans' dampers are closed; once dampers closed, check that all fans have permissive met for start as seen on the boiler control screen. If a permissive is not met, direct the ACRO to the equipment to investigate and inform the shift supervisor.
4. After correcting the cause of the boiler trip, reset the master fuel trip relay located in the associated trip relay panel (CP-960)
5. Restart tripped components as able.
6. **If boiler pressure trip was caused by a major tube failure, please refer to SOP 17K, Boiler Emergency Shutdown Catastrophic Tube Failure.**

Assistant Control Room Operator

1. Go to fans to prepare for restoration of fans, if able, unless directed otherwise by the shift supervisor or CRO. Prior to starting fan, ensure that the area around the fan is "all clear" and inform the CRO. (**Note: ID fan running is a permissive to clear both the master fuel trip <u>and</u> to restart the primary and secondary air fans.)**
2. Following restoration of fans, continue assisting the CRO as directed in the restoration of affected equipment and boiler.

D. Follow up Actions

Control Room Operator

1. Continue restoration of plant.
2. Assist the Shift Supervisor, as directed, to gather information for any incident reports needed, including log sheets, trends, etc.
3. Align plant as directed by shift supervisor to prepare for any corrective maintenance needed.

Assistant Control Room Operator

1. Continue to assist, as needed, with restoration of the plant and any applicable maintenance walk down / LOTO related work.

Alarm Response Sheet 1C

Alarm Title: Master Fuel Trip due to High Steam Outlet Temperature

Discussion: At 850F main steam outlet temperature for 30 seconds, as read by at least 2 out of 3 hardwire trip switches 1/2/3-THH009A/B/C, the boiler undergoes a Master fuel trip to protect the steam tubes of the boiler.

A. Possible causes of alarm

1. Loss of attemperator water / control.
2. Failure of trip switches on boiler caused by electrical problem.
3. High steam rate swing on boiler for extended period of time

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B. Automatic Actions

1. Primary, Secondary and Burner fans trip.
2. Ram feeder stops
3. FV-276 closes
4. Associated alarm(s) come in on Control Room alarm screen
5. The light for boiler steam hi hi temperature trip is lit on CP-960.

C. Immediate Operator Action

Control Room Operator

1. Notify the shift supervisor.
2. Use the alarm summary screen to verify trip of boiler due to hi-hi steam temperature. Check attemperator operation.
3. Ensure that all affected equipment is secured. Ensure that all fans' dampers are closed; once dampers closed, check that all fans have permissive met for start as seen on the boiler control screen. If a permissive is not met, direct the ACRO to the equipment to investigate and inform the shift supervisor.
4. After correcting the cause of the boiler trip, reset the master fuel trip relay located in the associated trip relay panel (CP-960)
5. Restart tripped components as able.

Assistant Control Room Operator

1. Go to the tripped fan to prepare for restoration of fan, if able, unless directed otherwise by the shift supervisor or CRO. Prior to starting fan, ensure that the area around the fan is "all clear" and inform the CRO. (**Note: ID fan running is a permissive to clear both the master fuel trip <u>and</u> to restart the primary and secondary air fans.)**
2. Following restoration of the fans, continue assisting the CRO as directed in the restoration of affected equipment and boiler.

D. Follow up Actions

Control Room Operator

1. Continue restoration of plant.
2. Assist the Shift Supervisor, as directed, to gather information for any incident reports needed, including log sheets, trends, etc.
3. Align plant as directed by shift supervisor to prepare for any corrective maintenance needed.

Assistant Control Room Operator

1. Continue to assist, as needed, with restoration of the plant and any applicable maintenance walk down / LOTO related work.

ALARM RESPONSE SHEET
NUMBER 2

Alarm Title: Primary Air Fan Trip

A. Possible Causes of Alarm

1. ID fan trip.
2. Low drum level.
3. Loss of electrical power, motor fault or control fault.

B. Automatic Actions

1. Master fuel (Boiler) trip.
2. Fan inlet damper shut.

C. Immediate Operator Action

Control Room Operator

1. Verify master fuel trip.
2. Check operation of ID fan and furnace draft.
3. Dispatch Asst control room operator to PA fan to review, evaluate & report cause of malfunction.

Assistant Control Room Operator

Asst control room operator to proceed to the PA fan or controller to review, evaluate & report cause of malfunction.

D. Follow Up Actions

Control Room Operator

1. Notify Shift Supervisor.
2. Determine cause of trip. If possible, restart the fan.

Assistant Control Room Operator

1. Stand by for fan restart.
2. Monitor repair activities & verify components are returned to an operating condition.

E. Consequences

Boiler trip, possibility of poor burning and CO or temperature excursions.

ALARM RESPONSE SHEET
NUMBER 3

Alarm Title: ID Fan Trip

A. Possible Causes of Alarm

1. Loss of electrical power.
2. Fan mechanical malfunction.
3. Control system malfunction.

B. Automatic Actions

Master Fuel (Boiler) Trip.

C. Immediate Operator Action

Control Room Operator

1. Verify master fuel trip.
2. Dispatch Asst Control Room Operator to review, evaluate & report cause of malfunction.

Assistant Control Room Operator

Asst Control Room Operator to review, evaluate & report cause of malfunction.

D. Follow Up Actions

Control Room Operator

1. Notify Shift Supervisor.
2. Determine cause of trip. If possible, restart fan.
   See Alarm response No. 1, Master Fuel trip for other actions.

Assistant Control Room Operator

Assist boiler restart.

E. Consequences

Boiler trip.

ALARM RESPONSE SHEET
NUMBER 4

Alarm Title: Secondary Air Fan Trip

A. Possible Causes of Alarm

1. Loss of electrical power or motor control failure.

B. Automatic Actions

None.

C. Immediate Operator Action

Control Room Operator

1. Dispatch ACRO to fan controller.
2. Monitor flue gas temperatures.
3. Notify Shift Supervisor.

Assistant Control Room Operator

Asst Control Room operator to review, evaluate & report cause of malfunction.

D. Follow Up Actions

Control Room Operator

1. Notify Shift Supervisor.
2. Determine cause of trip. If possible, restart fan.
3. If fan can not be restarted, use cold start up burner fan and/or reduce load to maintain temperatures; start some or all gas burners.

Assistant Control Room Operator

Assist in fan restart or monitor repair activities & verify components are returned to an operating condition.

E. Consequences

-Loss of combustion control.
-Loss of flame control.

ALARM RESPONSE SHEET
NUMBER 5

Alarm Title: Roller Grate Trouble
Initiating Device: Controller 100A-F

A. Possible Causes of Alarm

1. Loss of power.
2. Drive unit failure.
3. Roller grate jammed.
4. Loss of lubricating oil pumps or pressure.

B. Automatic Actions

Loss of two roller grates stops the ram feeder and oil burners.

C. Immediate Operator Action

Control Room Operator

1. Stop the jammed grate.
2. Depending on the grate any or all of the following may work:
   a. Put more air to the affected grate.
   b. Reverse the grate which feeds.
   c. Increase air to the next grate.
   d. Visually check progress.
   e. After some burn out, reverse jammed grate.
   f. If free to move, change to forward.
   g. If it works in forward, restore to normal.
3. Notify Shift Supervisor.
4. Lube oil pump trip:
   a. Send ACRO to investigate.
   b. Adjust boiler to burn without this grate.

Assistant Control Room Operator

1. Jammed Grate:
   a. Assist with local observations or operation.
2. Lube oil pump trip:
   a. Go to roller grate and inspect.

D. Follow Up Actions

Control Room Operator

If grate is inoperative, notify supervisor and maintenance as necessary.

Assistant Control Room Operator

Monitor combustion and repair during maintenance.

E. Consequences

Loss of controlled refuse travel into the furnace.
Uneven heat output of the furnace.

ALARM RESPONSE SHEET
NUMBER 6

Alarm Title: Ram Feeder Trouble

A. Possible Causes of Alarm

1. Loss of power.
2. Hydraulic pump malfunction.
3. Ram feeder limit switch failure.
4. Hydraulic fluid leak.
5. Stroke adjuster failure.
6. Ram feeder jammed.
7. Ram feeder misalignment.

B. Automatic Actions

Ram feeder automatic shutdown.

C. Immediate Operator Action

Control Room Operator

1. Notify Shift Supervisor.
2. Dispatch Asst Control Room operator to local control panel to review, evaluate & report cause of malfunction.
3. Light fuel oil burners to maintain combustion.

Assistant Control Room Operator

1. Asst Control Room operator to review, evaluate & report cause of malfunction.
2. Consult attached sheets for trouble codes.

D. Follow Up Actions

Control Room Operator

If the unit can not be restarted, prepare the fuel oil burners. Lower steam set point and maintain good combustion.

Assistant Control Room Operator

1. Check all piping for leaks and pumps for operation. If necessary, use the back up pump to replace the forward or reverse pump.
2. Monitor repair activities & verify components are returned to an operating condition.

E. Consequences

Loss of refuse feed.

Attachment 3

COVANTA
ENERGY
for a cleaner world

WASTE FLOW CONTROL PLAN

Revision 7, April 2015
Revision 8, June 2021
Revision 9, January 2022

VOLUME IX, CHAPTER 3

Approved by: [signature] **Date:** 1/10/22

ESSEX COUNTY RESOURCE RECOVERY FACILITY
WASTE FLOW CONTROL PLAN

Revision 9, January 2022

Waste Flow Control

The following contains a discussion of the waste delivery and flow path through the facility. Included in this discussion are measures utilized to minimize the processing of prohibited waste, to handle incoming waste flow during periods of emergencies and/or equipment breakdown or shutdown, and to describe the management of internally generated plant wastes.

A. Waste Deliveries

A.1 Permitted Waste Types

The following solid waste materials, as identified by waste ID numbers and defined in N.J.A.C 7:26-2.13(g) may be accepted for disposal:

TYPE 10 Municipal Waste (household, commercial and institutional)

TYPE 23 Vegetative Waste (except bulk quantities)

TYPE 25 Animal and Food Processing Waste (small quantities only, not large quantities or full truck loads)

TYPE 27 Dry Industrial Waste (except asbestos and asbestos containing wastes; dry non-hazardous pesticides; contaminated soils; hazardous waste; radioactive waste; and Type 27 from districts which have complied with an Industrial Waste Survey.

A.2 Prohibited Waste Types

The following solid and liquid waste materials, as identified by waste ID numbers and defined in N.J.A.C 7:26-2.13(g) and (h), regulated medical waste classes as defined in N.J.A.C 7:26-3A.6(a), and bulk recyclables as defined in N.J.A.C. 7:26A are specifically prohibited from disposal at the facility:

TYPE 12 Dry Sewage Sludge
TYPE 13 Bulky Wastes
TYPE 23 Vegetative Waste (Bulk quantities)
TYPE 25 Animal and Food Processing Waste (Large quantities or full truck loads)
TYPE 27 Dry Industrial Wastes
TYPE 72 Bulk liquid and Semi-Liquids
TYPE 73 Septic Tank Clean-out Wastes
TYPE 74 Liquid Sewage Sludge
Regulated Medical Waste (RMW), all classes, N.J.A.C 7:26-3A.6 (a)
Bulk Recyclables N.J.A.C. 7:26A
Iodine containing waste of any kind

A.3. Waste Flow

On-site traffic control is maintained to provide for orderly vehicular movement on the Facility grounds. Lane delineations, signals, signs, barriers ensure a controlled flow of traffic delivering waste to the Facility through the scales to the tipping floor, then leaving the tipping floor and exiting the Facility through the scale. Trucks carrying ash residue, recovered metals, unprocessible wastes, bypass wastes and/or chemical deliveries are similarly controlled and directed to minimize waste delivery traffic. Signs are posted indicating the maximum speed limit. A Facility traffic flow is represented in Appendix 1.

The control of prohibited waste is a multi—layered approach incorporating the cooperation of customers, the haulers, and Covanta Essex. One mechanism is through the guidance of the Essex County Solid Waste Management Plan, through which the company has determined which industrial wastes are prohibited at the Essex County Resource Recovery Facility.

In order to minimize prohibited waste from entering the facility, a HAULERS HANDBOOK (**copy attached as Appendix 2a**) has been developed which outlines and explains the waste acceptance criteria at the facility. This Handbook has been sent to all registered haulers utilizing the facility. The Handbook will be provided to new haulers. An abstract (as provided in Appendix 2) to the handbook pertaining to waste acceptance will be available at the scale house.

In addition, signs have been prominently posted on the facility's access road to indicate which wastes are acceptable. The signs read as follows:

THIS FACILITY RECEIVES AND BURNS ONLY HOUSEHOLD WASTE, COMMERCIAL WASTE AND INDUSTRIAL WASTE THAT DOES NOT CONTAIN HAZARDOUS WASTE – AS IDENTIFIED UNDER RCRA. INSPECTIONS WILL BE DONE TO ENSURE COMPLIANCE.

THIS FACILITY IS NOT PERMITTED TO ACCEPT BULKY WASTE. INSPECTIONS WILL BE PERFORMED TO ENSURE COMPLIANCE.

The first review of the paperwork and delivery vehicles is provided by the facility's scale house personnel. The origin and disposal (O&D) form, shown in Appendix 3, carried by the hauler denotes the origin and waste type of the material being delivered. At this time, the delivery vehicle is also checked for weight, proper registration, decals and is automatically scanned for radioactivity. If the review of documents and vehicle requirements proves satisfactory, the load information is entered into the scale house computer and the truck is released to proceed to the tipping bay. The scales are integrated into a computerized weighing system and weights of each load are recorded. Any problems encountered are brought to the attention of the appropriate supervisor.

If a delivery vehicle arrives at the facility's scale house and the O&D form indicates that it is a full truck load of Type 25 waste, the driver will be notified that the truck will be prohibited from dumping the load for processing at the facility and must be diverted to another location. The driver will receive instructions based on a previously determined agreement with the hauling company for delivering the waste to one of Covanta's New Jersey transfer stations which are permitted to accept Type 25 waste.

A.4. Tipping Floor Inspections:

Once the load has exited the scale and proceeded to the tipping floor (the waste receiving area), the load is subject to a visual inspection. Inspections are performed on a random basis by trained plant personnel on a minimum of 10% of trucks received at the facility per day. The purposes of the inspection are twofold: 1) to identify and remove prohibited or unprocessible materials prior to initiation of processing and 2) to ensure that the waste delivery vehicle is properly registered and decaled.

Under the visual inspection program, a truck being inspected will be observed for proper decals and for prohibited or unprocessible waste types as the truck unloads onto the tipping bay floor. For palletized loads of waste materials, a random sampling of the waste material will be checked against the approval paperwork (see Section D). With the inspection program, any hauler may be requested to unload contents of their truck on the tipping floor for visual inspection of waste. Once the inspection is completed, the acceptable portion of the load is pushed into the refuse pit by use of heavy equipment. Prohibited or unprocessible materials are handled as described below in Section 4. If the entire portion of the load is acceptable, the truck is released and returned to the scale house to weigh out.

All MSW loads received from hospitals are subject to inspection to check for iodine containing material in the waste which is prohibited. The procedure for these inspections includes pictures of typical items that may be found in hospital waste that could contain iodine to educate and train tipping floor operators. The waste will be raked as thinly as possible so that most of the waste is visible while performing these inspections. The current Hospital Load inspection procedure is included in Appendix 5 to this Plan.

Inspections will be conducted where they will least interfere with existing operational demands and flow of truck traffic. This provides for use of the tipping floor relative to the distribution of waste in the bunker and provides flexibility with regard to activities on the tipping floor.

All inspections will be recorded and these records will be used to evaluate carrier compliance and performance. An example of an inspection form in provided in Appendix 5. The enforcement of the inspection program is conducted primarily by Covanta Essex personnel. Regularly scheduled inspections by the NJDEP Solid Waste Enforcement Division also serve as a spot check of the inspection program.

A.5 Procedure for Removing Prohibited or Unprocessible Waste:

If prohibited or unprocessible waste is identified during the visual inspection, it will be separated or isolated as required.

If bulk recyclables as defined in N.J.A.C. 7:26A are identified, the vehicle will be reloaded and the material will be rejected. Class A materials consist of metals, glass, plastics and corrugated cardboard. Class B, C, and D materials would also not be acceptable at the facility due to the fact that they fit the description of ID 13, ID 23 (bulk) and ID 72.

If suspected hazardous waste, regulated medical waste (RMW) or prohibited dry industrial (Type 27) is identified, Tipping Hall personnel will initiate action to ensure proper handling of the material. If practicable and can be done safely, this material is separated from the acceptable portion of waste. If the generator can be identified and the NJDEP grants approval, the prohibited material can be rejected to the original generator. If the generator is not positively identified, the material will be secured and moved to the secured prohibited waste storage area (identified in Appendix 3) that is located a safe distance from the active disposal area. Arrangements for identification and disposal will be handled through qualified vendors.

In the case of bulky waste, the waste will be separated manually or by the use of a front-end loader. The bulky waste either be immediately rejected to the hauler or placed into the bulk storage/transport container. This container is routinely delivered to the authorized bulk acceptance site. The container is stored on the south side of the tipping floor next to Bay 15. (See Appendix 3 for arrangement drawing).

If a visual inspection spots an unidentifiable industrial container in the refuse pit, it can be removed with the overhead crane and lowered to the extended bucket of the front-end loader. The container will be separated using all necessary precautions and moved to the unprocessible or bulky waste storage area as identified in Appendix 3. Upon the identification of a bulky item in the refuse pit, the item will be picked-up by the overhead crane and deposited on the charging deck. Bulky items would be removed as described above.

If a visual inspection indicates a small quantity of Type 25 waste in the load on the floor, the front end loader operator will be notified and the load would be pushed into the pit immediately by the front end loader. After the load has been removed from the tipping floor, a bleach solution will be applied to the affected tipping floor area and front end loader bucket for disinfection.

If iodine containing material is discovered in a waste load on the tipping floor, the waste will be separated manually or by the use of a front-end loader if needed. The iodine containing waste will either be immediately rejected to the hauler with clear instructions that this waste is not to be delivered the the facility again or other arrangements will be made to have the waste transported to a landfill that can accept the waste.

A.6. <u>Special Waste</u>

The Facility offers secured destruction for a variety of materials including APHIS waste, pharmaceuticals, health care products, documents and non-hazardous industrial wastes.

a. Animal and Plant Health Inspection Services (APHIS) waste generated from international sources. These loads may originate from the numerous airports or shipping ports located in the area. A separate procedure for handling **(attached here as Appendix 6)** APHIS wastes is located in the Safe Operating Procedures (SOP) Manual.

b. Pharmaceuticals, Health Care Products & Industrial Wastes are accepted at the Facility for assured destruction. This material is screened for acceptability prior to approval and receipt at the Facility. A procedure for handling this type of material is located in the Safety Manual, Volume 10 of the O&M Manual. Provided in Appendix 7 is Plant Specific Operating Procedure #42 Handling Special Waste Deliveries.

B. Refuse Flow By—Pass Procedure

Since the majority of the potential equipment malfunctions or emergencies are not expected to affect waste flow, the Facility will first utilize the capacity of the waste pit to handle incoming waste flow in the event of an unplanned malfunction or outage. The bunker is designed to store an estimated 14,000 tons of refuse, enough for approximately four days of operation.

In the event that the Facility is unable to accept and dispose of Acceptable Waste whether as a result of scheduled downtime for maintenance or otherwise and the permits do not authorize use of the Facility (or a portion thereof) for transfer operations (or if the permits do authorize such use, such as transfer facilities are not operational), the Essex County Utilities Authority (ECUA) will arrange for Alternate Disposal Facilities to be available for disposal of such Acceptable Waste. After being informed by Covanta Essex that waste is unable to be accepted at the Facility, the ECUA would in turn call individual municipalities and contracted haulers to redirect to the appropriate by-pass site. The haulers are instructed as to the proper procedures to follow under this condition. They will be supplied with routes from Covanta Essex and from their respected origin sites to the by-pass location. Covanta Essex will supply the ECUA with updates as to when waste acceptance will resume.

During a short term situation which may affect the acceptance of waste into the tipping hall (i.e., pit fire, two cranes down, truck accident) no waste will be kept on the floor, other than what has been thrown—down for routine inspections, without seeking approval from the NJDEP. Space restrictions inside the facility limit staging of trucks in case of short term outages to road "A", which leads to the tipping hall, as shown in Appendix 4.

During a situation which may affect the acceptance of waste into the tipping hall (i.e., bunker (pit) fire, hazardous material release, trucking accident) the refuse trucks will first be held at the entrance gate. The trucks in line will remain in place. If it appears that the situation will not be solved quickly, NJDEP will be consulted as part of the decision making process.

C. Plant Waste Management -All Sources

Management of internally generated facility waste is best categorized in terms of waste disposal methods. The Essex facility has the capacity to safely process certain amounts and types of waste materials. Other waste types, including recyclables, will be handled through off-site disposal.

C.1. INTERNAL DISPOSAL

a. Use of incineration for waste types ID 10 non— recyclable trash, ID 23 vegetative waste (except for leaves), ID 25 animal and food processing waste, and ID 27 (dry industrial waste) allowed by the Solid Waste Permit.

b. Use of process design and water balance to absorb normally generated industrial wastewater for wetting of ash. The storm water retention system is also used to provide water for low quality use.

c. **Waste bulk liquid oils generated from equipment maintenance will be disposed off site to Class D used oil facilities in the State of New Jersey, or other similarly licensed facilities located outside of the State of New Jersey.**

d. **Use of incineration for waste oil debris and solids generated from spills, equipment maintenance and housekeeping.**

e. Use of incineration for disposal of various sump contents.

f. Used filter bags from the boiler baghouses

1) When disposing of used filter bags from any of the boiler baghouses, bags must be shaken, blown or pulsed prior to removal to remove as much loose ash residue as possible.
2) Bags are to be removed from the cell plate and placed into sealed containers (double plastic bags or fiber drums) within the baghouse compartment or within an enclosure that prevents direct release of ash to the environment. During removal of bags, procedures must be in place to avoid the emission or spillage of any loose ash into the environment.
3) The baghouse module qualifies as "preventing a release" if the filter bags are immediately rolled up and placed in plastic bags or drums.
4) The sealed containers containing the used baghouse filter bags are to be transported to the tipping floor and discharged into the refuse pit as soon as possible. The transporting of bags to the tipping floor shall only be performed by facility personnel. Third-party contractors shall not be used for this task.
5) The container or bag that the used filter bags are placed into should be marked with a red X using spray paint or similar markings to allow for easy identification by the refuse crane operator once placed in the refuse pit.

C.2. EXTERNAL DISPOSAL

a. Use of solid waste disposal contractor for waste Types ID 13 (bulky waste), through the appropriate transfer station.

b. Use of sanitary sewer system for sanitary/gray discharge and "upset condition" industrial wastewater (with approval from PVSC).

c. Use of recycling contractor for designated Essex County recyclables including newspapers, glass containers, aluminum, old corrugated containers, office paper and ferrous scrap.

d. Use of appropriately licensed vendors for:

1) waste degreaser (D001);
2) spent batteries;
3) fluorescent lamps/bulbs and other mercury containing devices;
4) spent phosphoric acid sludge (D002).

e. Use of one or combination of the following methods for non—hazardous empty drum disposal: (1) return to supplier; (2) establishment of reuse procedure; and/or (3) deheading of container and crushing prior to recycling disposal as ferrous scrap.

f. Use of contract for Essex County ash residue disposal. Ash will be loaded and transported 24 hours per day, six days a week. **Ash residue and recovered metals (contained in truck bodies or containers) can be stored on the tipping floor during Sundays only.**

g. All refuse hauler trucks, ash hauler trucks, metal hauler trucks, and bulky waste hauler trucks leaving the facility shall scale out on one of the outbound truck scales at the scalehouse. All other hauler trucks leaving the site for any reason are required to stop at the scale house for authorization from the scale house attendant to leave prior to departing from the site.

WASTE FLOW CONTROL PLAN

APPENDIX 1

(Appendix 1)

UNACCEPTABLE/UNPROCESSIBLE WHICH CANNOT BE ACEPTED AT THE ESSEX COUNTY RESOURCE RECOVERY FACILITY.

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE SOLID WASTE MANAGEMENT PLAN OF ESSEX COUNTY REGULATES THE PERMIT OF THE ESSEX COUNTY RESOURCE RECOVERY FACILITY TO ACCEPT ONLY HOUSEHOLD, NON-HAZARDOUS INDUSTRIAL/COMMERCIAL WASTE, CERTAIN VEGETATIVE WASTE (LEAVES ARE EXCLUDED), AND ANIMAL AND FOOD PROCESSING WASTE (EXCEPT LARGE QUANTITIES OR FULL LOADS). UNACCEPTABLE/UNPROCESSIBLE WASTE WHICH CANNOT BE RECEIVED INCLUDES ALL HAZARDOUS WASTE, CERTAIN NON-HAZARDOUS WASTES AND ALL MEDICAL/INFECTIOUS WASTES.

UNACCEPTABLE NON-HAZARDOUS INCLUDE BUT ARE NOT LIMITED TO:

BATTERIES such as dry cells, mercury batteries, vehicle batteries.

WHITE GOODS such as refrigerators, stoves, dishwashers, washers and dryers.

BULKY GOODS such as bed springs, mattresses, air conditioners, hot water heaters, water storage tanks, furnaces, oil storage tanks, any compressed storage tank, children swing sets, vehicle frame parts, crank cases, transmissions, engines, lawn equipment, snow blowers, bikes, file cabinets, metal furniture, clean fill, metal piping, fuel containers.

LARGE QUANTITIES OR FULL TRUCK LOADS OF TYPE 25 WASTE

WASTE CONTAINING IODINE IN ANY QUANTITY

UNACCEPTABLE MEDICAL/INFECTIOUS WASTES INCLUDE BUT ARE NOT LIMITED TO:

SURGICAL AND OBSTETICAL WASTES

PATHOLOGICAL WASTES such as human tissue, human anatomical parts.

BIOLOGICAL WASTES such as excretions, suctionings, secretions, disposable medical supplies that have come into contact with such wastes.

BLOOD SOILED MATERIALS

RENAL DIALYSIS WASTES such as tubing and needles.

UN-AUTOCLAVED OR UNSTERILIZED serums or vaccines, lab waste, sharp instruments such as hypodermic needles intravenous needles and tubing.

UNACCEPTABLE HAZARDOUS WASTE INCLUDING BUT NOT LIMITED TO:

DRUMS OR OTHER LARGE ENCLOSED STEEL, METAL OR PLASTIC DRUMS OR OTHER LARGE ENCLOSED STEEL, METAL OR PLASTIC CONTAINERS.

BULK SLUDGES OR WET SOLIDS NOT CHARACTERISTIC TO MUNICIPAL WASTE.

LARGE AMOUNTS OF LIQUIDS OR OIL SOAKED SOLIDS OR SORBENTS, EXCEPT FOR SOLIDS OR SORBENTS CONTAINING OILY RESIDUE WHICH HAVE BEEN CERTIFIED BY THE GENERATOR OF THE WASTE TO BE NON-HAZARDOUS.

MILITARY ORDINANCE OR OTHER EXPLOSIVES.

PRESSURIZED CONTAINERS.

ANY SUSPECT CLOSED INDUSTRIAL PACKAGING.

COVANTA ESSEX COMPANY

WASTE FLOW CONTROL PLAN - APPENDIX 2

COVANTA ESSEX WASTE LOAD INSPECTION REPORT

INSPECTION TYPE: (CIRCLE ONE) VISUAL (ON FLOOR) CAMERA (TIPPING BAY OFFICE)

BAY ASSIGNMENT: 2 3 4 5 6 7 8 9 10 11 12 13 14 15 CIRCLE BAY # ASSIGNED

INSPECTOR:	VEHICLE DATA:		COMPANY VEHICLE #	
DATE:	TYPE OF VEHICLE #	NJDEP DECAL	TRUCK #	NJ DEP # ***(Painted)***
TIME:	TRUCK			
HAULER:	ROLL-OFF		LIC PLATE # FRONT	REAR
TAG#:	TRANSFER			
WASTE TYPE:	ACCT. #		HOSPITAL WASTE?	YES NO

UNACCEPTABLE WASTE TYPES AND IDENTIFIERS

POTENTIALLY HAZARDOUS:

LIQUID SOAKED DEBRIS _____
EXPLOSIVES _____
INDUSTRIAL CONTAINERS _____
RADIOACTIVE MATERIAL _____
DRY/POWDERED MATERIAL _____
PRESSURIZED VESSELS _____
WARNING LABELS _____
MOTORS _____
PAINTS _____
WET SOLIDS _____
UNUSUAL ODOR _____

IODINE WASTE:

LIQUID IODINE ___________
ANTISEPTIC IODINE_____
- BETADINE ANTISEPTIC _____
- POVIDONE IODINE _____

MEDICATIONS W/IODINE ______
DYES OR INKS _____
PHOTO FILM/CHEM _____
INDUSTRIAL CHEMICALS ______
OTHER ______

REGULATED MEDICAL WASTE:

CULTURES AND STOCKS (CLASS 1) _____
PATHOLOGICAL WASTE (CLASS 2) _____
HUMAN BLOOD & BLOOD PRODUCTS (CLASS 3) _____
SHARPS (CLASS 4) _____
ANIMAL WASTE (CLASS 5) _____
ISOLATION WASTE (CLASS 6) _____
UNUSED SHARPS (CLASS 7) _____

RECYCLABLES:

ALUMINUM ____ CARDBOARD _____ PLASTIC ___ GLASS ___ BULK LOAD (100%) ____

BULKY WASTE (TYPE 13):

APPLIANCES _____
TAR PAPER/SHINGLES _____
METAL PRODUCTS _____
SHEET ROCK _____
BALES _____
BED SPRINGS _____
RUBBER PRODUCTS _____
C & D WASTE _____
AUTO PARTS _____
OTHER (SEE COMMENTS) _____
CEILING TILES _____

TYPE 27 - UNACCEPTABLE PORTIONS

NJDEP PROHIBITED WASTE _____
NON-RESPONDENT/INSUFFICIENT TO SURVEY _____
HAZARDOUS IMPACT ON EMISSIONS ___
HAZARDOUS WASTE _____
HAZ. EFFECT ON ASH _____
NON-COMBUSTIBLES _____

OVERALL RESULTS:

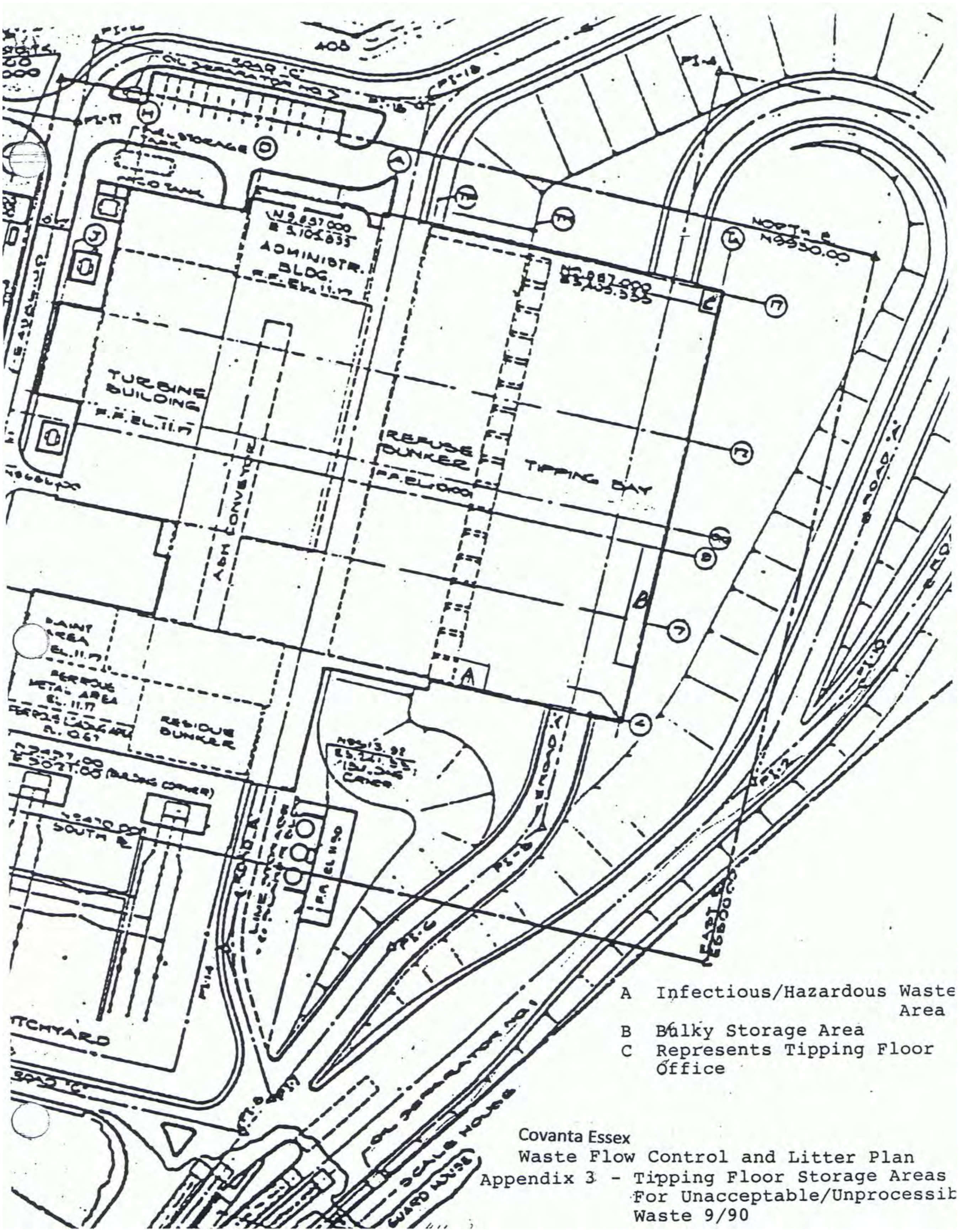
ACCEPTABLE LOAD _____ UNACCEPTABLE LOAD _____ DRIVER SAFETY VIOLATION _____

COMMENTS:

FOR REJECTED LOADS CONTACT ONE OF THE FOLLOWING INDIVIDUALS IMMEDIATELY UPON REJECTION:		
1) SHIFT SUPERVISOR ON DUTY		
2) ENVIRONMENTAL SPECIALIST		
2) OPERATIONS MANAGER		

*NOTE: CONTACT IN THE ORDER LISTED / CHECK BOX OF THE INDIVIDUAL THAT WAS CONTACTED

PLEASE INCLUDE PICTURES OF ALL UNACCEPTABLE WASTE



A Infectious/Hazardous Waste Area

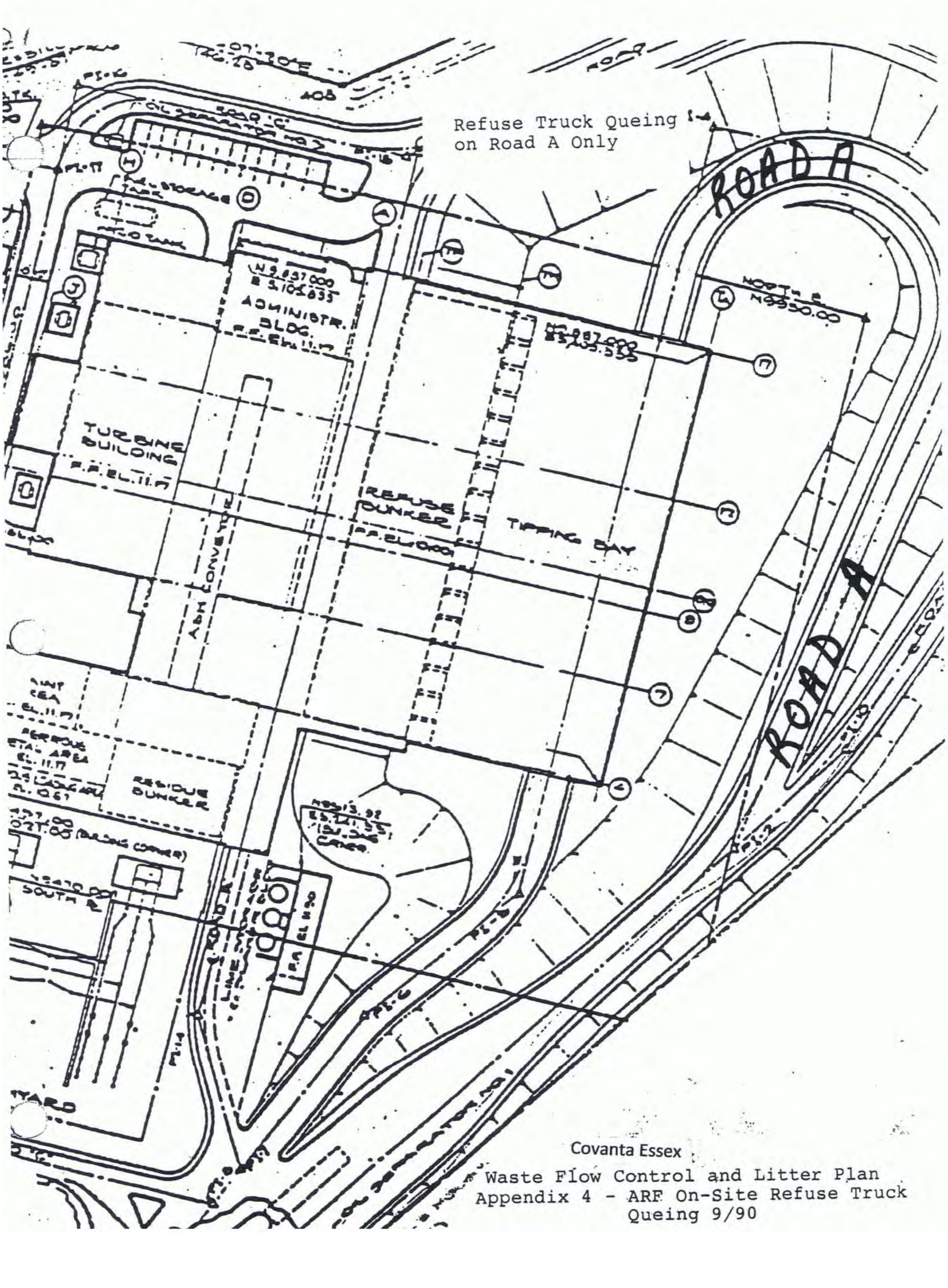
B Bulky Storage Area

C Represents Tipping Floor Office

Covanta Essex

Waste Flow Control and Litter Plan

Appendix 3 - Tipping Floor Storage Areas For Unacceptable/Unprocessib Waste 9/90



Covanta Essex

Waste Flow Control and Litter Plan
Appendix 4 - ARF On-Site Refuse Truck
Queing 9/90

COVANTA ESSEX COMPANY
WASTE FLOW CONTROL PLAN
APPENDIX 5

COVANTA ESSEX HOSPITAL LOAD INSPECTION PROCEDURE

1. FLAGGING LOADS AT SCALEHOUSE

a. Haulers delivering from hospitals in Essex County will be identifying loads from hospitals on the O&D forms going forward. The current known haulers are but not limited to:
   i. Interstate Waste Services (IWS)
   ii. T. Farese
   iii. LT Roselle; and
   iv. Giordano Company

b. These loads are typically compactor loads that contain 100% hospital waste.

c. The scalehouse operator is to make a note on the stage ticket that the load is from a hospital by marking “Hospital” on the ticket for the tipping floor operator.

2. WASTE INSPECTIONS ON THE TIPPING FLOOR

a. Once a notification is received from the scale house or the “Hospital” notation is observed on the stage ticket at the North entrance door, the tipping floor operator will have Bay #4 cleared if there is waste in the bay so that the hospital load can be dumped into Bay #4 for a closer inspection. Hold the truck at the door until Bay 4 is ready to receive the load.

b. Once the load is dumped into Bay 4 and the truck has left the bay and it is safe to do so, the tipping floor operator will walk over to Bay 4 for a closer visual inspection of the load. The “Covanta Essex Hospital Load Inspection Form” (attached) will be used to document the inspection. To provide for the operator’s safety, no loads are to be dumped in Bay 3 or Bay 5 during the inspection.

c. A visual inspection of the load will be conducted to determine if there are any containers of iodine containing material or any medications which contain iodine. The operator will use the visual aids provided for examples of this material to determine if it is visibly present in the load.
   i. The inspector will conduct a visual inspection only and will not handle the load or the materials directly.
   ii. The inspector may use a long handled tool such as a fire hook to move materials as needed. The waste will be raked as thinly as possible so that most of the waste is visible.

d. If nothing is observed that appears to contain iodine, the operator will note that the load is acceptable on the inspection form and the load can be pushed into the refuse pit.

e. If material is identified that may contain iodine, the operator will note this on the inspection form and will contact the Shift Supervisor, Chief Engineer, and/or Environmental Specialist for further instructions. The load is to be left in Bay 4 until the material can be examined by one of the above supervisors.

f. If it is determined that the material does appear to contain iodine, the material will be isolated in the unacceptable waste container on the tipping floor for alternate disposal.

g. The customer, hauler, and Essex County will be notified of the material observed in the compactor.

COVANTA ESSEX COMPANY
SAFE OPERATING PROCEDURE #41
APHIS COMPLIANCE AGREEMENT

Revision 8 – September 2018

I. INTRODUCTION

1. International waste brought into the United States may contain certain dangerous plant diseases and/or insect pests. This waste is referred to as **"regulated garbage"** which is regulated by the Department of Homeland Security, Customs and Border Protection (CBP) under the authority of the Animal and Plant Health Inspection Service (APHIS). The purpose of this SOP is to alert Covanta Essex personnel to that fact and to instruct personnel how to minimize potential uncontrolled contamination.

2. This does not include U.S. Customs seizures, which are typically packaged and palleted, unless packages are broken open. If packages open, exposing waste, equipment and floor must be disinfected, as necessary. Seizures are handled as Special Waste.

II. SPECIAL SAFETY ASPECTS/PRECAUTIONS

1. Do not handle APHIS regulated garbage – especially with bare hands. Use hand tools to inspect or manipulate the load.

2. Equipment used to manipulate regulated garbage must be disinfected after use. This includes tools, loader bucket, and the floor. Grapple should be disinfected prior to maintenance or repair activities if feasible or at least once at the end of each shift.

3. A mixture of the disinfectant is to be kept on the floor at all times. An APHIS authorized disinfectant must be used which includes either of the following:
   a. Clorox bleach (chemical name: sodium hypochlorite). Undiluted Clorox bleach must be 8.25% sodium hypochlorite.
   b. Virkon S, which is a livestock disinfectant, in a 1% solution.

4. Either disinfectant must be mixed into a dilute solution – Virkon S comes in powder form while bleach comes in liquid form. Due to the handling hazards of Virkon S in powder form, bleach will be used to disinfect the waste.

5. According to the Compliance Agreement with USDA, the bleach solution is a mixture of 1.0 part bleach (which is 8.25% sodium hypochlorite) in 9.0 parts water (example: 8 ounces Clorox to 72 ounces water) and must be prepared each day for maximum effectiveness. A typical garden sprayer will be used for application.

6. In the event of a spill of APHIS regulated garbage outside the facility, APHIS/CBP will be notified by calling (908) 986-9200. Cleaning and disinfection of the area of the spill with the above listed disinfectant must be performed immediately using the procedures listed in section V.

III. PERSONAL PROTECTIVE EQUIPMENT

1. Standard PPE (safety glasses, safety shoes, hearing protection).

2. Safety vest (for tipping floor).

3. Required disinfecting PPE: Tyvek suit with hood, disposable boot covers, yellow hard hat, nitrile gloves, chemical resistant gloves, face shield, and N95 respirator.

Note: Review Donning/Removal of PPE procedure – Attachment 1

IV. PROCEDURE

1. Fuel Handling Supervisor or designee and Control Room should be notified when load arrives on site.

2. Bay 4 will be used for all APHIS regulated loads, if available, and disinfectant should be staged in the area. This bay does not have to be dedicated to APHIS regulated loads.

3. Bay 12 will be used only when the North Refuse Crane is out of service and the South Refuse Crane will be used to charge waste.

4. Once the truck is accepted, the crane operator is to be notified as to which bay the material will be dumped into.

5. When possible, before the material is dumped into the pit, the crane operator must dig down into the trench area where the material will be dumped to create a hole for the APHIS regulated waste to be dumped into.

6. The APHIS regulated load should be pushed into the pit as soon as possible.

7. When unloading the APHIS regulated waste on the tipping floor, stage other dry, non-APHIS regulated waste in the area in front of bay 4 or 12 so that this dry waste can be mixed with the APHIS regulated waste if wet using the front end loader. The mixed waste should then be treated as APHIS regulated waste and pushed into the pit as soon as possible. In no case should APHIS waste be held for more than 72 hours.

8. Once in the pit, the load should be charged to a boiler as soon as possible. The crane operator must notify the Control Room before feeding any APHIS regulated waste. Ensure that the entire load is charged by digging down in the trench as necessary. Check that there is no residual material left on tipping floor.

9. If the APHIS regulated waste is wet and requires further mixing with dry waste, the waste should be taken from another area of the pit to the area where the APHIS regulated waste is and mixed in the trench. The APHIS regulated waste is not to be moved to any other areas of the pit once it has been dumped into the pit. Ensure that the entire mixed load is charged by digging down in the trench as necessary.

10. At least once per shift, the front end loader bucket, the floor, and any tools used to manipulate the APHIS regulated waste must be disinfected with the bleach solution described in section II.5 using the sprayer and this must be documented in the logsheet.

11. Before performing any maintenance on the front end loader, the loader bucket must be disinfected with the bleach solution described in section II.5 using the sprayer and this must be documented in the logsheet.

12. Before using the premixed bleach solution as a disinfectant, agitate the solution thoroughly.

13. If any residual material is observed on the floor, it should be pushed into the pit immediately. The crane operator will be notified and Steps 5-10 will be repeated as necessary.

14. At least once per shift and before performing maintenance/inspections/greasing, the grapple of the refuse crane that has charged APHIS regulated waste to a boiler must be disinfected with the bleach solution described in section II.5 using the sprayer and this must be documented in the logsheet.

15. When disinfecting the grapple, the following procedure will be used:

    a. Place the grapple on the charging deck in the open position.
    b. Using the sprayer, spray the interior surface of the grapple tines starting at the top pivot point and working down.
    c. Spray the overhead center hub as a last step in interior disinfection.
       Note: While spraying, do not stand under surfaces being sprayed.
    d. Spray the exterior surface of the grapple tines to complete the grapple disinfection.

V. SPILL RESPONSE PROCEDURES

1. The Fuel Handling Supervisor and Environmental Engineer or designee should be notified when a spill of regulated waste occurs in an area other than the tipping floor.

2. When a spill occurs, sweep up or scrape off as much of the contaminant as possible with a whisk broom and dust pan or shovel.

3. Apply absorbent material if needed (paper towel, etc.).

4. Place the sweepings, scrapings, and absorbent material in a 3 mil leak-proof plastic bag for incineration.

5. Free surfaces of grease or dirt when applicable.

6. Scrub the contaminated area or areas where the spill occurred using a detergent solution.

7. Flush the scrubbed surfaces with clean water.

8. When using the premixed bleach solution described in section II.5 as a disinfectant, agitate the solution thoroughly.

9. Apply disinfectant generously covering the entire area and allow it to remain on the surface for at least 5 minutes.

10. Rinse the surface with clean water and allow the surface to dry.

11. Dispose of all refuse, sweepings, and scrapings that are in the plastic bag in the pit for incineration.

VI. RECORDKEEPING REQUIREMENTS

1. When the APHIS approved hauler arrives at the scale house at the facility entrance, the origin and disposal (O&D) form carried by the hauler must be presented to the scale house personnel. This denotes the hauler name and origin and waste type of the material being delivered. If the review of documents and vehicle requirements proves satisfactory, the load information is entered into the scale house computer, a loop ticket is issued and highlighted as APHIS regulated waste, and the truck is released to proceed to the tipping bay. The scales are integrated into a computerized weighing system and weights of each load are recorded. Also recorded are the date and time the load of regulated garbage was received, the hauler name, and identification of the waste as international waste so that it is processed according to the USDA Compliance Agreement requirements.

2. Records must be kept of the dates that the bleach solution disinfectant is used in association with the handling of regulated garbage. Log sheets (shown on pages 5 and 6) will be maintained on the tipping floor and in the North Refuse Crane which will include the following information on disinfectant use:

   a. Date of use
   b. Location of use
   c. Name of disinfectant used
   d. Volume and concentration of sanitizer used

3. Documentation including date and time of notification of APHIS and US Customs and Border Protection (CBP) if there is any spillage of regulated garbage outside of the facility and the name of the employee making the notification must be maintained.

4. Records must be kept for three (3) years from the date of disinfectant or sanitizer usage.

VII. EMERGENCY BACK-UP PLAN

In the event that the facility is not able to accept waste due to a malfunction or outage, the local APHIS/CBP office will be notified immediately at (908) 986-9200 and will be advised in advance, as to the use of the following pre-arranged approved backup system:

Covanta Union, Inc.
1499 Route 1 North
Rahway, NJ 07065
(732) 499-0101

APPROVED:

Plant Manager	9/19/18 Date
Operations Manager	9/13/18 Date
Safety & Training Supervisor	9/13/2018 Date
Environmental Specialist	9/13/18 Date

DISINFECTION OF APHIS REGULATED WASTE HANDLING EQUIPMENT

Disinfectant Used: Bleach Solution (1 part bleach, 9 parts water)
Location of Use: Tipping Floor – Front End Loader Bucket and Bay 4 Floor

Date of Use	Volume Used (gallons)

DISINFECTION OF APHIS REGULATED WASTE HANDLING EQUIPMENT

Disinfectant Used: Bleach Solution (1 part bleach, 9 parts water)
Location of Use: North Refuse Crane – Grapple

Date of Use	Volume Used (gallons)

DISINFECTION OF APHIS REGULATED WASTE HANDLING EQUIPMENT

Disinfectant Used: Bleach Solution (1 part bleach, 9 parts water)
Location of Use: South Refuse Crane – Grapple

Date of Use	Volume Used (gallons)

ATTACHMENT 1
CORRECT DONNING AND REMOVAL OF PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR EBOLA

For most work tasks requiring PPE to protect a worker from exposure to Ebola virus, put on personal protective equipment in the following order:

1. Gown or Tyvek (if using double gloves, put on first pair before gown or Tyvek)
2. Mask (or respirator, when appropriate)
3. Face shield or goggles
4. Gloves

Remove PPE in a way to avoid self-contamination. This may include removing outer gloves simultaneously with the gown or Tyvek suit, decontaminating PPE between removal steps, or other measures. The order of PPE removal may vary depending on the type of PPE a worker uses, the nature of the work tasks being performed, and which devices or garments are contaminated, among other factors.

After use, remove and place suits, gloves, and disposable masks in a labeled waste container, as appropriate. Wash hands with soap and water, or use an alcohol-based hand gel if soap and water are not available. Reusable goggles, face shields, respirators, and other equipment must be decontaminated before re-use.

COVANTA ESSEX COMPANY
WASTE FLOW CONTROL PLAN
APPENDIX 7

Plant Specific Operating Procedure #42

COVANTA ESSEX COMPANY
PLANT SPECIFIC OPERATING PROCEDURE #42
HANDLING SPECIAL WASTE DELIVERIES

Revision 7 – December 2008

I. INTRODUCTION

This procedure is meant to be utilized whenever personnel are involved in the acceptance, unloading, and charging of Special Waste. Special Waste includes APHIS waste, Treated (disinfected and destroyed) Regulated Medical Waste and non-hazardous industrial waste pre-approved for disposal at our facility by Covanta Essex Company. For the purposes of this procedure, handling of the non-hazardous industrial component is discussed. Pharmaceutical waste, characterized using the Browning-Ferris protocol, is part of this classification.

II. SAFETY ASPECTS

A. Disposal of each Special Waste load requires visual inspection and appropriate handling. Because of this, personnel are required to come into much closer proximity to the waste stream than ordinary municipal solid waste deliveries. Detailed information regarding waste composition is available for review.

B. When inspecting or handling Special Waste, precautions must be taken so that personnel minimize contact with the waste and appropriate respiratory protection (dust mask) is used whenever a dusting condition is created. The Tipping Floor Technician or Special Waste Coordinator must notify the Refuse Crane Operators when these types of loads are present and must coordinate feed into the refuse pit. Use of hand tools and sharp objects requires attention to detail.

C. Many Special Waste deliveries require the unloading of trucks and staging of pallets on the tipping floor. This necessitates precautions while normal waste deliveries are still entering the tipping floor. Traffic flow is a concern as well as proper operation of the forklift. Loads should be handled on the far north/south ends whenever possible. A barrier with flashing light is placed in front of the work area to warn truck drivers of personnel in the area.

D. During transportation loads may shift. The truck driver is responsible for opening the vehicle's gate or door. Personnel must maintain a safe distance from the back of the truck when the back gate or door is being opened.

D. Personnel should maintain a minimum safe distance away from heavy equipment that is in use on the tipping floor. A general rule for safe distance is 8-10 feet from this equipment, however certain loads may require a greater distance away from the equipment.

III. ENVIRONMENTAL ASPECTS

A. Wastes excluded specifically by permit and regulation include, but are not limited to:
Asbestos, dry non-hazardous pesticides,
PCB containing material, contaminated soil
Hazardous waste, sewage sludge, animal and food waste.

B. Excluded due to potential permit issues with air emissions are wastes that contain:
Bromine or iodine containing material
Heavily sulfonated (rubber) or chlorinated (salts, PVC) materials.
Heavy metals (nickel, lead, beryllium, mercury, cadmium, and chromium)
Silica, fiberglass, carbon fibers, fine powders, etc.

C. Containers (drums) greater than or equal to 20 gallon capacity that contain bulk liquid cannot be accepted. Bulk loads (roll-offs or dump trailers) must also be limited to amount of free liquid.

D. Whenever charging the furnace with special waste, the Refuse Crane Operator must first thoroughly mix the waste stream with MSW. When not mixed, some industrial wastes can be more combustible than MSW. In almost all cases, this characteristic will not be a factor if the waste is thoroughly mixed drums, pallets and boxes must be broken up as much as possible by the crane grapple and the contents mixed thoroughly with MSW. Direct feed or witness burns necessitate the feeding of material to the hopper. Direct feed situations involve limited to no mixing of the material prior to introduction into the hopper. Feed rate will be determined upon evaluation of the load. The Special Waste Coordinator or Tipping Floor Technician must coordinate witness burns must with the Control Room and the Refuse Crane Operators.

IV. PERSONAL PROTECTIVE EQUIPMENT (PPE)

A. All personnel must wear standard personal protective equipment. If an observer or witness is present with the load, they must comply with our PPE standards if they should leave the normal tour route. Bays 2 & 3, the north end of ash alley and 84' elevation boiler house Unit #1 hopper window are areas where witnesses may be present.

B. Respirators may be utilized on an "as needed" basis for nuisance dusting when inspecting containers of bulk powders.

C. Appropriate gloves must be worn at all times when handling or inspecting Special Waste.

D. Personal restraint harnesses must be worn if working within 10' of the refuse bunker.

E. All personnel working on the tipping floor are required to wear reflective clothing. Reflective vests located at either end of the tipping floor.

V. PROCEDURE

Tipping Floor Drops

A. Special Waste deliveries will be identified at the Scalehouse. Tipping Floor Technicians can identify a special waste load by looking at the scale ticket, which identifies the load as special waste (ID10S or ID27S). A non-hazardous Special Waste manifest (attached) or bill of lading paperwork may accompany the load.

B. Once a load is identified as Special Waste; the Tipping Floor Technician will identify the type of Special Waste and verify the waste is scheduled and approved for disposal. The Special Waste Coordinator and facility Environmental Scientist keeps copies of approved profiles. Depending on the type of Special Waste received will dictate the visual QA/QC inspection to be performed.

C. Once the shipping paperwork is reviewed and the material is determined to be approved for disposal, the Tipping Floor Technician will determine how the waste will be unloaded. It is necessary to unload the vehicle before total assurance is achieved in the load's acceptability. The Tipping Floor Technician will also inquire if witnesses are required to see the destruction from the floor or crane cab.

NOTE: All loads are accompanied by a Certificate of Destruction (C of D).

D. During transportation loads may shift. The truck driver is responsible for opening the vehicle's gate or door. Personnel must maintain a safe distance from the back of the truck.

E. Vehicles that are to be unloaded with a forklift will be moved to the extreme north/south end of the tipping floor for unloading. Interference with truck and equipment traffic on the tipping floor will be eliminated by coordination with Tipping Floor personnel. A barrier to warn others, must be set up once the truck is in place.

G. A visual check of the materials will be done to ascertain if the material appears to be the approved waste. Pharmaceutical materials and consumer-packaged materials will be checked through the use of the approval lists. Each pallet will be checked against the approved product lists from each company. If the products are not listed the products will be rejected and reloaded on to the truck. Discrepancies or issues with the load will be documented on a Covanta Essex Company SWS Incident Report form (attached).

An inspection sheet is generated for each special waste load (attached). After the off-load QA/QC inspection is completed, the delivery paperwork is completed and the truck is cleared to leave. If unapproved, non-hazardous waste material is rejected, the containers are reloaded and the paperwork is properly annotated. , The truck is secured by use of a plastic numbered seal. If suspected hazardous or medical waste is found, the NJDEP Hot Line (1-877-WARNDEP) must contacted. Prior to the waste being rejected, verbal approval is secured from the NJDEP Division of Solid and Hazardous Waste (DSHW).

F. Some materials may be delivered in metal drums. The forklift drum tipper will be used to empty the drums. The metal drums will be crushed prior to be introduced into the refuse bunker. Caution must be taken when using heavy equipment to crush empty drums. Drums should be flattened by "pancaking"the drum with the bucket of the loader.

H. The Refuse Crane Operator will be informed whenever special waste is being put into the refuse bunker. The information that is conveyed should include the following:

1. Which refuse chute the special waste will be put into.
2. Type of special waste (i.e pharmaceuticals, documents, industrial).
3. Approximate amount of material
4. Confirmation with the Control Room Operator (CRO) when direct feeding a boiler with Special Waste.

This information will be communicated by the Special Waste Coordinator or Tipping Floor Technician to the Refuse Crane and Control Room Operator. The Refuse Crane Operator should then mix the Special Waste as instructed by the Special Waste Coordinator thoroughly with the MSW prior to charging it into the furnace at a specified feed rate.

NOTE: For confidentiality reasons, type of waste being handled should not be broadcast over the radio.

I. When charging special waste mixed with MSW, the Refuse Crane Operator will notify anyone working on the charging deck that special waste is being mixed and fed to the boilers. If the feeding of the special waste creates an excessive amount of dust, feeding should be stopped immediately.

Witness of Burn/Direct Feed

A. Government agencies or private entities request to use our facility for the secured and guaranteed destruction of seized narcotics, controlled substances, criminal evidence or USDA sanctioned material. These items will be fed directly into one of the boilers as directed by the Special Waste Coordinator.

B. All visiting personnel witnessing and handling these wastes must wear visitor PPE. Additionally, any person guarding the Ram Feeder Table at 49' elevation is required to wear steel-toed shoes.

C. When the load arrives, the Control Room Operator will be notified by either the Special Waste Coordinator or Tipping Floor Technician and provided with the following information:

1. Direct feeding special Waste
2. Type of material
3. Receiving boiler
4. Approximate quantity of material
5. Feed rate

D. The material will be offloaded from the truck and brought to 84' elevation by elevator.

E. If Boiler #1 is available the north Refuse Crane Operator will be notified of the destruction. A Covanta Essex employee will be in radio contact at all times with the north Refuse Crane Operator. Prior to opening the window above hopper #1, the Covanta Essex employee accompanying the government agents will obtain permission from the Refuse Crane Operator.

F. Once approval is obtained, the window above #1 will be opened and Special Waste material fed into the hopper. Feed rate into the hopper is determined by the type of material being fed. A grapple full of MSW should be placed in the hopper after a predetermined amount of Special Waste is fed.

G. If Boiler #1 is off line or in an upset condition, Boilers #2 and/or #3 may be used with all communications being maintained with the appropriate Refuse Crane Operator.

VI. POSTING

Control copies of SOP Manual
Tipping floor

APPROVED:

Plant Manager	12/23/08 Date
Operations Manager	12-15-08 Date
Safety & Training Supervisor	12-24/2008 Date
Environmental Engineer	01-05-2009 Date

Attachment 4

PURPLE PLUME MITIGATION PLAN

Original, January 2022

VOLUME IX, CHAPTER 3A

Approved by: ____________ **Date:** 1/10/22

COVANTA ESSEX COMPANY

OPERATIONS AND MAINTENANCE MANUAL
VOLUME IX - CHAPTER 3A

PURPLE PLUME MITIGATION PLAN

Original, January 2022

Purple Plume Mitigation

On December 20, 2019, Covanta Essex submitted a Purple Plume Prevention Plan to NJDEP (see Attachment 1) outlining planned efforts to eliminate the occurrence of purple plumes which occur when iodine containing waste is combusted. This was the basis of the requirements included in this Purple Plume Mitigation Plan (Plan) outlined below.

Iodine containing waste is prohibited from being delivered to the Covanta Essex facility.
The following plan includes protocols and procecures to prevent the delivery of iodinated waste to Covanta Essex and procedures and training at Covanta Essex to prevent processing of any iodinated waste delivered to Covanta Essex and deposited in the tipping floor area.

1.0 Procedures to increase education and outreach

1.1 Distribution of Flyers

Covanta Essex distributes informational flyers (see Attachment 2) to the Essex County Utility Authority (ECUA) at least annually which ECUA includes in their billing invoices to all Essex county haulers to alert them of the problem created by the presence of iodine in waste delivered to Covanta Essex. Flyers are also sent to all the commercial haulers and the Department of Sanitation of New York (DSNY) at least annually that deliver waste to Covanta Essex.

These informational flyers may also be sent to local businesses identified using the Virtual Drive-By Procedure described in Section 2.1 below to educate them about iodine containing materials in the waste stream, and Covanta will also offer assistance to interpret any reagent SDS sheets.

1.2 Hospital Outreach

The following hospitals are known to deliver waste to the facility and will be sent the informational flyers referenced in section 1.1 above on an annual basis to continue to inform them that iodine containing waste is prohibited from being delivered to the Covanta Essex facility:

- St. Barnabas Medical Center, Livingston NJ
- Clara Mass Medical Center, Belleville, NJ
- Beth Israel Medical Center, Newark, NJ
- St. Michael's Medical Center, Newark, NJ
- UMDNJ Hospital, Newark, NJ
- East Orange General Hospital, East Orange NJ
- VA Medical Center, East Orange, NJ

1.3 Essex County Solid Waste Advisory Committee (SWAC) Outreach

When necessary, Covanta Essex will solicit route information from members of the Essex County SWAC where commercial stops are incorporated into municipal routes. This information is used in the “Virtual Drive-By” procedure discussed in Section 2.1 below.

1.4 Website Link

A website link has been created by Covanta Essex that lists all waste types that are prohibited from being accepted at Covanta Essex including waste that contains iodine. This link will be maintained on the website with the most current informaiton. This link will be included on all correspondence with ECUA, DSNY and all haulers delivering waste to the Covanta Essex facility. The link address is https://info.covanta.com/prohibited-wastes.

1.5 Troy Chemical Outreach

Covanta Essex used the “Virtual Drive-By” procedure discussed in Section 4.2 to identify Interstate Waste Services (IWS) as the waste hauler for Troy Chemical who was identified as the source of the iodinated waste after the April 7, 2020 purple plume event. Covanta Essex has reached out to Troy Chemical numerous times since then to inform them that IPBC and any other iodine containing compounds in their waste are not acceptable to be delivered to Covanta Essex. Troy Chemical has not responded to Covanta Essex. After receiving no response, Covanta Essex contacted IWS and instructed them to divert all waste from Troy Chemical to another disposal location. Future attempts to contact Troy Chemical will only be made in the event that waste from their Newark facility is discovered in any loads delivered to the facility.

1.6 Outreach via Covanta Invoicing

Covanta Essex has created invoice templates for its non-Essex County commercial waste haulers and other haulers that are billed directly by Covanta which include the above referenced website link for prohibited waste types. These will be used for all future billing cycles. The website link address is listed in section 1.4 above. A copy of an invoice containing the website link is included as Attachment 3 to this Plan.

1.7 Plant Signage for Prohibited Waste

The signs posted on the scalehouse that list all the prohibited waste types for the Covanta Essex facility shall include iodine containing waste as a prohibited waste type. The signage shall be updated as needed.

2.0 Procedures to identify potential generators/sources of iodine containing waste, to ensure these wastes are not included in the waste streams coming to the facility and inspection/interception protocols to ensure these waste types are not processed through the facility

2.1 Virtual Drive-By Procedure

Covanta Essex has developed a detailed procedure to identify potential generators/sources of iodinated wastes in the facility's service area. These steps are summarized below:

Step	Action	Output	Covanta Essex Responsibility
1	Conduct Virtual Drive-By using Google Maps and going street by street and documenting: • the location (town, city) • business name and type • website address • contact information • list of products that may contain iodine.	List of businesses that potentially use iodine in their operation. Business types may include: • Large scale chemical companies; • Hospitals/Medical Labs • Printing companies • Veterinary clinics • College chemistry labs • Research facilities • Photography studios	Covanta support staff
2	Identify businesses that have waste delivered to Covanta Essex	Smaller pool of companies/haulers to investigate	Business Manager
3a	Contact hauler/generator to confirm that they delivered iodine-containing waste. If confirmed, then develop a plan to re-route source to a transfer station, ban their deliveries, or remove the iodine material from their waste stream	Confirmation of source	Business Manager
3b	Use the New Jersey's Community Right To Know database to check the inventory of target businesses for iodinated compounds	Confirmation of iodine-containing compounds on site	Environmental Specialist
4	Distribute flyers to customers/haulers	Educate waste generators/sources	Business Manager
5	Update waste screening protocols and train Covanta business units in screening non-residential waste approvals for targeted businesses and iodine containing wastes	Updated waste approvals	Covanta Business Units/Environmental Specialist

This procedure will be implemented in the event of any future purple plume events at the facility to identify the generator of the iodine containing waste.

2.2 Increased Hospital Load Inspections and Throwdown Inspections

All MSW loads received from hospitals are subject to inspection to check for iodine containing material in the waste which is prohibited. The procedure for these inspections includes pictures of typical items that may be found in hospital waste that could contain iodine to educate and train tipping floor operators. In a letter dated November 5, 2019 to NJDEP, Covanta Essex submitted its Hospital Waste Load inspection procedure and the original form used to identify loads of iodinated waste received at the facility. The Hospital Waste Load inspection procedure has been updated and now includes the following additional requirement that the waste will be raked as thinly as possible so that most of the waste is visible while performing the inspection. The current Hospital Load inspection procedure is included as Attachment 4 to this Plan. The standard throwdown inspection form for all waste load inspections has been updated and now also includes a section for identification of iodine containing waste as unacceptable waste and can also be used to document all hospital waste inspections. This form will now be used to document all waste load inspections, including Hospital waste load inspections. The updated form is included in Attachment 5.

Throwdown inspections are required to be performed on a minimum of 10% of all waste loads received per day. The inspections shall be done on a random basis throughout each shift.

3.0 Digital Camera Use

Between 2018 and 2019, Covanta Essex installed 10 HD digital cameras on the tipping floor. Four of the 10 cameras have additional pan, tilt and zoom (PTZ) capability. This PTZ capability allows for greater visual observation of loads. Additionally, 3 new HD digital cameras were installed over each of the three boiler feed chute hoppers. All recorded video footage by the cameras is stored and available for review for 40 days.

Covanta Essex plans to also install 7 additional HD digital cameras on the East Wall of the tipping floor, 4 additional HD digital cameras on the North side of the refuse pit, and 3 additional HD digital cameras on the South side of the refuse pit as part of the planned fire system upgrade to be installed in 2022. A diagram of the current and proposed loccations of all cameras on the tipping floor and refuse pit are included as Attachment 6 to this Plan.

3.1 Tipping Floor Monitoring

The tipping bay office is located inside the North entrance of the tipping floor. For each operations shift, one tipping floor operator is stationed at the North entrance and a second operator operates the front end loader. Once the load has exited the scale and proceeded to the North entrance to the tipping floor (the waste receiving area), the truck is required to present a scale ticket to the operator at the entrance and is inspected for proper decals. Once approved, the truck is then assigned a bay where it can deposit its load of waste.

The computer monitor located in the tipping bay office displays all tipping floor camera views which allows the tipping floor operator that is stationed at the North entrance to view all bays where waste is deposited. The operator can zoom in on any load using the cameras equipped with PTZ capability and can visually inspect the load for prohibited or unprocessible waste types as the truck unloads onto the tipping bay floor. The use of the cameras in addition to the throwdown inspections allows for greater visibility of all loads delivered to the tipping floor so that unprocessible waste can be identified and prevented from being processed.

4.0 Training

4.1 Annual Environmental Training

A training program is conducted annually to review all sections of the Environmental Compliance Operating Manual (ECOM) and is provided by the Environmental Specialist to all Covanta Essex employees who have responsibilities affecting the operation of the facility, including, but not limited to chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel and crane/load handlers. Section 3 of the ECOM covers types of waste that are acceptable and unacceptable at the facility, including waste with iodine, and required procedures for inspecting waste loads on the tipping floor, handling any unacceptable waste that is identified on the tipping floor, and management of the refuse pit by the refuse crane operators.

4.2 Waste Inspection and Camera Use Training

Refresher training will be provided to tipping floor attendants and refuse crane operators on completing inspections focused on MSW loads from hospitals on both the tipping floor and within the refuse pit on an annual basis. Training will include a review of inspection methods and proper completion of the throwdown inspection sheet and procedures for rejecting unacceptable and prohibited waste including iodine containing waste. The training will also include a review of the use of the cameras on the tipping floor for monitoring of loads.

4.3 Control Room Operator Purple Plume Response Procedure

All Control Room Operators (CROs) have been provided a procedure detailing response steps to be taken if a purple plume event occurs to minimize the impact of the event on opacity. The procedure is in a binder that is kept in the control room for easy access to all CROs when needed if an event occurs. This procedure is also included in Attachment 7 to this plan.

5.0 Annual Review of Plan

The Purple Plume Mitigation Plan shall be reviewed on an annual basis to assess whether further improvements or enhancements could be made to ensure that iodine containing waste is not processed at the Covanta Essex facility.

Attachment 1

COVANTA
Powering Today. Protecting Tomorrow.

Covanta Essex Company
183 Raymond Blvd
Newark, NJ 07105
Tel 973 344 0900

VIA E-MAIL AND CERTIFIED MAIL

December 20, 2019

Richelle B. Wormley, Director
Division of Air Enforcement
New Jersey Department of Environmental Protection
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Trenton, New Jersey 08625-0420
richelle.wormley@dep.nj.gov

Michael Hastry, Director
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Release Prevention
New Jersey Department of Environmental Protection
9 Ewing Street, Mail Code 09-03
P.O. Box 420
Trenton, New Jersey 08625-0420
michael.hastry@dep.nj.gov

Re: Covanta Essex Company – Draft Purple Plume Prevention Plan

Dear Ms. Wormley and Mr. Hastry:

On behalf of Covanta Essex Company ("Covanta"), I am writing in furtherance of our meeting on December 10th to discuss Covanta's ongoing efforts to prevent purple (iodinated) plumes at the Essex County Resource Recovery Facility ("Facility") located at 183 Raymond Boulevard in Newark. Covanta understands and appreciates the concerns expressed by the Ironbound Community Corporation and the New Jersey Department of Environmental Protection ("DEP") regarding these atypical visible emissions, and we are committed to finding a solution to prevent their occurrence.

As explained in the presentation that we shared with you last week, a copy of which is attached, a plume with a pink to purple color is caused when sufficient quantities of iodine are present in municipal solid waste and/or other nonhazardous waste (Type 10 and 27) that is combusted in the Facility's boilers. Covanta has been working rigorously to develop a two-pronged solution to prevent the occurrence of purple plumes: (1) develop a robust set of plans and procedures to prevent delivery of iodinated waste to the Facility in the first instance, and (2) in the event that iodinated waste nevertheless makes its way into the boilers, to have a system in place to reduce iodine emissions and thus minimize the formation of a purple plume.

The purpose of this letter is to present in DRAFT form our proposed strategy to address the five (5) specific action items identified by DEP for inclusion in Covanta's Purple Plume Prevention Plan:

1. Review and evaluate efforts made to date/planned to identify potential generators/sources of iodinated waste to prevent further deliveries of such waste to the Facility.
2. Review and evaluate the effectiveness of waste acceptance practices and other Best Management Practices (BMP) to screen/manage waste once it arrives at the Facility.
3. Evaluate potential human health risks associated with purple plume emissions.
4. Review and evaluate Covanta's community outreach practices in general, as well as upon occurrence of a purple plume event.
5. Review and evaluate the safety and efficacy of the proposed purple plume mitigation system

In response to DEP's request, Covanta will secure the services of independent contractors to review past and present efforts to prevent purple plume events, results obtained to date, and other ideas for consideration. Purple plumes are not acceptable to us and we welcome all efforts to prevent delivery of iodinated waste to the Facility.

Covanta's proposed approaches to the five action items, further detailed in Covanta's Purple Plume Prevention Plan attached, are as follows:

- The attached responses to action items 1 and 2 identify a wide range of efforts already implemented by the Facility to identify potential sources of iodinated waste, to prevent delivery of such waste to the Facility, and to detect the presence of iodinated waste on the Facility's tipping floor to keep it from reaching the boilers. Those efforts are continuing; however, to date we have not identified a generator of iodinated waste that can be linked to the plume events at the facility. We are also installing high resolution digital cameras that will record all waste charged to a boiler. If a purple plume should develop, those cameras and back up files would assist in identifying the nature of the waste and potential identification of the source (hauler/generator). Other technology-based solutions under consideration include iodine monitors in the pit area.

- The response to action item 3 will include 2 parts with Part 1 being an assessment of ground level impacts of iodine and Part 2 being an assessment of established iodine exposure standards. Part 1 will be based on a recently completed facility-wide risk screening assessment completed in connection with the Facility's Title V operating permit renewal. That report -- "Air Quality Evaluation and Modeling Report, Hazardous Air Pollutants Risk Assessment" -- was submitted to DEP on October 4, 2018. The report includes ambient impacts determined from dispersion modeling using the U.S. Environmental Protection Agency AERMOD model, and was designed to correlate facility operating conditions with short term and long term ground level impacts. The results from Part 1 will be compared to established iodine exposure standards and will serve as the foundation for a timely and complete evaluation of potential human health risks associated with purple plumes.

- The Facility's response to action item 4 identifies all recent community outreach efforts. With regard to purple plume events, Covanta has engaged with local and regional media including the *Star-Ledger*, *Newark Patch*, News 12 NJ and CBS 2 New York to educate the public and explain the events. The facility also created an educational flyer/poster used for outreach to customers, haulers and hospitals that explains the type of waste that may contain iodine and provides contact information to discuss alternative disposal options. We will be formulating a plan for alerting the local community in the event of a purple plume. In the meantime, the annual Open Public Meeting for the Facility occurred at the Blueprint Café (369 Raymond Boulevard, Newark), on December 18, 2019, during which we responded to questions from the public based on currently available information.

- In response to action item 5, the Facility has been actively involved in the development of a possible purple plume prevention technology. A test skid for one boiler (unit) is currently scheduled for delivery in the January-February time frame with testing scheduled to occur sometime in the 1st quarter of 2020. Testing would be limited to demonstrating that the injection of sodium thiosulfate solution promotes the formation of sulfur dioxide, which in turn reacts with iodine to prevent a plume from developing. This mitigation technology is in the development phase and would only be used when a plume is developing; it would not be in operation on a continuous basis. Implementation on all 3 combustion units at the Facility would occur only following a complete evaluation of the technology, and subject to any necessary DEP approvals.

We are evaluating qualified independent contractors so that we can implement their review as soon as we arrive at a final plan. We expect that each action item may require its own contractor or contractors and that each action will also have its own implementation schedule. The plan is to implement each as soon as possible.

We look forward to your feedback on this draft action plan however that does not mean that we have stopped researching the issues. Efforts on each of the five action items are continuing and will continue as we wait for your response. We are available to discuss at your convenience.

If you have any questions, please contact Patricia Earls at 973-817-7322 or pearls@covanta.com.

Sincerely,

David Blackmore
Facility Manager

Cc: Anthony Fontana, Solid Waste Permitting
(anthony.fontana@dep.nj.gov)
Jeffrey Meyer, Northern Regional Air Enforcement Field Office
(jeffrey.meyer@dep.nj.gov)
Kenneth Ratzman, Air Quality Permitting
(kenneth.ratzman@dep.nj.gov)
Scott Michenfelder, Northern Regional Air Enforcement Field Office
(scott.michenfelder@dep.nj.gov)
Brian Bahor, Covanta
Jack Bernardino, Covanta
Patricia Earls, Covanta

COVANTA
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DRAFT

Covanta Essex Purple Plume Prevention Plan

Action Item	Action
1	Review and evaluate efforts made to date/planned to identify potential generators/sources of iodinated waste to prevent further deliveries of such waste to the Facility.
2	Review and evaluate the effectiveness of waste acceptance practices and other Best Management Practices (BMP's) to screen/manage waste once it arrives at the Facility.
3	Evaluate potential human health risks associated with purple plume emissions.
4	Review and evaluate Covanta's community outreach practices in general, as well as upon occurrence of a purple plume.
5	Review and evaluate the safety and efficacy of the proposed purple plume mitigation system.

DRAFT Action Item # 1

1.0 Action

Review and evaluate efforts made to date/planned to identify potential generators/sources of iodinated waste to prevent further deliveries of such waste to the Facility.

1.1 Purpose

An independent contractor will review past and ongoing efforts to identify generators who could be the source of iodinated waste causing colored plumes.

1.2 Goal

Prevent further deliveries of iodinated waste.

1.3 Scope of contractor review

1.3.1 Background

Table 1 summarizes the outreach and inspection plan including a brief summary of efforts to date by Covanta Essex to investigate generators and haulers and inspections at Covanta Essex. This plan is an evolving work-in-progress and is updated to include lessons learned and new information and ideas.

1.3.2 Scope of contractor review

The independent contractor will review efforts outlined in Table A to identify and contact generators and to inspect deliveries of hospital waste and other non-hazardous waste known as Type 10 & 27. Contractor's review should consider any new ideas or approaches that would improve that outreach effort to prevent deliveries and/or activities at site to inspect waste deliveries.

Table A Outreach and Inspection Plan for Iodine Bearing Waste

A.1 Purpose

To minimize or eliminate the presence of iodine in the MSW that is received and processed at the Facility, the following actions have been and continue to be implemented by Covanta Essex:

A.2 Outreach to generators

Direct contact with generators and haulers where possible

Goal	Activity
Inform haulers and customers that iodine in waste is not acceptable	A flyer in English and Spanish has been distributed to the Essex County Utility Authority (ECUA) and has been included in their billings to all Essex County haulers
	That same flyer was mailed to all the commercial haulers that deliver waste to the Facility
	That same flyer has also been sent to the Department of Sanitation of New York (DSNY)
	Covanta hosted its annual Hauler Day at the Facility on 11/21/19 and the flyer was also handed out to drivers on the tipping floor that day.
Transfer Station waste	Transfer stations in Paterson and Totowa owned by Covanta affiliates separate out hospital waste from other waste and divert this waste to landfill to minimize amount of this waste sent to the Facility.
Direct outreach by phone to hospitals that have waste delivered to the Facility. Major hospitals include;	• St. Barnabas Medical Center, Livingston, NJ • Clara Maass Medical Center, Belleville, NJ • Beth Israel Medical Center, Newark, NJ • St. Michael's Medical Center, Newark, NJ • UMDNJ Hospital, Newark, NJ • East Orange General Hospital, East Orange, NJ • VA Medical Center, East Orange, NJ
Contacted Interstate Waste Services (IWS), the hauler for:	• St. Barnabas Medical Center, Livingston, NJ • Clara Maass Medical Center, Belleville, NJ • Beth Israel Medical Center, Newark, NJ
	IWS is to distribute our iodine flyer to the hospitals
Other hospitals	Attempting to reach out to others – but identifying responsible party for handling and disposal of waste is not always clear. With the help of the Essex County SWAC, we have enlisted the services of their consultant, Mr. Wayne DeFeo, to assist in contacting hospitals in Essex County that have waste delivered to the Facility.
Findings to date	One empty bottle and one small packet of povidone iodine solution from UMDNJ from tipping floor inspection

Identify other sources of iodinated waste.

Goal	Activity
Identify other generators beyond hospitals	Evaluating generators in Essex County, Passaic County and New York City
	Medical service providers including dental offices, veterinary hospitals and offices, urgent care facilities, surgery centers, dialysis centers, doctor's offices, and X-ray contrast media producers
	Adding chemical companies and food manufacturers
	Compare waste delivery schedule with past plume events

A.3 Facility Inspections

A.3.1 Hospital Waste Inspections

Goal	Activity
Prevent iodinated waste from hospitals from being mixed in the pit	Haulers have to identify loads from hospitals on the Origin and Disposal form that is presented to the scale house. The name of the hospital is specified on the form and this is noted on the stage ticket by the scale house operator
	Tipping floor inspections of loads with stage ticket marked "Hospital"
	Waste is pushed into the pit ONLY after the load is inspected and cleared for acceptance

A.3.2 Other Type 10 and Type 27 Waste Inspections

Goal	Activity
Prevent iodinated waste from industrial or commercial generators from being mixed in the pit (a)	Haulers have to identify Type 27 loads on the Origin and Disposal form that is presented to the scale house. The stage ticket is marked "Type 27" by the scale house operator
	Tipping floor inspections are performed on these loads on the tipping floor.
	Waste is pushed into the pit ONLY after the load is inspected and cleared for acceptance
	A review of customers delivering waste to the Facility either the day before or the day of a purple plume event for the last 5 years was performed to determine if there was any pattern that might indicate a potential source of iodine. A list of customers was generated and will now also be the target of detailed inspections. These customers include both Type 10 and Type 27 waste types. This is in addition to the normal inspections which is performed on 10% of the incoming trucks per day.

(a) Iodine has many uses including as an additive to nutrition products, and a wide range of medical, agricultural, and industrial applications. The leading application of iodine is in the production of X-ray contrast media (22%). Another application of iodine is in polarizing film in liquid crystal display (LCD) screens, where iodine is incorporated as a polyiodide (I3- or I5-). Potassium iodide is used in iodine tablets to be taken during nuclear accidents to protect the thyroid against exposure to radioactive iodine. Iodine based biocides are often used in paints as an in-can preservative as well as to prevent mold growth after application. Other applications include pharmaceuticals, disinfectant iodophors and povidone-iodine, fluoride derivatives, heat stabilization of nylon, or as process enabler in polymerization of plastics or other processes requiring chemical synthesis. An additional use of iodine is in Red Dye #3 which is a dye used in various food products and printing ink. Red dye #3 contains 58% iodine.

DRAFT Action Item # 2

2.0 Action

Review and evaluate the effectiveness of waste acceptance practices and other Best Management Practices (BMP) to screen/manage waste once it arrives at the Facility

2.1 Purpose

Evaluate existing practices to investigate content of trucks delivered to the facility.

2.2 Goal

If an iodinated waste is delivered to the facility, prevent it from being combusted.

2.3 Scope of contractor review

Review existing practices and procedures. Review must consider health and safety of personnel on site while facility is conducting normal business practices.

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DRAFT Action Item # 3

3.0 Action

Evaluate potential human health risks associated with purple plumes.

3.1 Purpose

An independent contractor will review results from the recent dispersion modeling report to determine the ground level impacts of iodine and possible health impacts.

3.2 Goal

Estimate the ground level impact of iodine and how it compares with documented heath-based standards.

3.3 Scope of contractor review

3.3.1 Background

Covanta recently completed a facility-wide risk screening assessment in connection with the Facility's Title V operating permit renewal. That report -- "Air Quality Evaluation and Modeling Report, Hazardous Air Pollutants Risk Assessment" -- was submitted to DEP on October 4, 2018. This report is described as a second-level risk screening assessment which determined ambient impacts from dispersion modeling from application of U.S. Environmental Protection Agency's AERMOD model. Second-level screening is a more rigorous evaluation as compared to first-level screening which uses dispersion look-up tables and DEP's risk screening spreadsheet.

The report was designed to correlate facility operating conditions with short term and long term ambient impacts. The results provide the ability to estimate ambient level iodine concentrations for comparison with established iodine exposure standards.

3.3.2 Scope of contractor review

The response to action item 3 will include 2 parts with Part 1 being an assessment of ground level impacts of iodine and Part 2 being an assessment of established iodine exposure standards. Part 1 will be based on the recently completed facility-wide risk screening assessment "Air Quality Evaluation and Modeling Report, Hazardous Air Pollutants Risk Assessment" completed in connection with the Facility's Title V operating permit renewal.

Part 2 will include a survey of recognized exposure standards for iodine for comparison with estimate ground level impacts.

DRAFT Action Item # 4

4.0 Review and evaluate Covanta's community outreach practices in general, as well as upon occurrence of a purple plume.

4.1 Purpose

Ensure effectiveness of community outreach practices, including timely communication in the event of a purple plume.

4.2 Goal

Covanta, along with Corporate Outreach and Communication resources will continue to plan community outreach activities as has been done historically. In addition, Covanta will investigate methodologies for communicating relevant operational information, including incidents involving a purple plume, to the community.

4.3 Scope

Develop outreach activities and present options on an immediate notification in the event of a purple plume.

4.3.1 Background

Community Outreach is typically targeted at developing long term, meaningful relationships with various members and groups within the community. Covanta has participated in a number of events to support various initiatives and address issues within its community.

Historically, operational information, whether routine or a deviation have not been communicated to the community directly, unless triggered as part of a specific incident with possible immediate impacts to the community or environment.

4.3.2 Scope of Contractor Review – general community outreach

An Agency with expertise in Marketing and Communications will review the Facility's outreach activities and communication actions including options on an immediate notification in the event of a plume.

Goal	Activity
Plan Community Outreach Activities	Follow past practice to develop an outreach strategy appropriate for the facility stakeholders and local community.
Investigate Communication Methodologies	Determine what information and what timeframe is appropriate to communicate to the community.
	Investigate communication technologies appropriate for large scale communication of information.

Examples of previous outreach activities in 2018 and 2019 that would be reviewed to determine appropriateness for 2020 include:

1.0 Meet periodically with stakeholders:
- Essex County Utilities Authority
- Essex County Executive
- City of Newark
- Ironbound Community Corporation
- Ironbound Business District
- Newark Board of Education

2.0 Member Essex County Solid Waste Advisory Committee
3.0 Member Newark Regional Business Partnership
4.0 Accept Pharmaceutical Takeback:
- Newark Police
- Essex County
- New Jersey Field Office DEA

5.0 Board member and Participant in NJ Clean Communities Program (includes litter cleanup at Valisburg Park)
6.0 Food Drive to benefit Pierre Toussaint Food Pantry Newark
7.0 Event Sponsor
- Millburn Township Earth Day
- Essex County Parks Earth Day
- Holiday Lights at Turtleback Zoo
- Giraffe Exhibit at Turtleback Zoo

8.0 Coordinate with Go Green Initiative pilot in Newark City School District. Provide support for Sustainable Jersey School Certification
9.0 Sustainable Jersey Sponsor
10.0 Donated reusable water bottles to Miller Street School for field trip and to teach about waste reduction
11.0 Conduct tours for visitors from NJIT, Rutgers, other community groups
12.0 Host Annual Open House
13.0 Sponsor 4E-waste collection events (1 in Ironbound)
14.0 Install Rain Garden at St. Benedict's School in Newark
15.0 Newark Sustainability Summit Participant
16.0 Hosted a 4-week summer program for Boys and Girls Club
17.0 Publish Quarterly Newsletter to the Community & Stakeholders

4.3.3 Scope of Contractor Review – community outreach for an event

An Agency with expertise in Marketing and Communications will review Covanta's proposed outreach activities and communication actions including options on an immediate notification in the event of a plume.

Goal	Activity
Evaluate Outreach and Communication Plan	Engage an Agency with Marketing and Communications expertise to review Covanta Essex's proposed outreach activities and communication actions, which will include an option for notification in the event of a plume.

DRAFT: Action Item # 5

5.0 Review and evaluate the safety and efficacy of the proposed purple plume prevention system

5.1 Purpose

An independent contractor will review the plan to use sodium thiosulfate to prevent a purple plume. Note that the addition of sodium thiosulfate is proposed only during a purple plume event and would not be in continuous operation.

5.2 Goal

Evaluate viability of sodium thiosulfate and other possible options for preventing the plume.

5.3 Scope of contractor review

5.3.1 Background

A colored plume with a pink to purple color is due to iodine in municipal solid waste and/or other nonhazardous waste (Type 10 and 27) that is combusted in a municipal waste combustor (MWC) at the Facility. Iodine is converted to a component of flue gas including I_2 which is the form that promotes a pinkish/purplish plume. Control of I_2 requires mitigation technology in an addition to the existing air pollution control systems. The proposed sodium thiosulfate (ST) system would only inject a ST solution when needed, it would not be in continuous operation.

ST prevention was initially used at a hazardous waste incinerator in Ohio where it is added to a wet scrubber only when iodinated waste is incinerated. That facility has the advantage of knowing when iodinated waste is being combusted because such waste is accepted for disposal as part of that company's normal business. In contrast, Covanta does not purposefully accept iodinated waste for disposal and any delivery of iodine occurs as a constituent of MSW. Application of ST at a MWC was initially evaluated at Covanta's sister facility in Lancaster, PA as a "proof of concept" that ST would breakdown and form SO_2 which is known to react with I_2. Initial efforts at the Covanta Lancaster facility have demonstrated the potential for ST as a prevention strategy however there are significant design differences between the Covanta Lancaster and Covanta Newark facilities including the equipment (grate, furnace and boiler), MSW quantity and origin and flue gas residence time and temperature through the system. We are not assuming that the ST prevention technology information from Covanta Lancaster translates directly to the Newark Facility and are therefore proposing to implement ST technology on one unit to confirm its potential as an I_2 mitigation technology.

Covanta has conducted R&D tests to evaluate the optimum injection location however that is a work in progress. Covanta is also using three consultants affiliated with universities to evaluate the basic ST prevention strategy and other issues that may impact its effectiveness.

5.3.2 Scope of contractor review

Independent contractors have already been involved in various aspects of the prevention design and optimization. The new independent contractor will be tasked to review the entire strategy and to consider alternative solutions. The scope of the contractor's review will include but not be limited to general mitigation chemistry, ST injection strategy and alternative prevention strategies.

Exhibit 15

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May 10, 2022

Mr. Anthony Fontana, Chief
NJ Department of Environmental Protection
Bureau of Solid Waste Permitting
P.O. Box 420
Mail Code: 401-02C
401 East State Street
2nd Floor, West Wing
Trenton, NJ 08625-0420

Subject: Application for a Solid Waste Facility Permit Renewal
Covanta Essex Company
Essex County Resource Recovery Facility
Program Interest Number: 133546
Permit No. RRF200001
Response to Second Technical Notice of Deficiency

Dear Mr. Fontana:

On behalf of Covanta Essex Company, the following responses are being provided to the questions and comments received in the Second Technical Notice of Deficiency letter dated April 7, 2022 and received on April 12, 2022 regarding the above referenced permit application. The comments and responses are provided below:

Comment No. 1

O&M Manual, Operating Procedure No. 3, page OP3-7:

Section 3.0 number 6 states, "Maximum flue gas temperature at the ESP inlet (4-hour average) shall not exceed 17 degrees C (30 degrees F) above the maximum demonstrated temperature (4-hour average) observed during the most recent dioxin/furan compliance test." Please revise or delete this item as the electrostatic precipitator has been replaced by the baghouse at the facility.

Covanta Response:

Section 3.0 item 6 has been revised to replace "ESP" with "baghouse" as follows (bolded text has been added and text in strikeout has been deleted):

6.0 **Flue Gas Temperature:** Maximum flue gas temperature at the ~~ESP~~ **baghouse** inlet (4-hour average) shall not exceed 17 degrees C (30° F) above the maximum demonstrated temperature (4-hour average) observed during the most recent dioxin/furan compliance test. Compliance shall be determined through continuous monitoring and 4-hour block averages.

The revised page OP3-7 is included as Attachment 1.

Comment No. 2
O&M Manual, Waste Flow Control Plan, page API3-7:

a. Section C.1.f, number 4 states, "The sealed containers containing the used baghouse filter bags are to be transported to the tipping floor and discharged into the refuse pit as soon as possible." In order to avoid RCRA hazardous waste applicability, please revise this language to include a clear time limit for the baghouse filter disposal, instead of the indeterminate language of "as soon as possible."

b. Section C.1.f. – Please add a provision in this section to specify a limit on the number of baghouse filters that can be replaced and discharged into the refuse pit at once. Also include a provision that the replacement of the baghouse filters shall be staggered in order to prevent potential emission spikes if all the baghouse filters are replaced and burned at the same time.

Covanta Response:
Section C.1.f has been revised as follows (bolded text has been added and text in strikeout has been deleted):

f. Used filter bags from the boiler baghouses

1) When disposing of used filter bags from any of the boiler baghouses, bags must be shaken, blown or pulsed prior to removal to remove as much loose ash residue as possible.
2) Bags are to be removed from the cell plate and placed into sealed containers (double plastic bags or fiber drums) within the baghouse compartment or within an enclosure that prevents direct release of ash to the environment. During removal of bags, procedures must be in place to avoid the emission or spillage of any loose ash into the environment.
3) The baghouse module qualifies as "preventing a release" if the filter bags are immediately rolled up and placed in plastic bags or drums.
4) The sealed containers containing the used baghouse filter bags are to be transported to the tipping floor and discharged into the refuse pit ~~as soon as possible~~ **no longer than 48 hours after the filter bags are removed from the baghouse module**. The transporting of bags to the tipping floor shall only be performed by facility personnel. Third-party contractors shall not be used for this task.
5) The container or bag that the used filter bags are placed into should be marked with a red X using spray paint or similar markings to allow for easy identification by the refuse crane operator once placed in the refuse pit.
6) **A maximum of 608 baghouse filter bags (equivalent to 2 full baghouse modules) are to be replaced and transported to the tipping floor for destruction per day. When feeding the used baghouse filter bags to a boiler for destruction, feeding of the bags must be staggered in order to prevent potential emission spikes from combustion of the used filter bags.**

The revised section API3, Waste Flow Control Plan, is included as Attachment 2.

Comment #3

O&M Manual, Purple Plume Mitigation Plan: Attachment 1, Section A.3.2 – Other Type 10 and Type 27 Waste Inspections states the goal is to, "Prevent iodinated waste from industrial or commercial generators from being mixed in the pit." Please indicate whether Covanta has updated its Type 27 Waste approval protocol to include iodinated waste as a prohibited substance for acceptance at the facility. Also, please include in the Purple Plume Mitigation Plan a copy of Covanta Material Characterization Forms for Type 27 Waste approvals and the Industrial Waste Survey for Type 27 Waste approvals.

Covanta Response:

The Covanta Type 27 waste approval protocol does include iodinated waste as a prohibited substance for acceptance at the facility. As part of the protocol, customers that request approval to dispose of their Type 27 waste at any Covanta facility must submit a Material Characterization Form (MCF) to the Covanta Environmental Solutions (CES) Environmental team that is responsible for screening all waste types for destruction at Covanta Waste to Energy (WtE) facilities. A copy of the Covanta MCF is included as Attachment 3. If iodine in any concentration is identified in Section 4 of the form as being in the waste, the waste is determined to be an unacceptable waste type for destruction in any WtE facility which includes the Covanta Essex facility. Additionally, for any waste that is proposed to be disposed of at the Covanta Essex facility, approval from the Environmental Specialist and the Facility Manager must also be given to the CES Environmental team after an additional review of the MCF and any other relevent information before the customer is given an approval to bring their waste to the facility. A copy of the MCF is now included in the Purple Plume Mitigation Plan, Section API3A, as Attachment 8 along with a copy of the 1993 Industrial Waste Survey for Type 27 waste conducted by the Essex County Utilities Authority (ECUA). Also, a new section 1.8 has been added to the Purple Plume Mitigation Plan, Section API3A, to outline the Type 27 waste approval protocol as follows:

1.8 Type 27 Profiled Waste

Profiled Waste, also referred to as Special Waste, is Type 27 waste that is delivered to the Covanta Essex facility for destruction. Prior to being approved for delivery to the Covanta Essex facility, this waste is screened by the Covanta Environmental Services (CES) Environmental team to ensure that it does not contain any prohibited substances.

As part of the approval protocol, customers that request approval to dispose of their Type 27 waste at any Covanta facility must submit a Material Characterization Form (MCF) to the Covanta Environmental Solutions (CES) Environmental team that is responsible for screening all waste types for destruction at Covanta Waste to Energy (WtE) facilities. A copy of the Covanta MCF is included as Attachment 8 along with the ECUA Industrial Waste Survey for Type 27 waste. If iodine in any concentration is identified in Section 4 of the form as being in the waste, the waste is determined to be an unacceptable waste type for destruction in any WtE facility which includes the Covanta Essex facility. Additionally, for any waste that is proposed to be disposed of at the Covanta Essex facility, approval from the Environmental Specialist and the Facility Manager must also be given to the CES Environmental team after an additional review of the MCF and any other relevent information before the customer is given an approval to bring their waste to the facility.

The revised Purple Plume Mitigation Plan is included as Attachment 3 to this response.

If you have any questions regarding these responses, please do not hesitate to contact me.

Sincerely,

Patricia Earls
New Jersey Regional Environmental Manager

cc: Kimberly Beccia, Bureau of Solid Waste Permitting
Tom Byrne, Bureau of Solid Waste Permitting
Gina Lugo, Bureau of Solid Waste Compliance & Enforcement
Rajendra Gandhi, Bureau of Solid Waste Compliance & Enforcement
Jeffrey Meyer, Bureau of Air Compliance & Enforcement - Northern

APPLICANT'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I understand that, in addition to criminal penalties, I may be liable for a civil administrative penalty pursuant to N.J.A.C. 7:26-5 and that submitting false information may be grounds for denial, revocation or termination of any solid waste facility permit or vehicle registration for which I may be seeking approval or now hold.

David Blackmore	[signature]
Print/Type Applicant/Owner Name	Signature of Applicant/Owner
5/9/22	Facility Manager
Date	Title
David Blackmore	[signature]
Print/Type App./Operator Name	Signature of Applicant/Operator
5/9/22	Facility Manager
Date	Title
Print/Type Co-Applicant Name	Signature of Co-Applicant
Date	Title

Attachment 1

3.0 Precautions and Limitations (Cont')

4. **Nitrous Oxides**: Maintain NO_x emissions less than 300 ppm on a one (1) hour average when there is an equipment malfunction and < 155 ppmdv for 24-hour average.

5. **Maximum Load Level:** Maximum load (4-hour average) shall not exceed 110 percent of the maximum load (4-hour average), demonstrated during the most recent dioxin/furan compliance test.

6. **Flue Gas Temperature:** Maximum flue gas temperature at the baghouse inlet (4-hour average) shall not exceed 17 degrees C (30° F) above the maximum demonstrated temperature (4-hour average) observed during the most recent dioxin/furan compliance test. Compliance shall be determined through continuous monitoring and 4-hour block averages.

I. Per the NJDEP regulations, the following conditions require that you **stop feeding refuse to the boiler.**

1. Failure of a baghouse which results in an opacity reading exceeding 10% for any 6 minute period. Note if only one of the baghouse modules fails and can be isolated from service so that there is no excess opacity, waste feeding to the boiler can resume.

J. Take action to ensure that the scrubber system is repaired immediately should the sulfur dioxide ($S0_2$) emissions:

1. Exceed 94 ppmdv SO_2 average and not achieve 70% removal SO_2 removal (average) during any one (1) hour period.

2. Exceed 29 ppmdv SO_2 average for a 24-hour geometric and less than 75% removal.

K. Within one (1) hour after charging and igniting refuse on start up, the temperature of the flue gas, three second downstream of the secondary air injection point, must be 1136°F.

Attachment 2

COVANTA
ENERGY
for a cleaner world

WASTE FLOW CONTROL PLAN

Revision 7, April 2015
Revision 8, June 2021
Revision 9, January 2022

VOLUME IX, CHAPTER 3

Approved by: ____________________ **Date:** 1/10/22

ESSEX COUNTY RESOURCE RECOVERY FACILITY
WASTE FLOW CONTROL PLAN

Revision 9, January 2022

Waste Flow Control

The following contains a discussion of the waste delivery and flow path through the facility. Included in this discussion are measures utilized to minimize the processing of prohibited waste, to handle incoming waste flow during periods of emergencies and/or equipment breakdown or shutdown, and to describe the management of internally generated plant wastes.

A. Waste Deliveries

A.1 Permitted Waste Types

The following solid waste materials, as identified by waste ID numbers and defined in N.J.A.C 7:26-2.13(g) may be accepted for disposal:

TYPE 10 Municipal Waste (household, commercial and institutional)

TYPE 23 Vegetative Waste (except bulk quantities)

TYPE 25 Animal and Food Processing Waste (small quantities only, not large quantities or full truck loads)

TYPE 27 Dry Industrial Waste (except asbestos and asbestos containing wastes; dry non-hazardous pesticides; contaminated soils; hazardous waste; radioactive waste; and Type 27 from districts which have complied with an Industrial Waste Survey.

A.2 Prohibited Waste Types

The following solid and liquid waste materials, as identified by waste ID numbers and defined in N.J.A.C 7:26-2.13(g) and (h), regulated medical waste classes as defined in N.J.A.C 7:26-3A.6(a), and bulk recyclables as defined in N.J.A.C. 7:26A are specifically prohibited from disposal at the facility:

TYPE 12 Dry Sewage Sludge
TYPE 13 Bulky Wastes
TYPE 23 Vegetative Waste (Bulk quantities)
TYPE 25 Animal and Food Processing Waste (Large quantities or full truck loads)
TYPE 27 Dry Industrial Wastes
TYPE 72 Bulk liquid and Semi-Liquids
TYPE 73 Septic Tank Clean-out Wastes
TYPE 74 Liquid Sewage Sludge
Regulated Medical Waste (RMW), all classes, N.J.A.C 7:26-3A.6 (a)
Bulk Recyclables N.J.A.C. 7:26A
Iodine containing waste of any kind

A.3. Waste Flow

On-site traffic control is maintained to provide for orderly vehicular movement on the Facility grounds. Lane delineations, signals, signs, barriers ensure a controlled flow of traffic delivering waste to the Facility through the scales to the tipping floor, then leaving the tipping floor and exiting the Facility through the scale. Trucks carrying ash residue, recovered metals, unprocessible wastes, bypass wastes and/or chemical deliveries are similarly controlled and directed to minimize waste delivery traffic. Signs are posted indicating the maximum speed limit. A Facility traffic flow is represented in Appendix 1.

The control of prohibited waste is a multi—layered approach incorporating the cooperation of customers, the haulers, and Covanta Essex. One mechanism is through the guidance of the Essex County Solid Waste Management Plan, through which the company has determined which industrial wastes are prohibited at the Essex County Resource Recovery Facility.

In order to minimize prohibited waste from entering the facility, a HAULERS HANDBOOK (**copy attached as Appendix 2a**) has been developed which outlines and explains the waste acceptance criteria at the facility. This Handbook has been sent to all registered haulers utilizing the facility. The Handbook will be provided to new haulers. An abstract (as provided in Appendix 2) to the handbook pertaining to waste acceptance will be available at the scale house.

In addition, signs have been prominently posted on the facility's access road to indicate which wastes are acceptable. The signs read as follows:

THIS FACILITY RECEIVES AND BURNS ONLY HOUSEHOLD WASTE, COMMERCIAL WASTE AND INDUSTRIAL WASTE THAT DOES NOT CONTAIN HAZARDOUS WASTE – AS IDENTIFIED UNDER RCRA. INSPECTIONS WILL BE DONE TO ENSURE COMPLIANCE.

THIS FACILITY IS NOT PERMITTED TO ACCEPT BULKY WASTE. INSPECTIONS WILL BE PERFORMED TO ENSURE COMPLIANCE.

The first review of the paperwork and delivery vehicles is provided by the facility's scale house personnel. The origin and disposal (O&D) form, shown in Appendix 3, carried by the hauler denotes the origin and waste type of the material being delivered. At this time, the delivery vehicle is also checked for weight, proper registration, decals and is automatically scanned for radioactivity. If the review of documents and vehicle requirements proves satisfactory, the load information is entered into the scale house computer and the truck is released to proceed to the tipping bay. The scales are integrated into a computerized weighing system and weights of each load are recorded. Any problems encountered are brought to the attention of the appropriate supervisor.

If a delivery vehicle arrives at the facility's scale house and the O&D form indicates that it is a full truck load of Type 25 waste, the driver will be notified that the truck will be prohibited from dumping the load for processing at the facility and must be diverted to another location. The driver will receive instructions based on a previously determined agreement with the hauling company for delivering the waste to one of Covanta's New Jersey transfer stations which are permitted to accept Type 25 waste.

A.4. Tipping Floor Inspections:

Once the load has exited the scale and proceeded to the tipping floor (the waste receiving area), the load is subject to a visual inspection. Inspections are performed on a random basis by trained plant personnel on a minimum of 10% of trucks received at the facility per day. The purposes of the inspection are twofold: 1) to identify and remove prohibited or unprocessible materials prior to initiation of processing and 2) to ensure that the waste delivery vehicle is properly registered and decaled.

Under the visual inspection program, a truck being inspected will be observed for proper decals and for prohibited or unprocessible waste types as the truck unloads onto the tipping bay floor. For palletized loads of waste materials, a random sampling of the waste material will be checked against the approval paperwork (see Section D). With the inspection program, any hauler may be requested to unload contents of their truck on the tipping floor for visual inspection of waste. Once the inspection is completed, the acceptable portion of the load is pushed into the refuse pit by use of heavy equipment. Prohibited or unprocessible materials are handled as described below in Section 4. If the entire portion of the load is acceptable, the truck is released and returned to the scale house to weigh out.

All MSW loads received from hospitals are subject to inspection to check for iodine containing material in the waste which is prohibited. The procedure for these inspections includes pictures of typical items that may be found in hospital waste that could contain iodine to educate and train tipping floor operators. The waste will be raked as thinly as possible so that most of the waste is visible while performing these inspections. The current Hospital Load inspection procedure is included in Appendix 5 to this Plan.

Inspections will be conducted where they will least interfere with existing operational demands and flow of truck traffic. This provides for use of the tipping floor relative to the distribution of waste in the bunker and provides flexibility with regard to activities on the tipping floor.

All inspections will be recorded and these records will be used to evaluate carrier compliance and performance. An example of an inspection form in provided in Appendix 5. The enforcement of the inspection program is conducted primarily by Covanta Essex personnel. Regularly scheduled inspections by the NJDEP Solid Waste Enforcement Division also serve as a spot check of the inspection program.

A.5 Procedure for Removing Prohibited or Unprocessible Waste:

If prohibited or unprocessible waste is identified during the visual inspection, it will be separated or isolated as required.

If bulk recyclables as defined in N.J.A.C. 7:26A are identified, the vehicle will be reloaded and the material will be rejected. Class A materials consist of metals, glass, plastics and corrugated cardboard. Class B, C, and D materials would also not be acceptable at the facility due to the fact that they fit the description of ID 13, ID 23 (bulk) and ID 72.

If suspected hazardous waste, regulated medical waste (RMW) or prohibited dry industrial (Type 27) is identified, Tipping Hall personnel will initiate action to ensure proper handling of the material. If practicable and can be done safely, this material is separated from the acceptable portion of waste. If the generator can be identified and the NJDEP grants approval, the prohibited material can be rejected to the original generator. If the generator is not positively identified, the material will be secured and moved to the secured prohibited waste storage area (identified in Appendix 3) that is located a safe distance from the active disposal area. Arrangements for identification and disposal will be handled through qualified vendors.

In the case of bulky waste, the waste will be separated manually or by the use of a front-end loader. The bulky waste either be immediately rejected to the hauler or placed into the bulk storage/transport container. This container is routinely delivered to the authorized bulk acceptance site. The container is stored on the south side of the tipping floor next to Bay 15. (See Appendix 3 for arrangement drawing).

If a visual inspection spots an unidentifiable industrial container in the refuse pit, it can be removed with the overhead crane and lowered to the extended bucket of the front-end loader. The container will be separated using all necessary precautions and moved to the unprocessible or bulky waste storage area as identified in Appendix 3. Upon the identification of a bulky item in the refuse pit, the item will be picked-up by the overhead crane and deposited on the charging deck. Bulky items would be removed as described above.

If a visual inspection indicates a small quantity of Type 25 waste in the load on the floor, the front end loader operator will be notified and the load would be pushed into the pit immediately by the front end loader. After the load has been removed from the tipping floor, a bleach solution will be applied to the affected tipping floor area and front end loader bucket for disinfection.

If iodine containing material is discovered in a waste load on the tipping floor, the waste will be separated manually or by the use of a front-end loader if needed. The iodine containing waste will either be immediately rejected to the hauler with clear instructions that this waste is not to be delivered the the facility again or other arrangements will be made to have the waste transported to a landfill that can accept the waste.

A.6. Special Waste

The Facility offers secured destruction for a variety of materials including APHIS waste, pharmaceuticals, health care products, documents and non-hazardous industrial wastes.

a. Animal and Plant Health Inspection Services (APHIS) waste generated from international sources. These loads may originate from the numerous airports or shipping ports located in the area. A separate procedure for handling (attached here as Appendix 6) APHIS wastes is located in the Safe Operating Procedures (SOP) Manual.

b. Pharmaceuticals, Health Care Products & Industrial Wastes are accepted at the Facility for assured destruction. This material is screened for acceptability prior to approval and receipt at the Facility. A procedure for handling this type of material is located in the Safety Manual, Volume 10 of the O&M Manual. Provided in Appendix 7 is Plant Specific Operating Procedure #42 Handling Special Waste Deliveries.

B. Refuse Flow By—Pass Procedure

Since the majority of the potential equipment malfunctions or emergencies are not expected to affect waste flow, the Facility will first utilize the capacity of the waste pit to handle incoming waste flow in the event of an unplanned malfunction or outage. The bunker is designed to store an estimated 14,000 tons of refuse, enough for approximately four days of operation.

In the event that the Facility is unable to accept and dispose of Acceptable Waste whether as a result of scheduled downtime for maintenance or otherwise and the permits do not authorize use of the Facility (or a portion thereof) for transfer operations (or if the permits do authorize such use, such as transfer facilities are not operational), the Essex County Utilities Authority (ECUA) will arrange for Alternate Disposal Facilities to be available for disposal of such Acceptable Waste. After being informed by Covanta Essex that waste is unable to be accepted at the Facility, the ECUA would in turn call individual municipalities and contracted haulers to redirect to the appropriate by-pass site. The haulers are instructed as to the proper procedures to follow under this condition. They will be supplied with routes from Covanta Essex and from their respected origin sites to the by-pass location. Covanta Essex will supply the ECUA with updates as to when waste acceptance will resume.

During a short term situation which may affect the acceptance of waste into the tipping hall (i.e., pit fire, two cranes down, truck accident) no waste will be kept on the floor, other than what has been thrown—down for routine inspections, without seeking approval from the NJDEP. Space restrictions inside the facility limit staging of trucks in case of short term outages to road "A", which leads to the tipping hall, as shown in Appendix 4.

During a situation which may affect the acceptance of waste into the tipping hall (i.e., bunker (pit) fire, hazardous material release, trucking accident) the refuse trucks will first be held at the entrance gate. The trucks in line will remain in place. If it appears that the situation will not be solved quickly, NJDEP will be consulted as part of the decision making process.

C. Plant Waste Management -All Sources

Management of internally generated facility waste is best categorized in terms of waste disposal methods. The Essex facility has the capacity to safely process certain amounts and types of waste materials. Other waste types, including recyclables, will be handled through off-site disposal.

C.1. INTERNAL DISPOSAL

a. Use of incineration for waste types ID 10 non— recyclable trash, ID 23 vegetative waste (except for leaves), ID 25 animal and food processing waste, and ID 27 (dry industrial waste) allowed by the Solid Waste Permit.

b. Use of process design and water balance to absorb normally generated industrial wastewater for wetting of ash. The storm water retention system is also used to provide water for low quality use.

c. Waste bulk liquid oils generated from equipment maintenance will be disposed off site to Class D used oil facilities in the State of New Jersey, or other similarly licensed facilities located outside of the State of New Jersey.

d. Use of incineration for waste oil debris and solids generated from spills, equipment maintenance and housekeeping.

e. Use of incineration for disposal of various sump contents.

f. Used filter bags from the boiler baghouses

1) When disposing of used filter bags from any of the boiler baghouses, bags must be shaken, blown or pulsed prior to removal to remove as much loose ash residue as possible.
2) Bags are to be removed from the cell plate and placed into sealed containers (double plastic bags or fiber drums) within the baghouse compartment or within an enclosure that prevents direct release of ash to the environment. During removal of bags, procedures must be in place to avoid the emission or spillage of any loose ash into the environment.
3) The baghouse module qualifies as "preventing a release" if the filter bags are immediately rolled up and placed in plastic bags or drums.
4) The sealed containers containing the used baghouse filter bags are to be transported to the tipping floor and discharged into the refuse pit no longer than 48 hours after the filter bags are removed from the baghouse module. The transporting of bags to the tipping floor shall only be performed by facility personnel. Third-party contractors shall not be used for this task.
5) The container or bag that the used filter bags are placed into should be marked with a red X using spray paint or similar markings to allow for easy identification by the refuse crane operator once placed in the refuse pit.
6) A maximum of 608 baghouse filter bags (equivalent to 2 full baghouse modules) are to be replaced and transported to the tipping floor for destruction per day. When feeding the used baghouse filter bags to a boiler for destruction, feeding of the bags must be staggered in order to prevent potential emission spikes from combustion of the used filter bags.

C.2. <u>EXTERNAL DISPOSAL</u>

a. Use of solid waste disposal contractor for waste Types ID 13 (bulky waste), through the appropriate transfer station.

b. Use of sanitary sewer system for sanitary/gray discharge and "upset condition" industrial wastewater (with approval from PVSC).

c. Use of recycling contractor for designated Essex County recyclables including newspapers, glass containers, aluminum, old corrugated containers, office paper and ferrous scrap.

d. Use of appropriately licensed vendors for:

1) waste degreaser (D001);
2) spent batteries;
3) fluorescent lamps/bulbs and other mercury containing devices;
4) spent phosphoric acid sludge (D002).

e. Use of one or combination of the following methods for non—hazardous empty drum disposal: (1) return to supplier; (2) establishment of reuse procedure; and/or (3) deheading of container and crushing prior to recycling disposal as ferrous scrap.

f. Use of contract for Essex County ash residue disposal. Ash will be loaded and transported 24 hours per day, six days a week. Ash residue and recovered metals (contained in truck bodies or containers) can be stored on the tipping floor during Sundays only.

g. All refuse hauler trucks, ash hauler trucks, metal hauler trucks, and bulky waste hauler trucks leaving the facility shall scale out on one of the outbound truck scales at the scalehouse. All other hauler trucks leaving the site for any reason are required to stop at the scale house for authorization from the scale house attendant to leave prior to departing from the site.

WASTE FLOW CONTROL PLAN

APPENDIX 1

(Appendix 1)

UNACCEPTABLE/UNPROCESSIBLE WHICH CANNOT BE ACEPTED AT THE ESSEX COUNTY RESOURCE RECOVERY FACILITY.

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE SOLID WASTE MANAGEMENT PLAN OF ESSEX COUNTY REGULATES THE PERMIT OF THE ESSEX COUNTY RESOURCE RECOVERY FACILITY TO ACCEPT ONLY HOUSEHOLD, NON-HAZARDOUS INDUSTRIAL/COMMERCIAL WASTE, CERTAIN VEGETATIVE WASTE (LEAVES ARE EXCLUDED), AND ANIMAL AND FOOD PROCESSING WASTE (EXCEPT LARGE QUANTITIES OR FULL LOADS). UNACCEPTABLE/UNPROCESSIBLE WASTE WHICH CANNOT BE RECEIVED INCLUDES ALL HAZARDOUS WASTE, CERTAIN NON-HAZARDOUS WASTES AND ALL MEDICAL/INFECTIOUS WASTES.

UNACCEPTABLE NON-HAZARDOUS INCLUDE BUT ARE NOT LIMITED TO:

BATTERIES such as dry cells, mercury batteries, vehicle batteries.

WHITE GOODS such as refrigerators, stoves, dishwashers, washers and dryers.

BULKY GOODS such as bed springs, mattresses, air conditioners, hot water heaters, water storage tanks, furnaces, oil storage tanks, any compressed storage tank, children swing sets, vehicle frame parts, crank cases, transmissions, engines, lawn equipment, snow blowers, bikes, file cabinets, metal furniture, clean fill, metal piping, fuel containers.

LARGE QUANTITIES OR FULL TRUCK LOADS OF TYPE 25 WASTE

WASTE CONTAINING IODINE IN ANY QUANTITY

UNACCEPTABLE MEDICAL/INFECTIOUS WASTES INCLUDE BUT ARE NOT LIMITED TO:

SURGICAL AND OBSTETICAL WASTES

PATHOLOGICAL WASTES such as human tissue, human anatomical parts.

BIOLOGICAL WASTES such as excretions, suctionings, secretions, disposable medical supplies that have come into contact with such wastes.

BLOOD SOILED MATERIALS

RENAL DIALYSIS WASTES such as tubing and needles.

UN-AUTOCLAVED OR UNSTERILIZED serums or vaccines, lab waste, sharp instruments such as hypodermic needles intravenous needles and tubing.

UNACCEPTABLE HAZARDOUS WASTE INCLUDING BUT NOT LIMITED TO:

DRUMS OR OTHER LARGE ENCLOSED STEEL, METAL OR PLASTIC DRUMS OR OTHER LARGE ENCLOSED STEEL, METAL OR PLASTIC CONTAINERS.

BULK SLUDGES OR WET SOLIDS NOT CHARACTERISTIC TO MUNICIPAL WASTE.

LARGE AMOUNTS OF LIQUIDS OR OIL SOAKED SOLIDS OR SORBENTS, EXCEPT FOR SOLIDS OR SORBENTS CONTAINING OILY RESIDUE WHICH HAVE BEEN CERTIFIED BY THE GENERATOR OF THE WASTE TO BE NON-HAZARDOUS.

MILITARY ORDINANCE OR OTHER EXPLOSIVES.

PRESSURIZED CONTAINERS.

ANY SUSPECT CLOSED INDUSTRIAL PACKAGING.

COVANTA ESSEX COMPANY

WASTE FLOW CONTROL PLAN - APPENDIX 2

COVANTA ESSEX WASTE LOAD INSPECTION REPORT

INSPECTION TYPE: (CIRCLE ONE)	VISUAL (ON FLOOR)		CAMERA (TIPPING BAY OFFICE)	
BAY ASSIGNMENT: 2 3 4 5 6	7 8 9 10 11 12 13 14		15 CIRCLE BAY # ASSIGNED	
INSPECTOR:	VEHICLE DATA:		COMPANY VEHICLE #	
DATE:	TYPE OF VEHICLE #	NJDEP DECAL	TRUCK #	NJ DEP # *(Painted)*
TIME:	TRUCK			
HAULER:	ROLL-OFF		LIC PLATE # FRONT	REAR
TAG#:	TRANSFER			
WASTE TYPE:	ACCT. #		HOSPITAL WASTE?	YES NO

UNACCEPTABLE WASTE TYPES AND IDENTIFIERS

POTENTIALLY HAZARDOUS:

LIQUID SOAKED DEBRIS ____
EXPLOSIVES ____
INDUSTRIAL CONTAINERS ____
RADIOACTIVE MATERIAL ____
DRY/POWDERED MATERIAL ____
PRESSURIZED VESSELS ____
WARNING LABELS ____
MOTORS ____
PAINTS ____
WET SOLIDS ____
UNUSUAL ODOR ____

IODINE WASTE:

LIQUID IODINE ____
ANTISEPTIC IODINE ____
- BETADINE ANTISEPTIC ____
- POVIDONE IODINE ____
MEDICATIONS W/IODINE ____
DYES OR INKS ____
PHOTO FILM/CHEM ____
INDUSTRIAL CHEMICALS ____
OTHER ____

REGULATED MEDICAL WASTE:

CULTURES AND STOCKS (CLASS 1) ____
PATHOLOGICAL WASTE (CLASS 2) ____
HUMAN BLOOD & BLOOD PRODUCTS (CLASS 3) ____
SHARPS (CLASS 4) ____
ANIMAL WASTE (CLASS 5) ____
ISOLATION WASTE (CLASS 6) ____
UNUSED SHARPS (CLASS 7) ____

RECYCLABLES:

ALUMINUM ____ CARDBOARD ____ PLASTIC ____ GLASS ____ BULK LOAD (100%) ____

BULKY WASTE (TYPE 13):

APPLIANCES ____
TAR PAPER/SHINGLES ____
METAL PRODUCTS ____
SHEET ROCK ____
BALES ____
BED SPRINGS ____
RUBBER PRODUCTS ____
C & D WASTE ____
AUTO PARTS ____
OTHER (SEE COMMENTS) ____
CEILING TILES ____

TYPE 27 - UNACCEPTABLE PORTIONS

NJDEP PROHIBITED WASTE ____
NON-RESPONDENT/INSUFFICIENT TO SURVEY ____
HAZARDOUS IMPACT ON EMISSIONS ____
HAZARDOUS WASTE ____
HAZ. EFFECT ON ASH ____
NON-COMBUSTIBLES ____

OVERALL RESULTS:

ACCEPTABLE LOAD ____ UNACCEPTABLE LOAD ____ DRIVER SAFETY VIOLATION ____

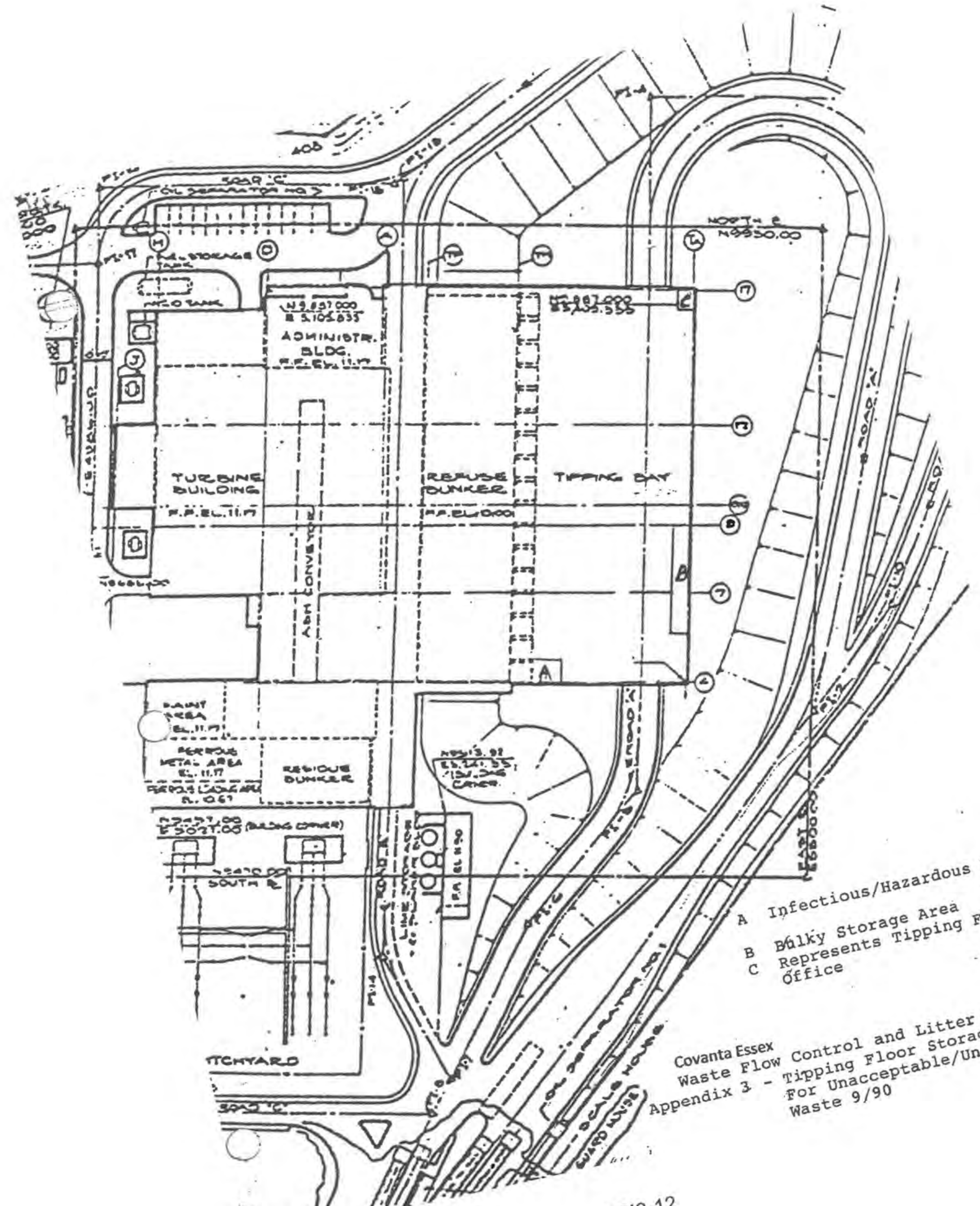
COMMENTS:

FOR REJECTED LOADS CONTACT ONE OF THE FOLLOWING INDIVIDUALS IMMEDIATELY UPON REJECTION:

1) SHIFT SUPERVISOR ON DUTY		
2) ENVIRONMENTAL SPECIALIST		
2) OPERATIONS MANAGER		

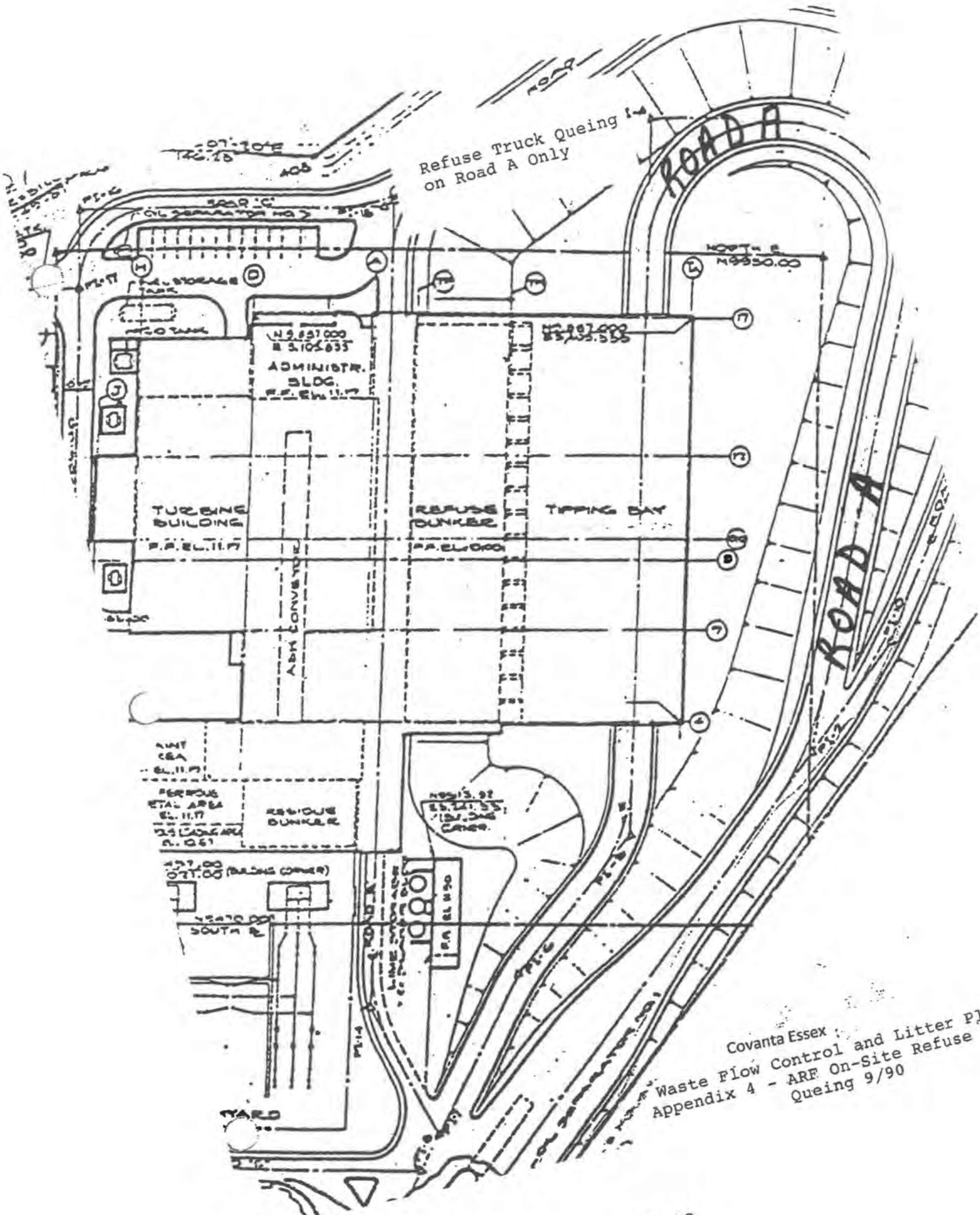
*NOTE: CONTACT IN THE ORDER LISTED / CHECK BOX OF THE INDIVIDUAL THAT WAS CONTACTED

PLEASE INCLUDE PICTURES OF ALL UNACCEPTABLE WASTE



A Infectious/Hazardous Waste Area
B Bulky Storage Area
C Represents Tipping Floor Office

Covanta Essex
Waste Flow Control and Litter Plan
Appendix 3 - Tipping Floor Storage Area For Unacceptable/Unprocessed Waste 9/90



Covanta Essex
Waste Flow Control and Litter Plan
Appendix 4 - ARF On-Site Refuse Truck Queing 9/90

COVANTA ESSEX HOSPITAL LOAD INSPECTION PROCEDURE

1. FLAGGING LOADS AT SCALEHOUSE

a. Haulers delivering from hospitals in Essex County will be identifying loads from hospitals on the O&D forms going forward. The current known haulers are but not limited to:
   i. Interstate Waste Services (IWS)
   ii. T. Farese
   iii. LT Roselle; and
   iv. Giordano Company

b. These loads are typically compactor loads that contain 100% hospital waste.

c. The scalehouse operator is to make a note on the stage ticket that the load is from a hospital by marking "Hospital" on the ticket for the tipping floor operator.

2. WASTE INSPECTIONS ON THE TIPPING FLOOR

a. Once a notification is received from the scale house or the "Hospital" notation is observed on the stage ticket at the North entrance door, the tipping floor operator will have Bay #4 cleared if there is waste in the bay so that the hospital load can be dumped into Bay #4 for a closer inspection. Hold the truck at the door until Bay 4 is ready to receive the load.

b. Once the load is dumped into Bay 4 and the truck has left the bay and it is safe to do so, the tipping floor operator will walk over to Bay 4 for a closer visual inspection of the load. The "Covanta Essex Hospital Load Inspection Form" (attached) will be used to document the inspection. To provide for the operator's safety, no loads are to be dumped in Bay 3 or Bay 5 during the inspection.

c. A visual inspection of the load will be conducted to determine if there are any containers of iodine containing material or any medications which contain iodine. The operator will use the visual aids provided for examples of this material to determine if it is visibly present in the load.
   i. The inspector will conduct a visual inspection only and will not handle the load or the materials directly.
   ii. The inspector may use a long handled tool such as a fire hook to move materials as needed. The waste will be raked as thinly as possible so that most of the waste is visible.

d. If nothing is observed that appears to contain iodine, the operator will note that the load is acceptable on the inspection form and the load can be pushed into the refuse pit.

e. If material is identified that may contain iodine, the operator will note this on the inspection form and will contact the Shift Supervisor, Chief Engineer, and/or Environmental Specialist for further instructions. The load is to be left in Bay 4 until the material can be examined by one of the above supervisors.

f. If it is determined that the material does appear to contain iodine, the material will be isolated in the unacceptable waste container on the tipping floor for alternate disposal.

g. The customer, hauler, and Essex County will be notified of the material observed in the compactor.

COVANTA ESSEX COMPANY
SAFE OPERATING PROCEDURE #41
APHIS COMPLIANCE AGREEMENT

Revision 8 – September 2018

I. INTRODUCTION

1. International waste brought into the United States may contain certain dangerous plant diseases and/or insect pests. This waste is referred to as **"regulated garbage"** which is regulated by the Department of Homeland Security, Customs and Border Protection (CBP) under the authority of the Animal and Plant Health Inspection Service (APHIS). The purpose of this SOP is to alert Covanta Essex personnel to that fact and to instruct personnel how to minimize potential uncontrolled contamination.

2. This does not include U.S. Customs seizures, which are typically packaged and palleted, unless packages are broken open. If packages open, exposing waste, equipment and floor must be disinfected, as necessary. Seizures are handled as Special Waste.

II. SPECIAL SAFETY ASPECTS/PRECAUTIONS

1. Do not handle APHIS regulated garbage – especially with bare hands. Use hand tools to inspect or manipulate the load.

2. Equipment used to manipulate regulated garbage must be disinfected after use. This includes tools, loader bucket, and the floor. Grapple should be disinfected prior to maintenance or repair activities if feasible or at least once at the end of each shift.

3. A mixture of the disinfectant is to be kept on the floor at all times. An APHIS authorized disinfectant must be used which includes either of the following:
   a. Clorox bleach (chemical name: sodium hypochlorite). Undiluted Clorox bleach must be 8.25% sodium hypochlorite.
   b. Virkon S, which is a livestock disinfectant, in a 1% solution.

4. Either disinfectant must be mixed into a dilute solution – Virkon S comes in powder form while bleach comes in liquid form. Due to the handling hazards of Virkon S in powder form, bleach will be used to disinfect the waste.

5. According to the Compliance Agreement with USDA, the bleach solution is a mixture of 1.0 part bleach (which is 8.25% sodium hypochlorite) in 9.0 parts water (example: 8 ounces Clorox to 72 ounces water) and must be prepared each day for maximum effectiveness. A typical garden sprayer will be used for application.

6. In the event of a spill of APHIS regulated garbage outside the facility, APHIS/CBP will be notified by calling (908) 986-9200. Cleaning and disinfection of the area of the spill with the above listed disinfectant must be performed immediately using the procedures listed in section V.

III. PERSONAL PROTECTIVE EQUIPMENT

1. Standard PPE (safety glasses, safety shoes, hearing protection).

2. Safety vest (for tipping floor).

3. Required disinfecting PPE: Tyvek suit with hood, disposable boot covers, yellow hard hat, nitrile gloves, chemical resistant gloves, face shield, and N95 respirator.

Note: Review Donning/Removal of PPE procedure – Attachment 1

IV. PROCEDURE

1. Fuel Handling Supervisor or designee and Control Room should be notified when load arrives on site.

2. Bay 4 will be used for all APHIS regulated loads, if available, and disinfectant should be staged in the area. This bay does not have to be dedicated to APHIS regulated loads.

3. Bay 12 will be used only when the North Refuse Crane is out of service and the South Refuse Crane will be used to charge waste.

4. Once the truck is accepted, the crane operator is to be notified as to which bay the material will be dumped into.

5. When possible, before the material is dumped into the pit, the crane operator must dig down into the trench area where the material will be dumped to create a hole for the APHIS regulated waste to be dumped into.

6. The APHIS regulated load should be pushed into the pit as soon as possible.

7. When unloading the APHIS regulated waste on the tipping floor, stage other dry, non-APHIS regulated waste in the area in front of bay 4 or 12 so that this dry waste can be mixed with the APHIS regulated waste if wet using the front end loader. The mixed waste should then be treated as APHIS regulated waste and pushed into the pit as soon as possible. In no case should APHIS waste be held for more than 72 hours.

8. Once in the pit, the load should be charged to a boiler as soon as possible. The crane operator must notify the Control Room before feeding any APHIS regulated waste. Ensure that the entire load is charged by digging down in the trench as necessary. Check that there is no residual material left on tipping floor.

9. If the APHIS regulated waste is wet and requires further mixing with dry waste, the waste should be taken from another area of the pit to the area where the APHIS regulated waste is and mixed in the trench. The APHIS regulated waste is not to be moved to any other areas of the pit once it has been dumped into the pit. Ensure that the entire mixed load is charged by digging down in the trench as necessary.

10. At least once per shift, the front end loader bucket, the floor, and any tools used to manipulate the APHIS regulated waste must be disinfected with the bleach solution described in section II.5 using the sprayer and this must be documented in the logsheet.

11. Before performing any maintenance on the front end loader, the loader bucket must be disinfected with the bleach solution described in section II.5 using the sprayer and this must be documented in the logsheet.

12. Before using the premixed bleach solution as a disinfectant, agitate the solution thoroughly.

13. If any residual material is observed on the floor, it should be pushed into the pit immediately. The crane operator will be notified and Steps 5-10 will be repeated as necessary.

14. At least once per shift and before performing maintenance/inspections/greasing, the grapple of the refuse crane that has charged APHIS regulated waste to a boiler must be disinfected with the bleach solution described in section II.5 using the sprayer and this must be documented in the logsheet.

15. When disinfecting the grapple, the following procedure will be used:

    a. Place the grapple on the charging deck in the open position.
    b. Using the sprayer, spray the interior surface of the grapple tines starting at the top pivot point and working down.
    c. Spray the overhead center hub as a last step in interior disinfection. Note: While spraying, do not stand under surfaces being sprayed.
    d. Spray the exterior surface of the grapple tines to complete the grapple disinfection.

V. SPILL RESPONSE PROCEDURES

1. The Fuel Handling Supervisor and Environmental Engineer or designee should be notified when a spill of regulated waste occurs in an area other than the tipping floor.

2. When a spill occurs, sweep up or scrape off as much of the contaminant as possible with a whisk broom and dust pan or shovel.

3. Apply absorbent material if needed (paper towel, etc.).

4. Place the sweepings, scrapings, and absorbent material in a 3 mil leak-proof plastic bag for incineration.

5. Free surfaces of grease or dirt when applicable.

6. Scrub the contaminated area or areas where the spill occurred using a detergent solution.

7. Flush the scrubbed surfaces with clean water.

8. When using the premixed bleach solution described in section II.5 as a disinfectant, agitate the solution thoroughly

9. Apply disinfectant generously covering the entire area and allow it to remain on the surface for at least 5 minutes.

10. Rinse the surface with clean water and allow the surface to dry

11. Dispose of all refuse, sweepings, and scrapings that are in the plastic bag in the pit for incineration.

VI. RECORDKEEPING REQUIREMENTS

1. When the APHIS approved hauler arrives at the scale house at the facility entrance, the origin and disposal (O&D) form carried by the hauler must be presented to the scale house personnel. This denotes the hauler name and origin and waste type of the material being delivered. If the review of documents and vehicle requirements proves satisfactory, the load information is entered into the scale house computer, a loop ticket is issued and highlighted as APHIS regulated waste, and the truck is released to proceed to the tipping bay. The scales are integrated into a computerized weighing system and weights of each load are recorded. Also recorded are the date and time the load of regulated garbage was received, the hauler name, and identification of the waste as international waste so that it is processed according to the USDA Compliance Agreement requirements.

2. Records must be kept of the dates that the bleach solution disinfectant is used in association with the handling of regulated garbage. Log sheets (shown on pages 5 and 6) will be maintained on the tipping floor and in the North Refuse Crane which will include the following information on disinfectant use:

   a. Date of use
   b. Location of use
   c. Name of disinfectant used
   d. Volume and concentration of sanitizer used

3. Documentation including date and time of notification of APHIS and US Customs and Border Protection (CBP) if there is any spillage of regulated garbage outside of the facility and the name of the employee making the notification must be maintained.

4. Records must be kept for three (3) years from the date of disinfectant or sanitizer usage.

VII. EMERGENCY BACK-UP PLAN

In the event that the facility is not able to accept waste due to a malfunction or outage, the local APHIS/CBP office will be notified immediately at (908) 986-9200 and will be advised in advance, as to the use of the following pre-arranged approved backup system:

Covanta Union, Inc.
1499 Route 1 North
Rahway, NJ 07065
(732) 499-0101

APPROVED:

Plant Manager	9/19/18 Date
Operations Manager	9/13/18 Date
Safety & Training Supervisor	9/13/2018 Date
Environmental Specialist	9/13/18 Date

DISINFECTION OF APHIS REGULATED WASTE HANDLING EQUIPMENT

Disinfectant Used: Bleach Solution (1 part bleach, 9 parts water)
Location of Use: Tipping Floor – Front End Loader Bucket and Bay 4 Floor

Date of Use	Volume Used (gallons)

DISINFECTION OF APHIS REGULATED WASTE HANDLING EQUIPMENT

Disinfectant Used: Bleach Solution (1 part bleach, 9 parts water)
Location of Use: North Refuse Crane – Grapple

Date of Use	Volume Used (gallons)

DISINFECTION OF APHIS REGULATED WASTE HANDLING EQUIPMENT

Disinfectant Used: Bleach Solution (1 part bleach, 9 parts water)
Location of Use: South Refuse Crane – Grapple

Date of Use	Volume Used (gallons)

ATTACHMENT 1
CORRECT DONNING AND REMOVAL OF PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR EBOLA

For most work tasks requiring PPE to protect a worker from exposure to Ebola virus, put on personal protective equipment in the following order:

1. Gown or Tyvek (if using double gloves, put on first pair before gown or Tyvek)
2. Mask (or respirator, when appropriate)
3. Face shield or goggles
4. Gloves

Remove PPE in a way to avoid self-contamination. This may include removing outer gloves simultaneously with the gown or Tyvek suit, decontaminating PPE between removal steps, or other measures. The order of PPE removal may vary depending on the type of PPE a worker uses, the nature of the work tasks being performed, and which devices or garments are contaminated, among other factors.

After use, remove and place suits, gloves, and disposable masks in a labeled waste container, as appropriate. Wash hands with soap and water, or use an alcohol-based hand gel if soap and water are not available. Reusable goggles, face shields, respirators, and other equipment must be decontaminated before re-use.

COVANTA ESSEX COMPANY
WASTE FLOW CONTROL PLAN
APPENDIX 7

Plant Specific Operating Procedure #42

Exhibit 16

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAIL CODE 401-02C
Division of Solid & Hazardous Waste
P.O. Box 420
Trenton, New Jersey 08625-0420
Telephone: (609) 292-9880 Telecopier: (609) 984-0565
http://www.state.nj.us/dep/dshw

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. MCCABE
Commissioner

SOLID WASTE FACILITY PERMIT

Under the provisions of N.J.S.A. 13:1E *et seq.* known as the Solid Waste Management Act, this permit is hereby issued to:

COVANTA ESSEX COMPANY

Facility Type:	Resource Recovery Facility - Mass Burn Incinerator
Lot Nos.:	28, 30, Parts of: 20, 34, 36, 40, 50, 52, 60, 60A, 80; 92, Parts of: 18, 29, 32, 35A, 80, 80A, 90
Block Nos.:	5000; 5001
Municipality:	City of Newark
County:	Essex
Facility ID No.:	133546
Permit No.:	RRF190001

This permit is subject to compliance with all conditions specified herein and all regulations promulgated by the Department of Environmental Protection.

This permit shall not prejudice any claim the State may have to riparian land nor does it allow the registrant to fill or alter, or allow to be filled or altered, in any way, lands that are deemed to be riparian, wetlands, floodway or flood hazard area, or within the Coastal Area Facility Review Act (CAFRA) zone or are subject to the Pinelands Protection Act of 1979 or the Highlands Water Protection and Planning Act of 2004, nor shall it allow the discharge of pollutants to waters of this State without prior acquisition of the necessary grants, permits, or approvals from the Department of Environmental Protection.

February 23, 2016
Issuance Date

Anthony Fontana
Anthony Fontana, Chief
Bureau of Solid Waste Permitting

October 21, 2019
Latest Modification Date

February 23, 2021
Expiration Date

Scope of Permit

This Permit, along with the referenced application documents herein specified, shall constitute the sole Solid Waste Facility Permit for the operation of a thermal destruction facility by Covanta Essex Company located in the City of Newark, Essex County, New Jersey. Any registration, approval or permit previously issued to Covanta Essex Company by the Division of Solid and Hazardous Waste or its predecessor agencies, is hereby superseded.

This Permit does not convey any property rights of any sort, or any exclusive privilege. Failure to comply with all the conditions specified herein may result in revocation of this Permit and/or may result in such other regulatory or legal actions which the Department is authorized by law to institute.

Regulated Activities at the Facility

Permit requirements 1 to 35 of this Permit contain the general requirements applicable to all solid waste facilities. Permit requirements 36 to 72 of this Permit contain general requirements applicable to all thermal destruction facilities that receive, store, and process solid waste. Permit requirements 73 to 127 of this Permit contain specific requirements applicable to the operations of this facility.

Facility Description

The Essex County Resource Recovery Facility is a large-scale waterwall incinerator that produces high temperature, high-pressure ("superheated") steam from the incineration of solid waste. The steam is utilized to generate electricity at the facility for sale to PSEG, and for in-plant use. The facility is located at 183 Raymond Boulevard in the City of Newark, New Jersey. The facility site is generally bordered by the Passaic River on the north, the New Jersey Turnpike on the east, Raymond Boulevard and the Pulaski Skyway to the south, and Blanchard Street to the west.

The facility is authorized to accept and process the following waste types: ID 10 - Municipal Waste (household, commercial, and institutional); ID 23 - Vegetative Waste (except for large quantities of easily discernible yard wastes such as grass clippings, leaves, tree trimmings, bushes, and shrubs, as described in the facility's Title V Air Pollution Control Operating Permit); ID 25 - Animal and Food Processing Waste (except full truckloads of dead animals); and ID 27 - Dry Industrial Waste (except for asbestos and asbestos-containing wastes; dry non-hazardous pesticides; contaminated soils; and, hazardous waste as defined in N.J.A.C. 7:26G-1 *et seq.* and 40 CFR 261 which is generated by small quantity generators as defined in N.J.A.C. 7:26G-1 *et seq.*). Using an approved "Special Waste" program protocol that is included as part of the facility's Operations and Maintenance Manual, the facility is also authorized to accept "special waste" that would be classified as ID 27.

The facility is authorized to operate twenty-four (24) hours per day, seven (7) days per week. Solid waste delivery hours to the facility are twenty-four (24) hours per day, Monday through

Saturday. Approximately 14,000 tons of solid waste can be stored in the facility's refuse storage pit.

The facility is permitted to process up to 985,500 tons of solid waste per year. The facility's rate at which it can process solid waste is further limited to a maximum steam production rate of 110 percent of the maximum demonstrated municipal waste combustor unit load (as defined in 40 CFR 60.51b.), or at a rate not to exceed 990,000 pounds per boiler (at a temperature of approximately 750 degrees F and a pressure of approximately 630 psig) over any discrete block four-hour period of time (i.e. 12-4 AM, 4-8 AM, 8 AM-12 PM, etc.), whichever is lowest.

The various system operations are housed predominately in one main building structure consisting of: the tipping hall, the refuse storage bunker, the boiler building, the turbine-generator building, the ash removal facility and recovered metal storage building, and the plant administration offices. Auxiliary support buildings and equipment located separate from the main building structure include: the maintenance building, the ID fan control building, the air-cooled condensers, the air pollution control systems, the scalehouse, the electrical switchyard, the lime storage silos, the aqueous ammonia storage tank, the raw water storage tank, the wastewater storage tank, the demineralized water storage tank, and the condensate storage tank.

The facility consists of three (3) identically sized independent processing units for the incineration of waste, the generation of steam, and the handling of process by-products. The facility produces "superheated" steam that is passed through two (2) turbine-generators to produce electricity. Each turbine-generator is rated at approximately 36 MW, for a facility total generating capacity of approximately 72 MW. Steam is condensed by air-cooled condensers and the condensate is returned to the boiler after being pumped from the condensate collection tank through low-pressure heaters and the deaerator system.

Each of the three (3) identical steam-generating incinerators contains the following combustion equipment: a charging hopper (which is loaded from the refuse storage pit by overhead cranes), a feed chute, a ram feeder, roller grates, primary and secondary air systems, auxiliary fuel oil burners, and flues and ducts. Each incinerator also includes the following steam generation equipment: economizer, main steam drum, the waterwalls (water-filled tubes that line the combustion chamber), the bank evaporator, the superheater, the spray attemperator, safety valves, continuous blowdown tank, intermittent blowdown tank, and atmospheric blowdown tank. Auxiliary burners are also utilized to bring each incinerator up to proper temperature during unit start-up, and to maintain the combustion temperatures (as necessary) to comply with the conditions of the Air Pollution Control Operating Permit.

The facility's air pollution control system consists of a carbon injection system for the control of mercury emissions, dry scrubbers for the removal of acid gases, baghouses on all units for the removal of particulate matter, and a selective non-catalytic reduction system (thermal DeNOx system), coupled with Covanta LN™ (Low NOx) Technology, to limit NOx emissions. Combustion in the incinerators is computer controlled to optimize the combustion process, thereby minimizing the formation and release of organic emissions. The flue gas is cooled in the spray dryer/reactor by evaporating water slurry containing an alkaline reagent, calcium hydroxide (lime slurry). As the flue gas is cooled, the acidic components of the gas react with the alkaline reagent forming solid salts. The baghouses remove particulate matter using bags with a polytetrafluoroethylene (PTFE) laminate coating. The thermal DeNOx system utilizes aqueous ammonia, which is injected into the incinerator above the combustion zone. An aqueous ammonia storage tank is located on site, and the facility has a Discharge Prevention, Containment, and Countermeasure (DPCC) Plan, Discharge Clean-up and Removal (DCR) Plan, and Contingency Plan that outline the methods to be employed to minimize any risk of release of aqueous ammonia to the environment.

The facility has a continuous emissions monitoring system (CEMS) which monitors the following parameters: carbon dioxide, oxygen, sulfur dioxide, carbon monoxide, nitrogen oxides, and opacity. An induced draft fan for each boiler system draws the gases through the boiler passes and the air pollution control system to the stack. Three (3) flues, one for each incinerator, are housed in a single stack structure that is 271 feet in height.

The ash handling system collects and conveys the salt and fly ash from the baghouses and scrubber, fly ash from the precyclone, fly ash from the boilers' second, third, and fourth pass (economizer) ash hoppers, and bottom ash from the roller grates and siftings hoppers. The ash handling system is comprised of three (3) separate systems that include the boiler bottom ash/sifting ash removal system, the boiler fly ash, baghouses, and scrubber salt removal system, and the fly ash treatment (pugmill) system.

Ash from the roller grates and the sifting conveyors is transported to the main slipstick conveyors via the bottom ash extractors. The slipstick conveyors transport the ash to either one of two inclined belt conveyors. Inclined belt conveyor, RH-502B-CV (which is normally in-service) transports the ash through the ferrous and non-ferrous metals recovery system and ultimately to the residue storage bunker. The recovered metals are separated and sent to the ferrous metal storage bunker, or to one of two non-ferrous bunkers, depending upon the size of non-ferrous metal recovered.

Large pieces of material, including ferrous metal, are removed from the bottom ash residue using a grizzly scalper. A drum magnet recovers smaller pieces of ferrous metal. All ferrous metal removed from the bottom ash residue stream is stored in the ferrous metal storage bunker prior to being loaded into trucks for transport and sale to the secondary materials market.

After the ferrous recovery system, any remaining material and bottom ash residue is transported to the non-ferrous metal recovery system by a series of conveyors. After sizing, material is presented to two (2) eddy current separators (ECSs). The non-ferrous metal recovered from both ECS units is sent to one of two non-ferrous storage bunkers, depending on the size of the material. These storage bunkers are located inside the residue building, where the non-ferrous metal is stored until it can be loaded into trucks and sent offsite for recycling. The remaining bottom ash residue from non-ferrous recovery system is transferred onto a belt conveyor, where it is combined with fly ash from the pugmill system. The combined ash is then transferred into the ash residue storage bunker. The facility's ash residue storage capacity is approximately 3,400 tons. Ash residue is removed by trucks, which are loaded inside the ash residue storage building by an ash crane located above the ash storage bunker.

If inclined belt conveyor, RH-502A-CV is utilized, then the residue is deposited in the residue storage bunker without passing through the ferrous and non-ferrous metals recovery system. Any ash residue that bypasses the metals recovery system is sent to the existing ash residue storage bunker. The metals recovery system has also been designed to allow re-feeding of ash residue by recombining it with ash residue from the boilers on belt conveyor RH-502B-CV.

05/18/17: This permit is modified to acknowledge the receipt and approval of Operations and Maintenance (O&M) Manual changes and as-built drawings related to the previously approved baghouse installation.

03/22/18: This permit is modified to acknowledge the removal of the phosphoric acid fly ash treatment and associated O&M Manual changes.

07/02/19: This permit is modified to reflect modifications to the pugmill system, associated O&M Manual changes, and as-built drawings.

09/10/19: This permit is modified to reflect a modification to the metals recovery system, including the installation of a new vibrating screen and MSB conveyor, and associated O&M Manual changes and as-built drawings.

10/21/19: This permit is modified to acknowledge the receipt and approval of as-built drawings for the installation of access platforms underneath the A and B pugmill fly ash silos and an as-built drawing for the expansion of the tipping floor office.

Approved Application, Drawings and Associated Documents

The Permittee shall construct and operate the solid waste facility in accordance with the provisions of N.J.A.C. 7:26-1 *et seq.*, the conditions of this Permit, and the following documents:

1. "Essex County Resource Recovery Project - Environmental Impact Statement", dated October 1983, with:

   - "Volume 1 Technical Appendices"
   - "Volume 2 Technical Appendices"
   - "Volume 3 Technical Appendices"
   - "Volume 4 Technical Appendices"
   - "Volume 5 Technical Appendices: 22. Impact on Local Streets in the Ironbound Community of Newark, New Jersey, from Refuse Trucks Utilizing the Proposed Essex County Energy Recovery Plant"; prepared by Konheim and Ketcham and the Port Authority of New York and New Jersey, dated January 1984.

2. "Essex County Resource Recovery Project - Environmental Impact Statement - Responses to Comments" and accompanying drawings, received by the Division of Waste Management on June 25, 1984.

3. "Essex County Resource Recovery Project - Environmental Impact Statement - Responses to Comments No. 2" and accompanying drawings, received by the Division of Waste Management on October 23, 1984.

4. Letter dated August 29, 1990, from John Waffenschmidt, American Ref-Fuel, to Charles DeWeese, Division of Solid Waste Management, transmitting as-built designs detailing modifications to various aspects of the facility.

5. The following drawings prepared by the Port Authority of New York and New Jersey, sealed and signed by Harry Schmerl, N.J.P.E. License Number 19427:

   - G-4, Site Access Road - Location Plan, Abbreviations, General Notes and Legends, dated 10/11/88
   - C-1, Site Access Road - Existing Conditions, dated 10/11/88
   - C-2, Site Access Road - Existing Conditions, dated 10/11/88
   - C-3, Site Access Road - Horizontal Alignment Plan 1 of 2, dated 10/11/88
   - C-4, Site Access Road - Horizontal Alignment Plan 2 of 2, Revision 1, dated 2/10/89
   - C-11, Site Access Road - Grading and Drainage Plan, Revision 1, dated 10/28/89
   - C-12, Site Access Road - Grading and Drainage Plan, Revision 1, dated 2/10/89
   - C-13, Site Access Road - Roadway Cross Sections, Revision 1, dated 10/28/88
   - C-28, Site Access Road - Signing and Striping Plan 1 of 2, Revision 1, dated 10/28/90
   - C-29, Site Access Road - Signing and Striping Plan 2 of 2, Revision 1, dated 2/10/90

6. The following drawing prepared by Parsons-Brinckerhoff for the Port Authority of New York and New Jersey, sealed and signed by M. Yalcin Tarhan, N.J.P.E. License Number 22766:

   - S-1, Site Access Road - Conrail Bridge Over Access Road - Plan, Longitudinal Section and Structural General Notes, Revision 1, 10/28/88

7. Final Landscape Plan, dated August 29, 1990, signed and sealed by Robert Charles Preston, NJ Certified Landscape Architect, Number AS00038.

8. The following drawings prepared by Gibbs and Hill, Inc., sealed and signed by Vinubhai F. Patel, New Jersey Professional Engineer License Number 30048:

   - ElSC-0012, As Drilled Boring Location Plan, Revision F, 10/22/92

   - ECSC-0135, Final Grading and Drainage Details - Sheet 1, Revision 6, 10/20/92

   - ECSC-0136, Final Grading and Drainage Details - Sheet 2, Revision 8, 10/20/92

9. The following drawings prepared by Gibbs and Hill, Inc., sealed and signed by Peter A. Totten, New Jersey Professional Engineer License Number 27566:

   - ElMP-0003, Plumbing Drainage & F. P. Symbol List, Schedule and Details, Revision 11, 11/10/93

   - ElMP-0100, Fire Protection Flow Diagram, Revision 7, 12/23/92

   - ElMP-1402, Plumbing Drainage and Fire Protection EL. 11'-2", Revision 9, 11/10/93

   - ElMP-2000, Plumbing & Drainage Miscellaneous Bldgs., Plans, Details & Diagrams, Revision 7, 12/23/92

   - EIMP-2201, Yard Piping - Plumbing, Drainage, Fire Protection and Potable Water, Revision 10, 11/10/93

   - ElMP-2202, Yard Piping - Plumbing, Drainage, Fire Protection and Potable Water, Revision 8, 11/10/93

   - ElM-0002, General Arrangement Plan at EL. 11'-2", Revision 3, 11/9/93

   - ElM-0004, General Arrangement Plan at EL. 49'-6", Revision 3, 11/9/93

   - ElM-0005, General Arrangement Plan at EL.' s 79'-8¼", 79'-11", 80'-1", 84'-10", 87'-6" and 101'-1", Revision 3, 11/9/93

   - ElM-0005A, Miscellaneous Boiler Platforms, Revision 4, 11/9/93

   - E1M-0101, Flow Diagram Main Steam and Dump Steam Systems, Revision 8, 9/22/92

   - ElM-0103, Flow Diagram Feedwater System, Revision 8, 11/29/93

   - ElM-0104, Flow Diagram Condensate and Make-Up Water Systems, Revision 7, 11/29/92

   - ElM-0105, Flow Diagram Closed Loop Cooling Water System, Revision 6, 11/29/93

- ElM-0106, Flow Diagram Fuel Oil & Diesel Generator Piping, Revision 7, 9/22/92
- ElM-0107, Flow Diagram Instrument and Plant Air Systems, Revision 8, 11/29/93
- ElM-0108, Flow Diagram Heater Vents and Drains Systems, Revision 6, 9/24/92
- ElM-0110, Flow Diagram Boiler Blowdown and Drains, Revision 8, 9/24/92
- ElM-0111, Flow Diagram Turbine Drains & Misc. Vents & Drains, Revision 5, 11/29/93
- ElM-0102, Flow Diagram Extraction Steam and Auxiliary Steam Systems, Revision 8, 9/22/92

10. The following drawings prepared by Gibbs and Hill, Inc., sealed and signed by Harry Victor Okabayashi, New Jersey Professional Engineer License Number 33620:

- ElE-0001, Symbols, Legend & General Notes, Revision 4, 7/24/92
- ElE-0100, Main One Line Diagram, Revision 7, 7/24/92
- ElE-0101, 4160V MCC One Line Diagram, Revision 5, 7/24/92

11. The following drawings prepared by American Ref-Fuel, sealed and signed by George A. Jarvi, New Jersey Professional Engineer License Number GE 29637:

- F-009, Expanded Permit Application Heat Balance - Case I, Revision 2, 3/13/95
- F-010, Expanded Permit Application Heat Balance - Case II, Revision 2, 3/13/95

12. The following Sierra Environmental Engineering, Inc. drawings, signed and sealed for as-built verification for permitting, by Dominick F. Golino, New Jersey Professional Engineer License Number 27351:

- 90237-00, Rev. 1, 1-13-95, Standard Legend
- 90237-01, Rev. 6, 1-24-95, Thermal DeNOx System P & ID (sheet 1 of 2)
- 90237-01, Rev. 6, 1-13-95, Thermal DeNOx System P & ID (sheet 2 of 2)
- 90237-02, Rev. 2, 1-13-95, Thermal DeNOx System Piping - Boiler Area (sheet 1 of 2)
- 90237-02, Rev. 2, 1-13-95, Thermal DeNOx System Piping - Boiler Area (sheet 2 of 2)
- 90237-05, Rev. 1, 1-13-95, Thermal DeNOx System Pumps

- 90237-07, Rev. 1, 1-13-95, Thermal DeNOx System Plot Plan
- 90237-08, Rev. 2, 1-13-95, Thermal DeNOx System Headers
- 90237-09, Rev. 3, 1-13-95, Thermal DeNOx System Injector Assembly
- 90237-10, Rev. 3, 1-13-95, Thermal DeNOx System Flex Hose Assembly
- 90237-11, Rev. 1, 1-13-95, Thermal DeNOx System Vaporizers
- 90237-03, Rev. 2, 1-13-95, Thermal DeNOx System Ammonia Tank
- 90237-04, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Tank (Pumps) Piping Details (sheet 1 of 2)
- 90237-04, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Tank (Pumps) Piping Details (sheet 2 of 2)
- 90237-06, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Control Skid General Arrangement for Boiler 2 & 3 (sheet 1 of 6)
- 90237-06, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Control Skid General Arrangement (sheet 2 of 6)
- 90237-06, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Control Skid Support for Boiler 2 & 3 (sheet 3 of 6)
- 90237-06, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Control Skid General Arrangement for Boiler-1 (sheet 4 of 6)
- 90237-06, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Control Skid Support for Boiler-1 (sheet 5 of 6)
- 90237-06, Rev. 4, 1-13-95, Thermal DeNOx System Ammonia Control Skid General Arrangement for Boiler-1 (sheet 6 of 6)
- 90237-102, Rev. 2, 1-24-95, Thermal DeNOx System Field Wiring Diagram
- 90237-101, Rev. 4, 1-13-95, Ammonia Storage System Power and Instrument Wiring Diagram

13. Drawing No. SK-100494, Rev. 0, 10-4-94, Plot Plan Ammonia Storage Tank, signed and sealed by Daniel R. Ramirez, NJ Professional Engineer (No. 38419).

14. "American Ref-Fuel/Essex County Resource Recovery Facility - Nighttime Waste Delivery Noise Study Report - Final Report - February 95", prepared by Analysis and Computing, Inc., Hicksville, NY.

15. Letter dated May 19, 1995, from American Ref-Fuel re: "Essex Solid Waste Permit Applications for Renewal and Expansion". Attached to this letter are Addendum documents that include:

    - "Independent Engineer's Certification" dated May 23, 1995, from Cummings & Smith Inc.
    - "Updated Registration Statement (CP1)"
    - "Updated Engineering Design and Site Modifications"
    - "Changes in Environmental Impacts from Facility Operations and Operational History"

16. The following drawings prepared by George A. Jarvi, NJ Professional Engineer License No. GE29637:

    - F-013 (Sheet 1 of 2), Process Flow Diagram Mass Balance, Revision 1, dated August 5, 1995
    - F-013 (sheet 2 of 2), Process Flow Diagram Mass Balance, Revision 1, dated August 5, 1995

17. Document titled "Essex County Resource Recovery Facility Stormwater Capture/Retention System", dated July 1996.

18. Drawing F-011, Water Balance Case I, Revision 2, dated 7-22-96, prepared by American Ref-Fuel, signed and sealed by Steven J. Bossotti, P.E. on 7/29/96.

19. Drawing F-012, Water Balance Case II, Revision 2, dated 7-22-96, prepared by American Ref-Fuel, signed and sealed by Steven J. Bossotti, P.E. on 7/29/96.

20. January 30, 1997 letter from American Ref-Fuel re: "Proposed Stormwater Collection and Re-Use System Application for Minor Modification of Solid Waste Facility Permit". Attached documents include "Stormwater Capture System Annual Performance" calculations and "Preliminary Soil Analysis - Stormwater Improvement Project", dated August 27, 1996, prepared by Frank H. Lehr Associates.

21. The following "as-built" drawings submitted by means of a 5 March 1998 letter from American Ref-Fuel Company of Essex County re: "Facility Modifications":

    - ECSC-0131, Final Grading and Drainage Plan, Sheet 2 of 3, Revision 11, dated 9/3/97, signed and sealed by Steven J. Bossotti, P.E. on 3/4/98

- ECSC-0132, Final Grading and Drainage Plan, Sheet 3 of 3, Revision 11, dated 9/3/97, signed and sealed by Steven J. Bossotti, P.E. on 3/2/98

22. The following "as-built" drawings prepared by STV, Inc., signed and sealed by Gerald Donnelly, P.E. (unless otherwise noted), and submitted by means of a June 4, 1999 letter from American Ref-Fuel Company of Essex County re: "Minor Modifications - Drawing Submittals" (for DPCC Minor Modification, Stormwater Minor Modification, and Modular Building Addition Minor Modification):

    - C-1A, DPCC Project - Fuel Storage Area Demolition and Site Plan, Revision 3, dated 2/25/98

    - C-2, DPCC Project - Carbon Silo Area Existing Conditions and Site Plan, Revision 3, dated 2/25/98

    - C-3, DPCC Project Miscellaneous Details, Revision 2, dated 2/18/98

    - C-4, DPCC Project Miscellaneous Details, Revision 2 (not dated)

    - S-1, DPCC Project - Fuel Storage Area Roof Framing Plan, Sections & Details, Revision 3, dated 3/20/98, signed and sealed by Robert E. Griffith, P.E.

23. The following "as-built" drawings submitted by means of the American Ref-Fuel Company of Essex County letter dated June 4, 1999, re: "Minor Modifications – Drawing Submittals" (for DPCC Minor Modification, Stormwater Minor Modification, and Modular Building Addition Minor Modification); the drawings submitted were prepared by Blasland, Bouck and Lee, Inc., sealed by Edward Lynch, P.E., and are dated 7/31/97:

    - G-1, Stormwater Capture/Retention System Site Plan, Revision 0

    - G-2, Stormwater Capture/Retention System Plans & Sections, Revision 0

    - G-3, Stormwater Capture/Retention System Details, Revision 0

    - M-1, Stormwater Capture/Retention System Pump Structure No. 1 Area Plan - Mechanical, Revision 0

    - M-2, Stormwater Capture/Retention System Pump Structure No. 1 Area Sections - Mechanical, Revision 0

    - M-3, Stormwater Capture/Retention System Pump Structure No. 2 Area Plan - Mechanical, Revision 0

    - M-4, Stormwater Capture/Retention System Pump Structure No. 2 Area - Sections and Detail - Mechanical, Revision 0

- M-5, Stormwater Capture/Retention System Manhole Sections and Details - Mechanical, Revision 0

24. The following drawings signed and sealed by Daniel R. Ramirez, P.E. on 5/28/99, and submitted by means of a June 4, 1999 letter from American Ref-Fuel Company of Essex County re: "Minor Modifications - Drawing Submittals" (for DPCC Minor Modification, Stormwater Minor Modification, and Modular Building Addition Minor Modification):

    - ECSC-0111, Site Plot Plan, Revision N, dated 5/11/99
    - ECSC-0130, Final Grading and Drainage Plan, Sheet 1 of 3, Revision 13, dated 5/28/99
    - ECSC-0160, Sanitary Pipe Plan, Revision 4, dated 5/11/99
    - E1M-0115, Flow Diagram - Raw, Demineralized & Wastewater Systems, Revision 11, dated 5/11/99
    - E1MP-0002, Plumbing & Drainage Symbol List, Schedule, General Notes and Details, Revision 12, dated 8/20/98
    - E1MP-0101, Potable Water, Sanitary & Oily Waste Flow Diagram, Revision 7, dated 5/11/99
    - E1MP-2200, Yard Piping - Plumbing, Drainage, Fire Protection, and Potable Water, Revision 14, dated 8/20/98

25. "American Ref-Fuel Company of Essex County Solid Waste Permit Renewal Application - Addendum Volume I - Renewal Application - November 2004"; also included in Addendum Volume I are the following drawings:

    - Drawing E1M-0003, General Arrangement Plan at El. 29'-2", Revision 7, dated 10-1-04, signed and sealed by Steven J. Bossotti, NJ P.E. License #GE39519 on 10/18/04
    - Drawing ElM-0006, General Arrangement Sections A-A, B-B, & C-C, Revision 9, dated 9-30-04, signed and sealed by Steven J. Bossotti, NJ P.E. License # GE39519 on 10/18/04

26. Untitled document submitted by American Ref-Fuel Company by means of a letter dated May 2, 2005. This document was received by the Division of Solid and Hazardous Waste on May 12, 2005. The document includes a revised ash management plan, a revised waste flow plan, a startup and shutdown plan, and the current contract for hazardous waste disposal. Also included with this document is the following design drawing:

    - W1016R, Fly Ash Immobilization Flow, Revision 4, dated 4-28-05, signed and sealed by David J. Osborne, NJ P.E. License Number 41974

27. July 28, 2008 Facility Change Notice: FCN Number ES-191; installation of ducting, dampers, nozzles, and controls to introduce combustion air in the upper elevations of the boiler 1 furnace with the purpose of reducing NOx formation during combustion of MSW. Included are the following design drawings:

- Drawing ES-LN-001, Rev. 0, dated 2/11/08, Low NOx Modification Tube Opening Details, Covanta Essex
- Drawing ES-LN-002, Rev. 1, dated 2/12/08, Low NOx Modification Tube Opening Assembly, Covanta Essex
- Drawing ESS-S-029, Rev. 0, dated 2/21/08, Boiler Building Horizontal Brace Alteration for New 36" Square Air Duct nrNr Col line Tp Elv 49'-6", Covanta Operations Engineering, signed by William Goldate P.E. License #24648
- Drawing 674001, P&ID Combustion Air Blower #1, Covanta Operations Engineering
- Drawing D-15505-1-60-M, Rev. 2, dated 3/17/08, Tertiary Air System Upgrade Tie-in to Existing Secondary Air General Arrangement, Sheet 1 of 2, Process Equipment/Barron Industries
- Drawing D-15505-1-60-M, Rev. 2, dated 3/17/08, Tertiary Air System Upgrade Tie-in to Existing Secondary Air General Arrangement Sheet 2 of 2, Process Equipment/Barron Industries

28. Solid Waste Facility (SWF) permit renewal dated May 13, 2011 for Covanta Essex Company Resource Recovery Facility prepared by Covanta Essex Company and certified by Steven J. Bossotti, P.E., N.J. License No. GE 39519. The submittal included:

- Updated Registration Statement (Solid Waste Facility Permit Application Form)
- Updated Engineering Design and Site Modifications
- Updated O & M Manual Volumes I, II, III, IV, VI, VIII, and IX
- Facility Change Notice (FCN) for LN™ System

29. Updated Operations and Maintenance (O&M) Manual for Covanta Essex Company, Essex County Resource Recovery Facility, dated May 2011. The document consists of the following:

- Volume I: Plant System Descriptions 1
- Volume II: Plant System Descriptions 2
- Volume III: Plant Operating Procedures 1

– Volume IV: Plant Operating Procedures 2

– Volume VI: Safety Manual

– Volume VIII: C.E.M.S.

– Volume IX: Introduction, Index, Administrative Plans, Emergency Plan, and Operating Instructions

30. April 20, 2012 Minor Modification Application; ferrous system upgrades and non-ferrous installation submitted by Joseph Volpe, Facility Manager of Covanta Essex Co.

31. July 24, 2012 "Submittal of Additional Technical Information – Administrative Notice of Deficiency (NOD) Response for the Modification of a Solid Waste Permit," submitted by Joseph Volpe, Facility Manager of Covanta Essex Co. Also included with this document are the following design drawings and updated Sections of the O&M Manual:

   – Drawing E1M-0002, General Arrangement Plan at El. 11'-2", Revision 5, dated 7/2/12, signed and sealed by Steven J. Bossotti, NJ P.E. License #GE39519 on 7/6/12

   – Drawing E1M-0003, General Arrangement Plan at El. 29'-2", Revision 7, dated 7/2/12, signed and sealed by Steven J. Bossotti, NJ P.E. License #GE39519 on 7/6/12

   – Drawing ElM-0006, General Arrangement Sections A-A, B-B, & C-C, Revision 11, dated 7/2/12, signed and sealed by Steven J. Bossotti, NJ P.E. License # GE39519 on 7/6/12

   – Drawing ECSC-0111, Site Plot Plan, Revision P, dated 4/17/12, signed and sealed by Steven J. Bossotti, NJ P.E. License # GE39519 on 7/17/12

   – Drawing 1214011-F, Metals Recovery Project Process Flow Diagram, dated 7/2/12, signed and sealed by Steven J. Bossotti, NJ P.E. License # GE39519 on 7/6/12

32. June 26, 2013 Response to Technical Notice of Deficiency, signed by Patricia Earls, Environmental Specialist of Covanta Essex. Included are revised pages 11 and 18 of the Solid Waste Application Form.

33. October 3, 2013 Minor Modification Application; installation of a fabric filter bag house on each of the 3 municipal waste combustors to replace the existing electrostatic precipitator on each combustor submitted by Joseph Volpe, Facility Manager of Covanta Essex Co. Included are the following design drawings:

   – Gibbs & Hill, Inc. Drawing No. ECSC-0111, Rev. P, dated 04-17-2012, titled Site Plot Plan, signed and sealed by Steven J. Bossotti, NJ P.E. License # GE39519

- Gibbs & Hill, Inc. Drawing No. E1M-0005, Rev. 5, dated 8-31-2012, titled General Arrangement Plan at EL's 79'-81/4", 79'-11", 80'-1", 84'-10", 87'-6" & 101'-1"

- Gibbs & Hill, Inc. Drawing No. E1M-0006, Rev. 11, dated 07-02-2012, titled General Arrangement Sections A-A, B-B, C-C & D-D

34. March 24, 2014 Response to Second Technical Notice of Deficiency, signed by Patricia Earls, Environmental Specialist of Covanta Essex.

35. March 4, 2015 Minor Modification Application to accept and process Type 25 Waste at the Facility submitted by Joseph Volpe, Facility Manager of Covanta Essex Co. Included in this document is the following updated section of the O&M Manual:

    - Covanta Essex Company Operations and Maintenance Manual Volume IX – Chapter 3; Essex County Resource Recovery Facility Waste Flow Control Plan; Revision 7, April 2015

36. July 13, 2015 Updated O&M Manual Contingency Plan, with updated Volume IX Section 6-Response to Radioactive Waste Detection Alarm finalized and approved by the Bureau of Environmental Radiation, submitted via email from Patricia Earls on July 13, 2015.

37. November 23, 2015 Letter from Patricia Earls, Environmental Compliance Specialist, Covanta Essex, transmitting the following design drawing, signed and sealed by Gary L. Smith, P.E. License # 28113 on 08-14-2014 and Richard A. Fry, P.L.S. License # 41330 on 08-14-2014:

    - Drawing Number E-21005.00-C-001, Site Plan, Rev. E, dated 08-14-2014

38. January 7, 2016 Letter from Patricia Earls, Environmental Compliance Specialist, Covanta Essex, Public Notice Comments on Solid Waste Facility Permit Renewal. Included in the letter is the following updated section of the O&M Manual:

    - Boiler: Furnace Combustion and Gas Path, Operating Procedure No. 3, Revised June 2013

39. February 10, 2017 Minor Technical Review and letter dated April 18, 2017 from Patricia Earls – Changes to the O&M Manual and As-Built Drawings of Baghouses. Included are the following drawings and sections of the final O&M Manual:

    - System Description (Volumes I and II): Table of Contents; System Description sections SD-2 though SD-5, SD-7 through SD-21, and SD-23 through SD-25 cover pages and Record of Changes pages; SD-6; and SD-22

    - Operating Procedures (Volumes III and IV): Table of Contents; Operating Procedure sections OP-2 through OP-5, OP-7 through OP-21, and OP-23 through OP-25 cover pages and Record of Changes pages; OP-6; and OP-22

- Administrative Plans and Index (Volume IX): Table of Contents; Index – Page API-ii of the Index; Sections API-2, API-4, API-6, API-7, API-8, API-9, API-10, API-13, and API-14; and Appendix A and Appendix B of Volume IX

- Contingency Plan (Volume IX): Section I.16 and Attachment A

- Drawing No. M210, General Arrangement Plan El 81'-1" and Above, Rev. 7, dated 12/5/16, signed and sealed by Stephen P. Stuhrke NJ PE No 29134 on 12/5/16

- Drawing No. M211, General Arrangement Section C-C, Rev. 13, dated 12/5/16, signed and sealed by Stephen P. Stuhrke NJ PE No 29134 on 4/10/17

40. September 20, 2017 Minor Modification Application to remove the phosphoric acid fly ash treatment, submitted by Carlos Ascencio, Facility Manager, Covanta Essex.

41. January 18, 2018 Letter from Patricia Earls, New Jersey Regional Environmental Manager, Covanta, transmitting an updated Appendix A of Volume IX of the O&M Manual.

42. June 28, 2018 Minor Modification Application for changes to the pugmill system for fly ash treatment, submitted by Carlos Ascencio, Facility Manager, Covanta Essex. Included is the following document:

    - Solid Waste Application Form for Covanta Essex Company, signed by Carlos Ascencio, Facility Manager, dated June 28, 2018

43. April 4, 2019 Letter from Patricia Earls, New Jersey Environmental Manager, Covanta, transmitting the following As-Built Drawings for the pugmill system modification:

    A Pugmill Drawings:

    - Drawing No. S4, Pug Mill Sections and Details, Rev. D, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498

    - Drawing No. S5, HTK 350-Fly Ash Conditioning System, Rev. D, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498

    - Drawing No. S6, 14" Dia Knife Gate, Rev. D, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498

    - Drawing No. S7, Erection Drawing, Rev. D, dated 1/30/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498

    - Drawing No. S8, Pug Mill Shop Drawings, Rev. D, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498

- Drawing No. S9, Pug Mill Shop Drawings, Rev. C, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498
- Drawing No. S10, Duct Opening Steel Shop Drawings, Rev. D, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498
- Drawing No. S11, Chute 1 & 2 Shop Drawings, Rev. D, dated 1/31/19, signed and sealed by Raj Ekhalikar NJ P.E. License No. 36498

B Pugmill Drawings:

- Drawing No. G-0, Metals Improvement Project Cover Sheet, Rev. 0, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. E1A-0020-01B, Code Compliance Analysis Egress Plan, Rev. C, dated 12/19/18, signed and sealed by Joseph A. Krawiec, NJ R.A. License No. 10039
- Drawing No. D-0, Removal & Modification Notes & Legend, Rev. 3, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. D-1, Removal & Modification Overall Plan, Rev. 3, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. D-2, Removal & Modification Sections "A-A" & "B-B", Rev. 3, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. D-3, Removal & Modification Section "C-C", Rev. 2, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. GA-1, Metals Improvement Project General Arrangement, Rev. 4, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. GA-2, Metals Improvement Project Enlarged Plan 1 @ 610-CV Head, Rev. 4, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. PM-1, Metals Improvement Project Section "A-A" and "D-D", Rev. 3, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683
- Drawing No. PM-2, Metals Improvement Project Section "B-B" & "C-C", Rev. 0, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683

- Drawing No. PM-3, Metals Improvement Project Section "E-E", Rev. 3, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683

- Drawing No. PM-4, Metals Improvement Project Section "F-F" & Enlarged Plan 2, Rev. 2, dated 12/17/18, signed and sealed by Nathiel G. Egosi, NJ P.E. License No. GE33683

- Drawing No. CIE-810, Metals Improvement Project Lighting Plan, Rev. 0, dated 12/19/18, signed and sealed by Ciro Capano, NJ P.E. License No. 24GE02981000

- Drawing No. ECS-1797, Structural Notes I, Rev. 1, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1798, Structural Notes II, Rev. 1, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1799, Framing Plans, Rev. 3, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1800, Sections, Rev. 2, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1801, Phase 2 Erection Plans, Rev. 3, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1802, Phase 2 Sections & Details, Rev. 2, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1803, Typical Details I, Rev. 1, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1804, Typical Details II, Rev. 1, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

- Drawing No. ECS-1805, Typical Details III, Rev. 1, dated 1/3/19, signed and sealed by Kenneth S. Peoples, NJ P.E. License No. 42624

44. April 8, 2019 Letter from Patricia Earls, New Jersey Environmental Manager, Covanta, transmitting the following revised Sections of the O&M Manual for the pugmill system modification:

    - Ash Removal System (Volume II): System Description No. 21, revised January 2019

    - Ash Removal System (Volume IV): Operating Procedure No. 21, revised June 2018

45. August 15, 2018 E-mail from Patricia Earls, New Jersey Environmental Manager, Covanta, requesting a modification to the metals recovery system.

46. September 4, 2018 E-mail from Kimberly Beccia, Environmental Engineer, Bureau of Solid Waste Permitting, approving a modification to the metals recovery system as described in an e-mail dated August 15, 2018 from Patricia Earls.

47. December 11, 2018 Letter from Carlos Ascencio, Facility Manager, Covanta Essex, transmitting a construction certification and the following revised Sections of the O&M Manual for the metals recovery system modification:

    - Metals Recovery Systems (Volume II): Operating Procedure No. 22, revised December 2018

    - Metals Recovery Systems (Volume IV): System Description No. 22, revised December 2018

48. August 20, 2019 Letter from Patricia Earls, New Jersey Environmental Manager, Covanta, transmitting the following As-Built Drawings for the metals recovery system modification:

    - Drawing No. 1735 001-T, MSB Upgrade Title Sheet, Rev. 3, dated 8/12/19, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 011-F, MSB Upgrade Process Flow Diagram, Rev. 1, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 151-G, MSB Upgrade Plan View, el. 21' 6 ¾", Rev. 2, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 152-G, MSB Upgrade Elevations, Rev. 2, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 153-G, MSB Upgrade Details, Rev. 2, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 351-M, MSB Upgrade 235 CHT Modification, Rev. 2, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 352-M, MSB Upgrade 405 CHT Skirt & Exploded, Rev. 1, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 451-M, MSB Upgrade Support Plates, Rev. 1, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

    - Drawing No. 1735 452-M, MSB Upgrade Beam Caps, Rev. 1, dated 12/4/18, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 8/14/19

49. June 28, 2019 Letter from Patricia Earls, New Jersey Environmental Manager, Covanta, transmitting the following As-Built Drawings for the installation of access platforms underneath the A and B pugmill fly ash silos:

   - Drawing No. S1, Notes, Anchor Bolts & Drawing List, Rev. 1, dated 6/25/19, signed and sealed by Christopher J. Pesce, NJ P.E. License No. 42484 on 6/26/19

   - Drawing No. S2, Pug Mill Part Plans at el 29'-2" and 55'-3", Rev. 1, dated 6/25/19, signed and sealed by Christopher J. Pesce, NJ P.E. License No. 42484 on 6/26/19

   - Drawing No. S3, Pug Mill Sections and Details, Rev. 1, dated 6/25/19, signed and sealed by Christopher J. Pesce, NJ P.E. License No. 42484 on 6/26/19

50. July 11, 2019 Letter from Patricia Earls, New Jersey Environmental Manager, Covanta, transmitting the following As-Built Drawing for the tipping floor office expansion:

   - Drawing No. A-1, Tipping Room Booth Enlargement at: Covanta Essex Company, Rev. 1, dated 4/9/19, signed and sealed by Jei-Wei Chao, NJ P.E. License No. GE31106 on 7/8/19 and Joseph A. Krawiec, NJ Architect License No. 10039

In case of conflict, the provisions of N.J.A.C. 7:26-1 *et seq.* shall have precedence over the conditions of this permit, the conditions of this permit shall have precedence over the plans and specifications listed above.

The conditions of this permit are found in the attached document titled "Covanta Essex Co – 133546 RRF190001 SW Resource Recovery Permit – Minor Technical Review Requirements Report."

Subject Item: PI 133546 -

1. The permittee shall operate the facility in compliance with the requirements of N.J.A.C. 7:26-2.11. [N.J.A.C. 7:26- 2.8(i)]
2. The permittee shall operate the facility in conformance with all of the conditions, restrictions, requirements and any other provisions set forth in this permit. [N.J.A.C. 7:26- 2.8(j)]
3. Except for minor modifications as set forth at N.J.A.C. 7:26-2.6(d), the permittee shall not modify, revise or otherwise change any condition of this permit without prior written approval of the Department. [N.J.A.C. 7:26- 2.8(k)]
4. If the permittee wishes to continue the operation of this facility after the expiration date of this permit, the permittee shall apply for permit renewal at least 90 days prior to the expiration date of this permit, and the facility must be included in the District Solid Waste Management Plan at the time of such application. [N.J.A.C. 7:26- 2.7(b)1]
5. The conditions of this permit shall continue in force beyond the expiration date of this permit pursuant to the Administrative Procedure Act, N.J.S.A. 52:14B-11, until the effective date of a new permit if the permittee has submitted a timely and complete application for a renewal permit at least 90 days prior to the expiration of this permit and the Department, through no fault of the permittee, does not issue a new permit with an effective date on or before the expiration date of this permit, due to time or resource constraints. [N.J.A.C. 7:26- 2.7(c)]
6. Permits continued under the Administrative Procedure Act remain fully effective and enforceable. If the Permittee is not in compliance with any one of the conditions of the expiring or expired permit, the Department may choose to: Initiate enforcement action based on the permit which has been continued; Issue a notice of intent to deny the new permit under N.J.A.C. 7:26-2.4. If the permit is denied, the permittee would then be required to cease activities and operations authorized by the continued permit or be subject to an enforcement action for operating without a permit; Issue a new permit under N.J.A.C. 7:26-2.4 with appropriate conditions; or take such other actions as are authorized by N.J.A.C. 7:26-1 et seq. or the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq. [N.J.A.C. 7:26- 2.7(d)]
7. Should the Department determine that the facility is operating in an environmentally unsound manner in accordance with N.J.A.C. 7:26-2.8(p) the permittee shall: Within 90 days of notification by the Department, submit a plan to close or environmentally upgrade the facility in conformance with the applicable standards, as determined by the Department and set forth in N.J.A.C. 7:26-1 et seq.; Within 90 days of receipt of written approval by the Department of the submitted plan, begin to close or construct the environmental upgrading at the facility; and Within one year of receipt of written approval by the Department of the submitted plan, complete closure or construction of the environmental upgrading at the facility. [N.J.A.C. 7:26- 2.8(p)]
8. A one time extension of the compliance schedule established by N.J.A.C. 7:26-2.8(p) shall be granted by the Department provided the permittee demonstrates that it has made a good faith effort to meet the schedule. [N.J.A.C. 7:26- 2.8(q)]
9. Should the environmental upgrading required pursuant to N.J.A.C. 7:26-2.8(p) not be completed or should continued operations be determined by the Department to be environmentally unsound despite the implementation of the plan approved pursuant to N.J.A.C. 7:26-2.8(p), the facility shall temporarily or permanently cease operations and close or enter into receivership, as provided for in N.J.S.A. 13:1E-9, for that period of time necessary to rectify the environmentally unsound conditions. [N.J.A.C. 7:26- 2.8(r)]

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10. If cause exists, the Department may modify, or revoke and reissue this permit, subject to the limitations of N.J.A.C. 7:26-2.6, and may require the permittee to submit an updated or new application in accordance with N.J.A.C. 7:26-2.6(e), if appropriate. [N.J.A.C. 7:26- 2.6(a)1]

11. The Department may modify or, alternatively, revoke and reissue this permit if cause exists for termination under N.J.A.C. 7:26-2.6(c) and the Department determines that modification or revocation and reissuance is appropriate. [N.J.A.C. 7:26- 2.6(b)]

12. Upon the request of the permittee, an interested party or for good cause, the Department may make certain minor modifications to a permit without issuing a tentative approval, providing public notice thereof or holding a public hearing thereon. [N.J.A.C. 7:26- 2.6(d)]

13. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, the permittee shall promptly submit such facts or information. [N.J.A.C. 7:26- 2]

14. All completed registration statements submitted by the permittee shall be signed as specified at N.J.A.C. 7:26-2.4(e)1. [N.J.A.C. 7:26- 2.4(e)1]

15. All engineering designs and reports, the environmental and health impact statement, other information requested as "Addendums" by the Department pursuant to N.J.A.C. 7:26-2.4(f) and (g)4 and documents required to be submitted pursuant to N.J.A.C. 7:26-2.9 and 2.10, submitted on behalf of the permittee, shall be signed by a person described in N.J.A.C. 7:26-2.4(e)1 or by a duly authorized representative of that person, as specified at N.J.A.C. 7:26-2.4(e)2. [N.J.A.C. 7:26-2.4(e)2]

16. Any person signing a registration statement, engineering design or report, environmental and health impact statement or addendum mentioned in N.J.A.C. 7:26-2.4(e)1 or (e)2, submitted on behalf of the permittee, shall make the certification specified at N.J.A.C. 7:26-2.4(e)3. [N.J.A.C. 7:26- 2.4(e)3]

17. The permittee shall not transfer ownership of the permit without receiving prior written approval of the Department, in accordance with N.J.A.C. 7:26-2.7(e). [N.J.A.C. 7:26- 2.8(l)]

18. A written request for permission to allow any transfer of ownership or operational control of the facility must be received by the Department at least 180 days in advance of the proposed transfer. The request for approval shall include all of the information required by N.J.A.C. 7:26-2.7(e)1i-iv. [N.J.A.C. 7:26- 2.7(e)1]

19. A new owner or operator may commence operations at the facility only after the existing permit has been revoked and a permit is issued pursuant to N.J.A.C. 7:26-2.4. [N.J.A.C. 7:26- 2.7(e)2]

20. During a transfer of ownership, the permittee of record remains liable for ensuring compliance with all conditions of the permit unless and until the existing permit is revoked and a new permit is issued in the name of the new owner or operator. [N.J.A.C. 7:26- 2.7(e)3]

21. Compliance with the transfer requirements set forth in N.J.A.C. 7:26-2.7 shall not relieve the permittee from the separate responsibility of providing notice of such transfer pursuant to the requirements of any other statutory or regulatory provision. [N.J.A.C. 7:26- 2.7(e)4]

22. Prior to May 1 of each calendar year the permittee shall submit to the Department a statement updating the information contained in the permittee's initial registration statement. This update shall be on forms furnished by the Department. In no case shall submission of an updated statement alter conditions of this permit. [N.J.A.C. 7:26- 2.8(b)]

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23. The permittee shall notify the Department in writing within 30 days of any change in the information set forth in the permittee's current registration statement. [N.J.A.C. 7:26- 2.8(c)]

24. Failure of the permittee to submit an updated registration statement and to submit all applicable fees, required by N.J.A.C. 7:26-4, on or before July 1 of each calendar year shall be sufficient cause for the Department to revoke this permit or take such other enforcement action as is appropriate. [N.J.A.C. 7:26- 2.8(d)]

25. The permittee shall maintain a daily record of wastes received. The record shall include the information specified at N.J.A.C. 7:26-2.13(a). [N.J.A.C. 7:26- 2.13(a)]

26. The daily record shall be maintained, shall be kept for five years, and shall be available for inspection in accordance with N.J.A.C. 7:26-2.13(b). [N.J.A.C. 7:26- 2.13(b)]

27. The permittee shall verify, retain and make available for inspection a waste origin/disposal (O and D) form for each load of solid waste received in accordance with N.J.A.C. 7:26-2.13(c). [N.J.A.C. 7:26- 2.13(c)]

28. The permittee shall submit monthly summaries of wastes received to the Division of Solid and Hazardous Waste, Bureau of Planning and Licensing and the Solid Waste Coordinator for the District where the facility is located, on forms provided by the Department (or duplication of same), no later than 20 days after the last day of each month. The monthly summaries shall include the information specified at N.J.A.C. 7:26-2.13(e). [N.J.A.C. 7:26- 2.13(e)]

29. Upon request by the Department, the permittee shall submit, in such form as the Department may deem appropriate, information concerning the sources of wastes received and the transportation or disposal patterns associated with such wastes. [N.J.A.C. 7:26- 6.4]

30. The permittee shall operate the facility in compliance with any applicable district solid waste management plan(s) as well as any amendments to and/or approved administrative actions concerning such plan(s). Should the permittee fail to comply with any applicable district solid waste management plan(s) as well as any amendment to or approved administrative actions concerning such plan(s), the permittee shall be deemed in violation of N.J.S.A. 13:1E-1 et seq. and N.J.A.C. 7:26-1 et seq. and shall be subject to applicable penalties provided thereunder, and any other applicable laws or regulations. [N.J.A.C. 7:26- 6.12(b)]

31. The permittee and/or facility operator shall report to the Department and the Attorney General within 30 days any changes or additions in the information required to be included in the disclosure statement, as specified at N.J.A.C. 7:26-16.6 [N.J.A.C. 7:26-16.6(b)]

32. The permittee and/or facility operator shall report any other changes in the information contained in the permittee's disclosure statement currently on file with the Department and the Attorney General in an annual update to be filed with the Department at the time of the permittee's annual renewal of its registration with the Department, as specified at N.J.A.C. 7:26-16.6 [N.J.A.C. 7:26-16.6(c)]

33. The issuance of this permit shall not exempt the permittee from obtaining all other permits or approvals required by law or regulations. [N.J.A.C. 7:26- 2.8(h)]

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34. The permittee shall inspect incoming waste loads in accordance with the "Waste Flow Control Plan" included as part of the facility's approved final operations and maintenance manual, or in accordance with any other approved facility operating plan, as appropriate. Such inspections shall be performed to identify the incidence of designated recyclable materials that may be mandated to be source separated by the District (County) Recycling Plan applicable to the point of origin of the waste load. The permittee shall consult with each District recycling coordinator for the facility's service area on a quarterly basis to review those recyclable materials that are designated by each county to be source separated pursuant to N.J.S.A. 13:1E-99.13(b)2. The "Waste Flow Control Plan" or other approved facility operating plan as appropriate, shall be updated accordingly. Should designated recyclable materials in excess of the threshold level of acceptability specified in a District Recycling Plan be detected in a delivered waste load, the appropriate District recycling coordinator shall be notified in writing. The permittee shall maintain a copy of each such notification at the facility. Whenever possible, the generator who failed to source separate the recyclable materials shall also be identified and reported to the District recycling coordinator. In accordance with the "Waste Flow Control Plan," if bulk recyclables are identified in an incoming waste load, the delivery vehicle shall be reloaded and the material shall be rejected. [N.J.A.C. 7:26- 2.10(b)9vii]

35. Upon notification from the Department that a State of Emergency, which may impact the facility's operations, has been declared by the Governor pursuant to the New Jersey Disaster Control Act at N.J.S.A. App. A:9-30 et seq., the permittee shall provide to the Division of Solid and Hazardous Waste a daily report on the operational status of the facility and the quantity of wastes received during the previous operating day or any other relevant information requested pursuant to N.J.S.A. App. A:9-36. The status report shall be submitted electronically, or as otherwise directed by the Department, to solidwasteemergencies@dep.nj.gov on forms, or in the format, provided by the Department and in compliance with the time frames established by the Department after the State of Emergency declaration. The status reports shall be submitted daily until the permittee is informed by the Department that the reports are no longer required for that State of Emergency. [N.J.A.C. 7:26-2.11(b)9]

Subject Item: SWDG787461 - Thermal Destruction

36. The permittee shall comply with the following general operating requirements for all solid waste facilities as provided at N.J.A.C. 7:26-2.11: (a) Within each 24 hr. period the operator shall clean each area where waste has been deposited or stored, except for those storage areas at thermal destruction facilities which are designed for multiple day storage capability; (b) No waste shall be stored overnight at any facility without effective treatment to prevent odors associated with putrefaction; (c) Facility property surrounding the actual disposal area shall be maintained free of litter, debris, and accumulations of unprocessed waste, process residues and effluents. Methods of effectively controlling wind-blown papers and other lightweight materials, such as fencing, shall be implemented at all facilities; (d) Methods of effectively controlling dust shall be implemented at all facilities in order to prevent offsite migration; (e) The operation of the facility shall not result in the emission of air contaminants in violation of N.J.A.C. 7:27-5.2(a); (f) The permittee shall maintain all facility systems and related appurtenances in a manner that facilitates proper operation and minimizes system downtime. When requested, the permittee shall furnish proof that provisions have been made for the repair and replacement of equipment which becomes inoperative; (g) An adequate water supply and adequate firefighting equipment shall be maintained at the facility or be readily available to extinguish any and all types of fires. Fire-fighting procedures as delineated in the approved O and M manual, including the telephone numbers of local fire, police, ambulance and hospital facilities, shall be posted in and around the facility at all times; and, (h) The permittee shall effectively control insects, other arthropods and rodents at the facility by means of a program in compliance with the requirements of the New Jersey Pesticide Control Code, N.J.A.C. 7:30. [N.J.A.C. 7:26- 2.11]

37. The permittee shall comply with the following additional general operating requirements for all solid waste facilities as provided at N.J.A.C. 7:26-2.11: (a) The permittee shall at all times comply with the conditions of this permit, as well as all other permits or certificates required and issued by the Department or any other Federal or State authority. The permittee shall not receive, store, handle, process or dispose of waste types not specifically identified in this permit; (b) The quantity of waste received by the facility shall not exceed the system's designed handling, storage, processing or disposal capacity as identified in this permit. The designed processing and disposal capacity approved within this permit, other permit or certificate, or approval conditions as a ton per day operational maximum shall be inclusive of all solid waste received at the facility; (c) The facility shall be operated in a manner that employs the use of the equipment and those techniques for the receipt, storage, handling, processing or disposal of incoming waste and process residues that are specifically authorized by this permit; and, (d) The approved final O and M manual shall be maintained at the facility. A written description of any proposed changes to the approved final O and M manual shall be submitted to the Department for review. These proposed changes shall not be implemented at the facility until the Department approves the changes. [N.J.A.C. 7:26-2.11]

38. The permittee shall conduct inspections as indicated in the approved final O and M manual in order to identify and remedy any problems. [N.J.A.C. 7:26-2B.8(d)1]

39. The permittee shall record the results of the inspections in a log book or by means of an electronic storage system approved by the Department which shall be accessible at the facility at all times for inspection by the Department. These records shall include the date and time of the inspection, the name of the inspector, a notation of observations and recommendations and the date and nature of any repairs or other remedial actions taken. [N.J.A.C. 7:26-2B.8(d)2]

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40. A Department inspector may, at the option of the Department, be stationed at district facilities on a daily basis and during all facility operating hours. The permittee of such a facility shall allow entry to the inspector at any time during operating hours. The permittee shall make available office space for Department personnel to prepare inspection reports. [N.J.A.C. 7:26-2B.8(e)]

41. The permittee shall implement waste receiving area control procedures that provide for the inspection of the incoming waste stream for the purpose of removing unprocessible or potentially explosive materials prior to the initiation of processing. In addition, the inspection shall effectively prevent the acceptance of unauthorized waste types. These procedures and necessary contingency plans shall be incorporated into the approved final O and M manual. [N.J.A.C. 7:26-2B.8(f)]

42. Should situations arise where the facility experiences equipment or system malfunction to the extent that the waste received cannot be handled or processed in the normal manner, as specified in this permit, then the permittee shall notify the Department of the existence of such a situation and the circumstances contributing to the situation within the working day of its occurrence. The permittee shall immediately pursue corrective measures. The continued receipt of wastes at the facility shall be limited to that quantity and type that can be handled, stored and processed in conformance with the facility's remaining approved operational capacity. [N.J.A.C. 7:26-2B.8(g)]

43. Arrangements for facility generated waste disposal shall be established and maintained throughout the life of the facility. These waste disposal arrangements shall be in conformance with the Solid Waste Management Plan of the District in which the facility is located and with the rules of the Department. [N.J.A.C. 7:26-2B.8(h)]

44. Unprocessed incoming waste, facility process waste residues and effluents, and recovered materials shall be stored in bunkers, pits, bins, or similar containment vessels and shall be kept at all times at levels that prevent spillage or overflow. [N.J.A.C. 7:26-2B.8(i)]

45. During periods when the facility is not processing wastes and during hours when waste is not being received, waste delivery tipping hall doors shall be kept closed to minimize potential migration of odors and dust to the exterior in accordance with N.J.A.C. 7:27. [N.J.A.C. 7:26-2B.8(j)]

46. The delivery of waste to the facility and the removal of residues and recovered products from the site shall be scheduled so as to eliminate traffic backups and allow for fluid vehicular movement on site. [N.J.A.C. 7:26-2B.8(k)]

47. Samples and measurements taken for the purpose of monitoring facility process and treatment operations shall be representative of the process or operation and shall be performed in accordance with the conditions of this permit, as well as the requirements of other regulatory agencies where applicable. Monitoring shall be conducted through the use of continuous monitoring instrumentation, where feasible. [N.J.A.C. 7:26-2B.8(l)]

48. Prior to disposal, the permittee shall perform a waste determination on all residual ash, in accordance with N.J.A.C. 7:26G-6. Such determination shall be based on analyses of representative composite samples collected in the manner specified in this permit. At a minimum the sampling shall include analyses for toxicity characteristics and total dioxins and furans per EPA test method 1613B (EPA report 821/B-94-005) or equivalent as approved by the Department, and shall be performed at the frequency specified in this permit. [N.J.A.C. 7:26-2B.8(m)]

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49. The Department may alter the list of ash test parameters, the methods of sample collection, the analytical procedures employed and the frequency of sampling and analysis deemed necessary. The permittee may request the Department to reduce the number of ash test parameters specified within the solid waste facility permit by applying qualitative knowledge of incoming waste streams. If the permittee demonstrates through testing that the concentration of any given parameter is consistently below method detection levels as determined using the Toxicity Characteristic Leaching Procedure (TCLP), as defined in USEPA's Test Methods for Evaluating Solid Waste Physical/Chemical Methods SW-846 (SW-846), or the concentration of any given parameter as determined using a total metals analysis, as defined in SW-846, is consistently below 20 times the regulatory threshold levels of the TCLP, the permittee may request the Department to eliminate those parameters from subsequent analysis. [N.J.A.C. 7:26-2B.8(n)]

50. Ash testing analyses required by this permit shall be performed in accordance with procedures outlined in the most recent edition of "Test Methods for Evaluating Solid Waste-Physical/Chemical Methods," U.S.E.P.A. publication SW-846. [N.J.A.C. 7:26-2B.8(o)]

51. The results of ash analysis, including the statistical evaluation of the analytical data conducted in accordance with SW-846, and related quality assessment and quality control information pertaining to sample collection, handling and laboratory analytical methodology, shall be submitted to the Department for evaluation. The permittee shall dispose of the onsite generated residual ash at a facility authorized and permitted to receive the waste type I.D. number assigned to the residual ash by the Department in accordance with its classification. [N.J.A.C. 7:26-2B.8(p)]

52. The permittee shall retain original records of all waste analyses and operation monitoring reports at the facility for a period of three years from the date of measurement. [N.J.A.C. 7:26-2B.8(q)]

53. Records of operation monitoring and waste analyses required above shall include: the date, time and place of sampling, measurement or analysis; chain of custody for all samples collected; the name of the individual who performed the sampling, measurement or analysis; the sampling and analytical methods including the minimum detection levels for the analytical procedure utilized; the results of such sampling, measurement or analyses; and the signature and certification of the report by an appropriate authorized agent for the facility. [N.J.A.C. 7:26-2B.8(r)]

54. The permittee shall act to prevent accidental or unintentional entry and minimize the possibility for unauthorized entry into the facility. The facility shall have a 24-hour surveillance system which continuously monitors and controls entry to the facility or an artificial or natural barrier which completely surrounds the facility. In addition, the facility shall have a means to control entry at all times through the gates or other entrances to the facility. [N.J.A.C. 7:26-2B.8(s)]

55. The permittee shall maintain sufficient personnel during each scheduled shift to assure the proper and orderly operation of all system components, along with the ability to handle all routine facility maintenance requirements. Such personnel shall have sufficient educational background, employment experience and/or training to enable them to perform their duties in such a manner as to ensure facility compliance with the requirements of the Solid Waste Management Act at N.J.S.A. 13:1E, N.J.A.C. 7:26-1 et seq., and the conditions of this permit. [N.J.A.C. 7:26-2B.8(t)1]

56. Each shift shall have a designated shift supervisor authorized by the permittee to direct and implement all operational decisions during that shift. [N.J.A.C. 7:26-2B.8(t)2]

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57. A facility utilizing a boiler to generate steam, power or heat shall employ individuals licensed in accordance with the Rules and Regulations of the New Jersey Department of Labor for Boilers, Pressure Vessels and Refrigeration, N.J.A.C. 12:90. [N.J.A.C. 7:26-2B.8(t)3]

58. Every district facility shall have under contract a New Jersey licensed professional engineer as a consultant to oversee the general plant operations. This engineer shall possess experience in the design and operation of the major system components or equipment that constitute the facility. [N.J.A.C. 7:26-2B.8(t)4]

59. All personnel who are directly involved in facility waste management activities or who operate, service, or monitor any facility equipment, machinery or systems shall successfully complete an initial program of classroom instruction and on-the-job training that includes instruction in the operation and maintenance of the equipment, machinery and systems which they must operate, service or monitor in the course of their daily job duties, and which teaches them to perform their duties in a manner that ensures facility compliance with the requirements of the Solid Waste Management Act at N.J.S.A. 13:1E, N.J.A.C. 7:26-1 et seq. and the conditions of this permit. [N.J.A.C. 7:26- 2B.8(u)1]

60. The training program shall be directed by a person thoroughly familiar with the technology being utilized at the facility and the conditions of the facility's permits. [N.J.A.C. 7:26-2B.8(u)2]

61. The training program shall ensure that facility personnel are able to effectively respond to any equipment malfunction or emergency situation that may arise. The training program shall provide instruction in the use of personal safety equipment, procedures for inspecting and repairing facility equipment, the use of communications or alarm systems, the procedures to be followed in response to fires, explosions or other emergencies, and the procedures to be followed during planned or unplanned shutdown of operations. [N.J.A.C. 7:26-2B.8(u)3]

62. Employees shall not work in unsupervised positions until they have completed the training program required herein. [N.J.A.C. 7:26-2B.8(u)4]

63. Facility personnel shall take part in a planned annual review of the initial training program. [N.J.A.C. 7:26-2B.8(u)5]

64. Training records that document the type and amount of training received by current facility personnel shall be kept until closure of the facility. Training records on former employees shall be kept for at least one year from the date the employee last worked at the facility. [N.J.A.C. 7:26-2B.8(u)6]

65. In the case of an emergency, the plant operator or emergency coordinator shall immediately identify the character, exact source, amount and extent of any discharged materials and notify appropriate State or local agencies with designated response roles if their help is needed. [N.J.A.C. 7:26-2B.8(v)1]

66. Concurrently, the plant operator or emergency coordinator shall assess possible hazards to public health or the environment that may result from the discharge, fire or explosion. This assessment shall consider both direct and indirect effects. [N.J.A.C. 7:26-2B.8(v)2]

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67. If the plant operator or emergency coordinator determines that the facility has had an uncontrolled discharge, a discharge above standard levels permitted by the Department, or a fire or explosion, he or she shall: Immediately notify appropriate local authorities if an assessment indicates that evacuation of local areas may be advisable; Immediately notify the Department at 1-877-927-6337; and when notifying the Department, report the type of substance and the estimated quantity discharged if known, the location of the discharge, the action the person reporting the discharge is currently taking or proposing to take in order to mitigate the discharge and any other information concerning the incident which the Department may request at the time of notification. [N.J.A.C. 7:26- 2B.8(v)3]

68. The plant operator shall take all reasonable measures to ensure that fires, explosions and discharges do not recur or spread to other areas of the facility. These measures shall include, where applicable, the cessation of process operations and the collection and containment of released waste. [N.J.A.C. 7:26-2B.8(v)4]

69. Immediately after an emergency, the plant operator or emergency coordinator shall provide for treating, storing or disposing of waste contaminated soil or water or any other material contaminated as a result of the discharge, fire or explosion. [N.J.A.C. 7:26-2B.8(v)5]

70. The plant operator or emergency coordinator shall insure that no waste is processed until cleanup procedures are completed and all emergency equipment listed in the contingency plan is again fit for its intended use. [N.J.A.C. 7:26-2B.8(v)6]

71. The plant operator or emergency coordinator shall notify the Department and appropriate local authorities when operations in the affected areas of the facility have returned to normal. [N.J.A.C. 7:26-2B.8(v)7]

72. Within 15 days after the incident, the plant operator or emergency coordinator shall submit a written report on the incident to the Department. The report shall include, but not be limited to: The name, address and telephone number of the facility; The date, time and description of the incident; The extent of injuries, if applicable, with names and responsibilities indicated; An assessment of actual damage to the environment, if applicable; An assessment of the scope and magnitude of the incident; A description of the immediate actions that have been initiated to clean up the affected area and prevent a recurrence of a similar incident; and An implementation schedule for undertaking measures to effect cleanup and avoid recurrence of the incident, if applicable. In addition to this procedure, loads delivered that are determined to have radioactive material that exceeds acceptable levels shall be addressed in accordance with the approved facility procedure "Response to Radioactive Waste Detection Alarm," which is part of the Operations & Maintenance Manual. [N.J.A.C. 7:26-2B.8(v)8]

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73. The permittee is authorized to accept the following waste types as defined at N.J.A.C. 7:26-2.13(g):

ID	Description
10	Municipal Waste (household, commercial, and institutional)
23	Vegetative Waste (except for large quantities of easily discernible yard wastes such as grass clippings, leaves, tree trimmings, bushes, and shrubs, as described in the facility's Title V Air Pollution Control Operating Permit)
25	Animal and Food Processing Waste (except full truck loads of dead animals)
27	Dry Industrial Waste (except for asbestos and asbestos-containing wastes; dry non-hazardous pesticides; contaminated soils; and, hazardous waste as defined in N.J.A.C. 7:26G-1 et seq. and 40 CFR 261 which is generated by small quantity generators as defined in N.J.A.C. 7:26G-1 et seq.). [N.J.A.C. 7:26- 2.11(b)9]

74. The permittee is not authorized to accept any other type or description of solid waste as defined at N.J.A.C. 7:26-2.13(g) and (h), regulated medical waste as defined at N.J.A.C. 7:26-3A.6(a), or hazardous waste as defined at N.J.A.C. 7:26G-1 et seq. [N.J.A.C. 7:26-2.11(b)9]

75. Any future excavation work on the facility site shall be conducted in accordance with approvals obtained from the Department's office responsible for site remediation activities, as may be required. [N.J.A.C. 7:26-2]

76. One complete set of the permit application documents listed in this permit, this Solid Waste Facility Permit, and all records, reports and plans as may be required pursuant to this permit shall be kept on-site and shall be available for inspection by authorized representatives of the Department upon presentation of credentials. [N.J.A.C. 7:26-2]

77. In addition to the requirements of N.J.A.C. 7:26-2B.8(t) and (u) the permittee shall also comply with all applicable Federal requirements pertaining to facility staffing. The permittee shall not allow the facility to be operated at any time unless one of the following persons is on duty: a fully certified chief facility operator, or a fully certified shift supervisor. If one of the persons listed above must leave the facility during their operating shift, a provisionally certified control room operator who is on duty may fulfill the requirement in this paragraph. [N.J.A.C. 7:26-2]

78. In addition to the requirements of N.J.A.C. 7:26-2B.8(t) and (u) the permittee shall also comply with all applicable Federal requirements pertaining to facility staffing. Each chief facility operator and shift supervisor at the facility shall have completed full certification in accordance with the American Society of Mechanical Engineers QRO-1-1994, Standard for Qualification and Certification of Resource Recovery Facility Operators. [N.J.A.C. 7:26-2]

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79. In addition to the requirements of N.J.A.C. 7:26-2B.8(t) and (u) the permittee shall also comply with all applicable Federal requirements pertaining to facility staffing. Each chief facility operator, shift supervisor, and control room operator must complete the EPA municipal waste combustor operator training course. This requirement does not apply to chief facility operators, shift supervisors, and control room operators who obtained full certification from the American Society of Mechanical Engineers on or before the effective date of the applicable Federal rules and regulations. [N.J.A.C. 7:26-2]

80. In addition to the requirements of N.J.A.C. 7:26-2.10 and N.J.A.C. 7:26-2B.4(a)16-18, the permittee shall also comply with all applicable Federal requirements pertaining to contents of the final O and M manual. The permittee shall review the facility's approved final O and M manual to ensure that all federally required elements for the site-specific operating manual are included. Should the approved facility final O and M manual need modification to comply with the Federal rules and regulations, the permittee shall submit said modifications to the Department for review and approval, in accordance with N.J.A.C. 7:26-2.11(b)12. [N.J.A.C. 7:26- 2]

81. In addition to the requirements of N.J.A.C. 7:26-2B.8(u) the permittee shall also comply with all applicable Federal requirements pertaining to facility staff training. As part of the planned annual review of the initial training program required N.J.A.C. 7:26-2B.8(u)(5), the permittee shall also ensure that review of the facility's approved final O and M manual is included in the program. Such training shall include each person who has responsibilities affecting the operation of the facility, including, but not limited to, chief facility operators, shift supervisors, control room operators, ash residue handlers, maintenance personnel, and crane/load handlers. [N.J.A.C. 7:26- 2]

82. The Permittee shall implement the "Community Public Relations Plan," which identifies the steps to be taken to transfer information to, and solicit input from, the community in which the facility is located. This plan shall be maintained as a section of the approved final O and M manual. [N.J.A.C. 7:26- 2B.4(a)19]

83. Waste shall be accepted for processing at the facility twenty four (24) hours per day, Monday through Saturday. [N.J.A.C. 7:26- 2]

84. Waste deliveries to the facility shall be scheduled in such a manner as to minimize truck queuing on the facility property. Under no circumstances shall delivery trucks be allowed to back up onto public roads. The permittee shall allow only vehicles properly registered with the Department for the transportation of waste, pursuant to N.J.A.C. 7:26-3, to deliver and deposit waste at the facility, or to remove process waste residues, unprocessible materials or bypass waste from the facility. The permittee shall also implement the necessary steps to prevent the continued acceptance of any haulage vehicles that are not equipped with working exaust silencer systems or that create excessive noise. The permittee shall maintain a program to notify affected vehicle owners of the problem, and to inform them that failure to correct the situation will result in the vehicle being denied access to the facility. [N.J.A.C. 7:26- 2]

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35. The permittee shall assist, as needed, the Essex County Solid Waste Management District and any other Solid Waste Management District (if applicable) in ensuring that haulers delivering waste to the facility adhere to the designated primary refuse truck delivery routes from and to each collection area served by the facility, as prescribed in the approved Essex County District Solid Waste Management Plan and any other District Solid Waste Management Plan (if applicable). Delivery access to the facility for collection vehicles originating in Essex County, shall be as prescribed in the approved Essex County District Solid Waste Management Plan. Haulage vehicles traveling to and from the facility from Solid Waste Management Districts, service areas, or sources other than Essex County, shall be restricted by the District Solid Waste Management Plan and/or contracts to the use of New Jersey Turnpike Exit 15E. The permittee shall ensure that delivery vehicles originating outside of Essex County use New Jersey Turnpike Exit 15E as the primary access point to the facility. Approval of any route other than the use of Exit 15E would be dependent upon the permittee submitting a traffic study with adequate data to demonstrate that a proposed alernate route would be in compliance with N.J.A.C. 7:26-2B.4(b)18. Additionally, the Essex County Solid Waste Management District would need to issue an adminstrative action that would specify alternate access routes for transporters delivering out-of-county waste, once these trucks enter Essex County. Such administrative action would also require Department approval. [N.J.A.C. 7:26- 2]

36. On-site traffic control measures shall be maintained to provide for orderly vehicular movement on the facility grounds. The measures implemented shall include the appropriate use of lane delineations, signals, signs, barriers or any combination thereof to ensure an orderly flow of traffic delivering waste to the facility through the scale to the tipping floor, then leaving the tipping floor and exiting the facility through the scale. Trucks carrying ash residue, recovered ferrous metals, recovered non-ferrous metals, unprocessible or bypass wastes from the facility shall be similarly controlled and directed to minimize interference with waste delivery traffic. All on-site roadways used by haulage vehicles shall be constructed in accordance with standards established for heavy truck usage, and shall be maintained in accordance with these standards. [N.J.A.C. 7:26- 2B.4(b)17]

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87. (a) Waste storage is allowed in only those areas specifically identified in the design for such purposes. Prior to moving waste into the pit by means of a front end loader, waste shall be deposited onto the tipping floor near a bay opening and visually inspected by tipping floor personnel in accordance with the O&M Manual. If unacceptable waste is identified, it shall be removed. Under no circumstances shall waste be deposited beyond the confines of the refuse storage pit, except for the purpose of conducting incoming waste load inspections, holding unauthorized materials, or storing unprocessible materials such as oversize bulky waste, or unless otherwise approved by the Department. Further exception to this limitation is granted in the case of transfer trailer unloading operations within the tipping hall, where the nature of the operation requires trailer contents to be unloaded onto the tipping floor before the waste is moved into the pit by means of a front end loader. Under such circumstances, the unloading activity being conducted, and the waste materials staged temporarily on the tipping floor, shall not be allowed to restrict the fluid movement of other haulage vehicles into and out of the tipping hall. (b) Interior storage of unprocessible bulky waste material shall be restricted to the designated areas on the South side of the tipping floor. (c) The storage of non-hazardous, non-putrescible "Special Waste" (as described in the facility's approved "Waste Flow Control Plan") shall be restricted to the designated area on the tipping floor in front of tipping bay numbers 1 and 2. Storage of "Special Waste" prior to processing shall be limited to a time period not to exceed 72 hours. This storage shall not interfere with the orderly and expedient delivery and discharge of the regular incoming waste, nor result in an increase in waste delivery truck turnaround times. [N.J.A.C. 7:26- 2]

88. The facility shall not process waste in excess of 985,500 tons per reporting year as determined by means of the facility truck scale records, used in conjunction with a pit level determination made at the beginning of each reporting year to adjust for the storage differential. For the purposes of definition, the reporting period shall begin January 1 and end December 31 of the same year. The facility's rate at which it can process solid waste shall be further limited to a maximum steam production rate of 110 percent of the maximum demonstrated municipal waste combustor unit load (as defined in 40 CFR 60.51b.), or at a rate not to exceed 990,000 pounds per boiler (at a temperature of approximately 750 degrees F. and a pressure of approximately 630 psig) over any discrete block four (4) hour period of time (i.e. 12-4 AM, 4-8 AM, 8-12 PM, etc.), whichever is lowest. Each time that the maximum demonstrated municipal waste combustor unit load is determined, the permittee shall report the results in writing to the Division of Solid and Hazardous Waste. [N.J.A.C. 7:26- 2]

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89. A program shall be maintained to detect and remove unauthorized and prohibited wastes from the waste stream entering the facility. This program shall include the recyclables inspection plan provisions of the approved final O and M manual. Specific ID 27 waste sources shall be excluded for disposal at the facility in accordance with the prohibited sub-categories of ID 27 waste identified in this permit. The permittee may also exclude other specific sources of ID 27 waste in accordance with its Service Agreement, and/or based on the results of the information supplied by the generator, and the permittee's determination that a given ID 27 waste is more suitable for disposal at another approved disposal facility. The permittee shall conduct an education and information program on an on-going basis, to ensure that waste generators and transporters are fully aware of the facility's acceptable and prohibited waste types, waste acceptance procedures, facility rules and regulations, and penalties associated with delivering or attempting to deliver unauthorized or hazardous wastes. At a minimum, this program shall also include the following steps: The permittee shall maintain a sign at or near the scale house which clearly indicates acceptable and prohibited waste types. The penalties for false certification and unauthorized waste delivery shall also be included on the sign. Continuous visual monitoring of the incoming waste shall be conducted by both the tipping floor attendant and the crane operators. In addition, random inspections of incoming waste loads shall be conducted. The crane operator and/or tipping floor attendant shall immediately notify the shift foreman or shift supervisor and plant security personnel, should suspect unacceptable waste be discovered. [N.J.A.C. 7:26- 2B.8(f)]

90. Unauthorized materials found by the visual inspection program shall not be charged to the feed hoppers. Appropriate measures shall be taken to remove the materials from the refuse bunker. In particular, the crane operators and floor attendants shall be trained to search for, identify, and safely remove the following materials: drums or other large metal, plastic, or fiberboard containers with unknown contents; bulk sludges or wet solids not characteristic to municipal solid waste; military ordnance or other explosives; large pressurized containers; and, any suspicious enclosed package. If suspected hazardous waste, drums, or liquids are found in a load accepted at the facility, such materials shall be segregated and stored in a secure manner. The discovery of any suspected hazardous wastes at the facility shall be immediately reported to the Department at 1-877-927-6337. The permittee shall secure the name of the collector-hauler suspected of delivering hazardous waste to the facility and related information surrounding the incident, if available, and shall make this information known to the Department's enforcement personnel. Such material may be returned to a known generator, providing that specific permission to do so is received by the permittee after contacting 1-877-927-6337. Otherwise, the permittee shall dispose of the unauthorized waste in accordance with instructions received from the Department. [N.J.A.C. 7:26- 2]

91. Through an effective inspection, planned maintenance, repair and parts replacement program, the facility systems and related appurtenances shall at all times be kept in proper operating order. As part of this program, the permittee shall maintain an appropriate inventory of spare parts and replacement equipment. [N.J.A.C. 7:26-2B.4(b)(25)]

92. A major malfunction is defined as an instance whereby a system control, an equipment malfunction, or a malfunction of any instrumentation used to monitor process operations for environmental effects occurs that could result in an impact adverse to the environment or public health and/or that also prevents the continual processing of waste in compliance with this permit. In the case of such a situation, the permittee shall undertake corrective actions immediately and shall notify the Department within the working day. The notification shall include the cause of the malfunction, the corrective action being taken, and the anticipated repair time. [N.J.A.C. 7:26-2]

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93. Records of equipment inspection and maintenance shall be maintained centrally in the facility for a minimum of three (3) years from the date of inspection and/or repair. These records shall include the date and time of the inspection, the name of the person conducting the inspection, a notation of the observations and recommendations, and the date and nature of any repairs or other remedial actions taken. [N.J.A.C. 7:26-2]

94. Routine housekeeping and maintenance procedures shall be implemented within the facility interior to prevent the excess accumulation of dust and debris, and to maintain general cleanliness in the working environment. The tipping floor shall be cleaned at least once daily. Housekeeping compliance in the recovered metals and ash residue areas of the facility shall be governed by the Stipulation of Settlement (OAL Docket No. ESW 11501-93N, Agency No. SWS-SW-05317-SW), as approved by Thomas E. Clancy, Administrative Law Judge on November 3, 1994. Facility exterior grounds shall be maintained in a manner free of litter, debris, and accumulations of unprocessed waste, process residues, and effluents. All paved areas on-site, including the access road, shall be swept as often as necessary to prevent the accumulation of dirt, debris, and process residues. [N.J.A.C. 7:26-2]

95. All facility floor drains, traps, sumps or similar catchment basins shall be maintained free of obstructions to facilitate effluent drainage. [N.J.A.C. 7:26-2]

96. Unprocessed waste feedstock and facility process waste residues shall be stored in containers, as specified in the referenced engineering plans. [N.J.A.C. 7:26-2B.8(i)]

97. The exterior facings of all facility buildings and similar structures shall be maintained in a manner in keeping with the original design intent to enhance the appearance of the property. The security fencing and gate controls shall be maintained around the entire facility perimeter. The fencing shall be metallic chain link or its equivalent, and shall extend to a height of at least seven (7) feet. All vegetation planted as part of the landscaping plan shall be maintained and replaced as needed, with the same or similar plant materials. [N.J.A.C. 7:26-2]

98. Wastewater discharges generated from facility operations that are reused internally, shall be directed solely to the systems designed and approved for the acceptance of such discharge. When wastewater discharges are made to the publicly operated treatment works facility, such discharges shall comply with the provisions of the Passaic Valley Sewerage Commission authorization. [N.J.A.C. 7:26-2]

99. Sludge and solid residues collected from the facility's process wastewater and stormwater settling basins shall be characterized for disposal in accordance with the waste classification requirements at N.J.A.C. 7:26G-1 et seq., and the requirements of the Department's Hazardous Waste Regulation Program. [N.J.A.C. 7:26-2]

100. If a total facility outage occurs, and said outage is determined to be long-term in nature (that is, longer than 3 days), the permittee shall remove all waste in storage at the facility and dispose of it in a manner consistent with the Essex County District Solid Waste Management Plan, as well as any amendment to or approved Administrative actions concerning such plan, and in compliance with the solid waste regulations found at N.J.A.C. 7:26-1 et seq. [N.J.A.C. 7:26- 2]

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101. Aqueous ammonia release protection shall follow the facility's approved Discharge Prevention, Containment, and Countermeasure (DPCC) Plan, Discharge Clean-up and Removal (DCR) Plan, and Contingency Plan. Equipment, piping, pumps, and related equipment used in the unloading, transport and storage of aqueous ammonia, or used to detect, control and contain the spillage of aqueous ammonia, shall be maintained in operable condition at all times. Equipment comprising the aqueous ammonia system shall be routinely inspected to ensure the structural and mechanical integrity of all components including, but not limited to, storage vessels, pumps, piping, gauges, valves, fittings, valve packings and gaskets. Protective equipment used by employees directed to respond to system leaks or spills shall be readily accessible for this purpose, and shall be maintained in good working order at all times. Operating/safety procedures specific to the handling of aqueous ammonia shall be posted in the work area affected. The procedures shall include a listing of telephone numbers for the local ambulance and hospital facilities, and local and State level emergency response centers. [N.J.A.C. 7:26- 2]

102. (a) All non-processible waste materials, recovered metals, and process residues shall be stored within the confines of an enclosed facility building at all times prior to removal from the site. Exterior storage of non-processible waste materials, recovered metals, and process residues on the site is expressly prohibited. Overhead (roll-up) doors and personnel doors on the ash residue storage building shall be kept closed at all times except during the actual passage of vehicles or personnel. Specifically, these doors shall not remain open for purposes of ventilation, comfort cooling, clearing of dust laden air, or similar reasons. (b) The permittee shall implement and maintain good management practices within the ash and metals loading areas to minimize or prevent the tracking of ash residue beyond the interior of the building by the exiting trucks. Facility exterior grounds shall be maintained in a manner free of the accumulation of ash residue in compliance with requirements 36(c) and 94 of this Permit. [N.J.A.C. 7:26- 2]

103. Interior storage of ash residue and recovered metals shall be restricted to the ash residue storage building. The metal recovery systems shall be maintained in an operable condition at all times. Storage of ash residue and recovered metals in truck bodies or containers is allowed on the facility tipping floor only during those hours when waste deliveries are prohibited by requirement 84 of this Permit. [N.J.A.C. 7:26- 2]

104. The permittee shall submit copies of any new contracts executed with the owner(s) of disposal facilities designated to receive bypass waste, non-processible waste, and non-hazardous ash residue, and the haulage firm(s) contracted to transport said materials. [N.J.A.C. 7:26-2]

105. The permittee shall implement and maintain a contingency plan for the secure handling, storage, transport and disposal of ash residue that may be found to be hazardous after analysis, and any suspect hazardous waste segregated from the incoming waste received at the facility. As part of the contingency plan, a contract shall be executed and maintained with a licensed hazardous waste disposal facility for the purpose of disposing any ash residue generated that may be proven hazardous after analysis, as well as any suspected hazardous waste that may be segregated from the incoming waste received at the facility. Copies of any new contracts shall be submitted to the Department, when executed. [N.J.A.C. 7:26-2]

Subject Item: SWDG787462 - Thermal Destruction

106. The permittee shall maintain written procedures for the hazardous waste manifest program that will be followed, in accordance with Federal and State requirements. Ash residue and any unacceptable waste materials that may be found to be hazardous after analysis, shall be transported by a licensed hauler to the permitted hazardous waste disposal facility retained by the permittee for that purpose. [N.J.A.C. 7:26- 2]

107. A finalized plan or program shall be maintained for the secured storage of ash residue, pending the receipt of the analytical results used in the classification of the residue for disposal, during any ash residue re-characterization analysis that may be required. If such storage cannot be accommodated and/or approved by the Department, residue generated during any such re-characterization period shall be manifested and transported as hazardous waste, and disposed of in accordance with its classification and the applicable laws in the State of disposal. [N.J.A.C. 7:26-2]

108. Material sampling methods, sample preservation requirements, sample handling times and decontamination procedures for field equipment shall conform to applicable industry methods as specified in the NJDEP Field Sampling Procedures Manual. Other methods may be used on written approval from the Division of Solid and Hazardous Waste. [N.J.A.C. 7:26- 2]

109. Residual ash from facility operations shall be analyzed in accordance with the following schedule: Confirmatory Toxicity Characteristic Leaching Procedure - Monthly, with analysis of a minimum of four samples for cadmium, chromium, lead, mercury, and selenium, as described below; Re-Characterization Toxicity Characteristic Leaching Procedure - As required, during a minimum period of 8 weeks, as described below; Total Dioxins and Furans - Samples collected during the period of time encompassing any stack-testing event conducted for dioxins and furans and analyzed using EPA Test Method 1613B, as described below. [N.J.A.C. 7:26-2]

110. During Confirmatory testing, the residual ash generated by the facility shall be sampled in accordance with the following protocol. One sample of sufficient size and of equal proportion shall be collected every hour. All samples shall be collected from the residue conveyor (upstream of the discharge point to the storage bunker) in such a manner that the samples collected shall contain both bottom ash and fly ash in a mixed ratio representative of the combined ash residue generated for disposal or reuse. Daily composite samples shall be prepared by combining all samples collected during each day. The resulting daily composite samples shall be further combined into a monthly composite sample. A minimum of four (4) samples shall be taken from the monthly composite for analyses. Each sample shall be analyzed for the following parameters using Toxicity Characteristic Leaching Procedure (TCLP): cadmium, chromium, lead, mercury, and selenium. [N.J.A.C. 7:26-2B.8(m)]

111. During any stack-testing event measuring dioxin emissions to the atmosphere, one sample of residual ash of sufficient size and of equal proportion, shall be collected every hour during the period in which stack testing occurs. All samples shall be collected from the location identified in requirement 110 of this Permit. Samples shall contain both bottom ash and fly ash in a mixed ratio representative of the combined ash residue slated for disposal. A composite sample representative of the ash residue generated during the stack-testing event shall be prepared by combining all hourly samples collected into a single composite sample. One sample shall be taken from the composite sample and analyzed for total TCDDs (17 2,3,7,8-substituted PCDD and PCDF congeners) using EPA Test Method 1613B. [N.J.A.C. 7:26- 2B.8(m)]

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112. A new eight-week ash residue characterization period may be required by the Department if there is a significant change in facility processes and/or operations; if there is a significant change in the type of waste(s) received for disposal at the facility; or if the results of the monthly analyses demonstrate that one or more of the parameters exceed the TCLP regulatory limits. Re-characterization analysis will be parameter-specific in the instance where the analysis indicates concentrations in the sample extract are above the defined regulatory threshold for that parameter, resulting in the waste residue requiring reclassification as a hazardous waste. If there is a significant change in facility processes and/or operations, or there is a significant change in the type of waste(s) received for disposal at the facility, then the re-characterization analysis shall include the full spectrum of listed TCLP parameters. [N.J.A.C. 7:26- 2]

113. During any eight-week re-characterization period, one sample of sufficient size and of equal proportion shall be collected every hour. All samples shall be collected from the location identified in requirement 110 of this Permit. Samples shall contain both bottom ash and fly ash in a mixed ratio representative of the ash residue slated for disposal. Daily composite samples shall be prepared by combining all samples collected during each day. The resulting daily composite samples shall be further combined into a weekly composite sample. A minimum of four (4) samples shall be taken from the weekly composite for analyses. The permittee shall retain an equivalent portion of each weekly composite sample collected during this eight-week period, so that the Department may conduct follow-up analyses when necessary. The samples retained shall be clearly marked for identification, appropriately preserved using approved techniques, and stored at the facility for a period of sixty (60) days from the date the composite sample is transferred to the laboratory for analysis. [N.J.A.C. 7:26- 2]

114. During the eight-week residue re-characterization period, each week's ash residue shall be stored separately until the analytical results from that week's composite sample are received, and a determination is rendered on the hazardous or non-hazardous nature of the material. [N.J.A.C. 7:26-2]

115. If the results of the analyses equal or exceed the TCLP parameter-specific regulatory threshold, that ash shall be disposed of at the hazardous waste disposal facility secured by the permittee for that purpose. If the material is determined to be non-hazardous, it shall be disposed of at a landfill permitted to receive waste ID number 27I as defined at N.J.A.C. 7:26-2.13(g), and in accordance with the Essex County District Solid Waste Management Plan, as applicable. [N.J.A.C. 7:26-2]

116. At the completion of the eight-week re-characterization period, the monthly confirmatory ash residue sampling and analysis regimen outlined in requirement 110 of this Permit, shall not be re-instituted without express written approval from the Division of Solid and Hazardous Waste. [N.J.A.C. 7:26-2]

Subject Item: SWDG787462 - Thermal Destruction

117. All analyses called for as a condition of this permit shall be performed by a laboratory approved, and/or certified by the Department for those specific analyses. The permittee shall submit each set of analytical results, with the appropriate statistical analysis, to the Division of Solid and Hazardous Waste upon the receipt of said results. The following information shall accompany the analytical reports: the date(s), time(s), and place of sampling and analysis; the chain of custody report for all samples collected; the names of the individual(s) who performed the sampling, compositing, and analysis; the sampling and analytical methods used and/or protocols followed (include the minimum detection levels for the analytical procedures utilized, and in the case of TCLP determinations, include the initial and final pH of the sample); and, the dated signature and certification of the sampling and anlytical report by an authorized agent of the permittee. The permittee shall retain all analytical reports at the facility for a period of three (3) years from the date of analysis. [N.J.A.C. 7:26- 2B.8(r)]

118. All truck bodies or containers used to remove ash residue, unprocessible waste materials and recovered metal, shall be sealed to prevent leakage and shall not be filled to levels that permit overflow or spillage during transport. The ash residue and unprocessible waste removal vehicles (truck bodies and/or containers) shall be covered to prevent spillage or scattering by wind during transport. [N.J.A.C. 7:26-3.4]

119. Trucks removing recovered metals, that are loaded in such a manner that the recovered metals extend above the level of the container or truck body, shall be covered to prevent spillage during transport. Trucks which are loaded so that the recovered metals do not extend above the level of the container or truck body, shall be operated in a manner that prevents littering, leakage, spillage or emissions of the recovered metals or the ash residue entrained on the recovered metals. In addition, rain or snow shall be prevented from accumulating in the bottom of the truck body or container at all times. [N.J.A.C. 7:26-3.4]

120. Ash residue and recovered metal loading shall be conducted solely within the confines of the ash residue storage building, in a controlled manner that minimizes dusting and prevents the tracking of ash to the exterior of the building in accordance with requirement 102 of this Permit. [N.J.A.C. 7:26-2]

121. To the maximum extent possible, ash residue removal operations by truck shall be conducted during periods of off-peak traffic on the surrounding public roadways, and shall utilize major arteries that transgress non-residential areas wherever possible. Exterior storage of ash residue, unprocessible waste, or recovered ferrous and non-ferrous metal in loaded trucks is prohibited. [N.J.A.C. 7:26- 2]

122. In addition to the reporting requirements of requirement 28 of this Permit, the permittee shall maintain the following records of facility operations on a daily basis and shall submit a monthly summary report of the daily totals for the reportable items listed below, which shall also include the monthly totals for each item. This report shall be submitted to the following address, before the 20th of the following month: Chief, Bureau of Solid Waste Permitting, Division of Solid and Hazardous Waste, PO Box 420 Trenton, New Jersey 08625-0420. [N.J.A.C. 7:26- 2]

Subject Item: SWDG787462 - Thermal Destruction

123. Monthly summary reports shall be signed, certified, and dated by an appropriate authorized agent for the facility. The information submitted shall include, but not be limited to the following: the weight and origin of solid waste delivered to the facility for each waste type permitted by this Permit; the weight of unprocessible solid waste removed for alternate disposal, and the facility receiving that waste for disposal; the weight of ash residue removed for disposal, and the facility(s) receiving the residue for disposal; the weight of recovered metal removed, and the facility(s) receiving the recovered material; the quantity of steam generated (in pounds) for each combustion unit over each discrete 4 hour block of time; the allowable 4 hour block maximum steam production rate for the reporting priod, as determined in accordance with requirement 88 of this Permit; the total electrical energy generated (in kilowatt-hours per day); and, the net electrical energy exported. [N.J.A.C. 7:26-2]

124. Pursuant to N.J.A.C. 7:26-6.4, the monthly summary report shall be supplemented with information regarding the sources of wastes received during the reporting month and the transportation and/or disposal pattern associated with such wastes. [N.J.A.C. 7:26-2]

125. Operations records shall be maintained on the premises for a three-year period, and shall be made available for inspection by Department personnel upon request. [N.J.A.C. 7:26-2B.8(q)]

126. All printed or electronically recorded records generated by the facility's monitoring and control systems through log printers, strip chart recorders or other means shall also be kept on file at the facility for a period of at least three (3) years from the date of data collection, and such records shall be made available for inspection by the Department upon request. [N.J.A.C. 7:26-2B.8(q)]

127. Under no circumstance shall the permittee recover metal from fly ash or combined fly and bottom ash. Metal recovery shall be from bottom ash only. During periods of maintenance of the ash handling system, metal recovery is prohibited. [N.J.A.C. 7:26- 2]

Exhibit 17

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790
P: (631) 444-0365 | F: (631) 444-0360
www.dec.ny.gov

SW

Received
NYS Dec - Region One
DEC 4 2015
Division of
Materials Management

November 30, 2015

Covanta Hempstead Company
600 Merchants Concourse
Westbury, NY 11590

RE: Permit No.: 1-2820-01727/00031

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit identified above. Please carefully read all permit conditions carefully to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

This permit must be kept available on the premises of the facility at all times and presented upon request. You should anticipate inspections conducted pursuant to issuance of this permit.

Sincerely,

Susan V. Ackerman
Permit Administrator

SVA/ls

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
COVANTA HEMPSTEAD COMPANY

600 MERCHANTS CONCOURSE
WESTBURY, NY 11590
(516) 683-5400

Facility:
HEMPSTEAD RESOURCE RECOVERY FACILITY
600 MERCHANTS CONCOURSE
WESTBURY, NY 11590

Facility Application Contact:
Brian Aerne
Covanta Hempstead Company
600 Merchants Concourse
Westbury, NY 11590
(516) 686-5438

Facility Location: in HEMPSTEAD in NASSAU COUNTY
Facility Principal Reference Point: NYTM-E: 619.019 NYTM-N: 4510.635
Latitude: 40°44'17.0" Longitude: 73°35'25.5"

Authorized Activity: Operate a waste-to-engery combustion facility producing no more than 6,250,000 thousand pounds of steam during any consecutive 12-month period (based on a nominal charging rate of 950 tons of MSW per day per combustor and 5,000 BTU per pound of MSW). The facility consists of three identical mass burn, waterwall-type combustors whose waste stream is municipal solid waste, which includes non-hazardous residential, commercial, and governmental and/or institutional wastes, and other non-hazardous industrial waste streams as approved by the Department on a case-by-case basis.

Solid Waste Management Facility No.: 30E06

Permit Authorizations

Solid Waste Management - Under Article 27, Title 7
Permit ID 1-2820-01727/00031
Renewal Effective Date: 12/2/2015 Expiration Date: 12/1/2020

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: SUSAN ACKERMAN, Deputy Regional Permit Administrator
Address: NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY 11790 -3409

Authorized Signature: ______________________ Date 12/2 /2015

Distribution List

Brian Aerne
OMAR F CHOWDHURY

Permit Components

SOLID WASTE MANAGEMENT PERMIT CONDITIONS

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

SOLID WASTE MANAGEMENT PERMIT CONDITIONS

1. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the permit application, plans and materials prepared by the premittee and/or the permittee's consultant on the date(s) specified in Special Condition #2.

2. **Terms of Operation, Approval for Changes** The facility shall be operated in conformance with :
   a. Terms and conditions of this permit;
   b. Current 6 NYCRR Part 360 Solid Waste Management Facilities regulations, or any revisions hereafter promulgated; and
   c. The most recent Department-approved manuals, plans, and programs required by the Part 360 regulations.

Any revision to the above approved documents identified in item (c) of this condition or to the operations at this site requires prior written approval from the Department. The permittee shall not add a facility component that would otherwise qualify as an exempt or registered facility, unless the permittee first receives a modified permit to incorporate the additional component of the operation. If any of the above documents conflict with any condition of this permit, the permit condition shall prevail.

A copy of this permit and the above regulations and engineering documents are to be available for reference at the facility site at all times.

3. **Permit Renewal** All manuals, plans, and programs must be updated no less frequently than each time the permit is renewed. The complete renewal application shall be submitted at least 180 days prior to the expiration of this permit.

4. **Submittal of Updated Engineering Report** No later than 180 days from the effective date of this permit, the permittee must submit the updated engineering report and related documents to the Department. This report must explicitly highlight the updated Ash Management System and Metal Separator System.

5. **Authorized Activity** Permitted activities are limited to the delivery, unloading and combustion of solid waste, loading, transfer of ash residue, recovered materials, bypass waste. No other solid waste activities regulated under 6 NYCRR Part 360 are to be conducted at the Facility, unless allowed for as a special permit condition.

The permittee may receive and combust only household waste and non-hazardous commercial waste, and pursuant to a variance issued by the Department on May 9,2002, wood chips infested by the Asian Long Horned Beetle. In addition, non-hazardous industrial wastes may be accepted with prior written approval of the Regional Materials Management Engineer or his designee. All requests should be submitted on a form47-19-7,"Application for Treatment or Disposal of an Industrial Waste Stream"along with supporting information at least two weeks in advance of requested acceptance. Approvals of new applications shall be valid for either one year or until any information on the approved application changes whichever is sooner. Approvals of renewal applications shall be valid for three years or until any information on the renewed applications changes, whichever is sooner.

The permittee shall not charge or process more waste than which results in the production of more than 6,250,000 thousand pounds of steam during any consecutive 12-month period. Department approved non-hazardous industrial waste shall not exceed more than 10% of the daily throughput, unless written approval is received from the Department.

The facility may also receive and combust Animal and Plant Health Inspection Service (APHIS) wastes per the United States Department of Agriculture (USDA) Agreement, dated September 15, 2015.

6. Unacceptable Wastes No untreated RMW, pathological waste, or sewage sludge may be processed at this facility unless specifically authorized in writing by the Department. Sharps as defined in Public Health law Section 1389-aa must be treated and destroyed, prior to acceptance at the facility. No hazardous waste as defined in 6NYCRR Part 371, which is subject to regulation under 6NYCRR Parts 370 through 374 and 376, and no radioactive waste as defined in 6NYCRR Part 380, may be accepted at this facility.

7. Tipping Floor The permittee shall maintain a tipping floor "clean hour" between 11:00 PM Sunday and 12:00 AM Monday each week. Waste found on the tipping floor during the "clean hour" is a violation of this permit and the facility shall immediately initiate bypassing waste until "clean hour" can be effectively maintained. The Department reserves the right to halt any storage of MSW on the tipping floor, if in its sole judgement such accumulation creates a hazard to safe operations on the tipping floor.

8. Ash Management Loading of transportation containers or vehicles with ash residue must only be done inside an enclosed structure. Ash stored outside must be contained in leak-proof and covered containers. Ash must be analyzed for leaching potential upon exposure to non-acid liquids and for total contents as required by 6 NYCRR Part 360-3.5(d), except where modified by the variance approved by the Department as stated below:

- Ash testing for volatile matter as per Part 360-3.5(c)(2)(i) shall be conducted as follows:
  i. On a semi-annual basis if volatile matter remains below 10%;
  ii. On a monthly or more basis(as determined by the Department) if volatile matter exceeds 10 percent in addition to the requirements of 360-3.5(c)(2)(i).

- At all times ash sampling protocal must be followed.

- All other testing requirements remain in effect.

The permittee must notify the Department at least 72 hours prior to commencement of the semi-annual ash sampling conducted for the purpose of assuring compliance with this permit.

9. Signs The permittee shall post signs showing hours of operation, and indicating that hazardous waste, medical waste, and asbestos waste are prohibited from being accepted at the facility. The signs shall be located so that they are visible to any vehicles and/or person approaching the facility.

10. Waste Control An attendant shall be on duty during all hours of operation. The attendant shall inspect all vehicles entering the facility, rejecting any loads containing unauthorized material.

The permittee shall conduct sampling and testing for verification that Department-approved wastes are nonhazardous using the methods described in the approved waste control plan.

11. Control of Nuisance Conditions Odors, dust, insects, vectors, noise, blowing litter and other potential nuisances shall be adequately controlled at all times. The permittee shall immediately implement any controls required by the Department including cessation of facility operations.

12. Fire Protection and Detection The permittee shall maintain fire protection and detection equipment in accordance with local laws and ordinances.

13. Event Notification The Permittee shall notify the Department within 24 hours of any emergency, breakdown or unplanned shutdown which materially affects proper pit management or requires the facility to cease operations for a period of 48 hours or more.

14. Ultimate Disposal of Waste All ash, bypass waste, as well as any and all non-burnables must be disposed of at an Department authorized facility, or if out of state, disposed of at a properly authorized facility in the out of state location. Ash which is determined by applicable analyses to be hazardous must either be treated to eliminate its toxicity characteristics or must be disposed of in a hazardous waste landfill.

15. Unauthorized Waste The permittee must notify the Department within 24 hours of any delivery of unauthorized medical waste, hazardous waste or low level radioactive waste. A contract with a permitted Part 364 transporter for the removal of any hazardous waste delivered to the Facility must be in place and on file at the Facility and with the Division of Materials Management.

16. Access The permittee must restrict the presence of and must minimize the possibility for any unauthorized entry onto the facility. A description of the security measures must be updated as they change and must include, but not be limited to, a means to control entry at all times through the gates or other entrances to the facility (as by a 24 hour surveillance system which continuously monitors and controls entry, or an artificial or natural barrier). Signs legible from a distance of at least 25 feet that read" VISITORS AND UNAUTHORIZED PERSONNEL MUST REPORT TO THE OFFICE" must be posted at each entrance to the facility and at other locations, in sufficient numbers to be seen from any approach to the facility.

17. Maintenance and Repair of Facility The permittee shall at all times properly operate and maintain this facility. Proper operation and maintenance includes, but is not limited to, effective performance, adequate funding, adequate operator staffing and training, and adequate process and laboratory controls, including appropriate quality assurance/quality control procedures in accordance with the requirements of this permit and as described in the Operation and Maintenance Manual. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

18. Comprehensive Recycling Analysis The permittee must not accept at the facility solid waste which was generated within a municipality which has either not completed a Comprehensive Recycling Analysis (CRA) or is not included in another municipality's CRA satisfying the requirements of 6NYCRR Part 360-1.9(f) which has been approved by the Department and implemented the recyclables recovery program determined to be feasible by the analysis.

19. Municipal Service Contracts The permittee must include in each of the permittee's service contracts provision that:

a. Each municipality whose solid waste is to be accepted at the facility must have a CRA satisfying the requirements of 6NYCRR 360-1.9(f), and an implemented recyclables recovery program determined to be feasible by that analysis, unless for the service area of the facility, either another municipality has such analysis and the Department approved it and that analysis addressed the waste stream of that municipality, or a local solid waste management plan that addressed all components of such analysis, is in effect.

b. The Department may direct the permittee to refuse accept solid waste from any municipality that is not complying with paragraph (a) of this condition.

20. Recordkeeping Requirements The permittee shall maintain the following records at the facility for no less than 7 years from the date of creation and be available immediately to the Department upon request:

a. Daily log of solid waste received and transported from the facility which includes:

- i. Type, quantity, and origin of the solid waste received.
- ii. Quantity and destination of all recyclables.
- iii. Quantity and destination of all non-recyclables and residuals transported for disposal.

b. All weight tickets, hauling receipts, disposal receipts, invoices, tracking documents, etc. to support entries made into the daily log.

21. Reporting Requirements All reports and submittals shall be in accordance with 6 NYCRR Part 360, the approved Operation and Maintenance Manual, and the following:

a. The monthly steam production, the rolling annual total steam production, and the quantity and percentage of non-hazardous industrial wastes processed shall be reported to the Department on a monthly basis.

b. Quarterly and Annual Reports shall include tons of MSW processed (by month), as well as theamounts of steam produced, industrial waste processed, and cardboard and non-ferrous metal removed from the waste stream.

c. Within 90 days of sampling and testing of a Department approved waste, results shall be submitted to the Department.

d. The original copies of the reports shall be sent to the Region 1 Office located at New York State Department of Environmental Conservation, Division of Materials Management, 50 Circle Road, SUNY@ Stony Brook, Stony Brook, NY 11790.

e. A copy of the annual report shall also be sent to Central Office at New York State Department of Environmental Conservation, Division of Materials Management, Bureau of Permitting and Planning,625 Broadway, 9th Floor, Albany, NY 12233-7253.

22. Environmental Monitor The environmental monitor shall be funded in accordance with the following:

a. The permittee shall fund environmental monitoring services to be performed by or on behalf of the Department. These monitoring services will include, but not be limited to, the scope of work in an annual environmental monitoring work plan which is incorporated by reference and enforceable under this permit.

b. The permittee shall provide to the Department on an annual basis the funds necessary to support the activities set forth in the annual environmental monitoring work plan. The sum to be provided will be based on the annual budgeted amount and is subject to annual revision. Subsequent annual payments shall be made for the duration of this permit or until the environmental monitoring services are no longer necessary, whichever comes first.

c. The permittee shall be billed annually, prior to the start of each State Fiscal Year (SFY) (April 1). If this permit is to first become effective subsequent to April 1, the initial bill will be for an amount sufficient to meet the anticipated cost of the environmental monitoring services through the end of the current SFY.

d. The Department may revise the required annual bill on an annual basis to include all of the Department's estimated costs associated with the environmental monitoring services. The annual revision may take into account such factors as inflation, salary increases, changes in the fringe benefits rate, changes in operating hours and procedures, changes in non-personal service costs (including travel, training, sampling and analytical, and equipment costs, etc.), an increase or decrease in the level of environmental monitoring services necessary, and an increase or decrease in the number of environmental monitors. Upon written request by the permittee, the Department shall provide the permittee with a written explanation of the basis for any revisions.

e. Prior to making its annual payment, the permittee will receive, and have an opportunity to review, an annual environmental monitoring work plan that the Department will undertake during the year.

f. Payments are to be made in advance of the period in which they will be expended and shall be made in full within 30 days of receiving a bill from the Department. The bill from the Department to the permittee will provide information regarding to whom payments should be made payable and the address to which payments should be sent.

g. Failure to make the required payments shall be a violation of this permit. The Department reserves all rights to take appropriate action to enforce the above payment provisions.

h. The environmental monitor shall, when present at any of the permittee's facilities, abide by all of the permittee's health and safety and operational requirements and policies, if such requirements and policies exist and provided they are not inconsistent with Department policies and labor management contracts, and further provided, however, that this shall not be construed as limiting the environmental monitor's powers as otherwise provided for by law and shall not result in the environmental monitor being afforded less protection than otherwise provided to the environmental monitor by State and Federal health and safety requirements.

i. The environmental monitor shall receive from the permittee all general and site-specific safety training which is normally given to new facility/site employees for all areas of the facility or site. This training will be a supplement to the health and safety training that the environmental monitor receives from the Department.

j. The permittee shall immediately furnish to the environmental monitor any facility/site health and safety and operational requirements and policies. Within five (5) days of any revision to the facility/site health and safety and operational requirements and policies, the permittee shall furnish to the environmental monitor the health and safety and operational requirements and policies.

k. The environmental monitor shall be permitted to use environmental monitoring and data collection devices (e.g., photo ionization detectors, cameras, video recording devices, computers, cell phones, etc.) deemed necessary by the Department to evaluate and document observed conditions. Copies of the data or images collected from areas where confidentiality is a concern shall be provided to the permittee upon their request. The permittee may request the data and images be considered confidential information if appropriate.

l. It will remain the responsibility of the permittee to contact the Spill Hotline or any Division within the Department regarding any required notification of any spill, release, exceedances etc. Notification to the environmental monitor will not be considered sufficient to replace and required notifications.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY11790 -3409

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 180 days before permit expiration for the following permit authorizations: Solid Waste Management.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Exhibit 18

SOLID WASTE FACILITY PERMIT

Facility Permit Number: 19-AK-0083

1. Name and Street Address of Facility:

Southeast Resource Recovery Facility (SERRF)
118 Pier S Ave
Long Beach, CA 90802

2. Name and Mailing Address of Operator:

City of Long Beach
120 Pier S Ave
Long Beach, CA 90802

3. Name and Mailing Address of Owner:

Southeast Resource Recovery Facility (SERRF) Authority, a Joint Powers Authority consisting of the City of Long Beach, and the Los Angeles County Sanitation District No. 2
120 Pier S Avenue Long Beach Ca 90802

4. Specifications:

a. Permitted Operations:

- ☐ Solid Waste Disposal Site
- ☒ Transfer/Processing Facility (MRF)
- ☐ Composting Facility /Green Material
- ☒ Transformation Facility
- ☐ Other:

b. Permitted Hours of Operation:

Receipt of Refuse/Waste...6:00am - 6:00pm, Monday - Saturday

Waste processing and handling.................................24 hours a day, 7 days a week

c. Permitted Maximum Tonnage:

Includes municipal solid waste, narcotics, and non-hazardous inert waste..2,240 tons per day (TPD)

d. Permitted Traffic Volume:

.... N/A vehicles per day

e. Key Design Parameters (Detailed parameters are shown on site plans)

	Total	Disposal	Transfer/Processing	Transformation	Composting
Permitted Area (acres)	15		15	15	
Design capacity	2,240 TPD		2,240 TPD	2,240 TPD	
Max. Elevation (ft. MSL)					
Max. Depth (ft. MSL)					
Estimated Closure Year					

Upon a significant change in design or operation from that described herein, this permit is subject to revocation or suspension. The attached findings and conditions are integral parts of this permit and supersede the conditions of any previously issued solid waste facility permit.

5. Approval

D Hanson Lugo

Approving Officer Signature

Dorcas Hanson-Lugo, Chief
Solid Waste Management Program
Permitting and Surveillance

6. Local Enforcement Agency:

County of Los Angeles
Department of Public Health
Solid Waste Management Program
5050 Commerce Drive
Baldwin Park, California 91706
(626) 430-5540

7. Date Received by CalRecycle:

July 31, 2015

8. CalRecycle Concurrence Date:

August 19, 2015

9. Permit Issued Date:

August 19, 2015

10. Permit Review Due Date:

June 26, 2024

11. Owner/Operator Transfer Date:

N/A

12. Legal Description of Facility:

Portions of Lots 13 & 14 of Tract No. 751, as per map filed in Book 16, pgs. 26 & 27 of Maps, Official Records (see current RSI Exhibit "A")

13. Findings:

a. This permit is consistent with the Countywide Integrated Waste Management Plan which was approved by the former California Integrated Waste Management Board (CIWMB) now the Department of Resources Recycling and Recovery (CalRecycle) on June 23, 1999. The facility is identified in the June 1997 Los Angeles County Countywide Siting Element, pursuant to Public Resources Code (PRC) Section 50001(a).

b. This permit is consistent with the standards adopted by CalRecycle pursuant to PRC Section 44010.

c. The design and operation of the facility is consistent with the State Minimum Standards for solid waste handling and disposal as determined by the Local Enforcement Agency (LEA), pursuant to PRC Section 44009.

d. The local fire protection agency has determined that the facility is in conformance with the applicable fire standards, pursuant to PRC Section 44151.

e. A Notice of Exemption for the reduction of the facility's acreage was filed and posted on February 19, 2015 with the Los Angeles County Clerk.

f. This permit does not supplant or modify local land use entitlements or local agencies' authority to enforce local entitlements. It is recognized by the LEA that the operator must comply with the provisions of the Integrated Waste Management Act (IWMA), state regulations and the terms and conditions of this permit as well as other regulatory requirements and applicable local land use measures which govern the operator's activities at the site. If the requirements inadvertently overlap, it is expected that the operator will comply with the more stringent requirements in order to maintain compliance. Non-compliance with another agency's requirement may not constitute a violation of this permit, the IWMA, or state regulations.

14. Prohibitions

a. The permittee is prohibited from accepting the following wastes: hazardous, radioactive, untreated medical (as defined in the California Code of Regulations, Section 117600-118360 of the Health and Safety Code), liquid, designated, or other wastes requiring special treatment or handling, except as identified in the Report of Station Information and unless such waste is specifically listed below*, and as approved by the LEA and other federal, state, and local agencies.

b. Scavenging is not permitted by customers or employees at the facility.

*Narcotics under the control of law enforcement agencies.

15. The following documents describe and/or restrict the operation of this facility:

Document	Date	Document	Date
Report of Station Information (RSI)	July 2015	Notice of Exemption	Feb 19, 2015
Conditional Use Permit Resolution No. 25642	12/06/1983	South Coast Air Quality Management District Permit	01/03/2014
U.S. EPA Air Permit No. NSR 4-49 LA 83-01	10/22/1996		

16. Self-Monitoring:

The owner /operator shall submit the results of all self-monitoring programs to the LEA within 15 days of the end of the reporting period (*for example, 1st quarter = January-March, the report is due by April 15, etc. Information required on an annual basis shall be submitted with the 4th quarter monitoring report, unless otherwise stated*).

Self-Monitoring Programs	Reporting Frequency
a. The types and quantities of non-hazardous wastes, including inert waste, separated or commingled recyclables received per day. The operator shall maintain these records on the facility's premises for a minimum of three years. These records shall be made available to the LEA and CalRecycle upon request.	**Monthly** (Due within 15 days of the end of each reporting period)
b. The types and quantities of hazardous wastes, medical wastes, or otherwise prohibited wastes found in the waste stream and the disposition of these wastes.	
c. All incidents of unlawful disposal of prohibited materials and the operator's actions taken. Indicate those incidents which occurred as a result of the random load checking program. Incidents mean that the hauler or producer of the prohibited materials is known.	
d. Reports of all special or unusual occurrences and the operator's actions taken to respond to these occurrences. (Notification to the LEA is required within 24 hours of the special occurrences)	
e. Copies of all written complaints and records of complaints received by telephone regarding this facility and the operator's actions taken to resolve these complaints. (Notification to the LEA is required within 24 hours of receiving complaints.)	
f. Record of receipt of a Notice of Violation from any regulatory agency. (Notification to the LEA is required within 24 hours of receiving a Notice of Violation from any regulatory agency.)	

17. LEA Conditions:

A. Standard Requirements

1. The operator shall comply with all applicable State Minimum Standards for Solid Waste Handling and Disposal as specified in Division 7 of Title 14 California Code of Regulations (14 CCR).

2. The facility shall comply with all mitigation measures specified in the certified environmental documents that are within the authority of the LEA and are contained in a mitigation monitoring and reporting program pursuant to PRC Section 21081.6.

3. The operator shall provide to the LEA, within the time specified, any additional information concerning the design and operation of this facility upon request by the LEA.

4. A copy of this permit and approved RSI, as amended, shall be maintained at the facility so as to be available at all to facility personnel and the LEA.

5. The operator shall maintain a log of special or unusual occurrences. Special occurrences include but are not limited to: fires, injury and property damage, accidents, explosions, receipt or rejection of prohibited wastes, lack of sufficient number of personnel pursuant to section 17410.2, flooding, earthquake damage and other unusual occurrences. Each log entry shall be accompanied by a summary of any actions taken to mitigate the occurrences. The operator shall maintain this log at the facility so as to be available at all times to the facility personnel and the LEA. The operator shall notify the LEA within 24 hours of special occurrences by calling the duty officer at County of Los Angeles, Department of Public Health, Solid Waste Management Program at (626) 430-5540.

6. The operator shall notify the LEA within 24 hours of receiving any written or verbal complaints or a violation from any regulatory agency.

7. This permit is subject to review by the LEA and may be temporarily suspended or revoked at any time for sufficient cause, in accordance with Division 30 of the Public Resources Code, part 4, Chapter 4, Article 2, Section 44305 et seq. and associated regulations.

8. The LEA reserves the right to suspend or modify waste receiving operations when deemed necessary due to an emergency, a potential health hazard, or the creation of a public nuisance.

9. The operator shall notify the LEA in writing, of any proposed changes in the facility routine operation or changes in the facility design during the planning stages. In no case shall the operator implement any changes without first submitting a written notice of proposed changes to the LEA <u>at least 180 days</u> before said changes are implemented. Any significant change as determined by the LEA shall require a revision of this permit.

10. The operator and/or owner shall notify the LEA of any plans to encumber, sell, transfer, or convey the operation or ownership to a new operator or owner, <u>at least 45 days</u> prior to the anticipated transfer, by written certification, including information deemed sufficient by the CalRecycle and the LEA. If the facility will not be operated in compliance with the terms and conditions of this permit, the new owner shall be required to file an application for a revision of this permit.

11. The facility shall not receive more than the maximum permitted daily tonnage of 2,240 tons per day of any combination of non-hazardous municipal solid waste, narcotics, and non-hazardous inert material without a revision of this permit.

12. The operator shall provide training to facility personnel to educate them in the identification of untreated medical waste as well as the proper action to take if this type of waste is received at the facility.

B. Particular Requirements

1. Operational controls shall be established to preclude the receipt and disposal of hazardous and prohibited wastes:

   a. The operator shall install and maintain operational and properly calibrated radiation monitors at the scales to detect radioactive materials at all times during the receipt of all incoming waste materials to the facility. Incidents of receipt of suspected radioactive materials, or warnings from the radiation detector, shall be reported immediately to the County of Los Angeles, Department of Public Health, Radiation Management Program at (213) 351-7897 and the LEA.

17. LEA Conditions Continued:

B. Particular Requirements Continued

b. The operator shall comply with the approved Hazardous Waste Loadchecking Program as described in the approved RSI to identify and separate for proper handling of the prohibited waste and materials. Any changes in this program must be approved by the LEA prior to implementation. The following conditions supplement the Loadchecking Program:

(1) Waste vehicle loads are to be randomly inspected; a minimum of one (1) load per every 500 tons of waste or its portion thereof received at the facility per operating day should be inspected. The operator shall inspect all waste loads if there is any reason to believe the loads may contain prohibited wastes.

(2) The loads selected for inspection shall be unloaded in a separate area from the active working floor. Any prohibited or hazardous materials thus found shall be set aside in a secure area to await proper disposition following notification of the producer (if known) and the appropriate governmental agencies.

(3) The LEA may increase the required number of loadchecks if it has reason to believe that the number currently required is inadequate to ensure compliance with the regulations and protection of the public health and safety, and the environment.

(4) The records of loadchecks and the training of personnel in the recognition, proper handling, and disposition of prohibited waste shall be included in the loadchecking program. A copy of the loadchecking program and copies of the loadchecking records for the last year shall be maintained in the operating record and shall be available for review by the LEA and other appropriate regulatory agencies.

(5) The facility shall have an attendant or attendants present during public operating hours. The tipping floor shall be under continual visual inspection by facility personnel, such as spotters, equipment operators, and supervisors. Facility personnel performing duties required by the Loadchecking Program shall be trained prior to assignment. Facility personnel are to be retrained on an annual basis and updated as necessary.

(6) Incidents of unlawful disposal of prohibited materials shall be reported to the LEA monthly as described in the self-monitoring section of this permit. In addition, the following agencies shall be notified immediately of any incidents of unlawful disposal of prohibited or hazardous materials:

(a) Duty officer, Los Angeles County Fire Department, Health Hazardous Materials Division at (323) 890-4045.

(b) Environmental Crimes Division, Los Angeles County District Attorney's Office at (213) 580-8777

(c) California Highway Patrol at (800) 835-5247 or (626) 338-1164.

(d) California Department of Public Health (CDPH) Environmental Management Branch, Medical Waste Program at (213) 977-6877 for any receipt of untreated medical waste.

2. The LEA reserves the right to require the operator to provide more stringent nuisance control measures if those control measures identified in the approved Report of Station Information prove to be inadequate or ineffective.

<END OF DOCUMENT>

February_4_, 2023

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera
CamdenPublicComments@covanta.com

CC: Sean Moriarty, Deputy Commissioner, NJDEP (sean.moriarty@dep.nj.gov)
David Pepe, Director, Office of Permitting and Project Navigation, NJDEP (David.Pepe@dep.nj.gov)

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

I am submitting the following comments under New Jersey Department of Environmental Protection ("DEP") Administrative Order No. 2021-25 ("AO-25") regarding the June 1, 2018 Title V Operating Permit Renewal Application and July 7, 2022 Title V Operating Permit Modification Application (the "Air Modification Application") and the September 30, 2022 Solid Waste Permit Modification Application (the "Waste Application") for Camden County Energy Recovery Associates L.P.'s municipal solid waste incinerator located at 600 Morgan Street, Camden, New Jersey ("Covanta Camden" or "Covanta").

I moved to Waterfront South about 12 years ago. The environment is a constant worry. A few years ago I contracted Cancer. None of my relatives going back to my great grandparents has ever had Cancer. Noone in my family lives in Camden. It is just odd that I would be the one affected. After treatment I have fully recovered.

Covanta is a facility that contributes to adverse cumulative stressors in the overburdened community of Camden's Waterfront South neighborhood. Accordingly, Covanta must go beyond the bare minimum to reduce the facility's emissions and negative impacts on the community.

Our community toured the Covanta plant a few years ago. We were told that a "Bag" would help but it was expensive. We were also told every other Covanta plant has this bag. Just not Camden.

Our community is asking for the following:

- **Need for increased emission control measures**
  - The renewed permits must include all feasible measures to reduce emissions and mitigate the impacts associated with Covanta's air emissions, solid waste handling, truck traffic, and other adverse stressors to which the facility contributes. The mere fact that a particular control measure is not expressly required by any pre-existing EPA or DEP

regulation is no longer an excuse for Covanta's permits to fail to impose that measure. To the extent that any control measure, permit condition, or action recommended in these comments is not required by other EPA or DEP regulations, they are now required by the EJ Law and AO-25 and must be included in the renewed permits.

- **Our health must not be held hostage**
  - Covanta has proposed the baghouse installation as a kind of package deal that comes only with the facility being allowed to accept liquid waste. But neither the EJ Law, the EJ Rule, nor AO-25 allow for such tit-for-tat emission reductions, which hold necessary emission reductions hostage unless a revenue-creating and emission-increasing action is also approved. To so hold would perpetuate the legacy of disproportionate environmental burdens in New Jersey's overburdened communities that the EJ Law is designed to stop. For these reasons, **Covanta must install the baghouse without tying this and other emission reduction measures to approval of the liquid waste injection proposal.**
- **A baghouse is long overdue**
  - Installation of a baghouse is a permit condition that DEP should have required decades ago, and is especially required now that the EJ Law and AO-25 require Covanta to take all feasible measures to reduce its emissions. EPA data shows that in 2001, only 21 out of the 167 total municipal waste combustor units (boilers) in existence at that time had ESPs instead of baghouses.[1] That means that over twenty years ago, over 87% of incinerator boilers already had baghouse controls.
- **Covanta Must Further Reduce its Dioxin Emission Limit.**
  - Covanta has proposed to reduce the Permit's dioxin/furan emission limit of 35 ng/dscm @ 7% O2 down to 13 ng/dscm.[2] But other incinerators have even lower emission limits. For example, the Covanta incinerator in Fairfax, Virginia has a dioxin/furan limit of only 2 ng/dscm. The EJ Law and AO-25 compels the Covanta Camden permit to include all feasible conditions to reduce emissions, and an emission limit that a larger Covanta incinerator achieves is plainly feasible. Accordingly, **Covanta Camden should reduce its dioxin limit to no higher than 2 ng/dscm.**
- **Covanta's risk assessment should account for cumulative impacts**
  - As stated previously, now under the EJ Law and AO-25, applicants seeking permit renewals for polluting facilities in overburdened communities must perform an impact assessment of environmental and public health stressors within the community, and the facility's

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[1] Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors, 70 FR 75348, 75351, 55–56 (proposed rule).
[2] Air Modification Application at 4-6.

contributions to these stressors, taking into account cumulative impacts. Covanta's emissions contribute to cumulative impacts on the Waterfront South community because these emissions deteriorate air quality, contribute to smog, and are linked to increased risk of miscarriages, preterm birth, asthma, developmental issues in children, and more. **Covanta's risk assessment should therefore take into account not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community.**

- **A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 should be required**
  - A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 would benefit the community by providing a more accurate picture of the facility's emissions and enabling Covanta to quickly identify and correct any problems with the facility's operations that cause unusually high emissions. As explained below, the monitoring specified in the Air Permit is insufficient to assure Covanta's ongoing compliance with its HCl, mercury, and PM limits. To ensure the legally required protection for the overburdened community around the Covanta Camden facility, Covanta must install a CEMS for each of these pollutants and the Air Permit must identify each CEMS as a means for assuring Covanta's compliance with applicable CAA requirements.
    - Mercury
      - Mercury, which causes a wide range of adverse health effects including neurological damage, kidney damage, and birth defects, is among the most toxic substances emitted from the Covanta Camden facility. Mercury exposure is especially dangerous for young children and pregnant women, as it can affect the developing brain and nervous system. Ensuring Covanta Camden's mercury emissions are controlled to the maximum degree possible should be among Covanta's highest priorities. A key action that Covanta could take to ensure maximum mercury control is to install a mercury CEMS.For all of these short-term mercury limits, the specified annual testing requirement is insufficient to assure Covanta's ongoing compliance as mandated by Title V and the federal Title V regulations. As with the short-term HCl limits, annual testing does not account for emissions variability that can easily result in Covanta violating mercury limits between stack tests.
    - Particulate Matter (PM)

- Particulate matter can be very hazardous to human health. PM2.5 presents the most danger because it can bypass the body's natural defenses in the nose and throat and enter the lungs. Short-term exposure to PM2.5 can aggravate lung disease, cause asthma attacks and acute bronchitis, and increase susceptibility to respiratory infections. Long-term exposures, such as those experienced by people living for many years in areas with high particulate matter levels, are associated with problems such as reduced lung function and the development of chronic bronchitis, and even premature death. Given the serious health risks posed by PM2.5, Covanta must do everything that it can to minimize its PM and PM2.5 to the maximum extent, including supplementing its existing PM monitoring activities with a PM CEMS.
- The Air Permit subjects Covanta Camden's three municipal waste combustors to various particulate emission limits, for which compliance is demonstrated via an annual stack test.[3] But the air permit has no PM2.5 limit at all. Given the particular dangers of PM2.5 compared to larger particulate matter**, the Permit must include a PM2.5 limit.**

Please address these concerns seriously. We as a community have worked hard to improve the quality of life for ourselves and our neighbors. The extra pollution created by approving this permit defeats our efforts.

Sincerely,

Betty Musetto
416 Jasper St
Camden, NJ 08104

[3] *See, e.g.*, Air Permit U1 OS1/OS3/OS5 Ref. ## 1 to 5.

February 4, 2023

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera
CamdenPublicComments@covanta.com

CC: Sean Moriarty, Deputy Commissioner, NJDEP (sean.moriarty@dep.nj.gov)
David Pepe, Director, Office of Permitting and Project Navigation, NJDEP (David.Pepe@dep.nj.gov)

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

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Covanta negatively impacts the human and environmental health of Camden and the surrounding region. It is a major contributor to environmental pollution and degradation in the overburdened community of South Camden. While this community would be healthier without Covanta here at all, if Covanta is going to continue to burn waste here, they must implement all the best available technology to minimize their emissions and negative impacts on the community.

Covanta's proposal to add liquid waste to their facility is incompatible with the new EJ law that requires polluters in overburdened communities to take all feasible measures to reduce its emissions.

By adding liquid waste, Covanta will be burning more tons of waste than they currently are (and therefore more truck traffic & diesel pollution will be added too). Covanta claims that the liquid waste would take the place of some of the Municipal solid waste (MSW), and not change the maximum amount of their permit, but this statement is misleading. Covanta currently doesn't have enough MSW contracts to run at their full capacity that is in their permits. This means they can keep all of the volume of incoming MSW they currently have, and add the liquid waste volume to fill the gap between what the volume of MSW they are currently receiving and the maximum volume allowed in their permit. **Adding liquid waste is therefore adding additional pollution to this overburdened community**. **Covanta is located in an overburdened community**, so adding another source of pollution to the neighborhood is not legal under the EJ law. **Substances that are considered "non-hazardous" in liquids may become hazardous when burned (combusted) or released into the air as steam.** Covanta also isn't testing the liquids that arrive for heavy metals, halogens, or other hazards. There is **no adequate accountability to ensure that they won't unknowingly burn hazardous liquids that they claim not to allow. The proposed testing is inadequate and does not protect human and environmental health.**

Covanta is also proposing to add the baghouse filters and additional pollution controls. **The baghouse filters should have been installed long ago** and are imperative for them to implement on the fastest time frame possible to mitigate harm to the community. To minimize harm in an EJ overburdened community, (and to fulfill their own EJ policy), **Covanta needs to implement the best available technology.** They should also be required to reduce dioxin limit to no higher than 2 ng/dscm, install SCR and Use a NOx Limit of 50 ppmvd and incorporate new limits for hazardous air pollutants in the permit.

Annual emissions tests are inadequate accountability for this community. Covanta should provide quarterly stack tests in addition to their continuous monitoring, and add HCl, mercury, and PM2.5 to their current continuous emissions monitoring.

Covanta's risk assessment should account for cumulative impacts - not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community.

Sincerely,

Ellen Pavlacka,
Waterfront South Resident

SIERRA CLUB

NEW JERSEY CHAPTER
145 West Hanover St., Trenton, NJ 08618
TEL: [609] 656-7612 FAX: [609] 656-7618
www.SierraClub.org/NJ

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera

February 6, 2023

RE: Covanta Camden Proposed Air Quality Title V Renewal and Minor Modification Permits

Dear Ms. Griselle Rivera,

I am writing on behalf of the New Jersey Sierra Club and our 80,000 plus members and supporters who strongly believe that there is no place for the continuous incineration of waste in a community overburdened by pollution and the health impacts caused by it. The acceptance of yet another form of waste (type 72 liquid waste) by Covanta Camden will further cause harm to the surrounding communities and the environment.

Sierra Club, NJ supports the conversion of the existing spray dryer scrubber on each Municipal Waste Combustor (MWC) to a circulating dry scrubber system, replacement of the electrostatic precipitator on each MWC with a fabric filter baghouse, and improvement of the selective non-catalytic reduction system on each MWC. In general, Sierra Club, NJ supports the installation of control technology that reduces air contaminant emissions, as long as the control technology is the possible best solution (State of Art) for the operation in question.

However, the Sierra Club, NJ strongly opposes the proposed expansion of operation by Covanta Camden into accepting additional waste for incineration, in this particular case, type 72 liquid waste.

Additionally, the Sierra Club, NJ urges Covanta Camden and the New Jersey Department of Environmental Protection (NJDEP) to provide another public hearing opportunity, this time with both the option of in person and virtual for the impacted community at large. Effective announcement of this additional public hearing must be ensured. Lastly, Covanta Camden must provide clear documentation without the beginning and ending of every page being cut off.

Please see below further details regarding the previous statements.

Minor Modification

As stated above, the Sierra Club, NJ supports the installation of better control technology, however it is to our understanding that the impacted community has been requesting the installation of baghouses by Covanta Camden for an extensive period of time and the facility has failed to do so until now with this proposed minor modification. Baghouse control technology is not a new cutting edge technology, but in fact a common effective way of reducing particulate matter emissions. Therefore, Covanta Camden has failed to deliver to the community the cleanest possible air that it could achieve by choosing not to install this control technology. It is very clear to the Sierra Club, NJ as well as the impacted community that the proposed installation of this technology has only come into play while Covanta Camden is requesting the acceptance of an additional type of waste and therefore adding a different spectrum of chemicals (air pollution) to their emissions. The expected emissions by the incineration of typical waste (trash) are certainly not the same type of emissions expected by the combustion of pesticides and pharmaceuticals. Apples to oranges. Therefore, It is unreasonable to make the statement that emissions will not increase by only evaluating the expected emissions from the incineration of trash.

Acceptance of Liquid Waste

Covanta Camden mentions that the liquid waste is to be screened (measure of pH (4-10) and reactivity) upon arrival and prior to incineration for the understanding of whether or not the waste can be accepted and burned. However, Convanta fails to disclose the chemical identity of what they will be accepting, what concentrations are acceptable, and ultimately and most importantly how this will impact the surrounding communities. A measure of reactivity by mixing the incoming and existing liquid wastes is not indicative of reactivity under the presence of heat inside a combustor. Additionally, is the proposed emissions control technology protective enough for the combustion products (and intermediates) generated out of this unidentified liquid waste. This is to explicitly state that without a clear understanding of what is being combusted (composition of liquid waste), the community, nor the NJDEP would know what is being emitted and impacting the community. Without this disclosure of information and transparency, Convanta is simply adding yet another type of pollution and threat to human health while increasing public and community opposition.

SIERRA CLUB

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145 West Hanover St., Trenton, NJ 08618
TEL: [609] 656-7612 FAX: [609] 656-7618
www.SierraClub.org/NJ

NOx and PM Emissions

Table 2.8 in the technical document for the proposed minor modification shows no decrease in the short-term permit allowable emission limit for both PM10 and NOx. The installation of an improved version of control technology, in this case a baghouse, ensures a reduction in PM10 emissions, therefore with it, the permit allowable emission limit must also decrease. A PM10 emissions benefit must be reflected in the permit.

Additionally, it is not clear why short-term NOx emissions are proposed to remain equal in the permit, but long-term are proposed to decrease by 59 tons/yr (16 tons/yr actuals). It is imperative for short-term NOx emissions to drastically decrease in an overburdened community like Camden, as NOx photochemically reacts on a day to day basis with volatile organic compounds (VOCs) generating ground-level ozone. Breathing ground-level ozone can trigger a variety of health problems including worsening bronchitis, emphysema, and asthma.

Public Participation and Accessibility

As stated above, the Sierra Club, NJ urges Covanta Camden and the NJDEP to provide an additional public hearing opportunity, this time with both the option of in person and virtual for the impacted community at large. By providing one exclusive option, those with no computer or connectivity issues cannot participate in a virtual-only meeting (the public hearing on December 8th), and those with complicated schedules or childcare responsibilities, etc. cannot participate in the in-person-only meeting. Access to both options for an additional public hearing is essential, if true accessibility is to be achieved. Additionally, this public hearing must occur during religious holidays.

Effective announcement of this additional public hearing must be ensured. Everyone in the surrounding community must be notified either via mail or in person.

Lastly, as stated above, Covanta Camden must provide clear documentation without the beginning and ending of every page being cut off. Both the Minor Modification and Title V Renewals proposal documents available in the Covanta Camden website are cut off leaving behind important narrative, table headings and units, data in horizontal tables, and horizontally extended diagrams. This makes it impossible for a highly technical document to be fully understood by the public. This is unacceptable.

Sincerely,

Anjuli Ramos-Busot
Director
Sierra Club, NJ

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

February 5, 2023

Via Email

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera
CamdenPublicComments@covanta.com

CC: Sean Moriarty, Deputy Commissioner, NJDEP (sean.moriarty@dep.nj.gov)
David Pepe, Director, Office of Permitting and Project Navigation, NJDEP (David.Pepe@dep.nj.gov)

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

I am submitting the following comments under New Jersey Department of Environmental Protection ("DEP") Administrative Order No. 2021-25 ("AO-25") regarding the June 1, 2018 Title V Operating Permit Renewal Application and July 7, 2022 Title V Operating Permit Modification Application (the "Air Modification Application") and the September 30, 2022 Solid Waste Permit Modification Application (the "Waste Application") for Camden County Energy Recovery Associates L.P.'s municipal solid waste incinerator located at 600 Morgan Street, Camden, New Jersey ("Covanta Camden" or "Covanta").

Covanta negatively impacts the human and environmental health of Camden and the surrounding region. It is a major contributor to environmental pollution and degradation in the overburdened community of South Camden. While this community would be healthier without Covanta here at all, if Covanta is going to continue to burn waste here, they must implement all the best available technology to minimize their emissions and negative impacts on the community.

Covanta's proposal to add liquid waste to their facility is incompatible with the new EJ law that requires polluters in overburdened communities to take all feasible measures to reduce its emissions.

Concerns about adding liquid wastes:

1. **Covanta will be burning more tons of waste than they currently are** (and therefore more truck traffic & diesel pollution too)
    a. Covanta claims that the liquid waste would take the place of some of the Municipal solid waste (MSW), and not change the maximum amount of their permit, but this statement is misleading.
    b. Covanta currently doesn't have enough MSW contracts to run at their full capacity that is in their permits. This means they can keep all of the volume of incoming MSW they currently have, and add the liquid waste volume to fill the gap between what the volume of MSW they are currently receiving and the maximum volume allowed in their permit. **Adding liquid waste is therefore adding additional pollution to this overburdened community**.

2. **Covanta is located in an overburdened community**, so adding another source of pollution to the neighborhood is not legal under the EJ law
3. **Substances that are considered "non-hazardous" in liquids may become hazardous when burned (combusted) or released into the air as steam**
4. Covanta isn't testing the liquids that arrive for heavy metals, halogens, or other hazards. There is **no adequate accountability to ensure that they won't unknowingly burn hazardous liquids that they claim not to allow. The proposed testing is inadequate and does not protect human and environmental health.**

Covanta is also proposing to add the baghouse filters and additional pollution controls

1. **The baghouse filters should have been installed long ago** and are imperative for them to implement on the fastest time frame possible to mitigate harm to the community

2. To minimize harm in an EJ overburdened community, (and to fulfill their own EJ policy), **Covanta needs to implement the best available technology.** They should also be required to:

   - reduce dioxin limit to no higher than 2 ng/dscm
   - Install SCR and Use a NOx Limit of 50 ppmvd
   - Incorporate New Limits for Hazardous Air Pollutants in the permit

3. **Annual emissions tests are inadequate accountability** for this community. Covanta should provide quarterly stack tests in addition to their continuous monitoring, and add HCl, mercury, and PM2.5 to their current continuous emissions monitoring.

4. **Covanta's risk assessment should account for cumulative impacts** - not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community.

Sincerely,

Rosemarie Kolmer	Camden City
name	*affiliation (city or county resident, parishioner)*
Mary Degnan Flynn	Sacred Heart Cedar
name	*affiliation (city or county resident, parishioner)*
Lesly D'Ambola	Camden County / Sacred Heart Parishioner
name	*affiliation (city or county resident, parishioner)*
John Ferry	SACRED HEART & C.C.
name	*affiliation (city or county resident, parishioner)*

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

name	affiliation (city or county resident, parishioner)
Jean Harden	Camden County
Willie Harden	" "
Margaret O'Donnell	Sacred Heart
Robert Rocky Wilson	Camden City
Bhuong Nong	Camden (Sacred Heart)
DUNG VU	Camden City
Anne Nong	Camden County
Zachary Egan	Sacred Heart Camden
Rosemary Halley	Sacred Heart Parish
Allison Egan	Camden County
Clare Dunne	Camden County
Michele DiBerardino	Camden County
Helen C Cooke	Sacred Heart Parish

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

name	affiliation (city or county resident, parishioner)
Bob Cocozza	SACRED HEART
Carol Guerrieri	CAMDEN COUNTY
Dale Guerrieri	CAMDEN COUNTY
Rev Vincent Guest	Sacred Heart Church - Camden
Aletha Cristo	Camden City
Marco Rua Jr	Camden City
Dorian Cruz	Camden City
Ana Valentin	Camden City
Brunilda M.	429 E Camden NJ
Maria Silverio	Camden City
Christine Castrataro	Camden City
Kevin Perez	Camden N. J
Julie Hernandez	Camden N.J

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

name	affiliation (city or county resident, parishioner)
Rosalie Vitale	Camden County
Thalia Vitale	Camden County
Lisa Caswell	Camden County (Collingswood)
DAVID SCANLAN	Sacred Heart PARISHONER
Thomas Herrera	Camden County
Jacqueline Cocozza	Sacred Heart Church
Maria Reza	Camden City
Juan Vieto	Camden City
Donald [illegible]	CAMDEN City
[illegible] White	Camden City
[illegible]	Camden
Derrick Gallashaw	Camden City
[illegible]	Camden City.

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

name	affiliation (city or county resident, parishioner)
Gail B. Gooney	Camden County
Pam Laurenzi	Camden county
John J. Devlin	Sacred Heart
Helen Cummings	Camden County
[illegible]	Camden County
Denise Schorr	Camden County
Joan C. Leonard	Camden County + Parish
[illegible]	Camden County
Celeste Bonfante	Sacred Heart Church, Camden
Helen D. Scanlon	Sacred Heart Church
Caitlyn Cruz	Camden City
RICHARD HOLSEY	CAMDEN CITY
Jose R[illegible]	CAMDEN CITY

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

name	affiliation (city or county resident, parishioner)
Joanne M Cracken	Sacred Heart
Ray McCracken	Sacred Heart Parish
Lan Kim Nguyen	Lawnside NJ
Rosanna [illegible]	Sacred Heart Parish
Kathleen Capezzi	Sacred Heart Parish
John J Capezzi	" " "
S. Partridge	Sacred Heart Parishioner
D. Partridge	Sacred Heart Parishioner
Frances Cicali	Sacred Heart Parishioner
Patricia Kelly	Sacred Heart Parish
Mari Sharron	Sacred Heart Parishioner
Patrick Mulligan	Sacred Heart Parishioner
Bee Beauchemin	Camden County

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

name	affiliation (city or county resident, parishioner)
Mary Heron	Sacred Heart Parishioner
Rod J Herrera	Camden County resident
Patrick J. Brady	Sacred Heart Camden
Marie Mitarotondo	Sacred Heart, Camden, Camden County Resident
Janet Parker	Camden resident / Sacred Heart parishioner
Susan & Burt Hitchcock	Sacred Ht. parishioners
John Shields	SACRED HEART PARISHIONER
Willie Barr	Camden Resident
Geraldine Gamble	Sacred Heart
Kelly Cintron	Sacred Heart School
Lorna Davis	Camden City
Francisca Colcock	Camden County
B. Colton	Sacred Heart Camden

Re: AO-25 Comments on Covanta Camden Air and Waste Permit Renewals

Dale Mezzacappa — Parishioner, Sacred Heart Camden
name — affiliation (city or county resident, parishioner)

Ruth Hunter — Sacred Heart Parisioner
name — affiliation (city or county resident, parishioner)

Frank [illegible] — Camden County resident
name — affiliation (city or county resident, parishioner)

Susan Cohen — Parishoner Sacred Heart Camden
name — affiliation (city or county resident, parishioner)

Susan Cedrone — parishioner
name — affiliation (city or county resident, parishioner)

Luis Muzzant — CAMDEN ROS.
name — affiliation (city or county resident, parishioner)

Queen schwing — Sacred Heart parishoner
name — affiliation (city or county resident, parishioner)

James A. Schwing — Sacred Heart Parishoner
name — affiliation (city or county resident, parishioner)

Marilyn Peterson — Sacred Heart
name — affiliation (city or county resident, parishioner)

Kathleen Walsh — Camden Co.
name — affiliation (city or county resident, parishioner)

Stephen J. McGeady — Sacred Heart Church Parishioner
name — affiliation (city or county resident, parishioner)

Jonathan Vitale — Camden County
name — affiliation (city or county resident, parishioner)

February _4__, 2023
Must be submitted to the email addresses below before end of day Feb 6th!

Via Email

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera
CamdenPublicComments@covanta.com

CC: Sean Moriarty, Deputy Commissioner, NJDEP (sean.moriarty@dep.nj.gov)
David Pepe, Director, Office of Permitting and Project Navigation, NJDEP (David.Pepe@dep.nj.gov)

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Our community is overburdened by pollution. It has personally impacted my friends and neighbors. My neighbor across the street from me, on Ferry Ave. needs to depend on oxygen. She has lived in this neighborhood since she was a little child. The nearby industry adds to our stress during this Hopefully< post pandemic period. We are worried about our air quality. We have beautiful children in our neighborhood, and an elementary school on Jasper St. and another on Morgan blvd. And one on 10th and Ferry Ave. Nurses can attest to the high incidence of asthma in our schools.

Covanta is a facility that contributes to adverse cumulative stressors in the overburdened community of Camden's Waterfront South neighborhood. Accordingly, Covanta MUST go beyond the bare minimum to reduce the facility's emissions IN OUR community.

- **Need for increased emission control measures**
  - The renewed permits must include all feasible measures to reduce emissions and mitigate the impacts associated with Covanta's air emissions, solid waste handling, truck traffic, and other adverse stressors to which the facility contributes. The mere fact that a particular control measure is not expressly required by any pre-existing EPA or DEP

regulation is no longer an excuse for Covanta's permits to fail to impose that measure. To the extent that any control measure, permit condition, or action recommended in these comments is not required by other EPA or DEP regulations, they are now required by the EJ Law and AO-25 and must be included in the renewed permits.

- **Covanta Camden is a significant stationary source of local pollution**
    - Covanta Camden is the number one stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5").[1] Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide.[2]

-
    - OUR HEALTH IN CAMDEN, AND COLLINGSWOOD, AND PENNSAUKEN AND PHILADELPHIA AND NEIGHBORING TOWNS MUST NOT BE HELD HOSTAGE BY COVANTA. IT'S WRONG. THOSE IN POWER KNOW IT'S WRONG. WE ARE AS PRECIOUS AS YOUR MOST LOVED FAMILY AND FRIENDS. WE ARE NOT A DUMPING GROUND. WE LOVE OUR NEIGHBORS, WE LOVE OUR RIVER, WE LOVE OUR OUR LITTLE BIT OF THE EARTH. THIS IS NOT A QUESTION OF US MOVING. OUR HISTORY HERE IS LONG AND DEEP. WE WILL NOT BE MOVED. WE WILL OPEN THE EYES AND MORE IMPORTANTLY THE HEARTS OF THOSE INVOLVED IN THIS UNWANTED, UNHEALTHY, INCONSIDERATE OPERATION. GIVE US A PLAYGROUND INSTEAD . FIND ANOTHER PLACE TO CONDUCT BUSINESS. FIND A SAFE SPOT, IN AN ISOLATED AREA TO DO THE WORK YOU DO. WHERE EVERYONE WILL BE SAFE, NOT CHALLENGED BY STRESS,WORRY, CONCERN, AND EVEN FOR THOSE WHO MAYBE DON'T HAVE THE CAPACITY TO REALLY UNDERSTAND WHAT IS GOING ON PRESENTLY.

        - Covanta has proposed the baghouse installation as a kind of package deal that comes only with the facility being allowed to accept liquid waste. But neither the EJ Law, the EJ Rule, nor AO-25 allow for such tit-for-tat emission reductions, which hold necessary emission reductions hostage unless a revenue-creating and emission-increasing action is also approved. To so hold would perpetuate the legacy of disproportionate environmental burdens in New Jersey's overburdened communities that the EJ Law is designed to stop. For these reasons, **Covanta must install the baghouse without tying this and other emission reduction measures to approval of the liquid waste injection proposal.**

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[1] Earthjustice et al., *New Jersey's Dirty Secret: The Injustice of Incinerators and Trash Energy in New Jersey's Frontline Communities* 9 (2021), https://earthjustice.org/sites/default/files/files/nj-incinerator-report_earthjustice-2021-02.pdf.

[2] *Id.* at 5.

- **A baghouse is long overdue**
  - Installation of a baghouse is a permit condition that DEP should have required decades ago, and is especially required now that the EJ Law and AO-25 require Covanta to take all feasible measures to reduce its emissions. EPA data shows that in 2001, only 21 out of the 167 total municipal waste combustor units (boilers) in existence at that time had ESPs instead of baghouses.[3] That means that over twenty years ago, over 87% of incinerator boilers already had baghouse controls.

- **Technical talking points about different harmful emissions and a request for increased monitoring and accountability:**
  - **Covanta Must Further Reduce its Dioxin Emission Limit.**
    - Covanta has proposed to reduce the Permit's dioxin/furan emission limit of 35 ng/dscm @ 7% O2 down to 13 ng/dscm.[4] But other incinerators have even lower emission limits. For example, the Covanta incinerator in Fairfax, Virginia has a dioxin/furan limit of only 2 ng/dscm. The EJ Law and AO-25 compels the Covanta Camden permit to include all feasible conditions to reduce emissions, and an emission limit that a larger Covanta incinerator achieves is plainly feasible. Accordingly, **Covanta Camden should reduce its dioxin limit to no higher than 2 ng/dscm.**
  - **Covanta's risk assessment should account for cumulative impacts**
    - As stated previously, now under the EJ Law and AO-25, applicants seeking permit renewals for polluting facilities in overburdened communities must perform an impact assessment of environmental and public health stressors within the community, and the facility's contributions to these stressors, taking into account cumulative impacts. Covanta's emissions contribute to cumulative impacts on the Waterfront South community because these emissions deteriorate air quality, contribute to smog, and are linked to increased risk of miscarriages, preterm birth, asthma, developmental issues in children, and more. **Covanta's risk assessment should therefore take into account not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community.**
  - **A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 should be required**
    - A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 would benefit the community by providing a more accurate picture of the facility's emissions and enabling Covanta to quickly identify and correct any problems with the facility's operations that cause unusually high emissions. As explained below, the monitoring specified in

[3] Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors, 70 FR 75348, 75351, 55–56 (proposed rule).
[4] Air Modification Application at 4-6.

the Air Permit is insufficient to assure Covanta's ongoing compliance with its HCl, mercury, and PM limits. To ensure the legally required protection for the overburdened community around the Covanta Camden facility, Covanta must install a CEMS for each of these pollutants and the Air Permit must identify each CEMS as a means for assuring Covanta's compliance with applicable CAA requirements.

- Mercury
  - Mercury, which causes a wide range of adverse health effects including neurological damage, kidney damage, and birth defects, is among the most toxic substances emitted from the Covanta Camden facility. Mercury exposure is especially dangerous for young children and pregnant women, as it can affect the developing brain and nervous system. Ensuring Covanta Camden's mercury emissions are controlled to the maximum degree possible should be among Covanta's highest priorities. A key action that Covanta could take to ensure maximum mercury control is to install a mercury CEMS.For all of these short-term mercury limits, the specified annual testing requirement is insufficient to assure Covanta's ongoing compliance as mandated by Title V and the federal Title V regulations. As with the short-term HCl limits, annual testing does not account for emissions variability that can easily result in Covanta violating mercury limits between stack tests.
- Particulate Matter (PM)

- Particulate matter can be very hazardous to human health. PM2.5 presents the most danger because it can bypass the body's natural defenses in the nose and throat and enter the lungs. Short-term exposure to PM2.5 can aggravate lung disease, cause asthma attacks and acute bronchitis, and increase susceptibility to respiratory infections. Long-term exposures, such as those experienced by people living for many years in areas with high particulate matter levels, are associated with problems such as reduced lung function and the development of chronic bronchitis, and even premature death. Given the serious health risks posed by PM2.5, Covanta must do everything that it can to minimize its PM and PM2.5 to the maximum extent, including supplementing its existing PM monitoring activities with a PM CEMS.
- The Air Permit subjects Covanta Camden's three municipal waste combustors to various particulate emission limits, for which compliance is demonstrated via an annual stack test.[5] But the air permit has no PM2.5 limit at all. Given the particular dangers of PM2.5 compared to larger particulate matter**, the Permit must include a PM2.5 limit.**

pEACE aLWAYS….ALWAYS, ALWAYS, ALWAYS….

Linda S. Delengowski, Artist, Retired teacher, life long resident of Camden
1718 Ferry Ave. Camden, nj 08104

[5] *See, e.g.*, Air Permit U1 OS1/OS3/OS5 Ref. ## 1 to 5.

February 5, 2023

Via Email

Camden County Energy Recovery Associates, L.P.
600 Morgan Boulevard
Camden, NJ 08104
Attn: Griselle Rivera
CamdenPublicComments@covanta.com

CC: Sean Moriarty, Deputy Commissioner, NJDEP (sean.moriarty@dep.nj.gov)
David Pepe, Director, Office of Permitting and Project Navigation, NJDEP (David.Pepe@dep.nj.gov)

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I write this letter on behalf of the Nick Virgilio Haiku Association, a nonprofit organization that operates a Writers House in Waterfront South. Mighty Writers uses our building to provide after-school programming for children, and the house also serves as a space for arts events and programs for people of all ages.

Environmental hazards in the Waterfront South neighborhood, including degraded air quality from nearby polluters and truck traffic, pose a direct threat to our ability to offer a safe space for program participants in and around our building. We must consider air quality when planning outdoor events in our garden, as many of the people who attend our events are part of vulnerable populations.

Covanta directly contributes to the pollution that degrades the air quality and standard of living in Waterfront South. Covanta Camden is the number one stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5"). Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide.

Given these facts, Covanta must go beyond the bare minimum to reduce the facility's emissions and negative impacts on an already-overburdened community. Covanta must do more.

The renewed permits must include all feasible measures to reduce emissions and mitigate the impacts associated with Covanta's air emissions, solid waste handling, truck traffic, and other adverse stressors to which the facility contributes. The mere fact that a particular control measure is not expressly required by any pre-existing EPA or DEP regulation is no longer an excuse for Covanta's permits to fail to impose that measure. To the extent that any control measure, permit condition, or action recommended in these comments is not required by other EPA or DEP regulations, they are now required by the EJ Law and AO-25 and must be included in the renewed permits.

This first of those measures in the installation of a baghouse, a permit condition that DEP should have required decades ago, and is especially required now that the EJ Law and AO-25 require Covanta to take all feasible measures to reduce its emissions. EPA data shows that in 2001, only 21 out of the 167 total municipal waste combustor units (boilers) in existence at that time had ESPs instead of baghouses.[1] That means that over twenty years ago, over 87% of incinerator boilers already had baghouse controls.

Meanwhile, Covanta has proposed the baghouse installation as a kind of package deal that comes only with the facility being allowed to accept liquid waste. But neither the EJ Law, the EJ Rule, nor AO-25 allow for such tit-for-tat emission reductions, which hold necessary emission reductions hostage unless a revenue-creating and emission-increasing action is also approved. To so hold would perpetuate the legacy of disproportionate environmental burdens in New Jersey's overburdened communities that the EJ Law is designed to stop. For these reasons, **Covanta must install the baghouse without tying this and other emission reduction measures to approval of the liquid waste injection proposal.**

Sincerely,

Robin Palley

Robin Palley
President, Nick Virgilio Haiku Association

[1] Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors, 70 FR 75348, 75351, 55–56 (proposed rule).

Mike Morgan

I am submitting the following comments under New Jersey Department of Environmental Protection ("DEP") Administrative Order No. 2021-25 ("AO-25") regarding the June 1, 2018 Title V Operating Permit Renewal Application and July 7, 2022 Title V Operating Permit Modification Application (the "Air Modification Application") and the September 30, 2022 Solid Waste Permit Modification Application (the "Waste Application") for Camden County Energy Recovery Associates L.P.'s municipal solid waste incinerator located at 600 Morgan Street, Camden, New Jersey ("Covanta Camden" or "Covanta").

Covanta is a facility that contributes to adverse cumulative stressors in the overburdened community of Camden's Waterfront South neighborhood. Accordingly, Covanta must go beyond the bare minimum to reduce the facility's emissions and negative impacts on the community.

- Covanta must not expand its permits to allow the acceptance and burning of liquid waste.
    - Covanta proposes to accept industrial liquid wastes and inject them into the boiler, in which they would likely not be fully combusted. As explained below, doing so threatens to increase toxic air emissions in an overburdened community with cumulative adverse stressors. This proposed permit expansion plainly contravenes the directive of the EJ Law and AO-25 to "limit the future placement and expansion of such facilities [which, by the nature of their activity, have the potential to increase environmental and public health stressors] in overburdened communities." For this reason, Covanta's proposed major modification to newly accept and inject industrial liquid wastes must be rejected.
    - Moreover, the EPA regulations that govern here do not allow Covanta to accept many of the liquid wastes it has proposed to accept. Covanta proposes to add "Type 72 Liquid Waste" to the list of waste types that the incinerator may receive and burn. Covanta's presentation at its AO-25 hearing clarified that this includes "process wash waters in the pharmaceutical, food, or other industrial or manufacturing operations" and that such "[t]ypical liquids are from tank rinses and line flushes from various manufacturing and industrial applications." But the EPA regulations that govern Covanta's municipal waste combustors expressly exclude "industrial process or manufacturing wastes" from the definition of the "municipal solid waste" that Covanta is allowed to burn, noting that waste from industrial facilities is permitted only if it is from "nonmanufacturing activities." Thus, EPA regulations forbid Covanta from accepting most, if not all, of the liquid wastes it seeks to accept.
- Need for increased emission control measures
    - The renewed permits must include all feasible measures to reduce emissions and mitigate the impacts associated with Covanta's air emissions, solid waste handling, truck traffic, and other adverse stressors to which the facility contributes. The mere fact that a particular control measure is not expressly required by any pre-existing EPA or DEP regulation is no longer an excuse for Covanta's permits to fail to impose that measure. To the extent that any control measure, permit condition, or action recommended in these

comments is not required by other EPA or DEP regulations, they are now required by the EJ Law and AO-25 and must be included in the renewed permits.

- Covanta Camden is a significant stationary source of local pollution
  - Covanta Camden is the number one stationary-source emitter of many air pollutants in the county, emitting 100% of the county's lead from stationary sources, 99.9% of the mercury, 93.6% of the hydrogen chloride ("HCl"), 86.6% of the oxides of nitrogen ("NOx"), and 71.4% of the fine particulate matter ("PM2.5"). Indeed, Covanta Camden is one of the top polluters out of all New Jersey stationary sources, being the highest emitter of cadmium and HCl and the third highest emitter of mercury and lead statewide.
- Baghouse
  - Our health must not be held hostage
    - Covanta has proposed the baghouse installation as a kind of package deal that comes only with the facility being allowed to accept liquid waste. But neither the EJ Law, the EJ Rule, nor AO-25 allow for such tit-for-tat emission reductions, which hold necessary emission reductions hostage unless a revenue-creating and emission-increasing action is also approved. To so hold would perpetuate the legacy of disproportionate environmental burdens in New Jersey's overburdened communities that the EJ Law is designed to stop. For these reasons, Covanta must install the baghouse without tying this and other emission reduction measures to approval of the liquid waste injection proposal.
  - A baghouse is long overdue
    - Installation of a baghouse is a permit condition that DEP should have required decades ago, and is especially required now that the EJ Law and AO-25 require Covanta to take all feasible measures to reduce its emissions. EPA data shows that in 2001, only 21 out of the 167 total municipal waste combustor units (boilers) in existence at that time had ESPs instead of baghouses. That means that over twenty years ago, over 87% of incinerator boilers already had baghouse controls.
- Covanta Must Further Reduce its Dioxin Emission Limit.
  - Covanta has proposed to reduce the Permit's dioxin/furan emission limit of 35 ng/dscm @ 7% O_2 down to 13 ng/dscm. But other incinerators have even lower emission limits. For example, the Covanta incinerator in Fairfax, Virginia has a dioxin/furan limit of only 2 ng/dscm. The EJ Law and AO-25 compels the Covanta Camden permit to include all feasible conditions to reduce emissions,and an emission limit that a larger Covanta incinerator achieves is plainly feasible. Accordingly, Covanta Camden should reduce its dioxin limit to no higher than 2 ng/dscm.
- Covanta's risk assessment should account for cumulative impacts

- As stated previously, now under the EJ Law and AO-25, applicants seeking permit renewals for polluting facilities in overburdened communities must perform an impact assessment of environmental and public health stressors within the community, and the facility's contributions to these stressors, taking into account cumulative impacts. Covanta's emissions contribute to cumulative impacts on the Waterfront South community because these emissions deteriorate air quality, contribute to smog, and are linked to increased risk of miscarriages, preterm birth, asthma, developmental issues in children, and more. Covanta's risk assessment should therefore take into account not just the facility's own pollution, but also the pollution from other nearby sources (in both New Jersey and Pennsylvania) that can impact the surrounding community.

- A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 should be required
  - A continuous emissions monitoring system ("CEMS") for HCl, mercury, and PM2.5 would benefit the community by providing a more accurate picture of the facility's emissions and enabling Covanta to quickly identify and correct any problems with the facility's operations that cause unusually high emissions. As explained below, the monitoring specified in the Air Permit is insufficient to assure Covanta's ongoing compliance with its HCl, mercury, and PM limits. To ensure the legally required protection for the overburdened community around the Covanta Camden facility, Covanta must install a CEMS for each of these pollutants and the Air Permit must identify each CEMS as a means for assuring Covanta's compliance with applicable CAA requirements.

- Mercury
  - Mercury, which causes a wide range of adverse health effects including neurological damage, kidney damage, and birth defects, is among the most toxic substances emitted from the Covanta Camden facility. Mercury exposure is especially dangerous for young children and pregnant women, as it can affect the developing brain and nervous system. Ensuring Covanta Camden's mercury emissions are controlled to the maximum degree possible should be among Covanta's highest priorities. A key action that Covanta could take to ensure maximum mercury control is to install a mercury CEMS.For all of these short-term mercury limits, the specified annual testing requirement is insufficient to assure Covanta's ongoing compliance as mandated by Title V and the federal Title V regulations. As with the short-term HCl limits, annual testing does not account for emissions variability that can easily result in Covanta violating mercury limits between stack tests.

- Particulate Matter (PM)
  - Particulate matter can be very hazardous to human health. PM2.5 presents the most danger because it can bypass the body's natural defenses in the nose and throat and enter the lungs. Short-term exposure to PM2.5 can aggravate lung disease, cause asthma attacks and acute bronchitis, and increase susceptibility to respiratory infections. Long-term exposures, such as those experienced by people living for many years in areas with high particulate matter levels, are associated with problems such as reduced lung

function and the development of chronic bronchitis, and even premature death. Given the serious health risks posed by PM2.5, Covanta must do everything that it can to minimize its PM and PM2.5 to the maximum extent, including supplementing its existing PM monitoring activities with a PM CEMS.

- The Air Permit subjects Covanta Camden's three municipal waste combustors to various particulate emission limits, for which compliance is demonstrated via an annual stack test. But the air permit has no PM2.5 limit at all. Given the particular dangers of PM2.5 compared to larger particulate matter, the Permit must include a PM2.5 limit.

Attachment 2 – Human Health Risk Assessment (HHRA)

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Project name:
Covanta Camden RRF

Project ref: 60654787

To:
Gary Pierce
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CC:

From:
Brian Stormwind & Amanda MacNutt

Date:
July 14, 2023

Memo

A multi-pathway human health risk assessment (HHRA) was conducted for the Camden County Energy Recovery Center (CCERC) to support the facility's Air Quality Control System Upgrade project (the "Project"). Emissions of air toxics from the municipal solid waste combustor (MWC) stack were modeled with the USEPA-preferred dispersion model, AERMOD, to obtain normalized annual air concentrations and deposition rates for the area surrounding the facility. The IRAP-h View™ Industrial Risk Assessment Program[1] (IRAP) was then used to implement U.S. Environmental Protection Agency's (USEPA) Human Health Risk Assessment Protocol (HHRAP)[2] which integrates the AERMOD output, pollutant-specific emissions, site-specific physical and hydrological parameters, exposure parameters, and compound-specific toxicity values to estimate the cumulative human health risk at specific exposure locations near the facility.

MWC Emissions Data

The USEPA HHRAP guidance allows for the use of actual emissions when estimating cancer and non-cancer health risks. However, the analysis conservatively used the proposed maximum potential to emit permitted emission rates for the Project; see **Table 1** (Table 3-3 from the Modeling Protocol). Note the HHRA was conducted with the maximum pound per hour (lb/hr) emission rates for each of the three (3) municipal solid waste (MSW) units and assumed all three units continuously operate throughout the year. This incorporates some added conservatism in the analysis since the MSW units are effectively limited by permit to 8256 hours per year operation.

Mercury emissions were speciated into elemental mercury and mercuric chloride based on stack test data from the Olmsted County Waste-to-Energy facility, following methodology used for the health risk assessment conducted for the Covanta Hennepin Energy Resource Company facility[3]. Use of speciated mercury stack test data is preferred where available and the Olmsted stack test data produces more conservative results (higher mercury deposition rates) compared to the default mercury speciation data provided in the HHRAP.

Hexavalent chromium emissions were assumed to be 10% of total chromium emissions. Use of 10% is a common conservative assumption for estimation of hexavalent chromium emissions from total chromium emissions for waste-to-energy facilities. The California Air Resources Board (CARB) did a review of emissions data and determined that Covanta should use an assumption of 5% for the risk assessment conducted for Covanta's Stanislaus County Resource Recovery Facility located in Crows Landing, CA. The 5% value was incorporated into Title V permit for the Stanislaus County facility. The results of coincident total chromium/hexavalent chromium stack testing at Covanta's

[1] Lakes Environmental 2009. Industrial Risk Assessment Program – Human Health (IRAP-h) View™ Human Health Risk Assessment Program. http://www.weblakes.com/products/iraph/
[2] USEPA 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Final. EPA520-R-05-006. Office of Waste-Hazardous Waste – Treatment & Disposal. September. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P10067PR.TXT
[3] AECOM 2012. Human Health Risk Assessment for the Covanta Hennepin Energy Resource Company. May.

Long Beach Resource Recovery Facility located in Long Beach, CA, showed that approximately 2% of total chromium was hexavalent chromium, confirming the use of 5% as being conservative. Nonetheless, further conservatism was added to the CCERC analysis by assuming 10% of total chromium was hexavalent chromium.

Permitted emissions of polynuclear aromatic hydrocarbons (PAHs) are for the total emissions of PAHs. The facility does not have permit limits for the individual PAH congeners. Emissions for the congeners were estimated based on data from three stack test runs conducted at the CCERC between March 26, 2021 and March 29, 2021[4]. For each of the three runs, the percentage of the total was computed for each congener. To be conservative, the congener percentages for Run 3 were used as the basis for emissions in the HHRA because that run had the highest total percentage of congeners that are the most toxic[5]. Emissions for each congener modeled in the HHRA were calculated based on the total permitted PAH limit multiplied by the percentages from Run 3.

Similar to PAHs, permitted emissions for "PCDD/PCDF" are for the total amount of PCDD/PCDF with no specific limits for the individual congeners. Therefore, emissions for the congeners were also estimated based on available stack test data. While speciated PCDD/PCDF congener data is available for the CCERC from stack tests, the current facility uses an ESP for particulate control. Dioxins/furans adhere to the surface of particles and therefore, emissions of dioxins/furans are closely associated with particulate emissions which will be better controlled by fabric filter baghouses following the Project. Therefore, the current available congener data at Camden are not representative of the future operations of the facility following implementation of the Project. However, dioxins/furans congener data were available from Covanta's Essex County Resource Recovery Facility (ECRRF) which operates MWCs that are similar to the units at the CCERC and the ECRRF is equipped with similar baghouses that will be installed at the CCERC. Emissions for the PCDD/PCDF congeners were estimated based on data from three stack test runs conducted at the ECRRF between March 15, 2021 and March 16, 2021[6]. Similar to the approach used for PAH congeners, for each of the three runs, the percentage of the total was found for each congener. The percentages found for Run 1 were used in the analysis as the basis for estimated emissions in the HHRA because that run had the highest total percentage of congeners that are the most toxic[7]. Emissions for each congener modeled in the HHRA were calculated based on the total permitted PCDD/PCDF limit multiplied by the percentages from Run 1.

Table 2 provides the speciated PAH and Dioxin/Furan emissions.

HHRA Methodology

AERMOD Modeling

The AERMOD model (version 22112) was used to develop annual and hourly air concentrations and deposition rates based on a normalized (1 g/sec) MWC emission rate, and pollutant-specific emissions were input and applied to the modeling results within the IRAP program. AERMOD was run in accordance with the Dispersion Modeling Protocol submitted to the New Jersey Department of Environmental Protection (NJDEP) in September 2022[8] to obtain annual and 1-hour average air concentrations for input to IRAP. To develop annual deposition rates, additional inputs not discussed in the air quality modeling protocol were also required for input to AERMOD. The additional data specifically required for the deposition modeling are:

- Particle Size Distribution – Stack test data from the MWC at Covanta's Hempstead facility in New York[9] were used to represent the particle size distribution of the exhaust from the CCERC stack. The Hempstead facility units are controlled with baghouses and the particle size data were the most recent, representative data available. These data are required by AERMOD to estimate wet and dry particulate deposition.

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[4] Provided by Gary Pierce (Covanta) via email to Brian Stormwind (AECOM) on December 07, 2022.
[5] Based on Toxic Equivalency Factors (TEF) for different congeners, provided in: USEPA 1993. Provisional guidance for quantitative risk assessment of polycyclic aromatic hydrocarbons. EPA/600/R-93/089. https://ordspub.epa.gov/ords/eims/eimscomm.getfile?p_download_id=466885
[6] Provided by Gary Pierce (Covanta) via email to Brian Stormwind (AECOM) on December 07, 2022.
[7] Based on Toxic Equivalency Factors (TEF) for different congeners, provided in: USEPA 2010. Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds. EPA/100/R 10/005.. https://www.epa.gov/sites/default/files/2013-09/documents/tefs-for-dioxin-epa-00-r-10-005-final.pdf
[8] AECOM 2022. Air Quality Modeling Protocol. Air Quality Control System Upgrade Project. Prepared for Camden County Energy Recovery Center. September. https://epa-prgs.ornl.gov/radionuclides/2005_HHRAP.pdf
[9] Radian Corporation 1989. Compliance Test Report for American Ref-Fuel Company of Hempstead. Hempstead Resource Recovery Facility. Westbury, New York. December.

- Chemical-Specific Parameters for Vapor Deposition – physical parameters including diffusivity in air (D_a), diffusivity in water (D_w), cuticular resistance (rcl) to uptake by lipids for leaves, and Henry's Law constant (H) are required for AERMOD to estimate vapor deposition. The IRAP software is designed to accept normalized vapor deposition output for divalent mercury, plus only one more "generic" compound that would represent all non-mercury vapor-state compounds. AERMOD sensitivity testing indicated that, of the emitted pollutants, associated physical parameters for benzo (a) pyrene resulted in the highest vapor deposition rates. As such, those physical parameters were used to represent all non-mercury vapor-state compounds. This is conservative because this methodology overestimates the vapor deposition for all emitted pollutants with the exception of divalent mercury and benzo (a) pyrene.

Exposure Scenarios

In accordance with USEPA's HHRAP[2], the following multi-pathway scenarios were evaluated for both adult and child exposure:

1. Resident/ Fisher – An adult/child who eats local produce from a backyard garden and fish caught from local water bodies. This scenario was located where AERMOD output indicated the highest CCERC stack air concentrations and deposition fluxes regardless of whether actual residences are currently present.

2. Farmer Type 1/ Fisher – A farmer (adult/child) who eats primarily produce and livestock from the farm *(excluding consumption of beef and dairy milk)* as well as fish caught from local water bodies. This scenario was also conservatively located where AERMOD output indicated the highest facility impacts even though those locations are not zoned for agricultural use[10].

   Note that the 2017 Census of Agriculture indicated there were no dairy cows in Camden County[11]. Furthermore, communication with the Rutgers Cooperative Extension indicated that while a few cattle are kept on farms in eastern Camden County, there were not likely any cattle within 10 miles of Camden City[12]. Since the HHRA risk results (presented below) indicated that the dairy and beef pathways contribute the largest portion of risk/hazard to the farmer scenario, inclusion of these pathways at the locations of the highest modeled AERMOD impact would unrealistically elevate the calculated risk/hazard for the farmer because no beef/dairy cows are currently present or reasonably expected to be kept at those locations in the future. The beef/dairy pathways were, however, evaluated for a farmer scenario located at the nearest beef/dairy farms as described below.

3. Farmer Type 2/ Fisher – A farmer (adult/child) who eats primarily produce and livestock from the farm *(including consumption of beef and dairy milk)* as well as fish caught from local water bodies. This scenario was evaluated at actual farms located nearest to the facility and confirmed, through readily available online information, to have beef and/or dairy cows. The nearest of these are the farm at Saul High School in Philadelphia, PA (~11 miles away), and Wellacrest Farms in Mullica Hill, NJ (~12 miles away).

Ingestion rates for the direct and indirect pathways associated with each of the exposure scenarios were based on default values provided in USEPA's HHRAP guidance[2], with the exception of the fish ingestion pathway. Site-specific fish ingestion rates used in the HHRA were based on a 2011-2012 creel angler survey of the Passaic River which flows through Newark, NJ.[13] The purpose of the study was to collect data about anglers' behaviors and fish consumption habits to calculate exposure factors for a human health risk assessment of the Study Area. Findings of the study are applicable to the current HHRA because fish consumption behaviors of residents in the Newark area are expected to be similar to those in the Camden area. The two locales are both urban areas in relatively close proximity to one another (approximately 75 miles apart), and the Passaic River is an urban, industrialized river similar to the Delaware River that is located adjacent to the CCERC. The study found the mean and 90th percentile consumption rates for the population of consuming anglers to be 5.0 and 8.8 grams per day (g/day), respectively. The study included a sensitivity analysis that estimated a maximum 95th percentile consumption rate of 27.75 g/day.

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[10] Camden zoning map, https://www.ci.camden.nj.us/wp-content/uploads/2020/08/zoning_map.pdf
[11] United State Department of Agriculture (USDA) 2019. 2017 Census of Agriculture, New Jersey State and County Data. Volume 1, Geographic Area Series. Part 30. AC-17-A-30. April. https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/New_Jersey/njv1.pdf
[12] Email from Mike Haberland (Rutgers Cooperative Extension) to Amanda MacNutt (AECOM) on December 02, 2022.
[13] Betsy Ruffle, Suzanne Baird, Gemma Kirkwood & F. Jay Breidt 2019. "Estimation of fish consumption rates based on a creel angler survey of an urban river in New Jersey, USA", Human and Ecological Risk Assessment: An International Journal, DOI: 10.1080/10807039.2018.1546549.

To be conservative, the HHRA used the value of 27.75 g/day for an adult fisher, even though the study indicates actual consumption rates are likely much lower. The child fisher consumption rate of 4.11 g/day was based on scaling the adult rate by the ratio of child-to-adult fish consumption rates in USEPA's HHRAP[14]. The HHRA assumed that locally caught fish were from either the Delaware River, Cooper River, or Newton Creek. These water bodies were selected because they are located closest to the facility and would therefore be subject to the highest impacts due to emissions from the MWC.

The drinking water pathway was not evaluated since water in the Camden local area is treated at one of five New Jersey American Water treatment plants prior to consumption. **Figure 1** provides the locations of the exposure scenarios. **Figure 2** depicts the proximity of the selected water bodies to the CCERC stack.

Toxicity Values

Toxicity values are used to define the relationship between the dose of a compound and the likelihood and magnitude of a health effect. Toxicity values used in the HHRA were selected with preference given to published values contained in the New Jersey Department of Environmental Protection (NJDEP) risk screening worksheet[15] unless more recent data were available in USEPA's Integrated Risk Information System (IRIS)[16]. For oral routes, which are not included in the NJDEP worksheet, the hierarchy of reference sources provided in USEPA's HHRAP were used. **Table 3** provides the toxicity values used in the HHRA. **Table 4** provides the acute benchmarks used in the HHRA.

Human Health Risk Assessment Thresholds and Results

The IRAP software used AERMOD output along with the site-specific physical and hydrological parameters and pollutant-specific emissions rates to calculate exposure point concentrations in the air, soil, surface water and fish, home-grown vegetables, farm-raised animals, cow's milk, eggs, and mother's milk (child only). The IRAP software then used the exposure point concentrations and toxicity values to calculate the pollutant-specific Excess Lifetime Cancer Risk which is expressed as a probability (e.g., 10^{-5} or one chance in 100,000), and non-carcinogenic risk, expressed as a hazard index (HI). The total cumulative risk was then calculated as the sum of the pollutant-specific values.

USEPA guidelines for hazardous waste boilers indicate that total incremental cancer risk should not exceed 1×10^{-5} (one chance in 100,000)[17]. USEPA selected this level in part to account for exposure to background levels of contamination from offsite combustion sources. USEPA guidelines indicate that the non-cancer HI for an individual constituent, or mixture of constituents where appropriate, should be less than 1.0[18]. The USEPA cancer and non-cancer guidelines are also consistent with that of NJDEP as provided in Section 2.3.1 of *Technical Manual 1003 Guidance on Preparing a Risk Assessment for Air Contaminant Emissions*[19]. The risk findings presented below assess calculated risk results relative to these cancer and non-cancer thresholds.

Table 5 presents the overall long-term risk results. While multiple locations and water bodies were evaluated for each exposure scenario, the table presents only the highest risk results. The overall risk results for all exposure scenarios evaluated are less than the acceptable cancer risk and non-cancer (HI) risk thresholds.

Table 6 presents the maximum acute risk results for each of the exposure scenario locations. Note that these results are applicable to both adult and child. All acute risk results are less than the acceptable HI risk threshold of 1.

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[14] HHRAP (Table 6-1) mean fish consumption rate of 0.8 servings/week (child) divided by 5.4 servings/week (adult) = 0.148 scalar applied to adult consumption rate.
[15] https://www.state.nj.us/dep/aqpp/downloads/risk/Risk2020.xlsx
[16] USEPA 2020. Integrated Risk Information System (IRIS). Office of Research and Development, Washington, D.C. Available at: http://www.epa.gov/iris.
[17] USEPA 1991. Burning of Hazardous Waste in Boilers and Industrial Furnaces. 40 CFR Parts 260, 261, 264, 265, 266, 270, and 271. EPA/OSW-FR-91-012; SWH-FRL-3865-61. February. https://www.epa.gov/sites/default/files/2016-03/documents/52fr16982.pdf
[18] USEPA 1998. Human Health Risk Assessment Protocol for Hazardous Waste combustion Facilities. Office of Solid Waste and Emergency Response. EPA-530-D-98-001A. July. https://www.epa.gov/sites/default/files/2015-09/documents/rags_a.pdf
[19] https://www.state.nj.us/dep/aqpp/downloads/techman/1003.pdf

Figure 1: Evaluated Exposure Scenario Locations

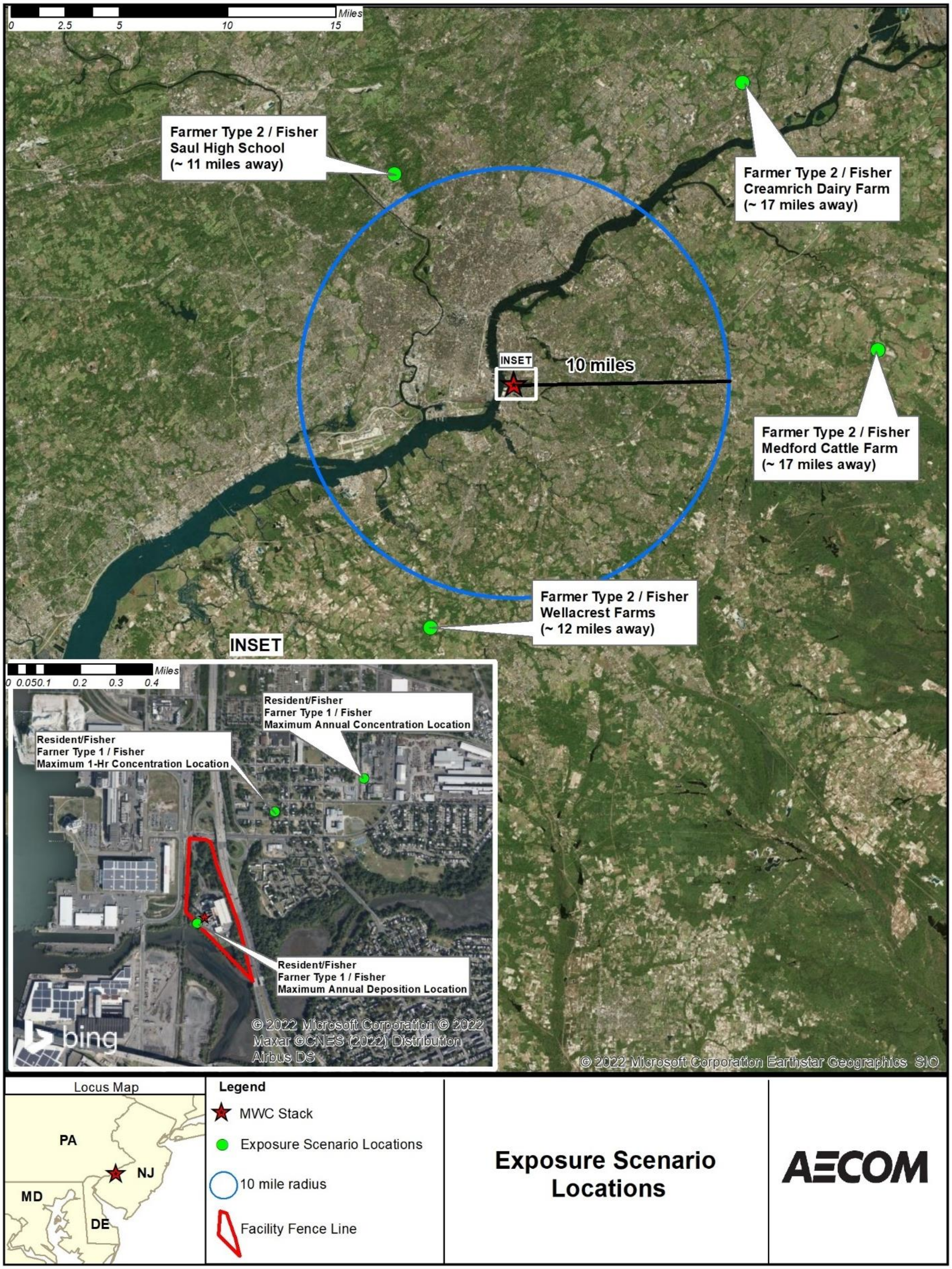

Figure 2: Proximity of Evaluated Water Bodies to CCERC

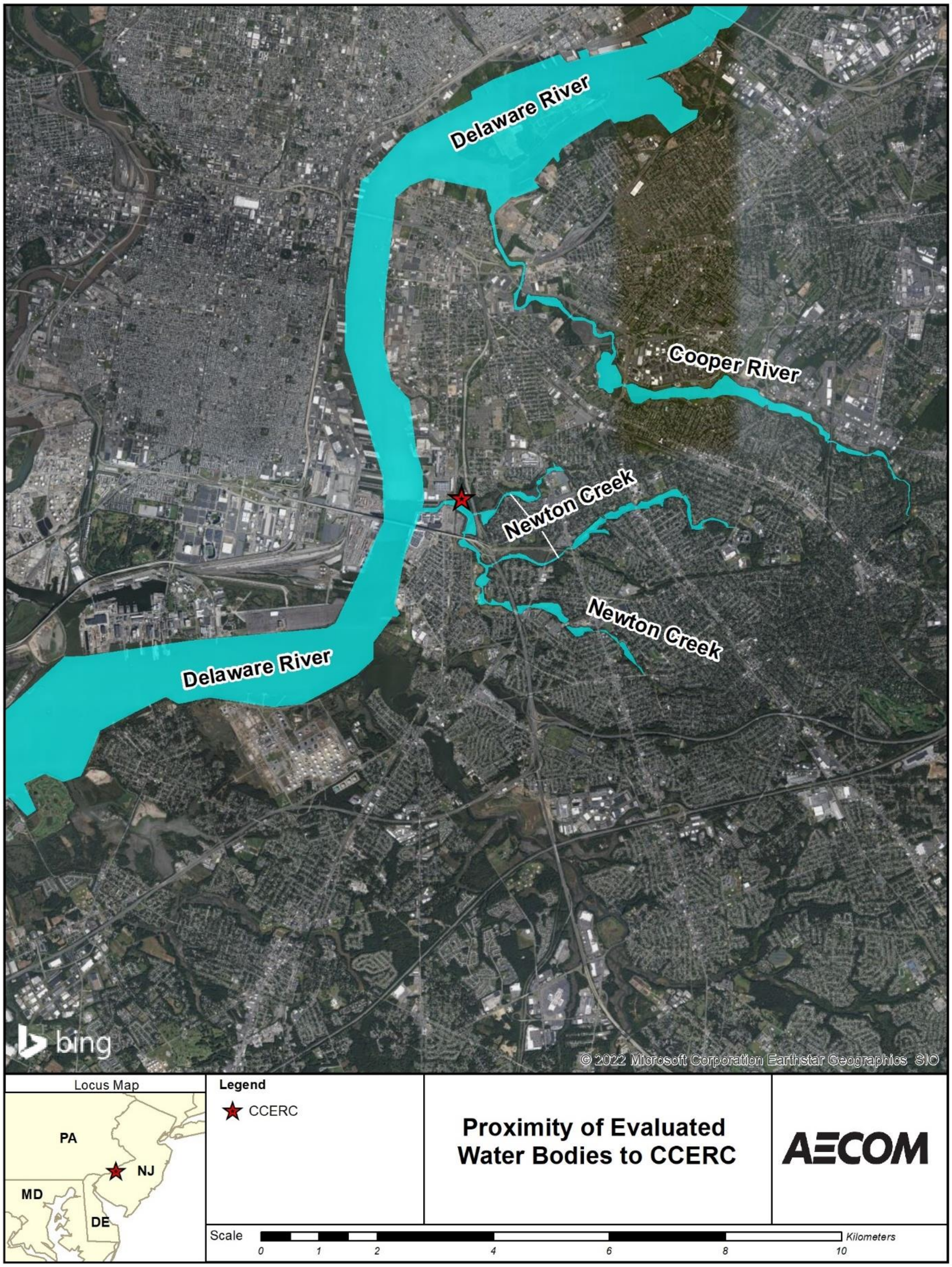

Table 1: Proposed Project Potential HAP Emissions and NJDEP Reporting Thresholds

Pollutant	Maximum Potential Emission Rate One MSW Unit (lb/hr)	Maximum Potential Emission Rate Three MSW Units (lb/yr) [1]	NJDEP Reporting Threshold (lb/yr) [2]	Above Reporting Threshold Yes/No
Lead	0.0170	421.5	2	Yes
Arsenic	0.000525	13.00	0.01	Yes
Cadmium	0.0017	42.15	0.01	Yes
PCDD/PCDF	0.00000221	0.055	0.0000012[3]	Yes
Hydrochloric acid	5.16	127,803	900	Yes
Mercury	0.0043	107	2	Yes
Hydrogen fluoride	0.035	867	600	Yes
H_2SO_4	2.60	64,397	NA	No
Ammonia	1.62	40,124	NA	No
Beryllium	0.0000131	0.32	0.02	Yes
Chromium	0.0215	533	1,000	No
Hexavalent chromium[4]	0.00215	107	0.004	Yes
Nickel	0.01800	446	0.6	Yes
2,3,7,8-TCDD	0.00000011	0.003	0.0000012	Yes
PAH	0.01450	359	2[5]	Yes

Notes:

(1) Based on three units operating 8256 hours/year for comparison with the NJDEP reporting thresholds. While each unit is limited to 8256 hours/year operation by permit condition, the emissions used in the HRA were conservatively based on unlimited annual operation for all three units (i.e., 8760 hours/year for each unit).

(2) https://www.nj.gov/dep/aqm/currentrules/Sub%2017.pdf; NA = no reporting threshold available.

(3) Threshold for 2,3,7,8-TCDD.

(4) Hexavalent chromium emissions conservatively estimated at 10%.

(5) Threshold for POM.

Table 2: Speciated PAH and Dioxin/Furan Emissions

Compound	Emissions (g/sec)	% of Total(1)
Total PAH (Permit Limit)	**5.48E-03**	
Naphthalene	3.22E-03	59%
2-Methylnaphthalene	4.74E-04	9%
Acenaphthene	1.33E-05	0.2%
Acenaphthylene	4.36E-05	1%
Fluorene	6.63E-05	1%
Phenanthrene	4.26E-04	8%
Anthracene	6.16E-05	1%
Fluoranthene	3.03E-04	6%
Pyrene	7.10E-04	13%
Benz(a)anthracene	3.98E-06	0.1%
Chrysene	9.95E-06	0.2%
Benzo[b]fluoranthene	1.23E-05	0.2%
Benzo[k]fluoranthene	3.50E-06	0.1%
Benzo(e)pyrene(2)	4.31E-05	1%
Benzo(a)pyrene	7.58E-06	0.14%
Perylene(2)	4.31E-06	0.1%
Indeno(1,2,3-cd)pyrene	9.95E-06	0.2%
Dibenz[a,h]anthracene	1.04E-06	0.02%
Benzo(g,h,i)perylene	6.63E-05	1%
Total PCDD/PCDF (Permit Limit)	**8.35E-07**	
1,2,3,6,7,8-HxCDD	2.15E-07	26%
1,2,3,7,8,9-HxCDD	1.90E-07	23%
1,2,3,4,6,78-HpCDD	1.31E-07	16%
OCDD	2.07E-08	2%
1,2,3,4,7,8-HxCDF	1.22E-07	15%
1,2,3,7,8,9-HxCDF	1.00E-07	12%
1,2,3,4,6,7,8-HpCDF	5.63E-08	7%
2,3,7,8-TCDD(3)	4.16E-08	--
1,2,3,7,8-PentaCDD(4)	4.16E-08	--

Notes:

(1) Percentages based on stack test data provided by Gary Pierce (Covanta) to Brian Stormwind (AECOM) on December 7, 2022.
(2) Not included in the HHRA due to lack of toxicity data for the compound
(3) Not detected in stack test data. Emissions set equal to the permit limit.
(4) Not detected in stack test data. Emissions conservatively set equal to the 2,3,7,8-TCDD permit limit.

Table 3: Toxicity Values

Air Toxic Pollutant	Cas No.	Inhalation Cancer Unit Risk Factor $(\mu g/m^3)^{-1}$	Ref.	Inhalation Chronic Non-Cancer Reference Conc. (mg/m^3)	Ref.	Oral Cancer Cancer Slope Factor $(mg/kg\text{-}d)^{-1}$	Ref.	Oral Chronic Non-Cancer Reference Dose (mg/kg-d)	Ref.
Ammonia	7664-41-7	NA	NA	5.00E-01	IRIS	NA	NA	3.40E+01	HEAST
Hydrogen Fluoride	7664-39-3	NA	NA	1.40E-02	NJDEP	NA	NA	5.71E-04	CalEPA
Sulfuric Acid	7664-93-9	NA	NA	1.00E-03	NJDEP	NA	NA	NA	NA
PentaCDD, 1,2,3,7,8-	40321-76-4	3.80E+01	CalEPA	4.00E-08	CalEPA(1)	1.30E+05	CalEPA	7.00E-10	IRIS(1)
Arsenic	7440-38-2	4.30E-03	NJDEP	1.50E-05	NJDEP	1.50E+00	IRIS	3.00E-04	IRIS
Beryllium	7440-41-7	2.40E-03	NJDEP	2.00E-05	NJDEP	NA	NA	2.00E-03	IRIS
Cadmium	7440-43-9	1.80E-03	IRIS	2.00E-05	NJDEP	NA	NA	1.00E-03	IRIS
Chromium	7440-47-3	NA	NA	5.30E+00	IRIS (R)	NA	NA	1.50E+00	IRIS
Hexavalent Chromium	18540-29-9	1.20E-02	NJDEP	1.00E-04	NJDEP	5.00E-01	CalEPA	3.00E-03	IRIS
Lead	7439-92-1	1.20E-05	NJDEP	1.50E-03	HHRAP	8.50E-03	CalEPA	4.29E-04	IRIS
Mercury	7439-97-6	NA	NA	3.00E-04	NJDEP	NA	NA	1.60E-04	CalEPA
Mercuric Chloride	7487-94-7	NA	NA	1.10E-03	IRIS (R)	NA	NA	3.00E-04	IRIS
Methyl Mercury	22967-92-6	NA	NA	3.50E-04	IRIS (R)	NA	NA	1.00E-04	IRIS
Nickel	7440-02-0	2.40E-04	NJDEP	1.40E-05	CalEPA	NA	NA	2.00E-02	IRIS
2,3,7,8-TCDD	1746-01-6	3.80E+01	NJDEP	4.00E-08	NJDEP	1.30E+05	CalEPA	7.00E-10	IRIS
1,2,3,7,8-PentaCDD	40321-76-4	3.80E+01	CalEPA	4.00E-08	CalEPA(1)	1.30E+05	CalEPA(1)	7.00E-09	IRIS(1)
1,2,3,6,7,8-HxCDD	57653-85-7	3.80E+00	NJDEP(1)	4.00E-07	NJDEP(1)	1.30E+04	CalEPA(1)	7.00E-09	IRIS(1)
1,2,3,7,8,9-HxCDD	19408-74-3	3.80E+00	NJDEP(1)	4.00E-07	NJDEP(1)	1.30E+04	CalEPA(1)	7.00E-08	IRIS(1)
1,2,3,4,6,7,8-HpCDD	37871-00-4	3.80E-01	NJDEP(1)	4.00E-06	NJDEP(1)	1.30E+03	CalEPA(1)	2.33E-06	IRIS(1)
OCDD	3268-87-9	1.14E-02	NJDEP(1)	1.33E-04	NJDEP(1)	3.90E+01	CalEPA(1)	7.00E-09	IRIS(1)
1,2,3,4,7,8-HxCDF	70648-26-9	3.80E+00	NJDEP(1)	4.00E-07	NJDEP(1)	1.30E+04	CalEPA(1)	7.00E-09	IRIS(1)
Naphthalene	91-20-3	3.40E-05	NJDEP	3.00E-03	NJDEP	1.20E-01	CalEPA	2.00E-02	IRIS
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	4.00E-03	IRIS
Acenaphthene	83-32-9	NA	NA	2.1E-01	IRIS (R)	NA	NA	6.00E-02	IRIS
Fluorene	86-73-7	NA	NA	1.4E-01	IRIS (R)	NA	NA	4.00E-02	IRIS
Phenanthrene(2)	85-01-8	NA	NA	1.05E+00	IRIS (R)	NA	NA	3.00E-01	IRIS
Anthracene	120-12-7	NA	NA	1.05E+00	IRIS (R)	NA	NA	3.00E-01	IRIS

Notes:

(1) Value based on USEPA Toxicity Equivalence Factors (TEFs).
https://www.epa.gov/sites/default/files/2013-09/documents/tefs-for-dioxin-epa-00-r-10-005-final.pdf

(2) No toxicity values available. Anthracene values used as surrogate.

(3) No toxicity values available. Pyrene values used as surrogate.

References:

NJDEP – New Jersey Department of Environmental Protection Risk Spreadsheet. https://www.state.nj.us/dep/aqpp/downloads/risk/Risk2020.xlsx

IRIS – USEPA Integrated Risk Information System (IRIS). https://www.epa.gov/iris

IRIS (R) – USEPA IRIS using route-to-route extrapolation, where: RfC (mg/m^3) = [RfD (mg/kg-day) x 70 kg] / 20 m3/day.

CalEPA – California EPA Office of Environmental Health Hazard Assessment, Chronic Reference Exposure Levels Database.
https://oehha.ca.gov/chemicals

HEAST – Health Effects Summary Tables (Archive). https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=2877

Table 3: Toxicity Values Cont.

Air Toxic Pollutant	Cas No.	Inhalation				Oral			
		Cancer		Chronic Non-Cancer		Cancer		Chronic Non-Cancer	
		Unit Risk Factor $(\mu g/m^3)^{-1}$	Ref.	Reference Conc. (mg/m^3)	Ref.	Cancer Slope Factor $(mg/kg\text{-}d)^{-1}$	Ref.	Reference Dose (mg/kg-d)	Ref.
Fluoranthene	206-44-0	NA	NA	1.40E-01	IRIS (R)	NA	NA	4.00E-02	IRIS
Pyrene	129-00-0	NA	NA	1.05E-01	IRIS (R)	NA	NA	1.05E-01	IRIS (R)
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	7.00E-01	PPRTV	NA	NA
Chrysene	218-01-9	6.00E-06	NJDEP(1)	NA	NA	1.20E-01	CalEPA	NA	NA
Benzo[b]fluoranthene	205-99-2	6.00E-05	NJDEP(1)	NA	NA	1.20E+00	CalEPA	NA	NA
Benzo[k]fluoranthene	207-08-9	6.00E-06	NJDEP(1)	NA	NA	1.20E-01	CalEPA	NA	NA
Benzo(a)pyrene	50-32-8	6.00E-04	NJDEP	2.00E-06	NJDEP	2.90E+00	CalEPA	3.00E-04	IRIS
Indeno(1,2,3-cd)pyrene	193-39-5	6.00E-05	NJDEP(1)	NA	NA	1.20E+00	CalEPA	NA	NA
Dibenz[a,h]anthracene	53-70-3	6.00E-04	IRIS(1)	NA	NA	4.10E+00	CalEPA	NA	NA
Benzo(g,h,i)perylene(3)	191-24-2	NA	NA	0.105	IRIS (R)	NA	NA	3.00E-02	IRIS

Notes:

(1) Value based on USEPA Toxicity Equivalence Factors (TEFs).
https://www.epa.gov/sites/default/files/2013-09/documents/tefs-for-dioxin-epa-00-r-10-005-final.pdf

(2) No toxicity values available. Anthracene values used as surrogate.

(3) No toxicity values available. Pyrene values used as surrogate.

References:

NJDEP – New Jersey Department of Environmental Protection Risk Spreadsheet. https://www.state.nj.us/dep/aqpp/downloads/risk/Risk2020.xlsx
IRIS – USEPA Integrated Risk Information System (IRIS). https://www.epa.gov/iris

IRIS (R) – USEPA IRIS using route-to-route extrapolation, where: RfC (mg/m^3) = [RfD (mg/kg-day) x 70 kg] / 20 m3/day.

CalEPA – California EPA Office of Environmental Health Hazard Assessment, Chronic Reference Exposure Levels Database. https://oehha.ca.gov/chemicals

PPRTV – Provisional Peer-Reviewed Toxicity Values https://www.epa.gov/pprtv
HEAST – Health Effects Summary Tables (Archive). https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=2877

Table 4: Acute Benchmarks

Air Toxic Pollutant	Cas No.	Acute Benchmark (µg/m³)$^{-1}$	Ref.
Ammonia	7664-41-7	3.20E+00	NJDEP
Hydrogen Fluoride	7664-39-3	2.40E-01	NJDEP
Sulfuric Acid	7664-93-9	1.20E-01	NJDEP
Arsenic	7440-38-2	2.00E-04	NJDEP
Beryllium	7440-41-7	5.00E-03	HHRAP
Cadmium	7440-43-9	3.00E-02	HHRAP
Chromium	7440-47-3	1.50E+00	HHRAP
Hexavalent Chromium	18540-29-9	NA	NA
Lead	7439-92-1	1.50E-01	HHRAP
Mercury	7439-97-6	6.00E-04	NJDEP
Mercuric Chloride	7487-94-7	1.25E-01	HHRAP
Methyl Mercury	22967-92-6	3.00E-02	HHRAP
Nickel	7440-02-0	2.00E-04	NJDEP
2,3,7,8-TCDD	1746-01-6	1.50E-03	HHRAP
1,2,3,7,8-PentaCDD	40321-76-4	2.50E-03	HHRAP
1,2,3,6,7,8-HxCDD	57653-85-7	1.50E-02	HHRAP
1,2,3,7,8,9-HxCDD	19408-74-3	1.50E-02	HHRAP
1,2,3,4,6,7,8-HpCDD	37871-00-4	6.00E-01	HHRAP
OCDD	3268-87-9	7.50E-02	HHRAP
1,2,3,4,7,8-HxCDF	70648-26-9	7.50E-03	HHRAP
1,2,3,7,8,9-HxCDF	72918-21-9	1.50E-02	HHRAP
1,2,3,4,6,7,8-HpCDF	67562-39-4	1.50E-01	HHRAP
Naphthalene	91-20-3	7.50E+01	HHRAP
2-Methylnaphthalene	91-57-6	NA	NA
Acenaphthene	83-32-9	1.30E+00	HHRAP
Acenaphthylene	208-96-8	1.00E+01	PAC-1
Fluorene	86-73-7	1.16E+01	HHRAP
Phenanthrene(1)	85-01-8	6.00E+00	HHRAP
Anthracene	120-12-7	6.00E+00	HHRAP

Notes:

(1) No toxicity values available. Anthracene values used as surrogate.
(2) No toxicity values available. Pyrene values used as surrogate.

References:

NJDEP – New Jersey Department of Environmental Protection Risk Spreadsheet. https://www.state.nj.us/dep/aqpp/downloads/risk/Risk2020.xlsx
HHRAP –USEPA 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Final. EPA520-R-05-006. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P10067PR.TXT
PAC-1 – United States Department of Energy (USDOE) 2016. Protective Action Criteria (PAC) with AEGLs, ERPGs, and TEELs: Rev. 29 for Chemicals of Concern. https://www.energy.gov/ehss/protective-action-criteria-pac-aegls-erpgs-teels

Table 4: Acute Benchmarks Cont.

Air Toxic Pollutant	Cas No.	Acute Benchmark $(\mu g/m^3)^{-1}$	Ref.
Anthracene	120-12-7	6.00E+00	HHRAP
Fluoranthene	206-44-0	1.50E-02	HHRAP
Pyrene	129-00-0	1.50E+01	HHRAP
Benz(a)anthracene	56-55-3	3.00E-01	HHRAP
Chrysene	218-01-9	6.00E-01	HHRAP
Benzo[b]fluoranthene	205-99-2	6.00E-01	HHRAP
Benzo[k]fluoranthene	207-08-9	6.00E-01	HHRAP
Benzo(a)pyrene	50-32-8	6.00E-01	HHRAP
Indeno(1,2,3-cd)pyrene	193-39-5	5.00E-01	HHRAP
Dibenz(a,h)anthracene	53-70-3	3.00E+01	HHRAP
Benzo(g,h,i)perylene(3)	191-24-2	3.00E+01	PAC-1

Notes:

(1) No toxicity values available. Anthracene values used as surrogate.
(2) No toxicity values available. Pyrene values used as surrogate.

References:

NJDEP – New Jersey Department of Environmental Protection Risk Spreadsheet. https://www.state.nj.us/dep/aqpp/downloads/risk/Risk2020.xlsx
HHRAP –USEPA 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, Final. EPA520-R-05-006. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P10067PR.TXT
PAC-1 – United States Department of Energy (USDOE) 2016. Protective Action Criteria (PAC) with AEGLs, ERPGs, and TEELs: Rev. 29 for Chemicals of Concern. https://www.energy.gov/ehss/protective-action-criteria-pac-aegls-erpgs-teels

Table 5: Long-Term Human Health Risk Assessment Results

Exposure Scenario	Adult / Child	Cancer Risk	Chronic Hazard Index
Resident Fisher	Adult	8.9E-07	0.48
Resident Fisher	Child	4.1E-07	0.40
Farmer Type 1 / Fisher	Adult	2.5E-06	0.48
Farmer Type 1 / Fisher	Child	5.1E-07	0.42
Farmer Type 2 / Fisher	Adult	2.2E-06	0.45
Farmer Type 2 / Fisher	Child	3.2E-07	0.36
	Risk Thresholds	**1.0E-05**	**1.00**

Table 6: Acute Human Health Risk Assessment Results

Exposure Scenario	Adult / Child	Hazard Index
Resident Fisher	Adult & Child	0.022
Farmer Type 1 / Fisher	Adult & Child	0.022
Farmer Type 2 / Fisher	Adult & Child	0.002
	Risk Threshold	**1.00**

Attachment 3 – Covanta Traffic Study

AECOM

Camden County Energy Recovery Center

Air Quality Control Systems Upgrade Project - Traffic Assessment Study

Camden County Energy Recovery Associates, L.P.
Camden, NJ

December 2022

Delivering a better world

Prepared for:

Camden County Energy Recovery Associates, L.P.
Camden, NJ

Prepared by:

AECOM
1700 Market Street
Philadelphia, PA 19103
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Table of Contents

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Appendices

1. Introduction

AECOM was tasked with performing a traffic study for the Camden County Energy Recovery Center (CCERC), in the City of Camden, Camden County, NJ, to evaluate the projected increase in truck traffic associated with the Air Quality Control System Upgrade Project (Project). The traffic study involved examining the expected increase in truck traffic associated with the proposed Project on Holtec Boulevard and a capacity analysis for the adjacent intersections of Holtec Boulevard and Broadway, Holtec Boulevard and I-676 SB Off-Ramp/Covanta Driveway, and Morgan Street and I-676 NB Off-Ramp/ Master Street. **Figure 1** below shows the location of the CCERC and immediate surrounding area, and **Figure 2** shows the intersections under study.

An Environmental Impact Study (EIS) was completed for original permitting of the CCERC in 1983 and excerpts from the report are included in **Appendix A**. As indicated by Covanta, site access and truck traffic routes will continue to be as described in the EIS, and the trucks traveling to and from the CCERC will primarily use I-676, Morgan Street, and Broadway.

The purpose of this analysis is to evaluate the potential impact to the identified intersections following implementation of the Project. This report summarizes the traffic analysis methodology, inputs and findings. **As discussed in Section 6, the findings of the study indicate that the Project would have no significant impact on the traffic in the vicinity of the CCERC.**

Figure 1. Location of CCERC

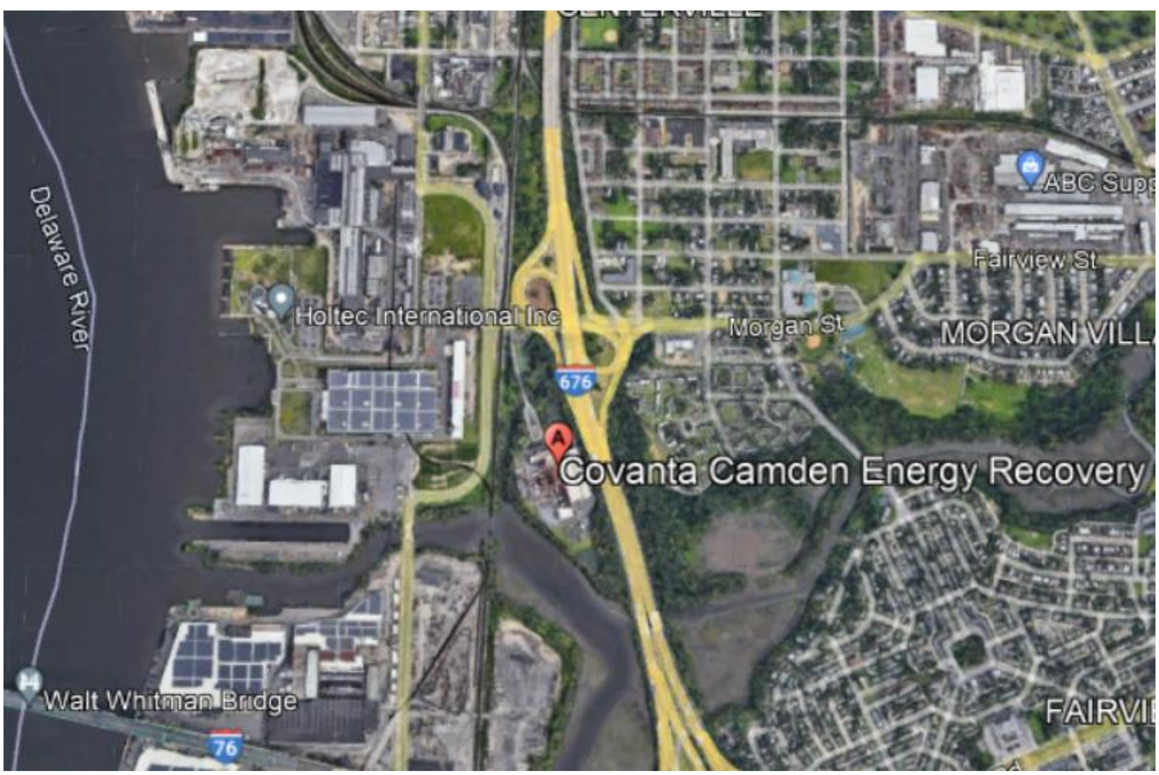
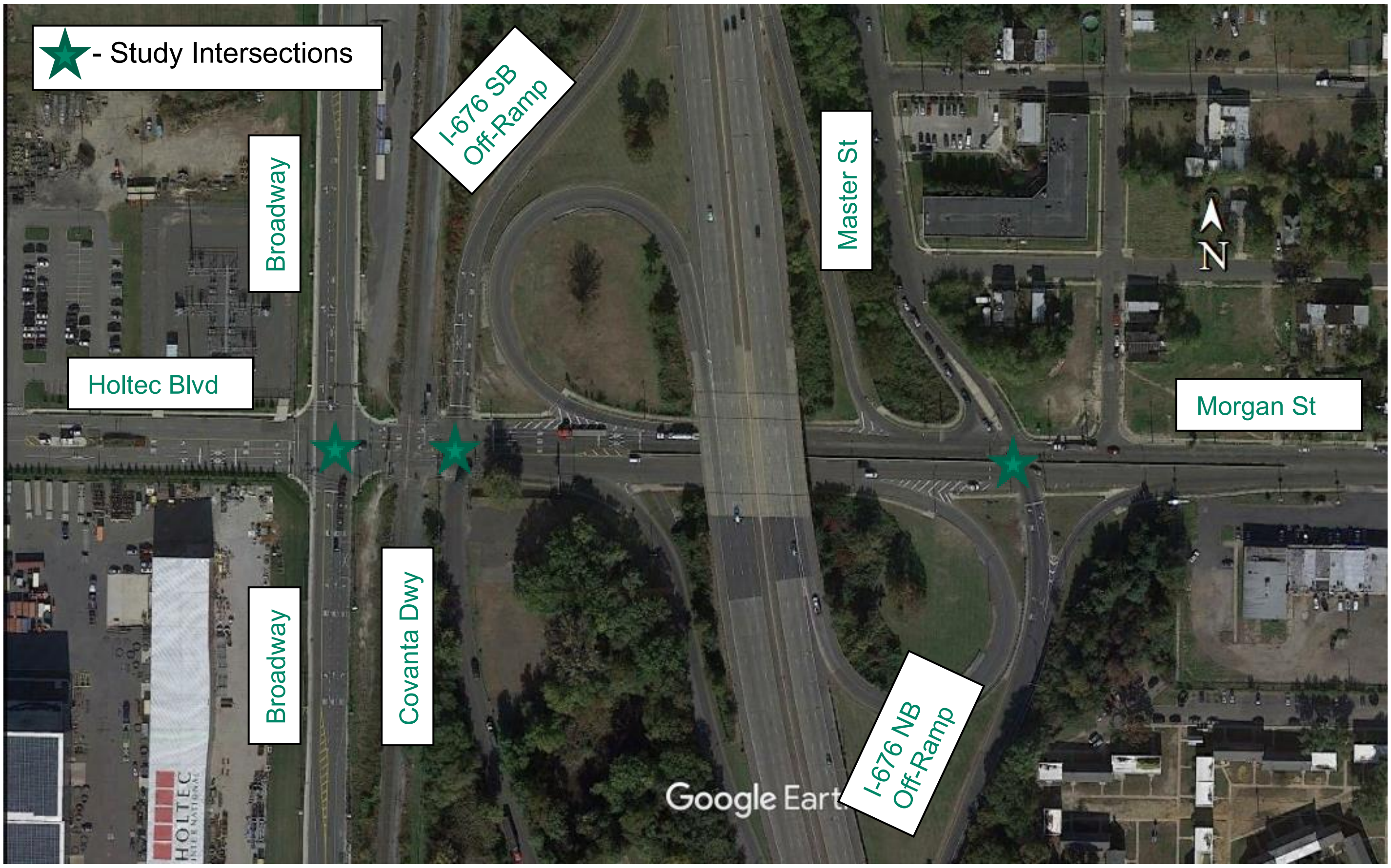


Figure 2. Study Area Intersections



2. Roadway Characteristics

Overall Roadway Characteristics

Broadway and Holtec Boulevard / Morgan Street are two important roadways that connect to the CCERC. An active railroad line runs parallel to Broadway between the intersections of Holtec Boulevard, and Broadway and Holtec Boulevard, and the CCERC Driveway/ I-676 SB off-ramp in the study area.

Holtec Boulevard / Morgan Street in the study area is an east-west corridor with generally two lanes in each direction from Fairview Street to Broadway. Holtec Boulevard / Morgan Street consists of multiple signalized and unsignalized intersections.

At the intersection of Morgan Street and Master Street, the eastbound Morgan Street has left/thru-thru lanes and the westbound Morgan Street has thru-thru/right lanes. The northbound I-676 Off-Ramp has left-left/thru lanes and the southbound Master Street approach has a shared left-right lane. Similarly, at the intersection of the Holtec Boulevard with CCERC Driveway/ I-676 SB off-ramp, the eastbound approach consists of thru-thru/right lanes and the westbound approach consists of two thru lanes and a left turn lane. The northbound CCERC Driveway consists of a shared left-right lane and the southbound I-676 off-ramp consists of one 250 feet left turn lane and a thru-right lane.

Broadway is a north-south corridor generally with two lanes in each direction. At the intersection of Broadway with Holtec Boulevard, the eastbound approach consists of one 175 feet left turn lane, a thru lane and a shared thru-right lane, and the westbound approach consists of thru-thru/right lanes. The northbound approach consists of one 320 feet left-turn lane, a through lane, and a 330 feet right-turn lane. The southbound approach consists of one 360 feet left turn lane and a shared left-through lane.

Holtec Boulevard / Morgan Street has a posted speed limit of 30 miles per hour (mph), and Broadway has a posted speed limit of 25 mph. All other approaches were assumed to be 25 mph.

3. Existing Traffic Conditions

Data Collection

Turning Movement Counts (TMC) were collected at the intersections listed below. TMCs were collected on Thursday, September 22, 2022 by Tri-State Traffic Data, Inc. between 7:00 AM to 10:00 AM and 2:00 PM to 6:00 PM. Data was collected in 15-minute intervals in order to understand traffic pattern fluctuations.

- Morgan Street and Master Street
- Holtec Boulevard and CCERC Driveway/ I-676 SB Off-Ramp
- Holtec Boulevard and Broadway

The TMCs included vehicular volumes (light and heavy vehicles), pedestrians, and bicycles data. From the traffic counts a rail crossing was observed during the AM peak hour and none during the PM peak hour. The complete count data is provided in **Appendix B**.

Additionally, signal plans and timing sheets for the intersections, requested from the New Jersey Department of Transportation (NJDOT), were used to finalize the Synchro model traffic analysis. The signal plans and timings sheets are provided in **Appendix C**.

LOS Threshold for Signalized and Unsignalized Intersections

The Level of Service (LOS) analysis was performed using Synchro[1], a traffic analysis and signal optimization software which utilizes Highway Capacity Manual's (HCM)[2] standards for signalized intersections, unsignalized intersections and roundabouts. The LOS is defined by a letter grade assigned to an intersection based on the delay in seconds and the type of intersection traffic control. The delay is calculated by considering factors such as volume, speed, geometry, grade, heavy vehicle percentages, and traffic control. LOS ranges from A through F, with A primarily representing minimum delay or free flow conditions and F representing congestion or extreme delay. Control delay quantifies the

[1] SYNCHRO | Bentley Systems | Infrastructure Engineering Software Company
[2] http://hcmvolume4.org/Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis | Publications (trb.org)

increase in travel time that a vehicle experiences due to the traffic control as well as provides a surrogate measure for driver discomfort and fuel consumption.

Table 1 illustrates the LOS criteria for signalized and unsignalized intersections.

Table 1. LOS Thresholds for Signalized/ Unsignalized Intersections

Level of Service	Control Delay (sec/veh) - signalized	Control Delay (sec/veh) - Unsignalized	Description
A	≤ 10	≤ 10	This describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at the boundary intersection is minimal. The travel speed exceeds 80% of the base free-flow speed.
B	> 10 and $\leq$ 20	> 10 and $\leq$ 15	This describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only strictly restricted, and control delay at the boundary intersections is not significant. The travel speed is between 67% and 80% of the base free flow speed.
C	> 20 and $\leq$ 35	> 15 and $\leq$ 25	This describes stable operation. The ability to maneuver and change lanes at midsegment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D	> 35 and $\leq$ 55	> 25 and $\leq$ 35	This indicates a less stable condition in which small increases in flow may cause substantial increase in delay and decrease in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersection. The travel speed is between 40% and 50% of the base free-flow speed.
E	> 55 and $\leq$ 80	> 35 and $\leq$ 50	This is characterized by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F	> 80	> 50	This is characterized by flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% of less of the base free-flow speed.

Source: Transportation Research Board, *Highway Capacity Manual 6th Edition* (Washington, D.C., 2010).

Existing Condition Analysis

The traffic analysis was completed using the Synchro traffic model (Version 11.0). The vehicular TMC established the existing year 2022 condition morning (AM) and evening (PM) peak hours for the study area. A system peak was calculated by looking at the counts at the three intersections holistically and the AM peak hour was determined to be the 7:30 AM to 8:30 AM, and the PM peak hour was determined to be 4:00 PM to 5:00 PM From the TMC it was also found that the railroad during the peak hours, between the intersections of Holtec Boulevard & Broadway and Holtec Boulevard & Covanta Driveway/ I-676 SB off-ramp was in use only once between 7:30 AM and 7:34 AM, which overlaps with the AM peak hour for this study. To account for the impacts of the train crossing, the green time for the conflicting phases were reduced by 8 seconds per signal cycle. The calculation is as follows:

$$time\ lost\ to\ train\ per\ hour = 4\ minutes = 240\ seconds$$

$$1\ signal\ cycle = 120\ seconds$$

$$cycles\ per\ hour = \frac{3600\ seconds}{120\ seconds} = 30$$

$$time\ lost\ to\ train\ per\ cycle = \frac{240\ seconds}{30\ cycles} = 8\ seconds\ per\ cycle$$

Note that this lost time (reduction in green time) is only applied to movements that conflict with the train movement. Phases that are allowed to move concurrently with the train movement (such as the NBT and SBT on Broadway and the SBL/ NBR at the intersection of I-676 SB Off-Ramp and Driveway) are not impacted.

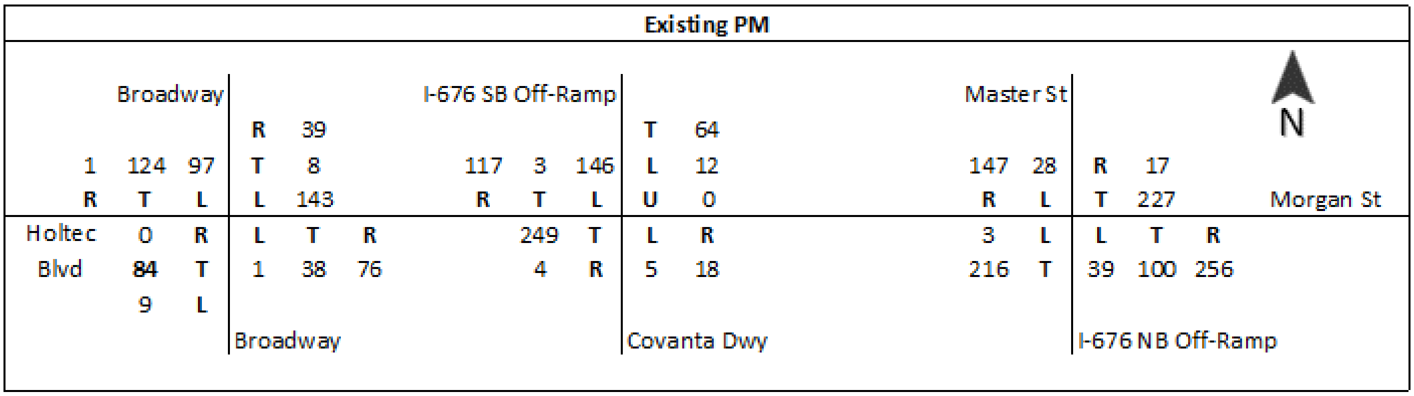
- The peak hour traffic volumes can be seen in **Figure** 33 and
-

Figure 44 below.

Existing AM																	
			Broadway					I-676 SB Off-Ramp					Master St				N
				R	70					T	142						
	1	45	60	T	62		60	0	113	L	10	143	13	R	16		
	R	T	L	L	78		R	T	L	U	1	R	L	T	209		Morgan St
Holtec		2	R	L	T	R		122	T	L	R	4	L	L	T	R	
Blvd		4	T	2	91	62		2	R	1	13	142	T	131	93	328	
		0	L														
				Broadway						Covanta Dwy				I-676 NB Off-Ramp			

Figure 3. AM Peak Hour Existing Year 2022

Figure 4. PM Peak Hour Existing Year 2022



Traffic count data was used in conjunction with the existing geometry and intersection traffic control to create the Synchro traffic model. HCM 2000 was used for the capacity analysis. The capacity analysis results are summarized in **Table 2** below and the detailed reports are presented in **Appendix D**.

From the results in **Table 2**, in the existing conditions all intersections operate at an acceptable LOS of B during both AM and PM peak hours. The northbound and southbound approaches at both Holtec Boulevard & Broadway and the eastbound and westbound approaches at Holtec Boulevard & Covanta/ I-676 SB off-ramp, operate at LOS A in both peak hours indicating free flow operations. Similarly, the eastbound and westbound approaches at the intersections of Holtec Boulevard & Broadway, and the northbound and southbound approaches at Holtec Boulevard & Covanta/ I-676 SB off-ramp operate at LOS C or better in both peak hours, indicating no operational issues at the intersection. All the approaches and the intersection level of service at Morgan Street and Master Street/ I-676 NB off-ramp operate at LOS B or better, again indicating no operational issues at the intersection.

Table 2. Existing Condition Capacity Analysis

Intersection	Approach	Movement	Peak Hour Delay in seconds (LOS)	
			A.M.	P.M.
Holtec Boulevard and Broadway	Eastbound	Left	22.7 (C)	-
		Through/ Right	25.0 (C)	24.1 (C)
		Approach	**24.2 (C)**	**24.1 (C)**
	Westbound	Left	23.7 (C)	18.9 (B)
		Through/ Right	26.2 (C)	14.4 (B)
		Approach	**25.2 (C)**	**17.8 (B)**
	Northbound	Left	8.3 (A)	8.2 (A)
		Through	9.1 (A)	8.5 (A)
		Right	8.7 (A)	8.7 (A)
		Approach	**9.0 (A)**	**8.7 (A)**
	Southbound	Left	9.4 (A)	9.9 (A)
		Through/ Right	8.7 (A)	9.5 (A)
		Approach	**9.1 (A)**	**9.7 (A)**
	Total Intersection		**16.6 (B)**	**14.6 (B)**
Holtec Boulevard and Covanta Driveway/ I-676 SB off-ramp	Eastbound	Through/ Right	5.4 (A)	11.2 (B)
	Westbound	Left	7.2 (A)	7.2 (A)
		Through	7.4 (A)	7.1 (A)
		Approach	**7.4 (A)**	**7.1 (A)**
	Northbound	Left	20.8 (C)	15.4 (B)
		Right	20.8 (C)	15.4 (B)
		Approach	**20.8 (C)**	**15.4 (B)**
	Southbound	Left	28.7 (C)	27.6 (C)
		Through/ Right	25.2 (C)	23.5 (C)
		Approach	**27.5 (C)**	**25.7 (C)**
	Total Intersection		**14.5 (B)**	**17.3 (B)**
Morgan St and Master St/ I-676 NB off-ramp	Eastbound	Left/ Through	16.4 (B)	13.4 (B)
	Westbound	Through/ Right	18.4 (B)	18.5 (B)
	Northbound	Left	8.8 (A)	7.7 (A)
		Through/ Right	10.7 (B)	10.1 (B)
		Approach	**10.3 (B)**	**9.9 (A)**
	Southbound	Left	8.0 (A)	8.0 (A)
		Right	8.2 (A)	8.1 (A)
		Approach	**8.2 (A)**	**8.1 (A)**
	Total Intersection		**12.4 (B)**	**12.3 (B)**

4. Project Traffic Volume Increase

The Project would generate additional truck trips to and from the site. The traffic impact analysis was based on the following information provided by Covanta.

The current vehicle trips associated with the operation of the CCERC ("the Facility") ranges from 180 to 195 vehicles per day which is associated with a current actual Municipal Solid Waste (MSW) throughput of approximately 398,000 tons per year. The Project will result in an MSW throughput rate of approximately 425,000 tons per year and a Liquid Direct Injection (LDI) throughput of approximately 26,000 tons per year (facility MSW limit of 451,140 tpy – 425,000 tpy). Therefore, the Project will result in an increase of 27,140 tons per year of MSW and 26,000 tons per year of LDI.

MSW loads average 20 tons per vehicle (transfer trailer loads) and LDI loads average 20 tons per vehicle (5,000 gallon loads). Waste will continue to be received at the CCERC on weekdays from 7:00 A.M to 5:00 P.M and from 7:00 A.M to 12:00 PM on Saturday. The 27,140 additional tons of MSW at 20 tons per load is equivalent to 1,350 additional MSW deliveries per year, and 26,000 tons of LDI at 20 tons per load is equivalent to 1,300 LDI deliveries per year, for a total 2,650 additional waste deliveries per year. Additional ash generation would be approximately 20% by weight of the additional MSW, or 5,400 tons per year. At 20 tons per truck, ash disposal would generate an additional 270 trips per year. This equates to a total number of additional vehicle trips per year of 2,920 (1350 + 1300 + 270) and the total number of receiving and disposal hours would equal 55 hours per week ([5 days x 10 hours] + 5 hours), and the total hours per year would equal 2,750 hours (55 x 50 weeks per year).

Therefore, the Project is expected to result in approximately 2,920 additional trucks trips per year over 2,750 receiving hours per year which equates to approximately one (1) additional vehicular trip per hour, to and from the Facility, respectively.

Figure 5**5 and Figure** 6**6** below show the total, existing ("Base Volume" in blue) plus Project ("Trip Gen Volume" in red), traffic volumes in black for AM and PM, respectively.

Figure 5. Existing Year 2022 AM Traffic Volumes with Project Traffic Increase

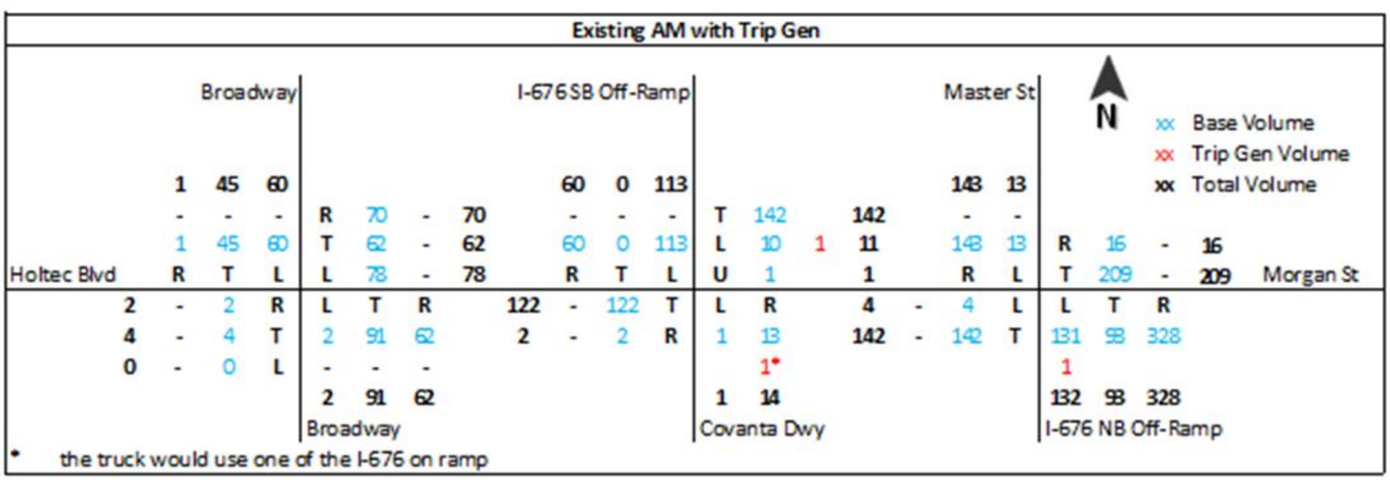


Figure 6. Existing Year 2022 PM Traffic Volumes with Project Traffic Increase

Existing PM with Trip Gen

			Broadway								I-676 SB Off-Ramp							Master St		N				
																						xx	Base Volume	
																						xx	Trip Gen Volume	
		1	124	97						117	3	146						147	28			xx	Total Volume	
		-	-	-	R	39	-	39		-	-	-	T	64		64		-	-					
		1	124	97	T	8	-	8		117	3	146	L	12	1	13		147	28	R	17	-	17	
Holtec Blvd		R	T	L	L	143	-	143		R	T	L	U	0		0		R	L	T	227	-	227	Morgan St
	0	-	0	R	L	T	R		249	-	249	T	L	R		3	-	3	L	L	T	R		
	84	-	84	T	1	38	76		4	-	4	R	5	18		216	-	216	T	39	100	256		
	9	-	9	L	-	-	-							1*						1				
					1	38	76						5	19						40	100	256		
					Broadway								Covanta Dwy							I-676 NB Off-Ramp				

* the truck would use one of the I-676 on ramp

5. Traffic Analysis Results with Project Increase

The traffic capacity analysis was completed to determine the impact of the additional trips generated by the Project. For this analysis the volumes shown in **Figure 5** and **Figure 6** were used in the Synchro model.

Table 3 below summarizes the capacity analysis results and the detailed traffic capacity analysis reports are presented in **Appendix E**. From the table below, it can be seen that the overall intersection LOS for all the intersections with the Project is B, with no change from the existing conditions, which implies that the intersections currently operate acceptably and would continue to do so following the Project with no improvements or mitigation required. Therefore, the Project would have an negligible impact on traffic operations at all three (3) intersections under study.

Table 3. Existing Year 2022 with Project Increase Volume

Intersection	Approach	Movement	Existing Peak Hour Delay in seconds (LOS)		w/Project Peak Hour Delay in seconds (LOS)	
			A.M.	P.M.	A.M.	P.M.
Holtec Boulevard and Broadway	Eastbound	Left	22.7 (C)	-	22.7 (C)	-
		Through/ Right	25.0 (C)	24.1 (C)	25.0 (C)	24.1 (C)
		Approach	**24.2 (C)**	**24.1 (C)**	**24.2 (C)**	**24.1 (C)**
	Westbound	Left	23.7 (C)	18.9 (B)	23.7 (C)	18.9 (B)
		Through/ Right	26.2 (C)	14.4 (B)	26.2 (C)	14.6 (B)
		Approach	**25.2 (C)**	**17.8 (B)**	**25.2 (C)**	**17.8 (B)**
	Northbound	Left	8.3 (A)	8.2 (A)	8.3 (A)	8.2 (A)
		Through	9.1 (A)	8.5 (A)	9.1 (A)	8.5 (A)
		Right	8.7 (A)	8.7 (A)	8.7 (A)	8.7 (A)
		Approach	**9.0 (A)**	**8.7 (A)**	**9.0 (A)**	**8.7 (A)**
	Southbound	Left	9.4 (A)	9.9 (A)	9.4 (A)	9.9 (A)
		Through/ Right	8.7 (A)	9.5 (A)	8.7 (A)	9.5 (A)
		Approach	**9.1 (A)**	**9.7 (A)**	**9.1 (A)**	**9.7 (A)**
	Total Intersection		**16.6 (B)**	**14.6 (B)**	**16.6 (B)**	**14.6 (B)**
Holtec Boulevard and Covanta Driveway/ I-676 SB off-ramp	Eastbound	Through/ Right	5.4 (A)	11.2 (B)	5.4 (A)	11.2 (B)
	Westbound	Left	7.2 (A)	7.2 (A)	7.2 (A)	7.2 (A)
		Through	7.4 (A)	7.1 (A)	7.4 (A)	7.2 (A)
		Approach	**7.4 (A)**	**7.1 (A)**	**7.4 (A)**	**7.2 (A)**
	Northbound	Left	20.8 (C)	15.4 (B)	20.8 (C)	15.4 (B)
		Right	20.8 (C)	15.4 (B)	20.9 (C)	15.4 (B)
		Approach	**20.8 (C)**	**15.4 (B)**	**20.9 (C)**	**15.4 (B)**
	Southbound	Left	28.7 (C)	27.6 (C)	28.7 (C)	27.6 (C)
		Through/ Right	25.2 (C)	23.5 (C)	25.2 (C)	23.5 (C)
		Approach	**27.5 (C)**	**25.7 (C)**	**27.5 (C)**	**25.7 (C)**
	Total Intersection		**14.5 (B)**	**17.3 (B)**	**14.5 (B)**	**17.2 (B)**
Morgan Street and Master Street / I-676 NB off-ramp	Eastbound	Left/ Through	16.4 (B)	13.4 (B)	16.4 (B)	13.4 (B)
	Westbound	Through/ Right	18.4 (B)	18.5 (B)	18.4 (B)	18.5 (B)
	Northbound	Left	8.8 (A)	7.7 (A)	8.9 (A)	7.7 (A)
		Through/ Right	10.7 (B)	10.1 (B)	10.7 (B)	10.1 (B)
		Approach	**10.3 (B)**	**9.9 (A)**	**10.3 (B)**	**9.9 (A)**
	Southbound	Left	8.0 (A)	8.0 (A)	8.0 (A)	8.0 (A)
		Right	8.2 (A)	8.1 (A)	8.2 (A)	8.1 (A)
		Approach	**8.2 (A)**	**8.1 (A)**	**8.2 (A)**	**8.1 (A)**
	Total Intersection		**12.4 (B)**	**12.3 (B)**	**12.4 (B)**	**12.3 (B)**

6. Summary

The findings of the study indicate that the truck traffic increase associated with the proposed Project will have a negligible impact on the traffic in the vicinity of the CCERC as the adjacent intersections analyzed have sufficient capacity to accommodate the minor traffic increase.

APPENDICES

APPENDIX A
Environmental Impact Study Excerpts

8.3.3 Historical and Archeological Impacts

The State and National Registers of Historic Places has singled out for recognition four sites which are within the general vicinity of the proposed facility. Two of these sites, the Morgan Village Archeological site and a Prehistoric/Historic occupation site in Gloucester City are sub-surface and should not come in contact with any adverse impact of the facility's construction or operation. The two remaining sites, the Fairview Historical District and Newton Avenue Garage may be subject to minor adverse impacts due to the potential for particulate fallout and the acidification of rainfall (depending on weather conditions) due to stack emissions. These types of impacts generally are endemic to major metropolitan areas, and result in accelerated aging, corrosion, and defacement of structures. There have been no historic or archaelogical resources identified on the site. Impacts to the historic and archeologic resources of the area are not projected to be significant in terms of air pollutants, since implementation of state-of-the-art air pollution control equipment for acid gases and particulates is required in New Jersey, and should effectively mitigate the potential adverse impact. It is not expected that the increased traffic flow to and around the project site will have any discernible adverse impact on the areas' historic or archeologic resources.

8.4 Socioeconomic Impacts

8.4.1 Traffic and Transportation

Anticipated Transportation Routes To and From the Proposed Facility

The projected major garbage truck routes from the service area municipalities to the proposed South Camden Resource Recovery

Figure 8.2

?

site can be seen on Figure 8.2. The primary routes to the site would be Route 30 north to I-295 south to I-76, I-676 north; Route 168 north to I-295 south to I-76, I-676 north; and Route 42 north to I-76, I-676. Trucks traveling to the site from Camden City would take I-676 south to the site. From Woodlynne, trucks will be directed to use Route 168 to Route 130, to I-676 North to Morgan Boulevard. These vehicle routing schemes are intended to eliminate the use of local roadways to reach the site, however some trucks from Camden and Gloucester City may use Broadway to reach Morgan Boulevard. All other refuse vehicles will reach the site via the Morgan Boulevard exit off of I-676. The proposed project site is located directly adjacent to this exit, therefore travel from the exit to the site entrance would be a maximum of 800 feet on Morgan Boulevard. Refuse trucks will return to their respective collection areas via the same route which they used to arrive at the facility.

Traffic Volumes

Approximately 290-310 vehicle trips to the facility will occur each week day under full operations. The maximum rate of vehicle trips is projected to be on the order of 53-54 per peak hour. Based on the projected operation and maintenance staff, 12 to 15 employee cars are expected to enter and leave the site during the 7:00 A.M. to 3:00 P.M. shift. Visitors to the facility during this shift are expected to account for 2 or 3 cars per day, or a single bus. Thus, without accounting for special maintenance, ash handling or delivery vehicles, the total number of private vehicles per day per shift is expected to total no more than approximately 20.

Thus, during each weekday, an additional maximum of about 330 vehicles will pass through the intersection of the I-676 ramp, Morgan Boulevard, and the facility driveway. This intersection now handles an average of 10,867 vehicles per day at a level-of-service of "C". The addition of 300+ vehicle round trips will result in an increase of daily traffic of about 5.6 percent. This additional traffic is not projected to have an adverse effect on the existing level-of-service. An explanation of level-of-service (LOS) rating is given in Section 3.4.1.

<u>On-site Traffic</u>

To minimize the impact of traffic onsite due to waste hauling vehicles, the following provisions will be employed. Garbage trucks will be scale weighed into the plant and weighed upon their exit, after unloading. Trucks will be queued in an orderly manner for entry weighing. If necessary, the entrance road from Morgan Boulevard to the main gate adjacent to the scale house can accomodate a queue of 17 packer trucks or 10 transfer trailers without causing a backup of traffic onto Morgan Boulevard. Queuing also will be utilized if necessary for entry into the tipping area, dumping into the pit, exiting the tipping floor, and exit weighing. A total of 30 queuing locations are provided on site to minimize traffic congestion. Each truck will be assigned a parking location on the tipping floor before proceeding to that area. Truck drivers will be instructed to dump into the pit and not on the tipping floor to prevent congestion and traffic accidents. A speed limit of 10 miles per hour will be enforced onsite and 5 miles per hour in the tipping area. A total of twenty unloading locations will be provided inside the tipping floor, 17 packer truck locations and 3 transfer trailer locations.

Trucks will enter the site from Morgan Boulevard via the main access road. The site road system will provide for a counter clockwise circular traffic pattern around the plant site as shown on Figure 4.1. The access road from Morgan Blvd. to the plant site will be a two lane 24'0" wide road with a 4'0" gravel shoulder on each side. Onsite roads, which are 2 lanes, will be

24'0" wide roads with a 4'0" wide gravel shoulder on each side. Because of the traffic patterns there will be areas where the two lane road splits into two single lane 12'0" wide roads with 4'0" wide gravel shoulders on both sides of the single lane roads. The traffic plan will utilize a one way only traffic flow. This one way road system will provide for a smoothly controlled flow of refuse vehicles, transfer vehicles, plant vehicles, private vehicles, employee and service vehicles to and from the facility. Appropriate directional and traffic control signage and signalization will be utilized and is detailed in the Engineering Report. Visitors will enter the site from Morgan Boulevard and park in a visitors' parking lot at the front of the administration building.

8.4.2. Sewage & Wastewater

Wastewater sources from the proposed facility include neutralization regeneration waste water from the anion/cation units (from the boiler feedwater preparation system), backwash from carbon filters, cooling tower blowdown, boiler blowdown, waste condensate, intermittent flow from the garbage pit sump, utility station clean-up water, dirty storm water and sanitary waste water.

Sanitary waste will be collected and directed to the Camden City sewer system. The estimated average sanitary wastewater flow is 1500 gpd., with a peak instantaneous flow of 3000 gpd. The local sanitary wastewater collection system in Morgan Boulevard can accomodate these flows without adverse impact on other users, and the upgraded CCMUA regional wastewater treatment facility will accept the additional flow without overloading plant capacity. The estimated composition of the sanitary wastewater flow is based upon a typical medium-high strength sanitary waste.

received a SHPO opinion of eligibility in 1983. Refer to Appendix C for correspondence from the NJDEP on the subject of Historic/Archeologic resources near the project site.

3.4 Socioeconomic Conditions

3.4.1 Traffic

a. Description of Site Access

The proposed Camden County Resource Recovery project site is located on Morgan Boulevard, adjacent to Interstate 676 in South Camden City. The proposed site is largely served by the same thoroughfares that are used by other facilities in the industrial district. These primary roadways include Interstate 676, Interstate 76, Broadway Avenue, and Morgan Boulevard.

Direct vehicular access to the site would be by I-676 via the Morgan Boulevard interchange which is located less than 400 feet from the proposed entrance to the site. Interstate 676 intersects with I-76 approximately one mile south of the Morgan Boulevard interchange. Both I-676 and I-76 are part of the interstate system initiated in 1956. Each highway ranges from six to eight lanes in width and is considered a major industrial and commercial collector.

Broadway Avenue is a two lane commercial and industrial collector, 30 to 40 feet in width, oriented in a north-south direction to the west of the site. Broadway is currently used as a major connector to both downtown Camden and Gloucester City.

Morgan Boulevard is a two lane local, commercial and industrial roadway, 40 feet in width, oriented in an east-west direction connecting Broadway with Interstate 676, and providing access to the South Jersey Port properties, Morgan Village and Fairview neighborhoods.

Access to the site from other parts of Camden County is available via U. S. Route 130 and Route 42 which connect with Interstate 76 approximately 1.1 miles and 2.5 miles, respectively southeast of the project site.

Immediate access to the site is only fair under existing conditions due to access limitations to the east and south. To the east of the site is I-676 and to the south is Newton Creek. Access from the west would require either a grade crossing or an overpass due to the existing railroad line and drainage ditch (See Figures 2.1 and 2.2). The Pennsylvania Reading Seashore Line (Conrail) provides freight service to nearby industries. This 2-track right-of-way is available to provide rail access for both the construction phase and operational phase of the proposed resource recovery facility. The best access to the site is provided by Morgan Boulevard with its direct connections to I-676.

b. Traffic Volume

In order to gauge any traffic impacts that might occur from the proposed resource recovery facility, two 24-hour traffic counts were performed at the interchange of I-676 and Morgan Boulevard, near the proposed site access/egress point. This intersection was chosen due to its location and the probability of being the most utilized route for most or all traffic bound to and from the facility.

Due to the complex nature of the interchange, (See Figure 3.12, two separate counts were performed on each side of the I-676 overpass. Through traffic on I-676 was not counted in this study

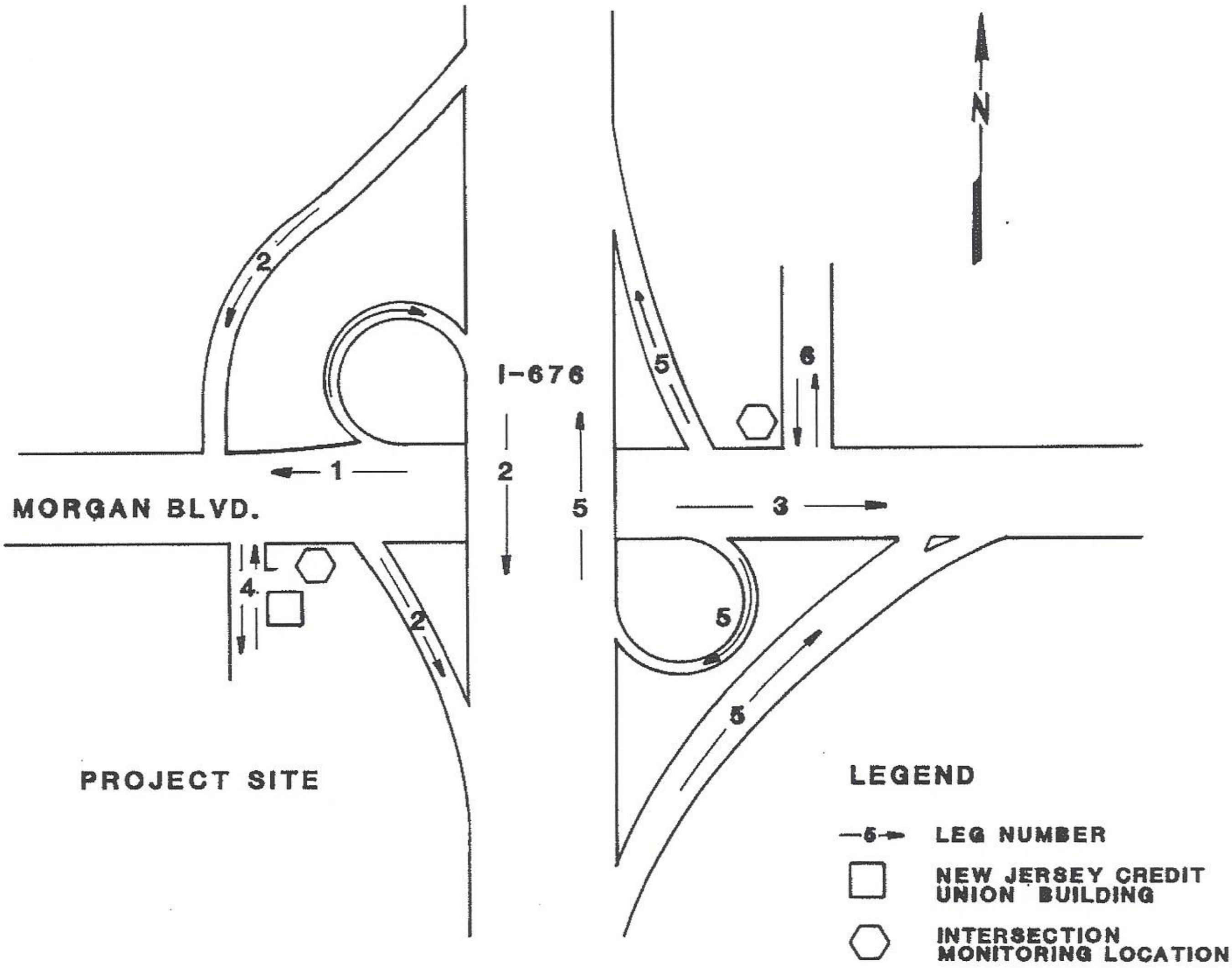


FIGURE 3.12

N.T.S.

since data was available from the New Jersey State Department of Transportation. Data from NJDOT revealed that an annual average daily traffic (AADT) range of 13,000 to 23,000 southbound vehicles in 1983 and 14,800 to 19,400 southbound vehicles and 17,300 to 20,800 northbound vehicles in 1982 occurred between Atlantic Avenue and the ramp to the Walt Whitman Bridge on I-676. No northbound data was supplied for 1983.

The Interstate 676/Morgan Boulevard interchange provides on and off ramps to both northbound and southbound I-676. On-ramps are provided on each side of Morgan Boulevard so that all movements onto I-676 are via right turns. Both off ramps are intended to intersect Morgan Boulevard at traffic signal controlled locations which permit traffic to turn in either direction onto Morgan Boulevard. However, the traffic signal at the intersection of Morgan Boulevard and the southbound I-676 off ramp does not yet exist. The signal is to be installed by Conrail with an automatic train pre-emption system, but the completion date is not yet determined. The interchange is a "clover leaf-diamond" type with traffic entering I-676 served by the "clover-leaf" ramps and exiting traffic served by the "diamond" ramps (refer to Figure 3.12).

The project site is located on the west side of the I-676 interchange. Complete twenty-four hour intersection counts for this location can be found in Appendix D. The total number of vehicles counted between 6:00 a.m. December 16, 1985 and 6:00 a.m. December 17, 1985 was 11,032 vehicles. Of this total, 9,331 trucks. Of these totals, 3,848 vehicles turned from Morgan Boulevard onto I-676, 1,481 from the westbound lanes of Morgan Blvd and 2,367 from the eastbound lanes. Totals from the second traffic count, December 17 to December 18, are slightly but not significantly lower. The total number of vehicles was 10,701 with 9,006 cars and 1,695 trucks. These 24-hour totals represent

TABLE 3.15

TRAFFIC TOTALS

	East Side of I-676			West Side of I-676		
	Total Vehicles	Total Cars	Total Trucks	Total Vehicles	Total Cars	Total Trucks
12/16/85	5797	4789	1008	11,032	9331	1701
12/17/85						
12/17/85	8051	6701	1350	10,701	9006	1695
12/18/85						

a decrease of traffic from a 1977 annual average daily traffic count (AADT) provided by N.J.D.O.T. of 14,676 vehicles.

A traffic survey was also performed on the east side of the I-676 overpass. Figure 3.12 shows both the east and west side of the overpass which were considered separately in this study. Table 3.15 gives totals for each intersection for cars, trucks, and all vehicles for each 24-hour period. Hourly totals and totals for each vehicle turning option can also be found in Appendix D.

Levels-of-service (LOS) are an indication of the degree of delay experienced by drivers. Ratings range from A to F, with E being considered the threshold of driver acceptability and A being a condition of minimum or no delay. Levels-of-service are defined as follows:

<u>Level of Service A</u> indicates that all approaches are open,i.e. no signal phase is fully used by traffic: turning movements are easily made and no vehicle waits longer than one red traffic light.
<u>Level of Service B</u> represents stable operations with an occasional approach phase used fully and a substantial number of phases approaching full use.

<u>Level of Service C</u> still reflects stable operations, but with fully loaded phases occurring more frequently. Occasionally, drivers may have to wait through more than one red signal and back-ups may develop behind turning vehicles.

<u>Level of Service D</u> is a condition of increasing restriction. Delays to approaching traffic may be substantial during short periods within the peak travel period, but enough cycles with lower demand occur to permit periodic clearance

of developing queues (lines), thus preventing excessive back-ups.

Level of Service E represents traffic activity at capacity level and the most vehicles that any particular intersection or approach can accommodate. During capacity conditions, long queues may develop and delays may extend for several cycles.

Level of Service F represents jammed traffic conditions. Back-ups from downstream, or on the cross street, may restrict or prevent the movement of vehicles from certain approaches; hence, the volume of traffic that can be accommodated is unpredictable.

The northbound Interstate 676 off ramp to Morgan Boulevard is the only signalized intersection included in the traffic count study. Peak traffic volumes at this intersection occurred between the hours of 7:00 a.m. to 9:30 a.m. and 1:00 p.m. to 3:00 p.m., with the peak morning hour 7:30 a.m. to 8:30 a.m. and the peak afternoon hour 4:00 p.m. to 5:00 p.m. The level of service at this intersection was determined to be C during peak volume hours and A at all other times. All other entrance and exit ramps in the I-676 and Morgan Boulevard interchange are found to perform at a level-of-service of C or better during any peak hour.

Accident Statistics

The New Jersey Department of Transportation was contacted for statistics regarding traffic accidents at four major accident locations in the area of the proposed facility. These locations are:

1) Interstate Route 676 between mileposts 0.00 and 3.62.

2) Interstate Highway Route 76 between mileposts 0.00 and 2.04.

3) Broadway Avenue (County Route 551) between Morgan Boulevard and Jackson Street.

4) Morgan Boulevard between Broadway Avenue and its intersection with Fairview Avenue.

The New Jersey DOT provided a computer print-out of accidents occurring in these areas for the dates 1/01/82 to 12/31/82 and 1/01/83 to 12/31/83. The following assumptions were made prior to reviewing the accident data:

1) Solid waste receiving hours for the proposed resource recovery facility will be 7:00 a.m. to 6:00 p.m., Monday through Saturday.

2) Truck traffic in the area will span the full twelve (12) hours of receiving time at the proposed resource recovery facility.

A summary of applicable data is presented in Tables 3.16 and 3.17.

Four hundred ninety-six (496) accidents occurred in the four areas between 1/01/82 and 12/31/83, of which eighty-six (17.3%) involved at least one truck. Of the four hundred ninety-six accidents, 355 occurred between the hours of 6:00 a.m. and 6:00 p.m. Twenty-two percent (22%) of these accidents involved trucks. Eighty percent (80%) of the accidents involving trucks occurred between the hours of 6:00 a.m. and 6:00 p.m. on the days of Monday through Saturday. A comparison of Columns 5 and 7 on

TABLE 3.16
TRAFFIC ACCIDENT STATISTICS FOR 1982 & 1983

Location	Total No. Accidents	Total No. Involving Trucks	Total No. 6AM-6PM Monday-Friday	Tot.No.6AM-6PM Monday-Friday Involving Trucks	Total No. 6AM-6PM Monday-Saturday	Tot.No.6AM-6PM Monday-Saturday Involving Trucks	Total No. 6AM-6PM	Total No. 6AM-6PM Involving Trucks
				1982				
1	52	5	30	4	31	4	33	4
2	167	27	91	20	100	20	112	23
3	19	6	12	6	15	6	15	6
4	7	2	5	2	6	2	6	2
				1983				
1	67	4	31	4	36	4	41	4
2	164	36	86	26	100	28	111	28
3	12	4	10	4	10	4	10	4
4	8	2	6	1	7	1	7	2
Totals	496	86	271	67	305	69	335	73

3-85

TABLE 3.17

INJURY OCCURRENCE DUE TO TRAFFIC ACCIDENTS

Location	Total No. Injured	Total No. Injured 6AM-6PM Monday-Saturday	Total No. Injured 6AM-6PM Monday-Saturday Involving Trucks
		1982	
1	42	18	4
2	119	55	9
3	8	6	1
4	5	5	1
		1983	
1	45	22	1
2	134	65	16
3	14	12	7
4	12	12	1
		TOTALS	
	379	195	40

Table 3.16 shows that the addition of Saturday to the data resulted in the addition of only two more accidents involving trucks.

Table 3.17 presents data concerning the number of injuries incurred as a result of traffic accidents at each of the four locations. The total number of people injured over the two year period was the hundred seventy-nine (379), one hundred seventy-four (174) during 1982 and two hundred five (205) during 1983. One hundred ninety-five (195) or fifty-one percent of the two year total were injured in accidents occurring between 6:00 a.m. and 6:00 p.m., Monday through Saturday. Two hundred fifty three (253) or sixty-seven percent of all accidents resulting in injuries occurred in location two, Interstate Route 76.

3.4.2 Sewerage

The Camden County Municipal Utilities Authority (CCMUA) owns and operates the main sewage treatment facility (Jackson Street WTF) in the City of Camden. This facility is currently being upgraded from primary to secondary treatment and is scheduled to be completed in ~~December 1986~~ January 87. The secondary treatment system consists of primary clarification, an enriched oxygen activated sludge system, secondary clarification and chlorination. Present flow to the facility is approximately 17 million gallons per day with the sole contributor being the City of Camden. The upgraded facility will have a design capacity of 38 million gallons per day and is intended to eventually treat all the sewage collected in Camden County's Cooper River, Big Timber Creek and Newton Creek watersheds.

same as below

The discharge from the ~~District~~ Delaware One Wastewater ~~Treatment~~ Pollution Control Facility will continue as a surface water discharge to the Delaware River adjacent to the Jackson Street plant, near River mile 97.9,

APPENDIX B
Turning Movement Counts (TMC)

TRI-STATE TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Camden County, NJ
Holtec Blvd & Broadway
Thursday, September 22, 2022
Location: 39.912638, -75.118081

Count Name: Holtec Blvd & Broadway
Site Code:
Start Date: 09/22/2022
Page No: 1

Turning Movement Data

Start Time	Holtec Blvd Eastbound							Holtec Blvd Westbound							Broadway Northbound							Boradway Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	0	1	1	0	0	0	2	22	32	21	0	0	0	75	1	9	9	0	1	0	20	9	6	0	0	0	0	15	112
7:15 AM	0	2	0	0	0	3	2	22	16	30	0	0	0	68	0	21	8	2	0	0	31	16	11	0	0	0	3	27	128
7:30 AM	0	2	0	0	0	1	2	26	14	16	0	0	0	56	0	19	14	2	0	0	35	10	11	0	0	0	0	21	114
7:45 AM	0	1	0	0	0	0	1	20	25	21	1	0	0	67	1	31	13	1	0	0	46	11	9	1	0	0	0	21	135
Hourly Total	0	6	1	0	0	4	7	90	87	88	1	0	0	266	2	80	44	5	1	0	132	46	37	1	0	0	3	84	489
8:00 AM	1	0	0	0	0	0	1	15	11	18	0	0	0	44	1	22	16	0	0	0	39	20	11	0	0	0	0	31	115
8:15 AM	1	1	0	0	0	0	2	17	12	14	0	0	0	43	0	19	16	0	0	0	35	19	14	0	0	0	0	33	113
8:30 AM	1	2	0	0	0	0	3	17	17	9	0	0	1	43	0	20	18	0	0	0	38	12	10	0	0	0	0	22	106
8:45 AM	0	2	0	0	0	1	2	16	13	14	1	0	0	44	0	8	12	0	0	0	20	16	8	0	0	0	0	24	90
Hourly Total	3	5	0	0	0	1	8	65	53	55	1	0	1	174	1	69	62	0	0	0	132	67	43	0	0	0	0	110	424
9:00 AM	0	0	1	0	0	0	1	15	9	11	0	0	0	35	0	7	23	0	0	0	30	10	8	0	0	0	0	18	84
9:15 AM	1	1	0	0	0	0	2	14	8	16	0	0	0	38	0	12	18	0	0	0	30	15	5	0	0	0	0	20	90
9:30 AM	1	2	0	0	0	2	3	11	7	17	0	0	0	35	0	8	17	1	0	0	26	22	13	1	0	0	0	36	100
9:45 AM	0	0	0	0	0	1	0	16	0	14	0	0	0	30	0	9	11	0	0	0	20	7	12	0	0	0	1	19	69
Hourly Total	2	3	1	0	0	3	6	56	24	58	0	0	0	138	0	36	69	1	0	0	106	54	38	1	0	0	1	93	343
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	1	3	0	0	0	0	4	15	0	18	0	0	0	33	0	9	16	0	0	0	25	13	16	0	0	0	0	29	91
2:15 PM	1	2	2	0	0	0	5	14	7	11	0	0	0	32	0	9	21	0	0	0	30	18	14	0	0	0	0	32	99
2:30 PM	0	5	0	0	0	1	5	22	6	5	1	0	0	34	2	13	19	0	0	0	34	30	10	0	0	0	0	40	113
2:45 PM	1	6	0	0	0	0	7	12	6	8	0	0	0	26	0	5	16	2	0	0	23	14	16	1	0	0	0	31	87
Hourly Total	3	16	2	0	0	1	21	63	19	42	1	0	0	125	2	36	72	2	0	0	112	75	56	1	0	0	0	132	390
3:00 PM	0	4	3	0	0	0	7	16	6	15	0	0	0	37	1	9	18	0	0	0	28	24	19	1	0	0	0	44	116
3:15 PM	1	3	0	0	0	2	4	20	5	11	0	0	0	36	0	15	18	0	0	0	33	22	22	1	0	0	0	45	118
3:30 PM	0	50	4	5	0	3	59	20	1	11	0	0	0	32	1	7	21	0	0	0	29	32	41	4	0	0	3	77	197
3:45 PM	0	19	2	1	0	0	22	19	2	11	0	0	0	32	0	7	24	0	0	0	31	20	16	0	1	0	1	37	122
Hourly Total	1	76	9	6	0	5	92	75	14	48	0	0	0	137	2	38	81	0	0	0	121	98	98	6	1	0	4	203	553
4:00 PM	0	38	1	1	0	0	40	22	4	12	0	0	0	38	1	9	19	1	0	2	30	20	23	0	0	0	0	43	151
4:15 PM	0	20	3	1	0	0	24	28	1	10	0	0	0	39	0	5	24	0	0	0	29	24	24	0	0	0	0	48	140
4:30 PM	0	13	1	1	0	1	15	44	0	8	0	0	0	52	0	13	19	1	0	0	33	23	32	0	0	0	0	55	155
4:45 PM	0	13	1	0	0	0	14	49	3	9	0	0	1	61	0	11	11	1	0	0	23	30	45	1	0	0	0	76	174
Hourly Total	0	84	6	3	0	1	93	143	8	39	0	0	1	190	1	38	73	3	0	2	115	97	124	1	0	0	0	222	620
5:00 PM	1	18	4	0	0	0	23	39	2	8	0	0	0	49	0	8	24	0	0	0	32	37	50	0	0	0	1	87	191
5:15 PM	0	14	2	0	0	1	16	39	2	9	0	0	0	50	1	11	18	0	0	0	30	27	31	0	0	0	0	58	154
5:30 PM	0	10	1	0	0	2	11	21	0	7	0	0	0	28	0	8	13	0	0	0	21	18	10	0	0	0	0	28	88
5:45 PM	1	10	1	0	0	1	12	22	2	11	0	0	0	35	0	9	11	1	0	0	21	25	15	0	0	0	0	40	108
Hourly Total	2	52	8	0	0	4	62	121	6	35	0	0	0	162	1	36	66	1	0	0	104	107	106	0	0	0	1	213	541
Grand Total	11	242	27	9	0	19	289	613	211	365	3	0	2	1192	9	333	467	12	1	2	822	544	502	10	1	0	9	1057	3360
Approach %	3.8	83.7	9.3	3.1	0.0	-	-	51.4	17.7	30.6	0.3	0.0	-	-	1.1	40.5	56.8	1.5	0.1	-	-	51.5	47.5	0.9	0.1	0.0	-	-	-
Total %	0.3	7.2	0.8	0.3	0.0	-	8.6	18.2	6.3	10.9	0.1	0.0	-	35.5	0.3	9.9	13.9	0.4	0.0	-	24.5	16.2	14.9	0.3	0.0	0.0	-	31.5	-
Lights	11	232	25	9	0	-	277	469	202	277	1	0	-	949	9	281	244	8	0	-	542	447	454	9	1	0	-	911	2679
% Lights	100.0	95.9	92.6	100.0	-	-	95.8	76.5	95.7	75.9	33.3	-	-	79.6	100.0	84.4	52.2	66.7	0.0	-	65.9	82.2	90.4	90.0	100.0	-	-	86.2	79.7
Buses	0	0	0	0	0	-	0	2	0	11	0	0	-	13	0	30	2	0	0	-	32	15	30	0	0	0	-	45	90
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.3	0.0	3.0	0.0	-	-	1.1	0.0	9.0	0.4	0.0	0.0	-	3.9	2.8	6.0	0.0	0.0	-	-	4.3	2.7
Trucks	0	10	2	0	0	-	12	142	9	77	2	0	-	230	0	22	221	4	1	-	248	82	18	1	0	0	-	101	591
% Trucks	0.0	4.1	7.4	0.0	-	-	4.2	23.2	4.3	21.1	66.7	-	-	19.3	0.0	6.6	47.3	33.3	100.0	-	30.2	15.1	3.6	10.0	0.0	-	-	9.6	17.6
Bicycles on Crosswalk	-	-	-	-	-	6	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	31.6	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	11.1	-	-
Pedestrians	-	-	-	-	-	13	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	-	68.4	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	88.9	-	-

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Camden County, NJ
Holtec Blvd & Broadway
Thursday, September 22, 2022
Location: 39.912638, -75.118081

Count Name: Holtec Blvd & Broadway
Site Code:
Start Date: 09/22/2022
Page No: 2

09/22/2022 7:00 AM
Ending At
09/22/2022 6:00 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Boradway [SB]

Out	In	Total
570	911	1481
41	45	86
101	101	202
0	0	0
0	0	0
712	**1057**	**1769**

R	T	L	U	P
10	454	447	0	0
0	30	15	0	0
1	18	82	0	0
0	0	0	0	1
0	0	0	0	8
11	**502**	**544**	**0**	**9**

Holtec Blvd [EB]

Out	In	Total
221	277	498
0	0	0
10	12	22
0	0	0
0	0	0
231	**289**	**520**

U	L	T	R	P
0	11	232	34	0
0	0	0	0	0
0	0	10	2	0
0	0	0	0	6
0	0	0	0	13
0	**11**	**242**	**36**	**19**

Holtec Blvd [WB]

Out	In	Total
931	949	1880
17	13	30
317	230	547
0	0	0
0	0	0
1265	**1192**	**2457**

R	T	L	U	P
278	202	469	0	0
11	0	2	0	0
79	9	142	0	0
0	0	0	0	0
0	0	0	0	2
368	**211**	**613**	**0**	**2**

U	L	T	R	P
0	9	281	252	0
0	0	30	2	0
1	0	22	225	0
0	0	0	0	0
0	0	0	0	2
1	**9**	**333**	**479**	**2**

Out	In	Total
957	542	1499
32	32	64
163	248	411
0	0	0
0	0	0
1152	**822**	**1974**

Broadway [NB]

Turning Movement Data Plot

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Camden County, NJ
Holtec Blvd & Broadway
Thursday, September 22, 2022
Location: 39.912638, -75.118081

Count Name: Holtec Blvd & Broadway
Site Code:
Start Date: 09/22/2022

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Holtec Blvd Eastbound							Holtec Blvd Westbound							Broadway Northbound							Boradway Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:15 AM	0	2	0	0	0	3	2	22	16	30	0	0	0	68	0	21	8	2	0	0	31	16	11	0	0	0	3	27	128
7:30 AM	0	2	0	0	0	1	2	26	14	16	0	0	0	56	0	19	14	2	0	0	35	10	11	0	0	0	0	21	114
7:45 AM	0	1	0	0	0	0	1	20	25	21	1	0	0	67	1	31	13	1	0	0	46	11	9	1	0	0	0	21	135
8:00 AM	1	0	0	0	0	0	1	15	11	18	0	0	0	44	1	22	16	0	0	0	39	20	11	0	0	0	0	31	115
Total	1	5	0	0	0	4	6	83	66	85	1	0	0	235	2	93	51	5	0	0	151	57	42	1	0	0	3	100	492
Approach %	16.7	83.3	0.0	0.0	0.0	-	-	35.3	28.1	36.2	0.4	0.0	-	-	1.3	61.6	33.8	3.3	0.0	-	-	57.0	42.0	1.0	0.0	0.0	-	-	-
Total %	0.2	1.0	0.0	0.0	0.0	-	1.2	16.9	13.4	17.3	0.2	0.0	-	47.8	0.4	18.9	10.4	1.0	0.0	-	30.7	11.6	8.5	0.2	0.0	0.0	-	20.3	-
PHF	0.250	0.625	0.000	0.000	0.000	-	0.750	0.798	0.660	0.708	0.250	0.000	-	0.864	0.500	0.750	0.797	0.625	0.000	-	0.821	0.713	0.955	0.250	0.000	0.000	-	0.806	0.911
Lights	1	3	0	0	0	-	4	49	66	64	1	0	-	180	2	84	36	3	0	-	125	47	33	1	0	0	-	81	390
% Lights	100.0	60.0	-	-	-	-	66.7	59.0	100.0	75.3	100.0	-	-	76.6	100.0	90.3	70.6	60.0	-	-	82.8	82.5	78.6	100.0	-	-	-	81.0	79.3
Buses	0	0	0	0	0	-	0	0	0	3	0	0	-	3	0	4	1	0	0	-	5	2	5	0	0	0	-	7	15
% Buses	0.0	0.0	-	-	-	-	0.0	0.0	0.0	3.5	0.0	-	-	1.3	0.0	4.3	2.0	0.0	-	-	3.3	3.5	11.9	0.0	-	-	-	7.0	3.0
Trucks	0	2	0	0	0	-	2	34	0	18	0	0	-	52	0	5	14	2	0	-	21	8	4	0	0	0	-	12	87
% Trucks	0.0	40.0	-	-	-	-	33.3	41.0	0.0	21.2	0.0	-	-	22.1	0.0	5.4	27.5	40.0	-	-	13.9	14.0	9.5	0.0	-	-	-	12.0	17.7
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Camden County, NJ
Holtec Blvd & Broadway
Thursday, September 22, 2022
Location: 39.912638, -75.118081

Count Name: Holtec Blvd & Broadway
Site Code:
Start Date: 09/22/2022
Page No: 4

Boradway [SB]

Out	In	Total
150	81	231
7	7	14
23	12	35
0	0	0
0	0	0
180	**100**	**280**

R	T	L	U	P
1	33	47	0	0
0	5	2	0	0
0	4	8	0	0
0	0	0	0	0
0	0	0	0	3
1	**42**	**57**	**0**	**3**

Holtec Blvd [EB]

Out	In	Total
69	4	73
0	0	0
0	2	2
0	0	0
0	0	0
69	**6**	**75**

U	L	T	R	P
0	1	3	0	0
0	0	0	0	0
0	0	2	0	0
0	0	0	0	0
0	0	0	0	4
0	**1**	**5**	**0**	**4**

Peak Hour Data

09/22/2022 7:15 AM
Ending At
09/22/2022 8:15 AM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Holtec Blvd [WB]

Out	In	Total
89	180	269
3	3	6
26	52	78
0	0	0
0	0	0
118	**235**	**353**

R	T	L	U	P
65	66	49	0	0
3	0	0	0	0
18	0	34	0	0
0	0	0	0	0
0	0	0	0	0
86	**66**	**83**	**0**	**0**

U	L	T	R	P
0	2	84	39	0
0	0	4	1	0
0	0	5	16	0
0	0	0	0	0
0	0	0	0	0
0	**2**	**93**	**56**	**0**

Out	In	Total
82	125	207
5	5	10
38	21	59
0	0	0
0	0	0
125	**151**	**276**

Broadway [NB]

Turning Movement Peak Hour Data Plot (7:15 AM)

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Camden County, NJ
Holtec Blvd & Broadway
Thursday, September 22, 2022
Location: 39.912638, -75.118081

Count Name: Holtec Blvd & Broadway
Site Code:
Start Date: 09/22/2022

Turning Movement Peak Hour Data (4:30 PM)

	Holtec Blvd Eastbound							Holtec Blvd Westbound							Broadway Northbound							Boradway Southbound							
Start Time	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
4:30 PM	0	13	1	1	0	1	15	44	0	8	0	0	0	52	0	13	19	1	0	0	33	23	32	0	0	0	0	55	155
4:45 PM	0	13	1	0	0	0	14	49	3	9	0	0	1	61	0	11	11	1	0	0	23	30	45	1	0	0	0	76	174
5:00 PM	1	18	4	0	0	0	23	39	2	8	0	0	0	49	0	8	24	0	0	0	32	37	50	0	0	0	1	87	191
5:15 PM	0	14	2	0	0	1	16	39	2	9	0	0	0	50	1	11	18	0	0	0	30	27	31	0	0	0	0	58	154
Total	1	58	8	1	0	2	68	171	7	34	0	0	1	212	1	43	72	2	0	0	118	117	158	1	0	0	1	276	674
Approach %	1.5	85.3	11.8	1.5	0.0	-	-	80.7	3.3	16.0	0.0	0.0	-	-	0.8	36.4	61.0	1.7	0.0	-	-	42.4	57.2	0.4	0.0	0.0	-	-	-
Total %	0.1	8.6	1.2	0.1	0.0	-	10.1	25.4	1.0	5.0	0.0	0.0	-	31.5	0.1	6.4	10.7	0.3	0.0	-	17.5	17.4	23.4	0.1	0.0	0.0	-	40.9	-
PHF	0.250	0.806	0.500	0.250	0.000	-	0.739	0.872	0.583	0.944	0.000	0.000	-	0.869	0.250	0.827	0.750	0.500	0.000	-	0.894	0.791	0.790	0.250	0.000	0.000	-	0.793	0.882
Lights	1	58	8	1	0	-	68	162	4	28	0	0	-	194	1	36	58	2	0	-	97	109	155	1	0	0	-	265	624
% Lights	100.0	100.0	100.0	100.0	-	-	100.0	94.7	57.1	82.4	-	-	-	91.5	100.0	83.7	80.6	100.0	-	-	82.2	93.2	98.1	100.0	-	-	-	96.0	92.6
Buses	0	0	0	0	0	-	0	0	0	2	0	0	-	2	0	6	0	0	0	-	6	2	2	0	0	0	-	4	12
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	5.9	-	-	-	0.9	0.0	14.0	0.0	0.0	-	-	5.1	1.7	1.3	0.0	-	-	-	1.4	1.8
Trucks	0	0	0	0	0	-	0	9	3	4	0	0	-	16	0	1	14	0	0	-	15	6	1	0	0	0	-	7	38
% Trucks	0.0	0.0	0.0	0.0	-	-	0.0	5.3	42.9	11.8	-	-	-	7.5	0.0	2.3	19.4	0.0	-	-	12.7	5.1	0.6	0.0	-	-	-	2.5	5.6
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Camden County, NJ
Holtec Blvd & Broadway
Thursday, September 22, 2022
Location: 39.912638, -75.118081

Count Name: Holtec Blvd & Broadway
Site Code:
Start Date: 09/22/2022

Peak Hour Data

09/22/2022 4:30 PM
Ending At
09/22/2022 5:30 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Boradway [SB]

Out	In	Total
65	265	330
8	4	12
5	7	12
0	0	0
0	0	0
78	**276**	**354**

R	T	L	U	P
1	155	109	0	0
0	2	2	0	0
0	1	6	0	0
0	0	0	0	0
0	0	0	0	1
1	**158**	**117**	**0**	**1**

Holtec Blvd [EB]

Out	In	Total
6	68	74
0	0	0
3	0	3
0	0	0
0	0	0
9	**68**	**77**

U	L	T	R	P
0	1	58	9	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	2
0	**1**	**58**	**9**	**2**

Holtec Blvd [WB]

Out	In	Total
227	194	421
2	2	4
20	16	36
0	0	0
0	0	0
249	**212**	**461**

R	T	L	U	P
28	4	162	0	0
2	0	0	0	0
4	3	9	0	0
0	0	0	0	0
0	0	0	0	1
34	**7**	**171**	**0**	**1**

U	L	T	R	P
0	1	36	60	0
0	0	6	0	0
0	0	1	14	0
0	0	0	0	0
0	0	0	0	0
0	**1**	**43**	**74**	**0**

Out	In	Total
326	97	423
2	6	8
10	15	25
0	0	0
0	0	0
338	**118**	**456**

Broadway [NB]

Turning Movement Peak Hour Data Plot (4:30 PM)

Camden County, NJ
Holtec Blvd & I676 SB Off Ramp/Cavanta Center
Thursday, September 22, 2022
Location: 39.91263, -75.117426

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Count Name: Holtec Blvd & I-676 SB Off Ramp/Cavanta Center Acess Rd
Site Code:
Start Date: 09/22/2022
Page No: 1

Turning Movement Data

	Holtec Blvd						Holtec Blvd					Cavanta Center Access Rd						I-676 Ramp						
	Eastbound						Westbound					Northbound						Southbound						
Start Time	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
7:00 AM	16	1	0	0	0	17	5	52	0	0	57	0	0	0	0	0	0	17	0	26	0	1	43	117
7:15 AM	28	0	0	0	0	28	1	36	0	0	37	2	1	2	0	0	5	17	0	25	0	4	42	112
7:30 AM	28	1	0	0	0	29	3	35	0	0	38	0	1	2	0	0	3	18	0	20	0	2	38	108
7:45 AM	24	0	0	0	0	24	0	47	1	0	48	0	0	3	0	0	3	28	0	17	0	1	45	120
Hourly Total	96	2	0	0	0	98	9	170	1	0	180	2	2	7	0	0	11	80	0	88	0	8	168	457
8:00 AM	36	0	0	0	0	36	2	28	0	0	30	1	1	0	0	0	2	36	0	11	2	0	49	117
8:15 AM	34	1	0	0	0	35	5	32	0	0	37	0	0	6	0	0	6	31	0	10	0	1	41	119
8:30 AM	30	1	0	0	0	31	3	29	0	0	32	1	2	2	0	0	5	37	2	12	1	1	52	120
8:45 AM	30	0	0	0	0	30	6	24	0	0	30	1	2	1	0	0	4	31	2	14	1	0	48	112
Hourly Total	130	2	0	0	0	132	16	113	0	0	129	3	5	9	0	0	17	135	4	47	4	2	190	468
9:00 AM	32	1	0	0	0	33	2	19	0	0	21	0	3	2	0	0	5	21	1	15	0	2	37	96
9:15 AM	31	2	0	0	0	33	8	27	0	0	35	0	4	0	0	0	4	22	2	12	0	1	36	108
9:30 AM	41	1	0	0	0	42	5	23	0	0	28	2	1	5	0	0	8	18	2	9	0	2	29	107
9:45 AM	18	0	0	0	0	18	8	19	0	0	27	0	6	3	0	1	9	16	2	8	0	2	26	80
Hourly Total	122	4	0	0	0	126	23	88	0	0	111	2	14	10	0	1	26	77	7	44	0	7	128	391
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	32	1	0	0	0	33	9	24	0	0	33	0	2	6	0	0	8	15	0	6	0	0	21	95
2:15 PM	42	0	0	0	0	42	6	21	0	0	27	1	7	1	0	1	9	25	4	10	1	0	40	118
2:30 PM	52	0	0	0	0	52	5	23	0	0	28	1	3	1	0	0	5	31	2	8	0	0	41	126
2:45 PM	37	0	0	0	0	37	3	15	0	0	18	1	1	9	0	0	11	20	0	10	1	2	31	97
Hourly Total	163	1	0	0	0	164	23	83	0	0	106	3	13	17	0	1	33	91	6	34	2	2	133	436
3:00 PM	44	1	0	0	1	45	3	19	0	0	22	0	7	5	0	0	12	48	2	18	1	4	69	148
3:15 PM	43	1	0	0	0	44	3	22	0	0	25	0	3	2	0	0	5	31	1	12	2	0	46	120
3:30 PM	102	1	0	0	0	103	2	14	0	0	16	0	3	2	0	0	5	40	1	16	0	2	57	181
3:45 PM	64	0	0	0	0	64	3	18	0	0	21	1	3	1	0	0	5	35	0	14	0	1	49	139
Hourly Total	253	3	0	0	1	256	11	73	0	0	84	1	16	10	0	0	27	154	4	60	3	7	221	588
4:00 PM	77	0	0	0	0	77	4	19	0	0	23	1	1	4	0	1	6	29	0	14	1	0	44	150
4:15 PM	64	3	0	0	0	67	3	14	0	0	17	1	0	0	0	3	1	33	0	19	4	2	56	141
4:30 PM	53	1	0	0	0	54	2	11	0	0	13	2	1	4	0	2	7	42	3	41	0	1	86	160
4:45 PM	55	0	0	0	0	55	3	20	0	0	23	1	3	5	0	1	9	42	0	43	0	3	85	172
Hourly Total	249	4	0	0	0	253	12	64	0	0	76	5	5	13	0	7	23	146	3	117	5	6	271	623
5:00 PM	78	2	0	0	0	80	2	14	0	0	16	1	0	1	0	0	2	21	0	27	4	2	52	150
5:15 PM	59	0	0	0	0	59	5	19	0	0	24	0	1	5	0	0	6	27	0	30	0	1	57	146
5:30 PM	41	0	0	0	1	41	6	11	0	0	17	0	1	0	0	0	1	22	2	17	0	2	41	100
5:45 PM	49	0	0	0	0	49	1	20	0	0	21	0	1	3	0	0	4	32	0	13	1	2	46	120
Hourly Total	227	2	0	0	1	229	14	64	0	0	78	1	3	9	0	0	13	102	2	87	5	7	196	516
Grand Total	1240	18	0	0	2	1258	108	655	1	0	764	17	58	75	0	9	150	785	26	477	19	39	1307	3479
Approach %	98.6	1.4	0.0	0.0	-	-	14.1	85.7	0.1	-	-	11.3	38.7	50.0	0.0	-	-	60.1	2.0	36.5	1.5	-	-	-
Total %	35.6	0.5	0.0	0.0	-	36.2	3.1	18.8	0.0	-	22.0	0.5	1.7	2.2	0.0	-	4.3	22.6	0.7	13.7	0.5	-	37.6	-
Lights	919	6	0	0	-	925	32	489	1	-	522	6	15	22	0	-	43	734	15	412	17	-	1178	2668
% Lights	74.1	33.3	-	-	-	73.5	29.6	74.7	100.0	-	68.3	35.3	25.9	29.3	-	-	28.7	93.5	57.7	86.4	89.5	-	90.1	76.7
Buses	16	0	0	0	-	16	0	11	0	-	11	0	0	0	0	-	0	27	0	2	0	-	29	56
% Buses	1.3	0.0	-	-	-	1.3	0.0	1.7	0.0	-	1.4	0.0	0.0	0.0	-	-	0.0	3.4	0.0	0.4	0.0	-	2.2	1.6
Trucks	305	12	0	0	-	317	76	155	0	-	231	11	43	53	0	-	107	24	11	63	2	-	100	755
% Trucks	24.6	66.7	-	-	-	25.2	70.4	23.7	0.0	-	30.2	64.7	74.1	70.7	-	-	71.3	3.1	42.3	13.2	10.5	-	7.7	21.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	11.1	-	-	-	-	-	10.3	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	35	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	88.9	-	-	-	-	-	89.7	-	-

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I-676 Ramp [SB]

Out	In	Total
0	1178	1178
0	29	29
0	100	100
0	0	0
0	0	0
0	**1307**	**1307**

R	T	L	P
429	15	734	0
2	0	27	0
65	11	24	0
0	0	0	4
0	0	0	35
496	**26**	**785**	**39**

Holtec Blvd [EB]

Out	In	Total
924	925	1849
13	16	29
231	317	548
0	0	0
0	0	0
1168	**1258**	**2426**

U	T	R	P
0	919	6	0
0	16	0	0
0	305	12	0
0	0	0	0
0	0	0	2
0	**1240**	**18**	**2**

09/22/2022 7:00 AM
Ending At
09/22/2022 6:00 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Holtec Blvd [WB]

Out	In	Total
1691	522	2213
43	11	54
425	231	656
0	0	0
0	0	0
2159	**764**	**2923**

T	L	U	P
489	32	1	0
11	0	0	0
155	76	0	0
0	0	0	0
0	0	0	0
655	**108**	**1**	**0**

U	L	R	P
0	6	37	0
0	0	0	0
0	11	96	0
0	0	0	1
0	0	0	8
0	**17**	**133**	**9**

Out	In	Total
53	43	96
0	0	0
99	107	206
0	0	0
0	0	0
152	**150**	**302**

Cavanta Center Access

Turning Movement Data Plot

Camden County, NJ
Holtec Blvd & I676 SB Off Ramp/Cavanta Center
Thursday, September 22, 2022
Location: 39.91263, -75.117426

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Count Name: Holtec Blvd & I-676 SB Off Ramp/Cavanta Center Acess Rd
Site Code:
Start Date: 09/22/2022

Turning Movement Peak Hour Data (7:45 AM)

	Holtec Blvd Eastbound						Holtec Blvd Westbound					Cavanta Center Access Rd Northbound						I-676 Ramp Southbound						
Start Time	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
7:45 AM	24	0	0	0	0	24	0	47	1	0	48	0	0	3	0	0	3	28	0	17	0	1	45	120
8:00 AM	36	0	0	0	0	36	2	28	0	0	30	1	1	0	0	0	2	36	0	11	2	0	49	117
8:15 AM	34	1	0	0	0	35	5	32	0	0	37	0	0	6	0	0	6	31	0	10	0	1	41	119
8:30 AM	30	1	0	0	0	31	3	29	0	0	32	1	2	2	0	0	5	37	2	12	1	1	52	120
Total	124	2	0	0	0	126	10	136	1	0	147	2	3	11	0	0	16	132	2	50	3	3	187	476
Approach %	98.4	1.6	0.0	0.0	-	-	6.8	92.5	0.7	-	-	12.5	18.8	68.8	0.0	-	-	70.6	1.1	26.7	1.6	-	-	-
Total %	26.1	0.4	0.0	0.0	-	26.5	2.1	28.6	0.2	-	30.9	0.4	0.6	2.3	0.0	-	3.4	27.7	0.4	10.5	0.6	-	39.3	-
PHF	0.861	0.500	0.000	0.000	-	0.875	0.500	0.723	0.250	-	0.766	0.500	0.375	0.458	0.000	-	0.667	0.892	0.250	0.735	0.375	-	0.899	0.992
Lights	80	0	0	0	-	80	1	97	1	-	99	0	0	2	0	-	2	119	0	41	2	-	162	343
% Lights	64.5	0.0	-	-	-	63.5	10.0	71.3	100.0	-	67.3	0.0	0.0	18.2	-	-	12.5	90.2	0.0	82.0	66.7	-	86.6	72.1
Buses	4	0	0	0	-	4	0	1	0	-	1	0	0	0	0	-	0	8	0	0	0	-	8	13
% Buses	3.2	0.0	-	-	-	3.2	0.0	0.7	0.0	-	0.7	0.0	0.0	0.0	-	-	0.0	6.1	0.0	0.0	0.0	-	4.3	2.7
Trucks	40	2	0	0	-	42	9	38	0	-	47	2	3	9	0	-	14	5	2	9	1	-	17	120
% Trucks	32.3	100.0	-	-	-	33.3	90.0	27.9	0.0	-	32.0	100.0	100.0	81.8	-	-	87.5	3.8	100.0	18.0	33.3	-	9.1	25.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Camden County, NJ
Holtec Blvd & I676 SB Off Ramp/Cavanta Center
Thursday, September 22, 2022
Location: 39.91263, -75.117426

Count Name: Holtec Blvd & I-676 SB Off Ramp/Cavanta Center Acess Rd
Site Code:
Start Date: 09/22/2022

I-676 Ramp [SB]

Out	In	Total
0	162	162
0	8	8
0	17	17
0	0	0
0	0	0
0	**187**	**187**

R	T	L	P
43	0	119	0
0	0	8	0
10	2	5	0
0	0	0	0
0	0	0	3
53	**2**	**132**	**3**

Holtec Blvd [EB]

Out	In	Total
140	80	220
1	4	5
50	42	92
0	0	0
0	0	0
191	**126**	**317**

U	T	R	P
0	80	0	0
0	4	0	0
0	40	2	0
0	0	0	0
0	0	0	0
0	**124**	**2**	**0**

Peak Hour Data

09/22/2022 7:45 AM
Ending At
09/22/2022 8:45 AM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Holtec Blvd [WB]

T	L	U	P
97	1	1	0
1	0	0	0
38	9	0	0
0	0	0	0
0	0	0	0
136	**10**	**1**	**0**

Out	In	Total
202	99	301
12	1	13
57	47	104
0	0	0
0	0	0
271	**147**	**418**

U	L	R	P
0	0	2	0
0	0	0	0
0	2	12	0
0	0	0	0
0	0	0	0
0	**2**	**14**	**0**

Out	In	Total
1	2	3
0	0	0
13	14	27
0	0	0
0	0	0
14	**16**	**30**

Cavanta Center Access

Turning Movement Peak Hour Data Plot (7:45 AM)

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Camden County, NJ
Holtec Blvd & I676 SB Off Ramp/Cavanta Center
Thursday, September 22, 2022
Location: 39.91263, -75.117426

Count Name: Holtec Blvd & I-676 SB Off Ramp/Cavanta Center Acess Rd
Site Code:
Start Date: 09/22/2022

Turning Movement Peak Hour Data (4:30 PM)

	Holtec Blvd						Holtec Blvd					Cavanta Center Access Rd						I-676 Ramp						
	Eastbound						Westbound					Northbound						Southbound						
Start Time	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Int. Total
4:30 PM	53	1	0	0	0	54	2	11	0	0	13	2	1	4	0	2	7	42	3	41	0	1	86	160
4:45 PM	55	0	0	0	0	55	3	20	0	0	23	1	3	5	0	1	9	42	0	43	0	3	85	172
5:00 PM	78	2	0	0	0	80	2	14	0	0	16	1	0	1	0	0	2	21	0	27	4	2	52	150
5:15 PM	59	0	0	0	0	59	5	19	0	0	24	0	1	5	0	0	6	27	0	30	0	1	57	146
Total	245	3	0	0	0	248	12	64	0	0	76	4	5	15	0	3	24	132	3	141	4	7	280	628
Approach %	98.8	1.2	0.0	0.0	-	-	15.8	84.2	0.0	-	-	16.7	20.8	62.5	0.0	-	-	47.1	1.1	50.4	1.4	-	-	-
Total %	39.0	0.5	0.0	0.0	-	39.5	1.9	10.2	0.0	-	12.1	0.6	0.8	2.4	0.0	-	3.8	21.0	0.5	22.5	0.6	-	44.6	-
PHF	0.785	0.375	0.000	0.000	-	0.775	0.600	0.800	0.000	-	0.792	0.500	0.417	0.750	0.000	-	0.667	0.786	0.250	0.820	0.250	-	0.814	0.913
Lights	223	3	0	0	-	226	10	54	0	-	64	2	1	10	0	-	13	126	2	135	4	-	267	570
% Lights	91.0	100.0	-	-	-	91.1	83.3	84.4	-	-	84.2	50.0	20.0	66.7	-	-	54.2	95.5	66.7	95.7	100.0	-	95.4	90.8
Buses	2	0	0	0	-	2	0	2	0	-	2	0	0	0	0	-	0	4	0	1	0	-	5	9
% Buses	0.8	0.0	-	-	-	0.8	0.0	3.1	-	-	2.6	0.0	0.0	0.0	-	-	0.0	3.0	0.0	0.7	0.0	-	1.8	1.4
Trucks	20	0	0	0	-	20	2	8	0	-	10	2	4	5	0	-	11	2	1	5	0	-	8	49
% Trucks	8.2	0.0	-	-	-	8.1	16.7	12.5	-	-	13.2	50.0	80.0	33.3	-	-	45.8	1.5	33.3	3.5	0.0	-	2.9	7.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Camden County, NJ
Holtec Blvd & I676 SB Off Ramp/Cavanta Center
Thursday, September 22, 2022
Location: 39.91263, -75.117426

TRI-STATE TRAFFIC DATA
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Count Name: Holtec Blvd & I-676 SB Off Ramp/Cavanta Center Acess Rd
Site Code:
Start Date: 09/22/2022

Peak Hour Data

09/22/2022 4:30 PM
Ending At
09/22/2022 5:30 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

I-676 Ramp [SB]

Out	In	Total
0	267	267
0	5	5
0	8	8
0	0	0
0	0	0
0	**280**	**280**

R	T	L	P
139	2	126	0
1	0	4	0
5	1	2	0
0	0	0	0
0	0	0	7
145	**3**	**132**	**7**

Holtec Blvd [EB]

Out	In	Total
195	226	421
3	2	5
15	20	35
0	0	0
0	0	0
213	**248**	**461**

U	T	R	P
0	223	3	0
0	2	0	0
0	20	0	0
0	0	0	0
0	0	0	0
0	**245**	**3**	**0**

Holtec Blvd [WB]

T	L	U	P
54	10	0	0
2	0	0	0
8	2	0	0
0	0	0	0
0	0	0	0
64	**12**	**0**	**0**

Out	In	Total
360	64	424
6	2	8
31	10	41
0	0	0
0	0	0
397	**76**	**473**

U	L	R	P
0	2	11	0
0	0	0	0
0	2	9	0
0	0	0	0
0	0	0	3
0	**4**	**20**	**3**

Cavanta Center Access

Out	In	Total
15	13	28
0	0	0
3	11	14
0	0	0
0	0	0
18	**24**	**42**

Turning Movement Peak Hour Data Plot (4:30 PM)

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Camden County, NJ
Morgan Rd & I676 SB Off Ramp/Master Rd
Thursday, September 22, 2022
Location: 39.912604, -75.114601

Count Name: Morgan Rd & I-676 SB Off Ramp/Master Rd
Site Code:
Start Date: 09/22/2022

Turning Movement Data

Start Time	Morgan Rd Eastbound						Morgan Rd Westbound						I-676 Ramp Northbound						Master Rd Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	20	0	0	0	21	0	32	1	0	0	33	53	26	59	0	0	138	2	0	18	0	1	20	212
7:15 AM	0	16	0	0	0	16	0	79	4	0	1	83	27	27	66	0	1	120	2	0	44	0	4	46	265
7:30 AM	1	25	0	0	0	26	0	49	7	0	0	56	30	26	95	0	0	151	3	0	53	0	1	56	289
7:45 AM	1	37	0	0	0	38	0	60	3	0	0	63	40	21	93	0	0	154	5	0	35	0	0	40	295
Hourly Total	3	98	0	0	0	101	0	220	15	0	1	235	150	100	313	0	1	563	12	0	150	0	6	162	1061
8:00 AM	1	43	0	0	0	44	0	55	3	0	0	58	25	24	67	0	0	116	1	0	30	0	0	31	249
8:15 AM	1	37	0	0	0	38	0	45	3	0	0	48	36	22	73	0	0	131	4	0	25	0	0	29	246
8:30 AM	0	49	0	0	0	49	0	47	6	0	0	53	27	14	62	0	0	103	2	0	37	0	0	39	244
8:45 AM	0	33	0	0	0	33	0	56	2	0	0	58	29	14	51	0	2	94	4	0	38	0	0	42	227
Hourly Total	2	162	0	0	0	164	0	203	14	0	0	217	117	74	253	0	2	444	11	0	130	0	0	141	966
9:00 AM	1	25	0	1	0	27	0	36	1	0	0	37	21	22	54	0	0	97	5	0	24	0	1	29	190
9:15 AM	1	27	0	0	0	28	0	44	6	0	0	50	25	17	61	0	1	103	1	0	22	0	1	23	204
9:30 AM	0	30	0	0	0	30	0	35	2	0	0	37	25	21	42	0	0	88	2	0	27	0	1	29	184
9:45 AM	0	21	0	0	0	21	0	44	2	0	1	46	23	22	41	0	0	86	5	0	19	0	5	24	177
Hourly Total	2	103	0	1	0	106	0	159	11	0	1	170	94	82	198	0	1	374	13	0	92	0	8	105	755
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	2	28	0	0	0	30	0	37	4	0	0	41	22	18	62	0	0	102	4	0	34	0	0	38	211
2:15 PM	1	33	0	0	0	34	0	38	1	0	0	39	20	20	65	0	0	105	0	0	31	0	0	31	209
2:30 PM	0	47	0	0	0	47	0	56	2	0	0	58	16	23	72	0	0	111	1	0	29	0	3	30	246
2:45 PM	2	34	0	0	0	36	0	47	3	0	0	50	13	30	75	0	0	118	2	0	36	0	0	38	242
Hourly Total	5	142	0	0	0	147	0	178	10	0	0	188	71	91	274	0	0	436	7	0	130	0	3	137	908
3:00 PM	0	47	0	0	0	47	0	66	4	0	1	70	13	21	48	0	0	82	6	0	51	0	2	57	256
3:15 PM	3	51	0	0	0	54	0	86	4	0	0	90	17	16	78	0	0	111	5	0	48	0	0	53	308
3:30 PM	1	56	0	0	0	57	0	57	2	0	0	59	14	23	51	0	0	88	3	0	57	0	2	60	264
3:45 PM	0	47	0	1	0	48	0	54	4	0	0	58	11	20	67	0	0	98	5	0	40	0	2	45	249
Hourly Total	4	201	0	1	0	206	0	263	14	0	1	277	55	80	244	0	0	379	19	0	196	0	6	215	1077
4:00 PM	1	51	0	0	0	52	0	56	4	0	0	60	9	28	57	0	0	94	9	0	43	0	1	52	258
4:15 PM	0	51	0	0	0	51	0	50	8	0	0	58	10	32	67	0	3	109	7	0	40	0	0	47	265
4:30 PM	1	58	0	0	0	59	0	54	1	0	0	55	7	14	57	0	1	78	4	0	31	0	0	35	227
4:45 PM	1	56	0	0	0	57	0	67	4	0	0	71	13	26	75	0	2	114	8	0	33	0	0	41	283
Hourly Total	3	216	0	0	0	219	0	227	17	0	0	244	39	100	256	0	6	395	28	0	147	0	1	175	1033
5:00 PM	0	41	0	0	0	41	0	44	6	0	0	50	9	23	45	0	0	77	3	0	36	0	4	39	207
5:15 PM	0	43	0	0	0	43	0	45	3	0	0	48	10	21	63	0	0	94	3	0	42	0	0	45	230
5:30 PM	0	34	0	0	1	34	0	44	6	0	0	50	11	24	54	0	2	89	4	0	35	0	2	39	212
5:45 PM	1	46	0	0	0	47	0	39	1	0	0	40	16	17	73	0	0	106	5	0	32	0	0	37	230
Hourly Total	1	164	0	0	1	165	0	172	16	0	0	188	46	85	235	0	2	366	15	0	145	0	6	160	879
Grand Total	20	1086	0	2	1	1108	0	1422	97	0	3	1519	572	612	1773	0	12	2957	105	0	990	0	30	1095	6679
Approach %	1.8	98.0	0.0	0.2	-	-	0.0	93.6	6.4	0.0	-	-	19.3	20.7	60.0	0.0	-	-	9.6	0.0	90.4	0.0	-	-	-
Total %	0.3	16.3	0.0	0.0	-	16.6	0.0	21.3	1.5	0.0	-	22.7	8.6	9.2	26.5	0.0	-	44.3	1.6	0.0	14.8	0.0	-	16.4	-
Lights	19	974	0	2	-	995	0	1293	93	0	-	1386	365	578	1665	0	-	2608	92	0	959	0	-	1051	6040
% Lights	95.0	89.7	-	100.0	-	89.8	-	90.9	95.9	-	-	91.2	63.8	94.4	93.9	-	-	88.2	87.6	-	96.9	-	-	96.0	90.4
Buses	1	37	0	0	-	38	0	35	2	0	-	37	2	8	22	0	-	32	12	0	7	0	-	19	126
% Buses	5.0	3.4	-	0.0	-	3.4	-	2.5	2.1	-	-	2.4	0.3	1.3	1.2	-	-	1.1	11.4	-	0.7	-	-	1.7	1.9
Trucks	0	75	0	0	-	75	0	94	2	0	-	96	205	26	86	0	-	317	1	0	24	0	-	25	513
% Trucks	0.0	6.9	-	0.0	-	6.8	-	6.6	2.1	-	-	6.3	35.8	4.2	4.9	-	-	10.7	1.0	-	2.4	-	-	2.3	7.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	16.7	-	-	-	-	-	10.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	10	-	-	-	-	-	27	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	83.3	-	-	-	-	-	90.0	-	-

TRI-STATE TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Camden County, NJ
Morgan Rd & I676 SB Off Ramp/Master Rd
Thursday, September 22, 2022
Location: 39.912604, -75.114601

Count Name: Morgan Rd & I-676 SB Off Ramp/Master Rd
Site Code:
Start Date: 09/22/2022

Master Rd [SB]

Out	In	Total
690	1051	1741
11	19	30
28	25	53
0	0	0
0	0	0
729	**1095**	**1824**

R	T	L	U	P
959	0	92	0	0
7	0	12	0	0
24	0	1	0	0
0	0	0	0	3
0	0	0	0	27
990	**0**	**105**	**0**	**30**

Morgan Rd [EB]

Out	In	Total
2619	995	3614
44	38	82
323	75	398
0	0	0
0	0	0
2986	**1108**	**4094**

U	L	T	R	P
2	19	974	0	0
0	1	37	0	0
0	0	75	0	0
0	0	0	0	0
0	0	0	0	1
2	**20**	**1086**	**0**	**1**

09/22/2022 7:00 AM
Ending At
09/22/2022 6:00 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Morgan Rd [WB]

Out	In	Total
2731	1386	4117
71	37	108
162	96	258
0	0	0
0	0	0
2964	**1519**	**4483**

R	T	L	U	P
93	1293	0	0	0
2	35	0	0	0
2	94	0	0	0
0	0	0	0	0
0	0	0	0	3
97	**1422**	**0**	**0**	**3**

U	L	T	R	P
0	365	578	1665	0
0	2	8	22	0
0	205	26	86	0
0	0	0	0	2
0	0	0	0	10
0	**572**	**612**	**1773**	**12**

Out	In	Total
0	2608	2608
0	32	32
0	317	317
0	0	0
0	0	0
0	**2957**	**2957**

I-676 Ramp [NB]

Turning Movement Data Plot

TRI-STATE TRAFFIC DATA
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Coatesville, Pennsylvania, United States 19320
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Camden County, NJ
Morgan Rd & I676 SB Off Ramp/Master Rd
Thursday, September 22, 2022
Location: 39.912604, -75.114601

Count Name: Morgan Rd & I-676 SB Off Ramp/Master Rd
Site Code:
Start Date: 09/22/2022

Turning Movement Peak Hour Data (7:15 AM)

	Morgan Rd Eastbound						Morgan Rd Westbound						I-676 Ramp Northbound						Master Rd Southbound						
Start Time	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:15 AM	0	16	0	0	0	16	0	79	4	0	1	83	27	27	66	0	1	120	2	0	44	0	4	46	265
7:30 AM	1	25	0	0	0	26	0	49	7	0	0	56	30	26	95	0	0	151	3	0	53	0	1	56	289
7:45 AM	1	37	0	0	0	38	0	60	3	0	0	63	40	21	93	0	0	154	5	0	35	0	0	40	295
8:00 AM	1	43	0	0	0	44	0	55	3	0	0	58	25	24	67	0	0	116	1	0	30	0	0	31	249
Total	3	121	0	0	0	124	0	243	17	0	1	260	122	98	321	0	1	541	11	0	162	0	5	173	1098
Approach %	2.4	97.6	0.0	0.0	-	-	0.0	93.5	6.5	0.0	-	-	22.6	18.1	59.3	0.0	-	-	6.4	0.0	93.6	0.0	-	-	-
Total %	0.3	11.0	0.0	0.0	-	11.3	0.0	22.1	1.5	0.0	-	23.7	11.1	8.9	29.2	0.0	-	49.3	1.0	0.0	14.8	0.0	-	15.8	-
PHF	0.750	0.703	0.000	0.000	-	0.705	0.000	0.769	0.607	0.000	-	0.783	0.763	0.907	0.845	0.000	-	0.878	0.550	0.000	0.764	0.000	-	0.772	0.931
Lights	3	107	0	0	-	110	0	216	16	0	-	232	85	92	306	0	-	483	9	0	157	0	-	166	991
% Lights	100.0	88.4	-	-	-	88.7	-	88.9	94.1	-	-	89.2	69.7	93.9	95.3	-	-	89.3	81.8	-	96.9	-	-	96.0	90.3
Buses	0	7	0	0	-	7	0	8	0	0	-	8	0	4	7	0	-	11	2	0	2	0	-	4	30
% Buses	0.0	5.8	-	-	-	5.6	-	3.3	0.0	-	-	3.1	0.0	4.1	2.2	-	-	2.0	18.2	-	1.2	-	-	2.3	2.7
Trucks	0	7	0	0	-	7	0	19	1	0	-	20	37	2	8	0	-	47	0	0	3	0	-	3	77
% Trucks	0.0	5.8	-	-	-	5.6	-	7.8	5.9	-	-	7.7	30.3	2.0	2.5	-	-	8.7	0.0	-	1.9	-	-	1.7	7.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Camden County, NJ
Morgan Rd & I676 SB Off Ramp/Master Rd
Thursday, September 22, 2022
Location: 39.912604, -75.114601

TRI-STATE TRAFFIC DATA
www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Morgan Rd & I-676 SB Off Ramp/Master Rd
Site Code:
Start Date: 09/22/2022
Page No: 4

Master Rd [SB]

Out	In	Total
111	166	277
4	4	8
3	3	6
0	0	0
0	0	0
118	**173**	**291**

R	T	L	U	P
157	0	9	0	0
2	0	2	0	0
3	0	0	0	0
0	0	0	0	0
0	0	0	0	5
162	**0**	**11**	**0**	**5**

Morgan Rd [EB]

Out	In	Total
458	110	568
10	7	17
59	7	66
0	0	0
0	0	0
527	**124**	**651**

U	L	T	R	P
0	3	107	0	0
0	0	7	0	0
0	0	7	0	0
0	0	0	0	0
0	0	0	0	0
0	**3**	**121**	**0**	**0**

Peak Hour Data

09/22/2022 7:15 AM
Ending At
09/22/2022 8:15 AM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

R	T	L	U	P
16	216	0	0	0
0	8	0	0	0
1	19	0	0	0
0	0	0	0	0
0	0	0	0	1
17	**243**	**0**	**0**	**1**

Morgan Rd [WB]

Out	In	Total
422	232	654
16	8	24
15	20	35
0	0	0
0	0	0
453	**260**	**713**

U	L	T	R	P
0	85	92	306	0
0	0	4	7	0
0	37	2	8	0
0	0	0	0	0
0	0	0	0	1
0	**122**	**98**	**321**	**1**

Out	In	Total
0	483	483
0	11	11
0	47	47
0	0	0
0	0	0
0	**541**	**541**

I-676 Ramp [NB]

Turning Movement Peak Hour Data Plot (7:15 AM)

TRI-STATE TRAFFIC DATA

Camden County, NJ
Morgan Rd & I676 SB Off Ramp/Master Rd
Thursday, September 22, 2022
Location: 39.912604, -75.114601

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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Morgan Rd & I-676 SB Off Ramp/Master Rd
Site Code:
Start Date: 09/22/2022

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Morgan Rd Eastbound						Morgan Rd Westbound						I-676 Ramp Northbound						Master Rd Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
3:15 PM	3	51	0	0	0	54	0	86	4	0	0	90	17	16	78	0	0	111	5	0	48	0	0	53	308
3:30 PM	1	56	0	0	0	57	0	57	2	0	0	59	14	23	51	0	0	88	3	0	57	0	2	60	264
3:45 PM	0	47	0	1	0	48	0	54	4	0	0	58	11	20	67	0	0	98	5	0	40	0	2	45	249
4:00 PM	1	51	0	0	0	52	0	56	4	0	0	60	9	28	57	0	0	94	9	0	43	0	1	52	258
Total	5	205	0	1	0	211	0	253	14	0	0	267	51	87	253	0	0	391	22	0	188	0	5	210	1079
Approach %	2.4	97.2	0.0	0.5	-	-	0.0	94.8	5.2	0.0	-	-	13.0	22.3	64.7	0.0	-	-	10.5	0.0	89.5	0.0	-	-	-
Total %	0.5	19.0	0.0	0.1	-	19.6	0.0	23.4	1.3	0.0	-	24.7	4.7	8.1	23.4	0.0	-	36.2	2.0	0.0	17.4	0.0	-	19.5	-
PHF	0.417	0.915	0.000	0.250	-	0.925	0.000	0.735	0.875	0.000	-	0.742	0.750	0.777	0.811	0.000	-	0.881	0.611	0.000	0.825	0.000	-	0.875	0.876
Lights	5	186	0	1	-	192	0	233	13	0	-	246	26	82	240	0	-	348	17	0	186	0	-	203	989
% Lights	100.0	90.7	-	100.0	-	91.0	-	92.1	92.9	-	-	92.1	51.0	94.3	94.9	-	-	89.0	77.3	-	98.9	-	-	96.7	91.7
Buses	0	8	0	0	-	8	0	8	1	0	-	9	0	1	2	0	-	3	5	0	0	0	-	5	25
% Buses	0.0	3.9	-	0.0	-	3.8	-	3.2	7.1	-	-	3.4	0.0	1.1	0.8	-	-	0.8	22.7	-	0.0	-	-	2.4	2.3
Trucks	0	11	0	0	-	11	0	12	0	0	-	12	25	4	11	0	-	40	0	0	2	0	-	2	65
% Trucks	0.0	5.4	-	0.0	-	5.2	-	4.7	0.0	-	-	4.5	49.0	4.6	4.3	-	-	10.2	0.0	-	1.1	-	-	1.0	6.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.0	-	-

Camden County, NJ
Morgan Rd & I676 SB Off Ramp/Master Rd
Thursday, September 22, 2022
Location: 39.912604, -75.114601

TRI-STATE TRAFFIC DATA
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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: Morgan Rd & I-676 SB Off Ramp/Master Rd
Site Code:
Start Date: 09/22/2022

Peak Hour Data

09/22/2022 3:15 PM
Ending At
09/22/2022 4:15 PM

Lights
Buses
Trucks
Bicycles on Crosswalk
Pedestrians

Master Rd [SB]

Out	In	Total
100	203	303
2	5	7
4	2	6
0	0	0
0	0	0
106	**210**	**316**

R	T	L	U	P
186	0	17	0	0
0	0	5	0	0
2	0	0	0	0
0	0	0	0	1
0	0	0	0	4
188	**0**	**22**	**0**	**5**

Morgan Rd [EB]

Total	In	Out
638	192	446
16	8	8
50	11	39
0	0	0
0	0	0
704	**211**	**493**

U	L	T	R	P
1	5	186	0	0
0	0	8	0	0
0	0	11	0	0
0	0	0	0	0
0	0	0	0	0
1	**5**	**205**	**0**	**0**

Morgan Rd [WB]

Out	In	Total
443	246	689
15	9	24
22	12	34
0	0	0
0	0	0
480	**267**	**747**

R	T	L	U	P
13	233	0	0	0
1	8	0	0	0
0	12	0	0	0
0	0	0	0	0
0	0	0	0	0
14	**253**	**0**	**0**	**0**

I-676 Ramp [NB]

U	L	T	R	P
0	26	82	240	0
0	0	1	2	0
0	25	4	11	0
0	0	0	0	0
0	0	0	0	0
0	**51**	**87**	**253**	**0**

Out	In	Total
0	348	348
0	3	3
0	40	40
0	0	0
0	0	0
0	**391**	**391**

Turning Movement Peak Hour Data Plot (3:15 PM)

System Peak Hour Turning Movement Counts

Holtec Blvd & Broadway - TMC

Thu Sep 22, 2022
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991739, Location: 39.912638, -75.118081

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Holtec Blvd							Holtec Blvd						
Direction	Eastbound							Westbound						
Time	L	T	R	U	RR	App	Ped*	L	T	R	U	RR	App	Ped*
2022-09-22 7:30AM	0	2	0	0	0	**2**	1	26	14	16	0	0	**56**	0
7:45AM	0	1	0	0	0	**1**	0	20	25	21	0	1	**67**	0
8:00AM	1	0	0	0	0	**1**	0	15	11	18	0	0	**44**	0
8:15AM	1	1	0	0	0	**2**	0	17	12	14	0	0	**43**	0
Total	2	4	0	0	0	**6**	1	78	62	69	0	1	**210**	0
% Approach	33.3%	66.7%	0%	0%	0%	**-**	-	37.1%	29.5%	32.9%	0%	0.5%	**-**	-
% Total	0.4%	0.8%	0%	0%	0%	**1.3%**	-	16.4%	13.0%	14.5%	0%	0.2%	**44.0%**	-
PHF	0.500	0.500	-	-	-	**0.750**	-	0.750	0.620	0.821	-	0.250	**0.784**	-
Lights	2	1	0	0	0	**3**	-	41	62	52	0	1	**156**	-
% Lights	100%	25.0%	0%	0%	0%	**50.0%**	-	52.6%	100%	75.4%	0%	100%	**74.3%**	-
Articulated Trucks and Single-Unit Trucks	0	3	0	0	0	**3**	-	37	0	16	0	0	**53**	-
% Articulated Trucks and Single-Unit Trucks	0%	75.0%	0%	0%	0%	**50.0%**	-	47.4%	0%	23.2%	0%	0%	**25.2%**	-
Buses	0	0	0	0	0	**0**	-	0	0	1	0	0	**1**	-
% Buses	0%	0%	0%	0%	0%	**0%**	-	0%	0%	1.4%	0%	0%	**0.5%**	-
Pedestrians	-	-	-	-	-	-	1	-	-	-	-	-	-	0
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Holtec Blvd & Broadway - TMC

Thu Sep 22, 2022
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991739, Location: 39.912638, -75.118081

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Broadway							Boradway							
Direction	Northbound							Southbound							
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*	**Int**
2022-09-22 7:30AM	0	19	14	0	2	**35**	0	10	11	0	0	0	**21**	0	**114**
7:45AM	1	31	13	0	1	**46**	0	11	9	1	0	0	**21**	0	**135**
8:00AM	1	22	16	0	0	**39**	0	20	11	0	0	0	**31**	0	**115**
8:15AM	0	19	16	0	0	**35**	0	19	14	0	0	0	**33**	0	**113**
Total	2	91	59	0	3	**155**	0	60	45	1	0	0	**106**	0	**477**
% Approach	1.3%	58.7%	38.1%	0%	1.9%	**-**	-	56.6%	42.5%	0.9%	0%	0%	**-**	-	-
% Total	0.4%	19.1%	12.4%	0%	0.6%	**32.5%**	-	12.6%	9.4%	0.2%	0%	0%	**22.2%**	-	-
PHF	0.500	0.734	0.922	-	0.375	**0.842**	-	0.750	0.804	0.250	-	-	**0.803**	-	0.883
Lights	2	80	37	0	1	**120**	-	46	36	1	0	0	**83**	-	362
% Lights	100%	87.9%	62.7%	0%	33.3%	**77.4%**	-	76.7%	80.0%	100%	0%	0%	**78.3%**	-	75.9%
Articulated Trucks and Single-Unit Trucks	0	6	21	0	2	**29**	-	10	5	0	0	0	**15**	-	100
% Articulated Trucks and Single-Unit Trucks	0%	6.6%	35.6%	0%	66.7%	**18.7%**	-	16.7%	11.1%	0%	0%	0%	**14.2%**	-	21.0%
Buses	0	5	1	0	0	**6**	-	4	4	0	0	0	**8**	-	15
% Buses	0%	5.5%	1.7%	0%	0%	**3.9%**	-	6.7%	8.9%	0%	0%	0%	**7.5%**	-	3.1%
Pedestrians	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Holtec Blvd & I-676 SB Off Ramp/Cavanta Cent... - TMC

Thu Sep 22, 2022
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991738, Location: 39.91263, -75.117426

TRI-STATE TRAFFIC DATA
Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Holtec Blvd						Holtec Blvd					Cavanta Center Access Rd						I-676 Ramp						
Direction	Eastbound						Westbound					Northbound						Southbound						
Time	T	R	U	RR	**App**	Ped*	L	T	U	**App**	Ped*	L	R	U	RR	**App**	Ped*	L	T	R	RR	**App**	Ped*	**Int**
2022-09-22 7:30AM	28	1	0	0	**29**	0	3	35	0	**38**	0	0	1	0	2	**3**	0	18	0	20	0	**38**	2	**108**
7:45AM	24	0	0	0	**24**	0	0	47	1	**48**	0	0	0	0	3	**3**	0	28	0	17	0	**45**	1	**120**
8:00AM	36	0	0	0	**36**	0	2	28	0	**30**	0	1	1	0	0	**2**	0	36	0	11	2	**49**	0	**117**
8:15AM	34	1	0	0	**35**	0	5	32	0	**37**	0	0	0	0	6	**6**	0	31	0	10	0	**41**	1	**119**
Total	122	2	0	0	**124**	0	10	142	1	**153**	0	1	2	0	11	**14**	0	113	0	58	2	**173**	4	**464**
% Approach	98.4%	1.6%	0%	0%	-	-	6.5%	92.8%	0.7%	-	-	7.1%	14.3%	0%	78.6%	-	-	65.3%	0%	33.5%	1.2%	-	-	-
% Total	26.3%	0.4%	0%	0%	**26.7%**	-	2.2%	30.6%	0.2%	**33.0%**	-	0.2%	0.4%	0%	2.4%	**3.0%**	-	24.4%	0%	12.5%	0.4%	**37.3%**	-	-
PHF	0.847	0.500	-	-	**0.861**	-	0.500	0.755	0.250	**0.797**	-	0.250	0.500	-	0.458	**0.583**	-	0.785	-	0.725	0.250	**0.883**	-	0.967
Lights	84	0	0	0	**84**	-	0	100	1	**101**	-	0	0	0	2	**2**	-	101	0	47	1	**149**	-	336
% Lights	68.9%	0%	0%	0%	**67.7%**	-	0%	70.4%	100%	**66.0%**	-	0%	0%	0%	18.2%	**14.3%**	-	89.4%	0%	81.0%	50.0%	**86.1%**	-	72.4%
Articulated Trucks and Single-Unit Trucks	33	2	0	0	**35**	-	10	41	0	**51**	-	1	2	0	9	**12**	-	4	0	11	1	**16**	-	114
% Articulated Trucks and Single-Unit Trucks	27.0%	100%	0%	0%	**28.2%**	-	100%	28.9%	0%	**33.3%**	-	100%	100%	0%	81.8%	**85.7%**	-	3.5%	0%	19.0%	50.0%	**9.2%**	-	24.6%
Buses	5	0	0	0	**5**	-	0	1	0	**1**	-	0	0	0	0	**0**	-	8	0	0	0	**8**	-	14
% Buses	4.1%	0%	0%	0%	**4.0%**	-	0%	0.7%	0%	**0.7%**	-	0%	0%	0%	0%	**0%**	-	7.1%	0%	0%	0%	**4.6%**	-	3.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Morgan Rd & I-676 SB Off Ramp/Master Rd - TMC

Thu Sep 22, 2022
Forced Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991737, Location: 39.912604, -75.114601

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Morgan Rd						Morgan Rd						I-676 Ramp						Master Rd						
Direction	Eastbound						Westbound						Northbound						Southbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-09-22 7:30AM	1	25	0	0	**26**	0	0	49	7	0	**56**	0	30	26	95	0	**151**	0	3	0	53	0	**56**	1	**289**
7:45AM	1	37	0	0	**38**	0	0	60	3	0	**63**	0	40	21	93	0	**154**	0	5	0	35	0	**40**	0	**295**
8:00AM	1	43	0	0	**44**	0	0	55	3	0	**58**	0	25	24	67	0	**116**	0	1	0	30	0	**31**	0	**249**
8:15AM	1	37	0	0	**38**	0	0	45	3	0	**48**	0	36	22	73	0	**131**	0	4	0	25	0	**29**	0	**246**
Total	4	142	0	0	**146**	0	0	209	16	0	**225**	0	131	93	328	0	**552**	0	13	0	143	0	**156**	1	**1079**
% Approach	2.7%	97.3%	0%	0%	**-**	-	0%	92.9%	7.1%	0%	**-**	-	23.7%	16.8%	59.4%	0%	**-**	-	8.3%	0%	91.7%	0%	**-**	-	-
% Total	0.4%	13.2%	0%	0%	**13.5%**	-	0%	19.4%	1.5%	0%	**20.9%**	-	12.1%	8.6%	30.4%	0%	**51.2%**	-	1.2%	0%	13.3%	0%	**14.5%**	-	-
PHF	1.000	0.826	-	-	**0.830**	-	-	0.871	0.571	-	**0.893**	-	0.819	0.894	0.863	-	**0.896**	-	0.650	-	0.675	-	**0.696**	-	0.914
Lights	4	124	0	0	**128**	-	0	187	15	0	**202**	-	81	89	316	0	**486**	-	9	0	139	0	**148**	-	964
% Lights	100%	87.3%	0%	0%	**87.7%**	-	0%	89.5%	93.8%	0%	**89.8%**	-	61.8%	95.7%	96.3%	0%	**88.0%**	-	69.2%	0%	97.2%	0%	**94.9%**	-	89.3%
Articulated Trucks and Single-Unit Trucks	0	7	0	0	**7**	-	0	16	1	0	**17**	-	50	2	6	0	**58**	-	0	0	2	0	**2**	-	84
% Articulated Trucks and Single-Unit Trucks	0%	4.9%	0%	0%	**4.8%**	-	0%	7.7%	6.3%	0%	**7.6%**	-	38.2%	2.2%	1.8%	0%	**10.5%**	-	0%	0%	1.4%	0%	**1.3%**	-	7.8%
Buses	0	11	0	0	**11**	-	0	6	0	0	**6**	-	0	2	6	0	**8**	-	4	0	2	0	**6**	-	31
% Buses	0%	7.7%	0%	0%	**7.5%**	-	0%	2.9%	0%	0%	**2.7%**	-	0%	2.2%	1.8%	0%	**1.4%**	-	30.8%	0%	1.4%	0%	**3.8%**	-	2.9%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Holtec Blvd & Broadway - TMC

Thu Sep 22, 2022
Forced Peak (4 PM - 5 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991739, Location: 39.912638, -75.118081

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Holtec Blvd							Holtec Blvd						
Direction	Eastbound							Westbound						
Time	L	T	R	U	RR	**App**	Ped*	L	T	R	U	RR	**App**	Ped*
2022-09-22 4:00PM	0	38	1	0	1	**40**	0	22	4	12	0	0	**38**	0
4:15PM	0	20	3	0	1	**24**	0	28	1	10	0	0	**39**	0
4:30PM	0	13	1	0	1	**15**	1	44	0	8	0	0	**52**	0
4:45PM	0	13	1	0	0	**14**	0	49	3	9	0	0	**61**	1
Total	0	84	6	0	3	**93**	1	143	8	39	0	0	**190**	1
% Approach	0%	90.3%	6.5%	0%	3.2%	**-**	-	75.3%	4.2%	20.5%	0%	0%	**-**	-
% Total	0%	13.5%	1.0%	0%	0.5%	**15.0%**	-	23.1%	1.3%	6.3%	0%	0%	**30.6%**	-
PHF	-	0.553	0.500	-	0.750	**0.581**	-	0.730	0.500	0.813	-	-	**0.779**	-
Lights	0	83	6	0	3	**92**	-	133	8	33	0	0	**174**	-
% Lights	0%	98.8%	100%	0%	100%	**98.9%**	-	93.0%	100%	84.6%	0%	0%	**91.6%**	-
Articulated Trucks and Single-Unit Trucks	0	1	0	0	0	**1**	-	9	0	5	0	0	**14**	-
% Articulated Trucks and Single-Unit Trucks	0%	1.2%	0%	0%	0%	**1.1%**	-	6.3%	0%	12.8%	0%	0%	**7.4%**	-
Buses	0	0	0	0	0	**0**	-	1	0	1	0	0	**2**	-
% Buses	0%	0%	0%	0%	0%	**0%**	-	0.7%	0%	2.6%	0%	0%	**1.1%**	-
Pedestrians	-	-	-	-	-	-	1	-	-	-	-	-	-	1
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	0%

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Holtec Blvd & Broadway - TMC

Thu Sep 22, 2022
Forced Peak (4 PM - 5 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991739, Location: 39.912638, -75.118081

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Broadway							Boradway							
Direction	Northbound							Southbound							
Time	L	T	R	U	RR	App	Ped*	L	T	R	U	RR	App	Ped*	Int
2022-09-22 4:00PM	1	9	19	0	1	**30**	2	20	23	0	0	0	**43**	0	**151**
4:15PM	0	5	24	0	0	**29**	0	24	24	0	0	0	**48**	0	**140**
4:30PM	0	13	19	0	1	**33**	0	23	32	0	0	0	**55**	0	**155**
4:45PM	0	11	11	0	1	**23**	0	30	45	1	0	0	**76**	0	**174**
Total	1	38	73	0	3	**115**	2	97	124	1	0	0	**222**	0	**620**
% Approach	0.9%	33.0%	63.5%	0%	2.6%	**-**	-	43.7%	55.9%	0.5%	0%	0%	**-**	-	**-**
% Total	0.2%	6.1%	11.8%	0%	0.5%	**18.5%**	-	15.6%	20.0%	0.2%	0%	0%	**35.8%**	-	**-**
PHF	0.250	0.731	0.760	-	0.750	**0.871**	-	0.808	0.689	0.250	-	-	**0.730**	-	0.891
Lights	1	33	49	0	3	**86**	-	85	119	1	0	0	**205**	-	557
% Lights	100%	86.8%	67.1%	0%	100%	**74.8%**	-	87.6%	96.0%	100%	0%	0%	**92.3%**	-	89.8%
Articulated Trucks and Single-Unit Trucks	0	0	24	0	0	**24**	-	10	1	0	0	0	**11**	-	50
% Articulated Trucks and Single-Unit Trucks	0%	0%	32.9%	0%	0%	**20.9%**	-	10.3%	0.8%	0%	0%	0%	**5.0%**	-	8.1%
Buses	0	5	0	0	0	**5**	-	2	4	0	0	0	**6**	-	13
% Buses	0%	13.2%	0%	0%	0%	**4.3%**	-	2.1%	3.2%	0%	0%	0%	**2.7%**	-	2.1%
Pedestrians	-	-	-	-	-	-	2	-	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Holtec Blvd & I-676 SB Off Ramp/Cavanta Cent... - TMC

Thu Sep 22, 2022
Forced Peak (4 PM - 5 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991738, Location: 39.91263, -75.117426

TRI-STATE TRAFFIC DATA
Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Holtec Blvd						Holtec Blvd					Cavanta Center Access Rd						I-676 Ramp						
Direction	Eastbound						Westbound					Northbound						Southbound						
Time	T	R	U	RR	App	Ped*	L	T	U	App	Ped*	L	R	U	RR	App	Ped*	L	T	R	RR	App	Ped*	Int
2022-09-22 4:00PM	77	0	0	0	**77**	0	4	19	0	**23**	0	1	1	0	4	**6**	1	29	0	14	1	**44**	0	**150**
4:15PM	64	3	0	0	**67**	0	3	14	0	**17**	0	1	0	0	0	**1**	3	33	0	19	4	**56**	2	**141**
4:30PM	53	1	0	0	**54**	0	2	11	0	**13**	0	2	1	0	4	**7**	2	42	3	41	0	**86**	1	**160**
4:45PM	55	0	0	0	**55**	0	3	20	0	**23**	0	1	3	0	5	**9**	1	42	0	43	0	**85**	3	**172**
Total	249	4	0	0	**253**	0	12	64	0	**76**	0	5	5	0	13	**23**	7	146	3	117	5	**271**	6	**623**
% Approach	98.4%	1.6%	0%	0%	-	-	15.8%	84.2%	0%	-	-	21.7%	21.7%	0%	56.5%	-	-	53.9%	1.1%	43.2%	1.8%	-	-	-
% Total	40.0%	0.6%	0%	0%	**40.6%**	-	1.9%	10.3%	0%	**12.2%**	-	0.8%	0.8%	0%	2.1%	**3.7%**	-	23.4%	0.5%	18.8%	0.8%	**43.5%**	-	-
PHF	0.808	0.333	-	-	**0.821**	-	0.750	0.800	-	**0.826**	-	0.625	0.417	-	0.650	**0.639**	-	0.869	0.250	0.680	0.313	**0.788**	-	0.906
Lights	214	2	0	0	**216**	-	6	54	0	**60**	-	3	0	0	6	**9**	-	141	2	113	5	**261**	-	546
% Lights	85.9%	50.0%	0%	0%	**85.4%**	-	50.0%	84.4%	0%	**78.9%**	-	60.0%	0%	0%	46.2%	**39.1%**	-	96.6%	66.7%	96.6%	100%	**96.3%**	-	87.6%
Articulated Trucks and Single-Unit Trucks	33	2	0	0	**35**	-	6	8	0	**14**	-	2	5	0	7	**14**	-	0	1	3	0	**4**	-	67
% Articulated Trucks and Single-Unit Trucks	13.3%	50.0%	0%	0%	**13.8%**	-	50.0%	12.5%	0%	**18.4%**	-	40.0%	100%	0%	53.8%	**60.9%**	-	0%	33.3%	2.6%	0%	**1.5%**	-	10.8%
Buses	2	0	0	0	**2**	-	0	2	0	**2**	-	0	0	0	0	**0**	-	5	0	1	0	**6**	-	10
% Buses	0.8%	0%	0%	0%	**0.8%**	-	0%	3.1%	0%	**2.6%**	-	0%	0%	0%	0%	**0%**	-	3.4%	0%	0.9%	0%	**2.2%**	-	1.6%
Pedestrians	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	6	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85.7%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, RR: Right on red, T: Thru, U: U-Turn

Morgan Rd & I-676 SB Off Ramp/Master Rd - TMC

Thu Sep 22, 2022
Forced Peak (4 PM - 5 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 991737, Location: 39.912604, -75.114601

TRI-STATE TRAFFIC DATA

Provided by: Tri-State Traffic Data, Inc.
184 Baker Road,
Coatesville, PA, 19320, US

Leg	Morgan Rd						Morgan Rd						I-676 Ramp						Master Rd						
Direction	Eastbound						Westbound						Northbound						Southbound						
Time	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	L	T	R	U	**App**	Ped*	**Int**
2022-09-22 4:00PM	1	51	0	0	**52**	0	0	56	4	0	**60**	0	9	28	57	0	**94**	0	9	0	43	0	**52**	1	**258**
4:15PM	0	51	0	0	**51**	0	0	50	8	0	**58**	0	10	32	67	0	**109**	3	7	0	40	0	**47**	0	**265**
4:30PM	1	58	0	0	**59**	0	0	54	1	0	**55**	0	7	14	57	0	**78**	1	4	0	31	0	**35**	0	**227**
4:45PM	1	56	0	0	**57**	0	0	67	4	0	**71**	0	13	26	75	0	**114**	2	8	0	33	0	**41**	0	**283**
Total	3	216	0	0	**219**	0	0	227	17	0	**244**	0	39	100	256	0	**395**	6	28	0	147	0	**175**	1	**1033**
% Approach	1.4%	98.6%	0%	0%	-	-	0%	93.0%	7.0%	0%	-	-	9.9%	25.3%	64.8%	0%	-	-	16.0%	0%	84.0%	0%	-	-	-
% Total	0.3%	20.9%	0%	0%	**21.2%**	-	0%	22.0%	1.6%	0%	**23.6%**	-	3.8%	9.7%	24.8%	0%	**38.2%**	-	2.7%	0%	14.2%	0%	**16.9%**	-	-
PHF	0.750	0.931	-	-	**0.928**	-	-	0.847	0.531	-	**0.859**	-	0.750	0.781	0.853	-	**0.866**	-	0.778	-	0.855	-	**0.841**	-	0.913
Lights	3	203	0	0	**206**	-	0	213	17	0	**230**	-	30	97	242	0	**369**	-	26	0	141	0	**167**	-	972
% Lights	100%	94.0%	0%	0%	**94.1%**	-	0%	93.8%	100%	0%	**94.3%**	-	76.9%	97.0%	94.5%	0%	**93.4%**	-	92.9%	0%	95.9%	0%	**95.4%**	-	94.1%
Articulated Trucks and Single-Unit Trucks	0	7	0	0	**7**	-	0	9	0	0	**9**	-	9	2	13	0	**24**	-	1	0	5	0	**6**	-	46
% Articulated Trucks and Single-Unit Trucks	0%	3.2%	0%	0%	**3.2%**	-	0%	4.0%	0%	0%	**3.7%**	-	23.1%	2.0%	5.1%	0%	**6.1%**	-	3.6%	0%	3.4%	0%	**3.4%**	-	4.5%
Buses	0	6	0	0	**6**	-	0	5	0	0	**5**	-	0	1	1	0	**2**	-	1	0	1	0	**2**	-	15
% Buses	0%	2.8%	0%	0%	**2.7%**	-	0%	2.2%	0%	0%	**2.0%**	-	0%	1.0%	0.4%	0%	**0.5%**	-	3.6%	0%	0.7%	0%	**1.1%**	-	1.5%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7%	-	-	-	-	-	0%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.3%	-	-	-	-	-	100%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

APPENDIX C
Signal Timings and Signal Plans

ID = TPOBARB file = _Traffic Signals by Route\Route 676\67600116 Rt 676 Morgan Blvd – CR 551 MP 1.16\67600116_0418105_ts7178_17_msk.dgn pen table = \\njdotprjws\v8system\njdotws\projects\NJDOTEng\Iplot\TBLs\Non-Roadway\elec.tbl

REFERENCE

NOTE:

1. SIGNAL HEADS #6, 7, 13, 14, 15 & 16 ARE OPTICALLY PROGRAMMED WITH LIMITS OF VISIBILITY AS SHOWN ON THE PLAN.
2. SIGNAL HEADS #5, 12 & 13 ARE MOUNTED AT A HEIGHT OF 12' ABOVE PAVEMENT LEVEL.
3. SIGNAL HEADS #1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 14, 15 & 16 ARE EQUIPPED WITH BACKPLATES.

STATE	FEDERAL PROJECT NO.
N.J.	*

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING
TRAFFIC SIGNAL INSTALLATION

ROUTE I-676 SB RAMP & MORGAN BLVD AND CR 551 (BROADWAY)

MUNICIPALITY CITY OF CAMDEN COUNTY CAMDEN

DESIGN AUTHORIZED - BUREAU OF TRAFFIC ENGINEERING DATE

SUBMITTED M. HANNA
CHECKED D. PATEL
AUTHORIZED C. BARRETTS

DRAWN MSK
CHECKED MH

SCALE: 1" = 30'

TS- 7178

REVISION DESCRIPTION	CADD	BY	CK'D	DATE

file=_Traffic Signals by Route\Route 676\67600116 Rt 676 Morgan Blvd – CR 551 MP 1.16\67600116_0418105_ts7178_17_msk.dgn

TPOBARB

ID = TPOBARB file = _Traffic Signals by Route\Route 676\67600116 Rt 676 Morgan Blvd – CR 551 MP 1.16\67600116_04181 05_ts7178_17_msk.dgn pen table = \\njdotprjws\v8system\njdotws\projects\NJDOTEng\Iplot\TBLs\Non-Roadway\elec.tbl

REFERENCE

file=_Traffic Signals by Route\Route 676\67600116 Rt 676 Morgan Blvd – CR 551 MP 1.16\67600116_0418105_ts7178_17_msk.dgn

86-121 Second Variable Cycle with Max 3 Extension

Normal Operation

		Signal Indications																				
Phase	**Highway & Street Name**	**1,2**	**3-5**	**6,7**	**8,9**	**10-12**	**13, 14**	**15,16**	**17-20**	**21, 22**	**23-25**	**26-28**	**29-32**	**33-36**	**37-40**	**RR1, RR2**	**RR3, RR4**	**RR5, RR6**	**RR7, RR8**	**RR Signals**	**RR Gates**	**Time (Sec)**
A	CR 551 (Broadway) ROW	<R-	R	G	<R-	R	R	R	G	R	R	G	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	7-25
	Change (Outer)	<R-	R	G	<R-	R	R	R	Y	R	R	Y	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	G	<R-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	Y(1)	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R(1)	<R-	R	G/<G-(1)	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
B	I-676 Ramp / Dvwy ROW	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	7-15
	Change (Outer)	<R-	R	R	<R-	R	G/<G-	G	R	Y	Y	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
C	Morgan Blvd. ROW	<R-	G	G	<R-	G	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	7-14
	Change (Outer)	<R-	Y	G	<R-	Y	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	G	<R-	R	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	Y	<R-	R	Y/<Y-(2)	Y(3)	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	R(2)	R(3)	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
D	Morgan Blvd. Lag Lefts	<G-	R	R	<G-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5-7
	Change (Outer)	<Y-	R	R	<Y-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	G(4)	<R-	R	Y/<Y-(6)(7)	Y(8) (9)	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	G(5)	<R-	R	R(6)(8)	R(8) (9)	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
Emergency Flash		**<R-**	**Y**	**Y**	**<R-**	**Y**	**Y**	**Y**	**R**	**R**	**R**	**R**	**DARK**	**DARK**	**DARK**	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**	**UP**	**-**

131-141 Second Variable Cycle with Max 3 Extension

With Pedestrian Actuation

		Signal Indications																							
Phase	**Highway & Street Name**	**1,2**	**3-5**	**6,7**	**8,9**	**10-12**	**13, 14**	**15,16**	**17-20**	**21, 22**	**23-25**	**26-28**	**29-32**	**33-36**	**37-40**	**RR1, RR2**	**RR3, RR4**	**RR5, RR6**	**RR7, RR8**	**RR Signals**	**RR Gates**	**Time (Sec)**
A	CR 551 (Broadway) ROW	<R-	R	G	<R-	R	R	R	G	R	R	G	DW	W	W	OFF	OFF	OFF	OFF	OFF	UP	7
	Pedestrian Clearance	<R-	R	G	<R-	R	R	R	G	R	R	G	DW	FDW	FDW	OFF	OFF	OFF	OFF	OFF	UP	25
	Change (Outer)	<R-	R	G	<R-	R	R	R	Y	R	R	Y	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	G	<R-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	Y[1]	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R[1]	<R-	R	G/<G-[1]	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
B	I-676 Ramp / Dvwy ROW	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	7-15
	Change (Outer)	<R-	R	R	<R-	R	G/<G-	G	R	Y	Y	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
C	Morgan Blvd. ROW	<R-	G	G	<R-	G	G	G	R	R	R	R	W	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	7
	Pedestrian Clearance	<R-	G	G	<R-	G	G	G	R	R	R	R	FDW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	20
	Change (Outer)	<R-	Y	G	<R-	Y	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	G	<R-	R	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	Y	<R-	R	Y/<Y-[2]	Y[3]	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	R[2]	R[3]	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
D	Morgan Blvd. Lag Lefts	<G-	R	R	<G-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5-7
	Change (Outer)	<Y-	R	R	<Y-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2
	Inside Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	5
	Change (Inner)	<R-	R	G[4]	<R-	R	Y/<Y-[6][7]	Y[8][9]	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	3
	Clearance	<R-	R	G[5]	<R-	R	R[6][8]	R[8][9]	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	2

Notes:

1. The memory circuits shall be OFF.
2. The vehicle extension interval shall be set at 4-seconds.
3. The manual control shall be disconnected.
4. Pedestrian push button PPB(A) shall call Phase “C” and PPB(B) shall call Phase “A”.
5. Signal is to rest in Phase “C” (Green, DW). Unactuated phases shall be skipped.
6. A queue detector pre-emption shall be provided on the I-676 southbound ramp. The queue detection shall employ a 10-second delay before accepting actuation.
7. Upon actuation of the queue detector pre-emption, all minimum green, yellow change, red clearance and pedestrian clearance times shall be guaranteed followed by green time to Phase “B” for the duration of the actuation plus 30-seconds.
8. The minimum queue detector pre-emption re-service time shall be set at 4-minutes.
9. Upon completion of the queue detector pre-emption, R.O.W. shall be given to Morgan Boulevard and Normal Operation shall resume.
10. Railroad pre-emption supersedes the queue pre-emption for the I-676 SB ramp.
11. Phase “B” shall have a Dynamic Max / Max 3 option installed with the following parameters:
    a. The number of successive Max terminations (Max-Outs) shall be set at 2.
    b. The increment adjustment time or Max 3 Adjust shall be set to 10-seconds.
    c. The Dynamic maximum green limit time or Max 3 Limit shall be set to 45-seconds.
    d. The number of successive gap terminations (Gap-Outs) shall be set at 2.
12. During transition into railroad pre-emption control, the minimum green time shall be set at 2-seconds, and the pedestrian clearance interval shall be omitted.
13. [(1)] Traffic signal heads shall display G if Phase “B” is skipped.
14. [(2)] Traffic signal heads shall display G/<G- if Phases “D” & “A” are skipped.
15. [(3)] Traffic signal heads shall display G if Phases “D” & “A” are skipped.
16. [(4)] Traffic signal heads shall display Y if Phase “A” is skipped.
17. [(5)] Traffic signal heads shall display R if Phase “A” is skipped.
18. [(6)] Traffic signal heads shall display G/<G- if Phase “A” is skipped.
19. [(7)] Traffic signal heads shall display G/<G- if Phases “A” & “B” are skipped.
20. [(8)] Traffic signal heads shall display G if Phases “A” & “B” are skipped.
21. [(9)] Traffic signal heads shall display G if Phase “A” is skipped.

Variable Cycle
Railroad Pre-emption

		Signal Indications																				
	Phase	**1,2**	**3-5**	**6,7**	**8,9**	**10-12**	**13, 14**	**15,16**	**17-20**	**21,22**	**23-25**	**26-28**	**29-32**	**33-36**	**37-40**	**RR1, RR2**	**RR3, RR4**	**RR5, RR6**	**RR7, RR8**	**RR Signals**	**RR Gates**	**Time (Sec)**
Φ A to Pre-emption	CR 551 (Broadway) ROW	<R-	R	G	<R-	R	R	R	G	R	R	G	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-
	RR Pre-Pulse Extension	<R-	R	G	<R-	R	R	R	G	R	R	G	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2
	RR Pre-Pulse Change (Outer)	<R-	R	G	<R-	R	R	R	Y	R	R	Y	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3
	RR Pre-Pulse Clearance	<R-	R	G	<R-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2
	Track Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	11
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	UP	3
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	7
	Track Clearance Change	<R-	R	Y	<R-	R	Y/<Y-	Y	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	3
	Track Clearance All-Red	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	2
	Hold	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Horizontal	-
	Return - Gate Ascending	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Ascending	12
	Change	<R-	R	R	<R-	R	R	R	Y	G	G	Y	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	R	R	R	G	G	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2
	Return to Normal (Phase B)	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-
Φ B to Pre-emption	I-676 Ramp / Dvwy ROW	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-
	RR Pre-Pulse Extension	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2
	RR Pre-Pulse Change (Outer)	<R-	R	R	<R-	R	G/<G-	G	R	Y	Y	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3
	RR Pre-Pulse Clearance	<R-	R	R	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2
	Track Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	11
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	UP	3
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	7
	Track Clearance Change	<R-	R	Y	<R-	R	Y/<Y-	Y	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	3
	Track Clearance All-Red	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	2
	Hold	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Horizontal	-
	Return - Gate Ascending	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Ascending	12
	Change	<R-	R	R	<R-	R	R	R	Y	G	G	Y	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3
	Clearance	<R-	R	R	<R-	R	R	R	R	G	G	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2
	Return to Normal (Phase B)	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-

		Signal Indications																					
	Phase	**1,2**	**3-5**	**6,7**	**8,9**	**10-12**	**13, 14**	**15,16**	**17-20**	**21,22**	**23-25**	**26-28**	**29-32**	**33-36**	**37-40**	**RR1, RR2**	**RR3, RR4**	**RR5, RR6**	**RR7, RR8**	**RR Signals**	**RR Gates**	**Time (Sec)**	
Φ C to Pre-emption	Morgan Blvd. ROW	<R-	G	G	<R-	G	G	G	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-	
	RR Pre-Pulse Extension	<R-	G	G	<R-	G	G	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2	
	RR Pre-Pulse Change (Outer)	<R-	Y	G	<R-	Y	G	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3	
	RR Pre-Pulse Clearance	<R-	R	G	<R-	R	G	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2	
	Track Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	11	
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	UP	3	
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	7	
	Track Clearance Change	<R-	R	Y	<R-	R	Y/<Y-	Y	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	3	
	Track Clearance All-Red	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	2	
	Hold	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Horizontal	-	
	Return - Gate Ascending	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Ascending	12	
	Change	<R-	R	R	<R-	R	R	R	Y	G	G	Y	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3	
	Clearance	<R-	R	R	<R-	R	R	R	R	G	G	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2	
	Return to Normal (Phase B)	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-	
Φ D to Pre-emption	Morgan Blvd. Lag Lefts	<G-	R	R	<G-	R	R	R	R	R	R	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-	
	RR Pre-Pulse Extension	<G-	R	R	<G-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2	
	RR Pre-Pulse Change (Outer)	<Y-	R	R	<Y-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3	
	RR Pre-Pulse Clearance	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2	
	Track Clearance	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	11	
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	UP	3	
	Track Clearance (Adjusted)	<R-	R	G	<R-	R	G/<G-	G	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	7	
	Track Clearance Change	<R-	R	Y	<R-	R	Y/<Y-	Y	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	3	
	Track Clearance All-Red	<R-	R	R	<R-	R	R	R	R	R	R	R	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Descending	2	
	Hold	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Horizontal	-	
	Return - Gate Ascending	<R-	R	R	<R-	R	R	R	G	G	G	G	DW	DW	DW	NRT	NLT	NLT	NRT	Active	Ascending	12	
	Change	<R-	R	R	<R-	R	R	R	Y	G	G	Y	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	3	
	Clearance	<R-	R	R	<R-	R	R	R	R	G	G	R	DW	DW	DW	NRT	NLT	NLT	NRT	OFF	UP	2	
	Return to Normal (Phase B)	<R-	R	R	<R-	R	G/<G-	G	R	G	G	R	DW	DW	DW	OFF	OFF	OFF	OFF	OFF	UP	-	

Railroad Pre-emption Input Parameters and Times

Railroad Pre-emption Input Parameters	**Pre-emption Time (sec.)**
Minimum Green	2
Minimum Walk	0
Minimum Pedestrian Clearance	0
Track Green	21
Track Yellow	3
Track Red Clearance	2
Minimum Hold Time	15
Delay Time	2
Hold Delay Time	3

ID=TPOBARB date=30-NOV-2022 11:22 scale=30.000000:1.000000 pen table=\\njdotprjws\v8system\njdotws\projects\NJDOTEng\Iplot\TBLs\Non-Roadway\elec.tbl

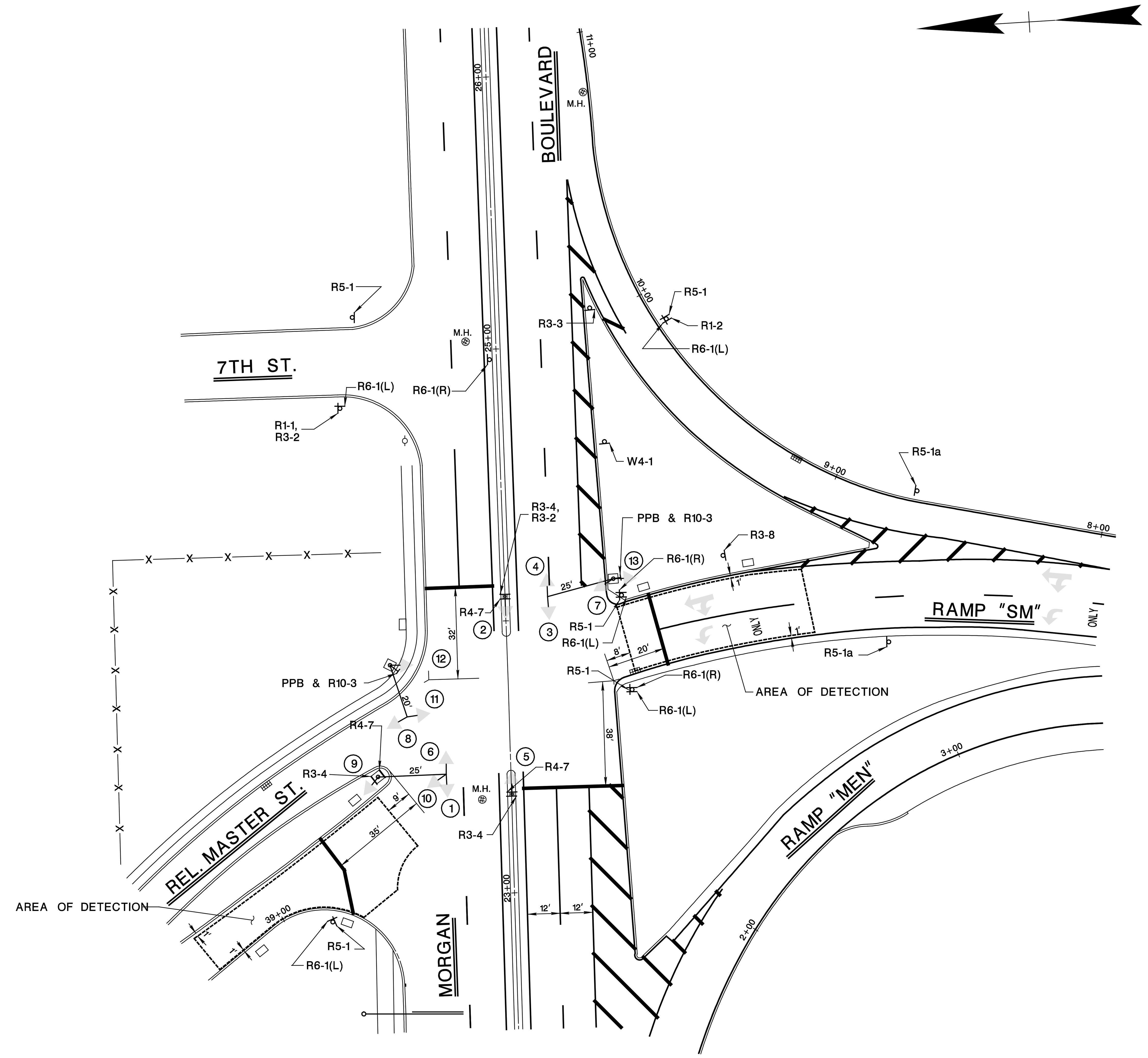
STATE	FEDERAL PROJECT NO.
N.J.	*

SIGN LEGEND

R1-1	STOP	30" x 30"
R1-2	YIELD	36" x 36" x 36"
R3-2	NO LEFT TURN (SYMBOL)	24" x 24"
R3-3	NO TURNS	24" x 24"
R3-4	NO U TURN (SYMBOL)	24" x 24"
R3-8	DOUBLE TURN (SYMBOL)	30" x 30"
R4-7	KEEP RIGHT (SYMBOL)	24" x 30"
R5-1	DO NOT ENTER	30" x 30"
R5-1a	WRONG WAY	36" x 24"
R6-1(L)	ONE WAY (LEFT)	36" x 12"
R6-1(R)	ONE WAY (RIGHT)	36" x 12"
R10-3	PUSH BUTTON FOR GREEN LIGHT	9" x 12"
W4-1	MERGE	36" x 36"

SIGNAL LEGEND

8"
R 8"
Y 8"
G 8"
1-13



ORIGINAL SIGNED BY
William E. Anderson
Manager, Bureau of Traffic Engineering and Safety Programs
April 27, 1995

30' 20' 10' 0 30' 60'

TS-
TS-

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING
TRAFFIC SIGNAL INSTALLATION

ROUTE I-676/MORGAN BLVD. & RELOCATED MASTER STREET/RAMP "SM"

MUNICIPALITY CITY OF CAMDEN COUNTY CAMDEN

DESIGN AUTHORIZED - BUREAU OF TRAFFIC ENGINEERING DATE

SUBMITTED DJM
CHECKED TJS
AUTHORIZED

DRAWN NRA
CHECKED DJM

SCALE: 1" = 30'

TS-4603

REVISION DESCRIPTION	CADD	BY	C'K'D	DATE
AS BUILT - SUPERSEDES TS 2910		DJM	TJS	3/9/95

file=_Traffic Signals by RouteRoute 67667600115 Rt 676 Relocated Master St – Ramp SM MP 1.1567600115_SID 418103_TS4603_MRRSOUTH C10-11-12_GPS.adeFinal!18.DGN

Form /71

New Jersey Department of Transportation

TRAFFIC ENGINEERING – ELECTRICAL PROJECT

Number 596

Job No.	0418103		Route No.	I-676
Memo to	Mr. R. Uth - #4		Location	Morgan Boulevard and Relocated Master Street and Ramp SM Camden City, Camden County
Attention			Date	May 1, 1980

Kindly engage your State forces to employ signal timing and operations as shown below:

70 Second Background Cycle

Signal Faces

Phase		1-6	7-10	11-13	Time
A.	Morgan Boulevard ROW	G	R	R	38-22
A.	Morgan Boulevard Change	Y	R	R	3*
A.	Morgan Boulevard Clear	R	R	R	2
B.	Ramp SM ROW	R	R	G	***10-22
B.	Ramp SM Change	R	R	Y	3
B.	Ramp SM Clearance	R	R	R	2
C.	Relocated Master Street ROW	R	G	R	7-11**
C.	Relocated Master Street Change	R	Y	R	3
C.	Relocated Master Street Clear	R	R	R	2

Reference:

Vehicle interval for Phases B and C: 2 seconds

Memory circuit for Phases B and C be disconnected.

Manual control be disconnected.

Controller shall be capable of skipping phases not actuated.

*Offset is 0 seconds measured from the beginning of yellow to Morgan Boulevard at this intersection.

**An actuation of the pedestrian push button on the northeast corner shall provide 11 seconds of green to Phase C without recall.

***An actuation of the pedestrian push button on the southeast corner shall provide 11 seconds of green to Phase B.

JMP:JS:vls

APPENDIX D
Existing Year 2022 Capacity Results

AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	4	0	78	62	70	2	91	62	60	45	1
Future Volume (vph)	2	4	0	78	62	70	2	91	62	60	45	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.92		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	2063		1228	2945		1805	1696	1162	1467	1584	
Flt Permitted	0.65	1.00		0.75	1.00		0.72	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1226	2063		975	2945		1368	1696	1162	1062	1584	
Peak-hour factor, PHF	0.75	0.75	0.75	0.78	0.78	0.78	0.84	0.84	0.84	0.80	0.80	0.80
Adj. Flow (vph)	3	5	0	100	79	90	2	108	74	75	56	1
RTOR Reduction (vph)	0	0	0	0	76	0	0	0	19	0	0	0
Lane Group Flow (vph)	3	5	0	100	93	0	2	108	56	75	57	0
Heavy Vehicles (%)	0%	75%	0%	47%	0%	24%	0%	12%	39%	23%	20%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	17.5	17.5		17.5	17.5		82.5	82.5	82.5	82.5	82.5	
Effective Green, g (s)	17.5	17.5		17.5	17.5		82.5	82.5	82.5	82.5	82.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.75	0.75	0.75	0.75	0.75	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	195	328		155	468		1026	1272	871	796	1188	
v/s Ratio Prot		0.00			0.03			0.06			0.04	
v/s Ratio Perm	0.00			c0.10			0.00		0.05	c0.07		
v/c Ratio	0.02	0.02		0.65	0.20		0.00	0.08	0.06	0.09	0.05	
Uniform Delay, d1	39.0	39.0		43.3	40.2		3.4	3.7	3.6	3.7	3.6	
Progression Factor	1.00	1.00		0.39	0.04		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		8.9	0.2		0.0	0.1	0.1	0.2	0.1	
Delay (s)	39.0	39.0		25.6	2.0		3.4	3.8	3.8	3.9	3.6	
Level of Service	D	D		C	A		A	A	A	A	A	
Approach Delay (s)		39.0			10.7			3.8			3.8	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	0	122	2	1	10	142	0	1	0	13	113	0	60
Future Volume (vph)	0	122	2	1	10	142	0	1	0	13	113	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0	
Lane Util. Factor		0.95			1.00	0.95		1.00		1.00	1.00	1.00	
Frt		1.00			1.00	1.00		1.00		0.85	1.00	0.85	
Flt Protected		1.00			0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2730			936	2777		902		873	1626	1346	
Flt Permitted		1.00			0.66	1.00		0.71		1.00	0.95	1.00	
Satd. Flow (perm)		2730			651	2777		677		873	1626	1346	
Peak-hour factor, PHF	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.58	0.58	0.58	0.88	0.88	0.88
Adj. Flow (vph)	0	142	2	1	12	178	0	2	0	22	128	0	68
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	0	6	0	17	0
Lane Group Flow (vph)	0	142	0	0	14	178	0	2	0	17	128	51	0
Heavy Vehicles (%)	0%	31%	100%	0%	100%	30%	0%	100%	0%	85%	11%	0%	20%
Turn Type		NA		Perm	Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4				8						6	
Permitted Phases				8	8			2		2	6		
Actuated Green, G (s)		17.5			17.5	17.5		82.5		82.5	82.5	82.5	
Effective Green, g (s)		17.5			17.5	17.5		82.5		82.5	82.5	82.5	
Actuated g/C Ratio		0.16			0.16	0.16		0.75		0.75	0.75	0.75	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		434			103	441		507		654	1219	1009	
v/s Ratio Prot		0.05				c0.06						0.04	
v/s Ratio Perm					0.02			0.00		0.02	c0.08		
v/c Ratio		0.33			0.14	0.40		0.00		0.03	0.11	0.05	
Uniform Delay, d1		41.0			39.8	41.6		3.4		3.5	3.7	3.6	
Progression Factor		1.22			1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.4			0.6	0.6		0.0		0.1	0.2	0.1	
Delay (s)		50.4			40.4	42.2		3.5		3.6	3.9	3.7	
Level of Service		D			D	D		A		A	A	A	
Approach Delay (s)		50.4				42.0			3.6			3.8	
Approach LOS		D				D			A			A	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	142	0	0	209	16	131	93	328	13	0	143
Future Volume (vph)	4	142	0	0	209	16	131	93	328	13	0	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Util. Factor		0.95			0.95		0.95	0.95		1.00		1.00
Frt		1.00			0.99		1.00	0.89		1.00		0.85
Flt Protected		1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)		3201			3228		1243	1521		1378		1568
Flt Permitted		0.95			1.00		0.95	1.00		0.31		1.00
Satd. Flow (perm)		3037			3228		1243	1521		450		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.89	0.89	0.89	0.90	0.90	0.90	0.70	0.70	0.70
Adj. Flow (vph)	5	171	0	0	235	18	146	103	364	19	0	204
RTOR Reduction (vph)	0	0	0	0	9	0	0	185	0	0	0	119
Lane Group Flow (vph)	0	176	0	0	244	0	131	297	0	19	0	85
Heavy Vehicles (%)	0%	13%	0%	0%	11%	6%	38%	4%	4%	31%	0%	3%
Turn Type	Perm	NA			NA		Perm	NA		Perm		Prot
Protected Phases		4			8			2				6
Permitted Phases	4						2			6		6
Actuated Green, G (s)		25.0			25.0		25.0	25.0		25.0		25.0
Effective Green, g (s)		25.0			25.0		25.0	25.0		25.0		25.0
Actuated g/C Ratio		0.42			0.42		0.42	0.42		0.42		0.42
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Grp Cap (vph)		1265			1345		517	633		187		653
v/s Ratio Prot					c0.08							0.05
v/s Ratio Perm		0.06					0.11	0.20		0.04		
v/c Ratio		0.14			0.18		0.25	0.47		0.10		0.13
Uniform Delay, d1		10.8			11.0		11.4	12.7		10.7		10.8
Progression Factor		1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2		0.2			0.3		1.2	2.5		1.1		0.4
Delay (s)		11.1			11.3		12.6	15.2		11.7		11.2
Level of Service		B			B		B	B		B		B
Approach Delay (s)		11.1			11.3			14.6			11.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	84	9	143	8	39	1	38	76	97	124	1
Future Volume (vph)	0	84	9	143	8	39	1	38	76	97	124	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt		0.99		1.00	0.88		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3524		1687	2808		1805	1681	1214	1612	1826	
Flt Permitted		1.00		0.65	1.00		0.65	1.00	1.00	0.73	1.00	
Satd. Flow (perm)		3524		1154	2808		1233	1681	1214	1236	1826	
Peak-hour factor, PHF	0.58	0.58	0.58	0.78	0.78	0.78	0.87	0.87	0.87	0.73	0.73	0.73
Adj. Flow (vph)	0	145	16	183	10	50	1	44	87	133	170	1
RTOR Reduction (vph)	0	12	0	0	39	0	0	0	27	0	0	0
Lane Group Flow (vph)	0	149	0	183	21	0	1	44	60	133	171	0
Heavy Vehicles (%)	0%	1%	0%	7%	0%	15%	0%	13%	33%	12%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		23.8		23.8	23.8		76.2	76.2	76.2	76.2	76.2	
Effective Green, g (s)		23.8		23.8	23.8		76.2	76.2	76.2	76.2	76.2	
Actuated g/C Ratio		0.22		0.22	0.22		0.69	0.69	0.69	0.69	0.69	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		762		249	607		854	1164	840	856	1264	
v/s Ratio Prot		0.04			0.01			0.03			0.09	
v/s Ratio Perm				c0.16			0.00		0.05	c0.11		
v/c Ratio		0.20		0.73	0.03		0.00	0.04	0.07	0.16	0.14	
Uniform Delay, d1		35.3		40.2	34.0		5.2	5.3	5.5	5.8	5.7	
Progression Factor		1.00		0.81	0.67		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1		10.7	0.0		0.0	0.1	0.2	0.4	0.2	
Delay (s)		35.4		43.4	22.8		5.2	5.4	5.6	6.2	6.0	
Level of Service		D		D	C		A	A	A	A	A	
Approach Delay (s)		35.4			38.3			5.5			6.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	249	4	12	64	0	5	0	18	146	3	117
Future Volume (vph)	0	249	4	12	64	0	5	0	18	146	3	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0		5.0	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00		1.00	1.00	1.00	
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3143		1203	3112		1289		967	1752	1563	
Flt Permitted		1.00		0.48	1.00		0.66		1.00	0.95	1.00	
Satd. Flow (perm)		3143		607	3112		896		967	1752	1563	
Peak-hour factor, PHF	0.82	0.82	0.82	0.83	0.83	0.83	0.64	0.64	0.64	0.79	0.79	0.79
Adj. Flow (vph)	0	304	5	14	77	0	8	0	28	185	4	148
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	9	0	45	0
Lane Group Flow (vph)	0	307	0	14	77	0	8	0	19	185	107	0
Heavy Vehicles (%)	0%	14%	50%	50%	16%	0%	40%	0%	67%	3%	33%	3%
Turn Type		NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8			2		2	6		
Actuated Green, G (s)		23.8		23.8	23.8		76.2		76.2	76.2	76.2	
Effective Green, g (s)		23.8		23.8	23.8		76.2		76.2	76.2	76.2	
Actuated g/C Ratio		0.22		0.22	0.22		0.69		0.69	0.69	0.69	
Clearance Time (s)		5.0		5.0	5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		680		131	673		620		669	1213	1082	
v/s Ratio Prot		c0.10			0.02						0.07	
v/s Ratio Perm				0.02			0.01		0.02	c0.11		
v/c Ratio		0.45		0.11	0.11		0.01		0.03	0.15	0.10	
Uniform Delay, d1		37.4		34.6	34.6		5.2		5.3	5.8	5.6	
Progression Factor		0.88		1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.5		0.4	0.1		0.0		0.1	0.3	0.2	
Delay (s)		33.4		34.9	34.7		5.3		5.4	6.1	5.8	
Level of Service		C		C	C		A		A	A	A	
Approach Delay (s)		33.4			34.7			5.4			5.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	216	0	0	227	17	39	100	256	28	0	147
Future Volume (vph)	3	216	0	0	227	17	39	100	256	28	0	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Util. Factor		0.95			0.95		0.95	0.95		1.00		1.00
Frt		1.00			0.99		1.00	0.89		1.00		0.85
Flt Protected		1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)		3406			3383		1394	1540		1687		1553
Flt Permitted		0.95			1.00		0.95	1.00		0.38		1.00
Satd. Flow (perm)		3244			3383		1394	1540		681		1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	3	232	0	0	264	20	45	115	294	33	0	175
RTOR Reduction (vph)	0	0	0	0	9	0	0	147	0	0	0	102
Lane Group Flow (vph)	0	235	0	0	275	0	40	267	0	33	0	73
Heavy Vehicles (%)	0%	6%	0%	0%	6%	0%	23%	3%	5%	7%	0%	4%
Turn Type	Perm	NA			NA		Perm	NA		Perm		Prot
Protected Phases		4			8			2				6
Permitted Phases	4						2			6		6
Actuated Green, G (s)		25.0			25.0		25.0	25.0		25.0		25.0
Effective Green, g (s)		25.0			25.0		25.0	25.0		25.0		25.0
Actuated g/C Ratio		0.42			0.42		0.42	0.42		0.42		0.42
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Grp Cap (vph)		1351			1409		580	641		283		647
v/s Ratio Prot					c0.08							0.05
v/s Ratio Perm		0.07					0.03	0.17		0.05		
v/c Ratio		0.17			0.19		0.07	0.42		0.12		0.11
Uniform Delay, d1		11.0			11.1		10.5	12.4		10.7		10.7
Progression Factor		1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2		0.3			0.3		0.2	2.0		0.8		0.4
Delay (s)		11.3			11.4		10.7	14.3		11.6		11.1
Level of Service		B			B		B	B		B		B
Approach Delay (s)		11.3			11.4			14.0			11.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX E

Existing Year 2022 with Trip Generation Volume Capacity Results

AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	4	0	78	62	70	2	91	62	60	45	1
Future Volume (vph)	2	4	0	78	62	70	2	91	62	60	45	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.92		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	2063		1228	2945		1805	1696	1162	1467	1584	
Flt Permitted	0.65	1.00		0.75	1.00		0.72	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1226	2063		975	2945		1368	1696	1162	1062	1584	
Peak-hour factor, PHF	0.75	0.75	0.75	0.78	0.78	0.78	0.84	0.84	0.84	0.80	0.80	0.80
Adj. Flow (vph)	3	5	0	100	79	90	2	108	74	75	56	1
RTOR Reduction (vph)	0	0	0	0	69	0	0	0	36	0	0	0
Lane Group Flow (vph)	3	5	0	100	100	0	2	108	38	75	57	0
Heavy Vehicles (%)	0%	75%	0%	47%	0%	24%	0%	12%	39%	23%	20%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	13.7	10.9		24.0	16.2		36.0	36.0	36.0	36.0	36.0	
Effective Green, g (s)	13.7	10.9		24.0	16.2		36.0	36.0	36.0	36.0	36.0	
Actuated g/C Ratio	0.20	0.16		0.34	0.23		0.51	0.51	0.51	0.51	0.51	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	263	321		363	681		703	872	597	546	814	
v/s Ratio Prot	0.00	0.00		c0.03	0.03			0.06			0.04	
v/s Ratio Perm	0.00			c0.06			0.00		0.03	c0.07		
v/c Ratio	0.01	0.02		0.28	0.15		0.00	0.12	0.06	0.14	0.07	
Uniform Delay, d1	22.7	25.0		16.8	21.4		8.3	8.8	8.5	8.9	8.6	
Progression Factor	1.00	1.00		1.38	1.22		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.4	0.1		0.0	0.3	0.2	0.5	0.2	
Delay (s)	22.7	25.0		23.7	26.2		8.3	9.1	8.7	9.4	8.7	
Level of Service	C	C		C	C		A	A	A	A	A	
Approach Delay (s)		24.2			25.3			9.0			9.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	0	122	3	1	11	142	0	2	0	14	113	0	60
Future Volume (vph)	0	122	3	1	11	142	0	2	0	14	113	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0	
Lane Util. Factor		0.95			1.00	0.95		1.00		1.00	1.00	1.00	
Frt		1.00			1.00	1.00		1.00		0.85	1.00	0.85	
Flt Protected		1.00			0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		2718			934	2777		902		868	1626	1346	
Flt Permitted		1.00			0.66	1.00		0.71		1.00	0.95	1.00	
Satd. Flow (perm)		2718			649	2777		677		868	1626	1346	
Peak-hour factor, PHF	0.86	0.86	0.86	0.80	0.80	0.80	0.80	0.58	0.58	0.58	0.88	0.88	0.88
Adj. Flow (vph)	0	142	3	1	14	178	0	3	0	24	128	0	68
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	6	0	17	0
Lane Group Flow (vph)	0	142	0	0	15	178	0	3	0	18	128	51	0
Heavy Vehicles (%)	0%	31%	100%	0%	100%	30%	0%	100%	0%	86%	11%	0%	20%
Turn Type		NA		Perm	Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4				8						6	
Permitted Phases				8	8			2		2	6		
Actuated Green, G (s)		17.5			17.5	17.5		82.5		82.5	82.5	82.5	
Effective Green, g (s)		17.5			17.5	17.5		82.5		82.5	82.5	82.5	
Actuated g/C Ratio		0.16			0.16	0.16		0.75		0.75	0.75	0.75	
Clearance Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		432			103	441		507		651	1219	1009	
v/s Ratio Prot		0.05				c0.06						0.04	
v/s Ratio Perm					0.02			0.00		0.02	c0.08		
v/c Ratio		0.33			0.15	0.40		0.01		0.03	0.11	0.05	
Uniform Delay, d1		41.0			39.8	41.6		3.5		3.5	3.7	3.6	
Progression Factor		1.22			1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.4			0.7	0.6		0.0		0.1	0.2	0.1	
Delay (s)		50.5			40.5	42.2		3.5		3.6	3.9	3.7	
Level of Service		D			D	D		A		A	A	A	
Approach Delay (s)		50.5				42.0			3.6			3.8	
Approach LOS		D				D			A			A	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	142	0	0	209	16	132	93	328	13	0	143
Future Volume (vph)	4	142	0	0	209	16	132	93	328	13	0	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Util. Factor		0.95			0.95		0.95	0.95		1.00		1.00
Frt		1.00			0.99		1.00	0.89		1.00		0.85
Flt Protected		1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)		3201			3228		1234	1521		1378		1568
Flt Permitted		0.95			1.00		0.95	1.00		0.31		1.00
Satd. Flow (perm)		3037			3228		1234	1521		450		1568
Peak-hour factor, PHF	0.83	0.83	0.83	0.89	0.89	0.89	0.90	0.90	0.90	0.70	0.70	0.70
Adj. Flow (vph)	5	171	0	0	235	18	147	103	364	19	0	204
RTOR Reduction (vph)	0	0	0	0	9	0	0	185	0	0	0	119
Lane Group Flow (vph)	0	176	0	0	244	0	132	297	0	19	0	85
Heavy Vehicles (%)	0%	13%	0%	0%	11%	6%	39%	4%	4%	31%	0%	3%
Turn Type	Perm	NA			NA		Perm	NA		Perm		Prot
Protected Phases		4			8			2				6
Permitted Phases	4						2			6		6
Actuated Green, G (s)		25.0			25.0		25.0	25.0		25.0		25.0
Effective Green, g (s)		25.0			25.0		25.0	25.0		25.0		25.0
Actuated g/C Ratio		0.42			0.42		0.42	0.42		0.42		0.42
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Grp Cap (vph)		1265			1345		514	633		187		653
v/s Ratio Prot					c0.08							0.05
v/s Ratio Perm		0.06					0.11	0.20		0.04		
v/c Ratio		0.14			0.18		0.26	0.47		0.10		0.13
Uniform Delay, d1		10.8			11.0		11.4	12.7		10.7		10.8
Progression Factor		1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2		0.2			0.3		1.2	2.5		1.1		0.4
Delay (s)		11.1			11.3		12.6	15.2		11.7		11.2
Level of Service		B			B		B	B		B		B
Approach Delay (s)		11.1			11.3			14.6			11.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	84	9	143	8	39	1	38	76	97	124	1
Future Volume (vph)	0	84	9	143	8	39	1	38	76	97	124	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt		0.99		1.00	0.88		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		3524		1687	2808		1805	1681	1214	1612	1826	
Flt Permitted		1.00		0.65	1.00		0.65	1.00	1.00	0.73	1.00	
Satd. Flow (perm)		3524		1154	2808		1233	1681	1214	1236	1826	
Peak-hour factor, PHF	0.58	0.58	0.58	0.78	0.78	0.78	0.87	0.87	0.87	0.73	0.73	0.73
Adj. Flow (vph)	0	145	16	183	10	50	1	44	87	133	170	1
RTOR Reduction (vph)	0	13	0	0	33	0	0	0	42	0	0	0
Lane Group Flow (vph)	0	148	0	183	27	0	1	44	45	133	171	0
Heavy Vehicles (%)	0%	1%	0%	7%	0%	15%	0%	13%	33%	12%	4%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)		13.4		23.9	23.9		36.1	36.1	36.1	36.1	36.1	
Effective Green, g (s)		13.4		23.9	23.9		36.1	36.1	36.1	36.1	36.1	
Actuated g/C Ratio		0.19		0.34	0.34		0.52	0.52	0.52	0.52	0.52	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		674		435	958		635	866	626	637	941	
v/s Ratio Prot		0.04		c0.03	0.01			0.03			0.09	
v/s Ratio Perm				c0.11			0.00		0.04	c0.11		
v/c Ratio		0.22		0.42	0.03		0.00	0.05	0.07	0.21	0.18	
Uniform Delay, d1		23.9		18.0	15.3		8.2	8.4	8.5	9.2	9.1	
Progression Factor		1.00		1.02	0.95		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2		0.7	0.0		0.0	0.1	0.2	0.7	0.4	
Delay (s)		24.1		19.0	14.6		8.2	8.5	8.7	9.9	9.5	
Level of Service		C		B	B		A	A	A	A	A	
Approach Delay (s)		24.1			17.9			8.7			9.7	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	249	5	13	64	0	6	0	19	146	3	117
Future Volume (vph)	0	249	5	13	64	0	6	0	19	146	3	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0		5.0	5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00		1.00	1.00	1.00	
Frt		1.00		1.00	1.00		1.00		0.85	1.00	0.85	
Flt Protected		1.00		0.95	1.00		0.95		1.00	0.95	1.00	
Satd. Flow (prot)		3133		1172	3112		1203		961	1752	1563	
Flt Permitted		1.00		0.48	1.00		0.66		1.00	0.95	1.00	
Satd. Flow (perm)		3133		590	3112		837		961	1752	1563	
Peak-hour factor, PHF	0.82	0.82	0.82	0.83	0.83	0.83	0.64	0.64	0.64	0.79	0.79	0.79
Adj. Flow (vph)	0	304	6	16	77	0	9	0	30	185	4	148
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	9	0	45	0
Lane Group Flow (vph)	0	308	0	16	77	0	9	0	21	185	107	0
Heavy Vehicles (%)	0%	14%	60%	54%	16%	0%	50%	0%	68%	3%	33%	3%
Turn Type		NA		Perm	NA		Perm		Perm	Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8			2		2	6		
Actuated Green, G (s)		23.8		23.8	23.8		76.2		76.2	76.2	76.2	
Effective Green, g (s)		23.8		23.8	23.8		76.2		76.2	76.2	76.2	
Actuated g/C Ratio		0.22		0.22	0.22		0.69		0.69	0.69	0.69	
Clearance Time (s)		5.0		5.0	5.0		5.0		5.0	5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		677		127	673		579		665	1213	1082	
v/s Ratio Prot		c0.10			0.02						0.07	
v/s Ratio Perm				0.03			0.01		0.02	c0.11		
v/c Ratio		0.45		0.13	0.11		0.02		0.03	0.15	0.10	
Uniform Delay, d1		37.5		34.7	34.6		5.2		5.3	5.8	5.6	
Progression Factor		0.88		1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2		0.5		0.4	0.1		0.0		0.1	0.3	0.2	
Delay (s)		33.4		35.2	34.7		5.3		5.4	6.1	5.8	
Level of Service		C		D	C		A		A	A	A	
Approach Delay (s)		33.4			34.8			5.4			5.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	216	0	0	227	17	40	100	256	28	0	147
Future Volume (vph)	3	216	0	0	227	17	40	100	256	28	0	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Util. Factor		0.95			0.95		0.95	0.95		1.00		1.00
Frt		1.00			0.99		1.00	0.89		1.00		0.85
Flt Protected		1.00			1.00		0.95	1.00		0.95		1.00
Satd. Flow (prot)		3406			3383		1372	1540		1687		1553
Flt Permitted		0.95			1.00		0.95	1.00		0.38		1.00
Satd. Flow (perm)		3244			3383		1372	1540		681		1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	3	232	0	0	264	20	46	115	294	33	0	175
RTOR Reduction (vph)	0	0	0	0	9	0	0	147	0	0	0	102
Lane Group Flow (vph)	0	235	0	0	275	0	41	267	0	33	0	73
Heavy Vehicles (%)	0%	6%	0%	0%	6%	0%	25%	3%	5%	7%	0%	4%
Turn Type	Perm	NA			NA		Perm	NA		Perm		Prot
Protected Phases		4			8			2				6
Permitted Phases	4						2			6		6
Actuated Green, G (s)		25.0			25.0		25.0	25.0		25.0		25.0
Effective Green, g (s)		25.0			25.0		25.0	25.0		25.0		25.0
Actuated g/C Ratio		0.42			0.42		0.42	0.42		0.42		0.42
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0		5.0
Lane Grp Cap (vph)		1351			1409		571	641		283		647
v/s Ratio Prot					c0.08							0.05
v/s Ratio Perm		0.07					0.03	0.17		0.05		
v/c Ratio		0.17			0.19		0.07	0.42		0.12		0.11
Uniform Delay, d1		11.0			11.1		10.5	12.4		10.7		10.7
Progression Factor		1.00			1.00		1.00	1.00		1.00		1.00
Incremental Delay, d2		0.3			0.3		0.2	2.0		0.8		0.4
Delay (s)		11.3			11.4		10.8	14.3		11.6		11.1
Level of Service		B			B		B	B		B		B
Approach Delay (s)		11.3			11.4			14.0			11.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Attachment 4- U.S. Waste-to-Energy GHG Reduction Overview

U.S. Waste-to-Energy GHG Reduction Overview

According to U.S. EPA, life cycle emission analysis show that waste-to-energy (WTE) facilities actually reduce the amount of greenhouse gases expressed as CO_2 equivalents (GHGs or CO_2e) in the atmosphere by approximately 1 ton for every ton of municipal solid waste (MSW) combusted.[1]

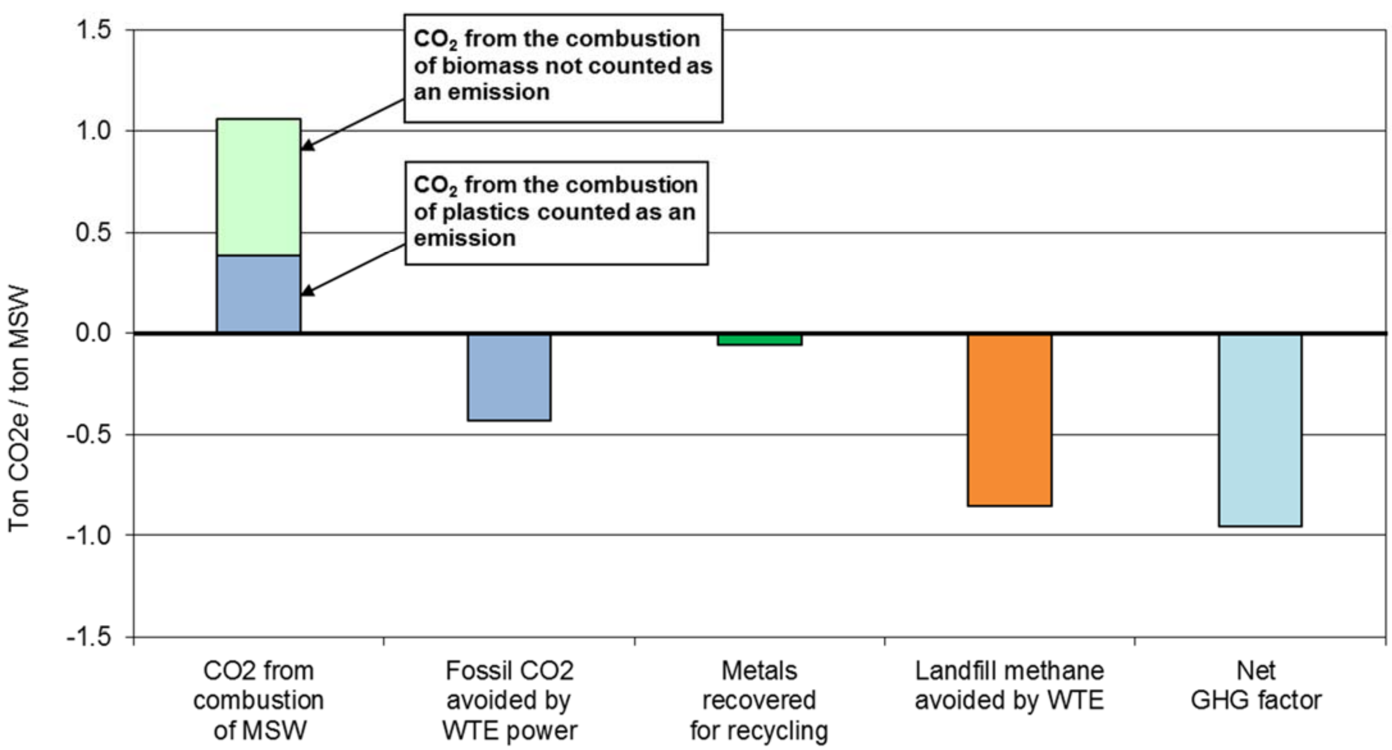
U.S. EPA scientists, in a prominent peer reviewed paper, concluded WTE facilities reduce GHG emissions relative to even those landfills equipped with energy recovery systems.[2] In addition, many other governmental and nongovernmental organizations have formally recognized WTE for its role in reducing world-wide GHG emissions including the:

- Intergovernmental Panel on Climate Change (IPCC) called WTE a "key GHG mitigation technology",[3]
- World Economic Forum (WEF) which identified WTE as one of eight renewable energy sources expected to make a significant contribution to a future low carbon energy system,[4]
- European Union, [5,6]
- U.S. Conference of Mayors,
- Clean Development Mechanism of the Kyoto Protocol,[7]
- Voluntary carbon markets,[8]
- Third Way[9] and the Center for American Progress.[10]

New WTE facilities are eligible to generate Emission Rate Credits (ERCs) under the EPA's Clean Power Plan. Existing facilities are exempt from regulation and stack CO_2 emissions do not count against state goals.

Lifecycle Assessment of WTE GHG Reductions

WTE GHG reductions are quantified using a life cycle assessment (LCA) approach that includes GHG reductions from avoided methane emissions from landfills, WTE electrical generation that offsets or displaces fossil-fuel based electrical generation, and the recovery of metals for recycling. The GHG reductions associated with these three factors more than offset WTE fossil-based CO_2 emissions from combustion of plastics and other fossil fuel based MSW components. Using national averages as inputs, an LCA results in an approximate 1 ton reduction in GHG emissions for every ton of MSW combusted as was estimated by the U.S. EPA.



Lifecycle Assessment Inputs

The major inputs and assumptions used in the Life Cycle Assessment are summarized below.

Avoided Landfill Methane Emissions:

- Landfill gas emissions and collection efficiency are not routinely measured and there is significant variation in both over the various stages of landfill operation and closure, and among landfills. On a national basis, approximately 28% of waste landfilled is managed in landfills with no gas collection, 38% of waste is managed in landfills with energy recovery and 34% in landfills with flares.
- Over the life of waste in a landfill, the typical lifetime average methane collection efficiency is estimated to be 50 – 60%, considering the variation in collection efficiencies for different stages of landfill operation including initial periods of no gas collection and post closure period when collection systems are no longer operated.
- To convert avoided methane emissions to CO_2 equivalents (CO_2e) a 100-year Global Warming Potential (GWP) value of 25 from the IPCC's 2007 Assessment Report was used in the LCA to be conservative.
- The most recent 2013 IPPC report increased the 100-year GWP for methane to 28, or 34 if climate carbon feedbacks are also considered. Using these values, avoided methane GHG benefits (as CO_2e) are 12-36% higher.

Avoided CO_2e Emissions From Fossil Fuel Fired Power Plants:

- The average WTE facility in the U.S. provides 550 kWh / ton MSW of net electrical power to the grid. New WTE facilities can supply 700 kWh / ton or more of electricity generation.
- GHG emissions from displacement of fossil fuel generation are based on the national U.S. EPA's eGRID non-baseload CO_2e emission rate.

Avoided GHG emissions associated with the recovery and recycling of ferrous and non-ferrous metals:

- Most WTE facilities recover ferrous and non-ferrous metal recovery systems for recycling.
- Each ton of ferrous metal recycled saves 2.0 tons of CO_2e.
- For aluminum, the predominate component in nonferrous metals recovered, the GHG savings is equal to 9.8 tons of CO_2e / ton aluminum.

WTE Fossil Based CO_2 Emissions

- On a national basis, 34% of CO_2 emissions from WTE are fossil based derived primarily from the combustion of plastics or other MSW components that may be derived from fossil fuel. The majority of CO_2 emissions are biogenic and derived from the combustion of the organic or biomass components of MSW.
- The biogenic fraction of CO_2 is determined by the radiocarbon dating of quarterly samples collected at WTE facilities in the U.S as required under USEPA GHG reporting regulations.

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[1] See U.S. EPA Office of Solid Waste, *Air Emissions from MSW Combustion Facilities*, https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/airem.html and Center for American Progress (2013) *Energy from Waste Can Help Curb Greenhouse Gas Emissions* https://cdn.americanprogress.org/wp-content/uploads/2013/04/EnergyFromWaste-PDF1.pdf

[2] Kaplan, P.O., J. DeCarolis, S. Thorneloe, Is It Better to Burn or Bury Waste for Clean Electricity Generation? *Environ. Sci. Technol.* **2009**, 43, 1711-1717. http://pubs.acs.org/doi/abs/10.1021/es802395e

[3] WTE identified as a "key mitigation measure" See Table 4.2 (p60) of IPCC, "Climate Change 2007: Synthesis Report. Contribution of Work Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change" [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp. Available at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

[4] WTE identified as a key technology for a future low carbon energy system in World Economic Forum. *Green Investing: Towards a Clean Energy Infrastructure.* January 2009. Available at: http://www3.weforum.org/docs/WEF_IV_GreenInvesting_Report_2009.pdf

[5] EU policies promoting WTE as part of an integrated waste management strategy have been an overwhelming success, reducing GHG emissions over 72 million metric tonnes per year, see European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2009: Tracking progress towards Kyoto targets* *http://www.eea.europa.eu/publications/eea_report_2009_9*

[6] European Environmental Agency (2008) Better management of municipal waste will reduce greenhouse gas emissions. Available at: http://www.eea.europa.eu/publications/briefing_2008_1

[7] Clean Development Mechanism: *Large-Scale Consolidated Methodology: Alternative waste treatment processes, ACM0022*. Available at: https://cdm.unfccc.int/methodologies/PAmethodologies/approved

[8] Verified Carbon Standard Project Database, http://www.vcsprojectdatabase.org/ See Project ID 290, Lee County Waste to Energy Facility 2007 Capital Expansion Project VCU, and Project ID 1036 Hillsborough County Waste to Energy (WtE) Facility 2009 Capital Expansion Unit 4.

[9] Third Way (2014) *Power Book*: *Energy from Waste*, http://powerbook.thirdway.org/filter-web-app/energy-from-waste

[10] Center for American Progress (2013) *Energy from Waste Can Help Curb Greenhouse Gas Emissions* https://cdn.americanprogress.org/wp-content/uploads/2013/04/EnergyFromWaste-PDF1.pdf