



Stantec

2010 Annual Inspection of CCP Facilities and Ponds

Kingston Fossil Plant
Harriman, Tennessee

Stantec Consulting Services Inc.
One Team. Infinite Solutions.

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Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

June 1, 2010



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June 1, 2010

175550002

Mr. Michael S. Turnbow
Tennessee Valley Authority
1101 Market Street
LP 2G-C
Chattanooga, Tennessee 37402

Re: 2010 Annual Inspection of CCP Facilities and Ponds
Kingston Fossil Plant
Harriman, Tennessee

Dear Mr. Turnbow:

Stantec Consulting Services Inc. (Stantec) has completed the 2010 annual inspections for CCP facilities and ponds at the Kingston Fossil Plant. Facilities reviewed included:

- Ash Pond
- Coal Yard Drainage Pond
- Dike 2 Sediment Pond
- Dredge Cell
- Engineered Redwater Wetlands
- Peninsula Gypsum Pond
- Sluice Trench
- Stilling Pond

The field work was performed from April 21 through 30, 2010. The results of the work along with facility-specific recommendations for maintenance or other activities are included on the enclosed documents. In addition, the following general plant-wide recommendations and comments are offered:

- It is recommended that vegetation maintenance continue, including mowing and clearing tall grass/cattail growth at regular intervals. If lack of vegetation is observed during these operations, re-seeding should be performed as soon as possible. If continued difficulties establishing new vegetation persist, then TVA should consider refining existing procedures or developing site specific specifications which address topsoil, fertilizing, seed mixtures, etc.

- It is recommended that TVA catalog, assign a responsible party and due date, and track the completion of the facility-specific recommendations provided herein.
- Please note that this scope did not include a review of the current Operations and Maintenance Manual (O&M) or Emergency Action Plan for KIF. Stantec understands that TVA plans to update the current O&M manual to include dam safety-related items in association with the transition from the initial December 2008 Dredge Cell incident recovery to re-initiation of plant operations. Current recovery operations include a site-wide Emergency Action Plan. In addition, Stantec is in the process of reviewing plant operations and developing an O&M Manual for Kingston ash operations.
- It is recommended that TVA personnel continue dike inspections/monitoring to look for changes or conditions that might affect dike integrity. The frequency and procedures for inspections should be consistent with TVA's newly implemented inspection program. Particular emphasis should be placed on reviewing and monitoring the seepage areas for changed or worsened conditions, and identifying and repairing other maintenance items such as animal burrows, erosion, and lack of vegetation.

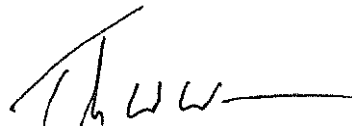
Stantec appreciates the opportunity to provide continued engineering services for the fossil plants. If you have any questions, or if we may be of further assistance, feel free to contact our office.

Sincerely,

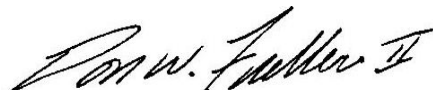
STANTEC CONSULTING SERVICES INC.



Mark L. Jones, EIT
Project Engineer



Thomas W. Ward, EIT
Project Engineer



Don W. Fuller II, PE
Principal

/cdm

Enclosure A

Ash Pond



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Ash Pond

1. General Facility Information

Facility Status:	Active	NID Identification:	TN14504
Surface Area (inside dikes):	79.92 Acres	TVA Hazard Classification:	Dike C: Significant
Maximum Height (toe to top of dike):	28 ft	Dike Length:	Dike D: 2,641 ft Dike C: 2,813 ft Divider Dike: 2,163 ft
Plant Discharge to Facility:	Unknown	Current Pool Elevation:	Approx. 761 ft

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT, Mark Jones EIT, and Leo Booth
TVA Staff Present:	None present.
Field Inspection Date:	04/30/2010
Weather/Site Conditions:	Sunny, 70s

3. History/Current and Future Operations

History:	This structure is used as the main Ash Pond and receives discharge from the fossil plant, Dredge Cell, Engineered Redwater Wetlands, and river dredging operations through the Sluice Trench. Construction of the Lateral Expansion in the northern extent of the Ash Pond is ongoing.
Current Operations:	Fly ash and bottom ash is sluiced into the Ash Pond. Sluice water flows from the active Ash Pond into the Stilling Pond through the five spillways constructed in 2005.
Future Planned Operational Changes:	The ash pond will be closed as part of the overall Dredge Cell closure.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Ash Pond

4.1. Interior Slopes

Vegetation:	Grass-covered dike slopes with generally good coverage. Occasional sparse areas of vegetation and/or settled ash with sparse cattails.
Trees:	Occasional small trees were observed along the toe of the Divider Dike and Dike C.
Wave Wash Protection:	Riprap was observed along north slope in from of riser weirs. Area of concrete observed at the Dike C/Divider Dike junction.
Erosion:	None observed.
Instabilities:	None observed.
Animal Burrows:	None observed, although several rabbits were noted during inspection.
Freeboard:	Approximately 5 feet.
Encroachments:	None observed.
Slope:	Varies from approximately 3.66H:1V to 3.12H:1V along the Ash Pond side of the Divider Dike. The interior slopes of Dike C along the Ash Pond are approximately 1.85H:1V and flatten out to 4.85H:1V near the current pool elevation.

4.2. Crest

Crest Cover and Slope:	Gravel (crushed stone) access road, adequate coverage. Relatively flat.
Erosion:	Some rutting on access road.
Alignment:	No issues observed.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Some rutting on access road.
Width:	Approximately 15 to 25 feet.

4.3. Exterior Slopes

Vegetation:	Grass-covered dike slopes with generally good coverage.
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TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Ash Pond

Trees:	Numerous trees were observed along the shoreline of Dike C with the Intake Channel (Photo 5).
Erosion:	Some minor erosion on lower bench observed.
Instabilities:	None observed.
Uniform Appearance:	Yes.
Seepage:	Potential seepage was observed along the portion of Dike C where the Intake Channel is directly downstream of the Ash Pond (Photo 3).
Benches:	One bench with a width of approximately 15 feet.
Foundation Drains, and Seepage Collection Systems:	Five 12-inch pipes installed at various locations below lower bench to intersect seeps from Ash Pond and Stilling Pond.
Instrumentation:	Eight piezometers and seven slope inclinometers have been installed along the sections of Dike C that dam the Ash Pond.
Animal Burrows:	None Observed.
Slope:	Varies from approximately 1.57H:1V to 2.89H:1V on the Stilling Pond side of the Divider Dike. Dike C varies from approximately 1.85H:1V near the crest to 3.02H:1V near the river waterline. Buttressing for Dike C being constructed at 6H:1V.
Height:	Approximately 23 ft.

4.4. Spillway Weirs/Riser Inlets

Number:	5
Size, Type and Material:	48-inch diameter RCP push-together risers with standard TVA steel skimmers.
Height of Riser Inlets:	Estimated at 8.5 feet.
Access:	Spillways -001 and -003 accessible via fixed metal catwalks from Dike C.
Joints:	No joints were observable. Reportedly sealed annually by divers.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Ash Pond

Mis-Alignment: None reported or observed.

Closed/Abandoned Conduits: There is reportedly one abandoned riser (-035) and one inactive riser (-036) in the Ash Pond.

4.5. Outlet Pipes

Number: 5

Size, Type and Material: 36-inch diameter steel pipes.

Headwall: N/A.

Joint Separations: Unknown, unable to observe (outlet pipes submerged).

Mis-Alignment: None reported or observed (outlet pipes submerged).

Closed/Abandoned Conduits: Kennedy Weir reportedly abandoned and removed.

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

The following activities and/or improvements have been performed within the Ash Pond since the last annual inspection:

- Ongoing construction of the Lateral Expansion.

6. Recommendations

The following maintenance recommendations are offered for the Ash Pond. Priority codes are included in parentheses and are described in Enclosure K:

- Trees and brush are located on the interior and exterior slopes. It is recommended that trees and brush be removed from these slopes in accordance with the general guidelines shown in Enclosure I. (Priority 4)
- It is recommended that TVA continue to monitor the potential seepage area (Photo 3). The frequency of monitoring should be in accordance with TVA's current inspection program.
- It is recommended that dike rutting (Photo 6) and Dike C toe undercutting (Photo 1) be repaired by placing and compacting material to restore the areas. (Priority 4)



Photo 1

Typical view of lower bench on downstream side of Dike C looking east. Some undercutting at toe of riser dike observed.



Photo 2

Outlet pipes from Engineered Redwater Wetlands to Ash Pond through Dike C with overgrown vegetation.



Photo 3

Possible Seepage observed on exterior side of Dike C toward Intake Channel amidst vegetation looking southeast.



Photo 4

Trees and vegetation on Dike C alongside Intake Channel looking southeast.



Photo 5

Spillways in Ash Pond looking west.



Photo 6

Typical rutting on crest of Dike C looking northeast.



Photo 7

Ongoing buttressing of
Dike C looking northeast.



Photo 8

Cenospheres and ash
deposits in south end of
Ash Pond looking west
from Divider Dike.




Photo 9

View looking south of
settled ash with sparse
vegetation in foreground
near intersection with Dike
D. Ongoing work for
Lateral Expansion in
background.



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Plan View - KIF 2010 Annual Inspection	
Ash Pond	
Tennessee Valley Authority Kingston Fossil Plant Kingston, Roane County, Tennessee	
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Enclosure B

Coal Yard Drainage Pond



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Coal Yard Drainage Pond

1. General Facility Information

Facility Status:	Active	NID Identification:	Unknown
Surface Area (inside dikes):	0.408 acres	TVA Hazard Classification:	Not Classified
Maximum Height (toe to top of dike):	8 feet deep	Dike Length:	N/A
Plant Discharge to Facility:	None	Current Pool Elevation:	750 feet

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT, Mark Jones EIT, and Don Fuller PE
TVA Staff Present:	N/A
Field Inspection Date:	April 21, 2010
Weather/Site Conditions:	Sunny, 67 degrees Fahrenheit

3. History/Current and Future Operations

History:	Basin excavated below grade to capture local stormwater runoff from the coal yard and areas immediately south.
Current Operations:	Local stormwater and drainage basin for runoff from the coal yard and areas immediately south. Water is discharged from the pond by being pumped into the fly ash discharge ditch and flows to the active ash disposal area.
Future Planned Operational Changes:	None reported.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.

4.1. Interior Slopes

Vegetation:	Mixture of grasses and shrubs, generally good coverage.
Trees:	Numerous small trees observed on south and west



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Coal Yard Drainage Pond

	slopes (Photos 10 and 11).
Wave Wash Protection:	N/A
Erosion:	Severe localized erosion at inlet pipe on north embankment of pond. Soil eroded and undercut area approximately 10 feet by 3 feet (Photo 14).
Instabilities:	Slough several feet across observed immediately west of inlet erosion on pond embankment (Photo 15).
Animal Burrows:	None observed.
Freeboard:	Approximately 6 feet (estimated).
Encroachments:	None observed.
Slope:	Estimated at approximately 2H:1V.
4.2. Crest	
Crest Cover and Slope:	N/A
Erosion:	N/A
Alignment:	N/A
Settlement/Cracking:	N/A
Bare Spots/Rutting:	N/A
Width:	N/A
4.3. Exterior Slopes	
Vegetation:	N/A
Trees:	N/A
Erosion:	N/A
Instabilities:	N/A
Uniform Appearance:	N/A
Seepage:	N/A
Benches:	N/A
Foundation Drains, and	N/A



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Coal Yard Drainage Pond

Seepage Collection Systems:

Instrumentation:	N/A
Animal Burrows:	N/A
Slope:	N/A
Height:	N/A

4.4. 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

4.5. Outlet Pipes

Number:	3
Size, Type and Material:	Two 14-inch corrugated steel stormwater pipes. One 12-inch steel drainage pipe.
Headwall:	N/A
Joint Separations:	Unable to observe.
Mis-Alignment:	Unable to observe.
Closed/Abandoned Conduits:	Unknown.

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

The following activities and/or improvements have been performed within the Coal Yard Drainage Pond since the last annual inspection:



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Coal Yard Drainage Pond

- The pond was cleaned out by TVA Civil Projects in the fall of 2009.

6. Recommendations

The following maintenance recommendations are offered for the Coal Yard Drainage Pond. Priority codes are included in parentheses and are described in Enclosure K:

- It is recommended that the large undermined area with adjacent slough be repaired (Photos 14 and 15). These and other eroded areas should be cleaned of loose/sloughed material, re-filled, and re-seeded. Filling procedures should include cutting foundation benches (as necessary), placing clay in maximum 6-inch lifts, and compacting with small compaction equipment such as a jumping jack or a hand-held mechanical tamper. An erosion control blanket should be placed after seeding. (Priority 4)
- It is recommended that the 2 rock check dams located in the drainage basin be cleaned and repaired as needed.
- It is recommended that TVA personnel monitor the storage capacity and pool level of the basin and perform dredging and pumping as needed to maintain sufficient capacity. (Priority 5)
- Trees and brush are located on the interior and exterior slopes. It is recommended that trees and brush be removed from these slopes in accordance with the general guidelines shown in Enclosure I. (Priority 4)



Photo 10

View of rock check dams from floating pump structure looking east. Trees and storm water outlet visible on south slope in upper right of photo.



Photo 11

Pump structure with attached walkway, looking west. South slope visible on left of photo showing overgrown vegetation.



Photo 12

Settled material immediately east/northeast of coal yard drainage basin, looking southeast.



Photo 13

Settled material immediately east of coal yard drainage basin, looking southwest.



Photo 14

Erosion undercutting inlet pipe northward from drainage pond.



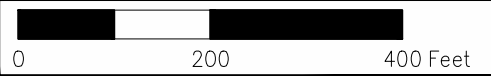
Photo 15

Sloughing on the north slope near eroded inlet as shown in Photo 5.



Coal Yard
Drainage Pond

1 Photo Number and Direction



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Plan View - KIF 2010 Annual Inspection
Coal Yard Drainage Pond

Tennessee Valley Authority
Kingston Fossil Plant
Kingston, Roane County, Tennessee



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Enclosure C

Dike 2 Settlement Pond



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Dike 2 Sediment Pond

1. General Facility Information

Facility Status:	Active	NID Identification:	Unknown
Surface Area (inside dikes):	3.86 acres	TVA Hazard Classification:	Not Classified
Maximum Height (toe to top of dike):	12 feet	Dike Length:	2,090 feet
Plant Discharge to Facility:	Unknown	Current Pool Elevation:	742 feet

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT, Mark Jones EIT, and Leo Booth
TVA Staff Present:	N/A
Field Inspection Date:	April 30, 2010
Weather/Site Conditions:	Partly cloudy with a high of 84 degrees Fahrenheit

3. History/Current and Future Operations

History:	Temporary structure built in 2009 as part of the incident recovery.
Current Operations:	Final series of sediment control ponds for water discharging from the Dredge Cell and embayment areas to the Emory River. Structure capacity maintained as part of recovery operations.
Future Planned Operational Changes:	Dike 2 structure will be removed in association with embayment restoration following completion of the incident ash removal operations.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.

4.1. Interior Slopes

Vegetation:	None observed.
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TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Dike 2 Sediment Pond

Trees:	None observed.
Wave Wash Protection:	Shot rock observed on outslopes of temporary dike.
Erosion:	Some minor erosion features of co-mingled ash on exterior side of dike.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	Approximately 4 feet on the west interior slope and 8 feet on the east interior slope.
Encroachments:	None Observed.
Slope:	Varies from approximately 2.24H:1V to 2.96H:1V.

4.2. Crest

Crest Cover and Slope:	Crushed stone co-mingled with ash, sloped towards pond.
Erosion:	None observed.
Alignment:	No issues observed.
Settlement/Cracking:	No issues observed.
Bare Spots/Rutting:	Some minimal rutting observed on roadway surface.
Width:	Approximately 30 feet.

4.3. Exterior Slopes

Vegetation:	None observed.
Trees:	None observed.
Erosion:	Minor surficial erosion features in exposed ash.
Instabilities:	None observed.
Uniform Appearance:	Yes.
Seepage:	None observed.
Benches:	N/A
Foundation Drains, and	None reported or observed.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Dike 2 Sediment Pond

Seepage Collection Systems:

Instrumentation:	N/A
Animal Burrows:	None observed.
Slope:	Approximately 2:1 on the river side.
Height:	5 to 12 feet

4.4. Spillway Weirs/Riser Inlets

Number:	5 between three holding ponds.
Size, Type and Material:	First to second pond: Two 36-inch corrugated metal pipe (CMP) inlets. Second to third pond: Two 48-inch CMP inlets with 36-inch CMP pipes. One additional 12-inch corrugated plastic pipe convey discharge from pump station.
Height of Riser Inlets:	Unknown.
Access:	Access by boat or amphibious craft only.
Joints:	None observable.
Mis-Alignment:	None observable.
Closed/Abandoned Conduits:	None reported or observed.

4.5. Outlet Pipes

Number:	5
Size, Type and Material:	36-inch diameter reinforced concrete pipes from third pond to river.
Headwall:	N/A
Joint Separations:	None observable.
Mis-Alignment:	None observable.
Closed/Abandoned Conduits:	None reported or observed.



**TVA 2010 Annual Inspection Program
Kingston Fossil Plant (KIF)
Dike 2 Sediment Pond**

5. Repairs/Mitigation/New Construction Activities
Since Last Annual Inspection

Dike 2 is a temporary structure that was not in place during previous inspections.

6. Recommendations

The following maintenance recommendations are offered for the Dike 2 Sediment Pond. Priority codes are included in parentheses and are described in Enclosure K:

- It is recommended that TVA continue to periodically clean out holding ponds by mechanical dredging. Perform as needed.
- It is recommended that TVA monitor crests and slopes of the temporary basin and regrade rutting and erosion as may be needed. Stantec observed some minor rutting/erosion (Photo 19) beginning to form. (Priority 3)



Photo 16

View looking north/northeast at Dike 2 sediment basin.



Photo 17

View of south end of sediment basin looking west, with floating pump attached to guy wire located in pond.



Photo 18

Shot rock on downstream (river side) slope. Emory River in background.



Photo 19

Minor surficial erosion located on river side of Dike 2 in exposed ash.



Photo 20

View looking north at extent of exterior Dike 2 slope.



Photo 21

View looking south across sediment basin with 2 spillway inlets visible in center of photo.



Dredge Cell

Ash Pond

Dike 2
Sediment Pond

16

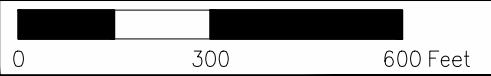
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1 Photo Number and Direction



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Plan View - KIF 2010 Annual Inspection Dike 2 Sediment Pond

Tennessee Valley Authority
Kingston Fossil Plant
Kingston, Roane County, Tennessee



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Enclosure D

Dredge Cell



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Dredge Cell

1. General Facility Information

Facility Status: Inactive

Surface Area: 17.93 acres Maximum Height (toe to top of stack): 51 feet

2. Site Visit Information

Stantec Inspection Team: Thomas Ward EIT, Mark Jones EIT, and Mike Crouch

TVA Staff Present: N/A

Field Inspection Date: April 28, 2010

Weather/Site Conditions: Cloudy with a high of 67 degrees Fahrenheit and wet ground conditions

3. History/Current and Future Operations

History: Available information indicates the December 22, 2008 Dredge Cell incident initiated at the northwest corner of the cell, progressing within the Dredge Cell through Cells 2 and 3. The remaining intact portion of the Dredge Cell, comprised of what was formerly referred to as "Cell 1," is now referred to as the Relic.

Current Operations: Production ash stacking operations have been suspended.

Future Planned Operational Changes: The current plan indicates the Relic will be reduced in height. The maximum elevation will be EL 790 feet at the time of closure as per the current closure option.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.

4.1. Exterior Slopes and Benches

Vegetation: Grass-covered, adequate coverage in most cases. Sparse coverage exists in several areas (Photos 29, 32, and 34).

Trees: Few small trees observed at base of Dike D to the east of the southeast corner of the Dredge Cell just north of the Rim Ditch and Sluice Trench (Photo 38).

Erosion: Erosion features on the dikes were observed, typically limited



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Dredge Cell

to minor washouts (Photo 27). Some minor erosion of ash from the test trench was also observed extending east and west on the middle bench (Photos 34 and 35). A clogged drain pipe will was observed (Photo 26). A localized erosion feature in an exposed area of ash was observed on the southwest corner (Photo 28).

Instabilities:	None observed.
Uniform Appearance	Yes.
Benches:	A total of five benches on the south side of the Relic varied on approximate height intervals between 6 to 15 feet and were approximately 20 feet wide, sloped toward the stack. Two benches were present on the southern half Dike D, with the top bench tapering off to the north.
Slope:	Dike C on the south side of the Relic (Cell 1) exhibited slopes ranging between approximately 3.25H:1V and 4.79H:1V. Dike D on the east side of the former Dredge Cell exhibited slopes between approximately 2.77H:1V and 3.08V:1V.
Height:	Approximately 51 feet.
Other:	None.

4.2. Perimeter Drainage Ditches and Down-Drains

Vegetation:	Grass-covered with occasional areas of cattails.
Rip-Rap Channel Lining:	None observed.
Erosion:	None observed.
Sedimentation in Ditches:	Some minor sedimentation observed.
Standing Water in Ditches or on Benches:	Observed at multiple locations on south side of Dredge Cell along Dike C (Photo 30) and on the east side of the Dredge Cell along Dike D (Photo 37).
Silted/Impeded Drainage Pipes:	Occasionally observed (Photo 26).
Other:	None.

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

The following maintenance activities and improvements have been performed for the



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Dredge Cell

Dredge Cell since the last annual inspection:

- Construction of the Test Embankment on the north side of the Relic was completed.
- Filling operations for ash storage in the Valley area on the east side of the Relic have been conducted.

6. Recommendations

The following maintenance recommendations are offered for the Dredge Cell. Priority codes are included in parentheses and are described in Enclosure K:

- Numerous areas of erosion and/or rutting with standing water were observed during the inspection include areas along both Dike C and Die D (Photos 27, 29, 30, 37, and 38). It is recommended that these areas be drained and/or subsequently filled/graded and in accordance with current site protocols for erosion repair and temporary vegetative cover. Filling should consist of placing select ash or clay and compacting with small compaction equipment, such as a jumping jack, or hand-held tampers. Some excavation may be required to create foundation benches to allow compaction to occur on level ground. Erosion control blankets should be used for the areas on sloping ground. (Priority 4)
- A few areas lacking adequate vegetation coverage were noted in this inspection along Dikes C and D (Photos 25, 27, 29, and 32). Re-seeding of these areas should be performed to re-establish vegetation growth. Erosion control blankets should be used since the areas are on sloping ground. (Priority 4)
- Some small trees and brush are located on the exterior slopes. It is recommended that trees and brush be removed from these slopes in accordance with the general guidelines shown in Enclosure I. (Priority 4)
- It is recommended that the erosion feature encountered in exposed ash (Photo 28) be excavated and re-filled with suitable ash materials in accordance with general site erosion control protocols. (Priority 4)
- It is recommended that the clogged drainage pipe (Photo 26) outlet be cleared and the pipe be evaluated to determine its current working condition and promote positive drainage. (Priority 4)



Photo 22

Shot rock haul road constructed on southwest corner of Dike C. Ponding water observed.



Photo 23

Shot rock built-up section of haul road at southwest corner of Dredge Cell, looking south.



Photo 24

View of vegetation on initial (lowest) dike of southern edge of Dredge Cell, looking east.



Photo 25

Typical Dike C bench, looking east.



Photo 26

Clogged drainage pipe on south side of Dredge Cell Dike C.



Photo 27

Erosion washout on south face of Dredge Cell, second bench, with areas of sparse vegetation on lower benches visible in background.



Photo 28

Ash erosion feature encountered at southwest corner of Dike C.



Photo 29

Minor erosion with sparse vegetation on south side of Dredge Cell.



Photo 30

Typical ponding and rutting for Dike C on south side of Dredge Cell, looking east.



Photo 31

Typical view of Dike D, looking north from southeast corner of Dredge Cell.



Photo 32

Minor erosion with additional vegetative cover required along Dike D.



Photo 33

East face of Dike D looking east into Ash Pond. Rock-lined drainage feature observed midway down slope.



Photo 34

View looking west on second bench of ash deposits on Dike C from erosion of test trench (see Photo 15).



Photo 35

View looking east on second bench of ash deposits on Dike C from erosion of test trench (see Photo 36).



Photo 36

Ash erosion at top of Dike C in the test trench.



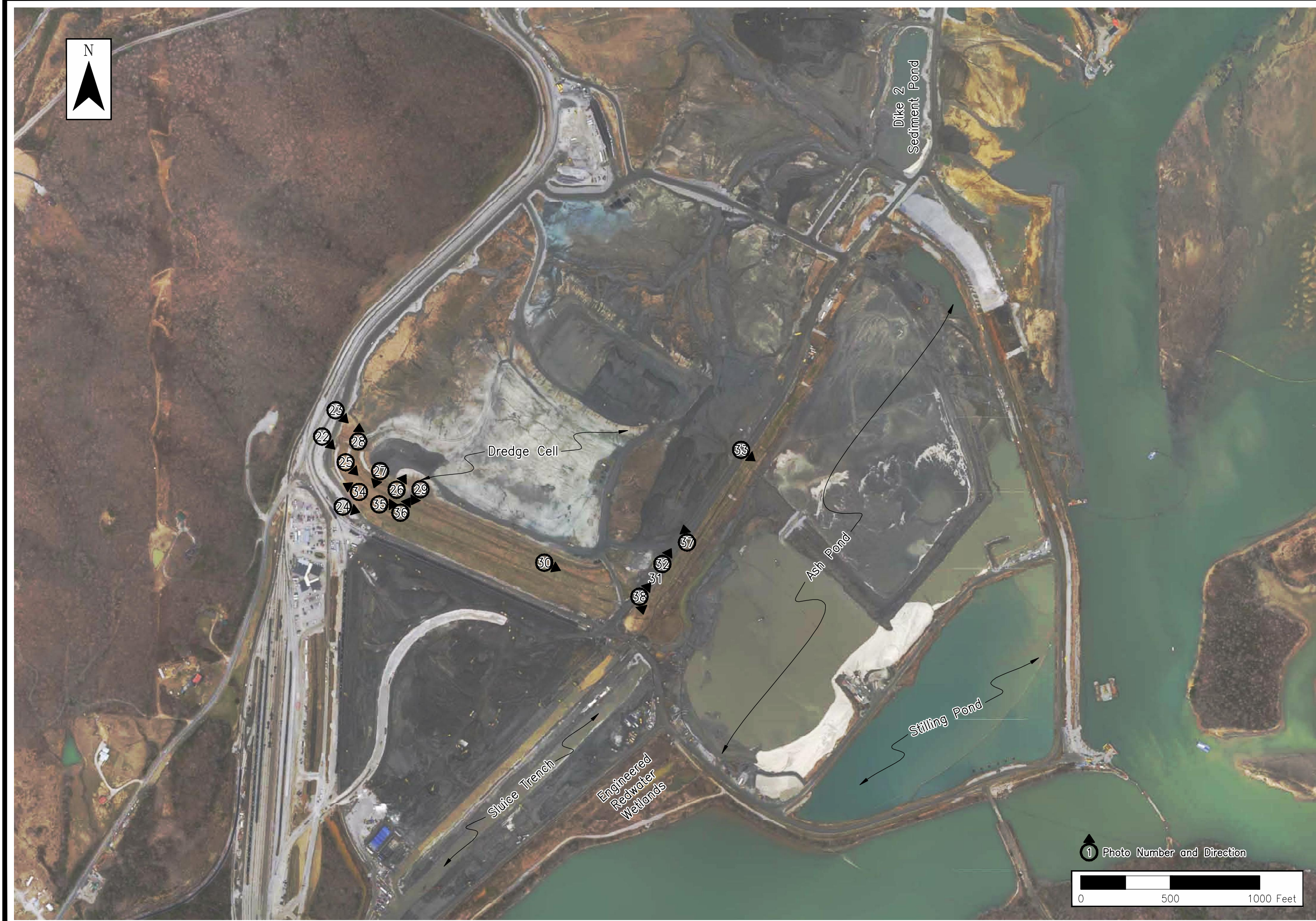
Photo 37

Dredge lines, rutting, and ponding on middle bench of Dike D, looking northwest.

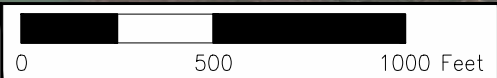


Photo 38

Southeast corner of Dredge Cell just north of Sluice Trench/Rim Ditch.



1 Photo Number and Direction



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DATE MAY 2010
DRAWN BY TMM
CHECKED BY TWV
CHECKED BY MLJ
SCALE 1"=500'
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Plan View - KIF 2010
Annual Inspection - Dredge Cell

Tennessee Valley Authority
Kingston Fossil Plant
Kingston, Roane County, Tennessee

Enclosure E

Engineered Redwater
Wetlands



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Engineered Redwater Wetlands

1. General Facility Information

Facility Status:	Active	NID Identification:	Unknown
Surface Area (inside dikes):	3.31 acres	TVA Hazard Classification:	Not Classified
Maximum Height (toe to top of dike):	12 feet	Dike Length:	Approx. 900 feet
Plant Discharge to Facility:	Unknown	Current Pool Elevation:	749 feet

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT and Mark Jones EIT
TVA Staff Present:	Robert Snow (Jacobs)
Field Inspection Date:	April 21, 2010
Weather/Site Conditions:	Sunny with a high of 67 degrees Fahrenheit

3. History/Current and Future Operations

History:	The Engineered Wetlands between Dike C and the Intake Channel collect seepage from the limestone drain below the bottom ash trench (currently designated as the Sluice Trench). The wetlands aid in naturally removing iron and raising the pH of the water before it is pumped to the Ash Pond via two pumps.
Current Operations:	Numerous seeps of redwater through the east dike toward the Intake Channel were observed in March of 2010 in an area south of the Redwater Wetlands. Borings were drilled by Mactec with piezometers installed to monitor the situation. Ongoing stability and seepage analyses are being conducted by Geosyntec. Preliminary results suggest the dike is in no imminent danger of a significant breach or failure.
Future Planned Operational Changes:	Pending continued monitoring and analyses of observed seepage.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Engineered Redwater Wetlands

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.

4.1. Interior Slopes

Vegetation:	Heavy brush, grass, and cattails within wetlands.
Trees:	Few relatively large trees observed on southwest end of interior slope of dike.
Wave Wash Protection:	N/A
Erosion:	Not observed.
Instabilities:	Not observed.
Animal Burrows:	Not observed.
Freeboard:	Approximately 1 to 2 feet for majority of actual Wetlands and 3 to 4 feet at collection pond.
Encroachments:	N/A
Slope:	Approximately 2H:1V (estimated).

4.2. Crest

Crest Cover and Slope:	The crest of the slope is overlain with crushed stone and is relatively flat.
Erosion:	Not observed.
Alignment:	No issues observed.
Settlement/Cracking:	Not observed.
Bare Spots/Rutting:	Some minor rutting and ponding is present.
Width:	Approximately 12 to 14 feet.

4.3. Exterior Slopes

Vegetation:	Heavy brush, grass, and tree-covered exterior dike slopes (Photo 41). Some areas lack coverage.
Trees:	Numerous trees were observed along the Intake



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Engineered Redwater Wetlands

	Channel.
Erosion:	No significant erosion features were observed.
Instabilities:	None observed.
Uniform Appearance:	Yes.
Seepage:	Seepage observed at multiple locations near the waterline at the southern portions of the wetland. Monitoring of the seeps and ongoing analysis being conducted (Photo 45).
Benches:	None observed.
Foundation Drains, and Seepage Collection Systems:	None reported or observed.
Instrumentation:	Six piezometers were installed by Mactec in April of 2010 along two cross sections of the east dike to monitor the current seepage conditions.
Animal Burrows:	None observed; however, rabbits were observed, indicating burrows could be likely obscured within thick vegetation.
Slope:	Approximately 2.2H:1V to 1.5H:1V.
Height:	Approximately 15 feet (estimated).

4.4. Spillway Weirs/Riser Inlets

Number:	2
Size, Type and Material:	24-inch steel pipe morning glory spillways (-018 and -019).
Height of Riser Inlets:	Unknown.
Access:	Catwalks from edge of pond.
Joints:	Unable to observe.
Mis-Alignment:	Unable to observe.
Closed/Abandoned Conduits:	One 12-inch steel pipe (-017) northwest of the spillways is reportedly inactive.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Engineered Redwater Wetlands

4.5. Outlet Pipes

Number:	2
Size, Type and Material:	12-inch plastic pipes with steel outlets in Ash Pond.
Headwall:	N/A
Joint Separations:	Unknown, unable to observe.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	One 12-inch steel pipe (-017) northwest of the spillways is reportedly inactive.

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

The following activities and/or improvements have been performed within the Engineered Redwater Wetlands since the last annual inspection:

- None reported.

6. Recommendations

The following maintenance recommendations are offered for the Engineered Redwater Wetlands:

- Trees and brush are located on the interior and exterior slopes. It is recommended that trees and brush be removed from these slopes in accordance with the general guidelines shown in Enclosure I. (Priority 4)
- It is recommended that floating debris/vegetation observed within the discharge pump structures be removed so the pumps do not become clogged or damaged. (Priority 3)
- It is recommended that the seepage observed along the Intake Channel waterline continue to be monitored in the interim until mitigation designs are implemented in association with Ash Pond closure and plant conversion from wet to dry ash handling.



Photo 39

Redwater drainage ditch along west side of access roadway immediately west of Intake Channel, looking north.



Photo 40

View of typical access road corridor along east side Engineered Redwater Wetlands, looking north.



Photo 41

Thick vegetation and trees between access road and Intake Channel.



Photo 42

Discharge pump alongside shoreline of Intake Channel.



Photo 43

Construction debris located on west side of access road with thick vegetation in the Redwater Wetlands.



Photo 44

Thick vegetation and trees on the slopes of the Intake Channel with sparse cover near waterline, looking north/northeast from the access road.



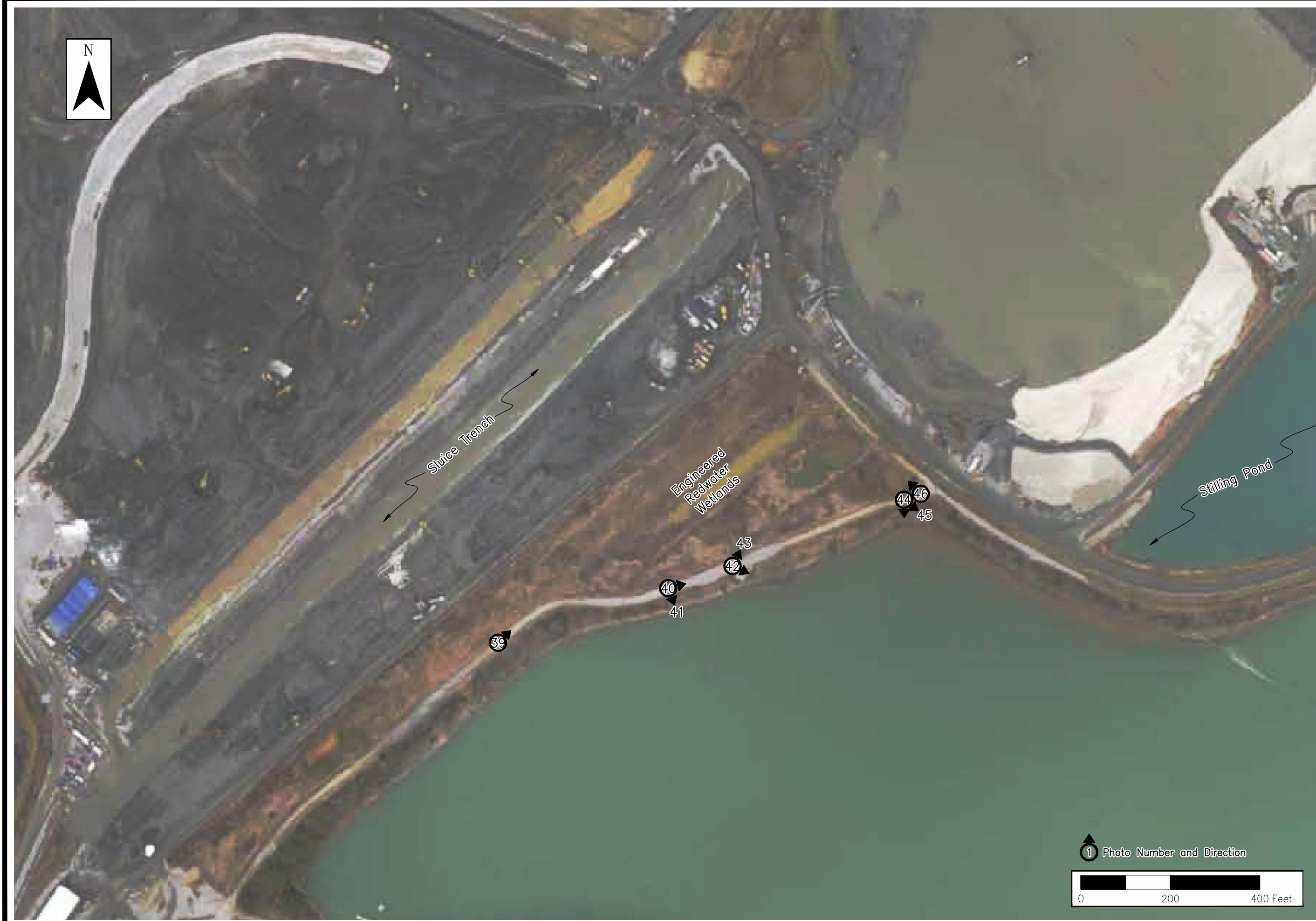
Photo 45

Typical seepage observed along Intake Channel.



Photo 46

Various debris floating near and within the two active morning glory spillways for the discharge pumps in collection pond.

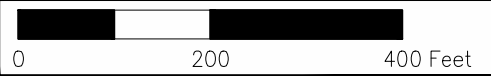


Sluice Trench

Engineered
Redwater
Wetlands

Stilling Pond

1 Photo Number and Direction




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PROJECT NO.	175550002
DATE	MAY 2010
DRAWN BY	TMM
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Plan View - KIF 2010 Annual Inspection
Engineered Redwater Wetlands

Tennessee Valley Authority
Kingston Fossil Plant
Kingston, Roane County, Tennessee



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Enclosure F

Peninsula Gypsum Pond



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Peninsula Gypsum Pond

1. General Facility Information

Facility Status:	Inactive	NID Identification:	Unknown
Surface Area (inside dikes):	51.2 acres (TVA Drawing 10W427-3)	TVA Hazard Classification:	Not Classified
Maximum Height (toe to top of dike):	28 feet	Dike Length:	5,904 feet
Plant Discharge to Facility:	Unknown	Current Pool Elevation:	Unknown

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT, Mark Jones EIT, and Leo Booth
TVA Staff Present:	N/A
Field Inspection Date:	April 30, 2010
Weather/Site Conditions:	Partly cloudy with a high of 84 degrees Fahrenheit

3. History/Current and Future Operations

History:	Excavation and construction began in 2008 in order to create a new facility to collect gypsum produced from the new plant scrubbers.
Current Operations:	Unknown.
Future Planned Operational Changes:	Unknown.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.

4.1. Interior Slopes

Vegetation:	Sparse grasses to no vegetative cover (bare soil).
Trees:	None observed.
Wave Wash Protection:	None observed.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Peninsula Gypsum Pond

Erosion:	Some minor erosion features observed, most notably a washout on the south slope (Photo 47).
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	N/A.
Encroachments:	None observed.
Slope:	Interior slopes varied from approximately 2.73:1 to 3.92:1

4.2. Crest

Crest Cover and Slope:	Crushed stone.
Erosion:	None observed.
Alignment:	No issues observed.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	None observed.
Width:	Varied from approximately 21 to 33 feet.

4.3. Exterior Slopes

Vegetation:	Grass-covered, ranging from well covered to bare soil.
Trees:	Trees were not present on any of the slopes. However, numerous large trees lined the edge of the peninsula beyond the toe of the exterior slopes along the south (Photo 48).
Erosion:	None observed.
Instabilities:	None observed.
Uniform Appearance:	Yes.
Seepage:	None observed.
Benches:	None observed.
Foundation Drains, and Seepage Collection Systems:	None reported or observed.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Peninsula Gypsum Pond

Instrumentation:	None observed.
Animal Burrows:	None observed.
Slope:	Exterior constructed fill slopes varied from 2.91H:1V to 2.88H:1V. The cut slope to the north side of the pond was approximately 3.01H:1V.
Height:	Based on Lidar data, the pond appears to have a maximum pool elevation of approximately 768 feet, corresponding to an approximate maximum pool depth of 18 feet. The constructed dike on the south side is approximately 25 feet in height.

4.4. Spillway Weirs/Riser Inlets

Number:	3
Size, Type and Material:	5-foot diameter drop inlets, precast concrete.
Height of Riser Inlets:	5.5 feet.
Access:	N/A
Joints:	None observed.
Mis-Alignment:	None observed.
Closed/Abandoned Conduits:	None observed.

4.5. Outlet Pipes

Number:	5
Size, Type and Material:	Three 48-inch reinforced concrete pipes (RCPs) located at the western Gypsum Pond dike discharge into the storm water pond. Additionally, two 12-inch HDPE underdrain pipes drain into a pump station at the southwestern portion of the Gypsum Pond dike. Two pumps are included in the pump station and pump to the adjacent storm water pond via two 4-inch ductile iron pipes (D.I.P.), combining into one 4-inch D.I.P. Additionally, a 24-inch PVC overflow line to the storm water pond is located within the pump station.
Headwall:	N/A



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Peninsula Gypsum Pond

Joint Separations: None observed.
Mis-Alignment: None observed.
Closed/Abandoned Conduits: None reported or observed.

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

Ongoing construction since previous inspection.

6. Recommendations

The following maintenance recommendations are offered for the Peninsula Gypsum Pond. Priority codes are included in parentheses and are described in Enclosure K:

- Areas of erosion observed during the inspection include areas along the interior of the Gypsum Pond dike (Photo 47). It is recommended that these be filled/graded and seeded to re-establish vegetation. Filling should consist of placing clay and compacting with small compaction equipment, such as a jumping jack, or hand-held tampers. Some excavation may be required to create foundation benches to allow compaction to occur on level ground. Erosion control blankets should be used for the areas on sloping ground. (Priority 4)
- Many areas lacking adequate vegetation coverage were noted in this inspection along the perimeter of the Gypsum Pond (Photo 50). Re-seeding of these areas should be performed to re-establish vegetation growth. Erosion control blankets should be used since the areas are on sloping ground. (Priority 4)
- It is recommended that the pump outlet system be checked periodically for proper operation. Maintenance should be performed as needed.



Photo 47

View of erosion feature on south slope looking to the south from north side. Vegetation not present in some areas.



Photo 48

Exterior slope on south side of gypsum pond with crushed stone access road at crest, looking southeast.



Photo 49

Drainage layer under construction on east side of Gypsum pond.



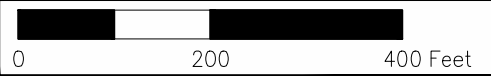
Photo 50

Typical view of lack of vegetative cover. Several feet of water present in much of pond at time of inspection.



Peninsula Gypsum Pond

1 Photo Number and Direction



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DATE	MAY 2010
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Plan View - KIF 2010 Annual Inspection

Peninsula Gypsum Pond

Tennessee Valley Authority
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Kingston, Roane County, Tennessee



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Enclosure G

Sluice Trench



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Sluice Trench

1. General Facility Information

Facility Status:	Active	NID Identification:	Unknown
Surface Area (inside dikes):	2.31 acres western, 3.87 acres eastern	TVA Hazard Classification:	Not Classified
Maximum Height (toe to top of dike):	19 feet	Dike Length:	N/A
Plant Discharge to Facility:	Unknown	Current Pool Elevation:	764 feet

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT and Mark Jones EIT
TVA Staff Present:	Robert Snow (Jacobs)
Field Inspection Date:	April 30, 2010
Weather/Site Conditions:	Sunny with a high of 67 degrees Fahrenheit

3. History/Current and Future Operations

History:	Previously used as the bottom ash trench with discharge directly from the plant, it has been converted into the current Sluice Trench to accommodate river dredging operations.
Current Operations:	Used as discharge point for dredge lines and initial retrieval point for ash being dredged out of the Emory River. Access near the trench is restricted due to safety concerns associated with the current mechanical dredging operations from the Sluice Trench and presence of large volumes of saturated ash near the Trench.
Future Planned Operational Changes:	Sluice Trench to remain active during dredging.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Sluice Trench

4.1. Interior Slopes

Vegetation:	None observed.
Trees:	None observed.
Wave Wash Protection:	None observed.
Erosion:	None observed.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	None observed.
Encroachments:	Wet ash being mechanically dredged from Sluice Trench.
Slope:	Not observable; obscured by wet ash being removed from Sluice Trench.

4.2. Crest

Crest Cover and Slope:	Obscured by wet ash being removed from Sluice Trench. Access road constructed immediately east of the Sluice Trench of crushed stone.
Erosion:	None observed.
Alignment:	No issues.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	None observed.
Width:	Not observable.

4.3. Exterior Slopes

Vegetation:	Grass-covered, generally good coverage. Areas approaching the shoreline were sparsely covered at time of inspection due to recent lowering of the existing pool elevation of the reservoir.
Trees:	Numerous trees with some areas of thick underbrush along shoreline on eastern edge of original dike.
Erosion:	Occasional minor erosion features observed near the



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Sluice Trench

	shoreline along the east dike.
Instabilities:	None observed.
Uniform Appearance:	Yes.
Seepage:	Seepage observed at multiple locations between the Sluice Trench and the Engineered Redwater Wetlands (Photos 53 and 54). Monitoring of the seeps and ongoing analysis being conducted by Geosyntec.
Benches:	N/A
Foundation Drains, and Seepage Collection Systems:	None reported or observed.
Instrumentation:	Six piezometers were installed by Mactec in April of 2010 along two cross sections of the east dike to monitor the current seepage conditions.
Animal Burrows:	None observed.
Slope:	Varies from approximately 4.25H:1V to 4.61H:1V. Slopes on the east dike varied from approximately 1.96H:1V to 3.36H:1V, flattening out to 5.23H:1V along the southern portion of the east dike.
Height:	19 feet

4.4. Spillway Weirs/Riser Inlets

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



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Sluice Trench

4.5. 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

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

The following activities and/or improvements have been performed within the Sluice Trench since the last annual inspection:

- Increase in river dredging operations in conjunction with Ballfield operations to facilitate removal of ash from site have resulted in the Sluice Trench being the initial point of mechanical dredging of incoming slurry. A sheet pile wall was also installed on the west side of the trench to aid in this effort.

6. Recommendations

The following maintenance recommendations are offered for the Sluice Trench:

- Trees and brush are located on the interior and exterior slopes. It is recommended that trees and brush be removed from these slopes in accordance with the general guidelines shown in Enclosure I. (Priority 4)
- It is recommended that the seepage observed along the Intake Channel waterline continue to be monitored. Stantec understands that Geosyntec has been tasked with this effort initiate a mitigation plan.
- Although no animal burrows were visible at the time of inspection, several rabbits were observed in the area, indicating burrows were likely obscured by thick vegetation. TVA should periodically monitor the area for animal burrows. If encountered, it is recommended that these burrows be repaired by collapsing the tunnels, cleaning loose soil, and refilling the resulting cavities/depressions with compacted clay. If the burrows are found to be severe and extensive, then filling with flowable fill may be more appropriate. (Priority 4)



Photo 51

Road constructed in corridor between Sluice Trench to the west and Intake Channel to the east. Typical minor surface rutting on east dike visible in foreground.



Photo 52

Typical view of thick vegetation and trees located along the Intake Channel, looking east.



Photo 53

Seepage located along the Intake Channel.



Photo 54

Typical view of redwater seepage observed, looking east into Intake Trench. Note: crushed stone in foreground placed as working platform for drilling operations that had recently been conducted to monitor seepage.



Photo 55

Debris located on the exterior slope, looking east.



Sludge Trench

Engineered
Redwater
Wetlands

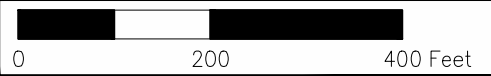
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1 Photo Number and Direction



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DATE	MAY 2010
DRAWN BY	TMM
CHECKED BY	TWW
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Plan View - KIF 2010
Annual Inspection - Sluice Trench
Tennessee Valley Authority
Kingston Fossil Plant
Kingston, Roane County, Tennessee



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Enclosure H

Stilling Pond



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Stilling Pond

1. General Facility Information

Facility Status:	Active	NID Identification:	TN14504
Surface Area (inside dikes):	24.28 acres	TVA Hazard Classification:	Dike C: Significant
Maximum Height (toe to top of dike):	28 feet	Dike Length:	2,716 ft of Dike C and 2,163 ft of the Divider Dike.
Plant Discharge to Facility:	Unknown	Current Pool Elevation:	755 feet

2. Site Visit Information

Stantec Inspection Team:	Thomas Ward EIT, Mark Jones EIT, and Leo Booth
TVA Staff Present:	N/A
Field Inspection Date:	April 30, 2010
Weather/Site Conditions:	Partly cloudy with a high of 84 degrees Fahrenheit

3. History/Current and Future Operations

History:	Sluice water flows from the main Ash Pond to the Stilling Pond through five active spillways constructed in 2005. Water then discharges into the plant Intake Channel via six riser structure spillways equipped with discharge diffusers constructed in November 2003.
Current Operations:	Continuing normally as mentioned above.
Future Planned Operational Changes:	No changes are planned.

4. Stantec Field Observations

See attached Photos and Site Plan Drawing.

4.1. Interior Slopes

Vegetation:	Grass-covered, generally thick with good coverage.
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TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Stilling Pond

	Some areas exhibited sparse vegetation near the waterline.
Trees:	Occasional small trees were observed near the water line.
Wave Wash Protection:	None observed.
Erosion:	No significant signs of erosion on interior slopes. However, possible seepage at one location through the Divider Dike into the Stilling Pond (Photo 66) was observed.
Instabilities:	None observed.
Animal Burrows:	None observed.
Freeboard:	Approximately 10 to 11 feet.
Encroachments:	None observed.
Slope:	Varies from approximately 2.8H:1V to 1.59H:1V.
4.2. Crest	
Crest Cover and Slope:	Crushed stone access road.
Erosion:	None observed.
Alignment:	No issues observed.
Settlement/Cracking:	None observed.
Bare Spots/Rutting:	Occasional minor rutting observed with potential for erosion at observed steep cut (Photo 62).
Width:	Approximately 12 to 15 feet.
4.3. Exterior Slopes	
Vegetation:	Grass-covered, generally good coverage with some sparse areas observed (Photos 56 and 57).
Trees:	Numerous medium to large trees and brush were observed at the toe of Dike C running alongside the Intake Channel. None observed along remainder of perimeter.
Erosion:	Some significant rutting with standing water and adjacent



TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Stilling Pond

	erosion washouts were observed on the exterior bench of Dike C (Photos 59 and 60).
Instabilities:	None Observed.
Uniform Appearance:	Slope on Divider Dike not uniform - generally steeper towards the southwest portion of the dike.
Seepage:	None observed.
Benches:	One bench, approximately 15 to 20 feet wide.
Foundation Drains, and Seepage Collection Systems:	None reported or observed.
Instrumentation:	Four slope inclinometers and four piezometers are present along the segment of Dike C adjacent to the Stilling Pond.
Animal Burrows:	None observed.
Slope:	Varies from approximately 1.77H:1V to 3.56H:1V.
Height:	28 feet.

4.4. Spillway Weirs/Riser Inlets

Number:	6
Size, Type and Material:	48-inch RCP push-together riser pipes with standard TVA steel skimmers.
Height of Riser Inlets:	Approximately 8.5 feet.
Access:	Catwalk from Dike C (Photo 63).
Joints:	Not observable.
Mis-Alignment:	Not observable.
Closed/Abandoned Conduits:	There is reportedly an unidentified 12-inch diameter pipe connected to weir -010 that penetrates the dike with no evidence of an outlet.

4.5. Outlet Pipes

Number:	6
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TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Stilling Pond

Size, Type and Material:	36-inch steel pipes.
Headwall:	No issues observed.
Joint Separations:	Unknown, unable to observe.
Mis-Alignment:	Unknown, unable to observe.
Closed/Abandoned Conduits:	Six 12-inch steel outlet pipes are reportedly in service to drain stormwater from the Stilling Pond to Watts Bar Lake, although only 3 could be located in the January 2010 pipe inventory inspection performed by Stantec. Historical drawings did not indicate any removal.

5. Repairs/Mitigation/New Construction Activities Since Last Annual Inspection

The following maintenance activities and improvements have been performed for the Stilling Pond since the last annual inspection:

- Buttressing of Dike C is ongoing and will continue south along the exterior slopes toward the Stilling Pond.

6. Recommendations

The following maintenance recommendations are offered for the Stilling Pond:

- During the inspection, Stantec observed an area of potential seepage on the Stilling Pond side of the Divider Dike (Photo 66). It is therefore recommended that TVA continue to monitor this area to observe changes in appearance in accordance with TVA's current inspection program.
- Trees and brush are located on the interior and exterior slopes. It is recommended that trees and brush be removed from these slopes in accordance with the general guidelines shown in Enclosure I. (Priority 4)
- Areas of extensive rutting and/or erosion on the middle bench of Dike C need to be repaired (Photos 59 and 60). It is recommended that these areas be drained, filled, graded, and subsequently seeded to re-establish vegetation. Filling should consist of placing clay in 6-inch lifts and compacting with small compaction equipment, such as a jumping jack or hand-held tampers. Some excavation may be required to establish benches to facilitate proper compaction on level surfaces. Erosion control blankets should be used on sloping areas. (Priority 4)
- Areas lacking adequate vegetation coverage should be re-seeded to establish proper vegetative cover (Photos 56 and 57). Erosion control blankets should be



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TVA 2010 Annual Inspection Program Kingston Fossil Plant (KIF) Stilling Pond

used on sloping areas. (Priority 4)

- Re-grading should be considered at the areas along the crest of Dike C near the catwalk to the spillways exhibiting very steep slopes (Photo 62) to reduce future potential for localized sloughing. (Priority 5)



Photo 56

Typical view of access roadway on lower bench of Dike C with some minor rutting and exposed soil.



Photo 57

Sparse vegetation on exterior slopes of Dike C.



Photo 58

Boulder observed alongside dredge pipes on exterior slopes of Dike C adjacent to Intake Channel.



Photo 59

Typical view of more significant rutting and standing water on bench of exterior slope; looking east adjacent to the Intake Channel with numerous trees present at toe of Dike C.



Photo 60

Typical erosion washout on exterior bench of Dike C.



Photo 61

Overflow pipe to discharge into Intake Channel.



Photo 62

Steep cut approximately 5 feet high on crest of Dike C with exposed clay and minor rutting.



Photo 63

Catwalk access to spillways.



Photo 64

View of spillways looking northeast from Dike C.



Photo 65

Slope protection at intersection of Dike C and Divider Dike in north corner of Stilling Pond; typical small trees present near waterline.



Photo 66

Possible seepage into Stilling Pond through Divider Dike, looking east.



Photo 67

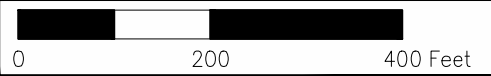
Ash deposit with sparse vegetation along Divider Dike in Stilling Pond. Dike C in background.



Ash Pond

Stilling Pond

1 Photo Number and Direction



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Plan View - KIF 2010
Annual Inspection - Stilling Pond

Tennessee Valley Authority
Kingston Fossil Plant
Kingston, Roane County, Tennessee

PROJECT NO. 175550002
DATE MAY 2010
DRAWN BY TMM
CHECKED BY TWW
CHECKED BY MLJ
SCALE 1"=200'
REVISED

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Enclosure I

General Guidelines for
Tree Removal and
Maintenance of Vegetation

General Guidelines for Tree Removal on Slopes at TVA Fossil Plants

Identification

Trees and heavy brush growth should be controlled on TVA dams and dikes. If left in place, trees can result in the creation of seepage paths within the embankment. Allowing vegetation to become overgrown restricts the level of inspection that can be performed on the structure. General guidelines for removal of trees and maintenance of vegetation are provided below. Evaluations other than those outlined below shall be made by a geotechnical engineer in consultation with facility representatives on a case-by-case basis.

Guidelines for Tree Removal and Maintenance of Vegetation

Tree Removal

At locations where it is not reasonable to remove trees by a mowing them with a bush hog or with similar mowing equipment:

- All trees shall be cut using a handsaw or chainsaw and the cut tree and branches discarded.
- Remove the remaining tree trunk, stump, and rootwad.
- Grub any remaining roots of the tree so that only 2 inches or smaller roots are left in place.
- The resulting cavity from removal of the rootwad shall be cleaned of loose soil and debris.
- The cavity shall then be backfilled with cohesive soil and compacted and the area seeded to re-establish vegetation. If the tree has been removed from along the upstream or downstream face of a slope, benches shall be cut into the slope face where the cavity is to be backfilled. This will allow for a proper bond between the existing dike and the backfill being used to reform the slope. If benches are needed, bench heights shall not exceed 4 to 5 feet in height.

Maintenance of Vegetation

- Mowing is recommended at regular intervals to allow for appropriate inspection of embankment slopes.
- If areas lacking vegetation are observed during mowing and clearing operations or subsequent inspections, the areas should be seeded to re-establish vegetation as soon as practicable.

Enclosure J

General Guidelines for
Repair of Animal Burrows

General Guidelines for Repair of Animal Burrows at TVA Fossil Plants

Identification

Animal burrows are relatively common along slopes of dams and dikes. If left untreated, these burrows can result in the creation of seepage paths through the embankment. Additionally tunnels may eventually collapse resulting in surface irregularities in the embankment. General guidelines for repair of animal burrows are provided below. However, if the burrow extends more than three (3) feet below the embankment surface or extends across a dam, the repair of these features should be evaluated by a geotechnical engineer on a case-by-case basis so that appropriate recommendations can be made.

Guidelines for Burrow Repair

It is recommended that shallow animal burrows (up to 3 feet) shall be repaired with surface treatment methods as follows:

- Animals shall be captured and removed from the area. It is recommended that a local conservation representative be consulted prior to this action.
- The animal burrow shall be excavated and cleaned of excess soil along its pathway up to a depth of 3 feet. With this type of repair, an isolated excavated area of the embankment is exposed.
- The excavated area shall be backfilled with compacted cohesive material.
- If the burrow extends more than three feet into the embankment, a geotechnical engineer shall further evaluate the burrow depth and recommend a deep burrow treatment method or other exploratory methods.
- One possible method which may be recommended to treat a deep burrow can consist of a special grout (flowable fill) pumping system with a hose inserted into the burrow.

Ultimately, these repairs will not prevent rodents from creating new burrows within dam embankments. Accordingly, continual efforts must be made to discourage rodent activity. Mowing of vegetation on the slopes / crest of the embankment and trimming of water-side vegetation at regular intervals will tend to discourage rodents from re-establishing burrows along the dike and will allow timely observation of new activity if it occurs.

Enclosure K

Dam Safety Priorities

Dam Safety Priorities

	Description
1	Urgent - Correct Immediately
2	Complete Within 1 Week of inspection
3	Complete Within 1 Month (30 days) of Inspection
4	Complete Within 6 Months of Original Entry Date
5	Complete Within 1 Year of Original Entry Date
6	Complete Within 3 Years of Original Entry Date
7	Complete Within 5 Years of Original Entry Date
8	Work During Scheduled Outage - Blank Until Outage is Scheduled