



Tennessee Valley Authority, 714 Swan Pond Road Trailer Park, Harriman, Tennessee 37748

February 25, 2009

Mr. Chuck Head  
5th Floor, L&C Annex  
401 Church Street  
Nashville, Tennessee 37243

Dear Mr. Head:

TENNESSEE VALLEY AUTHORITY (TVA) – COMMISSIONER’S ORDER, CASE NO.  
OGC09-0001 - KINGSTON FOSSIL PLANT (KIF) - REVISED REQUEST FOR AUTHORIZATION  
OF ASH PROCESSING/TEMPORARY STORAGE FACILITY

On February 5, 2009, TVA submitted our original request for authorization to construct an ash processing area on the KIF reservation for dewatering and temporary storage of ash under the Commissioner’s Order, Section XIII.1. After reviewing comments from the Tennessee Department of Environment and Conservation (TDEC), the Division of Land Use, and the United States Army Corps of Engineers (USACE), TVA is submitting this revised request to establish a processing/temporary storage facility located southwest of dredge cell #1 on an area formerly used as an ash pond. A map showing the location of the process/temporary storage area is given in Figure 1 in the enclosed “Ash Processing Area Construction and Operation Plan.” A narrative with sketches describing the intended ash dewatering operation and temporary storage area is also given in this plan.

According to TN Regulation 1200 -1-7-.02 (1)(b)(ix), a permit by rule for implementing a processing facility is not required for onsite processing of solid waste. However, the following written narrative is being submitted for review that describes how the facility/operation will comply with applicable standards listed in rule 1200-1-7-.02(1)(c).

(i) *The operator complies with the notification requirements of Part 2 of this subparagraph:*

Notification using specified forms provided by TDEC according to TN Regulation 1200 -1-7-.02 (2) is not necessary since the application for a permit by rule is not applicable. The activities intended to be performed at this location is the dewatering of ash and temporary storage of this product for placement in approved onsite or offsite locations.

(II) *The facility is constructed, operated, maintained, and closed in such a manner as to minimize:*

I. *The propagation, harborage, or attraction of flies, rodents, or other disease vectors;*

Due to the inert nature of ash, there is little potential for harborage or attraction of flies, rodents, or other disease vectors.

II. *The potential for explosion or uncontrolled fires;*

Due to the non-combustible nature of ash, there is little potential for explosions or fires.

III. *The potential for release of solid wastes or solid waste constituents to the environment except in a manner authorized by state and local air pollution control, water pollution control, and/or waste management agencies;*

The enclosed plan gives a brief narrative and sketches describing the intended ash dewatering operation and temporary storage area. The potential to release solid wastes or solid waste constituents to the environment will be controlled in a manner authorized by state and local air pollution control, water pollution control, and waste management agencies.

IV. *The potential for harm to the public through unauthorized or uncontrolled access;*

Potential harm to the public through unauthorized or uncontrolled access is reduced by limiting access to the processing area by TVA police patrols. The power plant is staffed 24 hours a day/7 days a week.

(III) *The facility has an artificial or natural barrier which completely surrounds the facility and a means to control entry, at all times, through the gates or other entrances to the facility;*

The process/temporary storage facility is not fenced. It is, however, located within the TVA property which is posted and patrolled to control access.

(IV) *The facility, if open to the public, has clearly visible and legible signs at the points of public access which indicates the hours of operation, the general types of waste that either will or will not be accepted, emergency telephone numbers, schedule of charges(if applicable), and other necessary information;*

The process/temporary storage facility will not be open to the public and is located within the TVA property which is staffed 24 hours a day/7 days a week. The TVA plant property is posted with emergency numbers.

(V) *Trained personnel are always present during operating hours to operate the facility;*

Trained personnel will be present during hours of operation. The personnel will be chosen based on their ash handling experience, with proven ability in rim ditch mechanical dredge ash recovery technique. Contractors such as TransAsh, Inc., or other corporations with proven experience, good safety record, and personnel that have undergone TVA required environmental training will be present during hours of operation.

(VI) *The facility has adequate sanitary facilities, emergency communications, and shelter available for personnel;*

When the process/temporary storage facility is operational, portable sanitary facilities will be in the vicinity. Emergency communication can be maintained by cellular phone. Shelter and wash facilities may be available at the plant.

- (VII) *The facility access road(s) and parking area(s) are constructed so as to be accessible in all weather conditions;*

The facility's access road and parking area are constructed so as to be accessible in all weather conditions. The plant access road is paved and parking areas are constructed of compacted stone.

- (VIII) *Except for composting facilities utilizing landscaping and land clearing wastes, all waste handling (including loading and unloading) at the facility is conducted on paved surfaces;*

Waste loading and unloading will be handled primarily on gravel surfaces.

- (IX) *There is no storage of wastes at the facility except in containers, bins, lined pits, or on paved surfaces designated for such storage;*

Temporary storage of ash will be in designated locations that drain to the ash pond.

- (X) *Except for incinerators or energy recovery units, there is no burning of solid wastes at the facility;*

The waste product is not suitable for burning; therefore, there is no risk that the solid waste being processed will be burned at this location.

- (XI) *There is no scavenging of solid waste at the facility and any salvaging is conducted at safe, designated areas and times;*

The waste product being processed is not suitable for scavenging.

- (XII) *Wind dispersal of solid waste at/or from the facility is adequately controlled, including the daily collection and proper disposal of windblown litter and other loose, unconfined solid waste;*

The potential for wind dispersal of the ash product will be controlled by spraying the roads and process area with water during dry periods. When there may be a need to store the product for a period of time before moving, chemical crusting agents may need to be employed. A vinyl acrylic emulsion blend liquid dust suppression agent such as TM-06-515 MINCRYL X50™ produced by Momar, Inc., or an erosion control mulch such as Flextarra FGM produced by Profile Products, LLC, can be applied via a truck and sprayer on the ash. Both of these products are readily available and are currently being used at KIF for dust suppression. MSDS sheets for these products can be found in the enclosed plan, Attachment 6.

- (XIII) *All liquids which either drain from solid wastes or are created by washdown of equipment at the facility go to either (1) a wastewater treatment facility permitted to receive such wastewaters under Tennessee Code Annotated Section 69-3-101 et seq. (TN Water Quality Act), or (2) other methods approved by the commissioner;*

All liquids that either drain from the solid waste or are created by equipment washdown in the processing area will be discharged to the ash pond.

- (XIV) *The facility receives no special wastes;*

No special waste other than recovered ash is anticipated to be received in this processing area.

- (XV) *The operator can demonstrate, at the request of the Commissioner, that alternative arrangements (e.g. contracts with the facilities) for the proper processing or disposal of the solid wastes his facility handles are available in the event his facility cannot operate;*

Alternative arrangements for processing of the material are being developed.

- (XVI) *The Facility has properly maintained and located fire suppression equipment (e.g. fire extinguishers, water hoses) continuously available in sufficient quantity to control accidental fires that may occur;*

Fire suppression equipment is not required for the handling of ash product. The individual mobile equipment is usually equipped with fire extinguishers.

- (XVII) *All waste residues resulting from processing activities at the facility are managed in accordance with this rule chapter or rule chapter 1200-1-11 (Hazardous Waste Management), whichever is applicable, and/or with any other applicable state or federal regulations governing waste management;*

All waste will be managed according to applicable state or federal regulations governing waste management.

- (XVIII) *The facility is finally closed by removal of all solid wastes and solid waste residues for proper disposal;*

Closure of this process/temporary storage facility will be incorporated into an overall closure plan which will be submitted for approval to TDEC.

- (XIX) *New solid waste processing facilities shall not be located in wetlands, unless the owner or operator makes applicable demonstrations to the Commissioner as referenced at rule 1200-1-7-.04(2)(p);*

This solid waste processing/temporary storage facility is not located in a wetland.

- (XX) *The facility must not be located in a 100-year floodplain;*

This solid waste processing/temporary storage facility is not located in a 100-year floodplain. The lowest elevation of the existing area is approximately 769. The 100-year flooded elevation taken from TVA data is 746 feet above mean sea elevation.

- (XXI) *The Facility does not - I) Cause or contribute to the taking of any endangered or threatened species of plants, fish or wildlife; or II) Result in the destruction or adverse modification of the critical habitat of endangered or threatened species;*

The solid waste processing/temporary storage facility does not cause or contribute to the taking of any endangered or threatened species of plants, fish, or results in the destruction or adverse modification of critical habitat.

- (XXII) *The owner/operator may not store solid waste until the processing equipment has been installed onsite and is ready for use;*

Some ash has been stored at this location on an emergency basis. The ash previously stored will be processed and removed.

- (XXIII) *The owner/operator of a solid waste facility shall file with the Commissioner a performance bond or equivalent cash or securities payable to the State of Tennessee;*

TVA is an agency and instrumentality of the United States created by the TVA Act of 1933, 16 U.S.C. 831-831dd (1988). TVA is not required to provide financial assurance in accordance with DSWM solid waste regulations rule 1200-1-7-.03 (1)(b)(3) page.03-1.

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*(XXIX) The owners or operators proposing a new solid waste processing facility that handles putrescible waste located within 10,000 feet of an airport ect.*

Not Applicable. The facility does not handle putrescible waste.

TVA has finalized a layout and dewatering operations plan for the triangle ball field dewatering/temporary storage area. This plan will be incorporated into a more comprehensive ash management proposal in the future. The comprehensive ash management plan will include several sites. TVA is currently preparing plans to develop the Gypsum Phase II area for ash processing and temporary storage in the near future. However, to support the recovery effort, we are requesting emergency authorization to utilize the triangle ball field for dewatering operation/storage.

If you have any questions, please contact John Dizer at 423-751-7636, or by email at [jedizer@tva.gov](mailto:jedizer@tva.gov). Please feel free to contact me as well at 423-751-4878, or by email at [cmanderson@tva.gov](mailto:cmanderson@tva.gov).

TVA greatly appreciates your continued support in this matter.

Sincerely,



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Enclosures

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**Tennessee Valley Authority  
Kingston Fossil Plant**

**ASH PROCESSING AREA  
CONSTRUCTION  
AND OPERATION PLAN**

**Prepared By:**

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1101 Market Street  
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February 2009

Title: Ash Processing Area Construction and Operation Plan		DCN#	
		Plant/Unit: Kingston Fossil Plant	
Vendor	Contract No.	Key Nouns:	
Applicable Design Documents	REV	EDMS NUMBER	DESCRIPTION
	R0		
References	R1		Incorporation of TDEC Comments
	R2		

**TENNESSEE VALLEY AUTHORITY  
FOSSIL POWER GROUP  
ENVIRONMENTAL COMPLIANCE**

	Revision 0	R1	R3
Date	Feb 2009	Feb 2009	
Prepared	John Dizer	John Dizer	
Checked			
Supervised			

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Attachment 1	Chemical Pond Sediment Analysis
Attachment 2	Ash Leachate Analysis
Attachment 3	KIF Processing Area Stacking Height Sensitivity Analysis
Attachment 4	Ash Processing Area Groundwater Attenuation Discussion
Attachment 5	Chemical Pond Sediment Sampling and Interim Closure Plan
Attachment 6	Ash Crusting Agent MSDS
Attachment 7	Executive Summary - Proposed Procedures for Construction, Operation, and Performance Monitoring

## **1.0 Introduction**

The intent of this narrative is to describe the construction, operation, maintenance and closure of an area on the Kingston Fossil Plant (KIF) for the purpose of dewatering and temporarily stockpiling dredged ash material. The area is commonly known as the “Ball Field Area”, but will hereafter be referred to as the “Ash Processing Area.” This narrative will give sufficient information to determine how any potential for release of solid waste or solid waste constituents to the environment is minimized, except in a manner authorized by TDEC.

## **2.0 Area Location and Description**

The location of the Ash Processing Area is shown in Figure 1. The area is triangular in shape and roughly 65 acres in size. It is bordered on the north by the existing ash stack cell 1, on the east by a line parallel to and approximately 250' east of the existing ash sluice channel, and on the west by the plant entrance road. The Ash Processing Area was formerly an ash pond which is now soil covered and contains several ball fields, and two chemical treatment ponds. The area is also currently being used for temporary storage of ash removed from the west side of the failed dredge cell area.

As currently envisioned the Ash Processing Area will be sub-divided into at least two areas (see Figure 2). Area 'A', termed the Ash Recovery Area is located on the east side of the triangle. This area will be devoted to ash recovery by mechanical capture of dredged material from the ash sluice channel using excavators. The material is dewatered in a series of adjacent rim ditches and the recovered ash is placed in a stock pile. Area 'B', termed the Operational Ash Temporary Storage Area located on the west side of the triangle would be reserved primarily for short term storage and additional drying. The dry material would be either trucked to locations offsite which are permitted to receive ash or trucked to designated approved areas onsite. The current plan does not include stacking against the slopes of the failed dredge cells.

## **3.0 Site Preparation**

### **3.1 Ash Recovery Area Site Preparation:**

The Ash Processing Area is expected to be constructed in stages. The first stage to be prepared is the Ash Recovery Area located on the east side of the triangle (Figure 2). A construction Storm Water Pollution Prevention Plan (SWPPP) for the entire Ash Processing Facility has been prepared, submitted and approved according to regulations. The site preparation for this area will include clearing vegetation and drainage modification utilizing best management practices outlined in the SWPPP. The grading and drainage plan provides ash processing and handling adjacent to the east and west rim ditches as well as provides relatively flat areas for temporary storage. The area shown in Figure 3 will be graded and surfaced to allow for

processing/dewatering of ash before removal to the operational ash storage area. Any water from this area will drain to the ash sluice channel and then to the ash pond.

The processing area consists of (2) 1,800-foot parallel rim ditches. Each of these ditches will have its own three-stage dewatering system. The total recovery area covers approximately 1,800 x 500 feet (see Figure 4). Main features include the primary channel, dewatering trough and loading pad. These features will be located on both sides of what is currently the bottom ash channel. Initially, the entire work limits will be cleared and grubbed of all vegetation. An underlying demarcation layer of crushed limestone and filter fabric will be placed before harvesting mechanically any ash from the sluice channel. This will provide a separation line between processed ash and the existing material. In-situ material shall be excavated from the proposed channel locations and simultaneously placed to create the berms for the dewatering trough. Following the initial setup of the parallel ditches and dewatering troughs, the dredging and dewatering operation will commence. The first material to come from the dewatering trough shall be placed immediately adjacent to it in the loading zone area until the loading zone is built up to an elevation that promotes positive drainage back to the dewatering trough (see Figure 5). At this point, preparation of the recovery area will be considered complete and the dredging / dewatering operations can begin.

### 3.2 Operational Ash Temporary Storage Area Site Preparation

The second stage to be constructed will be the Operational Ash Temporary Storage Area located on the western side of the ash processing facility (See Figure 2). The chemical ponds are located in this area and will be decommissioned as part of the site preparation as described in the next section.

### 3.3 Chemical Pond Interim Closure

The two chemical treatment ponds located in the Operational Ash Temporary Storage Area will receive interim closure. The larger of the two ponds is a clay lined Iron Pond which is approximately 400' x 350' and 8' deep. The smaller pond is a clay lined Copper Pond which is approximately 125' x 125' and 8' deep.

Analysis performed in 2004 on the sediments from both of the ponds indicated that it was non-hazardous (see Attachment 1). Once the ponds are dewatered, additional samples (at least two per acre) of the sludge will be taken. An analysis for metals of a composite sample of the sludge will be used to confirm that the analytical results are similar to the 2004 results.

Due to the need for expediency, an interim closure of the ponds will be made and involve temporarily leaving the pond sediment in place after stabilizing with shot rock and capping with a demarcation layer of crushed stone and filter fabric. TVA will submit a plan to TDEC for final closure on this area when ash processing is complete. Figure

6 is a cross-section of a typical pond showing the intended interim closure construction. Attachment 5 gives additional details of the sediment testing and construction.

### 3.4 Recovered Ash Currently Stockpiled In Area

Ash recovered from the west side if the failed dredge cell has temporarily been stockpiled in the northeast corner of the Ash Processing area. This material will be moved and placed over the demarcation layer for further dewatering once the area site preparation has been completed

## **4. Facility Final Design and Construction**

### 4.1 Geotechnical Investigation and Stability Analysis:

A stability analysis of the site has been developed based on very conservative soil parameters and assumptions. Attachment 3 is a stacking height analysis performed by Geosyntec. The limiting factor is assumed to be the very loose ash fill material that will provide the foundation layer within the Ash Processing Facility area. Since laboratory testing data was not available at the time of preparation of these calculations, conservative materials properties are assumed and in-situ density is varied in order to estimate the maximum safe filling height.

This analysis limits the maximum height of the stack to approximately 8 feet utilizing a safety factor of 1.5, which is a typical safety factor employed for a permanent facility design. Additional geotechnical investigation of the site is currently being performed which will include a further stability analysis of the area. This in-depth evaluation will ultimately determine whether material can be stored at heights greater than 8 feet in this area.

It is our intention to stockpile the ash in the Operational Ash Temporary Storage Area portion of the facility on a temporary basis until it can be moved to an authorized final storage location. Since the ability to locate suitable final storage locations is difficult and the need to quickly commence dredging is paramount, we are anticipating the need to store as much ash temporarily at this location as possible. Until such a time as a final stability evaluation indicates that additional stacking height can be utilized, the maximum height will be limited to 8 feet.

### 4.2 Final Design and Construction

The final construction drawings of the Ash Recovery area and Operational Ash Temporary Storage Area are being prepared. The design includes constructing a surrounding drainage ditch and contouring the areas for positive drain back to the ash sluice channel (Figure 7).

Some modifications to the current ash sluice channels will be required. An additional ash sluice trench will be installed to the west of the current channel which will be constructed to allow a counter flow direction then turned at the southern end and the flow reversed back through the existing sluice channel. Figure 4 shows the plan view of the area and layout of the ash recovery sluice channels.

Preliminary process effluent analysis indicates that the concentration of arsenic (As) in water draining from the recovered ash will be in the range of ~0.050—0.060 mg/l. Factors that appear to be driving those concentrations are the low buffering capacity of Emory River water, combined with an apparent residual acidity or acid-generating potential in the material from the dredge cells that discharged into the river.

One approach to both immobilizing arsenic (As) in the leachate from the recovered material and installing a demarcation layer is to place a layer of crushed limestone approximately six inches to one foot thick above the existing soil and grass on that area with a layer of filter fabric between the limestone and the recovered material. The limestone will increase the pH of the leachate sufficiently to immobilize the As. TVA can monitor the performance of the limestone layer in immobilizing As by periodic groundwater sampling (see section 5.4)

The filter fabric and crushed limestone layer will be installed over both the Ash Recovery Area and the Operational Ash Temporary Storage Area as a separation between the new processed ash and the old ash in the original ash pond. This layer will act as a demarcation indicator to aid in the removal of the processed ash as well as a means to immobilize As. Figure 5 is a cross section view across the Ash Processing Facility Area that shows details of the crushed stone separation layer.

TVA is also pursuing the installation of prefabricated vertical drains (PVT or wick drains) in the Ash Processing Area. The wick drains would expedite consolidation of the underlying ash and alluvium. The drains would not pose adverse impact to groundwater due to this consolidation and reduced infiltration through surface storm water control. Piezometers and inclinometers will be placed in the alluvium as part of a performance monitoring program. A request for authorization to install the wick drains and monitoring instrumentation was submitted to TDEC on February 21, 2009. Attachment 7 includes the Executive Summary from that submittal.

TVA will present the results of the current stability analysis of the Ash Processing Area, along with engineering design and operation recommendations, at the completion of the analysis.

## **5. Facility Operation**

### **5.1 Ash Processing Plan**

The purpose of this section is to provide specifics for the dewatering and processing of ash from both the dredge and the daily plant production. Various types of equipment

will be needed to perform the operations. The typical types of equipment that is planned to be used are as follows:

- 1) Track Excavator – (2) Doosan 520 Long-Reach  
(4) Hitachi 450 Standard Reach (or equivalent)
- 2) Track Dozer – (2) Cat D6-LGP
- 3) Peterbuilt 5,000 gallon water truck w/cannon

Each 10-inch dredge pumps 4,000 to 5,000 gallons per minute at 15-20% solids. The production estimates average 3,000 cubic yards per 24-hour day using in-place measure.

The dredging / dewatering operation is divided into two stages in the processing area. These are necessary to prepare the dredged material for transport and long-term storage. See Figure 3 for a cross section through the Ash Processing Area.

- o Stage 1 – Using the Long-Reach Excavator, dip ash from rim ditch and place in dewatering trough for primary dewatering.
- o Stage 2 – Using the Standard-Reach Excavator, remove ash from dewatering trough and stockpile in wind-row for further dewatering.

All effluent from the ash sluice and recovery operation will flow to the ash sluice trench to the ash pond. Trans-Ash Inc. who operates the ash management system at our Johnsonville Fossil Plant, estimates that 90% of the ash can be recovered by this method prior to it entering the ash pond. Free water volume in the ash pond as specified in the facility NPDES permit will be maintained. Accordingly ash accumulated in the ash pond may periodically need to be dredged back into the dredged ash sluice channel to be recovered in a similar fashion. ,

## 5.2 Ash Temporary Storage Operation

Ash that has been dewatered will be moved to the Ash Operation/Temporary Storage Area for further drying. The ash will be placed in low height stacks (limited to 8 feet until the stability study is completed) and compacted to the greatest extent practical to minimize erosion and dusting. It is anticipated that the ash will not be stored in the location for more than one year. However, ash processing in this location could be continued until a dry ash operational system can be designed and installed for daily plant fly ash production.

## 5.3 Dust Suppression:

Fugitive dust shall be controlled through the use of a water truck with spray bars and a top-mounted cannon. The water truck has front and side sprayers to water haul roads in order to control traffic related dust. This vehicle is also equipped with a water cannon that is capable of spraying stockpiles and other areas not directly accessible by vehicle. This will be adequate for dust control of wind-rowed ash and intermediate storage surfaces. If the stock pile is expected to be inactive for a period of time and normal water spray dust suppressant is ineffective, we may elect to apply a crusting agent to

the surface of the stockpile. If the stock pile is expected to be inactive for a period of time and normal water spray dust suppressant is ineffective, we may elect to apply a crusting agent to the surface of the stockpile. A vinyl acrylic emulsion blend liquid dust suppression agent such as TM-06-515 MINCRYL X50™ produced by Momar Inc. or an erosion control mulch such as Flexterra FGM produced by Profile Products LLC, can be applied via a truck and sprayer on the ash. Both of these products are readily available and are currently being used at KIF for dust suppression. TVA will maintain a ready and adequate supply of the referenced dust suppression agents. MSDS sheets for these products can be found in Attachment 6.

#### 5.4 Groundwater Monitoring Plan

The groundwater monitoring network for the Ash Processing Area will consist of one upgradient and two downgradient monitoring wells. Three new monitoring wells will be installed at approximate locations shown in Figure 8.

Groundwater sampling will be conducted quarterly beginning immediately after the wells have been installed or refurbished. The initially sampling date is expected in early March 2009. Samples will be analyzed for the 17 inorganic constituents listed in Appendix I of TDEC Rule 1200-1-7-.04. A more comprehensive Groundwater Monitoring Plan which includes the method of evaluating groundwater monitoring data will be provided at a later date.

It was initially stated that two decommissioned wells (12A and 10) would be refurbished in this effort however these wells along with several other wells in the Ash Processing Area (2, 9A, 9b and 13A) were plugged in October 2004 and removed from service. Well 13B located on the northeast corner of the Ash Processing Area is a compliance well for the ash landfill. The location of this well may cause interference with the ash processing trenches. An effort to design around well 13B is being made and it is expected that the well will not need to be moved at this time.

All wells will be installed according to requirements prescribed in TN. Regulation 1200-1-7-.04(7). The TDEC Solid Waste Management, Knoxville Environmental Field Office will be notified at least 24 hours in advance of any well closures or installations that will be performed.

## **6. Site Closure**

Closure of this area will be incorporated into an overall closure plan which will be submitted for approval to TDEC.

## **FIGURES**

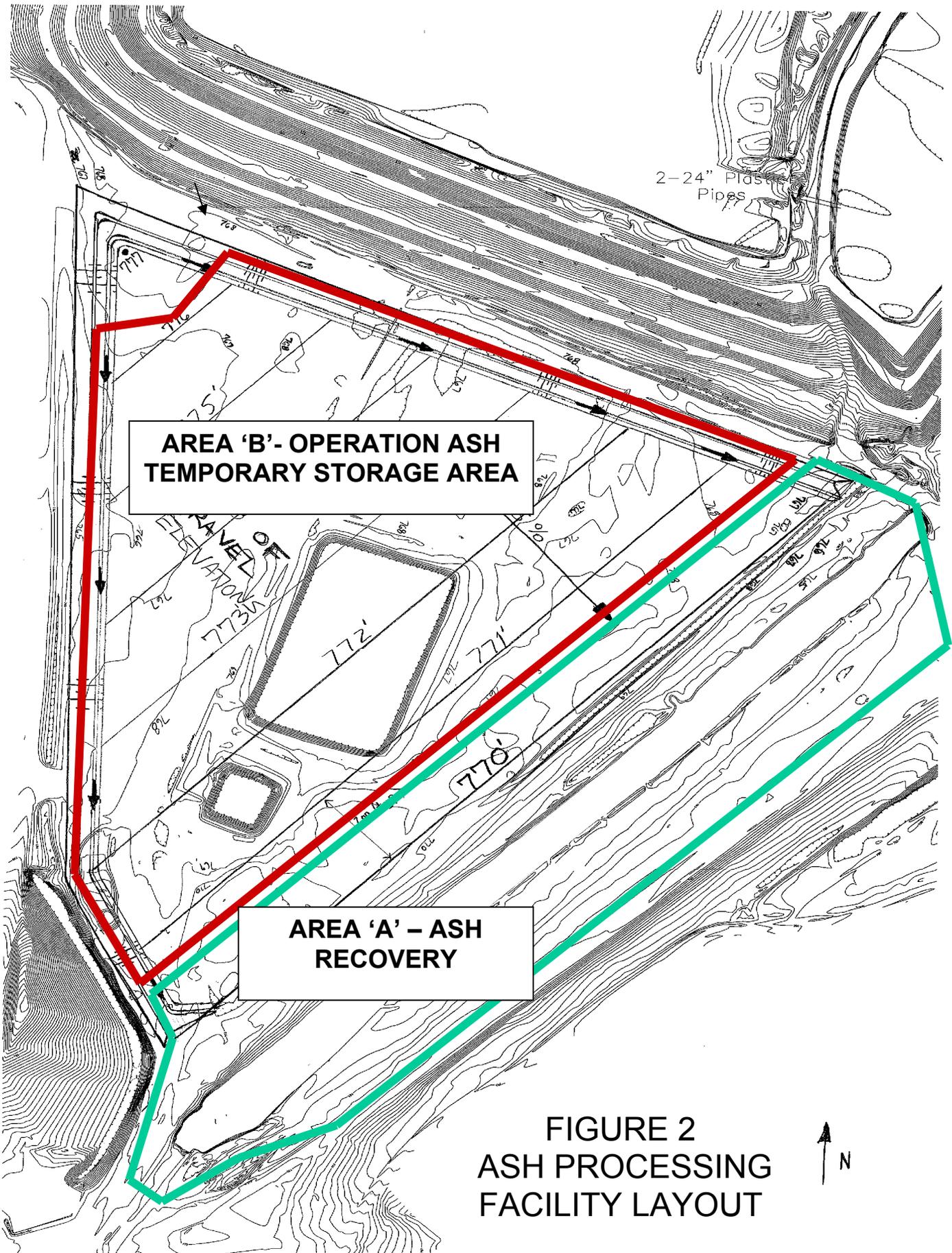
# FIGURE 1

## ASH PROCESSING FACILITY MAP



● Outfall location

TVA Kingston Temporary Ash Processing and Storage Area Project (Harriman Quad)

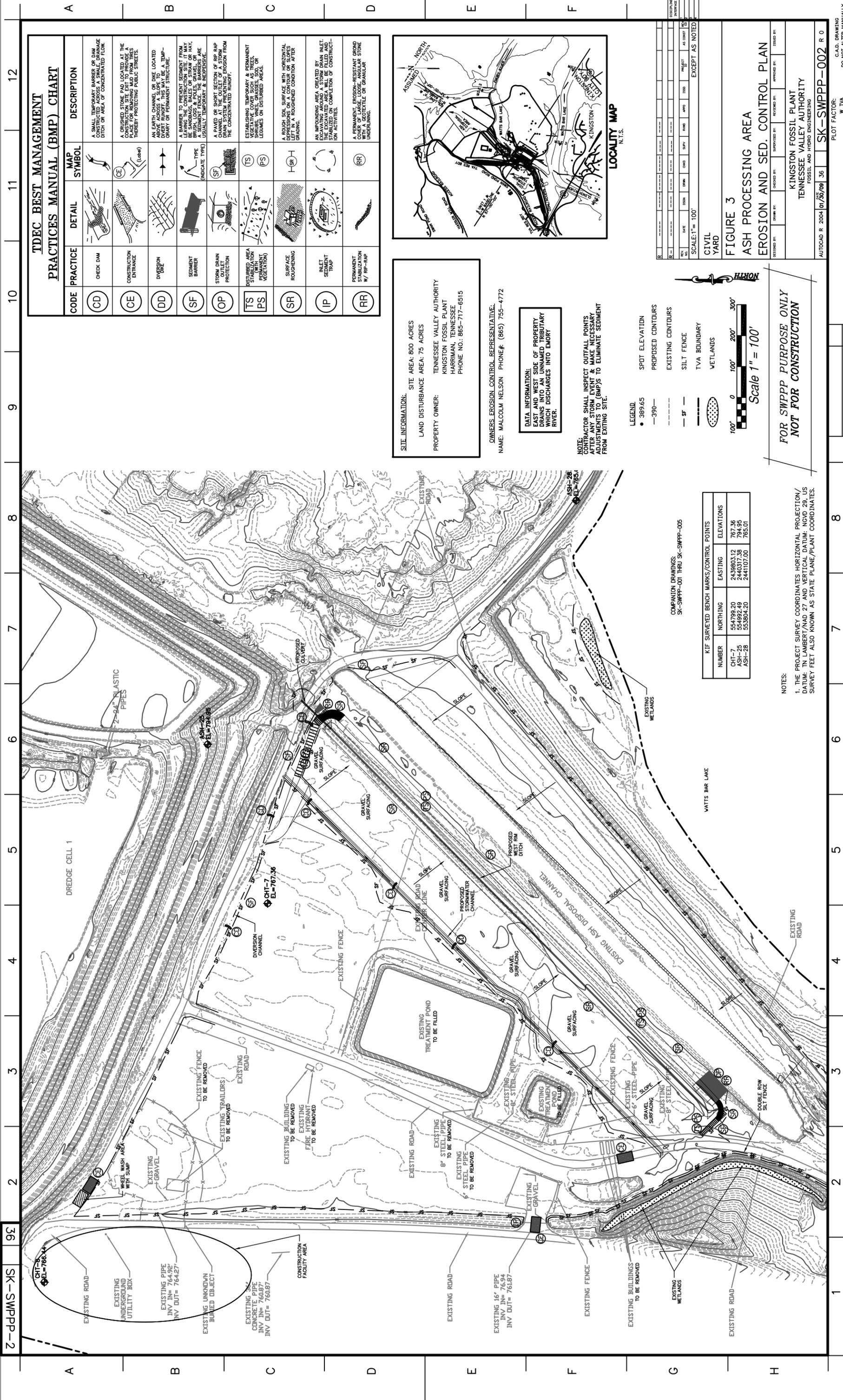


**AREA 'B' - OPERATION ASH  
TEMPORARY STORAGE AREA**

**AREA 'A' - ASH  
RECOVERY**

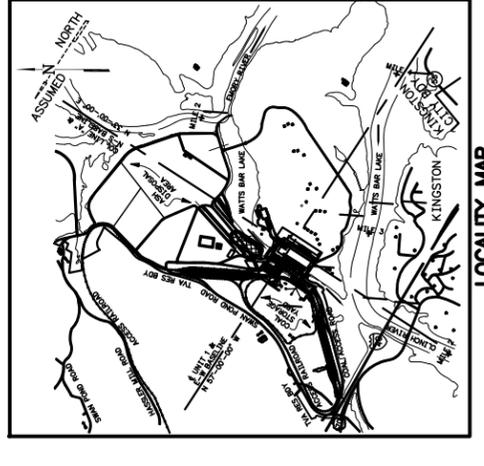
**FIGURE 2  
ASH PROCESSING  
FACILITY LAYOUT**

200'



### TDEC BEST MANAGEMENT PRACTICES MANUAL (BMP) CHART

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
CD	CHECK DAM			A SMALL TEMPORARY BARRIER OR DAM CONSTRUCTED ACROSS A SWALE, DRAINAGE DITCH OR AREA OF CONCENTRATED FLOW.
CE	CONSTRUCTION ENTRANCE			A CRUSHED STONE PAD LOCATED AT THE ENTRANCE TO A CONSTRUCTION SITE TO PREVENT EROSION AND TO REMOVE MUD FROM TIRES THEREBY PROTECTING PUBLIC STREETS.
DD	DIVERSION LAKE			AN EARTH CHANNEL OR DIKE LOCATED ABOVE A SLOPE TO DIVERT FLOW TO A TEMPORARY OR PERMANENT STRUCTURE.
SF	SEDIMENT BARRIER			A BARRIER TO PREVENT SEDIMENT FROM BEING TRANSPORTED BY FLOW. BARRIERS CAN BE SANDBAGS, BALES OF STRAW OR HAY, BRUSH LOGS & POLES, GRASSES, OR USUALLY TEMPORARY & INEXPENSIVE.
OP	STORM DRAIN PROTECTION			A PAVED OR SLOTTED SECTION OF A STORM DRAIN AT THE OUTLET OF A STORM DRAIN SYSTEM PREVENTING EROSION FROM THE CONCENTRATED FLOW.
TS	DISTURBED AREA STABILIZATION (WITH VEGETATION)			ESTABLISHING TEMPORARY & PERMANENT STABILIZATION OF DISTURBED AREAS WITH GRASSES, SOY, OR LEGUMES ON DISTURBED AREAS.
PS				
SR	SURFACE ROUGHENING			A BARRIERS OR SURFACES WITH HORIZONTAL PROJECTIONS OR CONTOURS OF ROCKS LEFT IN A ROUGHENED CONDITION AFTER GRADING.
IP	INLET SEDIMENT TRAP			AN IMPOUNDING AREA CREATED BY EXCAVATING AROUND A STORM DRAIN INLET. STABILIZED ON COMPLETION OF CONSTRUCTION ACTIVITIES.
RR	PERMANENT STABILIZATION W/ RIP-RAP			A PERMANENT, EROSION-RESISTANT GROND COVER OF LARGE, LOOSE, ANGULAR STONE UNDERLYING.



**SITE INFORMATION:**  
 SITE AREA: 800 ACRES  
 LAND DISTURBANCE AREA: 75 ACRES  
 PROPERTY OWNER:  
 TENNESSEE VALLEY AUTHORITY  
 KINGSTON FOSSIL PLANT  
 HARRIMAN, TENNESSEE  
 PHONE NO.: 665-717-6515

OWNERS EROSION CONTROL REPRESENTATIVE:  
 NAME: MALCOLM NELSON PHONE#: (665) 755-4772

**DATA INFORMATION:**  
 SIDE OF PROPERTY  
 DRAIN INTO UNNAMED TRIBUTARY  
 WHICH DISCHARGES INTO EMORY  
 RIVER.

**NOTE:**  
 CONTRACTOR SHALL INSPECT OUTFALL POINTS  
 AFTER ANY STORM EVENT & MAKE NECESSARY  
 ADJUSTMENTS TO (BMP)'S TO ELIMINATE SEDIMENT  
 FROM EXITING SITE.

**LEGEND**

- SPOT ELEVATION
- PROPOSED CONTOURS
- EXISTING CONTOURS
- SILT FENCE
- TVA BOUNDARY
- WETLANDS

Scale 1" = 100'

COMPANION DRAWINGS:  
 SK-SWPPP-001 THRU SK-SWPPP-005

K1F SURVEYED BENCH MARKS/CONTROL POINTS			
NUMBER	NORTHING	EASTING	ELEVATIONS
CHT-7	554799.20	2439803.12	767.36
ASH-25	554992.49	2440317.38	794.95
ASH-28	553804.20	2441107.00	765.01

**NOTES:**  
 1. THE PROJECT SURVEY COORDINATES HORIZONTAL PROJECTION/  
 DATUM: TN LAMBERT/NAAD 27 AND VERTICAL DATUM: NGVD 29. US  
 SURVEY FEET ALSO KNOWN AS STATE PLANE/PLANT COORDINATES.

**FOR SWPPP PURPOSE ONLY  
 NOT FOR CONSTRUCTION**

SCALE: 1" = 100'

CIVIL YARD

**FIGURE 3**  
**ASH PROCESSING AREA**  
**EROSION AND SED. CONTROL PLAN**

DESIGNED BY: [ ]  
 DRAWN BY: [ ]  
 CHECKED BY: [ ]  
 APPROVED BY: [ ]

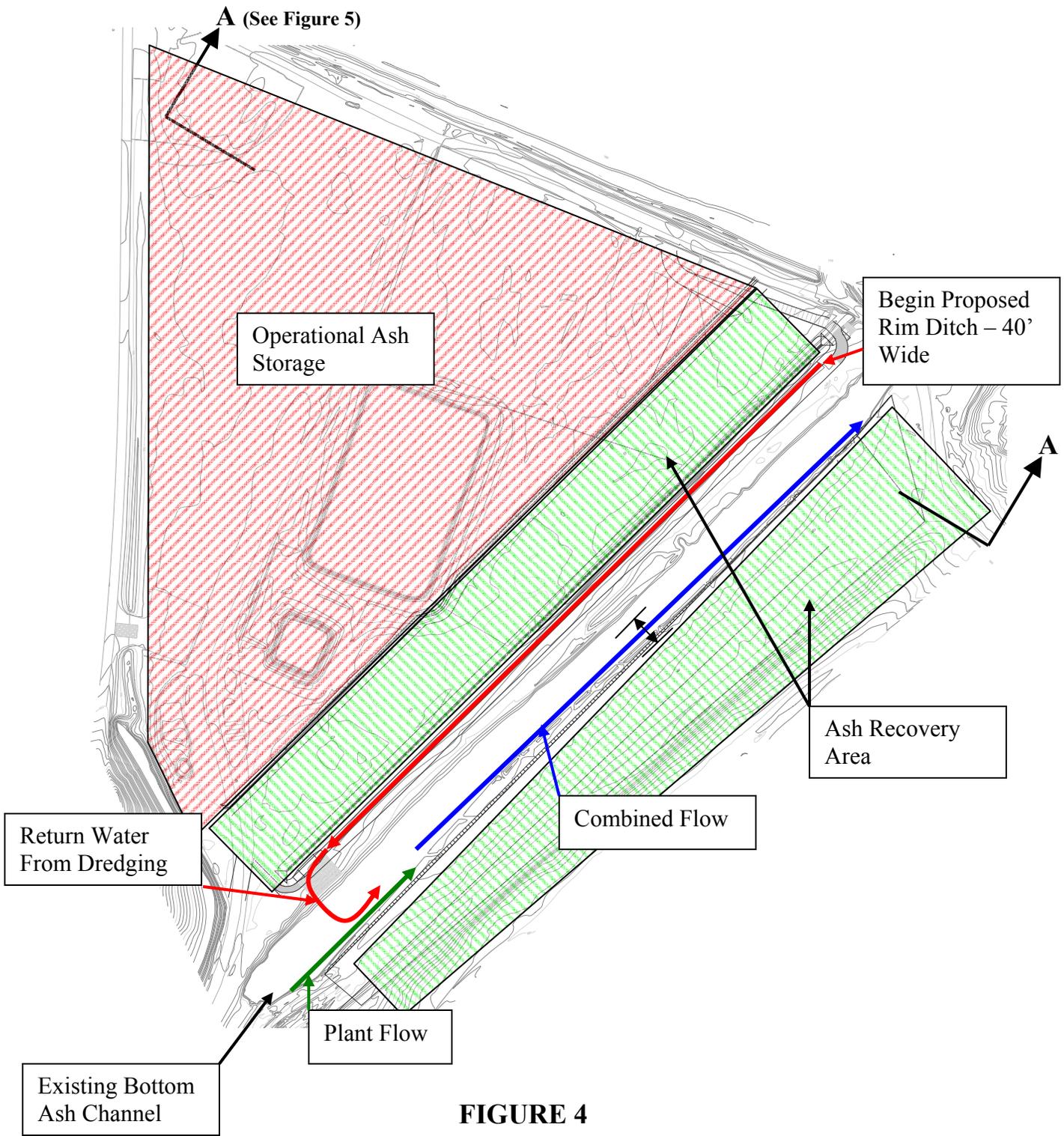
KINGSTON FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2004 01/30/09 36 SK-SWPPP-002 R 0

PLOT FACTOR: W\_TVA DO NOT ALTER MANUALLY

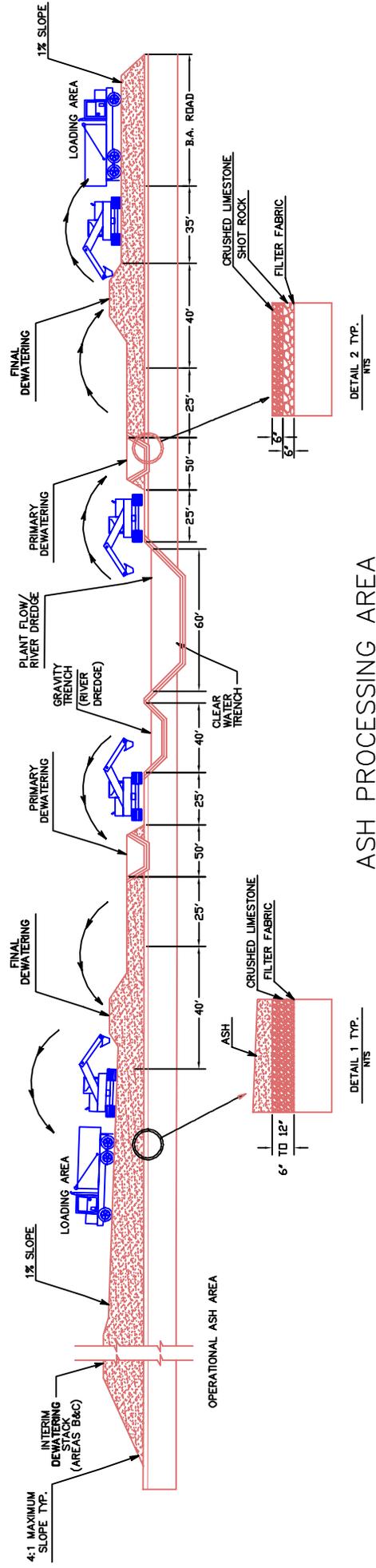
2-PPWS-SK

36



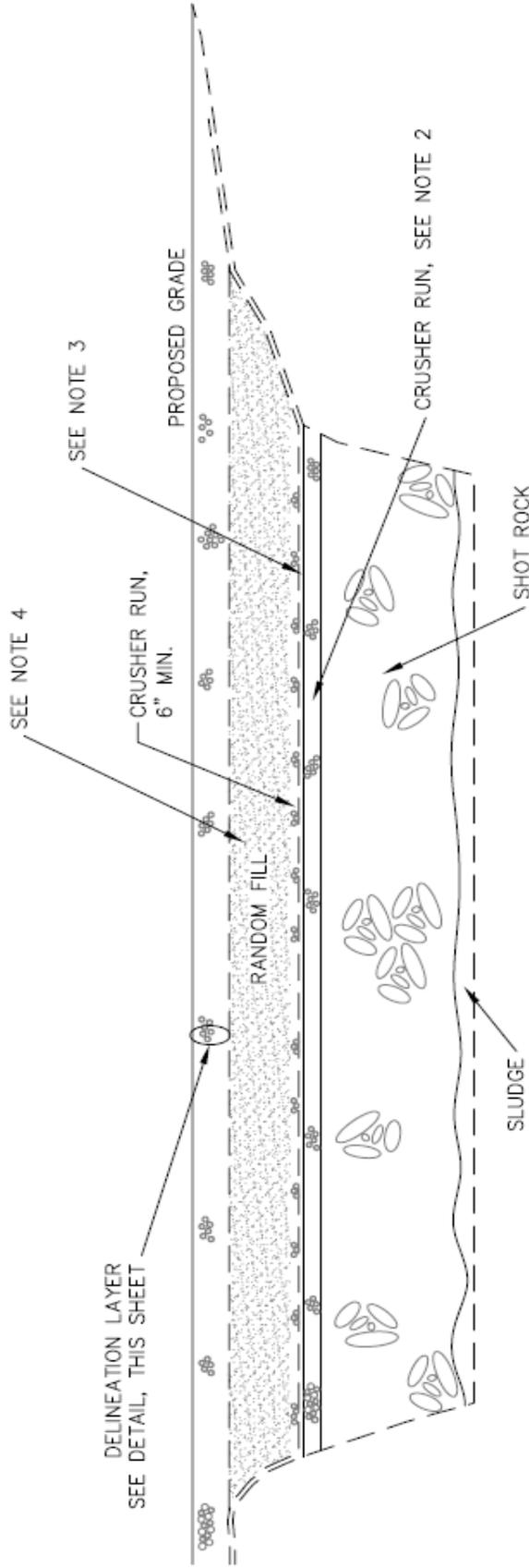
**FIGURE 4**  
**Ash Processing Area**  
**Flow Diagram**

FIGURE 5



ASH PROCESSING AREA  
 TYPICAL CROSS-SECTION (1/30)  
 NOT FOR CONSTRUCTION  
 NTS

# FIGURE 6 TYPICAL CHEMICAL POND CROSS-SECTION



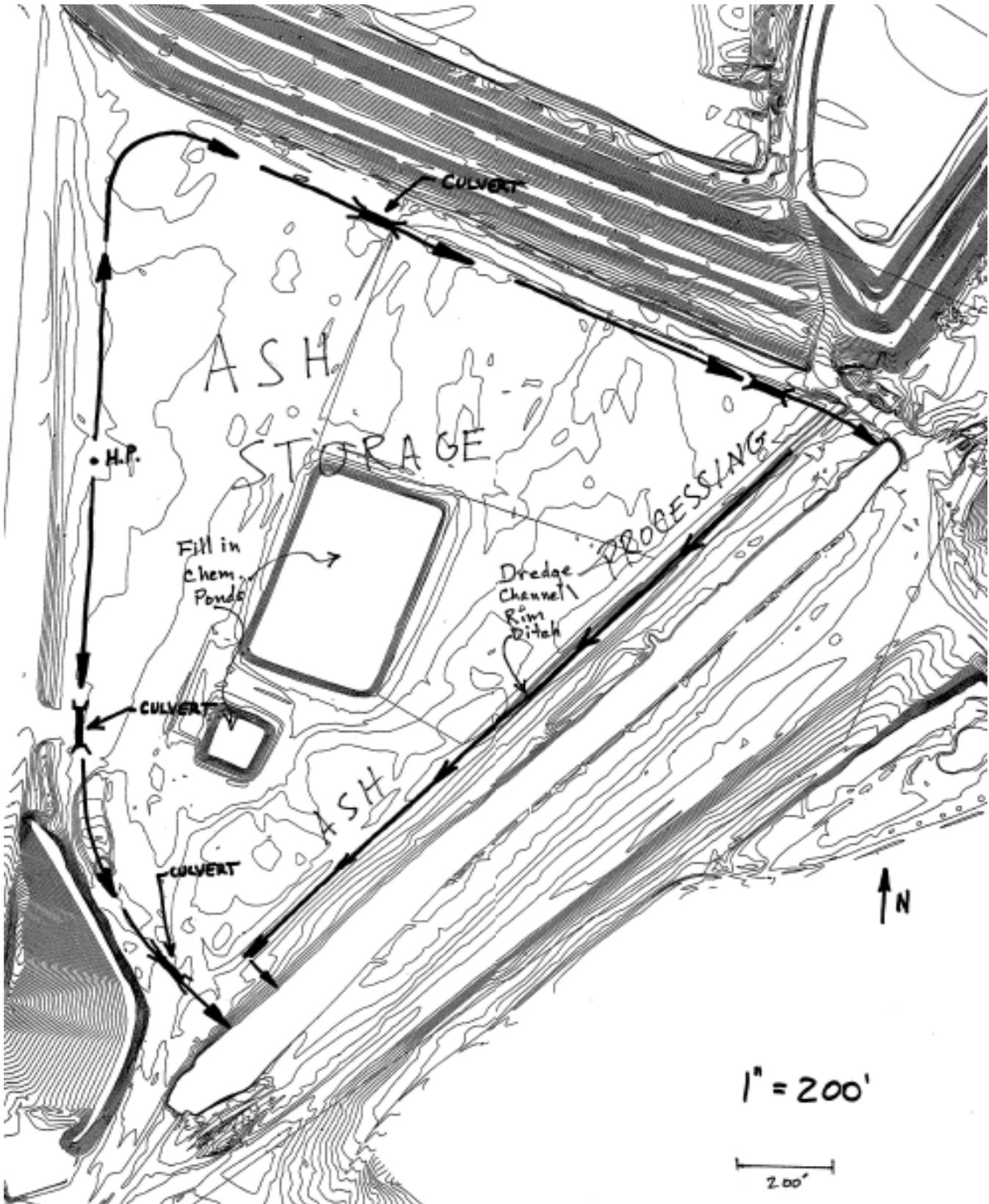
## CHEMICAL PONDS BACKFILL DETAIL

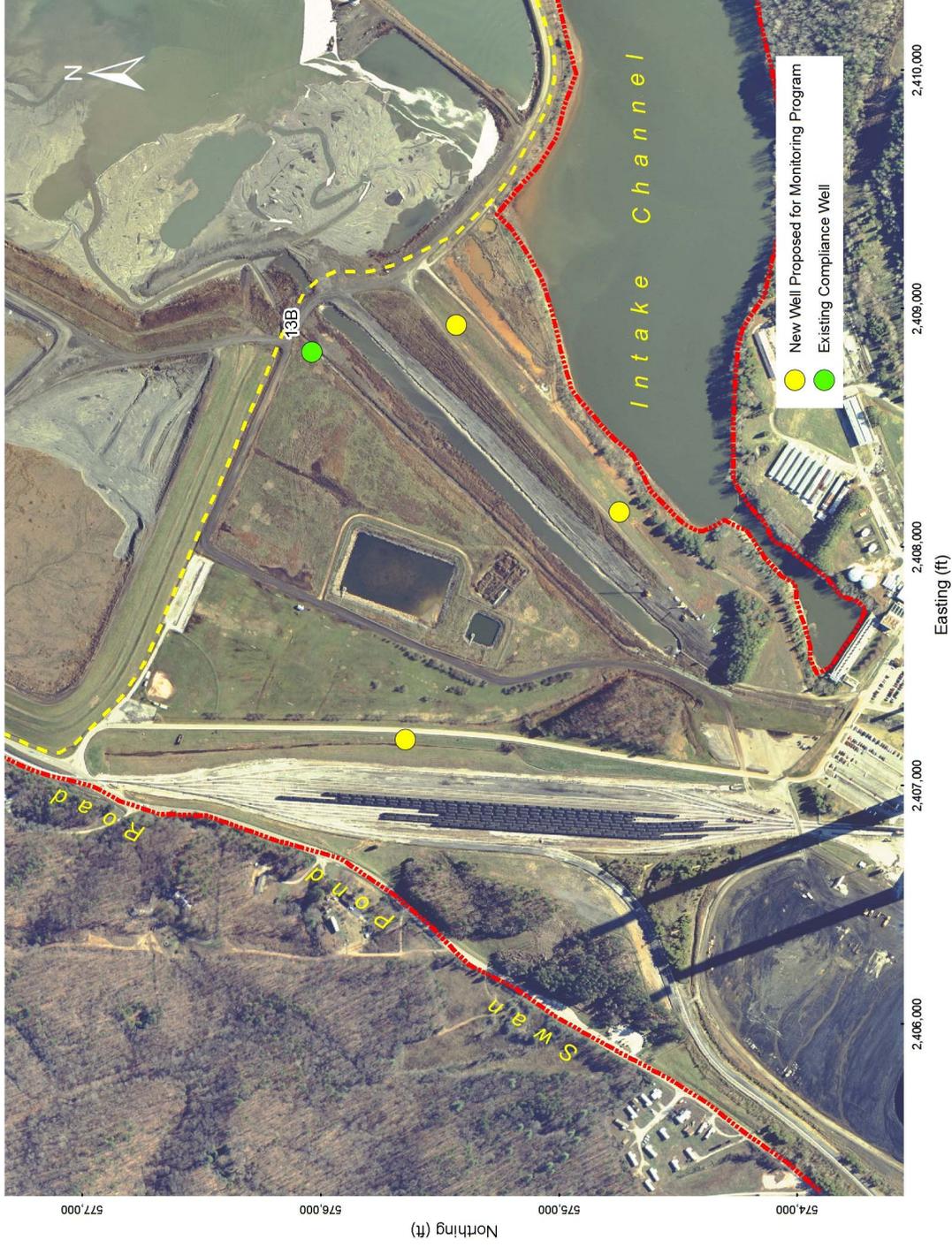
N.T.S.

### NOTES:

1. DEWATER CHEMICAL PONDS AS MUCH AS PRACTICAL. END DUMP SHOT ROCK INTO PONDS UNTIL ROCK IS SUFFICIENTLY ABOVE WATER LEVEL TO PROVIDE FIRM WORKING SURFACE FOR EQUIPMENT.
2. GRADE SHOT ROCK TO REASONABLY LEVEL, FIRM SURFACE AND CHOKE TOP OF SHOT ROCK WITH 12 INCHES OF CRUSHER RUN. SHOT ROCK SHALL HAVE A MAXIMUM PARTICLE SIZE OF 18 INCHES. CRUSHER RUN SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES.
3. COVER LOWER CRUSHER RUN LAYER WITH EITHER GEOTEX 4X4 WOVEN GEOTEXTILE OR GEOTEX 1071 NON-WOVEN GEOTEXTILE AS SHOWN.
4. PLACE COMPACTED FILL ABOVE THE UPPER CRUSHER RUN LAYER TO DELINEATION LAYER AS SHOWN.

**FIGURE 7**  
**Operational Ash Storage Area Drainage**





**FIGURE 8. - MONITORING WELL PROGRAM**

**ATTACHMENT 1**  
**CHEMICAL POND SEDIMENT ANALYSIS**



**TENNESSEE VALLEY AUTHORITY  
CENTRAL LABORATORIES SERVICES  
1101 Market Street, PSC 1B-C  
Chattanooga, Tennessee 37402-2801**

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Data Report Number:** 031016-141203

**Report of Results:** Environmental

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Location Code:** MISC

**Field ID:** KIF-IP-1

**Sample Description:** CHEM POND SEDIMENT

**Sample ID:** AD15370 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 9:20 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	19:55	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.84	mg/L	0.01	10/08/2003	19:55	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	0.013	mg/L	0.005	10/08/2003	19:55	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	19:55	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	0.15	mg/L	0.05	10/08/2003	19:55	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	19:55	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	19:55	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:30	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	53	mg/Kg	5	09/24/2003	9:01	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	21	mg/Kg	0.5	09/24/2003	9:01	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.71	mg/Kg	0.25	09/24/2003	9:01	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	18	mg/Kg	2.5	09/24/2003	9:01	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	14	mg/Kg	2.5	09/24/2003	9:01	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	< MDL	mg/Kg	5	09/24/2003	9:01	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	< MDL	mg/Kg	0.5	09/24/2003	9:01	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	9:15	RIG	EPA 7470

**Sample Comments:** None

Data Report Number: 031016-141203

Report of Results: Environmental



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**Chattanooga, Tennessee 37402-2801**

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Sample ID:** AD15371 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 10:00 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Location Code:** MISC

**Field ID:** KIF-IP-2

**Sample Description:** CHEM POND SEDIMENT

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	19:58	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.56	mg/L	0.01	10/08/2003	19:58	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	0.011	mg/L	0.005	10/08/2003	19:58	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	19:58	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	< MDL	mg/L	0.05	10/08/2003	19:58	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	19:58	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	19:58	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:33	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	26	mg/Kg	5	09/24/2003	9:05	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	14	mg/Kg	0.5	09/24/2003	9:05	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.49	mg/Kg	0.25	09/24/2003	9:05	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	13	mg/Kg	2.5	09/24/2003	9:05	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	11	mg/Kg	2.5	09/24/2003	9:05	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	< MDL	mg/Kg	5	09/24/2003	9:05	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	< MDL	mg/Kg	0.5	09/24/2003	9:05	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	9:23	RIG	EPA 7470

**Sample Comments:** None



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1101 Market Street, PSC 1B-C  
Chattanooga, Tennessee 37402-2801**

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Data Report Number:** 031016-141203

**Report of Results:** Environmental

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Location Code:** MISC

**Field ID:** KIF-IP-3

**Sample Description:** CHEM POND SEDIMENT

**Sample ID:** AD15372 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 10:45 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:01	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.94	mg/L	0.01	10/08/2003	20:01	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	0.007	mg/L	0.005	10/08/2003	20:01	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:01	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	< MDL	mg/L	0.05	10/08/2003	20:01	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:01	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:01	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:46	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	91	mg/Kg	5	09/24/2003	9:08	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	57	mg/Kg	0.5	09/24/2003	9:08	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	1.2	mg/Kg	0.25	09/24/2003	9:08	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	23	mg/Kg	2.5	09/24/2003	9:08	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	16	mg/Kg	2.5	09/24/2003	9:08	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	12	mg/Kg	5	09/24/2003	9:08	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	3.8	mg/Kg	0.5	09/24/2003	9:08	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	9:37	RIG	EPA 7470

**Sample Comments:** None

Data Report Number: 031016-141203

Report of Results: Environmental



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Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Sample ID:** AD15373 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 11:50 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Location Code:** MISC

**Field ID:** KIF-IP-4

**Sample Description:** CHEM POND SEDIMENT

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:04	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	1.1	mg/L	0.01	10/08/2003	20:04	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	0.005	mg/L	0.005	10/08/2003	20:04	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:04	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	< MDL	mg/L	0.05	10/08/2003	20:04	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:04	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:04	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:49	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	450	mg/Kg	5	09/24/2003	9:11	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	440	mg/Kg	0.5	09/24/2003	9:11	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	1.4	mg/Kg	0.25	09/24/2003	9:11	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	54	mg/Kg	2.5	09/24/2003	9:11	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	33	mg/Kg	2.5	09/24/2003	9:11	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	140	mg/Kg	5	09/24/2003	9:11	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	5.3	mg/Kg	0.5	09/24/2003	9:11	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	9:46	RIG	EPA 7470

**Sample Comments:** None

Data Report Number: 031016-141203

Report of Results: Environmental



**TENNESSEE VALLEY AUTHORITY**  
**CENTRAL LABORATORIES SERVICES**  
**1101 Market Street, PSC 1B-C**  
**Chattanooga, Tennessee 37402-2801**

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Sample ID:** AD15374 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 11:50 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Location Code:** MISC

**Field ID:** KIF-IP-4D

**Sample Description:** CHEM POND SEDIMENT

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis			Method Reference
					Date	Time	Analyst	
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:17	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	1.6	mg/L	0.01	10/08/2003	20:17	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	< MDL	mg/L	0.005	10/08/2003	20:17	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:17	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	< MDL	mg/L	0.05	10/08/2003	20:17	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:17	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:17	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:52	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	450	mg/Kg	5	09/24/2003	9:14	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	420	mg/Kg	0.5	09/24/2003	9:14	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	1.5	mg/Kg	0.25	09/24/2003	9:14	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	59	mg/Kg	2.5	09/24/2003	9:14	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	34	mg/Kg	2.5	09/24/2003	9:14	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	130	mg/Kg	5	09/24/2003	9:14	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	5.4	mg/Kg	0.5	09/24/2003	9:14	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	10:24	RIG	EPA 7470

**Sample Comments:** None



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Chattanooga, Tennessee 37402-2801**

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Data Report Number:** 031016-141203

**Report of Results:** Environmental

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Location Code:** MISC

**Field ID:** KIF-CP-1

**Sample Description:** CHEM POND SEDIMENT

**Sample ID:** AD15375 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 15:45 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:20	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.19	mg/L	0.01	10/08/2003	20:20	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	< MDL	mg/L	0.005	10/08/2003	20:20	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:20	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	0.18	mg/L	0.05	10/08/2003	20:20	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:20	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:20	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:54	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	< MDL	mg/Kg	5	09/24/2003	9:27	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	51	mg/Kg	0.5	09/24/2003	9:27	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.89	mg/Kg	0.25	09/24/2003	9:27	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	19	mg/Kg	2.5	09/24/2003	9:27	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	39	mg/Kg	2.5	09/24/2003	9:27	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	< MDL	mg/Kg	5	09/24/2003	9:27	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	8.4	mg/Kg	0.5	09/24/2003	9:27	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	10:29	RIG	EPA 7470

**Sample Comments:** None



**TENNESSEE VALLEY AUTHORITY  
CENTRAL LABORATORIES SERVICES  
1101 Market Street, PSC 1B-C  
Chattanooga, Tennessee 37402-2801**

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Data Report Number:** 031016-141203

**Report of Results:** Environmental

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Location Code:** MISC

**Field ID:** KIF-CP-2D

**Sample Description:** CHEM POND SEDIMENT

**Sample ID:** AD15376 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 15:45 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis			Method Reference
					Date	Time	Analyst	
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:23	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.44	mg/L	0.01	10/08/2003	20:23	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	< MDL	mg/L	0.005	10/08/2003	20:23	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:23	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	0.17	mg/L	0.05	10/08/2003	20:23	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:23	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:23	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	20:58	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	< MDL	mg/Kg	5	09/24/2003	9:30	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	43	mg/Kg	0.5	09/24/2003	9:30	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.74	mg/Kg	0.25	09/24/2003	9:30	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	20	mg/Kg	2.5	09/24/2003	9:30	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	34	mg/Kg	2.5	09/24/2003	9:30	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	< MDL	mg/Kg	5	09/24/2003	9:30	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	8.7	mg/Kg	0.5	09/24/2003	9:30	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	0.2	mg/Kg	0.1	10/08/2003	10:37	RIG	EPA 7470

**Sample Comments:** None

Data Report Number: 031016-141203

Report of Results: Environmental



**TENNESSEE VALLEY AUTHORITY  
CENTRAL LABORATORIES SERVICES  
1101 Market Street, PSC 1B-C  
Chattanooga, Tennessee 37402-2801**

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Sample ID:** AD15377 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 16:30 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Location Code:** MISC

**Field ID:** KIF-CP-2

**Sample Description:** CHEM POND SEDIMENT

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:27	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.30	mg/L	0.01	10/08/2003	20:27	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	< MDL	mg/L	0.005	10/08/2003	20:27	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:27	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	0.30	mg/L	0.05	10/08/2003	20:27	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:27	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:27	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	21:00	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	< MDL	mg/Kg	5	09/24/2003	9:33	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	43	mg/Kg	0.5	09/24/2003	9:33	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.70	mg/Kg	0.25	09/24/2003	9:33	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	21	mg/Kg	2.5	09/24/2003	9:33	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	42	mg/Kg	2.5	09/24/2003	9:33	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	< MDL	mg/Kg	5	09/24/2003	9:33	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	12	mg/Kg	0.5	09/24/2003	9:33	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	0.2	mg/Kg	0.1	10/08/2003	10:46	RIG	EPA 7470

**Sample Comments:** None

Data Report Number: 031016-141203

Report of Results: Environmental



**TENNESSEE VALLEY AUTHORITY**  
**CENTRAL LABORATORIES SERVICES**  
**1101 Market Street, PSC 1B-C**  
**Chattanooga, Tennessee 37402-2801**

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Sample ID:** AD15378 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 17:50 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Location Code:** MISC

**Field ID:** KIF-CP-3

**Sample Description:** CHEM POND SEDIMENT

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis	Analysis	Analyst	Method
					Date	Time		Reference
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:30	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	0.52	mg/L	0.01	10/08/2003	20:30	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	< MDL	mg/L	0.005	10/08/2003	20:30	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:30	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	0.23	mg/L	0.05	10/08/2003	20:30	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:30	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:30	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	21:02	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	< MDL	mg/Kg	5	09/24/2003	9:36	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	45	mg/Kg	0.5	09/24/2003	9:36	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.60	mg/Kg	0.25	09/24/2003	9:36	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	24	mg/Kg	2.5	09/24/2003	9:36	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	38	mg/Kg	2.5	09/24/2003	9:36	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	< MDL	mg/Kg	5	09/24/2003	9:36	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	12	mg/Kg	0.5	09/24/2003	9:36	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	0.1	mg/Kg	0.1	10/08/2003	10:59	RIG	EPA 7470

**Sample Comments:** None



**TENNESSEE VALLEY AUTHORITY  
CENTRAL LABORATORIES SERVICES  
1101 Market Street, PSC 1B-C  
Chattanooga, Tennessee 37402-2801**

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

**Data Report Number:** 031016-141203

**Report of Results:** Environmental

Shipping Address:  
Chickamauga Power Service Center  
North Side Chickamauga Reservation  
Chattanooga, Tennessee 37415

**Customer Address:** Todd Campbell  
CEB 3A-M  
Phone: Not Available  
Fax : Not Available  
E-Mail: tacampbell@tva.gov

**Location Code:** MISC

**Field ID:** KIF-CP-4

**Sample Description:** CHEM POND SEDIMENT

**Sample ID:** AD15379 **LRF ID:** 03090305

**Matrix:** Solids **Reg:** RCRA

**Date Collected:** 09/16/2003

**Time Collected:** 17:10 CST

**Date Received:** 09/18/2003

**Time Received:** 10:58

**Project Manager:** David M. Varnell

Analyte	CAS Number <sup>1</sup>	Result	Units	MDL <sup>2</sup>	Analysis		Analyst	Method Reference
					Date	Time		
Arsenic, TCLP Extract	7440-38-2	< MDL	mg/L	0.1	10/08/2003	20:34	LMJ	EPA 6010B
Barium, TCLP Extract	7440-39-3	3.8	mg/L	0.01	10/08/2003	20:34	LMJ	EPA 6010B
Cadmium, TCLP Extract	7440-43-9	< MDL	mg/L	0.005	10/08/2003	20:34	LMJ	EPA 6010B
Chromium, TCLP Extract	7440-47-3	< MDL	mg/L	0.05	10/08/2003	20:34	LMJ	EPA 6010B
Lead, TCLP Extract	7439-92-1	0.20	mg/L	0.05	10/08/2003	20:34	LMJ	EPA 6010B
Selenium, TCLP Extract	7782-49-2	< MDL	mg/L	0.1	10/08/2003	20:34	LMJ	EPA 6010B
Silver, TCLP Extract	7440-22-4	< MDL	mg/L	0.01	10/08/2003	20:34	LMJ	EPA 6010B
Mercury, TCLP Extract	7439-97-6	< MDL	mg/L	0.002	10/06/2003	21:06	RIG	EPA 7470
Arsenic, RCRA Total	7440-38-2	34	mg/Kg	5	09/24/2003	9:39	LMJ	EPA 6010B
Barium, RCRA Total	7440-39-3	210	mg/Kg	0.5	09/24/2003	9:39	LMJ	EPA 6010B
Cadmium, RCRA Total	7440-43-9	0.72	mg/Kg	0.25	09/24/2003	9:39	LMJ	EPA 6010B
Chromium, RCRA Total	7440-47-3	31	mg/Kg	2.5	09/24/2003	9:39	LMJ	EPA 6010B
Lead, RCRA Total	7439-92-1	37	mg/Kg	2.5	09/24/2003	9:39	LMJ	EPA 6010B
Selenium, RCRA Total	7782-49-2	10	mg/Kg	5	09/24/2003	9:39	LMJ	EPA 6010B
Silver, RCRA Total	7440-22-4	11	mg/Kg	0.5	09/24/2003	9:39	LMJ	EPA 6010B
Mercury, RCRA Total	7439-97-6	< MDL	mg/Kg	0.1	10/08/2003	11:07	RIG	EPA 7470

**Sample Comments:** None

**ATTACHMENT 2**  
**ASH LEACHATE ANALYSIS**



ENVIRONMENTAL  
SCIENCE CORP.

12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U

Chattanooga, TN 37402

Case Narrative

Friday January 30, 2009

Report Number: L384990

Samples Received: 01/23/09

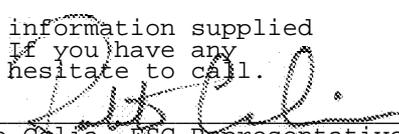
Client Project: TVAKIF-ASH

Description:

Other Comments

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Roberto Celia, ESC Representative

*Laboratory Certification Numbers*

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140  
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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Where applicable, sampling conducted by ESC is performed per guidance provided  
in laboratory standard operating procedures: 060302, 060303, and 060304.



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Mt. Juliet, TN 37122  
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1-800-767-5859  
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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

January 30, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : January 23, 2009  
Description :

Sample ID : KIF-DREDGE-OTR-012309

Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-01

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	01/25/09 0910	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	01/27/09 1001	KBW	1
Arsenic	0.058	0.050	mg/l	5.0	6010B	01/26/09 0921	DMM	1
Barium	BDL	0.15	mg/l	100	6010B	01/26/09 0921	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	01/26/09 0921	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	01/26/09 0921	DMM	1
Lead	BDL	0.050	mg/l	5.0	6010B	01/26/09 0921	DMM	1
Selenium	BDL	0.050	mg/l	1.0	6010B	01/26/09 0921	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	01/26/09 0921	DMM	1
TCLP Pesticides								
Chlordane	BDL	0.0050	mg/l	0.030	8081A	01/28/09 1103	LSB	1
Decachlorobiphenyl	41.2		% Rec.	123.	8081A	01/28/09 1103	LSB	1
Tetrachloro-m-xylene	60.5		% Rec.	114.	8081A	01/28/09 1103	LSB	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 01/30/09 12:31 Printed: 01/30/09 15:29



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

January 30, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : 01/23/09 17:53  
Description :

Sample ID : KIF-DREDGE-OTR-012309

Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-02

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Alkalinity	BDL	20.	mg/l	2320B	01/24/09 0921	236	01/26/09 2000	NJM
Hardness	240	30.	mg/l	130.1	01/28/09 1526	165	01/28/09 1526	LEM
Suspended Solids	7100	1.0	mg/l	160.2	01/24/09 1500	193	01/26/09 0818	AMS
Mercury	0.00032	0.00020	mg/l	7470A	01/27/09 0808	429	01/27/09 2231	CLF
Mercury, Dissolved	BDL	0.00020	mg/l	7470A	01/27/09 0814	429	01/27/09 2100	CLF
Aluminum	250	0.10	mg/l	6010B	01/28/09 1624	117	01/29/09 0110	DMM
Antimony	BDL	0.018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Arsenic	0.83	0.018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Barium	3.8	0.0045	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Beryllium	0.073	0.0018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Boron	0.80	0.18	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Calcium	50.	0.45	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Chromium	0.28	0.0090	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Cobalt	0.28	0.0090	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Copper	0.87	0.018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Iron	100	0.090	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Lead	0.54	0.0045	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Magnesium	20.	0.090	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Manganese	0.76	0.0090	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Molybdenum	0.025	0.0045	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Nickel	0.47	0.018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Selenium	0.042	0.018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Thallium	BDL	0.10	mg/l	6010B	01/26/09 1615	117	01/28/09 1512	JBC
Tin	0.030	0.018	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Titanium	13.	0.0090	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC
Zinc	1.0	0.027	mg/l	6010B	01/26/09 1615	117	01/28/09 1025	JBC

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Laboratory Certification Numbers:

AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01  
KY - 90010, NC - ENV375, DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

January 30, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : January 23, 2009  
Description :

Sample ID : KIF-DREDGE-OTH-012309

Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-03

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	01/25/09 0910	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	01/26/09 1654	KBW	1
Arsenic	0.55	0.050	mg/l	5.0	6010B	01/26/09 0924	DMM	1
Barium	1.1	0.15	mg/l	100	6010B	01/26/09 0924	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	01/26/09 0924	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	01/26/09 0924	DMM	1
Lead	BDL	0.050	mg/l	5.0	6010B	01/26/09 0924	DMM	1
Selenium	BDL	0.050	mg/l	1.0	6010B	01/26/09 0924	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	01/26/09 0924	DMM	1
TCLP Pesticides								
Chlordane	BDL	0.0050	mg/l	0.030	8081A	01/28/09 1114	LSB	1
Decachlorobiphenyl	42.1		% Rec.	123.	8081A	01/28/09 1114	LSB	1
Tetrachloro-m-xylene	54.9		% Rec.	114.	8081A	01/28/09 1114	LSB	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

January 30, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : January 23, 2009  
Description :

Sample ID : KIF-DREDGE-OTH-012309

Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-04

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.10	0.020	mg/kg	7471	01/25/09	1
Aluminum	1400	0.50	mg/kg	6010B	01/29/09	.1
Antimony	BDL	0.10	mg/kg	6010B	01/29/09	.1
Arsenic	6.6	0.10	mg/kg	6010B	01/29/09	.1
Barium	27.	0.025	mg/kg	6010B	01/29/09	.1
Beryllium	0.42	0.010	mg/kg	6010B	01/29/09	.1
Boron	4.9	1.0	mg/kg	6010B	01/29/09	.1
Cadmium	BDL	0.025	mg/kg	6010B	01/29/09	.1
Chromium	2.2	0.050	mg/kg	6010B	01/29/09	.1
Cobalt	1.4	0.050	mg/kg	6010B	01/29/09	.1
Copper	5.6	0.10	mg/kg	6010B	01/29/09	.1
Iron	670	0.50	mg/kg	6010B	01/29/09	.1
Lead	2.6	0.025	mg/kg	6010B	01/29/09	.1
Magnesium	110	0.50	mg/kg	6010B	01/29/09	.1
Manganese	5.0	0.050	mg/kg	6010B	01/29/09	.1
Molybdenum	0.20	0.025	mg/kg	6010B	01/29/09	.1
Nickel	2.5	0.10	mg/kg	6010B	01/29/09	.1
Selenium	0.47	0.10	mg/kg	6010B	01/29/09	.1
Silver	BDL	0.050	mg/kg	6010B	01/29/09	.1
Thallium	BDL	0.50	mg/kg	6010B	01/30/09	.5
Tin	0.28	0.20	mg/kg	6010B	01/29/09	.1
Titanium	65.	0.050	mg/kg	6010B	01/29/09	.1
Zinc	4.6	0.15	mg/kg	6010B	01/29/09	.1
<b>Pesticide/PCBs</b>						
Chlordane	BDL	0.20	mg/kg	8081/8082	01/27/09	1
PCB 1016	BDL	0.017	mg/kg	8081/8082	01/29/09	1
PCB 1221	BDL	0.017	mg/kg	8081/8082	01/29/09	1
PCB 1232	BDL	0.017	mg/kg	8081/8082	01/29/09	1
PCB 1242	BDL	0.017	mg/kg	8081/8082	01/29/09	1
PCB 1248	BDL	0.017	mg/kg	8081/8082	01/29/09	1
PCB 1254	BDL	0.017	mg/kg	8081/8082	01/29/09	1
PCB 1260	BDL	0.017	mg/kg	8081/8082	01/29/09	1
<b>Pest/PCBs Surrogates</b>						
Decachlorobiphenyl	58.0		% Rec.	8081/8082	01/27/09	1
Tetrachloro-m-xylene	60.4		% Rec.	8081/8082	01/27/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

January 30, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : January 23, 2009  
Description :  
Sample ID : KIF-DREDGE-RA-012309  
Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-05  
Site ID :  
Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	01/25/09 0910	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	01/26/09 1656	KBW	1
Arsenic	0.13	0.050	mg/l	5.0	6010B	01/26/09 0927	DMM	1
Barium	BDL	0.15	mg/l	100	6010B	01/26/09 0927	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	01/26/09 0927	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	01/26/09 0927	DMM	1
Lead	BDL	0.050	mg/l	5.0	6010B	01/26/09 0927	DMM	1
Selenium	BDL	0.050	mg/l	1.0	6010B	01/26/09 0927	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	01/26/09 0927	DMM	1
TCLP Pesticides								
Chlordane	BDL	0.0050	mg/l	0.030	8081A	01/28/09 1125	LSB	1
Decachlorobiphenyl	28.3		% Rec.	123.	8081A	01/28/09 1125	LSB	1
Tetrachloro-m-xylene	44.3		% Rec.	114.	8081A	01/28/09 1125	LSB	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

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January 30, 2009

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1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : 01/23/09 17:53  
Description :  
Sample ID : KIF-DREDGE-RA-012309  
Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-06  
Site ID :  
Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Alkalinity	BDL	20.	mg/l	2320B	01/24/09 0921	236	01/26/09 2000	NJM
Hardness	1900	300	mg/l	130.1	01/28/09 1541	165	01/28/09 1541	LEM
Suspended Solids	250000	1.0	mg/l	160.2	01/24/09 1500	193	01/26/09 0818	AMS
Mercury	0.0017	0.00020	mg/l	7470A	01/27/09 0808	429	01/27/09 2233	CLF
Mercury,Dissolved	BDL	0.00020	mg/l	7470A	01/27/09 0814	429	01/27/09 2102	CLF
Aluminum	9400	2.0	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Aluminum,Dissolved	2.4	0.10	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Antimony	6.4	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Antimony,Dissolved	BDL	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Arsenic	130	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Arsenic,Dissolved	0.20	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Barium	320	0.10	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Barium,Dissolved	0.097	0.0050	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Beryllium	4.2	0.040	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Beryllium,Dissolved	BDL	0.0020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Boron	91.	4.0	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Boron,Dissolved	0.55	0.20	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Calcium	10000	10.	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Calcium,Dissolved	18.	0.50	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Chromium	32.	0.20	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Chromium,Dissolved	BDL	0.010	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Cobalt	9.0	0.20	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Cobalt,Dissolved	BDL	0.010	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Copper	50.	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Copper,Dissolved	BDL	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Iron	2200	2.0	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Iron,Dissolved	0.88	0.10	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Lead	10.	0.10	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Lead,Dissolved	BDL	0.0050	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Magnesium	1300	2.0	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Magnesium,Dissolved	2.0	0.10	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Manganese	87.	0.20	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Manganese,Dissolved	0.011	0.010	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Molybdenum	2.3	0.10	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Molybdenum,Dissolved	0.021	0.0050	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Nickel	16.	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Nickel,Dissolved	BDL	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Selenium	2.3	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Selenium,Dissolved	BDL	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:

AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01  
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:

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REPORT OF ANALYSIS

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

January 30, 2009

Date Received : 01/23/09 17:53  
Description :  
Sample ID : KIF-DREDGE-RA-012309  
Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-06  
Site ID :  
Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Silicon,Dissolved	4.6	0.20	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Thallium	BDL	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Thallium,Dissolved	BDL	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Tin	3.3	0.40	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Tin,Dissolved	BDL	0.020	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Titanium	210	0.20	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Titanium,Dissolved	0.15	0.010	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Zinc	41.	0.60	mg/l	6010B	01/27/09 1518	117	01/28/09 1910	JBC
Zinc,Dissolved	BDL	0.030	mg/l	6010B	01/27/09 0835	117	01/29/09 1013	JBC
Silica	9.7	0.43	mg/l	Calc.	01/27/09 0835	237	01/29/09 0000	JBC

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:

AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01  
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

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REPORT OF ANALYSIS

January 30, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : January 23, 2009  
Description :

Sample ID : KIF-DREDGE-OTR-012309

Collected By : JW/AD  
Collection Date : 01/23/09 14:20

ESC Sample # : L384990-07

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Aluminum, Dissolved	BDL	0.10	mg/l	6010B	01/29/09	1
Antimony, Dissolved	BDL	0.020	mg/l	6010B	01/29/09	1
Arsenic, Dissolved	0.052	0.020	mg/l	6010B	01/29/09	1
Barium, Dissolved	0.067	0.0050	mg/l	6010B	01/29/09	1
Beryllium, Dissolved	BDL	0.0020	mg/l	6010B	01/29/09	1
Boron, Dissolved	BDL	0.20	mg/l	6010B	01/29/09	1
Calcium, Dissolved	10.	0.50	mg/l	6010B	01/29/09	1
Chromium, Dissolved	BDL	0.010	mg/l	6010B	01/29/09	1
Cobalt, Dissolved	BDL	0.010	mg/l	6010B	01/29/09	1
Copper, Dissolved	BDL	0.020	mg/l	6010B	01/29/09	1
Iron, Dissolved	BDL	0.10	mg/l	6010B	01/29/09	1
Lead, Dissolved	BDL	0.0050	mg/l	6010B	01/29/09	1
Magnesium, Dissolved	1.9	0.10	mg/l	6010B	01/29/09	1
Manganese, Dissolved	0.018	0.010	mg/l	6010B	01/29/09	1
Molybdenum, Dissolved	0.0059	0.0050	mg/l	6010B	01/29/09	1
Nickel, Dissolved	BDL	0.020	mg/l	6010B	01/29/09	1
Selenium, Dissolved	BDL	0.020	mg/l	6010B	01/29/09	1
Silicon, Dissolved	1.8	0.20	mg/l	6010B	01/29/09	1
Thallium, Dissolved	BDL	0.020	mg/l	6010B	01/29/09	1
Tin, Dissolved	BDL	0.020	mg/l	6010B	01/29/09	1
Titanium, Dissolved	BDL	0.010	mg/l	6010B	01/29/09	1
Zinc, Dissolved	BDL	0.030	mg/l	6010B	01/29/09	1
Silica	4.0	0.43	mg/l	Calc.	01/29/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L384990-02	WG404303	SAMP	Thallium	R608765	O
L384990-04	WG404435	SAMP	Thallium	R610046	O
L384990-06	WG404343	SAMP	Aluminum,Dissolved	R609646	J6
	WG404343	SAMP	Iron,Dissolved	R609646	J6
	WG404343	SAMP	Silicon,Dissolved	R609646	V
	WG404440	SAMP	Thallium	R609385	O

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed  
01/30/09 at 15:29:15

TSR Signing Reports: 400  
R4 - Rush: Three Day

Sample: L384990-01 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31  
Added SV8081TCLP per RC.MS 1/26  
Sample: L384990-02 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31  
Sample: L384990-03 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31  
Added SV8081TCLP per RC.MS 1/26  
Sample: L384990-04 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31  
Sample: L384990-05 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31  
Added SV8081TCLP per RC.MS 1/26  
Sample: L384990-06 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31  
Sample: L384990-07 Account: TVAKIF Received: 01/23/09 17:53 Due Date: 01/28/09 00:00 RPT Date: 01/30/09 12:31

**ATTACHMENT 3**

**KIF ASH PROCESSING AREA STACKING  
ESTIMATED FILL HEIGHT ANALYSIS**

**COMPUTATION COVER SHEET**

Client: TVA Project: KIF Recovery Project/  
Proposal No.: GR4327  
Task No.

Title of Computations **Initial Estimation of Fill Height – Ballfield Area**

Computations by: Signature *R. Neil Davies.* Date Feb 2 2009  
Printed Name (for) Justin Wang Date  
Title Senior Staff Engineer

Assumptions and Procedures Checked by: Signature *Raimund C. Bachus* Date Feb 2 2009  
(peer reviewer) Printed Name R. Bachus Date  
Title Principal Engineer

Computations Checked by: Signature *Raimund C. Bachus* Date Feb 2 2009  
Printed Name R. Bachus Date  
Title Principal Engineer

Computations backchecked by: Signature *Raimund C. Bachus* Date Feb 2 2009  
(originator) Printed Name R. Bachus Date  
Title Principal Engineer

Approved by: Signature *R. Neil Davies.* Date Feb 2 2009  
(pm or designate) Printed Name R. Neil Davies Date  
Title Principal Engineer

Approval notes: Initial Calculation - Pending Lab Results

Revisions (number and initial all revisions)

No.	Sheet	Date	By	Checked by	Approval
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

## **Description**

The attached calculations are used to provide a preliminary estimation of maximum fill height in the Ballfield Area at KIF. Limiting factor is assumed to be the very loose ash fill material that will provide the foundation layer within the Ballfield Area.

Since laboratory testing data is not available at the time of preparation of these calculations, conservative materials properties are assumed and in-situ density is varied in order to estimate the maximum safe filling height. It is anticipated that filling height will be re-evaluated once laboratory test results have been obtained. In addition, field instrumentation is anticipated to confirm the assumptions made, and allow the maximum fill height to be adjusted based on actual conditions encountered. The proposed approach is very similar to a staged filling or surcharging operation wherein pore pressure dissipation after loading will be monitored. In the event that pore pressure dissipation becomes a rate limiting factor, drainage contingencies such as the installation of wick drains or other methods may be considered.

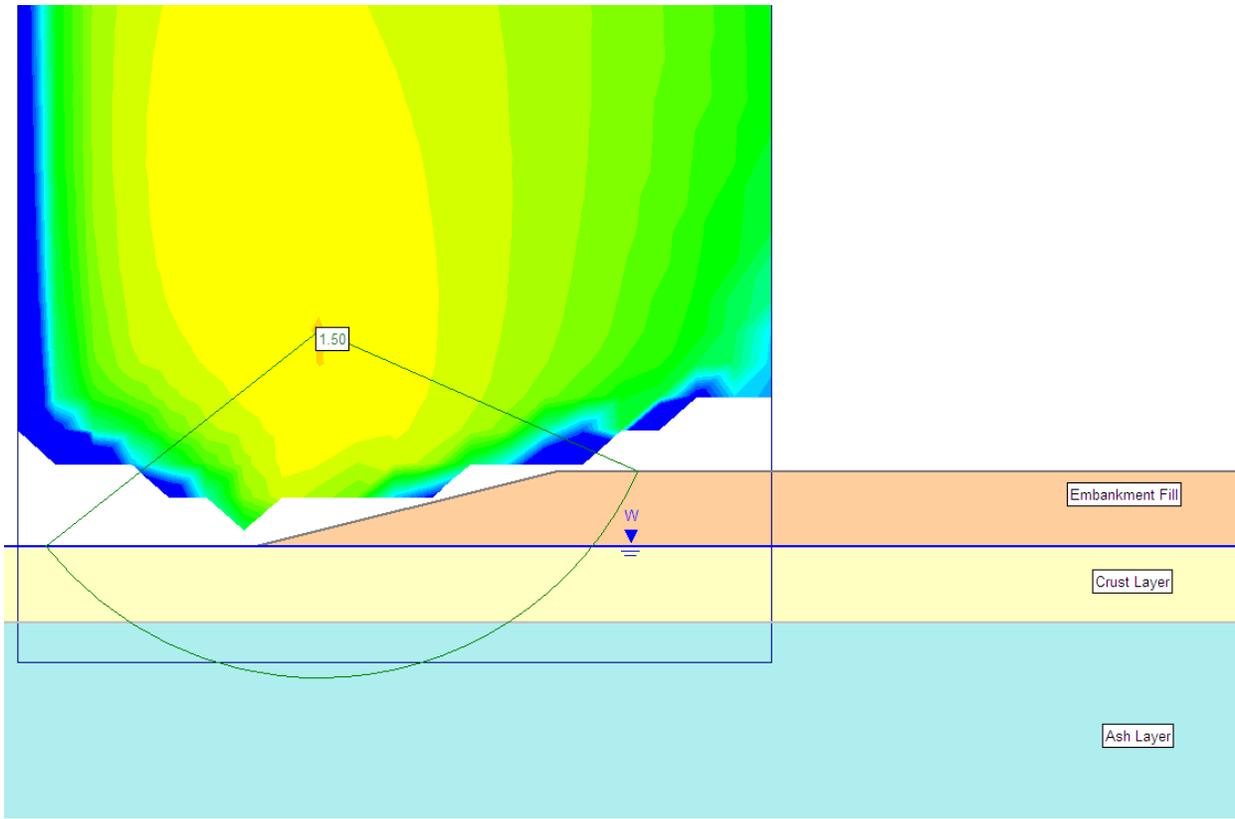
This calculation is preliminary and should be confirmed based on receipt of laboratory test results.

### **TVA – Kinston Ball Field: Assessment of Staged Loading Sensitivity Analysis Considering Unit weight of the Foundation Ash Layer**

The groundwater level is assumed to rise to the top of the crust layer to account for the dissipation of pore pressure and consolidation of the underlying ash layer. The proposed embankment slope is assumed to be 4H:1V. The material properties used in the slope stability analysis are summarized in Table 1 below. The slope stability analysis results presented in Figure 1 indicate that when the embankment height is 8 feet, the calculated minimum Factor of Safety (FS) is approximately 1.50.

**Table 1: Material Properties**

<b>Material</b>	<b>Layer Thickness (ft)</b>	<b>Unit Weight (pcf)</b>	<b>Shear Strength</b>
Embankment Fill	to be determined	100	$c=0, \phi = 30^\circ$
Crust Layer	8	90	$c=0, \phi = 25^\circ$
Ash Layer	>30	70	$c=0, \phi = 20^\circ$



**Figure 1: Result of Slope Stability Analysis**

Additional slope stability analysis was performed to evaluate the feasibility for staged loading of the underlying ash. Table 2 below presents a summary of the calculated staged maximum embankment height versus the saturated unit weight of the ash when requiring that the slope has a minimum calculated FS = 1.5. The increase in total unit weight above the initial 70 pcf value is affected by the consolidation of the ash beneath the ball field.

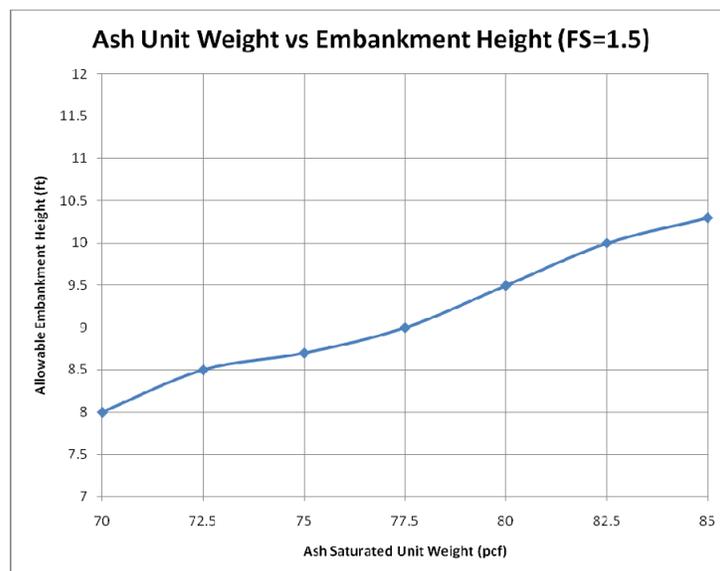
**Table 2: Relationship between Ash Unit Weight and Allowable Embankment Height (FS=1.5)**

Ash Saturated Unit Weight (pcf)	Embankment Height (ft)
70.0	8.0
72.5	8.5
75.0	8.7
77.5	9.0
80.0 <sup>(1)</sup>	9.5
82.5 <sup>(1)</sup>	10.0
85.0 <sup>(1)</sup>	10.3

Note:

1. The unit weight needs to be achieved through consolidation of ash layer. Consolidation to be confirmed by use of piezometers.

Figure 2 presents the graphical relationship between ash unit weight and calculated allowable embankment height.



**Figure 2 - Unit Weight of Ash vs. Maximum Embankment Height (FS=1.5)**

**ATTACHMENT 4**

**ASH PROCESSING AREA GROUNDWATER  
ATTENUATION DISCUSSION**

# **Ash Processing Area Groundwater Attenuation Discussion**

## ***Background***

The current proposal is to dewater and temporarily stockpile dredged ash material in the area of the TVA reservation known as the “Ball Field Area”. For purposes of the Ash Recovery Project, the “Ball Field Area” will hereafter be referred to as the “Ash Processing Area.” See Attachment 1. This area is located immediately south of the former dredge cells. The purpose of this white paper is to present rationale supporting proposed methods to protect potentially impacted groundwater on and off the TVA reservation.

## ***Details of Proposed Ash Handling***

Ash will be dredged from the river and other off-site areas and slurried to a system of sluice channels located in the general area of the current plant sluice channels. Some modifications to the current channels will be required. A supplemental operation will be set up to dip dredged ash from the sluice channels. The removed ash will be dewatered in the Processing Area by a combination of temporary stacking and windrowing the materials to allow gravity drainage of excess water and air drying of the material. Once the ash material has been sufficiently dewatered, it will be transported to final disposal.

A design is currently being developed for the stacking, drying, and materials handling operations. In general, the concept is removing water from the temporarily stacked ash by draining it back to the plant sluice channel. While the majority of drainage water will be directed back to the sluice channel, some component of flow will percolate downwards into the soils and underlying ash beneath the Processing Area. The remainder of this paper presents the rationale for addressing potential groundwater issues associated with this approach.

## ***Ash Leachate Analysis***

A sample of typical dredge material was simulated by collecting ash from the Emory River and combined with river water to form a 20/80 percent solid to liquid slurry. This slurry was allowed to settle for one hour and the supernatant was analyzed for expected constituents. Laboratory constituent analysis of anticipated ash leachate quality is being developed. Preliminary results indicate that arsenic (As) levels are consistent with past data and are slightly higher than MCL. The final laboratory analysis will be forwarded after the appropriate quality analysis.

## ***Arsenic Mitigation***

Preliminary analysis indicates that the concentration of As in water draining from the recovered ash will be in the range of ~0.050—0.060 mg/l. A factor that appears to be driving those concentrations is the low buffering capacity of Emory River water, combined with an apparent residual acidity or acid-generating potential in the material from the dredge cells that discharged into the river.

TDEC has indicated the need to install some sort of demarcation layer above the original ash pond in the Processing Area if it is used for temporary storage of recovered ash. TVA will be required to return the Processing Area to the original condition to pursue clean closure of the area once the processing is completed.

One approach to both immobilizing As in the leachate from the recovered material and installing a demarcation layer is to place a layer of crushed limestone approximately six inches to one foot thick above the existing soil and grass on that area with a layer of filter fabric between the limestone and the recovered material. The limestone will increase the pH of the leachate sufficiently to immobilize the As. TVA can monitor the performance of the limestone layer in immobilizing As by periodic sampling of the existing down-gradient groundwater monitoring well 13b.

### ***Groundwater Flow***

A second consideration in determining impact to the groundwater of the ash processing/storage facility is to realize that any constituents that may percolate into the ground will be intercepted by either the ash sluice trench or the plant intake channel. Current groundwater flow is generally to the east towards the sluice channel and plant intake channel. Drainage water resulting from the temporary ash stacking operation will tend to cause temporary mounding within the stacking area but groundwater flow will generally tend to follow the current groundwater gradient towards the Ash Sluice Channel and the Plant Intake Channel (see Attachment 2 - Groundwater Potentiometric Surface). Some component of flow may move towards Swan Pond Road, however, shallow flow could be intercepted by a perimeter ditch system, and conveyed back to the sluice channel.

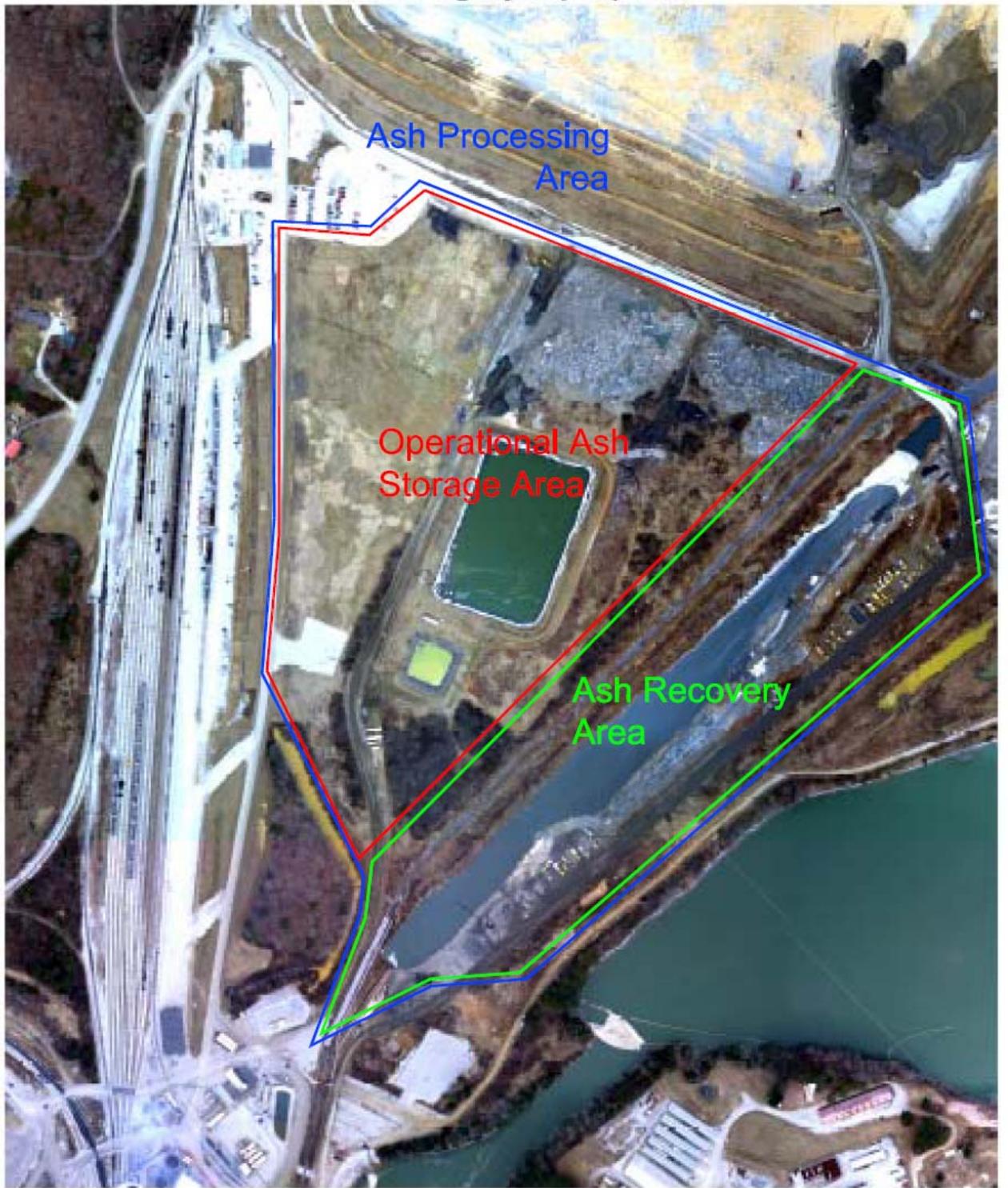
In the event that contaminants of concern in the resulting drainage water exceed MCLs, considerable attenuation is expected as groundwater progresses across the site towards the Plant Intake channel. Groundwater that enters the Plant Intake Channel will mix with river water and be used for plant operations. All water passing through the plant is then discharged through the permitted NPDES outfall. The estimated ground water flux into the intake channel compared to the very large volume of cooling water that normally flows through the intake channel would result in an insignificant concentration of any constituent.

### ***Conclusion***

TVA is planning to install a demarcation layer of crushed limestone approximately six inches to one foot thick above the existing soil and grass on the Ash Processing Area with a layer of filter fabric between the limestone and the recovered material. TVA believes that any impacts to groundwater resulting from temporary ash processing/storage activities will be mitigated by the limestone layer and the normal groundwater flow.

Attachment 1

**Aerial Imagery 01/17/2009**

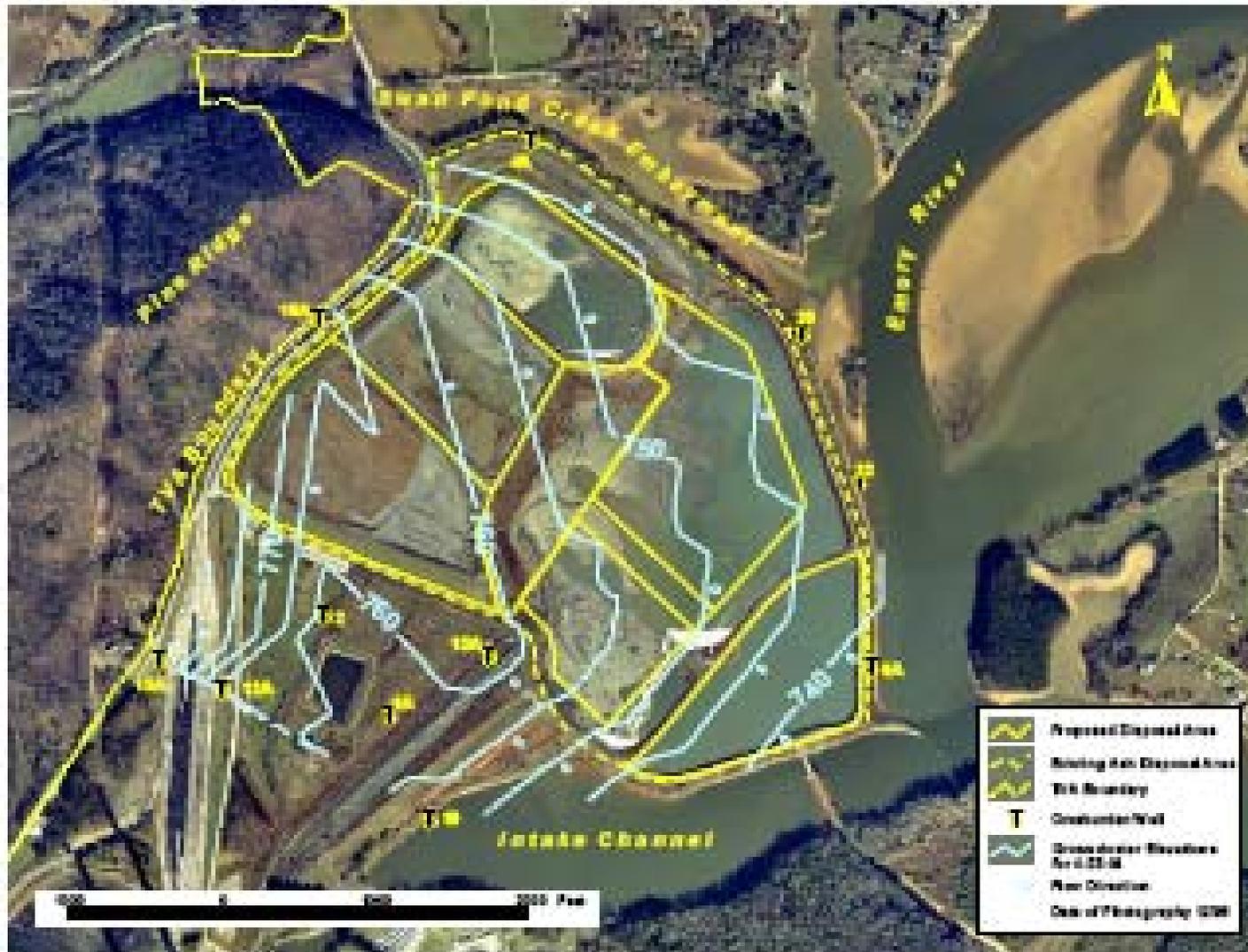


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Source: Aerial Imagery  
01/17/2009

Attachment 2



**ATTACHMENT 5**

**CHEMICAL POND SEDIMENT SAMPLING  
AND INTERIM CLOSURE PLAN**

**TVA KINGSTON FOSSIL PLANT  
RECOVERY PROJECT**

**Chemical Pond Sediment Sampling  
And Interim Closure Plan**

**Tennessee Valley Authority  
Fossil Power Group  
Environmental Compliance**

**February 10, 2009**

## **KINGSTON FOSSIL PLANT CHEMICAL PONDS SEDIMENT SAMPLING AND INTERIM CLOSURE PLAN**

### **BACKGROUND**

The chemical treatment ponds at KIF are located on the northwestern portion of the plant property, north of the main plant. There are two chemical treatment ponds on the plant premises; the first and largest of the two is the iron (Fe) treatment pond, while the second and smaller pond is the copper (Cu) treatment pond. Both treatment ponds are rectangular in shape. The iron pond is approximately 450 feet long north to south and 300 feet east to west. The copper pond is approximately 25 feet square. Both chemical ponds have riprap banks and a clay/riprap lined bottom

An analysis was performed on the pond sediments in 2004 and the results presented in a report, Todd A. Campbell, Environmental Engineering Services-West to Ross Schweinforth dated January 28, 2004. This report indicated that the pond bottoms were covered in a layer of sediment varying in thickness from less than one foot to three and one half feet. The results of the 2004 study indicated that the sediments were non-hazardous. See Figure 1 for representative depth graph based on the 2004 data. Since that time several air pre-heater washes have been discharged to the ponds, however the overall pond sediment depths and chemical make up is believed not to have appreciable changed.

### **SAMPLING**

The intent of the current sediment sampling on February 12, 2009 was to gather representative samples of the upper six inch layer of sediment which may have been deposited from plant activities (i.e. air pre-heater washes) since the last detailed sampling was performed. The results of the previous sampling event were summarized in a report dated January 28, 2004. In order to gather representative samples of the chemical pond sediment upper layers to be analyzed, the Iron Pond was divided into four quadrants, with one composite sample taken from each quadrant. The Copper Pond was divided into two halves and one composite sample taken from each half. (See Figure 2)

Five grab samples were collected from each quadrant of the Iron Pond and combined to form one composite sample for analysis from each quadrant. In this manner, four composite grab samples were collected from the Iron Pond. Likewise two composite grab samples were collected from the Copper Pond. A small Eckman Dredge was used to acquire a surface layer sample of the sediment. During the sample collection, proper protocol was followed to ensure the integrity of the sample and that no foreign or cross contamination occurred. The proper chain of custody was followed in shipping the samples to the laboratory.

### **ANALYSIS**

Each composite sample was analyzed for TCLP (Toxic Characteristics Leaching Procedure) and total for the following eight RCRA metals of concern: arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), selenium (Se), and silver (Ag). Analytical results are presented to the Tennessee Department of Environment and Conservation Division of Solid Waste Management as part of this plan.

### **INTERIM CLOSURE**

The triangular ball field area in which the two chemical ponds are located will be used as an ash processing and temporary storage area in support of the ash recovery project. For expediency, both the chemical ponds received an interim closure with the sediments encapsulated and temporarily left in place.

The existing pond sediment will be structurally stabilized by the addition of shot rock. A layer of shot rock was pushed over the sediment to form a stable base. After the sediment is stabilized, a 6 to 12 inch layer of crusher run and filter fabric will be placed over the shot rock as a demarcation layer. See Figure 3 for a cross-section view of a typical chemical pond. The interim closures of the Iron Pond and the Copper Pond will be completed February 27, 2009.

Figure 1

**KIF Chemical Treatment Ponds Sediment Depth Representation**

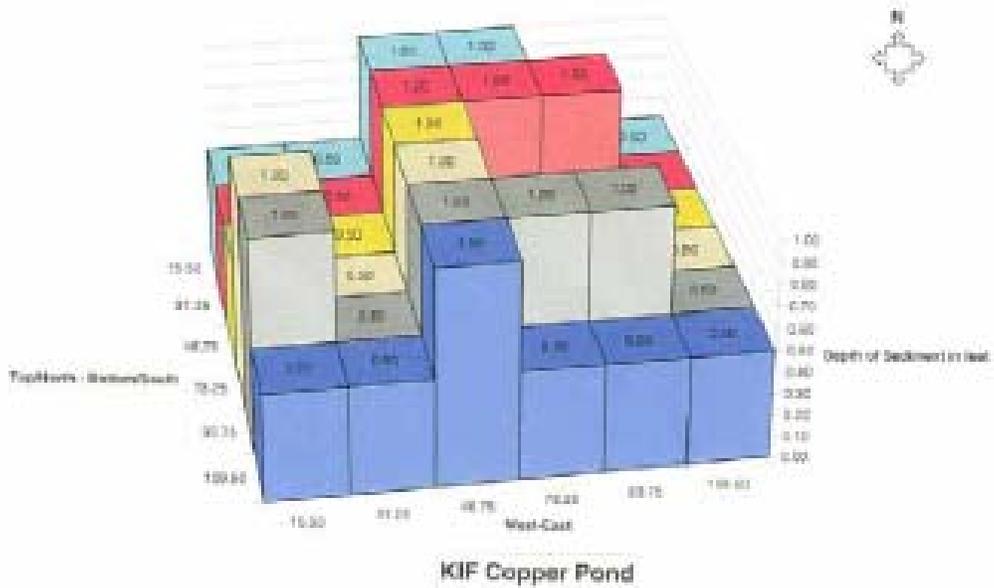
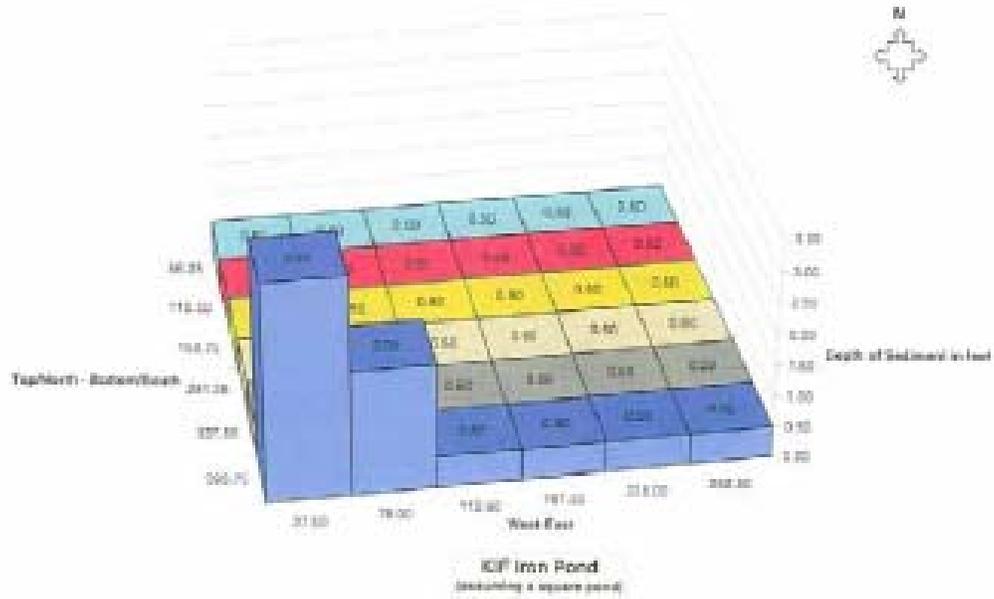
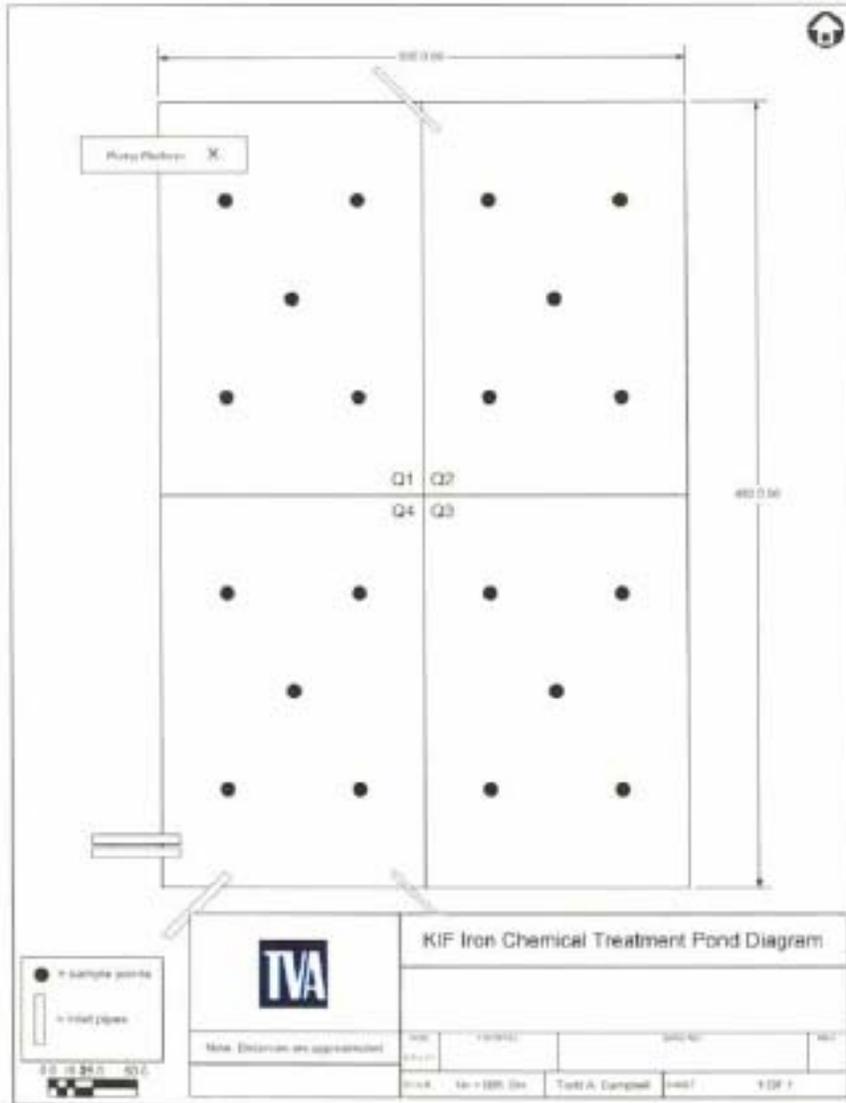
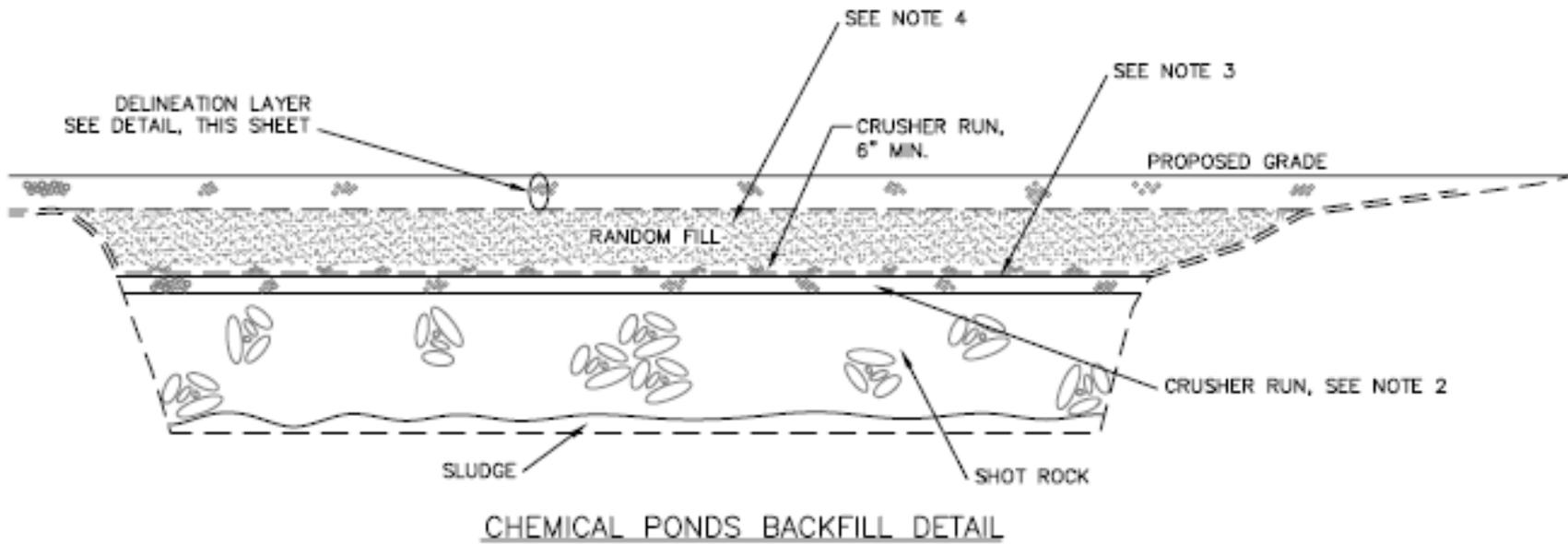


Figure 2



**FIGURE 3  
TYPICAL CHEMICAL POND CROSS-SECTION**



CHEMICAL PONDS BACKFILL DETAIL  
N.T.S.

**NOTES:**

1. DEWATER CHEMICAL PONDS AS MUCH AS PRACTICAL. END DUMP SHOT ROCK INTO PONDS UNTIL ROCK IS SUFFICIENTLY ABOVE WATER LEVEL TO PROVIDE FIRM WORKING SURFACE FOR EQUIPMENT.
2. GRADE SHOT ROCK TO REASONABLY LEVEL, FIRM SURFACE AND CHOKE TOP OF SHOT ROCK WITH 12 INCHES OF CRUSHER RUN. SHOT ROCK SHALL HAVE A MAXIMUM PARTICLE SIZE OF 18 INCHES. CRUSHER RUN SHALL HAVE A MAXIMUM PARTICLE SIZE OF 3 INCHES.
3. COVER LOWER CRUSHER RUN LAYER WITH EITHER GEOTEX 4X4 WOVEN GEOTEXTILE OR GEOTEX 1071 NON-WOVEN GEOTEXTILE AS SHOWN.
4. PLACE COMPACTED FILL ABOVE THE UPPER CRUSHER RUN LAYER TO DELINEATION LAYER AS SHOWN.



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Est. 1970

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U

Chattanooga, TN 37402

Report Summary

Thursday February 19, 2009

Report Number: L387756

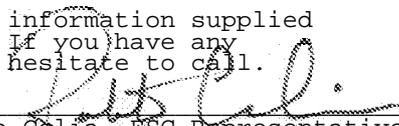
Samples Received: 02/12/09

Client Project: TVAKIF-ASH

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

  
Roberto Celis, ESC Representative

*Laboratory Certification Numbers*

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140  
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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Where applicable, sampling conducted by ESC is performed per guidance provided  
in laboratory standard operating procedures: 060302, 060303, and 060304.

12 Samples Reported: 02/18/09 16:52 Revised: 02/19/09 09:14  
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REPORT OF ANALYSIS

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description :  
Sample ID : KIF-IRON1-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 14:00

ESC Sample # : L387756-01  
Site ID :  
Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.087	0.020	mg/kg	7471	02/13/09	1
Arsenic	130	1.0	mg/kg	6010B	02/17/09	1
Barium	56.	0.25	mg/kg	6010B	02/17/09	1
Cadmium	0.78	0.25	mg/kg	6010B	02/17/09	1
Chromium	48.	0.50	mg/kg	6010B	02/17/09	1
Lead	28.	0.25	mg/kg	6010B	02/17/09	1
Selenium	39.	1.0	mg/kg	6010B	02/17/09	1
Silver	BDL	0.50	mg/kg	6010B	02/17/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

February 19, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON1-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 14:00

ESC Sample # : L387756-02

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	02/14/09 0753	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	02/15/09 1957	MAM	1
Arsenic	0.20	0.050	mg/l	5.0	6010B	02/15/09 1204	DMM	1
Barium	0.98	0.15	mg/l	100	6010B	02/15/09 1204	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1204	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	02/15/09 1204	DMM	1
Lead	0.18	0.050	mg/l	5.0	6010B	02/15/09 1204	DMM	1
Selenium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1204	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	02/15/09 1204	DMM	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON2-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 14:45

ESC Sample # : L387756-03  
Site ID :  
Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.094	0.020	mg/kg	7471	02/13/09	1
Arsenic	130	1.0	mg/kg	6010B	02/14/09	1
Barium	36.	0.25	mg/kg	6010B	02/14/09	1
Cadmium	BDL	0.25	mg/kg	6010B	02/14/09	1
Chromium	49.	0.50	mg/kg	6010B	02/14/09	1
Lead	24.	0.25	mg/kg	6010B	02/14/09	1
Selenium	22.	1.0	mg/kg	6010B	02/14/09	1
Silver	BDL	0.50	mg/kg	6010B	02/14/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON2-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 14:45

ESC Sample # : L387756-04

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	02/14/09 0753	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	02/15/09 1959	MAM	1
Arsenic	0.051	0.050	mg/l	5.0	6010B	02/15/09 1207	DMM	1
Barium	0.67	0.15	mg/l	100	6010B	02/15/09 1207	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1207	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	02/15/09 1207	DMM	1
Lead	BDL	0.050	mg/l	5.0	6010B	02/15/09 1207	DMM	1
Selenium	0.065	0.050	mg/l	1.0	6010B	02/15/09 1207	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	02/15/09 1207	DMM	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON3-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 15:19

ESC Sample # : L387756-05

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.045	0.020	mg/kg	7471	02/13/09	1
Arsenic	98.	1.0	mg/kg	6010B	02/14/09	1
Barium	78.	0.25	mg/kg	6010B	02/14/09	1
Cadmium	BDL	0.25	mg/kg	6010B	02/14/09	1
Chromium	37.	0.50	mg/kg	6010B	02/14/09	1
Lead	19.	0.25	mg/kg	6010B	02/14/09	1
Selenium	21.	1.0	mg/kg	6010B	02/14/09	1
Silver	BDL	0.50	mg/kg	6010B	02/14/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON3-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 15:19

ESC Sample # : L387756-06

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	02/14/09 0753	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	02/15/09 2002	MAM	1
Arsenic	0.053	0.050	mg/l	5.0	6010B	02/15/09 1210	DMM	1
Barium	1.3	0.15	mg/l	100	6010B	02/15/09 1210	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1210	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	02/15/09 1210	DMM	1
Lead	BDL	0.050	mg/l	5.0	6010B	02/15/09 1210	DMM	1
Selenium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1210	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	02/15/09 1210	DMM	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON4-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 15:43

ESC Sample # : L387756-07

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.083	0.020	mg/kg	7471	02/13/09	1
Arsenic	110	1.0	mg/kg	6010B	02/14/09	1
Barium	190	0.25	mg/kg	6010B	02/14/09	1
Cadmium	BDL	0.25	mg/kg	6010B	02/14/09	1
Chromium	40.	0.50	mg/kg	6010B	02/14/09	1
Lead	22.	0.25	mg/kg	6010B	02/14/09	1
Selenium	30.	1.0	mg/kg	6010B	02/14/09	1
Silver	BDL	0.50	mg/kg	6010B	02/14/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 02/18/09 16:52 Revised: 02/19/09 09:14



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SCIENCE CORP.**

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Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

February 19, 2009

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-IRON4-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 15:43

ESC Sample # : L387756-08

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	02/14/09 0753	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	02/15/09 2004	MAM	1
Arsenic	BDL	0.050	mg/l	5.0	6010B	02/15/09 1228	DMM	1
Barium	1.7	0.15	mg/l	100	6010B	02/15/09 1228	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1228	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	02/15/09 1228	DMM	1
Lead	BDL	0.050	mg/l	5.0	6010B	02/15/09 1228	DMM	1
Selenium	0.099	0.050	mg/l	1.0	6010B	02/15/09 1228	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	02/15/09 1228	DMM	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

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REPORT OF ANALYSIS

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TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-COPPER1-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 16:30

ESC Sample # : L387756-09

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.28	0.020	mg/kg	7471	02/13/09	1
Arsenic	13.	1.0	mg/kg	6010B	02/14/09	1
Barium	71.	0.25	mg/kg	6010B	02/14/09	1
Cadmium	BDL	2.5	mg/kg	6010B	02/14/09	10
Chromium	BDL	25.	mg/kg	6010B	02/14/09	50
Lead	56.	0.25	mg/kg	6010B	02/14/09	1
Selenium	12.	1.0	mg/kg	6010B	02/14/09	1
Silver	12.	0.50	mg/kg	6010B	02/14/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

J. Roy Quinn  
TVA-Kingston Fossil  
1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-COPPER1-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 16:30

ESC Sample # : L387756-10

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	02/14/09 0753	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	02/15/09 2007	MAM	1
Arsenic	BDL	0.050	mg/l	5.0	6010B	02/15/09 1232	DMM	1
Barium	1.2	0.15	mg/l	100	6010B	02/15/09 1232	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1232	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	02/15/09 1232	DMM	1
Lead	0.31	0.050	mg/l	5.0	6010B	02/15/09 1232	DMM	1
Selenium	0.20	0.050	mg/l	1.0	6010B	02/15/09 1232	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	02/15/09 1232	DMM	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

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1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-COPPER2-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 17:00

ESC Sample # : L387756-11

Site ID :

Project # : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Mercury	0.10	0.020	mg/kg	7471	02/18/09	1
Arsenic	7.3	1.0	mg/kg	6010B	02/14/09	1
Barium	23.	0.25	mg/kg	6010B	02/14/09	1
Cadmium	BDL	0.25	mg/kg	6010B	02/14/09	1
Chromium	BDL	5.0	mg/kg	6010B	02/14/09	10
Lead	16.	0.25	mg/kg	6010B	02/14/09	1
Selenium	1.4	1.0	mg/kg	6010B	02/14/09	1
Silver	5.5	0.50	mg/kg	6010B	02/14/09	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

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1101 Market St. LP-4-U  
Chattanooga, TN 37402

February 19, 2009

Date Received : February 12, 2009  
Description : Kingston Fossil Plant  
Sample ID : KIF-COPPER2-SD-021009  
Collected By : Paul Smith  
Collection Date : 02/10/09 17:00

ESC Sample # : L387756-12

Site ID :

Project : TVAKIF-ASH

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	02/14/09 0753	MVE	1
Mercury	BDL	0.0010	mg/l	0.20	7470A	02/15/09 2009	MAM	1
Arsenic	BDL	0.050	mg/l	5.0	6010B	02/15/09 1238	DMM	1
Barium	0.99	0.15	mg/l	100	6010B	02/15/09 1238	DMM	1
Cadmium	BDL	0.050	mg/l	1.0	6010B	02/15/09 1238	DMM	1
Chromium	BDL	0.050	mg/l	5.0	6010B	02/15/09 1238	DMM	1
Lead	0.064	0.050	mg/l	5.0	6010B	02/15/09 1238	DMM	1
Selenium	0.26	0.050	mg/l	1.0	6010B	02/15/09 1238	DMM	1
Silver	BDL	0.050	mg/l	5.0	6010B	02/15/09 1238	DMM	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L387756-09	WG407228	SAMP	Cadmium	R633305	O
	WG407228	SAMP	Chromium	R633305	O
L387756-11	WG407228	SAMP	Chromium	R633305	O

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
0	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed  
02/19/09 at 09:14:30

TSR Signing Reports: 400  
R4 - Rush: Three Day

Sample: L387756-01 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-02 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-03 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-04 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-05 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-06 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-07 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-08 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-09 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-10 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-11 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52  
Sample: L387756-12 Account: TVAKIF Received: 02/12/09 11:40 Due Date: 02/18/09 00:00 RPT Date: 02/18/09 16:52

<b>Company Name/Address</b>  <b>TVA - KINGSTON FOSSIL</b>  <b>714 Swan Pond Rd.</b> <b>KFP-1A-KST</b> <b>Harriman, TN 37748</b>				<b>Alternate Billing</b>  Report to: Bill Rogers and Paul Enlow E-mail to: wjrogers@tva.gov, pdenlow@tva.gov				<b>Analysis/Container/Preservative</b>						Chain of Custody Page <u>1</u> of <u>1</u>	
								Prepared by: <span style="float: right;"><b>C095</b></span>  <b>ENVIRONMENTAL Science corp</b> 12065 Lebanon Road Mt. Juliet TN 37122  Phone (615)758-5858 Phone (800) 767-5859 FAX (615)758-5859							
														CoCode (lab use only)	
<b>Project Description:</b> Kingston Fossil Plant				<b>PHONE:</b> 865.310.7286 <b>FAX:</b>		<b>Client Project No.</b>		<b>Lab Project #</b>		Total Metals (see remarks) TCLP Metals pH Ignitability (DCL) Volatiles (DCL) Semi Volatiles (DCL) Pesticides (DCL)					
<b>Collected by:</b> Jonathan Walker and Roy Quinn <i>Paul Smith</i>				<b>Site/Facility ID#</b>		<b>P.O.#</b>		<b>Date Results Needed</b> _____ Same Day.....200% _____ Next Day.....100% _____ Two Day.....50%				<b>No</b> of <b>Cntrs</b>			
<b>Collected by (signature):</b> 				<b>Rush?</b> (Lab MUST be Notified)		<b>Date Results Needed</b> <u>02/018/2009</u>		<b>Email?</b> <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <b>FAX?</b> <input type="checkbox"/> No <input type="checkbox"/> Yes				<b>Immediately Packed on Ice N</b> <input checked="" type="checkbox"/> <input type="checkbox"/>			
<b>Sample ID</b>		<b>Comp/Grab</b>	<b>Matrix</b>	<b>Depth</b>	<b>Date</b>	<b>Time</b>	<b>Total Metals</b>	<b>TCLP Metals</b>	<b>pH</b>	<b>Ignitability (DCL)</b>	<b>Volatiles (DCL)</b>	<b>Semi Volatiles (DCL)</b>	<b>Pesticides (DCL)</b>	<b>Remarks/contaminant</b>	<b>Sample # (lab only)</b>
KIF-IRON1-SD-021009		Grab	SS	na	2/10/09	1400	1 2	X X							L387756-01/02
KIF-IRON2-SD-021009		Grab	SS	na	2/10/09	1445	1 2	X X							03/04
KIF-IRON3-SD-021009		Grab	SS	na	2/10/09	1519	1 2	X X							05/06
KIF-IRON4-SD-021009		Grab	SS	na	2/10/09	1543	1 2	X X							07/08
KIF-COPPER1-SD-021009		Grab	SS	na	2/10/09	1630	1 2	X X							09/10
KIF-COPPER2-SD-021009		Grab	SS	na	2/10/09	1700	1 2	X X							11/12
<del>KIF-REDWATER DRUM - SW-021009</del>		<del>Comp</del>	<del>OT</del>	<del>na</del>	<del>2/10/09</del>	<del>1430</del>	<del>3</del>	<del>X X</del>	<del>X X</del>	<del>X X</del>	<del>X X</del>	<del>X X</del>	<del>X X</del>		<del>(SW)</del>

Matrix: SS-Soil/Solid GW-Groundwater WW-Wastewater DW-Drinking Water OT-Other Surface Water (SW)      pH \_\_\_\_\_ Temp \_\_\_\_\_

Remarks: <sup>Total</sup> Metals list: As, Ba, Cd, Cr, Pb, Hg, Se, Ag      Flow \_\_\_\_\_ Other \_\_\_\_\_

Relinquisher by: (Signature) 	Date: 2/12/09	Time: 0830	Received by: (Signature) 	Samples returned via: FedEx ___ UPS ___ Other ___	Condition (lab use only)  <b>ON ICE 04</b>
Relinquisher by: (Signature) 	Date: 2-12-09	Time: 11:40	Received by: (Signature) 	Temp: AM	Bottles Received: 6
Relinquisher by: (Signature)	Date:	Time:	Received for lab by: (Signature) 	Date: 2-12-09	Time: 1140
					pH Checked:      NCF:

**ATTACHMENT 6**  
**ASH CRUSTING AGENT MSDS**





# MSDS Material Safety Data Sheet

**PROFILE Products, LLC**



## Flexterra® FGM

MSDS Number: CON032

Revision Date: 4/8/08

Page 1 of 4

### 1 PRODUCT AND COMPANY IDENTIFICATION

#### Manufacturer

PROFILE Products, LLC  
750 LAKE COOK ROAD  
SUITE 440  
BUFFALO GROVE, IL 60089

#### Contact:

Telephone Number: (847) 215-1144

FAX Number: (847) 215-0577

E-Mail: [profileproducts.com](mailto:profileproducts.com)

Web [www.profileproducts.com](http://www.profileproducts.com)

**Product Name:** Flexterra® FGM  
**Revision Date:** 4/8/08  
**MSDS Number:** CON032  
**CAS Number:** Not applicable  
**Product Use:** Erosion control mulch for hydraulic seeding

Product Description: Green dyed wood fibers, synthetic fibers and a proprietary binder mixture.

### 2 HAZARDS IDENTIFICATION

**Route of Entry:** Inhalation, skin contact, eye contact

#### Target Organs:

**Inhalation:** Wood may cause sneezing, irritation, and dryness of the nose and throat. Dust may aggravate pre-existing respiratory conditions.

**Skin Contact:** Wood dust can cause irritation. Skin absorption is not known to occur.

**Eye Contact:** Wood dust can irritate the eyes.

**Ingestion:** No reports of human ingestion.

NFPA-ratings (scale 0-4): Health = 1, Fire = 2, Reactivity = 0

OSHA Classification: Wood dust is a hazardous substance as defined by the Hazard Communication Standard 29CFR 1910.1200

### 3 COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients:

Cas #	Perc.	Chemical Name
90003030	PROPRIETARY	VEGETABLE HYDRO-COLLOID

## 4 FIRST AID MEASURES

<b>Inhalation:</b>	Usually not a problem. Remove to fresh air if respiratory irritation develops, and get medical aid promptly if irritation persists.
<b>Skin Contact:</b>	Usually not a problem. Wash off with running water if irritation is experienced.
<b>Eye Contact:</b>	Open eyelids and flush with water.
<b>Ingestion:</b>	Get medical attention.

## 5 FIRE FIGHTING MEASURES

<b>Flash Point:</b>	Not applicable
<b>Flash Point Method:</b>	Not applicable
<b>Autoignition Temperature:</b>	200-206°C (400-500°F)
<b>Flammability Classification:</b>	Combustible product

Conditions to avoid: In contact with flames or hot surfaces

Flammable- Extinguish with water; same as a wood fire

## 6 ACCIDENTAL RELEASE MEASURES

Scoop up product. Wear goggles and respirator if dust is produced in unventilated areas. Wet product will be slippery.

## 7 HANDLING AND STORAGE

<b>Handling Precautions:</b>	Clean up areas where dust settles. Minimize blowdown or other practices that generate high airborne dust concentrations.
<b>Storage Requirements:</b>	Store in a cool, dry place. Keep away from sources of ignition.

## 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Engineering Controls:</b>	None required for outdoor mixing and application. Use dust collection system for indoor handling operations.
<b>Protective Equipment:</b>	Eye Protection: Wear goggles when emptying bags and during other operations where there is a risk of dust entering the eyes. Gloves: Leather, plastic or rubber gloves could be worn to minimize skin irritation. Respirators: When handling methods generate dust at concentrations that exceed occupational exposure limits, wear a NIOSH approved respirator. A fabric respirator or a facepiece respirator with dust cartridges will generally provide adequate protection. Footwear: The product is slippery when wet. Wear appropriate footwear.



## Flexterra® FGM

MSDS Number: CON032

Revision Date: 4/8/08

Page 3 of 4

### 9 PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Dyed green wood fibers - Pine & mixed hardwoods	<b>Boiling Point:</b>	
<b>Physical State:</b>	Wood Fibers	<b>Freezing/Melting Pt.:</b>	
<b>Odor:</b>	Mild wood odor	<b>Solubility:</b>	
<b>pH:</b>		<b>Spec Grav./Density:</b>	lighter than water
<b>Vapor Pressure:</b>	N/A		
<b>Vapor Density:</b>			

### 10 STABILITY AND REACTIVITY

<b>Stability:</b>	Stable product
<b>Conditions to avoid:</b>	Contact with strong acids and oxidizers may generate heat. Product may ignite at temperatures in excess of 200°C (400°F).
<b>Materials to avoid (incompatibility):</b>	Strong acids and oxidizers
<b>Hazardous Decomposition products:</b>	
<b>Hazardous Polymerization:</b>	Will not occur.

### 11 TOXICOLOGICAL INFORMATION

#### EFFECTS OF CHRONIC EXPOSURE:

Inhalation: Frequent and repeated exposure to wood dust is associated with an increased risk of developing nasal cancer.  
Skin Contact: Although rare, wood dust may cause dermatitis in sensitized people.

#### Occupational Exposure Limits:

Wood dusts- All other species: ACGIH (2007): TLV-TWA 1 mg/m<sup>3</sup> (Inhalable fraction); A4

Particulates Not Otherwise Regulated (PNOR): OSHA: PEL-TWA 15 mg/m<sup>3</sup> (Total Dust); 5 mg/m<sup>3</sup> (Respirable fraction)

Irritancy: Wood dust is a mild irritant  
Sensitization: Some wood dusts may cause allergic skin reactions

### 12 ECOLOGICAL INFORMATION



## 13 DISPOSAL CONSIDERATIONS

Normally can be disposed of as a wood residue. Ensure disposal is in compliance with local, provincial (state), and federal regulations.

## 14 TRANSPORT INFORMATION

DOT Class: Not regulated #

## 15 REGULATORY INFORMATION

COMPONENT / (CAS/PERC) / CODES

-----

### REGULATORY KEY DESCRIPTIONS

-----

MASS = MA Massachusetts Hazardous Substances List  
NRC = Nationally Recognized Carcinogens  
OSHA WAC = OSHA Workplace Air Contaminants  
PA = PA Right-To-Know List of Hazardous Substances  
TXAIR = TX Air Contaminants with Health Effects Screening Level

CERCLA = Superfund clean up substance  
CSWHS = Clean water Act Hazardous substances  
EHS302 = Extremely Hazardous Substance  
EPCRAWPC = EPCRA Water Priority Chemicals  
HAP = Hazardous Air Pollutants  
NJEHS = NJ Extraordinarily Hazardous Substances  
NJHS = NJ Right-to-Know Hazardous Substances  
OSHA PSM = OSHA Chemicals Requiring process safety management  
SARA313 = SARA 313 Title III Toxic Chemicals

## 16 OTHER INFORMATION

**ATTACHMENT 7**

**EXECUTIVE SUMMARY  
PROPOSED PROCEDURES FOR CONSTRUCTION, OPERATION, AND  
PERFORMANCE MODELING**

## Executive Summary

Proposed Procedures for Construction, Operation, and Performance Monitoring  
Ball Field Temporary Ash Disposal Site  
Kingston Fossil Plant, Harriman, TN

### Objective

- Proposes to utilize a portion of KIF (i.e., Ball Field site (Site)) for the temporary storage of dewatered fly ash.
- Ash will be excavated and collected from the Emory River, the Swan Pond Creek Embayment, and other areas in and around the KIF.
- Site is triangular in plan view and comprises approximately 40 acres.
- Technical Summary Report will be prepared to provide the anticipated subsurface conditions at Site, development and construction activities (including environmental protection components), operating guidelines during temporary ash placement, and monitoring activities to assure integrity of the temporary disposal area and to control ash disposal activities.
- Executive Summary and Technical Summary will be presented to Mr. William Walton, P.E., of AECOM and to personnel from the Tennessee Department of Environment and Conservation (TDEC) for review, concurrence, and comment..

### Anticipated Site and Subsurface Conditions

- Anticipated subsurface conditions at the Site is summarized as follows (from top to bottom):
  - 8- to 10-ft thick crust layer of relatively dense fly ash and bottom ash;
  - 30- to 50-ft thick layer of soft fly ash with local thin zones of bottom ash;
  - 20- to 30-ft thick layer of relatively soft alluvium; and
  - bedrock.
- Groundwater surface is typically located within or near the base of the crust layer.
- Ground surface is generally flat and vegetated with grass, except in areas where isolated excavated ash stockpiles have previously been placed.

### Proposed Construction

- Proposed development and construction activities within the Site are directed towards providing a stable foundation area across the entire Site that will support: (i) construction and operation of an Ash Processing Area; and (ii) construction and operation of the Temporary Ash Disposal Area.
- Construction activities will be completed by (or subcontracted by) TVA.
- After construction, the Site will be operated and maintained by TVA contractor.
- Proposed Site development and construction activities are anticipated to include:
  - local re-grading of the Site to provide access across the Site and to facilitate construction of a “demarcation layer;”
  - construction of demarcation layer comprising (top to bottom) of non-woven geotextile, #4 or #57 stone, woven geotextile;
  - installation of prefabricated vertical drains (i.e., PVDs or wick drains) on likely 7 to 12 foot centers to expedite consolidation of the underlying ash and alluvium;

- PVDs can be fully penetrating through ash and into top of alluvium and not pose adverse impact to groundwater due to consolidation of the underlying alluvium and reduced infiltration through temporarily placed dewatered ash due to thickness and surface grading to control stormwater; or
- PVDs can be partially penetrating to terminate within 10 to 20 feet of the alluvium and eliminate potential for direct vertical conduit to the alluvium.
- Difference in these options is only the calculated time rate of consolidation and strength gain in the lowest reaches of the foundation materials at Site.
- placement of approximately 8-ft thick working platform for the Ash Processing Area within approximately 250 feet each side of the existing sluice channel.
  - working platform graded to promote drainage of dewatered effluent towards the sluice channel.

#### Proposed Operation of Temporary Ash Disposal Area

- TVA contractor to develop an Operating and Ash Management Plan that includes mechanically dredging ash from the sluice channel and processing on the Ash Processing Area platform.
- Dredged ash will be managed in stockpiles and windrows within the Ash Processing Area until material is sufficiently dry (e.g., >50% solids) to allow excavation, loading, hauling, and placement of the dewatered ash within the constructed Temporary Ash Disposal Area.
- At discretion of TVA, dewatered ash that is excavated from other areas of the KIF may be placed within the Temporary Ash Disposal Area.
- Perimeter berms and ditches will be utilized within the Ash Processing Area to control stormwater and to facilitate diversion back to the sluice channel.
- Dewatered ash will be placed in controlled lifts and compaction to assure stability.
  - lift thickness and placement rate will be controlled by results from monitoring plan (subsequently discussed);
- Lifts of the compacted dewatered ash will be graded to divert stormwater to perimeter ditches that will in turn be graded to divert stormwater to the sluice channel (or other controlled sump or outlet).

#### Proposed Performance Monitoring Plan

- Instrumentation will be utilized to control placement of the dewatered ash to assure stability and to monitor consolidation of the foundation ash and alluvium.
- Instrumentation is anticipated to include piezometers, settlement plates, and slope inclinometers, as follows:
  - Piezometers (low-displacement piezoelectric, strain gage, or vibrating wire) will be used to monitor pore pressures in ash and alluvium
    - two piezometers in ash adjacent to the sluice channel;

- two piezometers in ash and one piezometer in alluvium behind Ash Processing Area platform; and
    - three piezometers in ash and two piezometers in alluvium within the Temporary Ash Storage Area.
  - Slope Inclinerometers (conventional tiltmeters manually deployed using grooved casing or MEMS-based units) will be anchored below alluvium stratum and used to monitor lateral spreading and provide early warning of potential slope instability
    - two slope inclinometers adjacent to sluice channel;
    - two slope inclinometers behind Ash Processing Area platform; and
    - two slope inclinometers adjacent to the railroad.
  - Settlement plates (simple vertical standpipes or electronic/hydraulic settlement gages) will be used to monitor vertical time rate and magnitude of settlement
    - two settlement plates within the Ash Processing Area
    - three settlement plates within the Temporary Ash Storage Area
- Instrumentation network will be installed after installation of the PVDs and prior to any ash placement/construction activities.
- Monitoring program will be developed to establish baseline information and then to read, report, and plot all instruments on a daily basis for at least two weeks after significant construction is initiated in a given area to establish response of the foundation materials, particularly in the initial phases of development..
- Monitoring program may be subsequently reduced depending on instrumentation response and actual dewatered ash placement rate, but not anticipated to be less frequent than: (i) piezometers on a daily basis, (ii) slope inclinometers at a frequency of two times per week, and (iii) settlement plates at a frequency of two times per week.
- Monitoring program will include daily reports of dewatered ash production and placement activities, including location of fill placement, fill height, etc.
- Web-based instrumentation reporting system will be developed and reviewed/updated daily for review by TVA, TDEC, AECOM, and other project personnel.
- Final details of the monitoring plan will be developed prior to construction initiation using slope stability and settlement calculation results when these analyses are completed utilizing actual laboratory and field testing results (when these data are available).

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Piezometer No.	Material to be Monitored
PZ-1	Foundation Ash
PZ-2	Foundation Ash
PZ-3	Foundation Ash
PZ-4	Alluvium
PZ-5	Foundation Ash
PZ-6	Ash to be Stored
PZ-7	Ash to be Stored
PZ-8	Ash to be Stored
PZ-9	Alluvium
PZ-10	Alluvium

**Legend**

- Proposed Piezometer
- Proposed Slope Inclinometer
- ◆ Proposed Settlement Plate



<b>PROPOSED INSTRUMENTATION PLAN</b> TVA Kingston Fossil Plant		 Figure <b>1</b>
 consultants ATLANTA, GEORGIA	16 FEBRUARY 2009	