

Attachment D-9

Closure Plan

9.1 Introduction

Veolia ES Technical Solutions, L.L.C. (Veolia) operates a mercury recovery, and reclamation facility at 342 Marpan Lane, Tallahassee, Florida. The building contains the following areas:

- Administrative offices,
- Operations support area,
- Receiving and staging area,
- Storage and accumulation areas,
 - Container Storage Areas
 - Universal Waste Storage Areas
 - Non-hazardous Waste Storage Areas
 - North Yard
- Prep and retort room, and
- Lamp processing room.
- HID Processing Area
- In-transit ten-day transfer operation

In support of the mercury reclamation and recovery operations, Veolia also occupies space in the building directly immediately to the south of the mercury recovery and reclamation facility, at 336 Marpan Lane. The building is used for the storage of new and reusable shipping containers as well as an area for the handling and accumulation of electronic waste, non hazardous batteries, and universal wastes not recycled on-site. A trailer parking area is located at 4972 Woodville Highway South Lot which is used for the parking of empty trailers and the transfer of universal wastes. The warehouse space located at 336 Marpan Lane will herein be referred to as the “e-waste area” and the transfer yard located at 4972 Woodville Highway South Lot will herein be referred to as the “transfer yard.” This closure plan was written to comply with 40 CFR Part 264.112.

9.2 Maximum Inventory of Waste

9.2.1 Maximum Inventory of Waste

Table 9.1 summarizes the maximum inventory of hazardous waste, universal waste, and non hazardous waste which could be on-site during facility operations and associated with the mercury recovery and reclamation activities as well as the facility’s universal waste handler activities. The maximum inventory contains an approximate volume of each type of waste anticipated to be present at any time during the facility’s life. Actual volumes of individual waste streams will vary; however, the total volume of waste on-site will not exceed the maximum storage capacities listed in Attachment D-4.

Table 9.1 – Maximum Inventory of Waste

Material	Maximum Inventory
Fluorescent Lamps 4' and less	40,000 Lamps
Fluorescent Lamps >4'	40,000 Lamps
Fluorescent, shattershield	30,000 Lamps
Fluorescent, U-tube and circular	20,000 Lamps
Fluorescent, Compact	30,000 Lamps
HID Lamps	31,488 Lamps
Mercury Containing Devices	20 drums
Dental Amalgam and Traps	2 drums
Phosphor Powder	20 drums
HID Arc Tubes (whole and crushed)	20 drums
Prep Room Debris	4 cubic yard boxes (16 drum equiv.)
Condensate Water	8 drums
Spent Carbon	8 drums
Retorted Powder/Arc Tubes	10 drums
Non-hazardous PPE	4 cubic yard boxes (16 drum equiv.)
Batteries	36 Pallets (72 drum equiv.)
Electronic Waste	36 Pallets (72 drum equiv.)
Glass	100 tons
Aluminum End Caps/Scrap Metal	5 tons
Plastic	30 tons
Cardboard	30 tons
Elemental Mercury	500 pounds

9.2.2 Anticipated Inventory of Waste Generated as a Result of Closure Activities

Table 9.2 summarizes the expected maximum inventory of waste materials anticipated to be generated as a result of closure activities.

Table 9.2 – Anticipated Inventory of Waste Generated from Closure Activities

Clean-up Wastes	Estimated Quantity
Demolition Debris – Hazardous Waste	20 tons
Demolition Debris – Non-hazardous Waste	40 tons
Decon Wash and Rinse Water	15 drums
Hazardous Waste Solids (non-debris)	4 drums

9.3. Closure Schedule

Figure 9.1 illustrates a closure schedule for Veolia's mercury reclamation, recovery and storage facility. The schedule reflects each of the tasks described in the section titled Detailed Description of Decontamination Activities. It is anticipated the inventory removal and pre-decontamination activities could be completed within thirty days. Decontamination activities are expected to require an additional ninety days to complete.

9.4. Detailed Description of Decontamination Activities

Decontamination activities at Veolia's facility consist of pre-decontamination, decontamination and post-decontamination related tasks. All tasks will be conducted by a third party. In the event of a planned closure, the recycling (e.g., crusher, separator and distiller) equipment and pollution control equipment (i.e., carbon filters, HEPA filter and baghouse filter) will be removed by Veolia. They will be dismantled before third party pre-decontamination activities and transported to a new location. In the event that this equipment is no longer usable for its intended purpose it will be decontaminated and recycled or disposed as appropriate.

9.4.1 Inventory Removal

The first step in the closure process will be the removal of all wastes and supplies from the facility. In the event of a planned closure of the facility, Veolia will transport all wastes and materials to other Veolia facilities for reuse, recycling or disposal. In the event of an unplanned closure or if Veolia does not have a facility permitted or available to accept the material, it will be shipped to the corresponding facility noted in the closure cost estimate contained in Table 9.3. In the case of materials meeting the definition of hazardous waste, a uniform hazardous waste manifest will be used to document the shipment of the material. In all other cases, a straight bill of lading will be used to document the shipment.

9.4.2 Pre-Decontamination Activities

Personnel will thoroughly sweep surface dust and glass from floors, and other readily accessible surfaces within the building, with the exception of the spaces inside the prep and retort room and inside the lamp processing room. Level "D" (work uniform and a dust mask) personal protective equipment would be required for this cleaning. Personal protective clothing such as dust masks and cleaning rags will be placed into 55-gallon drums and will be combined with the collected debris (i.e., dirt, dust and glass).

9.4.2 Decontamination Activities

Decontamination of Veolia's facility consists of three principal phases. Phase I involves determining the extent, if any, of mercury contamination. Phase II includes the demolition of the prep and retort room and the lamp processing room, the cleaning of the exterior surface of all equipment and accessible surfaces (i.e., floors, walls and ceilings). Phase III involves verifying that the cleaning activities completed in step two were successful.

9.4.2.1 Phase I - Contamination Evaluation

The current level of mercury contamination in the buildings is not known; however, for the purpose of closure it will be assumed that all surfaces within the warehouse and processing areas exhibit some level of contamination. As such, these areas will proceed directly to Phase II. The office areas and the e-waste area will be screened with a direct reading mercury monitoring instrument. The results of the direct reading instrument will be used to determine the decontamination activities required

for these areas. The transfer yard will be sampled to assess whether this area has been impacted by facility activities. Surface soil samples will be collected from the transfer yard and analyzed for total mercury. Eight samples will be collected from this area.

Sampling locations will be determined by a qualified independent third party. The sampling will also be conducted by an independent third party and will be analyzed by a state certified laboratory. Any area with mercury levels that exceed the closure standard will proceed to Phase II. If all samples from an area meet the closure standard, the area will be designated as meeting the closure standard and no further decontamination or testing will be required.

9.4.2.2 Phase II - Facility Decontamination

Decontamination of Veolia's building will be performed by the following procedures:

- Remove mercury contamination from all accessible surfaces and equipment in the prep room, retort room, and lamp processing room using a high efficiency mercury vacuum and a cold water pressure washer.
- Remove equipment and supplies from the prep room, retort room, and lamp processing room for reuse, recycling or disposal.
- Construct a containment area using polyethylene sheeting around the prep room, retort room, and lamp processing room.
- Demolish the prep room, retort room, and lamp processing room and containerize for off-site disposal.
- Remove mercury contamination from all accessible surfaces using a high efficiency mercury vacuum and a cold water pressure washer.
- Clean walls, ceiling beams, floor and equipment in accordance with the following procedures:
 1. Visually inspect the surfaces to be decontaminated. For surfaces with excessive dust buildup proceed to Step 2. If the surfaces have only a minimal amount of dust buildup, proceed to Step 3.
 2. Vacuum the surfaces using a mercury vacuum equipped with a HEPA filter and carbon filter.
 3. Using pump sprayers, mops and rags, wet the surface with a general purpose cleaner/degreaser. An example of this type of cleaner/degreaser would be Simple Green® All Purpose Cleaner. Scrub the surfaces as necessary to remove dust and any other surface contamination that might exist.
 4. Rinse the surface using a cold water pressure washer.
 5. Recover any cleaning fluids and rinse waters for proper disposal.
 6. Wet the surfaces with a mercury decontamination fluid. An example of this type of decontamination fluid would be HgX® from Acton Technologies.
 7. Scrub the surfaces to ensure that the decontamination fluid contacts all surfaces.
 8. Rinse the surface using a pressure washer and water.
 9. Recover any cleaning fluids and rinse waters for proper disposal.
 10. Repeat Steps 6 through 9.

11. Repeat Steps 3 through 5.
 - Collect all cleaning fluids and rinsate.
 - Containerize and segregate waste materials from clean-up activities (e.g., solids, liquid, cleaning materials and personal protective equipment); and
 - Sample waste materials and manage appropriately.

9.4.2.3 Phase III - Decontamination Verification

The objective of this phase is to sample and analyze representative areas and surfaces in order to determine that decontamination activities have removed mercury to target clean-up concentrations. The analytical results from the testing of air samples will provide documentation of successful facility decontamination. A total of twelve air samples will be collected from interior spaces. Samples will be collected from each of the following areas, administrative office, operations office/locker room, hazardous waste storage area, lamp storage area, universal waste battery storage area, HID processing area, lamp processing area, lamp processing room, retort room and container storage area in the building south of the lamp facility. Two additional air samples will be collected from warehouse/processing areas as determined by an independent third party. In addition, it is anticipated that three waste stream samples will be collected and analyzed for disposal purposes. Air sampling will be completed in accordance with the following procedures:

Final Clearance Sampling Protocol

This protocol is designed to be implemented after the decontamination activities have been completed and the facility has been adequately cleaned and for the sole purpose of gathering valid data.

Quantitative Sampling:

1. Prior to the sampling period, the indoor temperature of facility environment should be determined and documented. Temperature should be at least 75° F for a minimum of 60 minutes prior to commencing sampling. If the facility temperature is below 75° F, the facility shall be heated to achieve this temperature.
2. Following the heating period, if necessary, the facility should be closed up (ventilation systems turned off and doors closed) for a minimum of 60 minutes to allow for equilibrium temperatures to be achieved.
3. Final clearance sampling shall be performed utilizing USEPA Response Team SOP #1827 with a modified NIOSH 6009 method, 5/13/99 or OSHA ID-140. The pump will be calibrated to 0.2 liters/min., or as defined by the method. The media utilized will be hopacalite or approved equivalent (e.g. SKC Hydrar).

4. One (1) field blank (opened in field and handled with samples) shall be taken for the sampling event. In addition, two (2) unopened trip blanks from the same lot shall be retained and submitted with the corresponding field blank.
5. The sample media shall be set at a height of between three to four (3-4) feet from ground level to represent a breathing zone sample.
6. The sample time should be approximately eight (8) hours or as necessary to obtain a detection limit less than 0.001 mg/m^3 . Periodic pump flow checks and ambient temperature readings shall be performed and documented throughout the sampling period (minimum of 3).
7. Upon completion of the sampling, samples shall be handled and submitted to an AIHA accredited laboratory for analysis utilizing proper chain of custody procedures.
8. The analytical method to be utilized should be USEPA Response Team SOP #1827 with a modified NIOSH 6009 method, 5/13/99 or OSHA ID-140.
9. Upon completion of the final clearance test and receipt of results, the sampling firm will prepare a clearance sampling report and submit as a component of the closure certification report. The report shall consist of, at a minimum:
 - a. Floor map documenting the locations of samples taken
 - b. Sample data sheets documenting either the instrument readings or the media number, sample location, pump flow (with checks), final volume sampled, sample duration and any remarkable field notes.
 - c. Sample results as submitted by the laboratory corresponding to provided sample data sheets, as applicable.
 - d. Copy of this sampling protocol.

9.4.3 Post-Decontamination Activities

For purposes of this plan, these activities focus on the quantity and disposition of clean-up residue. Table 9.2 contains a listing of the types and volumes of wastes anticipated to be generated.

9.5. Closure Performance Standards

Table 9.4

<u>Chemical</u>	<u>Environmental Media</u>	<u>Maximum Concentration</u>		<u>Analytical Method</u>	<u>Source</u>
		<u>Residential</u>	<u>Industrial</u>		
<u>Mercury</u>	<u>Soil</u>	<u>2.1 mg/kg</u>	<u>2.1 mg/kg</u>	<u>EPA Method 7471</u>	<u>Note 2</u>
<u>Mercury</u>	<u>Indoor Air</u>	<u>1.0 ug/m3</u>	<u>3.0 ug/m3</u>	<u>NIOSH Method 6009</u>	<u>Note 1</u>

1. May 18, 2006 letter report from Stephen M. Roberts, Ph.D., University of Florida to Tim Bahr, Florida Department of Environmental Protection regarding Mercury Criteria for Buildings.

2. Florida Department of Environmental Protection Cleanup Target Levels Chapter 62-777 Florida Administrative Code based on leach ability to ground water.

9.6 Cost Estimate for Facility Closure

The closure cost estimate is based on costs for an independent third party to complete all activities required to close the facility. A detailed written facility closure estimate for the facility is presented in Table 9.3. Closure costs are expressed in 2016 dollars. Appendix D-9-I includes documentation of financial assurance for closure costs as required by 40 CFR 264.143.

9.7 Protection of Human Health and the Environment

Veolia has always maintained stringent operating practices. We strongly believe that the detailed decontamination procedures described in this Closure Plan ensure that the facility will not pose a threat to human health and the environment. Closure or decontamination procedures at Veolia will minimize exposure to hazardous constituents resulting in the protection of human health and the environment.

9.8 Expected Year of Closure

It is not possible to predict an expected year of closure as Veolia is a recycling facility. Closure of the facility would likely occur for one of the following reasons. One, Veolia ES Technical Services, L.L.C. decides to terminate the Florida operation. Two, business continues to grow and it must move to a larger building. Three, another company acquires the firm and decides to relocate the operation.

9.9 Closure Activities

Veolia will notify DEP staff of all closure related activities.

9.10 Amendment of Plan

Veolia will comply with the provisions of 40 CFR Part 264.112 (c)

9.11 Notification of Final Closure

Veolia will comply with the provisions of 40 CFR Part 264.112 (d).

Table 9.3 – Closure Cost Estimate
Inventory Removal

Material	Maximum Inventory	Per Unit Cost	Trans Cost	Total Cost	Source
Fluorescent Lamps 4' and less	40,000 Lamps	\$.14/lamp	Included	\$5600.00	1
Fluorescent Lamps >4'	40,000 Lamps	\$.30/lamp	Included	\$12000.00	1
Compact Lamps	30,000 Lamps	\$.20/lamp	Included	\$6000.00	1
U-Tube and Circular Lamps	20,000 Lamps	\$.16/lamp	Included	\$3200.00	1
Shattershield Lamps	30,000 Lamps	\$.14/lamp	Included	\$4800.00	
HID Lamps	31488 Lamps	\$.45/lamp	Included	\$14169.60	1
Mercury Containing Devices	20 drums	\$1338.00 / dm	\$114.51 / dm	\$29050.11	3,13
Dental Amalgam and Traps	2 drums	\$1338.00 / dm	\$114.51 / dm	\$2905.01	3,13
Phosphor Powder	20 drums	\$175.00 / dm	\$114.51 / dm	\$5790.11	3,13
HID Arc Tubes (whole and crushed)	20 drums	\$125.00 / dm	\$26.25 / dm	\$3025.00	3,13
Prep Room Debris	4 cubic yards	\$242.55 / yard	\$105.00 / box	\$1390.20	5,13
Condensate Water	8 drums	\$1,338.00 / dm	\$114.51 / dm	\$11620.04	3,13
Spent Carbon	8 drums	\$1,338.00 / dm	\$114.51 / dm	\$11620.04	3,13
Retorted Phosphor Powder	10 drums	\$50.00 / dm	\$15.00 / dm	\$650.00	4,11
Non-hazardous PPE	4 cubic yards	\$75.00 / dm	\$60.00 / yd	\$540.00	4,11
Retorted Arc Tubes and MCMA	20 drums	\$50 / dm	\$15.00 / dm	\$1300.00	4,11
Glass	100 tons	\$50.00 / ton	\$12.50 / ton	\$6250.00	14
Aluminum End Caps/Scrap Metal	5 tons	\$0.00	\$0.00	\$0.00	9
Plastic	30 tons	\$50.00 / ton	\$12.50 / ton	\$1875.00	4,11
Cardboard	30 tons	\$0.00	\$0.00	\$0.00	10

Elemental Mercury	500 pounds	\$12.00 / pound	\$2.00 / pound	\$7000.00	19,12
Alkaline Batteries	36 drums	\$150 / dm	\$64 / dm	\$7704.00	6,12
Nickel Cadmium Batteries	14 drums	\$30 / dm	\$64 / dm	\$1316.00	6,12
Lithium Metal Batteries	7 drums	\$1500 / dm	\$64 / dm	\$10948.00	6,12
Lithium Ion Batteries	15 drums	\$600 / dm	\$64 / dm	\$9960.00	6,12
Lead Acid Batteries	72 drums	0	0	\$0	7,12
Electronic Waste	40000 pounds	\$0.25/pound	\$0.025 / pound	\$11000.00	2
Project Management	8 hours	\$120.00 / hour	N/A	\$960.00	15
Labor for Labeling and Loading	16 hours	\$87.00 / hour	N/A	\$1392.00	15
Mobilization / demobilization	2 days	\$750.00 / day	N/A	\$1500.00	15
TOTAL				\$173,565.11	

Pre-Decontamination Activities

Task/Materials	Quantity	Per Unit Cost	Total Cost	Source
Labor (technician)	16 hours	\$87.00	\$1,392.00	15
Project Management	4 hours	\$120.00	\$480.00	15
Supplies (PPE, brooms...)			\$1,400.00	15
TOTAL			\$3,272.00	

Decontamination Activities – Phase I

Task/Materials	Quantity	Per Unit Cost	Total Cost	Source
Labor	12 hours	\$100.00	\$1200.00	15
Project Management	4 hours	\$120.00	\$480.00	15
Supplies			\$750.00	15
TOTAL			\$2,430.00	

Decontamination Activities – Phase II

Task/Materials	Quantity	Per Unit Cost	Total Cost	Source
Labor	250 hours	\$68.00	\$17,000.00	15
Project Management	32 hours	\$120.00	\$3,240.00	15
Supplies			\$1,000.00	15
Equipment (lift, power wash)	2 weeks	\$2,750.00	\$5,500.00	17
Wipes Analysis	120	\$30.00	\$3,600.00	16
TOTAL			\$30,340.00	

Decontamination Activities – Phase III

Task/Materials	Quantity	Per Unit Cost	Total Cost	Source
Labor	16 hours	\$100.00	\$1,600.00	15
Project Management	8 hours	\$120.00	\$960.00	15
Supplies		Included	\$0	
Wipes Analysis	30	\$30.00	\$900.00	16
Air Sampling for Mercury	5 (inc. blanks)	\$65.00	\$325.00	18
TOTAL			\$3,785.00	

Decontamination Derived Wastes

Material	Maximum Inventory	Per Unit Cost	Trans Cost	Total Cost	Source
Demolition Debris – Hazardous Waste	20 tons (27 yd, 2 loads)	\$242.55/ yd	\$147.00/ yd	\$10517.85	5,13
Demolition Debris – Non-hazardous Waste	40 tons	\$50.00/ton	\$12.50/ ton	\$2500.00	4,11
Decon Wash and Rinse Water	15 drums	\$125.00 / dm	\$98.00 / dm	\$3345.00	5,13
Hazardous Waste Solids (non-debris)	4 drums	\$1338.00 / dm	\$175 / dm	\$6052.00	3,13
TOTAL				\$22,414.85	

Closure Report and Certification

Task/Materials	Quantity	Per Unit Cost	Total Cost	Source
Report Preparation	32 hours	\$100	\$3200	15
PE Certification	4 hours	\$175	\$700	15
TOTAL			\$3,900.00	

Total Costs by Phase

Phase	Total Cost by Phase
Inventory Removal	\$173,565.11
Pre- Decontamination Activities	\$3,272.00
Decontamination Phase- I	\$2,430.00
Decontamination Phase-II	\$30,340.00
Decontamination Phase-III	\$3,785.00
Decontamination Derived Waste	\$22,414.85
Closure Report and Certification	\$3,900.00
SubTotal of Closure Cost	\$239,706.96
10 % Contingency on Plan Total	\$23,970.70
Grand Total for Closure	\$263,677.66

Sources for Cost Estimates

1.	Florida State Contract for Lamp and Mercury Recycling compact lamps and irregular shape lamps assumed to be evenly distributed and cost was averaged.
2.	Florida State Contract for Electronics Recycling assuming each pallet contains 3 televisions, 6 monitors, 9 CPUs and 200 lb. mixed peripherals
3.	WM Mercury Waste Solutions Union Grove, WI
4.	Advanced Disposal Evergreen Landfill Valdosta, GA
5.	Chemical Waste Management Emelle, AL
6.	Raw Materials Company Buffalo, NY
7.	Exide Muncie Indiana
8.	D.F. Goldsmith Co. Evanston, IL
9.	Viatek Tampa, FL
10.	Smurfit Stone Jacksonville, FL
11.	Advanced Disposal Valdosta, GA
12.	CH Robinson Sun Prairie, WI
13.	Smith Systems Includes 18% fuel surcharge
14.	Leon County Landfill Tallahassee, FL
15.	Environmental Sciences Group, Inc. Tampa, FL
16.	Pace Analytical Services, Inc. Tampa, FL
17.	ASAP Rentals Tampa, FL
18.	Bureau Veritas Detroit, MI
19.	Bethlehem Apparatus Bethlehem, PA

Appendix D-9-I

Financial Assurance for Closure

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