Alexandria/Arlington Waste-to-Energy Facility Fiscal Year 2017 Annual Report

Background

In 1984, an agreement was entered into between the Alexandria Sanitation Authority and the Arlington Solid Waste Authority to develop and construct a solid waste disposal facility having the capacity to handle 975 tons per day of waste from the City of Alexandria and Arlington County (the Jurisdictions). Waste-to-Energy was determined to be the most environmentally sustainable means of disposing of waste, after reduction, reuse and recycling. The waste-to-energy facility (the Facility), located at 5301 Eisenhower Avenue, Alexandria, is operated by Covanta Alexandria/Arlington Inc. (Covanta), and has been in operation since 1988. Over the years a number of enhancements and improvements have been made to the Facility primarily to meet the increasingly stringent air pollution requirements of the Clean Air Act, and the Facility has continued to reliably handle the waste from the Jurisdictions since it opened.

In 2012, both Jurisdictions entered into a new Waste Disposal Service Agreement, and in December 2013 agreed to extend the site lease for the continued operation of the Facility by Covanta to the year 2038, and in return the Jurisdictions received a favorable rate for disposing of the Jurisdictional waste at the Facility. This Annual Report summarizes the operation of the Facility during Fiscal Year 2017 (FY17). For more information on the history of the Facility and details of its operation, go to: https://www.alexandriava.gov/tes/info/default.aspx?id=82377.

HDR Inc. (HDR) was engaged to monitor the Facility performance and to perform regular inspections of the Facility on behalf of the Jurisdiction's Facility Monitoring Group (FMG). On a quarterly basis, HDR meets with the management of the Facility to discuss operations and maintenance issues, to acquire data, to perform an independent visual inspection of the Facility, and issue a detailed report of quarterly performance. Covanta is ultimately responsible for the operation, maintenance, environmental performance and safety issues at the Facility.

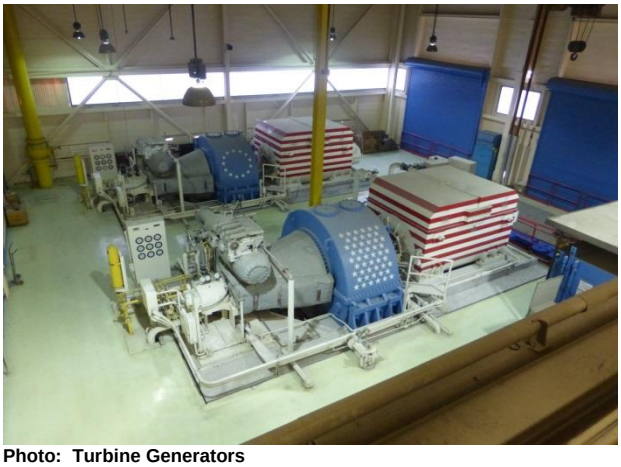


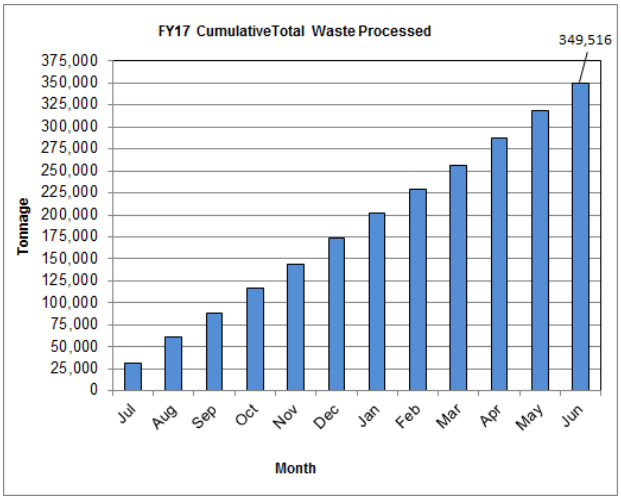
Photo: Turbine Generators

Facility Performance

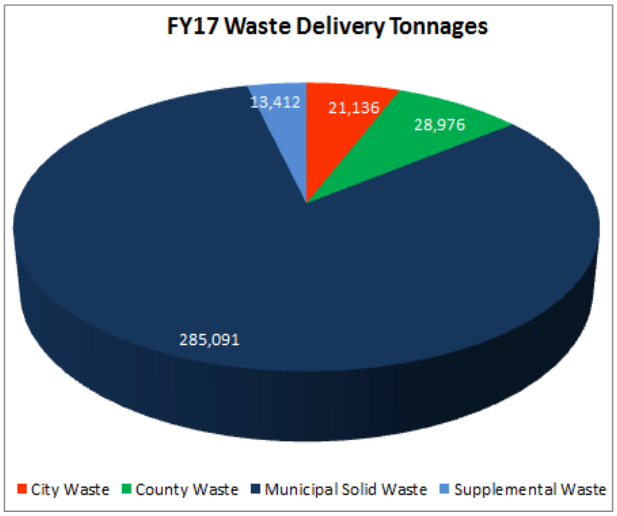
The Process

Household waste that is collected by the two Jurisdictions is brought to the Facility and discharged into a large pit. Operators at the Facility screen the incoming material to keep inappropriate wastes out of the combustion process. The waste is then moved by cranes to the combustion chambers, where the waste is burned at high temperatures, heating water to create steam which drives turbine generators to create electricity. The ash residue from the process is screened and ferrous metals are extracted via a magnet and recycled. The remaining ash is then sent to an ash monofill.

Quantities of Waste



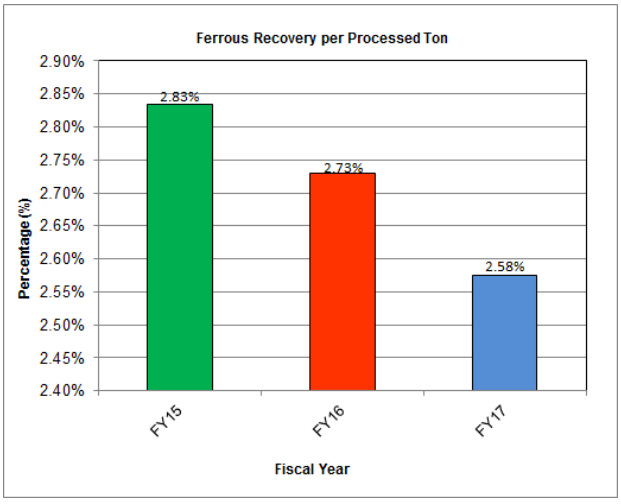
In FY17, the Facility processed a total of 349,516 tons of Municipal Solid Waste (MSW). The quantity of waste brought in by the City, over the past several years, has remained fairly steady, while quantities of waste brought in from the County have decreased slightly. In FY17, 21,136 tons were delivered by the City, which is fairly consistent with levels over the past 4 years, and an additional 28,976 tons were delivered by the County, which is a decrease of almost 11% from FY16. The remainder of capacity at the Facility was filled with waste collected by commercial haulers within the two Jurisdictions as well as by an increasing amount of Supplemental Waste.



Supplemental Waste is primarily confidential documents, pharmaceuticals and similar non-hazardous materials which require secure destruction. The amount of Supplemental Waste processed by the Facility in FY17 totaled 13,412 tons, which is an increase of 57% over the FY16 level.

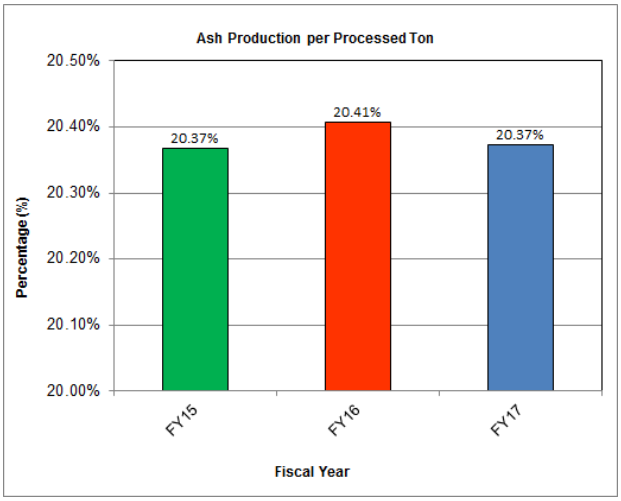
Ferrous Metal Recycled

In FY17, 9,036 tons of ferrous metals were recovered from the ash and recycled. This is a decrease of about 5.6% from the amount recycled in FY2016, but the quantity varies within the waste stream itself.



Ash Disposed

In FY17, 71,208 tons of ash generated at the Facility were disposed. The ash production rate, i.e. the tons of ash produced per ton of waste processed was 20.4%, and has remained in the range of about 20 to 21 percent for a number of years, which is excellent compared to other facilities.



Steam

The Facility is regulated by its Title V permit with the Virginia DEQ, which has set an annual facility steam production limit of 1,170,400 tons, which is based upon an assumption that each pound of waste processed generates 3.34 pounds of steam. The facility was in compliance with this permit limit during all of FY17. In order to compare boiler performance on a year-to-year basis, when the actual waste content varies, steam production is also looked at by converting raw waste tonnages to a “reference ton basis”. Most of FY17 showed a decline in boiler performance from FY16, but in the last few months, there was an improvement, so this will continue to be monitored to determine if the decline was an aberration. The turbine generator performance is evaluated in terms of the quantity of steam that it takes to generate one kWhr of electricity, where a lower steam rate indicates better performance. The performance has been fairly consistent, although one of the turbine generators requires some repair work to restore its original capacity and improve its efficiency.

Facility Maintenance

Significant and routine maintenance was performed at the Facility throughout FY17, with each of the three boilers and two turbine generators experiencing some downtime for the completion of various maintenance items. Covanta has been implementing an effective maintenance regimen, and is performing routine and preventative maintenance and selected equipment replacements in a timely manner.

Operational Performance

As a result of routine maintenance activities, the availabilities of the boilers overall was 96.2%, and the average availability of the turbine generators was 99.5 percent over the course of the entire year. This is considered to be excellent and comparable to that of mature, well-run waste to energy facilities.

Housekeeping

Routine inspections have shown that Covanta is performing facility housekeeping and maintaining plant cleanliness in accordance with acceptable industry practices. Housekeeping ratings for each major area of the facility, both internally and externally, have been found to be acceptable during each of the quarterly inspections. HDR also identifies deficiencies during its inspections, and maintains a running list of the deficiencies and removes them from the list as they are corrected. These items may include identifying a pothole on the property, or the corrosion of ceiling panel within the facility. In general, the deficiencies identified have been minor and don’t require immediate attention. Throughout FY17, 16 deficiencies were reported by HDR and 19 new and existing deficiencies were addressed by Covanta. At the end of FY17, 14 items remained on the list requiring attention.

Environmental Performance

Air Emissions

Emissions from the facility are controlled by the combination of good combustion practices, and by use of gas scrubbers and fabric filter baghouses. Ammonia injection and activated carbon systems are also used to control oxides of nitrogen and mercury emissions, respectively. Key emissions variables are continuously monitored with state of the art emissions monitoring equipment, supplemented by annual stack testing. Throughout FY17, the air pollution control equipment maintained emission concentrations well within the established regulations, and no permit deviations were reported by the facility during FY17.

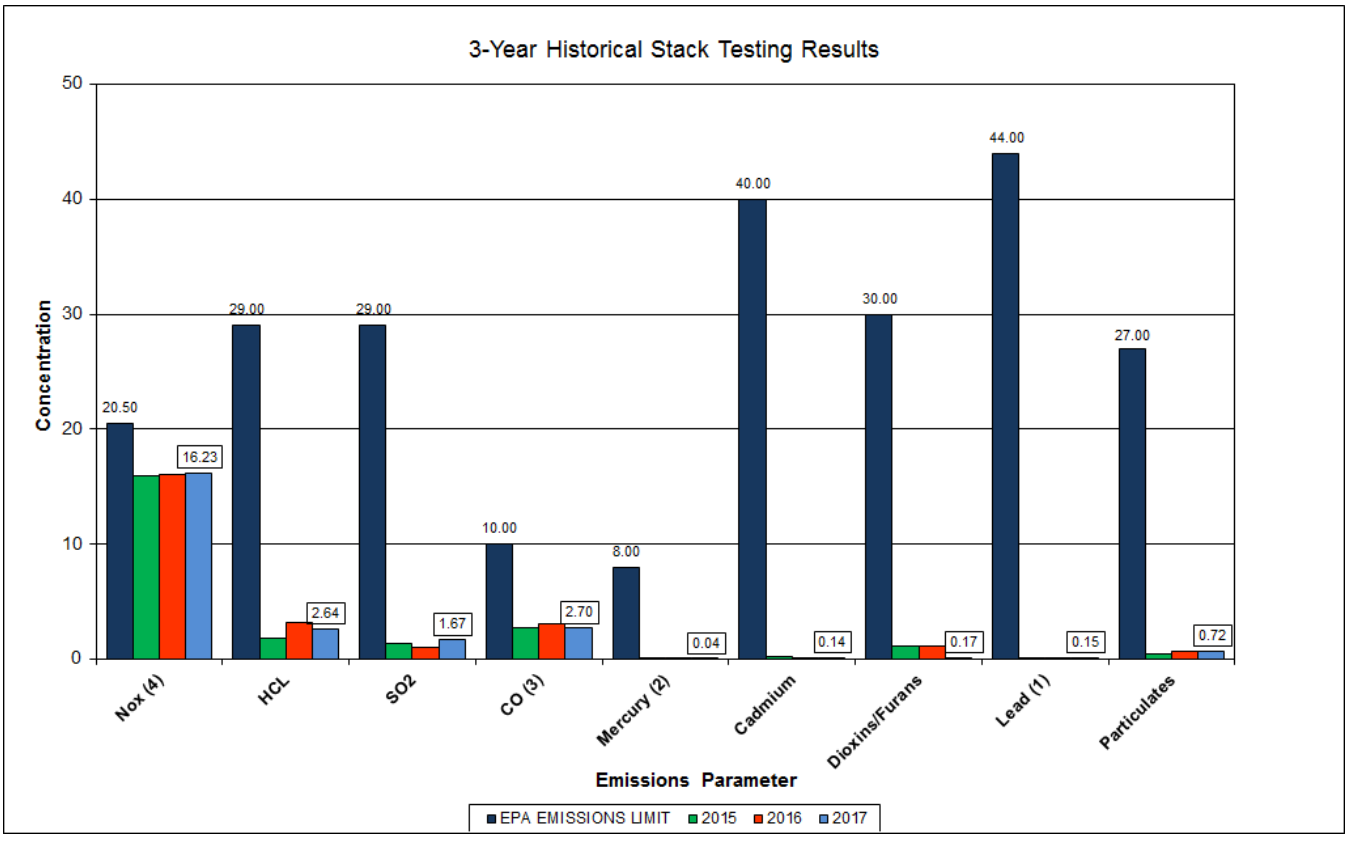
Annual stack testing is conducted, generally in March of each year, and these results, which are shown in the Table No. 1, demonstrate compliance well within the permit limits for all parameters.

As of the end of FY17, the Facility has operated 1,296 days without an environmental exceedance.

Ash Conditioning

Dolomitic lime is added to the ash to maintain a pH level within a range of 8.0 to 11.0. Additionally, the ash is periodically sampled and tested for its potential to leach toxic compounds, using ash toxicity (TCLP) procedures. This testing, which occurred in August of 2016 and May 2017 showed that the TCLP results were well below the regulatory thresholds.

3-Year Historical Stack Testing Results



Note (1): Lead emissions have been decreased by a factor of 10 for trending purposes

Note (2): Mercury emissions have been decreased by a factor of 10 for trending purposes

Note (3): CO emissions have been decreased by a factor of 10 for trending purposes

Note (4): NOx emissions have been decreased by a factor of 10 for trending purposes

Safety & Environmental Training

The Facility experienced one OSHA recordable accident on September 19, 2016, but since then has operated 284 days without an OSHA recordable accident. Each month, Covanta conducts training for its employees covering a number of varying safety and environmental issues, including Line of Fire Accidents and Prevention, Hazard Recognition, Environmental Root Cause Analysis and Employee Rights and Responsibilities.

Photo: Spray Dryer Absorbers

Outreach

Facility Tours

In FY17, Covanta provided tours of the Facility to over 150 individuals representing numerous educational and civic groups and professionals from other countries.

Photo: Main Vibratory Ash Conveyor

Other Outreach

Covanta sponsored several pharmaceutical take-back events throughout the year; provided free giveaways for dropping of mercury-containing devices at an e-waste event in Arlington, and sponsored a hauler safety day. In conjunction with the City of Alexandria, there has also been increased street sweeping in the vicinity of the facility, and other street improvements to improve safety in that area.

Accomplishments

Covanta remodeled the Administration Building including the employee break room, and installed warning lights at the pit edge to enhance safety.

Photo: Renovated Reception Area

Overall, Covanta is performing needed repairs and replacements of equipment as required, to overcome wear, tear, obsolescence and end of life of equipment and materials. These efforts will need to continue and even accelerate going forward if the nearly 30 year old Facility is to continue to operate reliably, efficiently, and safely.