Report of Phase 1 Facility Assessment

Coal Combustion Product Impoundments and Disposal Facilities
Various Locations, Alabama

Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

June 24, 2009

Stantec Consulting Services Inc.
One Team. Infinite Solutions

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June 24, 2009

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Re: Report of Phase 1 Facility Assessment
Coal Combustion Product
Impoundments and Disposal Facilities
Various Locations, Alabama

Dear Mr. Kammeyer:

Stantec Consulting Services Inc. (Stantec) is pleased to provide this report of Phase 1 facility assessments for the Coal Combustion Product (CCP) impoundments and disposal facilities. This report summarizes our Phase 1 activities at TVA's fossil plants in Alabama. It also includes our recommendations for Phase 2 studies, engineering designs, maintenance and other activities at TVA's CCP disposal facilities.

Stantec appreciates the opportunity to provide TVA with these engineering and dam safety services. We hope the information contained in this report assists you and the Fossil Power Group with future planning and operational decisions. Please call us if you have questions.

Sincerely,

STANTEC CONSULTING SERVICES INC.

John S. Montgomery, PE
Senior Principal

Randy L. Roberts, PE
Senior Associate

/ddb

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Report of Phase 1 Facility Assessment

Coal Combustion Product Impoundments and Disposal Facilities Various Locations, Alabama

1. Introduction

1.1. Purpose of Disposal Facility Assessments

The Tennessee Valley Authority (TVA) has requested that Stantec Consulting Services Inc. (Stantec) perform Phase 1 assessments of coal combustion product (CCP) impoundments and disposal facilities at eleven active fossil plants and at one closed fossil plant. These facilities are located in the states of Kentucky, Tennessee and Alabama.

This report presents the results of the assessments for the two plants located in Alabama. The purpose of this first phase is to:

- Identify conditions that may affect the stability and functionality of the facilities reviewed.
- Determine the need for short term corrective actions and further Phase 2 engineering evaluations.
- Prioritize and schedule disposal facilities for future Phase 2 engineering evaluations.

1.2. TVA Fossil Plants and Facilities Assessed

TVA's Fossil Power Group currently operates two coal-fired electric generating plants that are located in the state of Alabama. These plants contain a total of 13 separate coal-fired generation units with a combined capacity of approximately 3,000 MW. In the process of burning coal, these two plants produce, on an annual basis, approximately 630,000 tons of fly ash, 140,000 tons of bottom ash and boiler slag, and 750,000 tons of gypsum.

Although some of these CCP's are recycled for a variety of beneficial uses, the plants must operate various types of impoundments and disposal facilities in order to properly handle, manage, and dispose of CCP's. These facilities generally include: ash ponds, dredge cells, dry ash or gypsum stacks, and wet gypsum stacks. While the majority of the disposal facilities are actively receiving CCP's, some are closed or inactive. Table 1 includes a summary of the plants and the associated disposal facilities that were assessed in this Phase 1 study. Following Table 1, is a map that depicts the locations of TVA's coal-fired plants in Alabama.

Table 1. Summary of Fossil Plants and Facilities Assessed

Fossil Plant	City, State	Year Construction Began	Observed Facilities
Colbert (COF)	Tuscumbia, AL	1951	Ash Pond 4 Disposal Area 5 Dry Stack Disposal Area 5 Drainage Basin Closed Disposal Area 1
Widows Creek (WCF)	Stevenson, AL	1950	Abandoned Ash Disposal Area Bottom Ash Stack Gypsum Stack Gypsum Stack Stilling Pond Lower Stilling Pond Main Ash Pond A Old Scrubber Sludge Pond Dredge Cell Pump Pond Upper Stilling Pond

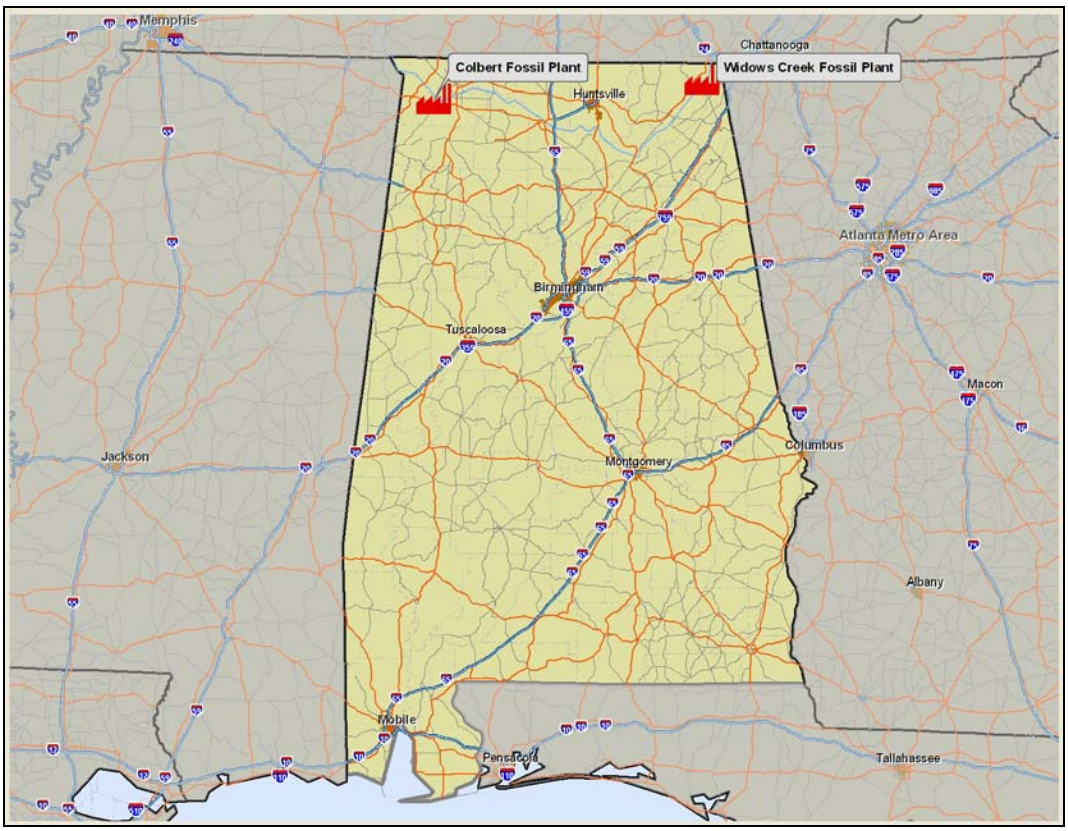


Figure 1. TVA Fossil Plants Located in Alabama

1.3. Scope of Services and Limitations

Stantec's scope of services for the Phase 1 assessment was divided into two sub-phases; Phase 1a and Phase 1b. This report presents the results of both phases. It is important to understand that Phase 1 is judgment-based, non-invasive, and limited to features and concerns that have been observed in the field or discovered in reviews of historical documents. Phase 1 does not constitute a complete engineering evaluation of the facilities reviewed. The following paragraphs describe the specific tasks performed for each phase.

1.3.1. Phase 1a Tasks

Tasks performed for Phase 1a included:

- Review of most recent TVA Dike Stability Inspection Report for each plant.

- Visits to fossil plants by Stantec assessment teams to interview plant personnel and to perform initial walk-over of disposal facilities and ponds. Photographs and field notes were taken. The assessment teams consisted of two engineers; one of which was a licensed professional engineer (PE) with experience in dam design and dam safety.

The Phase 1a work was completed in one week and the results used to identify those facilities that potentially represented the most risk from a structural perspective. These observations were also used to provide TVA with preliminary recommendations for initiating geotechnical explorations and short term improvements at those facilities, prior to completion of the Phase 1 scope. The information gathered during Phase 1a was presented to TVA during a meeting held in their Chattanooga office on January 20, 2009.

1.3.2. Phase 1b Tasks

Tasks performed for Phase 1b included:

- Review of documents and records provided by TVA. TVA provided Stantec with electronic copies of reports, drawings, data, memorandums, etc., pertinent to the characterization, design, construction, operation, and maintenance of its CCP disposal facilities and other ponds. Stantec engineers also visited TVA's Chattanooga office to review documents compiled by TVA and to assist TVA with prioritizing the copying/scanning process.

- Further site reconnaissance of disposal facilities and ponds by Stantec assessment teams including measurement of embankment slopes and crest widths, freeboard, extent of observed seepage, and slope instabilities. The teams again interviewed plant personnel to gain additional information, and recorded observations/measurements using a dam safety inspection checklist customized for the types of CCP management units encountered. Additional follow-up visits were also made to some plants, as conditions warranted.

- At the completion of field efforts and document review, the Stantec teams prepared facility assessment forms, assembled photographs, and prepared aerial photograph exhibits to present the results. These assessment forms also

contain recommendations for Phase 2 engineering activities and for maintenance items. This information is included in the appendices of this report, with a separate appendix for each plant.

- Based on the field observations and records review, Stantec assisted TVA with prioritizing the disposal facilities for Phase 2 explorations and analyses.

- Communications with TVA throughout the Phase 1 efforts included submittal of weekly status reports and attendance at bi-weekly progress meetings in Chattanooga.

1.3.3. Future Scope Phases

Future phases for continuation of facility assessments, repairs, and CCP management will include the following:

Phase 2 – As a result of Phase 1 assessments, Phase 2 engineering work scopes will be developed and executed. Phase 2 engineering evaluations will include initial recommendations/designs for temporary corrective measures, geotechnical explorations, hydraulic and hydrologic evaluations, conceptual designs for improvements, and general engineering support. Rather than delay action until the completion of Phase 1 activities, TVA proactively initiated Phase 2 work for selected structures that have been identified as having primary concerns. These include: Widows Creek Gypsum Stack – due to the gypsum release on January 9, 2009 and observed seepage; and Widows Creek Ash Pond and Dredge Cell – due to the dredge cell being located over the active ash pond.

Phase 3 – Phase 3 work will include a variety of engineering tasks including planning assistance for short and long term CCP management, final design of conceptual repairs as identified in Phase 2, preparation of construction plans/specifications, cost opinions, and permitting assistance. No scopes have been developed for Phase 3 work at this time.

Phase 4 – This phase will involve assisting TVA with improving its dam safety program within the fossil power group, dam safety training for appropriate TVA CCP staff, and annual facility inspections. This work has been initiated in parallel with Phase 1.

1.3.4. Report Organization

The remainder of this report is organized as follows: Section 2 describes the observations and findings of the document review and site reconnaissance tasks; Section 3 presents the conclusions and recommendations; and Section 4 discusses Phase 2 scheduling and prioritization.

The report includes one appendix for each fossil plant located in the state of Alabama. Each plant's appendix contains the following:

- Phase 1 CCP Disposal Facility Summary Form for each individual facility reviewed. This form contains pertinent information relative to the Phase 1 assessments, lists noted observations, and offers recommendations for both maintenance and Phase 2 evaluations.

- Photographs and photo log for each facility reviewed.

- Aerial photographs illustrating the plant and facility general layout.
- Log of reviewed TVA documents.

2. Phase 1 Observations and Findings

2.1. Document and Records Review

TVA provided Stantec with electronic copies of reports, drawings, data, and correspondence, etc.; pertinent to the history, characterization, design, construction, operation, maintenance, and closure of its CCP disposal facilities at the Alabama fossil plants included in this work scope. Stantec engineers also visited TVA's Chattanooga office to review documents compiled by TVA and to assist them with prioritizing the copying/scanning process. Review of this information helped Stantec understand the history, construction methods, design, operation, and maintenance practices of the CCP facilities and ponds. Over 8,000 documents were provided by TVA for all twelve fossil plants, including the two in Alabama. The following sections describe in general terms, the available information and highlight a few notable findings and trends.

With construction of TVA's fossil plants in Alabama having begun in the 1950's, the CCP impoundments and disposal facilities have undergone a continual process of new construction, expansion, rehabilitation, repair, modification, and closure (for the older or initial disposal facilities). The TVA-provided documentation of these efforts varies in terms of quantity and detail. Original construction documents for the older facilities are sparse or often were not located during this effort. For newer facilities, the trend of documentation seemed to become more common with increasing detail.

The following list summarizes the general types of documentation provided by TVA. It is not intended to be a comprehensive list, but rather to convey the general categories of the various types of documents that TVA provided.

- Annual inspection reports on dike stability and seepage inspection.
- Quarterly inspection reports of ash pond dikes and seepage areas.
- Geotechnical reports, geologic reports, geophysical reports, geotechnical data, laboratory testing data, and stability analyses.
- Design and construction drawings.
- Design, feasibility, CCP management reports.
- Permit documents.
- Design calculations.
- Aerial photography.

- Various other correspondence and documentation (sketches, e-mails, letters, contractor work orders, meeting notes, etc.).

- Water quality testing data.

A complete list of documents provided by TVA is presented within each plant's appendix.

In addition to document review, Stantec assessment teams also conducted interviews with plant personnel during site visits and in subsequent meetings/phone discussions to gain additional historical information regarding plants and CCP disposal facilities.

2.2. Field Observations

For Phase 1 field observations, Stantec assembled six assessment teams. Teams consisted of at least two engineers; one of which was a licensed professional engineer with experience in dam design, dam safety, and geotechnical engineering. The licensed engineer assumed the role as team lead. Teams often provided field and/or office assistance to one another, depending on work loads, schedules and project needs.

As described previously, Phase 1a field observations consisted of on-site interviews with TVA plant personnel followed by initial facility walk-over's. Photographs and field notes were taken. The intent of the initial facility walk-over was specifically to look for visible or obvious signs of distress or concerns that may require short term corrective action and to prioritize initial Phase 2 activities. Items of primary concern included: active seepage areas and their appearance and flow conditions, evidence of slope instability (cracking, sloughing, hummocky ground surface), sinkholes and depressions, insufficient freeboard, steepness and height of dike slopes, and condition/adequacy of spillways and pipes through dikes. If time permitted during initial walk-over's, items considered to be of a maintenance nature were also noted, such as erosion, sparse or lack of vegetation, trees on dike slopes, animal burrows, and standing water/poor drainage. Phase 1a field assessments were performed the week of January 12 - 16, 2009.

Return visits to the plants were made at various times during the remainder of January and through February, 2009 for Phase 1b field observations. These site visits were made after Stantec had reviewed historical documents provided by TVA, which allowed the teams to become more familiar with facility history and TVA practices prior to returning. The Phase 1b field activities consisted of further discussions with plant personnel to gain additional information relative to the history, maintenance, operations, and issues of each facility. Further site reconnaissance of disposal facilities and ponds was then conducted, which included limited measurements of embankment slopes, crest widths and freeboard; and further noted the extent of seepage, slope instability, erosion, sparse vegetation, trees, animal burrows, poor surface drainage, and other relevant features. Measurements and observations were then recorded using dam safety checklists customized for CCP impoundments and disposal facilities.

2.3. Notable Findings

Certain findings and trends were directly useful in helping Stantec to understand TVA's system-wide historical CCP disposal philosophies and practices. Some notable system-wide concerns gleaned from Stantec's historical research and document review are described below:

2.3.1. Limited Record Drawings and Construction Testing/Observation Records

Stantec found relatively few as-built construction records or construction testing records for the disposal facilities. These records are important to illustrate how facilities were actually constructed, compliance with project plans and specifications, and to show adjustments that may have been necessary to deal with changes or unexpected conditions that may differ from the original plans.

2.3.2. Construction of Stacks over Ash Ponds and the Operation of Fly Ash Dredge Cells

Hydraulically-placed fly ash in ponds and dredge cells is generally very soft in terms of consistency and loose in terms of density, porosity and void ratio. This condition can sometimes result in significant and sudden loss of shear strength within the sluiced ash at low strains due to embankment loading. TVA has several active facilities that have been constructed over ash ponds. These facilities include the inactive ash dredge cell at Widows Creek. Operating CCP disposal facilities on top of ash that has been sluiced into ponds, is a common practice in the industry. While this practice represents greater risk than constructing over natural earth materials, the risk is typically managed by ensuring appropriate geotechnical analyses have been completed to support design and operation, and that operation includes instrumentation to monitor pore pressures, settlement and slope movement. Load rates must also be controlled to minimize the build-up of excess pore pressures.

There were no active permanent ash dredge cells observed at any of the plants in Alabama.

2.3.3. Tall, Unsupported Weir Structures

A number of the facilities have weir structures that are tall and unsupported. System-wide, weir structures are typically vertical, push-together, reinforced concrete pipe or manhole sections. This type of weir system presents a concern from the standpoint of developing leaking joints and leaning. In addition, outlet pipes from the weir structures are constructed of reinforced concrete culvert pipe. This type of pipe does not employ a restrained joint system and is also susceptible to developing leaking joints. Some past inspection reports have documented these problems.

2.3.4. Conduit and Weir Abandonment Procedures

As various disposal facilities have been raised in the past to increase CCP storage capacity, process water conduits and weirs have been abandoned in place. Apparently, the abandonment procedures have varied from site to site over the years and are not documented. Improper abandonment can lead to internal piping and loss of materials through joint separation in the conduits.

2.3.5. Maintenance

Annual dike inspection reports appear to be adequate in identifying items for maintenance, but there is a trend of not executing all of the maintenance recommendations provided in these reports. In many instances, the same maintenance recommendations were made repeatedly in the annual reports from year to year. Tree and other vegetation removal from dikes and surface drainage ditches is an example of one of the typical recurring items.

2.3.6. Limited Operation and Maintenance Manuals (OM) and Emergency Action Plans (EAP)

During the historical research/document review phase, Stantec found a general lack of Emergency Action Plans (EAP) for the disposal facilities. These items are important for the safe operation of a dam/impoundment, and for the protection of downstream communities, as well as plant personnel.

2.3.7. Limited Geotechnical Instrumentation

Dam safety management of significant impoundments should include an instrumentation program to monitor performance and condition changes during operation of the facility. In general, instrumentation may consist of piezometers to monitor pore pressures within embankments and foundations, slope inclinometers and surface monuments to monitor movement, and plates for monitoring settlement. The type of instrumentation installed will depend on the type and function of the facility and design/operation concerns. Limited geotechnical instrumentation was observed at a majority of the facilities during Phase 1 reviews and the presence of a program to routinely obtain measurements was not witnessed.

Facility specific findings are presented in each appendix.

3. Phase 1 Conclusions and Recommendations

3.1 Due to limited record drawings and construction QA/QC documentation at any of the facilities, Stantec is unable to render opinions relative to overall structural integrity. Therefore, Stantec recommends that all significant impounding facilities be subjected to a Phase 2 engineering evaluation. For the purposes of this recommendation, the term “significant impoundment” is defined as a surface impoundment having been created by a dike or dam having a height of 25 feet or taller, or an impounding capacity of 50 acre-feet or greater. The facilities meeting these conditions are identified in Table A.1 of Appendix A. These facilities generally include all ash ponds, wet stacks, and gypsum stacks. In some instances, additional surveys will have to be performed to confirm the size of the facility relative to the criteria stated herein.

The Phase 2 evaluations should include a geotechnical exploration and hydrologic/hydraulic assessment. The geotechnical exploration scope should include field explorations, laboratory testing, and engineering analysis. Field explorations should include drilling soil borings to characterize subsurface conditions and obtain samples for laboratory testing. Both conventional and cone penetration methods may be needed depending on the data required and subsurface conditions anticipated. Field CCP and soil sampling should consist of standard penetration testing (ASTM D 1586), thin-walled Shelby tube (ASTM D 1587) sampling and grab bulk samples. Drilling should be supervised by a geotechnical engineer or geologist.

Cone penetration testing may be useful at some sites. Data collected will include tip resistance, skin resistance and pore pressure dissipation.

Instrumentation should be installed as needed to characterize subsurface conditions and measure performance. Piezometers should be installed to record phreatic conditions and pore pressure conditions. Piezometers should generally be installed using conventional drilling methods and will consist of slotted PVC screens and tubing, 1-inch diameter or greater. Zones selected for monitoring should be based on field conditions encountered. Slope inclinometer casing should be installed using conventional drilling methods where current ground movement is suspected, loading is increasing over hydraulically placed fly ash, or where it is desirable to monitor conditions in the future.

Laboratory testing should be performed in accordance with ASTM standards. Testing should include engineering classification (ASTM D 422, D 4318 and D 854), natural moisture content (ASTM D 2216), triaxial compression (ASTM D 2850 and D 4767), permeability (ASTM D 5084), unit weight determination, moisture/density relationship (ASTM D 698), and unconfined compression (ASTM D 2166) tests.

Geotechnical engineering analysis should include slope stability and seepage calculations. The calculations should be performed using recognized industry methods and software packages such as Geo-Slope, Slope-W and Seep W. For facilities that will be raised in the future, the engineering analysis should include a time rate of construction and pore pressure dissipation analysis.

Hydraulic and hydrologic analysis should include characterization of process flow rates, hydrographic surveys and storm routings to evaluate freeboard. Criteria used to evaluate freeboard should generally follow federal dam safety guidelines as appropriate.

3.2 During Phase 2, it is recommended that TVA review and update the dam safety hazard classification of each impoundment. Hazard classifications should be assigned in accordance with appropriate state and federal dam safety guidelines and should consider the size, design characteristics and consequences of failure. Further, based upon updated hazard classification, appropriate design criteria for proposed modifications and improvements should be determined.

3.3 Hydraulically placed fly ash represents significantly increased operational hazards due to the erodibility and liquefaction potential of saturated ash. In general, fly ash would be characterized as a low-strength, erodible silt and easily susceptible to piping, erosion, and liquefaction. Therefore, Stantec recommends that all dry and wet stacks operating on top of ash ponds be subjected to Phase 2 geotechnical explorations as described in Paragraph 3.1. Facilities meeting this are identified in Table A.1 of Appendix A.

3.4 In general, the outlet weir structures serving CCP impoundments are constructed of stacked concrete manhole or pipe sections. These tall, unsupported weir structures represent a risk from the standpoint of unplanned joint separation, resulting in uncontrolled releases and potential loss of pool. During routine management of the pond, such as making pool adjustments or ash dredging, it is possible to inadvertently dislodge the weir structure below the pool level. Therefore, Stantec recommends that these weir structures and outlet pipes be retrofitted or prioritized, inspected, and replaced as necessary, with a more reliable structure for pool level regulation.

3.5 Stantec recommends that TVA assemble the "best available" record drawings for each facility. This may require field surveys to confirm location, size and orientation of structures, and ancillary features. In addition, it is recommended that TVA implement a program to ensure record drawings are maintained for each facility. Modifications, expansions and improvements should be properly noted and identified with dates. Record drawings should reflect field conformance surveys of all constructed items including excavations, embankments and structures.

Further, TVA should require and retain construction quality assurance/quality control (QA/QC) plans, specifications, and documentation for all significant improvement or modification projects. QA/QC plans should address material specifications, construction execution, and QA/QC documentation.

3.6 As various disposal facilities have been raised or operated in the past, process water conduits and weirs have been abandoned in place. Based on Stantec's observations and review, abandonment procedures have varied over the years and also from site to site. Stantec understands that at times, these procedures have been inadequate and have led to uncontrolled releases. Therefore, Stantec recommends that Phase 2 explorations include an inventory of existing and abandoned conduits, and assessments of the abandonment procedures employed. This review should result in action plans to properly remediate these features. In general, abandoned conduits should be grouted full or removed.

3.7 Based on observations during the Phase 1 reconnaissance, Stantec developed recommendations for short term improvements at various facilities. These improvements include installing seepage collection systems; regrading slopes; abandoning conduits/spillways; installing stability buttresses and berms; and lowering pool elevations. At the time of this report, TVA is aggressively addressing these recommendations and many of the proposed improvements are complete. Table A.2 of Appendix A summarizes these recommendations and current status/schedule for implementation. By implementing these recommendations, TVA has improved the integrity of its facilities.

3.8 TVA performs annual inspections of its CCP impoundments and disposal facilities. However, based on Stantec observations, there does not appear to be a system in place that tracks recommendations and ensures issues are addressed in a timely manner. In addition, there are inconsistency in inspections and reporting depending on staff assigned and level of understanding of dam safety operations.

Therefore, Stantec recommends TVA review its current dam safety program and include the appropriate elements within its CCP facility management program. The program should address all organizational elements responsible for planning, design, construction, operation, maintenance and regulation of facility impoundments. The program should address on-going training of staff in appropriate dam safety inspection and management procedures.

3.9 Currently, TVA maintains operations manuals for CCP's at each of its plants. In general, these plans address: key dates, CCP handling contracts, construction planning, design drawings, permit requirements, survey data, management procedures, emergency contacts lists, work packages, capital projects and marketing. At the conclusion of future phases of work, as appropriate, it is

recommended that these operation manuals be reviewed and updated to address dam safety and maintenance aspects. Additional topics or sections to be added may include dam safety inspection requirements, instrumentation monitoring, management of QA/QC documentation and record drawings, routine maintenance activities, TVA staff responsibilities, and reporting.

3.10 It is recommended that TVA develop Emergency Action Plans for all impoundments determined to be "High Hazard from a dam safety perspective." Emergency Action Plans should consider the following elements: Notification Flowchart; Responsibilities; Preparedness; and where applicable, Inundation Maps. Emergency Action Plans should be patterned after the "Federal Guidelines for Dam Safety," as appropriate.

3.11 Stantec observed woody vegetation and trees growing on embankment slopes at many of TVA's CCP impoundments. Tree roots can penetrate embankments, creating preferential flow paths. Excessive vegetation can prevent visual observation and review of dike surfaces and provide cover and habitat for burrowing animas. In some cases, vegetation inhibited review of field conditions during Phase 1. It is recommended that all trees and excessive vegetation be removed from embankments slopes and crests. Roots larger than 2-inches in diameter should be removed and the resulting rootwad cavity be backfilled with cohesive soil and compacted. Depending on the size of tree removed, benching may be needed to achieve proper backfill and compaction. It is further recommended that removal of rootwads and subsequent treatment be performed under the direction of a geotechnical engineer. Debris should be removed and disposed of away from dam embankments.

Areas previously inaccessible due to vegetation cover should be reviewed following tree and brush removal and the Phase 1 recommendations modified as appropriate.

Further, it is recommended that TVA increase the frequency of mowing and other vegetation removal activities at the CCP facilities so that dikes, slopes, ponds, shorelines, and drainage channels are kept clear of vegetation and trees. This will improve the ability of plant personnel and others to visually assess the conditions of disposal and impounding facilities.

3.12 Stantec observed conditions requiring further maintenance. These observations generally consisted of surface erosion, animal burrows, and absence of wave wash revetment. Specific instances are identified in the appendices as appropriate for each facility reviewed. Stantec recommends that TVA implement a maintenance program to address and improve these conditions. Maintenance activities that involve excavations with embankments should be performed under the direction of a geotechnical engineer.

4. Phase 2 Scheduling

Phase 2 engineering evaluations have been underway since February 2009. The goal is to complete these evaluations for the active CCP disposal impoundments and active CCP by mid-2010. The schedule for these activities is reflected in Table A.1 of Appendix A. The

order in which the evaluations are being performed reflect Stantec's opinion of relative risk based on its observations of active seepage/slope stability concerns determined during Phase 1 and by issues reported to Stantec by TVA. However, depending on future findings or observations, adjustments to the order and schedules may be made.

Appendix A

Tables A.1 and A.2

Table A.1 Phase 1 Recommendation Summary
Coal Combustion Product Impoundments and Disposal Facilities
Various Locations, Alabama

		Facility Data							Phase 2 Engineering Evaluation				
PLANT	FACILITY	(1)Facility Type	Active/Inactive Status	(2) Embankment Height (ft)	(2)Maximum Water Storage (ac. ft.)	(2)Surface Area (acres)	Operated Over Ash Pond	Stacked Weir Outlet Structure	Evaluation Recommended	(3)Status	(4)Estimated Start Date	(4)Estimated Completion Date	Comments
Colbert Fossil Plant	Disposal Area 5 Dry Stack	ST	Active	120	N/A	75	Y	N	X	Future	Aug-09	Mar-10	Anticipate Completing Drilling September 2009
	Disposal Area 5 Drainage Basin	AP/OT	Active	17	121	12	N	Y	X	Future	Aug-09	Mar-10	Anticipate Completing Drilling September 2009
	Ash Pond 4	AP	Active	40	408	52	N	Y	X	Future	Aug-09	Mar-10	Anticipate Completing Drilling September 2009
	Closed Disposal Area 1	AP	Inactive	40	N/A	40	N	N	-	-	-	-	See Note 5
Widows Creek Fossil Plant	Abandoned Ash Disposal Area	ST	Inactive	NA	NA	136	N	N	-	-	-	-	See Note 5
	Bottom Ash Stack	AP	Active	36	1464	40	N	N	X	Active	May-09	Oct-10	Field Geotechnical Drilling Compelted June 2009
	Gypsum Stack	GS	Active	79	6619	95	N	Y	X	Active	Jan-09	Jul-10	Field Geotechnical Drilling Compelted May 2009
	Gypsum Stack Stilling Pond	SP	Active	15	135	9	N	N	X	Active	Jan-09	Jul-10	Field Geotechnical Drilling Compelted May 2009
	Lower Stilling Pond	SP	Active	21	84	4	N	Y	X	Active	May-09	Oct-10	Field Geotechnical Drilling Compelted June 2009
	Main Ash Pond A	AP	Active	53	8268	160	N	Y	X	Active	May-09	Oct-10	Field Geotechnical Drilling Compelted June 2009
	Old Scrubber Sludge Pond Dredge Cell	DC	Inactive	53	6070	116	Y	N	X	Active	May-09	Oct-10	Field Geotechnical Drilling Compelted June 2009
	Pump Pond	SP	Active	21	5.25	0.4	N	N	X	Active	May-09	Oct-10	Field Geotechnical Drilling Compelted June 2009
	Upper Stilling Pond	SP	Active	21	84	4	N	N	X	Active	May-09	Oct-10	Field Geotechnical Drilling Compelted June 2009

Notes:

1. Facility Types: AP - Ash Pond ST - Dry Stack DC - Ash Dredge Cell GS - Gypsum Stack OT - Other
2. Embankment height, maximum water storage and surface area data were obtained through cursory field and office measurements, and information reviewed during Phase 1. The data are approximations only and not intended to supersede previously reported values for design or regulatory purposes. The data presented are solely for determining a facilities eligibility for Phase 2 evaluations as part of this study. Prior to initiating Phase 2 efforts, data will be reviewed and additional measurements made, if necessary. Any facility deemed as not meeting the criteria for Further Phase 2 work will be removed from the schedule and further work halted.
3. Status of Phase 2 engineering evaluations are as of June 15, 2009.
4. Estimated start and completion dates may be adjusted based on further observations and findings.
5. Recommendations for additional engineering analysis of inactive facilities are generally limited to development of Record Drawings and updating the Operations & Maintenance Manual, unless otherwise noted.

Table A.2 Short Term Improvement Recommendations and Status
Coal Combustion Product Impoundments and Disposal Facilities
Various Locations, Alabama

Facility	Work Plan	Observation	Short Term Improvement Recommendation	Actual/Anticipated Submittal Date to TVA	Construction Status	Anticipated/Actual Construction Completion Date
Colbert Fossil Plant (COF)	Work Plan No. 1	Trees, heavy vegetation on various facilities	Removal of trees and mowing of slopes	April 30, 2009	Active	June 2009
Widows Creek Fossil Plant (WCF)	Work Plan No. 1	Storm water erosion of gypsum stack perimeter slopes, animal borrows and woody vegetation growth	Embankment slope repair and maintenance	February 3, 2009	Active	July 2009
	Work Plan No. 2	Lack of positive drainage in perimeter ditch surrounding the gypsum stack	Perimeter ditch repair and maintenance	February 3, 2009	Active	August 2009
	Work Plan No. 3	Old wood skimmer supported by four wood column foundation reportedly unstable and leaning	Gypsum Stack Stilling Pond skimmer replacement	February 25, 2009	Complete	April 2009
	Work Plan No. 4	Lack of stability bench storm water inlet structures and associated BMP's at the elevation 655 level.	Surface water collection system construction	May 22, 2009	Active	December 2009
	Work Plan No. 5	Two active spillway conduits discharging mid slope, lack of subdrainage system and sloughing near the toe of slope along west perimeter of the gypsum stack	Spillway pipe 12 replacement and spillway pipe 5 extension	June 2, 2009	Active	August 2009
	Work Plan No. 6	Abandoned spillway pipe penetrations through dike	Cleaning, inspection and grouting of Pipe 14 and 15	May 19, 2009	Active	June 2009

Notes:

1. Short term improvement recommendations are based on Stantec's observations as of June 15, 2009. Significant effort has been made by TVA to date to implement these recommendations and improve site conditions.
2. Table A.2 does not include system wide efforts by TVA to improve vegetation management, mitigate animal burrows/erosion, and install stone surfacing. Each of these activities improves site conditions and permits further inspection of sloped areas.

Appendix B

Colbert Fossil Plant

TVA Disposal Facility Assessment
Phase 1 Plant Summary
Colbert Fossil Plant (COF)

Location:	Colbert Fossil Plant (COF) 900 Steam Plant Road Tuscumbia, Colbert County, AL 35674 Latitude: 34.735 N Longitude: 87.854 W
Plant Contact:	Micheal Gean Program Administrator, Environmental Conformance Engineering Phone: 256-389-7152 Email: magean@tva.gov
Facts and Figures:	The Colbert Fossil Plant has five coal-fired generating units and eight combustion turbines. Construction began in 1951 and was completed in 1965. The plant consumes approximately 8,900 tons of coal per day. It is located on Pickwick Reservoir on the Tennessee River, about 50 miles west of Huntsville, AL.
Coal Combustion Byproduct Disposal:	Approximately 350,000 tons of dry fly ash is collected in silos each year and hauled to an onsite dry stack disposal area (Disposal Area 5). Approximately 30,000 tons per year of bottom ash is wet-sluiced to Ash Pond 4. Dewatered bottom ash is removed from Ash Pond 4 and stacked within its west side.
Geology and Seismicity:	TVA's Colbert Fossil Plant is underlain by the Tuscumbia Limestone formation. Residual plastic clay soils are above bedrock. The Tuscumbia limestone is known for karst activity. Two known sinkhole collapses have occurred in the past at COF; one in an abandoned/unused area of Disposal Area 5, and one at the area of the closed chemical pond adjacent to Ash Pond 4. Three zones of earthquake activity affecting northern Alabama are the New Madrid Seismic Zone (NMSZ), the Southern Appalachian Seismic Zone (SASZ), and the South Carolina Seismic Zone (SCSZ). Most earthquakes in Alabama occur within the SASZ. Historical records show that earthquakes with epicenters in Alabama have been recorded throughout most of the state, but they are often not strong enough to be felt on the surface, and would most likely do little or no damage. In contrast, if a large earthquake were to occur within the New Madrid zone to the northwest, damage to northern Alabama would be possible.
Facilities Reviewed:	Ash Pond 4 Disposal Area 5 Dry Stack Disposal Area 5 Drainage Basin Closed Disposal Area 1

TVA Disposal Facility Assessment
Phase 1 Coal Combustion Product Disposal Facility Summary
Colbert Fossil Plant (COF)
Ash Pond 4 (AP-4)

1. General Facility Information

Facility Status:	Active	NID Identification:	Not Available
Surface Area (inside dikes)	51.7 acres (estimated)	Maximum Height (toe to top of dike):	40 ft
Free Water Volume:	455,327 CY (January, 2008 data)	Maximum Water Storage:	703,260 CY (January, 2008 data)
Estimated CCB Storage:	1,159,013 CY (current)	Dike Length:	6,700 ft (estimated)
Plant Discharge to Facility:	12 MGD	Current Pool Elevation:	Approx. 456 feet

2. Site Visit Information

Stantec Assessment Team:	Randy Roberts, PE and Paul Cooper, EIT
TVA Staff Present:	Michael Gean and Allison Horton on January 14, 2009
Field Assessment Dates:	January 14, 2009 and February 3, 2009
Weather/Site Conditions:	Mid-40 degrees F, partly cloudy, moist ground both days

3. History/Description of Usage

History and Operation:	Approximately 30,000 tons per year of bottom ash is wet sluiced to Ash Pond 4. Outlet is through four 48 inch RCP riser pipe/weirs that discharge through four 36 inch RCP sections into an open channel. Ash Pond 4 was initially constructed in 1972 with 20-feet tall clay dikes. The dikes were reportedly raised 20 feet using an upstream method with new clay dikes in 1984. Raised dikes were constructed over sluiced ash. Dried bottom ash is being excavated, dewatered, and stacked within the west side of the pond area. This operation reportedly began in 1999. The stacking is active.
Past Failures/Releases:	No failures or releases reported.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	No EAP has been prepared for this facility.
Operations Manual:	A coal combustion products operations manual is available for the Colbert Fossil Plant covering all active facilities.
TVA Maintenance:	Exterior slopes mowed twice annually. Annual sealing of RCP spillway inlet riser joints using oakum; joints in top 12 feet or so are treated.
TVA Inspections:	TVA Engineering performs annual dike inspections and prepares reports. Plant personnel recently started making daily observations and performing weekly reviews of seepage areas.
Problems Previously Identified During Past TVA Inspections:	Mid-slope seepage on east dike, isolated trees on exterior slopes, need for annual joint repairs in RCP spillway inlet joints.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	Drawing numbers 10N290, 291, 292, 293, 294-1 thru 294-7, 213, 287.
TVA As-Built Drawings:	None available.
TVA Construction Testing Records:	None available.
TVA Annual Inspection Reports:	TVA Annual Inspection Reports 1993 to 2008.
Geotechnical Data:	"Colbert Steam Plant - Proposed Ash Disposal Area 4 - Dikes - Soil Investigation", Memorandum from Gene Farmer to F.P. Lacy, October 13, 1972. "Colbert Steam Plant - Ash Disposal Area No. 4 Dike Raising - Soils Exploration and Testing - En Des Soils Schedule No. 67", Memorandum from Gene Farmer to G.L. Buchanan, March 27, 1978.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Tall grass, cattails and dense coverage.
Trees:	None were observed.
Wave Wash Protection:	None was observed.
Erosion:	Few locations of wave erosion, size and length vary.
Instabilities:	None were observed.
Animal Burrows:	Past annual inspection reports indicated beaver activity on east dike interior slopes. Dense/tall grass and cattail coverage prevented thorough assessment.
Freeboard:	**Measured:** 4.3 feet at Section 6, 5.2 feet at Section 7 (see drawing for section locations) **Design:** 4 feet (from Drawing 10N292)
Encroachments:	A dry stack is operated within the west side of the ash pond, reducing pool storage capacity.
Slope:	**Measured:** 2.0H:1.0V at both Sections 6 and 7. **Design:** 2.0 H:1.0V (from Drawing 10N292)

6.2. Crest

Crest Cover and Slope:	Gravel/ash covered access road, crest appeared relatively flat.
Erosion:	None was observed.
Alignment:	Alignment appeared to agree with design drawings. No issues observed.
Settlement/Cracking:	None was observed.
Bare Spots/Rutting:	None was observed.
Width:	**Measured:** 25 feet at both Sections 6 and 7. **Design:** 25 feet (from Drawing 10N292)

6.3. Exterior Slopes

Vegetation:	Mostly grass, adequate coverage. Thick brush at seepage areas on east dike face where mowing cannot be done due to soft ground.
Trees:	There are numerous 6 inch to 12 inch trees near bottom of slope and toe area of north dike. There are also a few trees at isolated areas on west dike.
Erosion:	None was observed.
Instabilities:	No evidence of instability was observed.
Uniform Appearance:	Good.
Seepage:	Yes, at mid-slope area intermittent along entire length of east dike (see drawing for locations). Most areas are wet, with no flow observed. Minor flow observed being collected in mid-slope drainage ditch along access road at south part of east dike - water was clear. Seepage areas contain cattails and long grass coverage and cannot be mowed due to soft/saturated ground.
Benches:	Approximate 3 to 5-foot wide bench at elevation 440.
Foundations, Drains, Relief Wells, Instrumentation:	No provisions for drainage/seepage control, or instrumentation were observed.
Animal Burrows:	None were observed.
Slope:	**Measured:** 3.0H:1.0V at Sections 6 and 7. **Design:** 3.0H:1.0V (from Drawing 10N292)
Height:	**Measured:** 40 feet (estimated) on east side. **Design:** 40 feet decreasing on west side

6.4. Spillway Weirs/Riser Inlets

Number:	4 located in the stilling pond at the north end of the facility.
Size, Type and Material:	48 inch RCP push-together riser sections with standard TVA steel skimmers.
Height of Riser Inlets:	Approximately 34 feet

Access:	All spillways accessible via floating catwalks.
Joints:	Joints are sealed annually by divers using oakum joint sealant. Only joints located within top 12 feet can be accessed. Unable to observe below inlet level any joint leakage or sealant.
Mis-Alignment:	None reported or observed.
Closed/Abandoned Conduits:	None reported or observed.

6.5. Outlet Pipes

Number:	Four (4)
Size, Type and Material:	36 inch RCP
Headwall:	Yes, appears to be in good shape.
Joint Separations:	Unknown, unable to observe.
Mis-Alignment:	Unknown, unable to observe.
Closed/Abandoned Conduits:	None reported or observed.

7. Notable Observations and Concerns

- The seepage along east dike at mid-slope is a concern. It has been reportedly ongoing since about 1984, when the dikes were initially raised. The seepage has been continuously monitored by TVA with little or no change being reportedly noticed through the years. In 2007, TVA retained a geotechnical consultant to investigate the seepage. The investigation identified a seepage zone between the two phases of dike construction where a thin zone of bottom ash and organic material was found. The report recommended to continue monitoring the seepage, and to install a collection system below the seeps. A collection system has not been installed.
- Raising the dikes by using upstream construction over sluiced ash is a potential slope stability concern.
- Excavating and stacking dried bottom ash in the west portion of the pond is a concern. Constructing embankments over hydraulically placed ash requires engineering analysis and geotechnical explorations. The rate and manner of placement is critical to the integrity and stability. Also, placement of embankment within the ash pond pool area reduces storm and process water storage capacity.

- RCP push-together riser structure spillways are a concern. The joints of the riser pipes at Ash Pond 4 reportedly receive annual repair using oakum joint sealant, suggesting that there is a historic joint leakage issue.
- Dikes are mowed twice annually and are well-maintained, except for interior slopes and seepage areas where ground is soft. Cutting the tall brush would facilitate better observations of seepage areas and interior slopes.
- Trees located on north dike, and at a few other isolated locations are a concern. Recommendations for tree removal have been provided in past annual reports, but have not yet been performed.
- Wave action erosion was noted at several locations along interior slopes just above pool level.
- Both inlet and outlet ends of the drainage pipe beneath the access road northwest of the pond outlet was observed to be buried/covered with sedimentation. Some flow from this pipe through the sedimentation and into the discharge channel was observed.
- Previous inspection reports appear adequate, but there is a trend of not all maintenance recommendations being executed.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that Ash Pond 4 undergo further Phase 2 engineering study to evaluate the seepage on the east dike face, to evaluate slope stability, and to evaluate the stacking plan on the west side of the facility. The geotechnical work should include installation of piezometers. It is also recommended that a hydraulic and hydrologic analysis be performed to check freeboard and pond outlet adequacy relative to process flow and storm water.
- It is recommended that the Operations and Maintenance Plan be updated.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be established.

8.2. Maintenance Recommendations

- Remove trees from north exterior slope and from isolated areas on west dike.
- Cut and maintain heavy/tall cattail and grass growth on interior slopes to permit better observation.
- Repair erosion on interior slopes, and line with rip-rap to help reduce future erosion.
- Cut tall brush and cattails at seepage areas to permit better observations.
- Monitor seepage areas on east dike for change until engineering evaluation can be completed and remedial actions developed.
- Continue annual joint repairs of RCP risers. This spillway system may ultimately be modified or replaced, pending Stantec-TVA assessment of replacement system. Monitor until that time.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Clean sedimentation from drainage pipe that lies beneath access road leading up to Ash Pond 4. The inlet and outlet ends of this pipe are completely buried, but some water still trickles through into the discharge channel. This pipe is not associated with the ash pond, but should be cleaned and inlet/outlet ends re-opened and maintained for positive site drainage.

TVA Disposal Facility Assessment
Phase 1b Byproduct Disposal Facility Summary
Colbert Fossil Plant (COF)
Disposal Area 5 Dry Stack (DS-5)

1. General Facility Information

Facility Status:	Active		
Surface Area:	75 acres (estimated)	Maximum Height (toe to top of stack):	120 feet (estimated from drawing 10W283-14)

2. Site Visit Information

Stantec Assessment Team:	Randy Roberts, PE and Paul Cooper, EIT
TVA Staff Present:	Michael Gean and Allison Horton on January 14, 2009
Field Assessment Dates:	January 14, 2009 and February 3, 2009
Weather/Site Conditions:	Mid-40 degrees F, partly cloudy, moist ground both days

3. History/Description of Usage

History, Operation and Stacking Plan:	Disposal Area 5 perimeter dikes were constructed in 1984. The disposal area was initially intended to be an ash pond, but a sinkhole failure occurred in northwest portion upon initial filling. Sinkhole was reportedly treated and capped, and disposal operations then shifted to dredge cell method in south and southeast portions (2 cells). Entire north and northwest portions of Disposal Area 5 are not in use and are now thickly wooded. From mid-1980's until 1990, ash was dredged in slurry fashion from Ash Pond 4 to Area 5 dredge cells 1 and 2. In 1990, dredging was stopped and disposal methods were converted to a dry stacking operation. COF personnel reported that sluiced ash storage reached only a few feet thick in these two cells prior to conversion. Dry disposal operation is following a stacking plan developed in the early 1990's. Ultimate height of stack will range from 100 to 120 feet from top to toe of original perimeter dikes. Stacked fly ash is being constructed on 4H:1V slopes, with benches every 20 feet in height. Stack appears fully built out in south and west portions. Current disposal activity is on east side.

Stacking over Dredge Cells or CCB Ponds:	Cells 1 and 2 beneath the existing stack were initially operated as dredge cells. Ash was dredged from Ash Pond 4 into these cells from mid-1980's until 1990. COF personnel report that just a few feet of sluiced ash storage existed before operation shifted to stacking. There is also a small area at the extreme northeast portion of the stack that was operated as a temporary stilling pool for material dredged from the adjacent drainage basin. This pool was reportedly in operation only for about a month.
Past Failures/Releases:	There was a release of sluiced ash through a sinkhole collapse in 1984 shortly after pond was placed into operation. This occurred in northeast portion of Area 5. The sinkhole was reportedly capped. This area has since been abandoned and is not in use.

4. Owner's Operations, Maintenance and Inspection Information

TVA Maintenance:	Cover and vegetate completed stack slopes semi-annually, repair erosion areas as needed, re-grade perimeter ditch as needed.
TVA Inspections:	TVA engineering performs annual inspections and prepares reports. Plant personnel recently started making daily observations, and documenting on a weekly basis.
Problems Previously Identified During Past TVA Inspections:	Areas of erosion and sparse vegetation, sedimentation and need to regrade perimeter ditches, rutting on dike access roads, trees on slopes, "bubbling seepage" in drainage ditch along southern toe of Cells 1 and 2.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	Drawing numbers 10W279, 10W283-1 thru 5, 283-10 thru 20.

TVA As-Built Drawings:	None available.
TVA Construction Testing Records:	None available.
TVA Annual Inspection Reports:	TVA Annual Inspection Reports 1993 to 2008.
Geotechnical Data:	"Colbert Steam Plant - Ash Disposal Area 5 - Soils Exploration and Testing - En Des Soil Schedule No. 67.2", Memorandum from Frank VanMeter to G. L. Buchanan dated June 9, 1982 "Colbert Steam Plant - Additional Ash Disposal Area No. 5 - Engineering Report", Memorandum from M.M. Sprouse to H.S. Fox dated December 21, 1982. "Colbert Steam Plant - Dry Fly Ash Facility" Memorandum from R.C. Weir to O.P. Thornton dated October 31, 1986. "Report of Geotechnical Exploration, Ash Stack Area 5, Colbert Fossil Plant, Tuscumbia, Alabama", prepared by MACTEC Engineering and Consulting, Inc., March 19, 2004

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Exterior Slopes and Benches

Vegetation:	Grass, sparse coverage on dry stack slopes in several areas. Thick vegetation on initial perimeter dike faces below dry stack.
Trees:	Trees are numerous on face of initial perimeter dikes on northwest and southwest sides.
Erosion:	Several areas of erosion along faces of dry stack were noted where vegetation is sparse. Also, severe rill/gully erosion noted along face of initial perimeter dike at few locations (see drawing) on northwest face. Few minor areas of erosion noted along perimeter dike access road at west corner.

Instabilities:	No evidence of instability was observed.
Uniform Appearance	Good, except at areas of severe rill/gully erosion on face of initial perimeter dike on northwest side. Stacking plan appears to agree with design drawings.
Benches:	Yes, placed at approximate 20 feet intervals in elevation, 25 feet wide, sloped toward stack (from drawing 10W283-14).
Slope:	Design: 4H:1V for dry stack slopes, 2H:1V for initial perimeter dike (from drawing 10W283-14). Dry stack slopes appear to agree with design. Lower perimeter dike slopes appear to agree with design, except for southwest area where steeper slopes were observed. Measured: 1.4H:1V at Section 1 (perimeter dike only) 1.9H:1V at Section 2 (perimeter dike only)
Height:	100 to 120 feet (estimated)
Other:	None.

6.2. Perimeter Drainage Ditches and Down-Drains

Vegetation:	Tall grass/cattail growth present in some intervals of perimeter ditch, and sparsely along down-drains. Isolated trees also noted.
Rip-Rap Channel Lining:	Rip-rap was observed on down drains only, no rip-rap in perimeter ditches.
Erosion:	No significant erosion noted, but sedimentation had accumulated in ditch at several areas from erosion along stack faces.
Siltation in Ditches:	Yes. Siltation noted throughout perimeter ditch.
Standing Water in Ditches or on Benches:	Yes. Standing water noted along most of northwest perimeter ditch west of the haul road.
Silted/Impeded Drainage Pipes:	Yes. Perimeter ditch drainage pipe beneath haul road is severely silted and flow through pipe is slowed. Outlet end is buried. This has caused standing water in portion of perimeter ditch along northwest side. It is also believed that during rain events, the perimeter ditch

floods and water probably flows across the access road and down the slopes of the perimeter dike, which has lead to the severe rill/gully erosion noted under item 6.1.

Other: None.

7. Notable Observations and Concerns

- The area beneath the current dry stack was initially operated as dredge cells. Dredged ash was sluiced from Ash Pond 4 in the mid to late 1980's. Constructing embankments over hydraulically placed ash is a potential slope stability issue and requires engineering analysis and geotechnical explorations.
- Storm water flow through the perimeter ditch drainage pipe that lies beneath the haul road on the northwest side of the stack is impeded (inlet end is partly impeded by siltation and outlet end is buried and not visible). This has lead to poor drainage and ponded water within the portion of the perimeter drainage ditch upstream of the pipe crossing. Stantec also observed significant rill and gully erosion along the exterior perimeter dike slopes below this ditch interval. It is believed that during rain events, the perimeter ditch floods and water flows across the adjacent access road and down the slope, which has lead to the erosion.
- Minor rill/gully erosion was noted along perimeter access road at west corner of stack.
- Vegetative cover is sparse along slopes of dry stack above initial perimeter dike.
- Areas of rill/gully erosion were noted on all sides of dry stack exterior slopes.
- One animal burrow was noted along east perimeter dike face.
- The slope of the initial perimeter dike along the south area (at Section 1 on drawing) is relatively steep, on the order of 1.4H to 1V. The design drawings call for perimeter slopes to be 2H:1V.
- Siltation and erosion was noted throughout much of the length of the perimeter drainage ditch.
- The absence of as-built drawings and construction testing records is a concern.
- Previous inspection reports appear adequate, but there is a trend of not all maintenance recommendations being executed.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that Disposal Area 5 Dry Stack undergo further engineering study to evaluate the stacking plan and slope stability. Geotechnical work should include test borings, and piezometers; followed by laboratory testing and slope stability analysis of critical cross sections.
- It is recommended that a program be established to develop as-built drawings and construction records for future maintenance and construction activities.

8.2. Maintenance Recommendations

- Repair locations of significant rill and gully erosion at the northwest face of the perimeter dike. The areas should be excavated, foundation benches cut into the slopes, and new fill placed to reform the slope. After grading, clay cover should be placed, the area seeded, and then protected with an erosion control blanket. Monitor for future erosion/sparse vegetation and repair as needed.
- It is recommended that siltation be cleaned from the perimeter ditch drainage pipe that crosses beneath the haul road at the northwest area to improve perimeter ditch drainage. Both inlet and outlet ends need cleaning. Extend inlet and outlet ends past haul road as needed. The grades along the entire length of the perimeter ditch should also be checked and the ditch re-graded as necessary for positive drainage. Sedimentation and long grass/cattail growth should also be removed. Last, it is recommended that the perimeter ditch be lined with rip-rap to help reduce future erosion.
- It is recommended that areas of erosion and sparse vegetation on dry stack slopes be reworked to repair erosion, and seeded/re-seeded to establish vegetation. Monitor for erosion/sparse vegetation and repair as needed.
- Repair areas of erosion along perimeter access road at west corner.
- Establish a mowing program for this disposal area.
- Repair animal burrows where noted.
- Continue annual inspection program and execute recommendations.

TVA Disposal Facility Assessment
Phase 1 Coal Combustion Product Disposal Facility Summary
Colbert Fossil Plant (COF)
Disposal Area 5 Drainage Basin (P-1)

1. General Facility Information

Facility Status:	Active	NID Identification:	Not Available
Surface Area (inside dikes)	12 acres (estimated)	Maximum Height (toe to top of dike):	17 feet
Free Water Volume:	116,000 CY (Stantec estimate)	Maximum Water Storage:	209,000 (Stantec estimate)
Estimated CCB Storage:	Basin does not store CCB.	Dike Length:	3,000 feet (estimated)
Plant Discharge to Facility:	N/A	Current Pool Elevation:	468 feet (estimated)

2. Site Visit Information

Stantec Assessment Team:	Randy Roberts, PE and Paul Cooper, EIT
TVA Staff Present:	Michael Gean and Allison Horton on January 14, 2009
Field Assessment Dates:	January 14, 2009 and February 3, 2009
Weather/Site Conditions:	Mid-40 degrees F, partly cloudy, moist ground both days

3. History/Description of Usage

History and Operation:	The Disposal Area 5 Drainage Basin was constructed in the early 1980's with initial development of this disposal area. The basin receives storm water runoff from the adjacent Area 5 Dry Stack. Storm water enters the basin at the southeast corner. Outlet is through two 48 inch RCP riser pipe/weirs that discharge through two 36 inch RCP sections into an open channel.
Past Failures/Releases:	No failures or releases reported.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	No EAP has been prepared for this facility.
Operations Manual:	A coal combustion products operations manual is available for the Colbert Fossil Plant covering all active facilities.
TVA Maintenance:	Exterior slopes mowed twice annually, where accessible (i.e. no trees).
TVA Inspections:	TVA Engineering performs annual dike inspections and prepares reports. Plant personnel recently started making daily observations, with documented inspections made weekly.
Problems Previously Identified During Past TVA Inspections:	Leakage was reported in top joint of RCP riser section for northwest spillway/weir in 1999 and 2000 reports. No mention of repair or continued problem in subsequent reports. Trees on exterior slopes, leaning wood inlet, and cenospheres forming in basin also mentioned in reports.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W279, 10W283-1 thru 283-5, 283-10 thru 20 for Disposal Area 5 (drawings contain some information pertinent to drainage basin).
TVA As-Built Drawings:	None available.
TVA Construction Testing Records:	None available.
TVA Annual Inspection Reports:	TVA Annual Inspection Reports 1993 to 2008.
Geotechnical Data:	None available.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Tall grass and cattail growth, dense coverage.	
Trees:	None were observed.	
Wave Wash Protection:	None was observed.	
Erosion:	Some erosion due to wave action noted.	
Instabilities:	One small slough approximately 12 feet wide on southwest dike.	
Animal Burrows:	None were observed.	
Freeboard:	**Measured:**	4.8 feet at Section 3, 8.6 feet at Section 4 (see drawing for section locations).
	Design:	Not available on drawings provided.
Encroachments:	None were observed.	
Slope:	**Measured:**	2.0H:1V at Section 3, 1.6H:1V at Section 4
	Design:	1.5H:1V at NE dike at outlets, 2H:1V at SW dike (from Drawing 10W283-2,5)

6.2. Crest

Crest Cover and Slope:	Ash-covered road on NE,SE dikes, grass covered on NW,SW dikes, crest appeared relatively flat.	
Erosion:	None was observed.	
Alignment:	Alignment appears to agree with design drawings.	
Settlement/Cracking:	None was observed.	
Bare Spots/Rutting:	None were observed.	
Width:	**Measured:**	16 feet at Section 3, 19 feet at Section 4
	Design:	16 feet at SW dike, 32 feet at NE dike at outlets (Drawing 10W283-2,5).

6.3. Exterior Slopes

Vegetation:	Trees and woody growth on NE and NW dikes; grass cover on SE and SW dikes.
Trees:	Numerous trees noted on NE and NW dikes.
Erosion:	None was observed.
Instabilities:	None were observed.
Uniform Appearance:	Good.
Seepage:	None was observed.
Benches:	None were observed.
Foundations, Drains, Relief Wells, Instrumentation:	No provisions for drainage/seepage control, or instrumentation were observed.
Animal Burrows:	One noted on NE dike south of outlet area (see drawing)
Slope:	**Measured:** 2H:1V at Sections 3 and 4 **Design:** 2H:1V (from Drawing 10W283-2,5)
Height:	**Measured:** 17.2 feet at Section 3, 16 feet at Section 4 **Design:** 16 feet at SW dike (from Drawing 10W283-2,5)

6.4. Spillway Weirs/Riser Inlets

Number:	Two (southeast weir is above pool and inactive) located at NE side of basin.
Size, Type and Material:	48 inch RCP push-together riser sections with standard TVA steel skimmers.
Height of Riser Inlets:	23 feet (estimated from Drawing 10W283-3).
Access:	Spillways are accessed via walkway between spillways.
Joints:	No leakage visible in upper portion of southeast weir, which is above pool and inactive. Unable to observe below inlet level at active northwest weir.
Mis-Alignment:	None reported or observed.
Closed/Abandoned Conduits:	None reported or observed.

6.5. Outlet Pipes

Number:	Two (2)
Size, Type and Material:	36 inch RCP
Headwall:	Yes, appears to be in good shape.
Joint Separations:	Unknown, could not observe. None reported.
Mis-Alignment:	Unknown, could not observe. None reported.
Closed/Abandoned Conduits:	None reported or observed.

7. Notable Observations and Concerns

- RCP push-together riser structure spillways are a concern. The annual reports from 1999 and 2000 indicated water flowing between pipe joints in the northwest spillway riser.
- Wave action erosion was noted at a few locations along interior slopes just above pool level.
- One animal burrow was noted along the toe of the northeast dike.
- A small sloughed area was noted along the interior slope of the southwest dike.
- The wood inlet structure located along the southeast side (where drainage from Disposal Area 5 enters pond) is leaning toward the pond.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.
- Trees located throughout the northeast and northwest exterior dike slopes are a concern. Recommendations for tree removal have been provided in past annual reports, but have not yet been performed.
- Tall brush and cattails are present on interior slopes. Cutting the tall brush would facilitate better observations of interior slopes.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that the Operations and Maintenance Plan be updated.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be established.

8.2. Maintenance Recommendations

- Remove trees from exterior sides of northeast and northwest dikes.
- Cut and maintain heavy/tall cattail and grass growth on interior slopes of pond to allow better observations.
- Repair erosion and sloughed areas where noted on interior slopes of pond. Line interior pond slopes with rip-rap to help reduce future erosion.
- The spillway risers at Disposal Area 5 Drainage Basin may ultimately be modified or replaced, pending Stantec-TVA assessment of replacement system. Monitor the spillway systems until that time.
- Repair animal burrows where noted.
- Continue mowing program for grass-covered dikes. Establish new mowing program on northeast and northwest dikes following tree removal.
- Continue annual inspection program and execute recommendations.
- Perform soundings and monitor for storage capacity, and perform dredging as needed to maintain storage capacity.

TVA Disposal Facility Assessment
Phase 1 Coal Combustion Product Disposal Facility Summary
Colbert Fossil Plant (COF)
Closed Disposal Area 1 (CDA1)

1. General Facility Information

Facility Status:	Closed	NID Identification:	Not Available
Surface Area (inside dikes)	40 acres (estimated)	Maximum Height (toe to top of dike):	40 feet (estimated)
Free Water Volume:	N/A	Maximum Water Storage:	N/A
Estimated CCB Storage:	Unknown; disposal area is abandoned and closed.	Dike Length:	3,000 ft (estimated)
Plant Discharge to Facility:	None. Disposal area is closed.	Current Pool Elevation:	N/A

2. Site Visit Information

Stantec Assessment Team:	Randy Roberts, PE and Paul Cooper, EIT
TVA Staff Present:	Michael Gean and Allison Horton.
Field Assessment Dates:	February 17, 2009 and March 24 and 25, 2009.
Weather/Site Conditions:	Mid-40 degrees F, partly cloudy, moist ground on February 17, 2009; Mid-60 degrees F , partly cloudy on March 24, 2009, rain showers on March 25, 2009.

3. History/Description of Usage

History and Operation:	This disposal area was the first ash pond constructed at COF. Ash has not been sluiced to this area since 1975. A reclamation/final grading plan was developed in 1976 for final grading and storm water management. The plant reportedly periodically dry-stacked ash in this area from Disposal Area 4 between 1982 and 1990. The area is currently heavily vegetated and wooded.
Past Failures/Releases:	None reported.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	N/A, the area is closed and abandoned.
Operations Manual:	A coal combustion products operations manual is available for the Colbert Fossil Plant covering active facilities.
TVA Maintenance:	None reported. The area is closed and heavily vegetated.
TVA Inspections:	TVA Engineering performs annual dike inspections and prepares reports.
Problems Previously Identified During Past TVA Inspections:	Bare slope area northeast of old asbestos disposal area; some minor/small areas of sloughing and erosion along riverbank at river level.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W298, 10W299, 10N213
TVA As-Built Drawings:	None available.
TVA Construction Testing Records:	None available.
TVA Annual Inspection Reports:	TVA Annual Inspection Reports 1993 to 2008.
Geotechnical Data:	None available.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	N/A, interior portion of closed disposal area has been filled/graded and contains thick vegetation and wooded areas.

Trees:	N/A	
Wave Wash Protection:	N/A	
Erosion:	N/A	
Instabilities:	N/A	
Animal Burrows:	N/A	
Freeboard:	**Measured:**	N/A
	Design:	N/A
Encroachments:	N/A	
Slope:	**Measured:**	N/A
	Design:	N/A

6.2. Crest

Crest Cover and Slope:	Grass and light brush covered access road, some sparse areas of gravel, crest appeared relatively flat.
Erosion:	None was observed.
Alignment:	Alignment appeared to agree with design drawings. No problem.
Settlement/Cracking:	None was observed.
Bare Spots/Rutting:	None was observed.
Width:	**Measured:** 25 feet at both Sections 9 and 10. **Design:** Not shown on available drawings.

6.3. Exterior Slopes

Vegetation:	Trees, brush and woody growth noted throughout. Dense coverage.
Trees:	Yes. Numerous trees noted.
Erosion:	None was observed. Riprap protection was observed at the toe of the slope, near the river.
Instabilities:	None were observed.
Uniform Appearance:	Good.

Seepage:	None was observed.	
Benches:	Yes, 19 feet wide at Section 9, 45 feet wide at Section 10.	
Foundations, Drains, Relief Wells, Instrumentation:	No provisions for drainage/seepage control, or instrumentation were observed.	
Animal Burrows:	None were observed.	
Slope:	**Measured:**	2.9H:1V at Section 9, 1.8H:1V at Section 10.
	Design:	3H:1V (from TVA drawing 10N213)
Height:	**Measured:**	Not measured.
	Design:	Approximately 40 feet from top to edge of river, as estimated from TVA drawings. Stantec observations agree with drawings relative to slope height.

6.4. Spillway Weirs/Riser Inlets

Number:	N/A, disposal area is closed.
Size, Type and Material:	N/A
Height of Riser Inlets:	N/A
Access:	N/A
Joints:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	Drawing 10N213 shows two weir inlets, one at northwest portion and one at southeast. Northwest weir was visible and open, with no apparent abandonment/closure effort observed (i.e. filling with concrete). Weir is approximately 41 feet deep, with 48" RCP riser inlet. Southeast weir inlet was not observed (possibly buried).

6.5. Outlet Pipes

Number:	N/A, disposal area is closed.
Size, Type and Material:	N/A

Headwall:	N/A
Joint Separations:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	Drawing 10N213 shows two pipe outlets, one at northwest portion and one at southeast. Both pipe outlet ends were found at toe of slopes. They were observed to be 30" diameter RCP sections. Both outlets were open and no apparent abandonment/closure efforts were observed.

7. Notable Observations and Concerns

- The northwest weir inlet structure was found. It was open and no apparent abandonment/closure effort was observed. The southeast weir inlet was not found.
- Both RCP pipe outlet ends were found to be open with no apparent abandonment/closure effort observed.

8. Recommendations

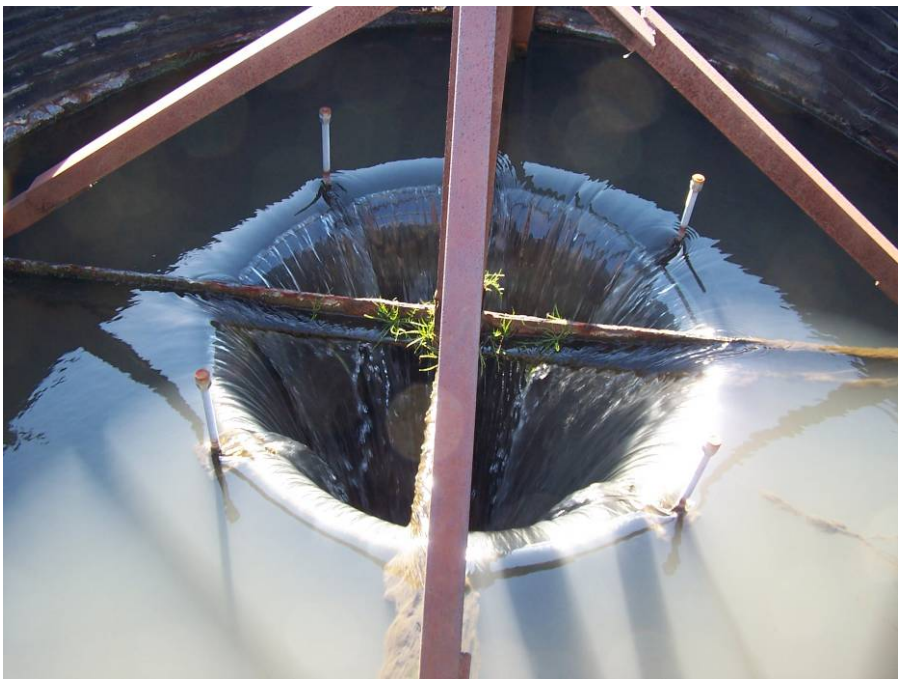
8.1. Phase 2 Engineering and Programmatic Recommendations

- Phase 2 engineering is not recommended at this time for this closed facility.

8.2. Maintenance Recommendations

- It is recommended that the two old outlet structures be properly abandoned and closed by filling with grout or concrete to the extent practical. Filling should progress from both the inlet and outlet ends. Efforts to locate the possible buried southeast weir inlet should be made by excavating with a backhoe.
- Continue annual dike and facility inspections.
- Downed trees along the old dike crest should be removed and brush mowed/maintained to provide access for annual inspections.

Drawing Mark AP-4-1 Typical photo representing mid-slope seepage locations along the east and southeast dike.



Drawing Mark AP-4-2 Stacked RCP riser outlet structures.

Drawing Mark AP-4-3 Stacking operation at west side of ash pond, located at left in photo.

Drawing Mark AP-4-4 Typical photo of inner slope wave erosion.

Drawing Mark AP-4-5 Buried drainage pipe located at access road.

Drawing Mark AP-4-6 Trees located at toe of North dike.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
AP-4-1	Typical photo representing mid-slope seepage locations along the east and southeast dike.	Photo 11A
AP-4-2	Stacked RCP riser outlet structures.	Photo R3A
AP-4-3	Stacking operation at west side of ash pond, located at left in photo	Photo R8A
AP-4-4	Typical photo of inner slope wave erosion.	Photo 16B
AP-4-5	Buried drainage pipe located at access road.	Photo 19A
AP-4-6	Trees located at toe of North dike.	Photo 2A

Drawing Mark DS-5-1 View showing perimeter ditch and dry stack slope, siltation in ditch, sparse vegetation on stack.

Drawing Mark DS-5-2 View of typical downdrain on the dry stack.

Drawing Mark DS-5-3 View showing perimeter ditch and dry stack slope, siltation in ditch, sparse vegetation on stack.

Drawing Mark DS-5-4 View showing perimeter ditch and dry stack slope, siltation in ditch, vegetation on stack.

Drawing Mark DS-5-5 View of perimeter ditch and stack.

Drawing Mark DS-5-6 View of perimeter ditch and stack.

Drawing Mark DS-5-7 Erosion on exterior slope of dike, ruts on access road

Drawing Mark DS-5-7 Erosion on exterior slope of dike.

Drawing Mark DS-5-7 Erosion on exterior slope of dike.

Drawing Mark DS-5-7 Erosion on exterior slope of dike.

Drawing Mark DS-5-8 Significant rill/gully erosion on northwest face of perimeter dike.

Drawing Mark DS-5-8 Significant rill/gully erosion on northwest face of perimeter dike.

Drawing Mark DS-5-10 Outlet of perimeter ditch drainage pipe beneath haul road, buried.

Drawing Mark DS-5-11 Perimeter ditch drainage pipe inlet where ditch crosses haul road, partly silted closed.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
DS-5-1	View showing perimeter ditch and dry stack slope, siltation in ditch, sparse vegetation on stack.	Photo 1B
DS-5-2	View of a typical downdrain on the dry stack.	Photo 2B
DS-5-3	View showing perimeter ditch and dry stack slope, siltation in ditch, sparse vegetation on stack.	Photo 3B
DS-5-4	View showing perimeter ditch and dry stack slope, siltation in ditch, vegetation on stack.	Photo 4B
DS-5-5	View of perimeter ditch and stack.	Photo 5B
DS-5-6	View of perimeter ditch and stack.	Photo 6B
DS-5-7	Erosion on exterior slope of dike, ruts on access road.	Photo 7B, 8B, 11B, 12B
DS-5-8	Significant rill/gully erosion on northwest face of perimeter dike.	Photo 9B, 10B
DS-5-9	Animal burrow, mid-slope of perimeter dike.	No photo
DS-5-10	Outlet of perimeter ditch drainage pipe beneath haul road, buried.	Photo 14B
DS-5-11	Perimeter ditch drainage pipe inlet where ditch crosses haul road, partly silted closed.	Photo 13B

Drawing Mark P-1-1 Small inner slope slough.

Drawing Mark P-1-3 Stacked RCP riser outlets.

Drawing Mark P-1-5 Tree growth on NE dike (to the left in photo).

N/A General photo of basin.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
P-1-1	Small inner slope slough.	Photo 32A
P-1-2	Wooden weir inlet structure.	No Photo
P-1-3	Stacked RCP riser outlets.	Photo 35A
P-1-4	Animal burrow.	No Photo
P-1-5	Tree growth on NE dike.	Photo 29A
N/A	General photo of basin.	Photo 37A

Drawing Mark CDA-1-1 Northwest weir RCP inlet (looking down inlet).

Drawing Mark CDA-1-1 Northwest weir RCP inlet.

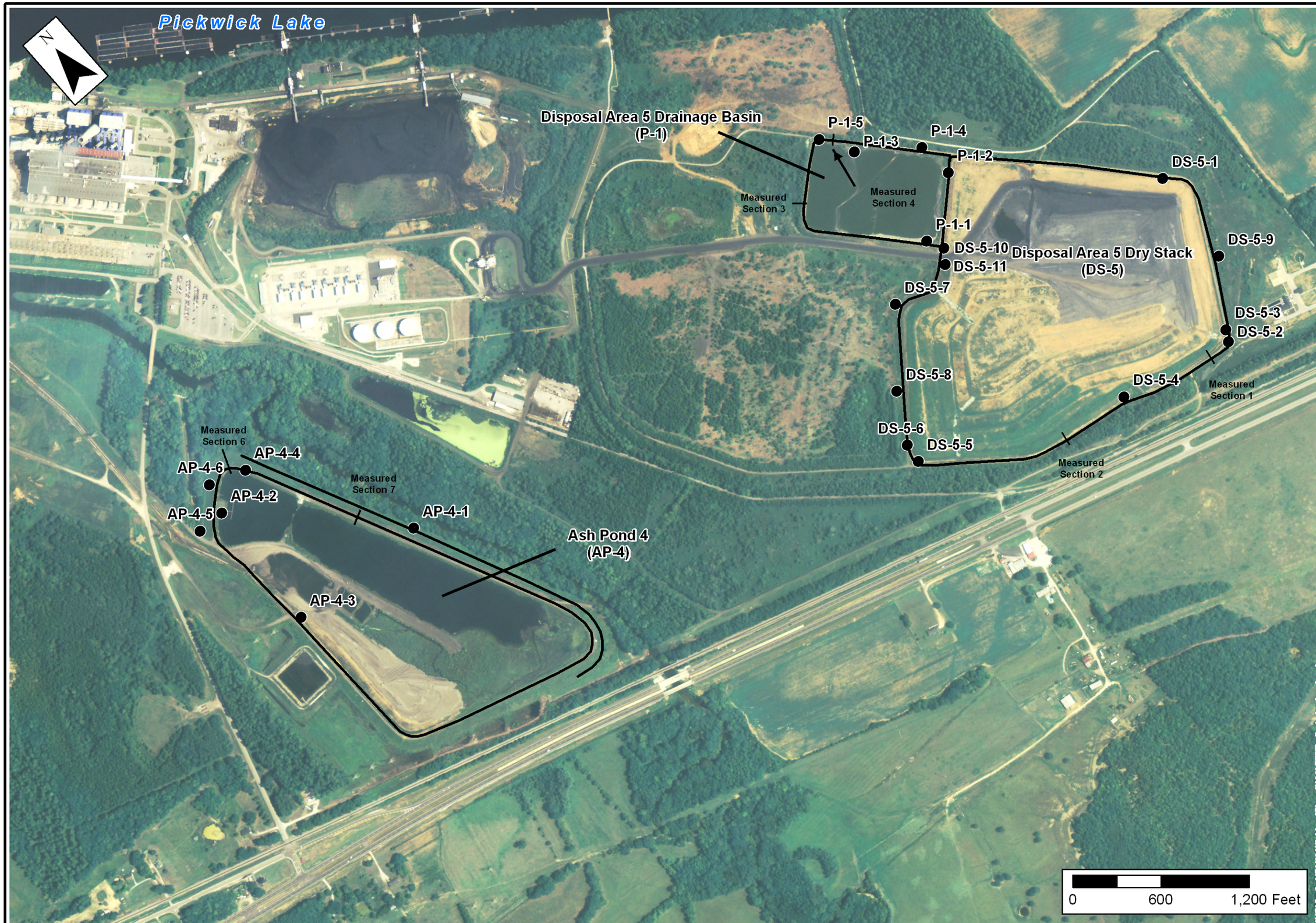
Drawing Mark CDA-1-2 Northwest outlet pipe.

Drawing Mark CDA-1-3 Typical photo of dike slope near Section 10.

Drawing Mark CDA-1-4 Typical wave erosion protection near river.

Drawing Mark CDA-1-5 Southeast outlet pipe.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
CDA-1-1	Northwest weir RCP inlet.	Photo 19C, 20C
CDA-1-2	Northwest outlet pipe.	Photo 32C
CDA-1-3	Typical photo of dike slope near Section 10.	Photo 22C
CDA-1-4	Typical wave erosion protection near river.	Photo 28C
CDA-1-5	Southeast outlet pipe.	Photo 30C



STANTEC
CONSULTING
SERVICES INC.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
859-422-3000

Stantec

Plan View 1 - COF

Tennessee Valley Authority
Colbert Fossil Plant
Tuscumbia, Colbert County, Alabama

PROJECT NO.	171468118
DATE	MARCH 2009
DRAWN BY	MEA
CHECKED BY	RLR
CHECKED BY	DAG
SCALE	AS SHOWN
REVISED:	
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Lexington, Kentucky
40511-2050
859-422-3000

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Plan View 2 - COF

Tennessee Valley Authority
Colbert Fossil Plant
Tuscumbia, Colbert County, Alabama

PROJECT NO.	171468118
DATE	MARCH 2009
DRAWN BY	MEA
CHECKED BY	RLR
CHECKED BY	DAG
SCALE	AS SHOWN
REVISED	
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2 OF 2

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Coal Combustion Product Disposal Facility Assessment
Phase 1 Document Review Form
Colbert Fossil Plant (COF)

Date Reviewed	Reviewed by	File Name	File Type
1/30/2009	RLR/PJC	Colbert.pdf (This Is An Aerial View W/ Structures Located - Also Includes Top And Toe Of Dike Elevations)	PDF
1/30/2009	RLR/PJC	01-10-1992 Red Water Seepage.pdf	PDF
1/30/2009	RLR/PJC	013 Ash Pond Leachate Treat Wetlands Npdes Al0003867 04-1987.pdf	PDF
1/30/2009	RLR/PJC	10-28-1987 COF Proposed Admin Order.pdf	PDF
1/30/2009	RLR/PJC	11-10-1997 Yrly Free Water Vol 97-15497-99.pdf	PDF
2/23/2009	PJC	1-14-09 Bottom Ash Pond Inspection.Tif	TIF
1/30/2009	RLR/PJC	12-02-1987 COF 013 Wetland Treatment System.pdf	PDF
2/23/2009	PJC	1-21-09 Pond Dike Inspections.Tif	TIF
1/30/2009	RLR/PJC	12-19-1986 Effluent Limits Violation.pdf	PDF
1/30/2009	RLR/PJC	12-22-1986 Incomp Rept Al0003867 Discharge Monitoring Rept .pdf	PDF
2/23/2009	PJC	1-29-09 Pond Dike Inspection.Tif	TIF
1/30/2009	RLR/PJC	1-30-1990 No4 And 5 Ash Pond Dikes.pdf	PDF
3/30/2009	PJC	2-10-09 Pond Dike Inspection.pdf	PDF
3/30/2009	PJC	2-19-09 Pond Dike Inspection.pdf	PDF
3/30/2009	PJC	2-27-09 Pond Dike Inspection.pdf	PDF
3/30/2009	PJC	2-6-09 Pond Dike Inspection.pdf	PDF
1/30/2009	RLR/PJC	3-12-1987 Npdes Permit Al0003867 Ash Pond Leachate Letter.pdf	PDF
3/30/2009	PJC	3-6-09 Pond Dike Inspection.pdf	PDF
1/30/2009	RLR/PJC	4-01-1987 Al0003867 013 Outfall Ash Pond Leachate.pdf	PDF
1/30/2009	RLR/PJC	4-05-1990 No 4 Ash Pond Sample Of Redwater.pdf	PDF
1/30/2009	RLR/PJC	5-23-1986 Redwater Invest Insp Rept.pdf	PDF
1/30/2009	RLR/PJC	5-25-1993 Dike Inspection For 4-6-93.pdf	PDF
1/30/2009	RLR/PJC	7-25-1991 Npdes Permit Al0003867 Ash Pond Dikes Seep.pdf	PDF
1/30/2009	RLR/PJC	7-30-1986 Proposed Npdes Permit Mod M00072.pdf	PDF
1/30/2009	RLR/PJC	97-15497-00 Insp Wo Yrly Free Water Vol 12-16-1997 .pdf	PDF
1/30/2009	RLR/PJC	A60 910307 065 3-07-1991 Ash Pond Dikes Seepage.pdf	PDF
1/30/2009	RLR/PJC	A60 910312 066 3-14-1991 Water Sample Collection And Analys.pdf	PDF
1/30/2009	RLR/PJC	A60 910312 066 3-14-1991 Water Sample Collection And Analyses.pdf	PDF
1/30/2009	RLR/PJC	A60 910312 066 3-14-1991 Water Sample Collection.pdf	PDF
1/30/2009	RLR/PJC	A60 910312 066 Water Sample Collection And Analyses.pdf	PDF
1/30/2009	RLR/PJC	A60 930816 002 8-09-1993 Proposed Copper Pond Closure Plan.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond 4 Increment Vol Oct 7-1997.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Vol Cert Dec 16-1997.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume 11-26-1996.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume 1990 Data.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume 1990.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume 1992 Fax Copy.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume 1992.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
1/30/2009	RLR/PJC	Ash Pond Free Water Volume 2008.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Chart 1999.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Draft 1990 Continued.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Draft 1993.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Draft 1994 Data.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Draft 1994.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Report 1992 Cover Letter.pdf	PDF
1/30/2009	RLR/PJC	Ash Pond Free Water Volume Report 1993.pdf	PDF
1/30/2009	RLR/PJC	B65 980417 270 4-17-1998 Inspect Of Waste Disposal Areas.pdf	PDF
1/30/2009	RLR/PJC	B65 990623 702 6-23-1999 Annual Insp Waste Disposal Areas.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection 2006.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection April 1995 (2).pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection April 1995.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection April 1997 Pictures.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection April 1997.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection April 2000.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Dec 2006.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Dec 2007.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Jan 1997.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Jan 1998.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Jan 1999.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Jan 2002.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection July 1993.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection March 1994.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection May 2006.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection Nov 2004.pdf	PDF
1/30/2009	RLR/PJC	Bottom Ash Pond Annual Inspection November 2002.pdf	PDF
1/30/2009	RLR/PJC	COF 10-04-1978 Noncompliance With Metal Cleaning Wastes N.pdf	PDF
1/30/2009	RLR/PJC	COF 11-03-2000 No 4 Ash Pond Sediment Oil Study Report.pdf	PDF
1/30/2009	RLR/PJC	COF 94-318-Fh39 Coal Yard Drainage Basin Study Gp-168.pdf	PDF
1/30/2009	RLR/PJC	COF A60 900917 066 9-19-1990 Water Pollution Control Compl.pdf	PDF
1/30/2009	RLR/PJC	COF Coppm-M84-23 6-04-1990 Plant Proced-Chemical Cleaning.pdf	PDF
1/30/2009	RLR/PJC	COF M01 920723 001 7-20-1992 Copper Pond Release.pdf	PDF
1/30/2009	RLR/PJC	COF M72 910514 503 Water Qual Control Compliance Improv Ta.pdf	PDF
1/30/2009	RLR/PJC	COF N01 921102 802 11-02-1992 Copper Pond Release.pdf	PDF
1/30/2009	RLR/PJC	COF 10-04-1978 Noncompliance With Metal Cleaning Wastes.pdf	PDF
1/30/2009	RLR/PJC	COF 1-10-1992 Special Groundwater Monitoring Near Chemical.pdf	PDF
1/30/2009	RLR/PJC	COF 1-10-1992 Special Groundwater Monitoring Newr Chemical .pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
1/30/2009	RLR/PJC	COF 1-16-1992 Analytical Results For Samples.pdf	PDF
1/30/2009	RLR/PJC	COF 1-31-1992 Coal Yard Runoff Pond Cyrp Bypass Info.pdf	PDF
1/30/2009	RLR/PJC	COF 2-06-1992 Groundwater Monitoring Data For Wells Mc1-Mc4.pdf	PDF
1/30/2009	RLR/PJC	COF 2-06-1992 Groundwater Monitoring-Review Of Data For Wel.pdf	PDF
1/30/2009	RLR/PJC	COF 3-08-1991 Nonchemical Metal Cleaning Waste.pdf	PDF
1/30/2009	RLR/PJC	COF 7-08-1997 Fugitive Oil-Sheen Project.pdf	PDF
1/30/2009	RLR/PJC	COF Ash Pond Insp Fy 2005.pdf	PDF
1/30/2009	RLR/PJC	COF Ash Pond Insp Fy 2006.pdf	PDF
1/30/2009	RLR/PJC	COF Ash Pond Insp Fy 2007.pdf	PDF
1/30/2009	RLR/PJC	COF Ash_Pond_Insp_Summaries.doc	DOC
1/30/2009	RLR/PJC	COF M36 920124 045 1-24-1992 Diary Note From Water Chemist.pdf	PDF
1/30/2009	RLR/PJC	COF M56 910806 585 8-07-1991 High Iron Concentration In Cop.pdf	PDF
1/30/2009	RLR/PJC	COF-10N211-Sht -Rev 8 Main Plant General Grading Plan Coal Yard.cal	CAL
1/30/2009	RLR/PJC	COF-10N212-Sht -Rev 2 Main Plant Coal Yard Drainage Plan At Protective Fence And Coal Track.cal	CAL
3/30/2009	PJC	COF-10N213 Rev 3.cal	CAL
2/23/2009	PJC	COF-10N213 Rev 3.cal	CAL
1/30/2009	RLR/PJC	COF-10N213-Sht -Rev 6 Main Plant Ash Disposal Areas.cal	CAL
3/30/2009	PJC	COF-10N287 Rev 1.cal	CAL
2/23/2009	PJC	COF-10N287 Rev 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N287-Sht -Rev 1 Main Plant Ash Disposal Area No. 4 Divider Dike & Floating Skimmer.cal	CAL
3/30/2009	PJC	COF-10N290 Rev 6.cal	CAL
2/23/2009	PJC	COF-10N290 Rev 6.cal	CAL
3/30/2009	PJC	COF-10N290 Rev 8.cal	CAL
2/23/2009	PJC	COF-10N290 Rev 8.cal	CAL
1/30/2009	RLR/PJC	COF-10N290-Sht -Rev 8 Main Plant Ash Disposal Area No. 4 Plan.cal	CAL
3/30/2009	PJC	COF-10N291 Rev 4.cal	CAL
2/23/2009	PJC	COF-10N291 Rev 4.cal	CAL
1/30/2009	RLR/PJC	COF-10N291-Sht -Rev 4 Main Plant Ash Disposal Area No. 4 Spillway & Channel Plan.cal	CAL
3/30/2009	PJC	COF-10N292 Rev 3.cal	CAL
2/23/2009	PJC	COF-10N292 Rev 3.cal	CAL
1/30/2009	RLR/PJC	COF-10N292-Sht -Rev 3 Main Plant Ash Disposal Area No. 4 Sections And Details.cal	CAL
3/30/2009	PJC	COF-10N293 Rev 1.cal	CAL
2/23/2009	PJC	COF-10N293 Rev 1.cal	CAL
3/30/2009	PJC	COF-10N293 Rev 2.cal	CAL
2/23/2009	PJC	COF-10N293 Rev 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N293-Sht -Rev 2 Standard Drawing Ash Disposal Spillway.cal	CAL
3/30/2009	PJC	COF-10N295-01 Rev 3.cal	CAL
2/23/2009	PJC	COF-10N295-01 Rev 3.cal	CAL

Date Reviewed	Reviewed by	File Name	File Type
3/30/2009	PJC	COF-10N295-02 Rev 0.cal	CAL
2/23/2009	PJC	COF-10N295-02 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10N295-1-Sht -Rev 3 Main Plant Ash Disposal Area No. 4 Misc. Details - Sh 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N295-2-Sht -Rev 0 Main Plant Ash Disposal Area No. 4 Misc Details Sheet 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N295-Sht -Rev 0 Main Plant Ash Dspsl Area 4 Misc Det.cal	CAL
3/30/2009	PJC	COF-10N296 Rev 1.cal	CAL
2/23/2009	PJC	COF-10N296 Rev 1.cal	CAL
3/30/2009	PJC	COF-10N297 Rev 1.cal	CAL
2/23/2009	PJC	COF-10N297 Rev 1.cal	CAL
3/30/2009	PJC	COF-10N297 Rev 2.cal	CAL
2/23/2009	PJC	COF-10N297 Rev 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N297-Sht -Rev 2 Standard Drawing Weir For Ash Disposal Spillway.cal	CAL
3/30/2009	PJC	COF-10N309 Rev 1.cal	CAL
2/23/2009	PJC	COF-10N309 Rev 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N400-Sht -Rev 1 Yard Concrete Ash Disposal Trench Outline & Reinforcement.cal	CAL
1/30/2009	RLR/PJC	COF-10N401-Sht -Rev 4 Yard Concrete Ash Disposal Supports Outline & Reinf.cal	CAL
1/30/2009	RLR/PJC	COF-10N405-Sht -Rev 2 Yard Concrete Ash Disposal Trench Outline & Reinf - Sh 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N406-Sht -Rev 1 Yard Concrete Ash Disposal Trench Outline & Reinf - Sh 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N410-Sht -Rev 0 Yard Ash Disposal Area No. 4 Bridge Across Cane Creek Abutment 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N411-Sht -Rev 2 Yard Ash Disposal Area No. 4 Bridge Across Cane Creek Bent.cal	CAL
1/30/2009	RLR/PJC	COF-10N412-1-Sht -Rev 1 Yard Ash Disposal Area No. 4 Bridge Across Cane Creek Abutment 2 & Sump Sh 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N412-2-Sht -Rev 0 Yard Ash Disposal Area No. 4 Bridge Across Cane Creek Abutment 2 & Sump Sh 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N413-1-Sht -Rev 1 Yard Ash Disposal Area No. 4 Bridge Across Cane Creek Deck Slab & Drainage Sh 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N413-2-Sht -Rev 0 Yard Ash Disposal Area No. 4 Bridge Across Cane Creek Deck Slab & Drainage Sh 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N414-1-Sht -Rev 0 Yard Ash Disposal Area No. 4 Road Crossing Pipe Protection Station 37_68-Sh 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N414-2-Sht -Rev 0 Yard Ash Disposal Area No. 4 Road Crossing Pipe Protection Station 37_68-Sh 2.cal	CAL
1/30/2009	RLR/PJC	COF-10N415-1-Sht -Rev 1 Yard Ash Disposal Area No. 4 Road Crossing Removable Bridge Sta 41.00.cal	CAL
1/30/2009	RLR/PJC	COF-10N415-2-Sht -Rev 0 Yard Ash Disposal Area No. 4 Road Crossing Removable Bridge Sta 41+00.cal	CAL
1/30/2009	RLR/PJC	COF-10N416-1-Sht -Rev 0 Yard Ash Disposal Area No. 4 Road Crossing Removabe Bridge Sta 46+87.5.cal	CAL
1/30/2009	RLR/PJC	COF-10N416-2-Sht -Rev 1 Yard Ash Disposal Area No. 4 Road Crossing Removable Bridge Sta 46+87.5.cal	CAL
1/30/2009	RLR/PJC	COF-10N5410-Sht -Rev 5 Yard Unit 5 Concrete Ash Disposal Trench Outline & Reinforcement - Sh 1.cal	CAL
1/30/2009	RLR/PJC	COF-10N5411-Sht -Rev 2 Yard Unit 5 Concrete Ash Disposal Trench Outline & Reinforcement Sh 2.cal	CAL
3/30/2009	PJC	COF-10W200-01 Rev 3.cal	CAL
2/23/2009	PJC	COF-10W200-01 Rev 3.cal	CAL
3/30/2009	PJC	COF-10W200-1-Sht -Rev 3.cal	CAL
2/23/2009	PJC	COF-10W200-1-Sht -Rev 3.cal	CAL
3/30/2009	PJC	COF-10W201-02 Rev 3.cal	CAL
2/23/2009	PJC	COF-10W201-02 Rev 3.cal	CAL

Date Reviewed	Reviewed by	File Name	File Type
3/30/2009	PJC	COF-10W201-03 Rev 4.cal	CAL
2/23/2009	PJC	COF-10W201-03 Rev 4.cal	CAL
3/30/2009	PJC	COF-10W202-01 Rev 2.cal	CAL
2/23/2009	PJC	COF-10W202-01 Rev 2.cal	CAL
3/30/2009	PJC	COF-10W203-01 Rev 5.cal	CAL
2/23/2009	PJC	COF-10W203-01 Rev 5.cal	CAL
3/30/2009	PJC	COF-10W203-02 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W203-02 Rev 0.cal	CAL
3/30/2009	PJC	COF-10W206 Rev 5.cal	CAL
2/23/2009	PJC	COF-10W206 Rev 5.cal	CAL
1/30/2009	RLR/PJC	COF-10W253-1-Sht -Rev 0 Main Plant Road Crossing At Dry Fly Ash Piping Plan, Profile, Sections & Miscellaneous Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W253-2-Sht -Rev 0 Main Plant Road Crossing At Dry Fly Ash Piping Profiles, Sections & Miscellaneous Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W279-Sht -Rev 0 Main Plant General Plan Proposed Ash Disposal Are No. 5.cal	CAL
3/30/2009	PJC	COF-10W283-01 Rev 10.cal	CAL
2/23/2009	PJC	COF-10W283-01 Rev 10.cal	CAL
3/30/2009	PJC	COF-10W283-02 Rev 11.cal	CAL
2/23/2009	PJC	COF-10W283-02 Rev 11.cal	CAL
3/30/2009	PJC	COF-10W283-03 Rev 7.cal	CAL
2/23/2009	PJC	COF-10W283-03 Rev 7.cal	CAL
3/30/2009	PJC	COF-10W283-04 Rev 6.cal	CAL
2/23/2009	PJC	COF-10W283-04 Rev 6.cal	CAL
3/30/2009	PJC	COF-10W283-05 Rev 5.cal	CAL
2/23/2009	PJC	COF-10W283-05 Rev 5.cal	CAL
3/30/2009	PJC	COF-10W283-10 Rev 7.cal	CAL
2/23/2009	PJC	COF-10W283-10 Rev 7.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-10-Sht -Rev 7 Main Plant Ash Disposal Area No. 5 Misc Details & Sections Sheet 10.cal	CAL
3/30/2009	PJC	COF-10W283-11 Rev 1.cal	CAL
2/23/2009	PJC	COF-10W283-11 Rev 1.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-11-Sht -Rev 1 Yard Ash Disposal Area No.5 Misc. Details & Sections Wooden Spillway - Skimmer.cal	CAL
3/30/2009	PJC	COF-10W283-12 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-12 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-12-Sht -Rev 0 Main Plant Ash Disposal Area No. 5 Misc. Details & Sections Sheet 12.cal	CAL
3/30/2009	PJC	COF-10W283-13 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-13 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-13-Sht -Rev 0 Main Plant Ash Disposal Area No. 5 Fly Ash Stacking Plan Sheet 13.cal	CAL
3/30/2009	PJC	COF-10W283-14 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-14 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-14-Sht -Rev 0 Main Plant Ash Disposal Area No. 5 Misc. Details & Sections Sheet 14.cal	CAL

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3/30/2009	PJC	COF-10W283-15 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-15 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-15-Sht -Rev 0 Yard Ash Disposal Area No. 5 Fly Ash Stacking Plan Intermediate Stage 1.cal	CAL
3/30/2009	PJC	COF-10W283-16 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-16 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-16-Sht -Rev 0 Yard Ash Disposal Area No. 5 Fly Ash Stacking Plan Intermediate Stage 2.cal	CAL
3/30/2009	PJC	COF-10W283-17 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-17 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-17-Sht -Rev 0 Yard Ash Disposal Area No. 5 Fly Ash Stacking Plan Intermediate Stage 3.cal	CAL
3/30/2009	PJC	COF-10W283-18 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-18 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-18-Sht -Rev 0 Yard Ash Disposal Area No. 5 Fly Ash Stacking Plan Intermediate Stage 4.cal	CAL
3/30/2009	PJC	COF-10W283-19 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-19 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-19-Sht -Rev 0 Yard Ash Disposal Area No. 5 Fly Ash Stacking Plan Intermediate Stage 5.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-1-Sht -Rev 10 Main Plant Ash Disposal Area No. 5 Sheet 1.cal	CAL
3/30/2009	PJC	COF-10W283-20 Rev 0.cal	CAL
2/23/2009	PJC	COF-10W283-20 Rev 0.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-20-Sht -Rev 0 Yard Ash Disposal Area No 5 Fly Ash Stacking Plan Intermediate Stage 6.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-2-Sht -Rev 11 Main Plant Ash Disposal Area No. 5 Sheet 2.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-3-Sht -Rev 7 Main Plant Ash Disposal Area No. 5 Misc. Details & Sections Sheet 3.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-4-Sht -Rev 6 Main Plant Ash Disposal Area No. 5 Misc. Details & Sections Sheet 4.cal	CAL
1/30/2009	RLR/PJC	COF-10W283-5-Sht -Rev 5 Main Plant Ash Disposal Area No. 5 Misc Details & Sections Sheet 5.cal	CAL
3/30/2009	PJC	COF-10W284 Rev 3.cal	CAL
2/23/2009	PJC	COF-10W284 Rev 3.cal	CAL
3/30/2009	PJC	COF-10W284 Rev 4.cal	CAL
2/23/2009	PJC	COF-10W284 Rev 4.cal	CAL
1/30/2009	RLR/PJC	COF-10W284-Sht -Rev 4 Main Plant Chemical Treatment Pond & Ash Pond Divider Dike Plan And Details.cal	CAL
3/30/2009	PJC	COF-10W285-01 Rev 5.cal	CAL
2/23/2009	PJC	COF-10W285-01 Rev 5.cal	CAL
3/30/2009	PJC	COF-10W285-02 Rev 1.cal	CAL
2/23/2009	PJC	COF-10W285-02 Rev 1.cal	CAL
1/30/2009	RLR/PJC	COF-10W285-1-Sht -Rev 5 Yard Coal Yard Drainage Basin Plan & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W285-2-Sht -Rev 1 Yard Coal Yard Drainage Basin Sections & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W292-1-Sht -Rev 0 Main Plant Ash Disposal Area No. 4 Sections And Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W294-1-Sht -Rev 1 Yard Civil Ash Pond #4 Co2 Conditioning Location And Access Plan.cal	CAL
1/30/2009	RLR/PJC	COF-10W294-2-Sht -Rev 0 Yard Civil Ash Pond #4 Co2 Conditioning Partial Plan 1.cal	CAL
1/30/2009	RLR/PJC	COF-10W294-3-Sht -Rev 0 Yard Civil Ash Pond #4 Co2 Conditioning Partial Plan 2.cal	CAL

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1/30/2009	RLR/PJC	COF-10W294-4-Sht -Rev 0 Yard Civil Ash Pond #4 Co2 Conditioning Partial Plan 3.cal	CAL
1/30/2009	RLR/PJC	COF-10W294-5-Sht -Rev 1 Yard Civil Ash Pond #4 Co2 Conditioning Partial Plan, Profiles, & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W294-6-Sht -Rev 0 Yard Civil Ash Pond #4 Co2 Conditioning Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W294-7-Sht -Rev 0 Yard Civil-Ash Pond #4 Co2 Conditioning Antenna Mast Foundation Plan, Sections & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W298-Sht -Rev 0 Main Plant Ash Disposal Area No 1 Reclamation - Sheet 1.cal	CAL
1/30/2009	RLR/PJC	COF-10W299-1-Sht -Rev 5 Project Facilities Dry Fly Ash Coll . Fac. Tva Contract 88Pkg-06298A Civil - Plot Plan.cal	CAL
1/30/2009	RLR/PJC	COF-10W299-2-Sht -Rev 2 Project Facility Dry Fly Ash Coll. Fac. Tva Contract# 88Pkg-06298A Civil Maintenance Road & Storm Drainage Plan.cal	CAL
1/30/2009	RLR/PJC	COF-10W299-3-Sht -Rev 2Project Facility Dry Fly Ash Collection Facilities Tva Contract# Civil Ash Silo Area Paving Plan And Grading .cal	CAL
1/30/2009	RLR/PJC	COF-10W299-Sht -Rev 0 Main Plant Ash Disposal Area No 1 Reclamation - Sheet 2.cal	CAL
1/30/2009	RLR/PJC	COF-10W371-1-Sht -Rev 1 Yard Coal Storage Yard & Gas Turbine Area Existing Facilities.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-1-Sht -Rev 4 Project Facility Dry Fly Ash Facilities Tva Contract Concrete Surge Bin Trench - Plan, Section & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-2-Sht -Rev 5 Project Facility Dry Fly Ash Facilities Tva Contract Structural Surge Bin Trench Steel Grating Plan & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-3-Sht -Rev 4 Dry Fly Ash Collection Facilities Concrete Surge Bin - Sump Pit, Plan, Sections & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-4-Sht -Rev 2 Dry Fly Ash Collection Facilities Structural Surge Bin & Ash Silo Sump Pits Plan & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-5-Sht -Rev 3 Dry Fly Ash Collection Facilities Concrete Ash Pipe Trench Type 1 Plan, Sections & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-6-Sht -Rev 1 Dry Fly Ash Collection Facilities Structural Ash Pipe Trench Type 1 & 11 Steel Grating Plans & Detail.cal	CAL
1/30/2009	RLR/PJC	COF-10W450-7-Sht -Rev 1 Concrete Ash Pipe Trench Type 11 Plan Sections & Details.cal	CAL
1/30/2009	RLR/PJC	COF-10W460-1-Sht -Rev 1 Yard - Units 1-5 Dry Fly Ash Facilities Concrete Storage Silos Pile Location Plan.cal	CAL
3/30/2009	PJC	COF-17W412-01 Rev 3.cal	CAL
2/23/2009	PJC	COF-17W412-01 Rev 3.cal	CAL
3/30/2009	PJC	COF-17W412-02 Rev 2.cal	CAL
2/23/2009	PJC	COF-17W412-02 Rev 2.cal	CAL
3/30/2009	PJC	COF-17W412-03 Rev 2.cal	CAL
2/23/2009	PJC	COF-17W412-03 Rev 2.cal	CAL
3/30/2009	PJC	COF-17W412-03 Rev 3.cal	CAL
2/23/2009	PJC	COF-17W412-03 Rev 3.cal	CAL
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2/23/2009	PJC	COF-18W250-01 Rev 2.cal	CAL
3/30/2009	PJC	COF-18W250-02 Rev 4.cal	CAL
2/23/2009	PJC	COF-18W250-02 Rev 4.cal	CAL
3/30/2009	PJC	COF-18W255-01 Rev.cal	CAL
2/23/2009	PJC	COF-18W255-01 Rev.cal	CAL
3/30/2009	PJC	COF-67W301-01 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-01 Rev 1.cal	CAL
3/30/2009	PJC	COF-67W301-02 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-02 Rev 1.cal	CAL

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3/30/2009	PJC	COF-67W301-03 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-03 Rev 1.cal	CAL
3/30/2009	PJC	COF-67W301-04 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-04 Rev 1.cal	CAL
3/30/2009	PJC	COF-67W301-05 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-05 Rev 1.cal	CAL
3/30/2009	PJC	COF-67W301-06 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-06 Rev 1.cal	CAL
3/30/2009	PJC	COF-67W301-07 Rev 1.cal	CAL
2/23/2009	PJC	COF-67W301-07 Rev 1.cal	CAL
3/30/2009	PJC	Colbertfossilplantashstackingplandisposalareano4September2002.pdf	PDF
3/30/2009	PJC	Colbertfossilplantgeologyofthecolbertsteamplantcharlespbenziger.pdf	PDF
3/30/2009	PJC	Colbertfossilplantlawreportofgeologicalandgeophysicalinvestigationaugust1989.pdf	PDF
3/30/2009	PJC	Colbertfossilplantletterdrsmithtoronpowelljanuary182002Contract99998970Bottomashstackingplanpr0362.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmactecreportofgeotechnicalexplorationashstackarea5March192004.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmactecreportofgeotechnicalexplorationproposedborrowareamarch172004.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmactecreportofgeotechnicalexplorationproposedgypsumdisposalfacilitynovember72003.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmemofvanmetertoglbuchananashdisposalarea5Soilsexplorationandtestingendessoilscheduleno672June91982.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmemoglbuchanantogenefarmerapril51977Ashdisposalarea4Dikeraisingsoilsexplorationandtestingendessoilsschedno67.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmemojfmurdocktojlgoldenborrowareaseand5Permeabilitytestmarch151988.pdf	PDF
3/30/2009	PJC	Colbertfossilplantmemomnsprousetohsfoxadditionalashdisposalareano5Engineeringreportdecember211982.pdf	PDF
3/30/2009	PJC	Colbertfossilplantsandmeprojectno143202511Reportofsubsurfaceexplorationfgddisposalsite.pdf	PDF
3/30/2009	PJC	Colbertsteamplantashdisposalarea5Soilsexplorationandtestingendessoilscheduleno672Duplicate.pdf	PDF
3/30/2009	PJC	Colbertsteamplantashpondno5Engineeringreportapril251985.pdf	PDF
3/30/2009	PJC	Colbertsteamplantborrowareafsoilsinvestigationsmesoi87030November131987.pdf	PDF
3/30/2009	PJC	Colbertsteamplantdryashfacilitysingletonreport.pdf	PDF
3/30/2009	PJC	Colbertsteamplantgenefarmertofplacyoctober131972Proposedashdisposalareano4Dikessoilinvestigation.pdf	PDF
3/30/2009	PJC	Colbertsteamplantjaraulstontoopthorntondecember141984Ashpond5Fieldpermeabilitytestsoesoilschedule673.pdf	PDF
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3/30/2009	PJC	Colbertsteamplantmemomnsprousetohsfoxundatedashdisposalarea5Evaluationofstructuralstability.pdf	PDF
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3/30/2009	PJC	Colbertsteamplantwestongeophysicalashpond5Electromagneticterrainconductivitysurveymay1988.pdf	PDF
3/30/2009	PJC	Colbertsteamplantwestongeophysicalashpond5Geophysicalsurveyjanuary1985.pdf	PDF
1/30/2009	RLR/PJC	Colbert-Summary Of Groundwater Elevations-Quality Data Wr2.pdf	PDF
1/30/2009	RLR/PJC	Compliance Sampling Insp M10 812 .pdf	PDF
1/30/2009	RLR/PJC	document Dec 14-1998.pdf	PDF
1/30/2009	RLR/PJC	document Dec 8-1999.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
1/30/2009	RLR/PJC	document June 27-2000.pdf	PDF
1/30/2009	RLR/PJC	document June11-2001.pdf	PDF
1/30/2009	RLR/PJC	document June12-2002.pdf	PDF
1/30/2009	RLR/PJC	document1.pdf	PDF
1/30/2009	RLR/PJC	documentfed Ex.pdf	PDF
1/30/2009	RLR/PJC	documentfed Ex2.pdf	PDF
1/30/2009	RLR/PJC	documentjun28-04pdf.pdf	PDF
1/30/2009	RLR/PJC	documentjune13-2003.pdf	PDF
1/30/2009	RLR/PJC	Free Water Volume No 4 Ash Pond Email Jun 24-1998.pdf	PDF
1/30/2009	RLR/PJC	Free Water Volume Reports Email 2-16-1999.pdf	PDF
1/30/2009	RLR/PJC	M01 840213 339 2-10-1984 Compliance Sampling Insp M10-812.pdf	PDF
1/30/2009	RLR/PJC	M63 830111 930 1-23-1986 Recomm For Proactive Investigation.pdf	PDF
1/30/2009	RLR/PJC	M63 861196 860 12-01-1986 Red Water Seep - Insp Prog And Re.pdf	PDF
1/30/2009	RLR/PJC	M63 870508 841 5-21-1987 Ash Pond Leachate Dsn 013.pdf	PDF
1/30/2009	RLR/PJC	M63 870528 873 6-05-1987 Ash Pond Leachate Treat Wetlands.pdf	PDF
1/30/2009	RLR/PJC	M63 871109 853 Dsn 013 Proposed Admin Order.pdf	PDF
1/30/2009	RLR/PJC	M72 870123 969 12-19-1986 Effluent Limits Violation Al0003867.pdf	PDF
1/30/2009	RLR/PJC	M72 870401 802 3-30-1987 Ash Pond Leachate M00071.pdf	PDF
1/30/2009	RLR/PJC	M72 870605 836 6-04-1987 Ash Pond Leachate Dsn 013.pdf	PDF
1/30/2009	RLR/PJC	M72 910125 989 1-25-1994 Ash Pond Dikes Seepage Insp.pdf	PDF
1/30/2009	RLR/PJC	M72 910222 446 2-15-1991 Red Water Seepage Rept.pdf	PDF
1/30/2009	RLR/PJC	M72 920115 630 1-15-1992 No 4-5 Red Water Seepage Rept.pdf	PDF
1/30/2009	RLR/PJC	M72 920115 630 1-15-1992 Red Water Seepage Rept.pdf	PDF
1/30/2009	RLR/PJC	M72 920115 630 1-15-1992 Red Water Seepage Rept2.pdf	PDF
1/30/2009	RLR/PJC	M72 930128 825 1-27-1993 Ash Pond Dikes Seepage Insp.pdf	PDF
1/30/2009	RLR/PJC	M72 930128 825 1-27-1993 Ash Pond Dikes Seepage Insp2.pdf	PDF
1/30/2009	RLR/PJC	M72 9501129 109 1-20-1995 Ash Pond Dikes Seepage Insp.pdf	PDF
1/30/2009	RLR/PJC	M72 951218 229 Ash Pond Free Water Vol Cert 12-18-1995.pdf	PDF
1/30/2009	RLR/PJC	M72 960124 246 1-24-1996 Ash Pond Dikes Seppage Insp.pdf	PDF
1/30/2009	RLR/PJC	M72 961205 328 Dec 12-1996 Ash Pond Free Water Vol Cert.pdf	PDF
1/30/2009	RLR/PJC	M72 961220 336 Dec 20-1996 Revised Ash Pond Free Water Vol.pdf	PDF
1/30/2009	RLR/PJC	M72 970124 348 1-24-1997 Ash Pond Dikes Seepage Insp.pdf	PDF
1/30/2009	RLR/PJC	M72 980123 436 Ash Pond Dikes Seep Insp Al0003867.pdf	PDF
1/30/2009	RLR/PJC	Mass Balance 10-2-97 To 9-2-99.pdf	PDF
1/30/2009	RLR/PJC	Material Into Pond 4 Jan 2-1997.pdf	PDF
1/30/2009	RLR/PJC	Material Ponded Between Surveys 10-1-1995 To 9-30-1996.pdf	PDF
1/30/2009	RLR/PJC	Memo-Email Jan 13-1998.pdf	PDF
1/30/2009	RLR/PJC	No 4 Ash Pond Free Water Volume 1990-2002.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
1/30/2009	RLR/PJC	No 4 Ash Pond Free Water Volume 1990-2003.pdf	PDF
1/30/2009	RLR/PJC	No4 Ash Pond Info 1996.pdf	PDF
1/30/2009	RLR/PJC	Npdes Permit Al0003867 Ash Pond Dikes Seepage Insp.pdf	PDF
1/30/2009	RLR/PJC	Short-Long Term Disposal Plan Fy2000.pdf	PDF
1/30/2009	RLR/PJC	Yrly Free Water Vol Insp Wo 12-12-1996.pdf	PDF

Appendix C

Widows Creek Fossil Plant

TVA Disposal Facility Assessment
Phase 1b Plant Summary
Widows Creek Fossil Plant (WCF)

Location:	2800 Steamplant Road Stevenson, Jackson County, Alabama 35772-2000 Latitude: 34.890226 Longitude: 85.754385
Plant Contact:	Stanley Bramlett TVA Systems Engineer Phone: (256) 437-4350 Email: shbramle@tva.gov
Facts and Figures:	Widows Creek has eight coal-fired generating units. Construction of the main ash pond perimeter dike at Widows Creek began in 1950 and was completed in 1965. The winter net dependable generating capacity is 1,629 megawatts. The plant consumes some 10,000 tons of coal per day.
Coal Combustion Byproduct Disposal:	Approximately 280,000 dry tons of fly ash is wet sluiced to the main ash pond each year. Fly ash is retrieved from the main ash pond and stacked within the main ash pond footprint. Approximately 110,000 dry tons of bottom ash is wet sluiced to the main ash pond each year. Dewatered bottom ash is retrieved and stacked within the main ash pond footprint. Approximately 750,000 dry tons of scrubber gypsum is produced each year. The scrubber gypsum is wet sluiced to an onsite gypsum stacking area, where it is handled by a rim-ditch stacking method. Approximately 20,000 tons per year of scrubber gypsum is marketed offsite to the cement industry.
Geology and Seismicity:	The Widows Creek Fossil Plant is located in northeastern Alabama along the west shore of the Tennessee River, at the confluence of the river and Widows Creek. The plant is situated in the Sequatchie Valley District of the Appalachian Plateaus Physiographic Province, just south of a northeast to southwest trending thrust fault. The geologic mapping indicates the plant is underlain by Ordovician age limestone and shale bedrock of the Sequatchie Formation, Nashville Group, and Stones River Group. The Sequatchie Formation consists of thin bedded calcareous shale and mudstone interbedded with fossiliferous or bioclastic limestone. The Nashville Group is described as argillaceous and fossiliferous limestone overlain by laminated, silty limestone. The Stones River Group consists of locally argillaceous, fossiliferous limestone, with bentonite and bentonitic shale near the top of the formation. Although not depicted on the geologic mapping, alluvial deposits are likely present beneath the portions of the site adjacent to the river.

Three zones of earthquake activity affecting northern Alabama are the New Madrid Seismic Zone (NMSZ), the Southern Appalachian Seismic Zone (SASZ), and the South Carolina Seismic Zone (SCSZ). Most earthquakes in Alabama occur within the SASZ. Historical records show that earthquakes with epicenters in Alabama have been recorded throughout most of the state, but they are often not strong enough to be felt on the surface, and would most likely do little or no damage. In contrast, if a large earthquake were to occur within the New Madrid zone to the northwest, damage to northern Alabama would be possible.

Facilities Reviewed:

Abandoned Ash Disposal Area
Bottom Ash Stack
Gypsum Stack
Gypsum Stack Stilling Pond
Lower Stilling Pond
Main Ash Pond A
Old Scrubber Sludge Pond Dredge Cell
Pump Pond
Upper Stilling Pond

1. General Facility Information

Facility Status:	Inactive since June 1969	NID Identification:	N/A
Surface Area (inside dikes)	136 Acres	Maximum Height (toe to top of dike):	N/A
Free Water Volume:	N/A	Maximum Water Storage:	N/A
Estimated CCB Storage:	N/A	Dike Length:	9,375 feet
Plant Discharge to Facility:	N/A	Current Pool Elevation:	Filled and abandoned to elevation 625.0 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Ash Disposal Area for Units 1-6, commissioned pre-1958. Decommissioned June 1969.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Inactive since June 1969.
Operations Manual:	Inactive since June 1969.
TVA Maintenance:	Inactive since June 1969.
TVA Inspections:	Post closure inspection performed yearly.
Problems Previously Identified During Past TVA Inspections:	Based on available data, none were identified.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W7420 R14, 10W7420 R0, 10N7421 R6, 10N7422 R8, 10W7463-01, 10W7463-02, 10N7425
TVA As-Built Drawings:	FY 1969 Divider Dike Drawing.
TVA Construction Testing Records:	Based on available date, none were identified.
TVA Annual Inspection Reports:	FY 1967 - FY 2009
Geotechnical Data:	Geotechnical data was not available.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	N/A	
Trees:	N/A	
Wave Wash Protection:	N/A	
Erosion:	N/A	
Instabilities:	N/A	
Animal Burrows:	N/A	
Freeboard:	**Measured:**	N/A
	Design:	N/A
Encroachments:	N/A	
Slope:	**Measured:**	N/A
	Design:	N/A

6.2. Crest

Crest Cover and Slope:	N/A	
Erosion:	N/A	
Alignment:	N/A	
Settlement/Cracking:	N/A	
Bare Spots/Rutting:	N/A	
Width:	**Measured:**	N/A
	Design:	N/A

6.3. Exterior Slopes

Vegetation:	Heavy grass cover.	
Trees:	Heavily wooded.	
Erosion:	N/A	
Instabilities:	N/A	
Uniform Appearance:	N/A	
Seepage:	N/A	
Benches:	N/A	
Foundations, Drains, Relief Wells, Instrumentation:	N/A	
Animal Burrows:	N/A	
Slope:	**Measured:**	N/A
	Design:	N/A
Height:	**Measured:**	N/A
	Design:	N/A

6.4. Spillway Weirs/Riser Inlets

Number:	2
Size, Type and Material:	Could not assess thoroughly.
Height of Riser Inlets:	Could not assess thoroughly.
Access:	Covered with woody vegetation.

Joints:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	Both discharge structures are abandoned.

6.5. Outlet Pipes

Number:	(4)
Size, Type and Material:	Culverts.
Headwall:	N/A
Joint Separations:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	N/A

7. Notable Observations and Concerns

- None

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be maintained and established.

8.2. Maintenance Recommendations

- Continue annual inspection program and execute recommendations.

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	40 acres	Maximum Height (toe to top of dike):	36 feet
Free Water Volume:	15 Acre-feet	Maximum Water Storage:	1,464 Acre-feet
Estimated CCB Storage:	900 Acre-feet	Dike Length:	6,925 feet
Plant Discharge to Facility:	77.4 cfs	Current Pool Elevation:	635.6 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned Pre-1967. Provides Stacking area for Bottom Ash.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operation manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	Based on available data, none were identified.
TVA Inspections:	FY1967 - FY2009
Problems Previously Identified During Past TVA	South dike noted to have landslide and seepage.

Inspections:

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W7246 R1, 10W7460 R1, 10W7461-1 R0
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1967 - FY2009
Geotechnical Data:	May 2004 (Mactec Report), February 2003 (Mactec Report) and August 1980 (TVA Report).

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Sparse vegetation observed.	
Trees:	None observed.	
Wave Wash Protection:	None observed.	
Erosion:	Interior slopes observed to have erosion, vegetation was not observed.	
Instabilities:	None observed.	
Animal Burrows:	Few observed.	
Freeboard:	**Measured:**	N/A
	Design:	N/A
Encroachments:		
Slope:	**Measured:**	N/A
	Design:	N/A

6.2. Crest

Crest Cover and Slope:	Bottom ash, no predominate slope.
Erosion:	None observed.
Alignment:	Observed to be in good condition.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Observed throughout the south dike where vehicles travel.
Width:	**Measured:** 10 feet to 30 feet **Design:** N/A

6.3. Exterior Slopes

Vegetation:	Sparse vegetation observed.
Trees:	None observed.
Erosion:	Numerous areas of significant erosion particularly on the south side intermediate dike.
Instabilities:	Sloughing of the south side perimeter dike was observed. This instability has been reported in previous inspection reports dating back to 1985.
Uniform Appearance:	Observed to be uniform except for southern dike.
Seepage:	Observed on the south side perimeter dike adjacent to the Scrubber Road.
Benches:	Intermediate bench observed.
Foundations, Drains, Relief Wells, Instrumentation:	None observed.
Animal Burrows:	Few observed.
Slope:	**Measured:** 2H:1V **Design:** 2H:1V
Height:	**Measured:** 50 feet **Design:** 116 feet

6.4. Spillway Weirs/Riser Inlets

Number:	N/A
Size, Type and Material:	N/A
Height of Riser Inlets:	N/A
Access:	N/A
Joints:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	Pipe inventory study is ongoing.

6.5. Outlet Pipes

Number:	See Upper Stilling Pond
Size, Type and Material:	N/A
Headwall:	N/A
Joint Separations:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	N/A

7. Notable Observations and Concerns

- Sloughing has occurred in the southwest portion of the active Ash Pond. The stacking of bottom ash above the plant road level has created a cell approximately twelve to thirty feet in height with moderate slopes ranging from 2H:1V to 3H:1V. The majority of the slope disturbance is located down gradient of the sluice pipe outlets and Chemical Ponds consisting of copper and iron ponds. The previous inspection report states the spillway conduit inlets being plugged with the action item to clean the lines. This was apparently performed. Water discharging from the pond's spillway conduit is discharged mid slope. The slope disturbance appears to be localized below these sources of water. The landslide spoils have encroached onto the Scrubber Road causing standing water in the west-bound traffic lane of the road. The width of the encroachment is less than one hundred feet. However, numerous repairs to the slope and additional evidence of slope disturbance extends over three hundred feet along Scrubber Road. Numerous attempts to repair the sloughing have been made over the last couple of years according to a TVA WCF System Engineer.

- Excessive seepage observed on the south dike extending 600 feet along Plant Road. Research revealed the construction of a bentonite slurry cut off wall which directs seepage through the bottom ash stack into this area.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended the practice of terminating active spillway conduits above the toe of dikes or embankments cease. In at least one case, conduit outlets on the mid slope of dikes have caused surface erosion, rutting and sloughing. New conduits should be designed and constructed in accordance with acceptable dam safety regulations with the proper material, pressure rating, anti-seep measures, and outlet energy dissipating provisions to operate as a spillway conduit. The conduit outlet should be supported by a engineered concrete thrust block foundation. The outlet should extend into the receiving stilling pond or ditch with erosion protection in the area of the splash pool using a serviceable concrete apron.
- It is recommended conduit inventory study be conducted on all by-product disposal facilities. If inactive or abandoned pipes are discovered an abandonment plan should be developed and implemented.
- It is recommended the current practices of Construction Quality Assurance be reviewed and revised. It is recommended a CQA plan under the direct supervision of a licensed engineer in the State of Alabama.
- It is recommended that an Operations and Maintenance Plan, and an Emergency Action Plan be developed for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be maintained and established.

8.2. Maintenance Recommendations

- Seed and mulch bare areas.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Achieve minimum design freeboard on all dikes.
- Maintained design interior slope grading.

- Repair erosion and rutting on exterior slopes.
- Monitor seepage through the embankment slopes.

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	95 acres	Maximum Height (toe to top of dike):	79 feet
Free Water Volume:	475 Acre-feet	Maximum Water Storage:	6,619 Acre-feet
Estimated CCB Storage:	7,892,243 CY	Dike Length:	Crest – 8,600 feet, Intermediate Bench – 9,450 feet, Perimeter Bench – 10,350 feet
Plant Discharge to Facility:	5,000 gpm (Unit 7/8 combined)	Current Pool Elevation:	Pond 1A - Dry Pond 2A/2B - Elevation 655 Pond 3 - Elevation 670

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett
Field Assessment Dates:	January 14, 2009 and January 15, 2009
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned 1986. Contains sluiced material from Units 7 and 8.
Past Failures/Releases:	Abandoned decant weir failure on January 9, 2009. Side stack sloughs reportedly repaired in TVA inspection reports (1985-2009).

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	TVA Inspection reports make reference to minor maintenance issues (1985-2004).
TVA Inspections:	FY1986 - FY2009
Problems Previously Identified During Past TVA Inspections:	Construction deviation from design, operations are not fully functioning per designs. 2007 weir abandoned, slurry pipes unstable, woody growth in Pond 2B, perimeter and intermediate benches and slopes are vegetated, erosion occurs from the upper slope approximate elevation 650 feet.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W215 series
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1986 - FY2009
Geotechnical Data:	1980, 1984, 1991, 2004, 2009 borings were drilled.

6. Stantec Field Observations

Due to the dike recovery efforts in response to the January 9, 2009 incident, the gypsum stack engineering assessment was accelerated as requested by TVA. Phase 2 geotechnical exploration efforts began January 12, 2009. The Phase 1A and 1B site reconnaissance, completion of checklists and document review process were performed in parallel with the Phase 2 field exploration and office engineering analyses. The results of the Phase 1b assessment are provided in this report. The results, conclusions, recommendations and engineering designs of immediate work plans will be provided in a Phase 2 engineering report.

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Vegetation was not observed.
Trees:	Woody growth observed, approximately 15 feet tall.
Wave Wash Protection:	None observed.
Erosion:	None observed.
Instabilities:	Steep interior slopes with sloughing observed.
Animal Burrows:	None observed.
Freeboard:	**Measured:** 1.5 feet **Design:** 3.0 feet
Encroachments:	None observed.
Slope:	**Measured:** Approximately 1.5H:1V **Design:** 2H:1V

6.2. Crest

Crest Cover and Slope:	None observed on the three crests.
Erosion:	Surface erosion observed where the rim ditching operation was allowed to overtop.
Alignment:	Observed to be in marginal condition. Evidence of crest center lines not following the construction plans is apparent.
Settlement/Cracking:	None observed.

Bare Spots/Rutting:	Rutting observed on all crests.	
Width:	**Measured:**	20 feet
	Design:	20 feet

6.3. Exterior Slopes

Vegetation:	Dense brush covers lower and intermediate side slopes. The upper slope is bare.	
Trees:	Some woody growth present.	
Erosion:	Surface runoff erosion is present on all slopes around the perimeter. 8" - 12" deep and 6" - 8" wide. Erosion 1' - 6" deep 1'-4" wide x 25' long observed on the northeast groin. Reference is made to Work Plan 3 - field adjustments to Surface Drainage Plan.	
Instabilities:	Abandoned decant weir failure observed on 01/09/2009. Evidence of three landslides were observed along the west side of the stack. Slope inclinometer was installed in January, 2009. Monitoring of these slopes is ongoing.	
Uniform Appearance:	Observed to be in good condition.	
Seepage:	On the east side, there are wet areas and cattails present at the toe.	
Benches:	Intermediate bench and perimeter bench.	
Foundations, Drains, Relief Wells, Instrumentation:	500 and 600 Series surface drainage inlets are incomplete. Toe drain and slope drain outlets Nos. 3 through 15 subdrainage outlets are complete. Outlets Nos. 1 and 2 have not been installed.	
Animal Burrows:	None observed.	
Slope:	**Measured:**	2.4H:1V
	Design:	2.5H:1V
Height:	**Measured:**	50 to 79 feet
	Design:	150 feet planned

6.4. Spillway Weirs/Riser Inlets

Number:	Two (2)
Size, Type and Material:	Pre-cast concrete, 4-foot diameter, manhole base, 1 foot r.c. barrels, one structure in Pond 2B, one structure in Pond 3.
Height of Riser Inlets:	N/A
Access:	Accessible.
Joints:	Observed to be in good condition.
Mis-Alignment:	Observed to be in good condition.
Closed/Abandoned Conduits:	Pipe inventory is ongoing.

6.5. Outlet Pipes

Number:	Two (2)
Size, Type and Material:	Two (2) 30 inch HDPE, reference is made to Work Plan 5 - Field Adjustments to spillway outfalls.
Headwall:	None observed.
Joint Separations:	None observed.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	A pipe inventory study is ongoing. Four abandoned pipe penetrations will be grouted under Work Plan 6 - Pipe Grouting Plan.

7. Notable Observations and Concerns

- Co-mingling of ash and gypsum is a concern. The addition of fly ash has a negative impact on permeability and strength.
- The practice of using push together pipe for spillway weir/riser structures is a concern due to the potential for leakage between joints.
- Observations of structural distress in CMP spillway conduits.
- Lower perimeter ditch drains poorly along west and south sides.
- 2009 Abandoned spillway structures were improperly abandoned.

- Internal dike instability in Pond 2B.
- Operating pond with minimum freeboard.
- The absence of an Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- A Phase 2 Geotechnical Study is already underway at the Gypsum Stack to evaluate the stability of the slopes, perform seepage analysis, and evaluate construction design and methods.
- It is recommended that a conduit inventory be conducted on all by-product disposal facilities. Conduit and Weir abandonment procedures should be standardized across TVA. One unanswered question Stantec had during the exit interviews involved the Order of Operations or 'OoO' identification number labeled on some of the conduits in the plans. A search of the TVA document server may provide valuable information in finding existing conduits in the field.
- It is recommended the practice of terminating active spillway conduits above the toe of dikes or embankments be stopped immediately. In at least two cases, conduits outlets on the mid slope of dikes have caused surface erosion, rutting and sloughing. The new conduits should designed and constructed in accordance with dam safety regulations with the proper material, pressure rating, anti-seep measures, and outlet energy dissipating provisions to operate as a spillway conduit. The conduit outlet should be supported by a designed concrete thrust block foundation with the last section of conduit turned up at the end to 30 to 45 degrees from horizontal depending on conduit slope, size and operating capacity. The outlet should extend into the stilling pond or ditch with erosion protection in the area of the splash pool using a serviceable concrete apron.
- It is recommended the current practices of Construction Quality Assurance be reviewed and revised. It is recommended a more stringent CQA plan under the direct supervision of a licensed engineer in the State of Alabama begin immediately at the Gypsum Stack, Main Ash Pond and Dredge Cell. It is apparent that the construction and operation of the Gypsum Stack varies, sometimes significantly, from the available construction plans of the facility without the issuance of addendums or revisions by an Engineer of Record. The apparent deviations from the plans include relocated interior divider dikes, the operation of the ponds with marginal freeboard, and the unplanned abandonment and installation of spillway weir and conduit systems.

- It is recommended that an Operations and Maintenance Plan, and an Emergency Action Plan be developed for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be established.
- Due to the limited construction monuments at this facility, it is recommended that additional surveyed monuments be established at selected locations. These monuments should be surveyed annually as a minimum.

8.2. Maintenance Recommendations

- Remove woody growth from exterior slopes.
- Seed and mulch bare areas.
- Cut and maintain heavy/tall cattail and grass growth on exterior slopes to permit better inspection.
- Repair erosion and rutting on exterior slopes.
- Cut tall brush and cattails at seepage areas to permit better inspections and observations.
- Monitor seepage areas on west dike for change until engineering evaluation can be completed and remedial actions developed.
- Conduct annual joint repairs of RCP risers. This spillway system may ultimately be modified or replaced, pending Stantec-TVA assessment of replacement system. Monitor until that time.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Maintain minimum design freeboard based on hydraulic and hydrology analysis.
- Uncover all the inlets to the bench drains and uncover the outlets of the toe drains.
- Maintain design interior slope grading and design width of perimeter dike.
- Monitor seepage and static water levels through the dikes on a monthly basis.

TVA Disposal Facility Assessment
Phase 1b Byproduct Disposal Facility Summary
Widows Creek Fossil Plant (WCF)
Gypsum Stack Stilling Pond (GSSP)

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	8.5	Maximum Height (toe to top of dike):	15 feet
Free Water Volume:	81 Acre-feet	Maximum Water Storage:	135 Acre-feet
Estimated CCB Storage:	81 Acre-feet	Dike Length:	3,000 feet
Plant Discharge to Facility:	5,000 gpm	Current Pool Elevation:	614.0 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned in 1986. Contains decant water from the gypsum stack. The water is pumped through the 008 outfall into Guntersville Reservoir.
Past Failures/Releases:	The Gypsum Stack failure occurred on January 9, 2009 due to an abandoned decant weir.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	Annual mowing, tree removal.
TVA Inspections:	FY86 - FY09

Problems Previously Identified During Past TVA Inspections:	Floating fly ash, heavy vegetation, and woody growth on interior/exterior slopes. Skimmer attached to outlet control pipe should be replaced.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10E7416-1, 10E7416-2, 10W215-1, 10W215-34
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1986 - FY2009
Geotechnical Data:	1980, 1984, 1991, 2004, 2009 borings were drilled.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Heavy vegetation.
Trees:	None observed.
Wave Wash Protection:	Vegetated clay.
Erosion:	None observed.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	**Measured:** 6 feet **Design:** 7 feet
Encroachments:	None observed
Slope:	**Measured:** 2H:1V **Design:** 2H:1V

6.2. Crest

Crest Cover and Slope:	Vegetated clay. Relatively level.
Erosion:	None observed.
Alignment:	Normal alignment observed.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	None observed.
Width:	**Measured:** 25 feet to 50 feet **Design:** 25 feet to 50 feet

6.3. Exterior Slopes

Vegetation:	Heavy vegetation of native grasses.
Trees:	Sparse woody growth.
Erosion:	West slope due to failure of decant weir in Pond 2B of the FGD Wet Stacking Area on January 9, 2009. Area is approximately 80 feet wide by 250 feet long.
Instabilities:	None observed.
Uniform Appearance:	Observed to be uniform.
Seepage:	South dike observed to be wet at the toe.
Benches:	None observed.
Foundations, Drains, Relief Wells, Instrumentation:	None observed.
Animal Burrows:	None observed.
Slope:	**Measured:** 3H:1V **Design:** 3H:1V
Height:	**Measured:** 15 feet **Design:** 15 feet

6.4. Spillway Weirs/Riser Inlets

Number:	Two (2)
Size, Type and Material:	24 inch CMP, 36 inch HDPE.
Height of Riser Inlets:	Inlets outfall to perimeter ditch then enter the stilling pond through a 36 inch HDPE culvert.
Access:	Accessible.
Joints:	Not observed.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	See Abandoned Conduit Inventory drawing, March, 2009, Stantec Consulting Services.

6.5. Outlet Pipes

Number:	One (1)
Size, Type and Material:	30 inch carbon steel with wooden skimmer.
Headwall:	None observed.
Joint Separations:	Unable to observe.
Mis-Alignment:	Unable to observe.
Closed/Abandoned Conduits:	None observed.

7. Notable Observations and Concerns

- Reported distress at the skimmer structure.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- Implement a proposed skimmer replacement.
- It is recommended that an Operations and Maintenance Plan and an Emergency Action Plan be prepared for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future operation, maintenance and construction activities be maintained and established.
- Due to the limited construction monuments at this facility, it is recommended that additional surveyed monuments be established at selected locations. These monuments should be surveyed annually as a minimum.
- Re-establish emergency overflow spillway weir.
- A Phase 2 Hydrologic and Hydraulic Study of the spillway system is currently being performed.

8.2. Maintenance Recommendations

- Seed and mulch bare areas.
- Repair erosion and rutting on exterior slopes.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Maintain design freeboard based on updated hydrologic and hydraulic study results on all dikes.
- Maintain design interior slope grading.

TVA Disposal Facility Assessment
Phase 1b Byproduct Disposal Facility Summary
Widows Creek Fossil Plant (WCF)
Lower Stilling Pond (LSP)

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	4 Acres	Maximum Height (toe to top of dike):	21 feet
Free Water Volume:	64 Acre-feet	Maximum Water Storage:	84 Acre-feet
Estimated CCB Storage:	N/A	Dike Length:	1,685 feet
Plant Discharge to Facility:	77.4 cfs	Current Pool Elevation:	611.5 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett, Stuart Harris
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned 1986. The Lower Stilling Pond receives discharge from the Active Ash Pond and functions with the Upper Stilling Pond as one pond.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	Based on available data, none were identified.
TVA Inspections:	FY1986 - FY2009

Problems Previously Identified During Past TVA Inspections:	Floating fly ash and accumulation of ash, interior slopes are heavily vegetated and contain woody growth.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W234-1
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1986 - FY2009
Geotechnical Data:	Based on available data, none were identified.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Heavy vegetation observed.	
Trees:	Dense woody growth observed.	
Wave Wash Protection:	Vegetated slopes.	
Erosion:	Northwest groin, the dike intersecting the dredge cell is composed of fly ash and is observed to be eroding.	
Instabilities:	None observed.	
Animal Burrows:		
Freeboard:	**Measured:**	3 feet
	Design:	5 feet

Encroachments:	None observed.
Slope:	**Measured:** 2H:1V **Design:** 2H:1V

6.2. Crest

Crest Cover and Slope:	Crest is utilized for vehicle travel. The majority of the crest is composed of bottom ash and gravel. Areas that are not traveled on are observed to be heavily vegetated. Relatively level.
Erosion:	None observed.
Alignment:	Observed to be in good condition.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Rutting observed where vehicles travel.
Width:	**Measured:** 20 feet **Design:** 20 feet

6.3. Exterior Slopes

Vegetation:	Dense brush observed.
Trees:	Sparse woody growth observed.
Erosion:	None observed.
Instabilities:	None observed.
Uniform Appearance:	Observed to be uniform.
Seepage:	None observed.
Benches:	None observed.
Foundations, Drains, Relief Wells, Instrumentation:	None observed.
Animal Burrows:	None observed.
Slope:	**Measured:** N/A **Design:** N/A
Height:	**Measured:** 21 feet **Design:** 21 feet

6.4. Spillway Weirs/Riser Inlets

Number:	Five (5)
Size, Type and Material:	36 inch CMP.
Height of Riser Inlets:	Based on available data, the height is unknown. The rises are 48 inch concrete structures connected to the 36 inch CMPs.
Access:	Limited access to one inlet at the time of inspection was available.
Joints:	Unable to be observed.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	None observed.

6.5. Outlet Pipes

Number:	Five (5)
Size, Type and Material:	36 inch CMP.
Headwall:	10 foot wide wooden skimmer.
Joint Separations:	Unable to observe.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	None observed.

7. Notable Observations and Concerns

- Seepage reported in 2007 was observed to be present.
- Reports of structural distress at weirs and conduits.
- Steep interior slopes with sloughing.
- Exterior slopes are heavily vegetated.
- Sloughing on the interior slopes of the lower stilling pond was observed. The two ponds operate in series with an internal divider dike serving both ponds. The divider dike is fifteen to twenty feet in height and about one hundred feet in length. Looking at the lower pond, the most impacted interior slope was the internal divider dike on the northwest side. A pile of approximately thirty plastic sand bags were stacked

across a portion of the crest of the divider dike. Based on an exit interview with Stuart Harris of TVA conducted by Stantec, hydraulic issues involving the spillway conduits in both the upper and lower ponds have reportedly caused structural distress in the dikes surrounding the ponds. Repairs to the dikes were made to protect the dike slopes.

- Five decant weir spillway structures exceed 30 feet in height.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- Replace tall spillway structures constructed of push together pipe with short stop-log structures, seamless conduit with anti seepage measures.
- It is recommended a conduit inventory be conducted on all by-product disposal facilities. If inactive or improperly abandoned pipes are discovered, an abandonment plan should be developed and implemented.
- It is recommended that an Operations and Maintenance Plan and an Emergency Action Plan be developed for the facility.
- it is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be maintained and established.

8.2. Maintenance Recommendations

- Seed and mulch bare areas.
- Repair erosion and rutting on exterior slopes.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Maintain minimum freeboard on all dikes.
- Maintain designed interior slope grading.

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	160 Acres	Maximum Height (toe to top of dike):	53 feet
Free Water Volume:	5,850 Acre-feet	Maximum Water Storage:	8,268 Acre-feet
Estimated CCB Storage:	5,850 acre-feet	Dike Length:	11,590 feet
Plant Discharge to Facility:	77.4 cfs	Current Pool Elevation:	632.5 feet

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2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett, Stuart Harris
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold

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3. History/Description of Usage

History and Operation:	Commissioned in 1975. Contains sluiced material from Units 1 through 6.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	Based on available data, none were identified.
TVA Inspections:	FY1975 - FY2009
Problems Previously	Some floating fly ash near discharge structures.

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Identified During Past TVA Inspections:	

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W7426 R1, 10W7460 R1, 10W7461-1 R0
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1975 - FY2009
Geotechnical Data:	May 2004 (Mactec Report), February 2003 (Mactec Report) August 1980 (TVA Report).

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Sparse vegetation observed.
Trees:	None observed.
Wave Wash Protection:	None observed.
Erosion:	Observed minor surface erosion.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	**Measured:** 2 feet **Design:** 5 feet
Encroachments:	None observed.
Slope:	**Measured:** Vertical **Design:** 2H:1V

Deleted: Spares vegetation observed

Deleted: Observed minor surface erosion present

6.2. Crest

Crest Cover and Slope:	Gypsum and ash. Relatively level.
Erosion:	None observed.
Alignment:	Observed to be in good condition.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Rutting along entire crest, approximately 6 inch deep x 8 inch wide.
Width:	**Measured:** 12 feet **Design:** 16 feet

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6.3. Exterior Slopes

Vegetation:	Dense brush and dense grass observed.
Trees:	Dense woody growth with large trees on the west slope north of the Red Water River Pond observed.
Erosion:	None observed.
Instabilities:	None observed.
Uniform Appearance:	Observed to be uniform.
Seepage:	None observed.
Benches:	Intermediate bench observed.
Foundations, Drains, Relief Wells, Instrumentation:	None observed.
Animal Burrows:	Few observed.
Slope:	**Measured:** 2H:1V **Design:** 2H:1V
Height:	**Measured:** 51 **Design:** 66

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6.4. Spillway Weirs/Riser Inlets

Number:	Five (5)
Size, Type and Material:	4-foot diameter, reinforced concrete manholes.
Height of Riser Inlets:	32 feet.
Access:	Accessible.
Joints:	Reported open joints during inspection performed in 2007.
Mis-Alignment:	Reported damage during dredging operation.
Closed/Abandoned Conduits:	Pipe Inventory study is ongoing.

6.5. Outlet Pipes

Number:	Five (5)
Size, Type and Material:	36 inch steel.
Headwall:	10 foot diameter skimmer.
Joint Separations:	Unable to be observed.
Mis-Alignment:	Unable to be observed.
Closed/Abandoned Conduits:	Pipe study ongoing.

7. Notable Observations and Concerns

- 2007 seepage on east dike observed.
- Seepage on northeast dike south of the bridge accessing the gypsum stack observed.
- Five riser inlets exceed 30 feet in height.
- Low overhead power transmission line clearance observed in areas where dipping and stacking ash occurs.
- 2008 erosion noted on field inspection at the northeast dike between the bridge accessing Widows Creek.
- The practice of using push together pipe for spillway conduits is a concern.
- Reports of structural distress at weirs and conduits.

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- Existing and abandoned conduits through embankments.
- Steep interior slopes.
- Exterior slopes are heavily vegetated with some woody growth.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.
- The current spillway structure is believed to be constructed of push-together RCP riser sections. The use of push-together risers presents a concern for leakage between the joints.

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<#>Reports of structural distress at weirs and conduits ¶
<#>Existing and Abandoned conduits through embankments ¶
<#>Steep interior slopes¶
<#>Surface erosion on the exterior slopes¶
<#>Rutting on the exterior slopes¶
<#>Seepage through the embankments – cattails and grass growth are present near the toe¶
<#>Operating under the design freeboard of 5 feet ¶
Exterior slopes are heavily vegetated with some woody growth.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that Main Ash Pond A undergo a Geotechnical Study to evaluate the seepage, slope stability, ongoing rim-ditching stacking plan, and future dry stack landfill. Remediation efforts to address these items will be developed based on the results. It is also recommended that a hydraulic and hydrologic analysis be preformed to check freeboard and pond outlet adequacy relative to process flow and stormwater.
- It is recommended that a conduit inventory study be conducted on all by-product disposal facilities. If inactive or improperly abandoned pipes are discarded, an abandonment plan should be developed and implemented.
- It is recommended the current practices of Construction Quality Assurance be reviewed and revised. It is recommended a more stringent CQA plan under the direct supervision of a licensed engineer in the State of Alabama begin immediately Active Ash Pond.
- It is recommended that an Operations and Maintenance Plan, and an Emergency Action Plan be developed for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be maintained be established.
- Due to the limited construction monuments at this facility, it is recommended that additional surveyed monuments be established at selected locations. These monuments should be surveyed annually as a minimum.

8.2. Maintenance Recommendations

- Remove woody growth from exterior slopes.
- Seed and mulch bare areas.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Achieve design freeboard minimum of 5 feet on all dikes.
- Maintain designed interior slope grading.

TVA Disposal Facility Assessment
Phase 1b Byproduct Disposal Facility Summary
Widows Creek Fossil Plant (WCF)
Old Scrubber Sludge Pond Dredge Cell (DC)

1. General Facility Information

Facility Status:	Inactive	NID Identification:	N/A
Surface Area (inside dikes)	116 Acres	Maximum Height (toe to top of dike):	53 feet
Free Water Volume:	Less than 50 Acre-feet	Maximum Water Storage:	6,070 Acre-feet
Estimated CCB Storage:	5,228 Acre-feet	Dike Length:	8,622 feet
Plant Discharge to Facility:	0 cfs	Current Pool Elevation:	641.0 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned in 1973. Contains dredge material from the active ash pond.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	Based on available data, none were identified.
TVA Inspections:	FY1973 - FY2009

Problems Previously Identified During Past TVA Inspections:	Interior slopes have no vegetation, erosion present on the interior slopes, exterior slopes have sparse vegetation, erosion is present on exterior slopes, heavy vegetation in perimeter ditch.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W7420, 10E200
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1973 – FY2009
Geotechnical Data:	May 2004 (Mactec), February 2003 (Mactec), August 1980 (TVA).

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	None observed.
Trees:	None observed.
Wave Wash Protection:	None observed.
Erosion:	Heavy erosion along the perimeter of the interior slope observed.
Instabilities:	Observed the interior slopes to be steep with minor sloughing.
Animal Burrows:	None observed.
Freeboard:	**Measured:** 1.5 feet **Design:** 4.0 feet

Encroachments:	None observed.
Slope:	**Measured:** 1.5H:1V **Design:** 2H:1V

6.2. Crest

Crest Cover and Slope:	Gypsum and ash.
Erosion:	None observed.
Alignment:	Observed to be in good condition.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Observed rutting where vehicles travel.
Width:	**Measured:** 12 feet **Design:** 16 feet

6.3. Exterior Slopes

Vegetation:	Heavy vegetation with some bare spots observed.
Trees:	Some woody growth observed.
Erosion:	Observed throughout slope on northeast corner.
Instabilities:	None observed.
Uniform Appearance:	Observed to be uniform.
Seepage:	Red water observed at the toe of the eastern slope.
Benches:	Intermediate.
Foundations, Drains, Relief Wells, Instrumentation:	None observed. The status of planned subdrainage system was unknown at the time of this report.
Animal Burrows:	None observed.
Slope:	**Measured:** 2H:1V **Design:** 2H:1V
Height:	**Measured:** 50 feet **Design:** 66 feet

6.4. Spillway Weirs/Riser Inlets

Number:	Two (2)
Size, Type and Material:	Fiberglass stop log riser structures 4 feet wide.
Height of Riser Inlets:	20 foot planned.
Access:	Accessible.
Joints:	Unable to observe.
Mis-Alignment:	Unable to observe.
Closed/Abandoned Conduits:	N/A

6.5. Outlet Pipes

Number:	Two (2)
Size, Type and Material:	18 inch diameter steel pipe, "equalization", temporary.
Headwall:	20 feet fiberglass riser structure, 4 feet wide
Joint Separations:	None observed.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	Pipe inventory study is ongoing.

7. Notable Observations and Concerns

- Existing and abandoned conduits through embankments.
- Steep interior slopes.
- Rutting on the southwest exterior slopes.
- Seepage through the embankments - cattails and grass growth are present near the toe.
- Operating with minimum freeboard.
- Exterior slopes are heavily vegetated with some woody growth.
- Along the northeast perimeter of the DC, the exterior slope surface is saturated and soft in at least two areas. Each area extends from the top of the first tier bench to the toe (approximately fifty feet vertically). The areas are bare ground, void of vegetation presumably due to the unbalanced pH of the water. The source of water

appears to be stormwater runoff ponding in a roadside ditch located on the first tier bench. The observations at the Ash Dredge Cell also included evidence like standing water in ditches, sediment filled ditches, clogging toe drain outlets, rutting and erosion, loss of soil cover and the exposure of ash and gypsum within the perimeter ditches.

- Known seepage at the toe of the slope.
- Abandoned equalizing pipes between the Old Scrubber Sludge Pond (OSSP) and raised dredge cells.
- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that the Dredge Cell undergo further Geotechnical Evaluation to evaluate the seepage, slope stability, and the closure plan. Remediation efforts to address these items will be developed based on the results. It is also recommended that a hydraulic and hydrologic analysis be preformed to check freeboard and outlet adequacy relative to stormwater.
- It is recommended the current practices of Construction Quality Assurance be reviewed and revised. It is recommended a more stringent CQA plan under the direct supervision of a licensed engineer in the State of Alabama begin immediately.
- It is recommended that an Operations and Maintenance Plan, and an Emergency Action Plan be prepared for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be established.
- Due to the limited construction monuments at this facility, it is recommended that additional surveyed monuments be established at selected locations. These monuments should be surveyed annually as a minimum.
- Abandoned pipes should be evaluated to determine their status. If it is determined that any of these pipes are inactive or improperly abandoned, then an abandonment plan should be developed and implemented.
- It is recommended conduit inventory study be conducted on all by-product disposal facilities. If inactive or improperly abandoned pipes are discovered, an abandonment plan should be developed and implemented.

8.2. Maintenance Recommendations

- Maintain minimum design freeboard on all dikes.
- Maintain design interior slope grading.
- Monitor seepage through the embankment slopes.
- Remove woody growth from exterior slopes.
- Seed and mulch bare areas.
- Cut and maintain heavy/tall cattail and grass growth on exterior slopes to permit better assessment.
- Repair erosion and rutting on exterior slopes.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	0.40 acres	Maximum Height (toe to top of dike):	21 feet
Free Water Volume:	3.75 Acre-feet	Maximum Water Storage:	5.25 Acre-feet
Estimated CCB Storage:	N/A	Dike Length:	425 feet
Plant Discharge to Facility:	77.4 cfs Normal operating conditions, recycle 100% of inflow back to plant)	Current Pool Elevation:	601.7 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned in 1986. Pumps to the Condenser Cooling Water Intake with a portion being pumped to the wet gypsum system or overflows into the 001 outfall into Guntersville Reservoir.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.

TVA Maintenance:	Based on available data, none were identified.
TVA Inspections:	FY1986 - FY2009
Problems Previously Identified During Past TVA Inspections:	Seepage in 2007.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W234-1
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1986 - FY2009
Geotechnical Data:	Based on available data, none were identified.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Sparse brush observed.
Trees:	Woody growth observed on the north and east slopes.
Wave Wash Protection:	Vegetated slopes.
Erosion:	Observed on the west slope, approximately 4 inches to 12 inches wide by 6 inches to 8 inches deep by 12 feet long.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	**Measured:** 3 feet

Design: 5 feet

Encroachments:		
Slope:	**Measured:**	2:1
	Design:	2:1

6.2. Crest

Crest Cover and Slope:	Vegetated with grass.
Erosion:	None observed.
Alignment:	None observed.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	West and east portion observed to be utilized for vehicle access with minor rutting.
Width:	**Measured:** 25 feet **Design:** N/A

6.3. Exterior Slopes

Vegetation:	Vegetated with grass.
Trees:	Observed several large trees on the eastern slope.
Erosion:	None observed.
Instabilities:	None observed.
Uniform Appearance:	Observed to be uniform.
Seepage:	Seepage reported in 2007 on the western dike. The water level was too high to observe the seep.
Benches:	None observed.
Foundations, Drains, Relief Wells, Instrumentation:	None observed.
Animal Burrows:	None observed.
Slope:	**Measured:** 2H:1V **Design:** 3H:1V
Height:	**Measured:** 18 feet **Design:** 17.5 feet

6.4. Spillway Weirs/Riser Inlets

Number:	Five (5)
Size, Type and Material:	36 inch CMP.
Height of Riser Inlets:	Based on available data, the height is unknown.
Access:	Limited, only one inlet was accessible during assessment.
Joints:	Unable to be observed.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	None observed.

6.5. Outlet Pipes

Number:	Three (3) plant recycling pumps with 3 intake pipes, 3 emergency spillway culverts.
Size, Type and Material:	Culverts observed to be 48 inch oval CMP.
Headwall:	Pump station structure.
Joint Separations:	None observed.
Mis-Alignment:	Culverts observed to be oval.
Closed/Abandoned Conduits:	None observed.

7. Notable Observations and Concerns

- 2007 seepage observed on east dike.
- 2008 three principal spillway conduits show evidence of distress.
- The Pump Pond is receiving pond from the Lower Stilling Pond. The Lower Stilling Pond spillways experience continuous surging problems.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended conduit inventory study be conducted on all by-product disposal facilities. If inactive or improperly abandoned areas are discovered, an abandonment plan should be developed and implemented.
- It is recommended than an Operations and Maintenance Plan be developed for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be maintained and established.
- A hydrologic and hydraulic analysis is recommended to address the Lower Stilling Pond surging problems.

8.2. Maintenance Recommendations

- Seed and mulch bare areas.
- Repair erosion and rutting on interior and exterior slopes.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Maintain minimum freeboard on all dikes.
- Maintain design interior slope grading.

1. General Facility Information

Facility Status:	Active	NID Identification:	N/A
Surface Area (inside dikes)	4 Acres	Maximum Height (toe to top of dike):	21 feet
Free Water Volume:	64 Acre-feet	Maximum Water Storage:	84 Acre-feet
Estimated CCB Storage:	N/A	Dike Length:	1,700 feet
Plant Discharge to Facility:	77.4 cfs	Current Pool Elevation:	611.5 feet

2. Site Visit Information

Stantec Assessment Team:	Robert Fuller, Craig Barnett, Josh Bell and Ben Phillips
TVA Staff Present:	Stanley Bramlett, Stuart Harris
Field Assessment Dates:	January 14, 2009 and January 15, 2009.
Weather/Site Conditions:	Sunny, Cold.

3. History/Description of Usage

History and Operation:	Commissioned in 1986. The Upper Stilling Pond receives discharge from the Active Ash Pond and functions with the Lower Stilling Pond as one pond.
Past Failures/Releases:	Based on available data, none were identified.

4. Owner's Operations, Maintenance and Inspection Information

Emergency Action Plan:	Based on available data, none were identified.
Operations Manual:	A coal combustion products operations manual is available for the Widows Creek Fossil Plant covering active facilities.
TVA Maintenance:	Based on available data, none were identified.
TVA Inspections:	FY1986 - FY2009

Problems Previously Identified During Past TVA Inspections:	Floating ash and accumulation of ash, interior slopes are heavily vegetated and contain woody growth. Discharge structures in good condition.

5. Documents Reviewed

See attached Document Log for complete list of documents provided by TVA for review. In particular, the following provided pertinent information for the assessment of this facility:

TVA Design Drawings:	10W234-1
TVA As-Built Drawings:	Based on available data, none were identified.
TVA Construction Testing Records:	Based on available data, none were identified.
TVA Annual Inspection Reports:	FY1986 - FY2009
Geotechnical Data:	Based on available data, none were identified.

6. Stantec Field Observations

See attached Concerns/Photo Log, Photos, and Site Plan Drawing.

6.1. Interior Slopes

Vegetation:	Heavy vegetation observed.
Trees:	Dense woody growth observed.
Wave Wash Protection:	Vegetated slopes.
Erosion:	Northwest groin, the dike intersecting the dredge cell is composed of fly ash and is observed to be eroding.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	**Measured:** 3 feet **Design:** 5 feet

Encroachments:	None observed.
Slope:	**Measured:** 2H:1V **Design:** 2H:1V

6.2. Crest

Crest Cover and Slope:	Crest is utilized for vehicle travel. The majority of the crest is composed of bottom ash and gravel. Areas that are not traveled on are heavily vegetated. Relatively level.
Erosion:	None observed.
Alignment:	Observed to be in good condition.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Rutting observed where vehicles travel.
Width:	**Measured:** 20 feet **Design:** Not shown on design drawings.

6.3. Exterior Slopes

Vegetation:	Dense brush observed.
Trees:	Sparse woody growth observed.
Erosion:	None observed.
Instabilities:	None observed.
Uniform Appearance:	Observed to be uniform.
Seepage:	None observed.
Benches:	None observed.
Foundations, Drains, Relief Wells, Instrumentation:	None observed.
Animal Burrows:	None observed.
Slope:	**Measured:** N/A **Design:** N/A
Height:	**Measured:** 21 feet **Design:** 21 feet

6.4. Spillway Weirs/Riser Inlets

Number:	N/A
Size, Type and Material:	N/A
Height of Riser Inlets:	N/A
Access:	N/A
Joints:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	N/A

6.5. Outlet Pipes

Number:	N/A
Size, Type and Material:	N/A
Headwall:	N/A
Joint Separations:	N/A
Mis-Alignment:	N/A
Closed/Abandoned Conduits:	N/A

7. Notable Observations and Concerns

- Steep interior slopes.
- Based on the observations at the Upper and Lower Stilling Ponds for the Main Ash Pond, evidence of sloughing on the interior slopes of the lower stilling pond was observed. The two ponds operate in series with an internal divider dike serving both ponds. The divider dike is fifteen to twenty feet in height and about one hundred feet in length. Looking at the lower pond, the most impacted interior slope was the internal divider dike on the northwest side. A pile of approximately thirty plastic sand bags were stacked across a portion of the crest of the divider dike. Based on an exit interview with Stuart Harris of TVA conducted by Stantec, hydraulic surging issues involving the spillway conduits in both the upper and lower ponds have reportedly caused structural distress in the dikes surrounding the ponds. Repairs to the dikes were made to protect the dike slopes.

- The absence of an Emergency Action Plan, Operation and Maintenance Plan, as-built drawings and construction testing records is a concern.

8. Recommendations

8.1. Phase 2 Engineering and Programmatic Recommendations

- It is recommended that a conduit inventory be conducted on all by-product disposal facilities.
- It is recommended that an Operations and Maintenance Plan and an Emergency Action Plan be developed for the facility.
- It is recommended that a program to develop as-built drawings and construction records for future maintenance and construction activities be maintained and established.
- A Hydrologic and Hydraulic Analysis is recommended to address the MAPA spillway surging problems.

8.2. Maintenance Recommendations

- Seed and mulch bare areas.
- Repair erosion and rutting on exterior slopes.
- Continue mowing of exterior slopes.
- Continue annual inspection program and execute recommendations.
- Maintain minimum freeboard on all dikes.
- Maintain designed interior slope grading.

Drawing Mark AADA Overview of abandoned Ash Disposal Area.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
AADA	Overview of the abandoned Ash Disposal Area.	HPIM1421

Drawing Mark BAS-1-4 Bottom Ash Stack exterior slope. Slip area on south side of the stack.

Drawing Mark BAS-1-4 Bottom Ash Stack exterior slope. Repaired slip area on south side of the stack.

BAS-1

Typical erosion of the exterior slope without adequate clay cover. Photo taken on south side of the stack.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
BAS-1-4	Bottom Ash Stack exterior slope. Slip area on south side of the stack.	DSCF2374
BAS-1-4	Bottom Ash Stack exterior slope. Repaired slip area on south side of the stack.	DSCF2370
BAS-1	Typical erosion of the exterior slope without adequate clay cover. Photo taken on the south side of the stack.	HPMI0496

Drawing Mark GS-1-1 Weir structure located on intermediate dike of Pond 3 and Pond 2B.

Drawing Mark GS-1-2 Interior slope on west dike of Pond 2B.

Drawing Mark GS-1-3 Overtopping of Pond 3 rim ditch.

GS-1 Woody growth on southern exterior dike (Typ.).

Drawing Mark GS-2 Runoff erosion on east exterior embankment of Gypsum Stack (Typ.).

Drawing Mark GS-3 Repaired slide area on west exterior embankment (Typ.).

Drawing Mark GS-4 Pond 2B spillway outlet eroding embankment at discharge point.

Drawing Mark GS-5 Spillway weir in Pond 2B.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
GS-1-1	Weir structure located in intermediate dike of Pond 3 and Pond 2B.	HPIM0387
GS-1-2	Interior slope on west dike of Pond 2B.	DSCF2235
GS-1-3	Overtopping of Pond 3 rim ditch.	HPIM1393
GS-1	Woody growth on southern exterior dike (Typ.).	HPIM0295
GS-2	Runoff erosion on east exterior embankment of Gypsum Stack (Typ.).	HPIM0318
GS-3	Repaired slide area on west exterior embankment (Typ.).	HPIM0356
GS-4	Pond 2B spillway outlet eroding embankment at discharge point.	HPIM0356
GS-5	Spillway weir in Pond 2B.	HPIM0281

Drawing Mark GSSP-1	Overview of the Gypsum Stack Stilling Pond.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
GSSP-1	Overview of the Gypsum Stack Stilling Pond,	HPIM1375

Drawing Mark LSP-1-6 Erosion on eastern exterior slope.

Drawing Mark LSP-1 Runoff erosion on northwest interior slope.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
LSP-1-6	Erosion on western interior slope.	DSCF2322
LSP-1	Runoff erosion on northwest interior slope.	DSCF2340

Drawing Mark AP-1 Active Ash Pond interior slope.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
AP-1	Active Ash Pond interior slope.	HPMI0400

Drawing Mark DC-1 Freeboard of Dredge Cell.

Drawing Mark DC-1 South dike vegetation on exterior slope, north of the Stilling Pond.

Drawing Mark DC-1 Rim ditch for the Dredge Cell.

Drawing Mark DC-1-5 North east perimeter of the Dredge Cell, soft saturated area.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
DC-1	Freeboard of Dredge Cell.	DSCF2315
DC-1	South dike vegetation on exterior slope, north of the Stilling Pond.	DSCF2277
DC-1	Rim ditch for the Dredge Cell.	DSCF2282
DC-1-5	North east perimeter of the Dredge Cell, soft saturated area.	DSCF2305

Drawing Mark PP-1 Erosion on western interior slope.

Drawing Mark PP-2 Pump Pond Pump Stations and the deformation of the overflow pipes on the eastern dike.

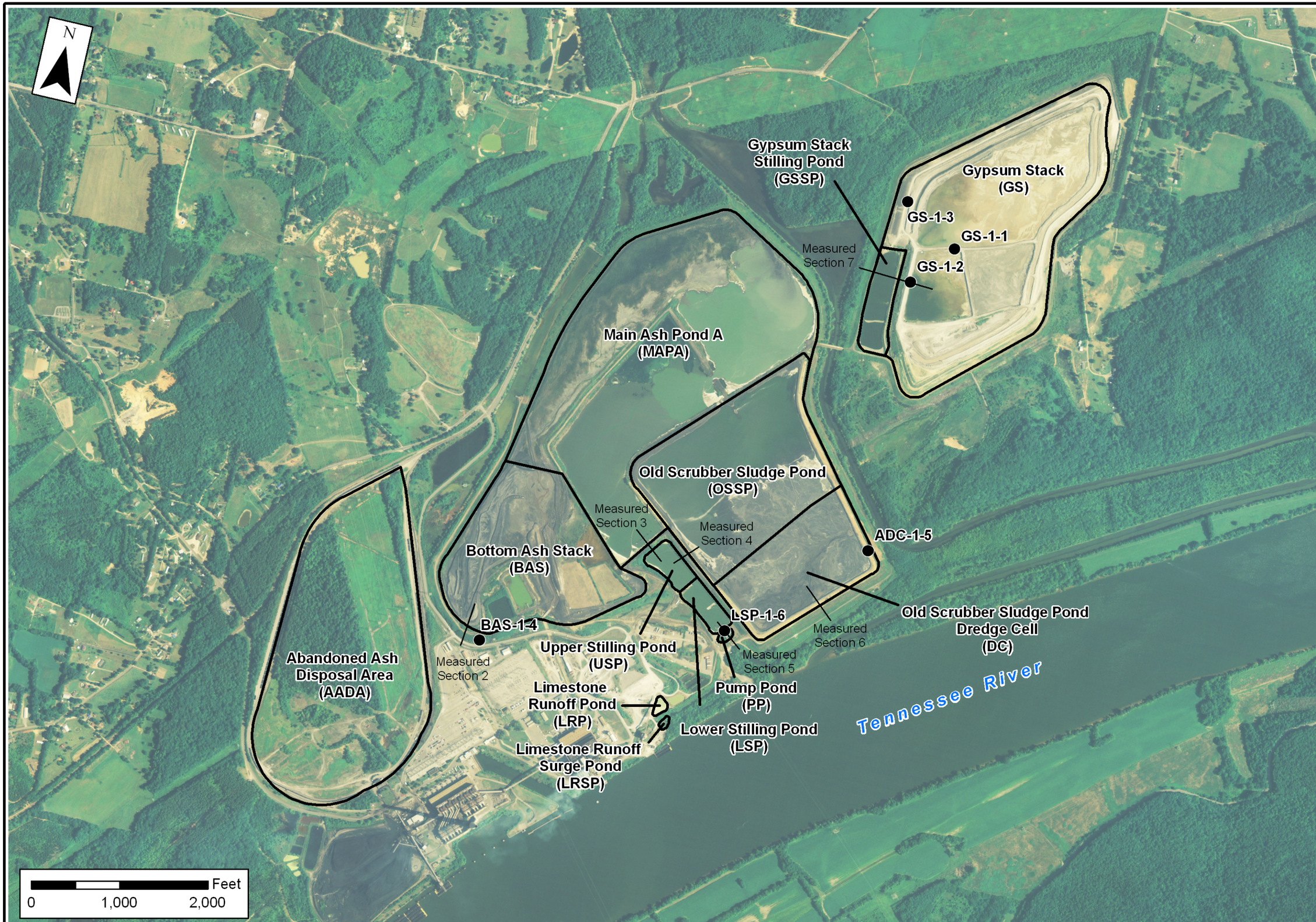
Drawing Mark PP-3 Overview of Structure.

Drawing Mark PP-4 Overview of the outlet for the emergency spillway for the Pump Pond.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
PP-1	Two (2) pump stations and the emergency spillway pipes	DSCF2324
PP-2	Overview of structure	DSCF2321
PP-3	Erosion on western interior slope	DSCF2322
PP-4	Overview of the outlet for the emergency spillway for the Pump Pond	HPIM0626

Drawing Mark USP-1 Overview of the Upper Stilling Pond.

Concerns/Photo Log		
Drawing Mark	**Comments**	**Photo/GPS ID**
USP-1	Overview of the Upper Stilling Pond.	HPIM1373



STANTEC CONSULTING SERVICES INC.
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Stantec

Plan View - WCF

Tennessee Valley Authority
Widows Creek Fossil Plant
Stevenson, Jackson County, Alabama

PROJECT NO.	171468118
DATE	MARCH 2009
DRAWN BY	AMG
CHECKED BY	TCB
CHECKED BY	RDF
SCALE	AS SHOWN
REVISED	
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SHEET

1 OF 1

Coal Combustion Product Disposal Facility Assessment
Phase 1 Document Review Form
Widows Creek Fossil Plant (WCF)

Date Reviewed	Reviewed by	File Name	File Type
3/20/2009	RDF	01 WCF 1976 Precipitator Foundations - Summary.pdf	PDF
3/20/2009	RDF	01 WCF 1978 Phase I Foundation Investigation For So2 Scrubber For Unit 7 - Geotek Project No. 78-531.pdf	PDF
3/20/2009	RDF	01 WCF 1978 Phase Ii Foundation Investigation For So2 Scrubber For Unit 7 - Geotek Project No. 78-531.pdf	PDF
3/20/2009	RDF	01 WCF 1981 Waste Disposal Area Dike Raising Soils Exploration & Testing En Des Soils Schedule No. 83.1.pdf	PDF
3/20/2009	RDF	01 WCF 1983 Dikes Raising.pdf	PDF
3/20/2009	RDF	01 WCF 1983 Forced Oxidation - Project Schedule Baseline.pdf	PDF
3/20/2009	RDF	01 WCF 1984 En Des Soil Sched 83.2.pdf	PDF
3/20/2009	RDF	01 WCF 1988 Landfill App To Adem.pdf	PDF
3/20/2009	RDF	01 WCF 1989 1990 Misc Notes & Sketches - Bedrock Variance Request.pdf	PDF
3/20/2009	RDF	01 WCF 2002 Misc Notes Clearance Meetings.pdf	PDF
3/20/2009	RDF	01 WCF 2005 Engineering Evaluation & Design Recommendations For Renovation Of Gypsum-Fly Ash Storage Facility.pdf	PDF
3/20/2009	RDF	01 WCF 2007 Scope Of Work - Raise Dredge Cell.pdf	PDF
3/20/2009	RDF	02 WCF 1976 Steam Plant Geologic Reports .pdf	PDF
3/20/2009	RDF	02 WCF 1981 Scrubber Sludge & Ash Pond Dikes Raising.pdf	PDF
3/20/2009	RDF	02 WCF 1981 Waste Disposal Area Dike Raising Soils Exploration & Testing En Des Soils Schedule No. 83.1.pdf	PDF
3/20/2009	RDF	02 WCF 1982 Top-Of-Rock Contour Map.pdf	PDF
3/20/2009	RDF	02 WCF 1984 Table Of Contents.pdf	PDF
3/20/2009	RDF	02 WCF 1989 Alabama Historical Commission Certifications For Colbert & Widows Creek.pdf	PDF
3/20/2009	RDF	02 WCF 1990 Scope Of Work - Cost Estimate.pdf	PDF
3/20/2009	RDF	02 WCF 2002 Dredge Cell I Calcs & Sketches.pdf	PDF
3/20/2009	RDF	02 WCF 2005 Engineering Evaluation & Design Recommendations For Renovation Of Gypsum-Fly Ash Storage Facility.pdf	PDF
3/20/2009	RDF	02 WCF 2008 Meetings.pdf	PDF
3/20/2009	RDF	02 WCF Appendix C - Pre-Construction Survey Of Mill Building (Color Photos).pdf	PDF
3/20/2009	RDF	03 WCF 1958 Steam Plant Geologic Reports 'Foundation Exploration For Unit 7'.pdf	PDF
3/20/2009	RDF	03 WCF 1981 Borrow Soils.pdf	PDF
3/20/2009	RDF	03 WCF 1981 Waste Disposal Area Dike Raising Soils Exploration & Testing Tables.pdf	PDF
3/20/2009	RDF	03 WCF 1982 Borrow Area Dike Raising.pdf	PDF
3/20/2009	RDF	03 WCF 1984 Discussion.pdf	PDF
3/20/2009	RDF	03 WCF 1989 Reference - Memo Loney To Downer - Cultural Resources Section.pdf	PDF
3/20/2009	RDF	03 WCF 1990 Junior Brendle Misc Notes.pdf	PDF
3/20/2009	RDF	03 WCF 2005 Field Exploration & Site Inspection.pdf	PDF
3/20/2009	RDF	03 WCF 2008 Rfp.pdf	PDF
3/20/2009	RDF	03 WCF Appendix C Continued.pdf	PDF
3/20/2009	RDF	03 WCF Step 1 Thru Step 3 - Raise Perimeter Dikes Around Original Pond.pdf	PDF
3/20/2009	RDF	04 WCF 1949 Steam Plant Geologic Reports 'Preliminary Geologic Investigations For The Central Area Steam Plant'.pdf	PDF
3/20/2009	RDF	04 WCF 1981 Controlled Earthfill.pdf	PDF
3/20/2009	RDF	04 WCF 1981 Waste Disposal Area Dike Raising Soils Exploration & Testing Drawings.pdf	PDF
3/20/2009	RDF	04 WCF 1982 Seismic Time Distance Graph.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
3/20/2009	RDF	04 WCF 1984 Data Summary Sheets.pdf	PDF
3/20/2009	RDF	04 WCF 1989 Cultural Resources Evaluation Note.pdf	PDF
3/20/2009	RDF	04 WCF 1990 Alabama Dep Of Environmental Management Permit To Operate Landfill & Letter Denying Request.pdf	PDF
3/20/2009	RDF	04 WCF 2001 Soil For Dike S Volume Check.pdf	PDF
3/20/2009	RDF	04 WCF 2005 Laboratory Materials Testing.pdf	PDF
3/20/2009	RDF	04 WCF 2008 Geosyntech.pdf	PDF
3/20/2009	RDF	05 Cof 1988 Landfill App To Adem.pdf	PDF
3/20/2009	RDF	05 WCF 1949-1958 Site Investigations.pdf	PDF
3/20/2009	RDF	05 WCF 1981 Uncontrolled Earthfill.pdf	PDF
3/20/2009	RDF	05 WCF 1981 Waste Disposal Area Dike Raising Soils Exploration & Testing Soil Profile.pdf	PDF
3/20/2009	RDF	05 WCF 1984 Attachment A.pdf	PDF
3/20/2009	RDF	05 WCF 1990 Misc Asbestos Disposal Notes.pdf	PDF
3/20/2009	RDF	05 WCF 2001 Misc Notes Ash Pond Dikes.pdf	PDF
3/20/2009	RDF	05 WCF 2005 Engineering Evaluation & Recommendations.pdf	PDF
3/20/2009	RDF	05 WCF 2008 Misc Corresp..pdf	PDF
3/20/2009	RDF	05 WCF Information Pertaining To The Scrubber Sludge Disposal Project.pdf	PDF
3/20/2009	RDF	06 WCF 1981 Fly Ash.pdf	PDF
3/20/2009	RDF	06 WCF 1981 Waste Disposal Area Dike Raising Soils Exploration & Testing Particle Size Analysis.pdf	PDF
3/20/2009	RDF	06 WCF 1982 Exploratory Agreement.pdf	PDF
3/20/2009	RDF	06 WCF 1984 Attachment B.pdf	PDF
3/20/2009	RDF	06 WCF 1988 1989 Memos - Construction Demolition Asbestos Waste Disposal Areas.pdf	PDF
3/20/2009	RDF	06 WCF 1990 Elevation Information.pdf	PDF
3/20/2009	RDF	06 WCF 2001 Gypsum Sluice Line Letter.pdf	PDF
3/20/2009	RDF	06 WCF 2005 Operating Guidelines For Gypsum Stacking Facility.pdf	PDF
3/20/2009	RDF	06 WCF 2007 Misc Calcs.pdf	PDF
3/20/2009	RDF	06 WCF Misc Drill Holes.pdf	PDF
3/20/2009	RDF	07 WCF 1972 Drawing - Core Drill Layout & Summary.pdf	PDF
3/20/2009	RDF	07 WCF 1981 Bottom Ash.pdf	PDF
3/20/2009	RDF	07 WCF 1981 Waste Disposal Area Dike - Particle Unconsolidated Undrained Triaxial Compression (Q) Test.pdf	PDF
3/20/2009	RDF	07 WCF 1982 Site Location Maps For Saturated Conductivity Tests.pdf	PDF
3/20/2009	RDF	07 WCF 1984 Attachment C.pdf	PDF
3/20/2009	RDF	07 WCF 1989 Environmental Decision Record.pdf	PDF
3/20/2009	RDF	07 WCF 1990 Memo From Ruffner To Cowser Authorization.pdf	PDF
3/20/2009	RDF	07 WCF 2001 Ash Disposal Project.pdf	PDF
3/20/2009	RDF	07 WCF 2005 Appendix 1 Mactec Report Of Geotechnical Drilling Gypsum Fly Ash Storage.pdf	PDF
3/20/2009	RDF	07 WCF 2007 2008 Estimates.pdf	PDF
3/20/2009	RDF	07 WCF Misc Info - Drill Holes - Maps - Etc.pdf	PDF
3/20/2009	RDF	08 WCF 1981 Ash Pond & Scrubber Dikes.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
3/20/2009	RDF	08 WCF 1981 Waste Disposal Area Dike - Misc Tests.pdf	PDF
3/20/2009	RDF	08 WCF 1981 Waste Disposal Area Dike - Particle Size Analysis.pdf	PDF
3/20/2009	RDF	08 WCF 1982 Borrow Area For The Scrubber Sludge Pond Dike Raising.pdf	PDF
3/20/2009	RDF	08 WCF 1984 Attachment D.pdf	PDF
3/20/2009	RDF	08 WCF 1988 Asbestos Landfills Memo - General Categorical Exclusion Conditions.pdf	PDF
3/20/2009	RDF	08 WCF 1990 Memo From Ruffner To Schmiebach Re Waste Permit Variance.pdf	PDF
3/20/2009	RDF	08 WCF 1990 Petition For Clearance To Adem.pdf	PDF
3/20/2009	RDF	08 WCF 2002 Ash - Mechanical Review.pdf	PDF
3/20/2009	RDF	08 WCF 2005 Appendix 2 Results Of Chemical Analyses Of Gypsum-Fly Ash Samples By Tva Central Lab Services.pdf	PDF
3/20/2009	RDF	08 WCF Misc Drawings (Back Cover).pdf	PDF
3/20/2009	RDF	09 WCF 1982 Meeting Notes - Ground Water Concerns.pdf	PDF
3/20/2009	RDF	09 WCF 1984 Attachment E.pdf	PDF
3/20/2009	RDF	09 WCF 1988 Environmental Review Checklist.pdf	PDF
3/20/2009	RDF	09 WCF 1996 Improvement Activity Summary - Long Term Ash Disposal Phase Iii - Phase Ii.pdf	PDF
3/20/2009	RDF	09 WCF 2001 Bottom Ash Base Misc.pdf	PDF
3/20/2009	RDF	09 WCF 2005 Appendix 3 Grain Size Distribution Curves For Widows Creek Gypsum-Fly Ash Deposits.pdf	PDF
3/20/2009	RDF	09 WCF Misc Notes & Drawings (Front Cover).pdf	PDF
3/20/2009	RDF	09 WCF Misc Sketches.pdf	PDF
3/20/2009	RDF	10 WCF 1982 Gsg - Workplan.pdf	PDF
3/20/2009	RDF	10 WCF 1984 Attachment F.pdf	PDF
3/20/2009	RDF	10 WCF 1988 Nepa Categorical Exclusion - Asbestos Demolition Waste Landfills.pdf	PDF
3/20/2009	RDF	10 WCF 1990 Misc Memos And Notes Re Permits With Adem.pdf	PDF
3/20/2009	RDF	10 WCF 2005 Appendix 4 Summary Of Permeability Test Results From Previous (1991) Study.pdf	PDF
3/20/2009	RDF	10 WCF Misc Notes & Drawings Cont (Front Cover).pdf	PDF
3/20/2009	RDF	10E214 R1.cal	CAL
3/20/2009	RDF	10E217-01 R1.cal	CAL
2/2/2009	TCB	10H232-1 Thru 9 30" Drainage Pipe From Gypsum Stack Stilling Pond (008 Outfall)	Hard Copy
2/5/2009	TCB	10N7425-Sht -Rev 0.cal	CAL
2/5/2009	TCB	10N7429-Sht -Rev 0.cal	CAL
2/5/2009	TCB	10N8223-Sht -Rev 0.cal	CAL
2/2/2009	TCB	10W219 Finished Grading And Paving Plan	Hard Copy
2/2/2009	TCB	10W219-1 Continuous Emissions Monitoring System Bldg Slab - Units 1-6 Location And Details	Hard Copy
1/26/2009	TCB	10W7420-Sht -Rev 13.dwg	DWG
1/26/2009	TCB	10W7420-Sht -Rev 14.dwg	DWG
1/26/2009	TCB	10W7420-Sht -Rev 15.dwg	DWG
1/26/2009	TCB	10W7420-Sht -Rev 16.dwg	DWG
2/2/2009	TCB	10W7428-1 Concrete And Misc. Steel Strainer Fdn And Hoist Outline And Reinfocement	Hard Copy
2/2/2009	TCB	10W7434-1 Thru 30 Series - Unit 7 Concrete Absorber Bldg Foundation System	Hard Copy

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2/2/2009	TCB	10W7435-1 Thru 9 Series - Unit 7 Concrete Absorber Bldg Foundation System	Hard Copy
2/2/2009	TCB	10W7436-1 Thru 2 Series - Unit 7 Concrete Absorber Bldg Foundation System	Hard Copy
2/2/2009	TCB	10W7440-1 Thru 9 Series - Unit 7 Concrete Absorber Bldg Foundation System	Hard Copy
2/2/2009	TCB	10W7441-1 Unit 7 Concrete Ball Mill Sump, Outline And Reinf Sections, Details	Hard Copy
2/2/2009	TCB	10W7448-1 Unit 7Concrete Absorber Bldg Electrical Conduit Duct Bank Outline And Reinf	Hard Copy
2/2/2009	TCB	10W7455-1 - Unit 7 Concrete Ball Mill And Absorber Bldg'S Existing And Proposed	Hard Copy
2/2/2009	TCB	10W7455-10 Thru 14 Series - Unit 7 Concrete Ball Mill And Absorber Bldg'S Existing And Proposed	Hard Copy
2/2/2009	TCB	10W7471 Concrete Sbs Area Transformer Foundation Plan And Sections	Hard Copy
2/2/2009	TCB	10W7550-149 Flow Diagram Eflluent Bleed And Sump Piping System	Hard Copy
3/20/2009	RDF	11 WCF 1984 Attachment G.pdf	PDF
3/20/2009	RDF	11 WCF 1990 Letter (With Attachment) From Lance To Bittner.pdf	PDF
3/20/2009	RDF	11 WCF 2005 Appendix 5 Design Slope Geometry & Stability Analysis From 1991 Engineering Evaluation.pdf	PDF
3/20/2009	RDF	11 WCF Misc Notes.pdf	PDF
3/20/2009	RDF	12 WCF 1984 Attachment H.pdf	PDF
3/20/2009	RDF	12 WCF 1989 Asbestos - Demolition Solid Waste Disposal Plan By Maps & Survey Dep.pdf	PDF
3/20/2009	RDF	12 WCF Request To Do Work & Meeting.pdf	PDF
3/20/2009	RDF	13 WCF 1979 Soils Exploration And Testing - En Des Soils Schedule No 83.1 (85.1).pdf	PDF
3/20/2009	RDF	13 WCF 1990 More Misc Notes & Info.pdf	PDF
3/20/2009	RDF	14 WCF 1989 Imput For Permit Application.pdf	PDF
3/20/2009	RDF	14 WCF 1989 Permit Application Solid Waste Disposal Facility Adem.pdf	PDF
3/20/2009	RDF	14 WCF Drawing Proposed Phase I & Ii Disposal Areas.pdf	PDF
3/20/2009	RDF	15 WCF 1981 Soils Exploration And Testing - En Des Soils Schedule No 85.1 (83.1).pdf	PDF
3/20/2009	RDF	15 WCF 1989 Historical Commission Clearance From Graham To Lance About WCF & Col.pdf	PDF
3/20/2009	RDF	16 WCF Bellefonte Section Use For Projection To Widows Creek.pdf	PDF
3/20/2009	RDF	17 WCF 1989 Law Engineering Drilling Soil Sampling Soil Testing & Monitoring Well Instal Services.pdf	PDF
3/20/2009	RDF	17 WCF Misc Maps & Summary Of Core Drilling.pdf	PDF
2/2/2009	TCB	17W7450-1 Mechanical Scrubber System Slurry Piping	Hard Copy
2/2/2009	TCB	17W7450-2 Mechanical Scrubber System Slurry Piping	Hard Copy
2/2/2009	TCB	17W7450-3 Mechanical Scrubber System Slurry Piping	Hard Copy
3/20/2009	RDF	18 WCF 1984 Assessment Of Potential Effects Of Pond On Ground Water We28-4-34-101.pdf	PDF
3/20/2009	RDF	18 WCF Scrubber Sludge Pond Dike Raising.pdf	PDF
3/20/2009	RDF	19 WCF 1989 Request For Approval Payment Of Invoice.pdf	PDF
3/20/2009	RDF	20 WCF 1989 Schedule.pdf	PDF
3/20/2009	RDF	21 WCF Alternatives For Asbestos Demo Waste Disposal.pdf	PDF
3/20/2009	RDF	22 WCF 1989 Soil Profile.pdf	PDF
3/20/2009	RDF	23 WCF 1989 Top Of Rock Contour Map.pdf	PDF
3/20/2009	RDF	24 WCF 1989 Former Borrow Area.pdf	PDF
3/20/2009	RDF	25 WCF 1989 Misc Notes & Info.pdf	PDF

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3/20/2009	RDF	26 WCF 1989 Groundwater Assessment.pdf	PDF
3/20/2009	RDF	26 WCF 1989 Groundwatersampling Well Depths Table Elevations & Subsoil Stratum Samples At Plant L.pdf	PDF
3/20/2009	RDF	28 WCF 1988 Store Summary Data.pdf	PDF
3/20/2009	RDF	29 WCF 1989 Environmental Status Report.pdf	PDF
3/20/2009	RDF	30 WCF 1988 New Adem Permit Application Form.pdf	PDF
3/20/2009	RDF	31 WCF 1990 Solid Waste Permit Application Rev 1.pdf	PDF
3/20/2009	RDF	32 WCF Misc Notes Maps Letters.pdf	PDF
3/20/2009	RDF	33 WCF Review Practice Of Landfilling.pdf	PDF
3/20/2009	RDF	45N546 R14.cal	CAL
3/20/2009	RDF	45N7502 R16.cal	CAL
3/20/2009	RDF	45N7562-1 R4.cal	CAL
3/20/2009	RDF	45N7568-2 R7.cal	CAL
3/20/2009	RDF	45N7583 R7.cal	CAL
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3/20/2009	RDF	45N8515 R3.cal	CAL
3/20/2009	RDF	45N8516 R3.cal	CAL
3/20/2009	RDF	461 K 529-3 R1.cal	CAL
3/20/2009	RDF	461 K 529-7 R1.cal	CAL
3/20/2009	RDF	55N651 R18.cal	CAL
3/20/2009	RDF	55N7666 R9.cal	CAL
3/20/2009	RDF	55N7668 R6.cal	CAL
2/5/2009	TCB	61816Uc.dwg	DWG
3/20/2009	RDF	90-059 Figure 10.cal	CAL
3/20/2009	RDF	90-059 Figure 11.cal	CAL
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3/20/2009	RDF	90-059 Figure 13.cal	CAL
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3/20/2009	RDF	90-059 Figure 4.cal	CAL
3/20/2009	RDF	90-059 Figure 5.cal	CAL
3/20/2009	RDF	90-059 Figure 6.cal	CAL
3/20/2009	RDF	90-059 Figure 7.cal	CAL
3/20/2009	RDF	90-059 Figure 8.cal	CAL

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3/20/2009	RDF	90-059 Figure 9.cal	CAL
1/15/2009	RDF	Ardaman And Associates Reports	PDF
1/15/2009	RDF	Conceptual Design Recommendations.pdf	PDF
1/13/2009	RDF	DCA-WCF-04-1016-001 (10W235-1)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-002 (10W235-2)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-003 (10W235-3)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-004 (10W235-4)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-005 (10W235-5)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-006 (10W235-6)	CAL
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1/13/2009	RDF	DCA-WCF-04-1016-011 (10W235-11)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-012 (10W235-12)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-013 (10W235-13)	CAL
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1/13/2009	RDF	DCA-WCF-04-1016-016 (10W235-16)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-017 (10W235-17)	CAL
1/13/2009	RDF	DCA-WCF-04-1016-018 (10W235-18)	CAL
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1/15/2009	RDF	Engineering Evaluation And Design Recommendations.pdf	PDF
1/15/2009	RDF	Evaluation Of Engineering Properties And Wet Stacking Disposal.pdf	PDF
1/15/2009	RDF	Interim Report On Evaluation Of Fgd Gypsum-Flyash - Widows Creek.pdf	PDF
1/22/2009	RDF	Jan 18 2009 FY2009 Draft WCF Ash Rp.pdf	PDF
3/20/2009	RDF	JOF Sketch - Long Range Ash Study Rr Loop - Cross-Sections For Dike Materials .cal	CAL
3/20/2009	RDF	JOF Sketch - Long Range Ash Study Rr Loop - Cross-Sections For Storage Volumes .cal	CAL
3/20/2009	RDF	JOF Sketch - Long Range Ash Study Rr Loop - Cross-Sections For Storage Volumes.cal	CAL
1/15/2009	RDF	Proposed Management Plan.pdf	PDF
1/15/2009	RDF	Proposed Underdrain System - Widows Creek.pdf	PDF
3/20/2009	RDF	Section 10W7465-01.cal	CAL
3/20/2009	RDF	Soil Excavation Map (Proposed).cal	CAL
3/20/2009	RDF	Std6E Std4E.cal	CAL
3/20/2009	RDF	Summary 2008 Wcf Ash Rp 2008.pdf	PDF
3/20/2009	RDF	WCF 1950 (Duplicate) Geology Of The Widows Creek Steam Plant Site By Kellber & Benziger.pdf	PDF
3/20/2009	RDF	WCF 1950 Geology Of The Widows Creek Steam Plant Site By Kellber & Benziger Mf 83.pdf	PDF
3/20/2009	RDF	WCF 1973 Experimental So2 Removal System & Waste Disposal Pond.pdf	PDF
3/20/2009	RDF	WCF 1975 Report Of Subsurface Investigation & Engineerig Eval Proposed Addition.pdf	PDF
3/20/2009	RDF	WCF 1975 Soils Investigation Wcs P-1 Letter To Montgomery.pdf	PDF
3/20/2009	RDF	WCF 1976 Well Logs.pdf	PDF
3/20/2009	RDF	WCF 1977 Foundation Investigations Unit 7 So2 Scrubber.pdf	PDF
3/20/2009	RDF	WCF 1980 1981 Waste Disposal Area Dike Rasing Soils Exploration & Testing - En Des Soils Schedule No 85.1.pdf	PDF
3/20/2009	RDF	WCF 1982 1983 Background Info.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
3/20/2009	RDF	WCF 1982 Environmental Impact Statement Environmental Evaluations Task 6- Water Wet Limestone Scrubber Research Project.pdf	PDF
3/20/2009	RDF	WCF 1982 Permeability Tests - Cost Estimate.pdf	PDF
3/20/2009	RDF	WCF 1983 Addendum 1 Evaluation Of Engineering Properties & Wet Stacking Disposal Fgd Gypsum - Fly Ash Waste.pdf	PDF
3/20/2009	RDF	WCF 1983 Ash Pond Dike Raising Soil Investigation.pdf	PDF
3/20/2009	RDF	WCF 1983 Chemistry Oxidation & Landfill Unit 8 Fgd System Phase Ii Testing Stone.pdf	PDF
3/20/2009	RDF	WCF 1983 Disposal Area For Forced Oxidation Scrubber Sludge Subsurface Investigation & Groundwater Monitoring - Soil Schedule 83.2.pdf	PDF
3/20/2009	RDF	WCF 1983 Evaluation Of Engineering Properties & Wet Stacking Disposal Fgd Gypsum - Fly Ash Waste.pdf	PDF
3/20/2009	RDF	WCF 1983 Evaluation Of Engineering Properties & Wet Stacking Disposal Fgd Gypsum - Fly Ash Waste.pdf	PDF
3/20/2009	RDF	WCF 1983 Memo Disposal Area For Forced Oxidation Scrubber Sludge Subsurface Investigation & Groundwater Monitoring - Soil.pdf	PDF
3/20/2009	RDF	WCF 1983 Rewetting Characteristics Of Gypsum & Fly Ash For Dry Stacking.pdf	PDF
3/20/2009	RDF	WCF 1984 1985 Ash Disposal Area.pdf	PDF
3/20/2009	RDF	WCF 1984 Analysis Of Soil Investigation Report Endes Soil Schedule 85.1.pdf	PDF
3/20/2009	RDF	WCF 1984 Ash Pond Dredge Cell Stability Analysis (Using Pcstabl5M).pdf	PDF
3/20/2009	RDF	WCF 1984 Background Information - Concrete Pipe.pdf	PDF
3/20/2009	RDF	WCF 1984 Background Information - Steel Pipe.pdf	PDF
3/20/2009	RDF	WCF 1984 Completion Of Dikes As Of 12-31-83.pdf	PDF
3/20/2009	RDF	WCF 1984 Completion Of Quantities Remaining 12-31-83.pdf	PDF
3/20/2009	RDF	WCF 1984 Computation Of Quantities.pdf	PDF
3/20/2009	RDF	WCF 1984 Forced Oxidation Wet Stack Disposal Of Gypsum Fly Ash Mixture Engineering Properties - En Des Soil Schedula 83.21.pdf	PDF
3/20/2009	RDF	WCF 1984 Invitation Bid & Acceptance Design & Construct A Slurry Trench Wall & Design Impervious Earth Cap.pdf	PDF
3/20/2009	RDF	WCF 1984 Listing Of Quantities Remaining 12-31-83.pdf	PDF
3/20/2009	RDF	WCF 1984 Raising Ash Disposal Area Dikes & Table Of Contents.pdf	PDF
3/20/2009	RDF	WCF 1984 Slurry Trench Info.pdf	PDF
3/20/2009	RDF	WCF 1984 Soil Design Parameters.pdf	PDF
3/20/2009	RDF	WCF 1984 Stability Analysis - End Of Construction.pdf	PDF
3/20/2009	RDF	WCF 1984 Stability Analysis - Summary.pdf	PDF
3/20/2009	RDF	WCF 1984 Stability Analysis Full Operating Condition.pdf	PDF
3/20/2009	RDF	WCF 1984 Stability Analysis Sudden Drawdown.pdf	PDF
3/20/2009	RDF	WCF 1984 Weak Area Investigation.pdf	PDF
3/20/2009	RDF	WCF 1985 Old (Abandoned) Ash Disposal Area Red Water Seepage Soils Investigation Soils Schedule 83.3.pdf	PDF
3/20/2009	RDF	WCF 1986 Additional References & Misc Notes.pdf	PDF
3/20/2009	RDF	WCF 1986 Development Of Reclamation Techniques For Scrubber Sludge Pond.pdf	PDF
3/20/2009	RDF	WCF 1986 Gravity Drain Pipe & Table Of Contents.pdf	PDF
3/20/2009	RDF	WCF 1986 Gypsum Sludge Pond.pdf	PDF
3/20/2009	RDF	WCF 1986 Units 7 & 8 - Fog Project.pdf	PDF
3/20/2009	RDF	WCF 1987 Coal Yard Drainage Basin Liner Sme-Soi-87-003 - Nuclear Engineering Branch.pdf	PDF
3/20/2009	RDF	WCF 1988 Design & Deveelopment Of Asbestos-Demolition Landfill .pdf	PDF
3/20/2009	RDF	WCF 1988-1990 Asbestos Waste Landfills.pdf	PDF

Date Reviewed	Reviewed by	File Name	File Type
3/20/2009	RDF	WCF 1990 Assessment Of Potential Effects On Groundwater Of The Phase Ii Fgd Pond.pdf	PDF
3/20/2009	RDF	WCF 1990 Civil Replace Lighting Off Oil Tanks - Plant A 910110A0006.pdf	PDF
3/20/2009	RDF	WCF 1990 Civil Transformer Yard Oil Spill Containment 910110A0007.pdf	PDF
3/20/2009	RDF	WCF 1990 Draft Rev 1 Assessment Of Petential Effects On Groundwater Of The Phase Ii Fgd Pond Wr28-1-34-107.pdf	PDF
3/20/2009	RDF	WCF 1990 Groundwater Assessment Wet Stacking Dispossal Of Fgd Gypsum - Fly Ash Waste Phase Ii - Workplan.pdf	PDF
3/20/2009	RDF	WCF 1990 Rev 1 Assessment Of Potential Effects On Groundwater Of The Phase Ii Fgd Pond.pdf	PDF
3/20/2009	RDF	WCF 1991 Intermim Report On Evaluation Of Fgd Gypsum Flyash Wet-Stacking Disposal Facility.pdf	PDF
3/20/2009	RDF	WCF 1991 Preliminary Evaluation Misc Info.pdf	PDF
3/20/2009	RDF	WCF 1991 Preliminary Evaluation Proposed Underdrain System Gypsum Fly Ash Disposal Facility.pdf	PDF
3/20/2009	RDF	WCF 1991 Volume I Forced Oxidation Gypsum Dry Stacking - Phase Ii Geotechnical Investigation .pdf	PDF
3/20/2009	RDF	WCF 1991 Volume Ii Forced Oxidation Gypsum Dry Stacking - Phase Ii Geotechnical Investigation .pdf	PDF
3/20/2009	RDF	WCF 1994 Specifications For The Utilities Board Of The City Of Stevenson Sanitary Sewerage Improvements.pdf	PDF
3/20/2009	RDF	WCF 1996 Technical Report - Replacement Of Common Station Service Transformer Watthour Totalizer.pdf	PDF
3/20/2009	RDF	WCF 1996 Technical Report - Tripping Of Unit 8 By Generator Backup Impedance Relay.pdf	PDF
3/20/2009	RDF	WCF 1996 Unit 3 Refurbish Coal Silos - Project Id 423D.pdf	PDF
3/20/2009	RDF	WCF 1998 Annual Inspection Of Waste Disposal Areas.pdf	PDF
3/20/2009	RDF	WCF 2001 Crane Pad Unloading Areas - Report Of Geotechnical Exploration.pdf	PDF
3/20/2009	RDF	WCF 2001 Preliminary Engineering Scope.pdf	PDF
3/20/2009	RDF	WCF 2001 Selective Catalytic Reduction Units - Report Of Geotechnical Exploration - S&Me Project No. 1431-01-124.pdf	PDF
3/20/2009	RDF	WCF 2002 Parsons Hydraulic Modeling Associated With Active Ash Pond.pdf	PDF
3/20/2009	RDF	WCF 2002 Proposed Scr Addition - Report Of Geotechnical Exploration.pdf	PDF
3/20/2009	RDF	WCF 2003 Proposed Ash Pond Dike Raise - Report Of Geotechnical Exploration.pdf	PDF
3/20/2009	RDF	WCF 2003 Proposed Coal Handling Upgrades.pdf	PDF
3/20/2009	RDF	WCF 2004 Draft Dredge Cell Dike Report Of Cone Penetrometer Testing.pdf	PDF
3/20/2009	RDF	WCF 2004 Report Of Geotechnical Drilling Gypsum Fly Ash Storage Facility.pdf	PDF
3/20/2009	RDF	WCF 2004-06 Gypsum Stacking.pdf	PDF
3/20/2009	RDF	WCF 2005 Drawings Ash Stacking Plan.pdf	PDF
3/20/2009	RDF	WCF Ash Dike Raising Plan Of Borrow Investigation 604B1062R0.cal	CAL
1/29/2009	KA	WCF Ash Pond Insp FY00.pdf	PDF
1/29/2009	KA	WCF Ash Pond Insp FY01.pdf	PDF
1/29/2009	KA	WCF Ash Pond Insp FY02.pdf	PDF
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1/22/2009	RDF	WCF Ash Pond Insp FY68.pdf	PDF

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1/22/2009	RDF	WCF Ash Pond Insp FY69.pdf	PDF
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1/22/2009	RDF	WCF Ash Pond Insp FY99.pdf	PDF
3/20/2009	RDF	WCF Conceptual Design Recommendations For Construction & Management Of The Fgd Gypsum- Fly Ash Waste Disposal Facility.pdf	PDF
3/20/2009	RDF	WCF Environmental Information.pdf	PDF
3/20/2009	RDF	WCF Geometry & Design Calculations (Misc).pdf	PDF
3/20/2009	RDF	WCF Misc Drawings & Notes.pdf	PDF
3/20/2009	RDF	WCF Production Manager Training.pdf	PDF
3/20/2009	RDF	WCF Red H20 Photos.pdf	PDF
3/20/2009	RDF	WCF Scrubber Sludge Borrow Top Of Rock Larger Print.cal	CAL
3/20/2009	RDF	WCF Scrubber Sludge Borrow Top Of Rock.cal	CAL
3/20/2009	RDF	WCF Scrubber Sludge Borrow.cal	CAL
3/20/2009	RDF	WCF Short Long Term Disposal Plan.pdf	PDF

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3/20/2009	RDF	WCF Site Plan & Hydraulic Design Calculation.pdf	PDF
2/5/2009	RDF	WCF Spillwayeval_March2007.pdf	PDF
3/20/2009	RDF	WCF Weir (Skimmer) Replacement Sketch.pdf	PDF
3/20/2009	RDF	WCF Weir (Skimmer) Replacement.pdf	PDF
3/20/2009	RDF	WCF Wet Stack Disposal Of Gypsum - Fly Ash Mixture - Engineering Properties.pdf	PDF
3/20/2009	RDF	WCF Wiring Diagram Main Relay Board Pnl 42 161 Kv Osc No. 2.pdf	PDF
3/20/2009	RDF	WCF Wiring Diagrams Turbo Generator Auxiliaries Schematic Diagrams - Sh 3 45N8680-3 R8.pdf	PDF
1/22/2009	RDF	WCF_Ash_Pond_Insp_FY08.pdf	PDF
2/2/2009	TCB	WCF-06-1118 (10W219-2) Concrete Stacks Cems Bldg Foundation Outline And Reinforcement	Hard Copy
2/3/2009	JTB	WCF-10E200-01-Sht-Rev 3.cal	CAL
2/3/2009	JTB	WCF--10E2001-01-Sht-Rev 5.cal	CAL
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1/26/2009	TCB	WCF-10W7460-Sht -Rev 1.cal	CAL
1/26/2009	TCB	WCF-10W7461-1-Sht -Rev 0.cal	CAL
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1/26/2009	RDF	Widows Creek.doc	DOC
1/26/2009	RDF	Widows Creek.pdf	PDF
1/26/2009	RDF	Widows Creek.pdf (This Is An Aerial With Structure Locations And Top & Toe Of Dikes)	PDF
3/20/2009	RDF	Yard Ash Disposal Area Unit 7 & 8 Plan 10W7465-01 Rev 1.cal	CAL
3/20/2009	RDF	Yard Ash Disposal Area Unit 7 & 8 Plan 10W7465-01 Rev 3.cal	CAL
3/20/2009	RDF	Yard Ash Disposal Area Unit 7 & 8 Plan 10W7465-02 Rev 1.cal	CAL
3/20/2009	RDF	Yard Ash Disposal Area Unit 7 & 8 Plan 10W7465-02 Rev 4.cal	CAL