Tennessee Valley Authority
Regulatory Submittal for Kingston Fossil Plant

Documents submitted:
Time Critical Ash Removal from East Embayment Work Plan (Revised)

Date submitted
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Submitted to whom
Leo Francendese

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Time Critical Ash Removal from East Embayment Work Plan

1.0 Purpose

A work plan was already approved to remove ash from the east embayment. Although the work plan primarily identified mechanical excavation as the means for ash removal, the use of dredging as a polishing step was also identified. An evaluation of the load the effluent from this dredging activity would put on the existing solids removal system associated with river dredging (either the rim ditch or the lateral expansion area) suggests that the embayment dredging would have to be delayed significantly until the river dredging production decreases. Since there is an unacceptable schedule risk that this production decrease may not occur in time to support completion of the east embayment by the spring of 2010, mechanical excavation with ash transport to wet storage areas will be used instead.

2.0 Design

The following activities would occur to allow for excavation of the remaining material in the east embayment.

1. Remove trees along the eastern side. Construct a temporary truck hauling road of rock along the bank.
2. Take samples of the embayment bottom on the northern portion of the embayment and, if needed, across Swan Pond Circle Road.
3. Create a relatively impermeable rock or earthen berm on the southern end of the culvert under Swan Pond Circle Road to allow pumping of clean water bypass.
4. Plug the pipe under Summers Lane by building a check dam with an impermeable barrier to prevent clean water from entering the area.
5. Pump clean water from upstream sources from the rock berm area on the south side of Swan Pond Circle Road to the river.
6. Pump the embayment down. The initial pumping will be clean water discharged to the river. As the water being removed is impacted by the ash in the embayment, the water will be redirected to the settling basins. Future pumping efforts to keep the embayment dry will discharge to the settling basins.
7. As the water level drops, remove fish through electroshocking.
8. Remove the port-a-dam and save for potential future use.
9. Remove the ash, stockpile, and haul to wet storage.

The attached figure illustrates the various locations of the activities listed above.

The northern extent of ash will be quantified first. The goal of the sampling is to determine how far north the ash has moved to determine the lateral limits of excavation necessary. The depth of ash excavation will be determined by the EPA On Scene Coordinator in the field in consultation with the EPA Remedial Project Manager.

A systematic series of 10 sampling location about 50-65 feet apart between the ash berm and the culvert have been identified. The locations will be in the middle of the embayment. This

systematic approach was designed to provide uniform coverage across area of interest in the east embayment. If fly ash is identified up to Swan Pond Circle, additional sampling every 50-65 feet will occur for the east embayment north of Swan Pond Circle until ash is no longer found.

Sediment sample collection will be performed with a box corer. An estimate of the thickness of ash is an integral part of this plan; therefore, a box corer is preferred over an Eckman Dredge.

The following steps shall be performed for sediment sample collection.

- Use a rowboat or other similar small water craft to navigate to the GPS coordinates (generated by TVA GIS personnel) for each sample location. Store the GPS coordinates in the hand-held device and record in the field logbook.
- Upon retrieval of the box corer, place the sample on plastic with the box core plastic sleeve intact.
- The sampling team shall identify if ash is present. If ash is identified (greater than 50% ash), the team shall measure the thickness of the ash and record it in the field logbook.
- A description should also be provided for the native sediment (color, grain size, presence of ash and/or organics) and recorded in the field logbook.
- The field team will take a picture of each collected sample according to the Photographic Documentation SOP (TVA-KIF-SOP 26). Use a white board or 3″ x 5″ note card to identify each sample.
- Following description, the sediment can be placed back into the East Embayment.
- If the box core only retrieves ash and does not penetrate the native sediment, use a different sampling device (*i.e.,* Vibecore or hand core) that is capable of penetrating the full thickness of the ash.

The collected sediment samples will be identified according to the protocol described below.

KIF-EEMBAY_X-SED-mmddyy

Where: "EEMBAY" identifies sample location and collection plan.
"X" is the sediment sample location number.
"mmddyy" is the date.

3.0 Construction

The primary field work activity described in this work plan is the removal of ash in the East Embayment. The volume is uncertain but probably varies from 60,000 to 100,000 cy, including the small clean water ash berm that is still present in the area. The ash will be moved using bulldozers, trackhoes, and amphibious equipment, stockpiled, and loaded onto articulating trucks by trackhoes. The ash will be transported by articulating trucks to temporary staging areas west of Dike 2. Debris that is removed will be taken to the appropriate disposal location within the exclusion zone. Docks will be demolished and the debris size reduced enough to be sent to Alabama via rail. Trees will be taken into the dredge cell for eventual chipping and disposal.

On June 30, 2009, 1273 fish were shocked and relocated from the East Embayment to the Emory River. The same area is used as a collection site for turtles used in toxicity studies. A significant number of fish and some turtles are still believed to inhabit the embayment, prompting cause for relocation.

Following quantification of ash extent and water depth in East Embayment and prior to ash movement, the following actions are proposed to relocate fish and turtles from the portion of the East Embayment south of Swan Pond Circle Rd.:

1. Initial removal of fish using electrofishing boats in the embayment. Collect all fish possible in a single day. Staff working with turtles will accompany fish crews to try to remove any turtles encountered during the electrofishing.
2. Draw embayment down approximately one foot to confine any remaining fish and turtles into smaller areas.
3. Utilize stream electrofishing boats (john boats) once water depths are such that standard boats are not practical. Depending on pumping time, this may be accomplished on the day following initial removal.

Depending on extent of ash and stability of the bottom of the embayment once the area is almost fully drained, the remaining fish and turtles might be visible in shallow pools of water not accessible by any boat. If safe, these animals may be recovered on foot by use of portable backpacker shockers, seines, and/or dip nets. All specimens collected will be transported in large tubs across Lakeshore Drive to the Emory River.

Clean water from upstream and from initial dewatering efforts will be pumped to the river through the clean water ditch. It was decided to pump from the south side of Swan Pond Circle Road to avoid having to cross that road with the discharge line. Discharge lines across Lakeshore Drive will be protected against vehicular traffic. The water will be pumped from the embayment to the clean water ditch until the visual characteristics of the water change, indicating the presence of ash.

Pumping the more ash impacted water during the initial dewatering effort will occur during low flows to the settling basins to minimize the flow impact on the basins. The amount of ash will be little because of the quiet nature of the water in the embayment.

The road will be temporary and will be built of available rock. Large boulders will be avoided since the rock will be sent offsite to Alabama. A geofabric layer may be used but that will depend on the site conditions found. The road will be removed as the ash removed is completed since the rock will have become ash-laden.

Upon completion, the rock berm would be breached and flattened somewhat but left in place, allowing the water to naturally rise to its original levels.

During removal activities, portions of the east embayment may be used for wet ash processing. Due to limitations in processing space, ash from dredging operations (including mechanical dredge spoils and the sluice trench ash) generated in the next few

months may be brought into the dammed up portion of the embayment and processed along with material being excavated from the embayment. This material would be preferentially placed nearer the ash berm in the back of the cleared area to allow water to drain. This ash would be removed at the same time that the excavated ash is removed, by the end of April.

4.0 Schedule

This work will begin upon approval of this plan. Originally, the ash removal in the east embayment was to have been removed by the end of January. However, the need to avoid using any aspect of the solid removal systems onsite for the dredging, has resulted in a delay to the east embayment. The excavation is anticipated to be done in the spring-no later than the end of April, well before completion of the time-critical removal activities. This area is protected by a rock dike (Summers Lane) so there is no chance of a release of ash to the river under high flow events.

5.0 Waste Management

Ash is the waste generated and its handling is addressed in Section 3.0. It will be moved to the wet storage areas. Miscellaneous debris that may be excavated will be handled with the ash if sufficiently small or will be set aside if large. Ash-laden vegetative debris will be moved to a debris staging area and eventually shredded and used as onsite mulch. The non-contaminated trees shall be removed from the road will be chipped at the Gypsum Pond area and used for site mulch.

6.0 Health and Safety

The activities in this work plan will follow the site-wide health and safety plan. Personal hygiene efforts will be used to control exposure to ash. The greatest risk may be from many trucks and large equipment in a small space. Unauthorized personnel will not be allowed into the area. Foot traffic and small vehicular traffic will be kept to those required to conduct work in the area (flagging, inspections, etc.).

EAST EMBAYMENT ACTIVITIES

TVA Kingston Fossil Plant