

INCREMENT 1 BUILDOUT OPERATION PLAN

**Seminole Generating Station
Putnam County, Florida**

Prepared for:



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Tampa, Florida 33618-1427**

Prepared by:



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July 16, 2010
Revised September 27, 2010



Introduction

This Increment 1 Buildout Operation Plan summarizes the procedures for solid waste disposal, leachate management and stormwater management.

Waste Quantities and Characteristics

The Seminole Generating Station (SGS) annually generates the following quantities and types of solid waste. The specific waste categories for record keeping are listed on page 8 in the Section Waste Records.

- 250,000 to 325,000 tons of fly ash
- 15,000 to 25,000 tons of sludges from purge water treatment (PWT), percolation ponds, cooling towers, and equalization basins;
- 5,000 tons of sandblasting waste (see attachments);
- 5,000 tons of stack liner scale; and
- 5,000 tons of limestone slurry and scale.

The design annual disposal quantity is estimated at 300,000 tons.

Approximately 36,500 tons of bottom ash is produced annually, and is sold to concrete and concrete block manufacturers. Some bottom ash may be used for road construction within the limits of the lined footprint. No other waste such as construction and demolition debris, yard trash or garbage will be placed in the Buildout. There will be no large rigid objects that could damage the liner or leachate collection system, putrescible wastes that require daily soil cover, or blowing litter. The fly ash is not combustible and will not produce methane. So no methane collection system is required. Hazardous waste is prohibited from disposal in this facility.

Designation of Persons Responsible for Operation and Maintenance

Key SECI personnel are listed in the table below.

Name	Telephone Number	Company	Title/Responsibility
Steve Harris	386-328-9255 Ext. 2276	SECI	Support Systems EPF Supervisor
<u>Robert Yarbrough</u> <u>Walt Egan</u>	<u>813-739-1228</u> <u>386-328-9255</u>	SECI	Senior Environmental Engineer Responsible <u>Compliance</u> <u>Analyst</u> for environmental monitoring and compliance

Control of Access and Disposal

Access to the SGS site, including the Increment 1 Buildout, is controlled by fencing, gates and natural barriers. The SGS gate house is manned 24 hours per day, and screens everyone entering the facility. There is no public access to the Increment 1 Buildout.

The SECI Environmental Department or the Effluent Processing Facility (EPF) Supervisor screens, tracks and approves waste generated at the SGS site for disposal using the Solid Waste Disposal Sheet which is included at the end of this Operation Plan. This Sheet must be completed and approved by the Environmental Department or the EPF Supervisor prior to waste disposal. As stated on the sheet "Anything other than flyash, bottom ash, limestone and slurry, or anything that is suspected to be contaminated will need to be routed to the Environmental Department for sampling and approval." As further required on the form, the Environmental Department will subject the non-standard waste including sandblast waste to the TCLP test to determine if the waste is hazardous. Each new plant piece of equipment from designated areas sandblast waste shall be tested at the start of the project, but no less than annually, if results of that area sandblast waste tests are not on file with the SECI Environmental Department or have not been tested within the previous year. No hazardous waste is permitted for disposal in this landfill. Hazardous waste will be disposed of off-site at a permitted hazardous waste disposal facility.

As defined by Rule 62-701.200(65), F.A.C. no liquid waste is permitted for disposal in this landfill. Liquid waste means any waste material that is determined to contain free liquids as defined by Method 9095 (Paint Filter Liquids Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods". The Effluent Processing Facility Supervisor shall be responsible to see that all sludge or other wastes that appear to contain free liquids be subjected to passing the Paint Filter Test prior to disposal in the landfill. The test results shall be documented on the Solid Waste Disposal Sheet and kept with the Landfill Waste Records.

Equipment

SECI has the following equipment for operation:

- Two ~~Volvo A40D~~ articulated haulers with a heaped capacity of approximately 32 cubic yards and payload capacity of approximately 40 tons;
- One - ~~Caterpillar D7H LGP (low ground pressure)~~ track-type tractor with a straight blade;
- One ~~Caterpillar CS-563C~~ vibratory soil compactor;
- One ~~Volvo L350F~~ wheel loader;
- One ~~Caterpillar 12H~~ motor grader;
- One ~~Volvo MC70B~~ skid steer loader; and
- One ~~JCB 214~~ backhoe loader (shared with the coal yard).



- One water truck for dust control on landfill haul roads and work areas

The articulated haulers have the larger ~~(875/65R29)~~ tires that produce lower ground pressure.

The ~~D7H~~ tractor/bulldozer is used to spread waste in layers. The ~~CS-563C~~ compactor is used to compact the waste. This equipment is also used to construct the pozzocrete dikes.

The ~~L350F~~ wheel loader is used to load fly ash and other waste from stockpiles into the articulated haulers for disposal or load private trucks with bottom ash for transport offsite to concrete plants.

The motor grader is used to grade roads, waste and the pozzocrete dikes. A water truck is used as necessary to control dust on the landfill haul roads and in work area.

The skid steer loader is used to move materials around the EPF including dewatered PWT sludge from the filter press.

SECI contracts for cleaning out ponds, sumps, and ditches using vacuum trucks. SECI also has its own vacuum truck and a sweeper, which are used for site cleanup.

Operation Hours

The facility is open for disposal 8 hours per day, Monday through Friday. Waste material is placed in the landfill 5 days a week and is spread and compacted at least every other day. Waste is disposed of in the landfill on Monday, Tuesday, and Wednesday. On Thursday the waste is graded and compacted. The landfill is available at other times for disposal operation if needed.

Processing and Mixing of Waste

Fly ash is stored in two 38-foot diameter silos designated silos 141 and 142 that have a height of 55 feet above the top of the discharge cone at the bottom of the silos. Each silo has a storage capacity of approximately 62,000 cubic feet above the cone feeder and 12,000 cubic yards within the cone. The weight of fly ash is recorded as it is removed from the silos and tracked in worksheets maintained by SECI personnel. From the silo discharge, ash is conveyed to a pug mill where water is added to make the moisture content 20 to 25 percent. The conditioned fly ash is then conveyed to a stockpile or directly into trucks via a screw conveyor/radial stacker.

Pozzocrete is produced by mixing 2.5 to 3 percent pebble lime with fly ash and water in a pug mill. The amounts of water and lime are calculated by the EPF plant operator.

Purge water treatment (PWT) sludge from the 101 clarifier is pumped out from the underflow via a hose to a frac tank and then to a trailer-mounted US Filter/JWI filter press located next to the dewatering building. The dewatered sludge/filter cake from the filter press (what SECI calls



“blue goo”) is then pushed away from the filter press against a concrete barrier using a skid steer loader. The filter cake is then mixed with fly ash using the L350F wheel loader, loaded into an articulated dump truck, and hauled to the landfill. Typically, four buckets of fly ash are mixed with one bucket of filter cake. Depending on the consistency and stability of the fly ash/filter cake layer, additional fly ash may be placed over it and compacted to provide a stable surface for trucks.

Various waste materials collected in vacuum trucks by SECI or by contractors are discharged ~~into the ditch between Pond 1 and on to cured pozzocrete material at~~ the EPF. The solids are excavated from the ditch with the backhoe loader and mixed with fly ash to a consistency that permits loading into the trucks. The liquids flow via the ditch to Ponds 7 and 8, from which they are pumped to the treatment facility.

Percolation pond and cooling tower sludge are collected infrequently and trucked to the disposal facility and placed ~~within berms on cured pozzocrete materials~~. The sludge is spread out in thin layers to facilitate drying. When the sludge has dried enough to be workable, the ~~Caterpillar D7H~~ dozer adds fly ash to the sludge and it is compacted.

Access/Haul Roads

Access to the Buildout will be from the existing haul road. A branch road as shown on Sheet 1 of 2 in Attachment 2 will lead to the Buildout. The ramp road will be approximately 20 feet wide and with a grade not greater than 10 %. The road will be extended as needed during filling. All stormwater runoff is collected in the process ponds in the EPF area.

Side Slopes and Benches

The exterior side slopes are designed with a slope of 3 feet horizontal to 1 foot vertical (3H:1V) with 20 foot wide benches every 20 foot change in vertical elevation. So the overall slope of the landfill from the toe to the crest will average 4H:1V. The benches will be at nominal Elevation (El.) 95, El. 115, El. 135, El. 155, El. 175 and El. 195. Each bench will slope 4% toward the inside of the landfill, and have a cross slope to take storm water collected on the bench to the side slope spillways. At El. 195, the landfill crest, the grade will slope a negative 4% for 20 feet to create a perimeter swale and then increase at 4% to a peak El. 206.

Pozzocrete Dike/Berm Construction

The Conditions of Certification require landfill lifts constructed with outer pozzocrete berms to minimize dusting of the fly ash. The EPF Supervisor is responsible for the construction of the pozzocrete berms. He monitors the filling of the landfill to ensure that the pozzocrete berms/dikes are not overtopped. He determines when to start the new berm construction and when the berms are ready for filling of flyash. The pozzocrete berms are constructed a maximum



of 10 feet high with exterior side slopes of 3H:1V and interior side slopes of 7H:1V to 6H:1V. A new pozzocrete berm is constructed when the flyash is within 3 feet of the top of the existing pozzocrete berm. If the berm has a top width adequate for the construction equipment, interior side slopes of the berm may be constructed as steep as 3H:1V. The interior area is then filled with fly ash before constructing the next increment of the pozzocrete berm. None of the slopes during operations (including internal ones) shall be steeper than 3:1 (horizontal distance to vertical rise).

Pozzocrete is produced by mixing 2.5 to 3 percent pebble lime with fly ash and water in a pug mill. The amounts of water and lime are calculated by the EPF plant operator. The pozzocrete is hauled to the landfill and placed along the perimeter of the landfill on top of the previous pozzocrete berm and partly over the flyash fill within the pozzocrete berm. The pozzocrete is dumped and spread in approximately 12-inch thick lifts. The pozzocrete is allowed to cure for at least 30 days prior to placing the flyash within the pozzocrete berm.

Lift and Compaction Requirements

The ~~D7H~~ bulldozer is used to spread the waste, and the ~~Caterpillar 653C~~ compactor is used to compact the fly ash and miscellaneous waste. The compactor typically makes two passes over a 16-inch lift. Based on tons landfilled and airspace consumed, the waste has an average in-place density of approximately 1.1 tons per cubic yard (81.5 pcf). To be conservative, the filling rate is based on 1.0 tons per cubic yard. None of the slopes during operations (including internal ones) shall be steeper than 3:1 (horizontal distance to vertical rise).

Soil and Vegetative Cover and Stormwater Management

Stormwater runoff from the existing landfill with 2 feet of soil and vegetative cover discharges to surface waters without treatment in a retention pond. Stormwater runoff from pozzocrete berms is sent to the EPF for treatment. The Increment 1 Buildout includes Stormwater Pond B to treat stormwater run-off from the existing landfill areas as well as the area of Increment 1 Buildout that are ultimately closed. Stormwater run-off that comes in contact with solid waste including the pozzocrete berms will be sent to Ponds 7, 8 or 9 for treatment at the EPF. As the waste is covered, stormwater runoff will be diverted to Stormwater Pond B.

Proposed Method and Sequence of Filling Waste

The Increment 1 Buildout Filling Plan drawing is included with the attachments. There are 6 lifts. The initial lift is between the liner system base grade and El. 95 and varies in thickness from 20 to 30 feet. Lifts 2 through 5 are 20 feet thick. Lift 6 is the top lift and varies between 20 feet at the slope brake and 31 feet at the highest point of the landfill.

The Increment 1 Buildout construction for Lift 1 includes the following major elements:

- Liner system installation on the base grade and on the landfill side slope ~~to El. 95~~ as per the construction drawings.
- Leachate gravity pipe to Pond 8.
- Groundwater monitoring wells.
- Stormwater Pond B including outlet structure and sidebank filter.
- Relocation of the existing forcemain for pumping leachate from Ponds 7 & 8 and Groundwater Recovery System to Pond 9 for treatment.
- Relocation of the existing electrical conduit for the pump stations at Ponds 7 & 8 and the Groundwater Recovery System.

~~After the construction certification is accepted by FDEP, filling will begin.~~ Prior to filling, all clean stormwater will be pumped from the landfill into Stormwater Pond B. Filling will begin from west to east at the edge of the haul road. Since the initial lift is below the top of the perimeter berm, no pozzocrete berm is required. The critical element in the initial filling is stormwater management. Stormwater that comes in contact with ash can be sent to Pond 8 in the leachate pipe. A temporary pump may also be used to pump contaminated stormwater from the landfill into Pond 9. Once the landfill surface is above the leachate level in Pond 9, contaminated surface water runoff will be diverted directly to Pond 9. As the pozzocrete berms are constructed for lifts above the landfill, the outer surface will be covered with soil and vegetation. The stormwater run-off will then be diverted to Stormwater Pond B.

~~Prior to constructing Lift 2, the liner system will be extended over the existing landfill side slope from El. 95 to El. 115, for Lift 3 from El. 115 to El. 135, for Lift 4 from El. 135 to El. 155, and for Lifts 5 and 6 from El. 175 to Approximately El. 195. These liner system constructions will occur approximately every two years. The landfill construction sequence plan stages are shown on the construction drawings. SECI shall notify the DEP at least 60 days prior to starting any new stage of the landfill liner system. Upon completion of the construction of each stage of the landfill liner system, the engineer of record will certify to DEP, the Solid Waste Section of the Northeast District that the permitted construction is complete and that it was done in accordance with the plans submitted to DEP (Except where minor deviation was necessary), and that the certification will be submitted on Form 62-701.900(2). Included with the certification shall be the record construction drawings for that sequence and the Quality Assurance Report. This certification shall be done for each of the incremental constructions.~~

Operating Record

SECI is required to maintain an operating record consisting of: all records, reports, analytical results, demonstrations, and notifications required by the Conditions of Certification, any correspondence from FDEP related to construction, operation, and closure plans along with the engineering drawings, specification and supporting information. The record must be kept with the operation plan at or near the landfill facility, or in an alternate location designated in the operating permit which is readily accessible to landfill operators. The operating record must be available for inspection at reasonable times by FDEP personnel with adequate notice.

Waste Records

SECI will maintain a record of waste placed in the Facility by type including:

- Fly ash
- Bottom ash
- Gypsum (off-spec)
- Activated carbon
- Cation and anion resin beads
- Coal dust and particles
- Cooling tower sludge
- Filter media
- Dirt, debris, and insulation particles
- Dirt and topsoil
- Pozzocrete (fly ash and pebble lime)
- Hydrated lime
- Limestone slurry and scale
- Plant sludge and limestone from equalization basins
- Purge water treatment sludge
- Percolation pond sludge
- Sandblasting material and metal
- Stack liner scale
- Sweeper/vacuum sludge (dirt, sand, fly ash, and limestone)
- Spill cleanup of FGD process streams mixed with limestone and/or soil (non-oily).
- Spill cleanup of wastewater/water mixed with limestone and or soil (non-oil).
- Spill cleanup of process reagents stabilized with limestone, soil, or other similar materials.
- Plant sump clean out debris (non-oily).
- Stormwater ditch cleanout soils.
- Stormwater pond clean out.



- Crushed asphalt (small sized pieces less than 1 inch)

Waste records will be reported in tons. Fly ash weight is determined at the silos. The tonnage of other wastes can be estimated based on recording the number of batches, truckloads, cubic yards, etc. and using factors to convert from cubic yards to tons. Waste reports will be compiled monthly.

SECI will keep records/logs of all inspections and will also record ~~monthly~~ daily rainfall in inches and leachate in gallons ~~per month~~. The records/logs will be provided to the Florida Department of Environmental Protection upon request, including during routine inspections.

Maintenance of Berms, Stormwater Structures, Cover Soil and Vegetation and Mowing

The landfill berms, stormwater structures, ~~and~~ cover soil and vegetation must be maintained in a working condition to prevent contamination of the environment. The pozzocrete berms around the working area of the landfill must be inspected daily for damage and to ensure that the flyash and other wastes are contained within the landfill. The outer landfill berms and stormwater structures must be inspected for damage weekly, ~~regularly and at least monthly and~~ The landfill including all stormwater structures will be inspected within 24-hours of each 1-inch or greater rain storm event. ~~after major rain storms.~~ Any damage to the berms, stormwater structures, ~~and~~ cover soil and vegetation must be repaired within seven days of detection of the damaged area-

The vegetation on the side slopes, benches, and top of the landfill should be maintained to a height less than 24-inches. ~~mowed periodically.~~

Leachate Collection and Leak Detection System Operation and Maintenance

The leachate collection and leak detection system will drain by gravity through a HDPE pipe to Pond 8.

~~The~~ SECI will conduct daily visual inspections of the aboveground leachate piping system to monitor for potential leaks. SECI will also record daily the leachate flow in gallons per day coming from the leachate collection system and the secondary leachate Collection/leak detection system. ~~will be checked weekly.~~ Necessary cleaning or repairs will be performed in a timely manner to assure the leachate collection and leak detection systems continue to function as designed.

The Increment 1 Buildout leachate collection and leak detection piping must be water pressure cleaned and inspected by video recording after construction, and prior to initial placement of



wastes. The piping must also be water pressure cleaned at least once every five years. If pipe sections cannot be cleaned or are suspected to be damaged, these sections must be inspected by video recording.

Emergency Preparedness and Response Plan

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An attachment to this Operation Plan is the Seminole Generating Station “Integrated Contingency Plan (ICP)” dated 2009. This Plan is used for emergency preparedness and response.

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Attachments

SECI Solid Waste Disposal Sheet

List of Typical Plant Parts and Areas Sandblasted

Material Safety Data Sheets for Bituminous Coal, Petroleum Coke and Fly Ash

Seminole Generating Station – Integrated Contingency Plan - 2009

Increment 1 Buildout - Filling Plan Revised 09/23/2010

Increment 1 Buildout - Final Grading Plan for Closure Revised 09/23/2010

Increment 1 Buildout – Cross Sections and Details Revised 09/23/2010