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February 26, 2007

Michael T. Beckham, KFP 1A-KST

KINGSTON FOSSIL PLANT - ANNUAL ASH POND DIKE STABILITY INSPECTION

Attached is the latest dike stability inspection for your plant. The report was prepared by John Albright and Jeff Gray of EDS - Civil Engineering. The dike stability inspection was made on November 21, 2006. The report includes recommendations for repairs and corrective actions. I concur with those recommendations.

If you have questions of comments, please call John Albright at (423) 751-3981.

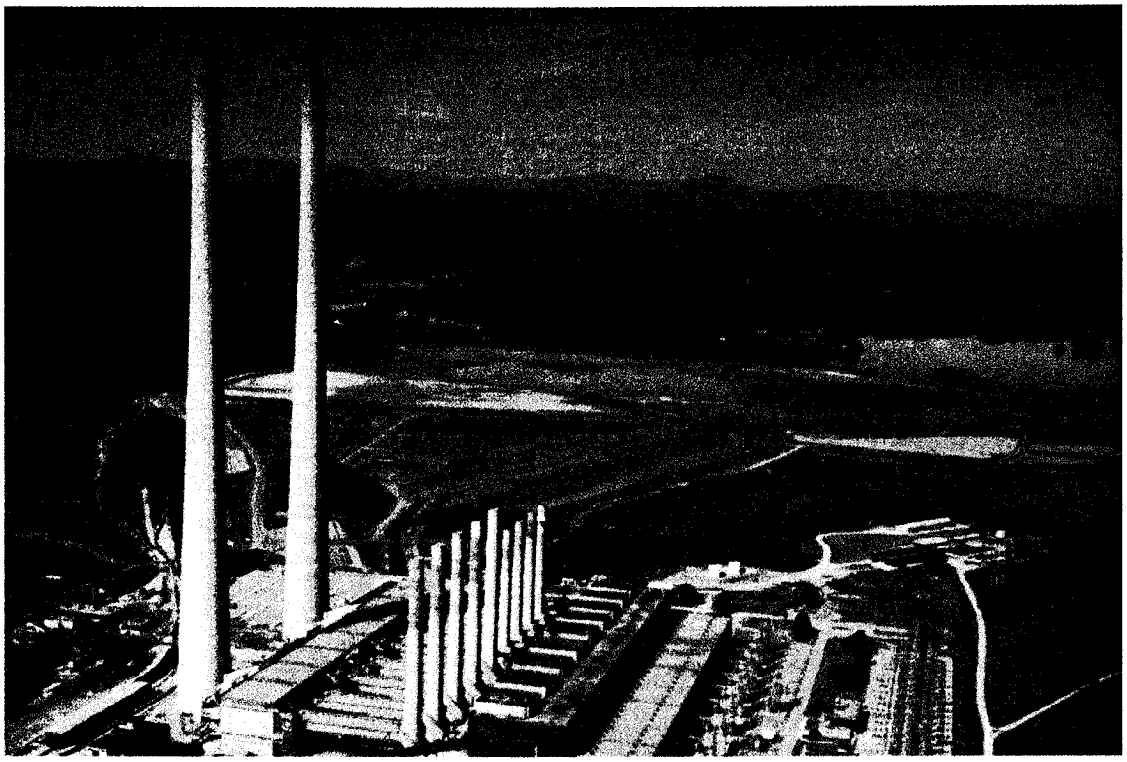
John C. Kammeyer, Manager
Engineering Design Services
LP 2G-C

REP:JGA:SRF
Attachment
cc (w/attachment):
J. G. Albright, LP 2P-C (two copies)
J. S. Baugh, LP 5G-C
L. F. Campbell, KFP 1A-KST
M. D. Davis, LP 5E-C
L. P. Johnson, LP 5D-C
S. R. Kramer, Dam Safety Files, LP 1F-C
G. R. MacDonald, LP 5E-C
J. M. Poston, KFP 1A-KST
F. D. Rushing, KFP 1A-KST
A. L. Smith, LP 5D-C
EDMS, WT CA-K

TENNESSEE VALLEY AUTHORITY

KINGSTON FOSSIL PLANT

ANNUAL ASH POND DIKE STABILITY INSPECTION 2007



Prepared by: John Albright and Jeff Gray
Date: January 31, 2007

KINGSTON FOSSIL PLANT
ANNUAL ASH POND DIKE STABILITY INSPECTION
2007

General

The waste disposal areas at Kingston Fossil Plant were inspected for dike structural stability on November 21, 2005. The inspection was performed by John Albright and Jeff Gray of TVA Engineering Design Services, Civil Engineering and Linda Campbell and Matt Phillips of Kingston.

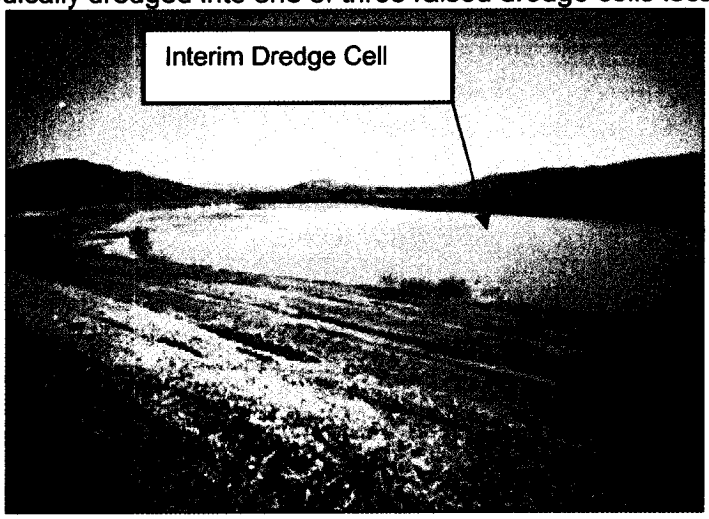
The previous annual inspection was performed on October 19, 2005.

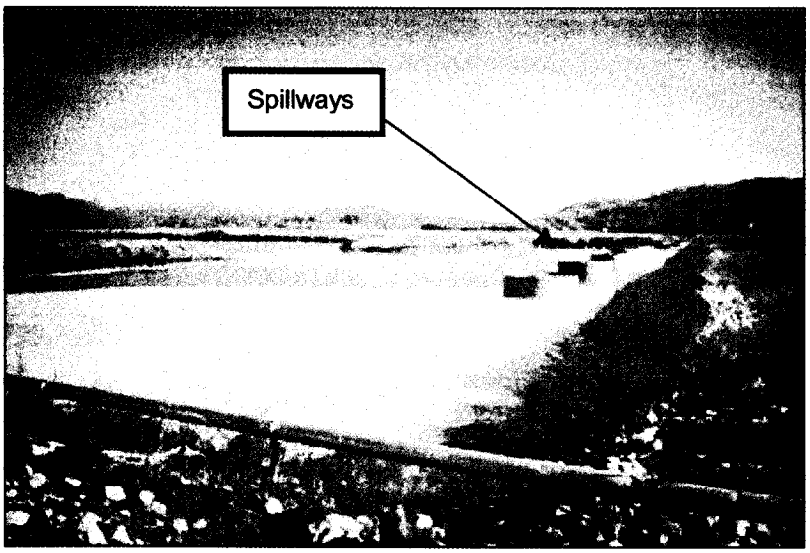
The results of the annual stability inspection are listed below according to location within the ash disposal area.

Active Ash Disposal Area

Bottom ash is sluiced into a channel southwest of the disposal area where it settles out and is removed by drag line, approximately once a week, to be used for dike construction. Fly ash is sluiced into a channel northwest of the bottom ash channel. Both channels flow northeast into the active ash pond where the fly ash settles out and accumulates. Please see drawing API 2007.

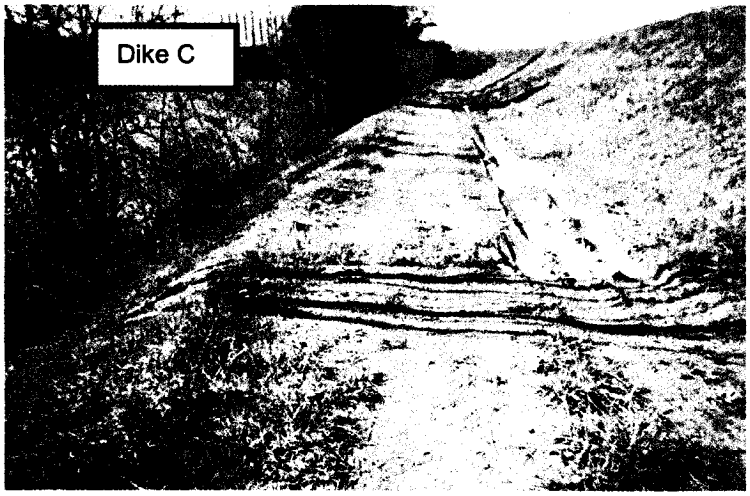
Prior to November 2003 the fly ash was periodically dredged into one of three raised dredge cells located in the western portion of the disposal area. In November 2003 dredging operations ceased because of a leak in the toe of the dike slope for Dredge Cell 2/3. To prevent a permit violation, ash was removed from the pond with track hoes and used to construct an interim dredge cell east of the original dredge cells. Through 2004 and 2005 ash was dredged to the interim cell while repairs were made to the original dredge cells. Dredging resumed to the original dredge cells in early 2006.





Sluice water flows from the active ash pond into the stilling pool through the five (5) new spillways constructed in 2005. The old plant constructed spillway (Kennedy Weir) were taken out of operation in 2005 as part a project to replace the Kennedy weir and allow more accurate accounting of free water volume. From the stilling pool, the water discharges into the plant intake channel via six standard spillways equipped with discharge diffusers constructed in November 2003.

All exterior dike slopes around this area appeared to be in sound condition with excellent vegetative cover. The dikes had been mowed recently and were in very good condition. As shown to the left, some of the benches don't drain well. As much as practical, these ditches should be graded so they will drain, even if slowly. Wheel ruts that hold water should be filled with soil and covered with stone if they are in a road.



The divider dike between the active pond and the stilling pool had some areas of erosion and gullies, but appeared stable otherwise. The dikes at the new spillway construction should have rip-rap placed to minimize erosion from wave action.

Some of the dike roads need immediate attention.

The seeps along the toe of Dike C and below the toe of the dike along the intake channel, known since the early 1980s were not visible during this inspection.

Dredge Cells

The top-of-dikes elevation is now 815 feet. In late 2004, design was started on a repair to the slope failure that happened in 2003. Construction of the repair started during the summer of 2005 and completed in October 2005. Underdrains were installed in the lower two benches to relieve water pressure caused by the water elevation in the dredge cells. The drainage ditches were rip-rapped and a pump station built to send the water to the ash pond.

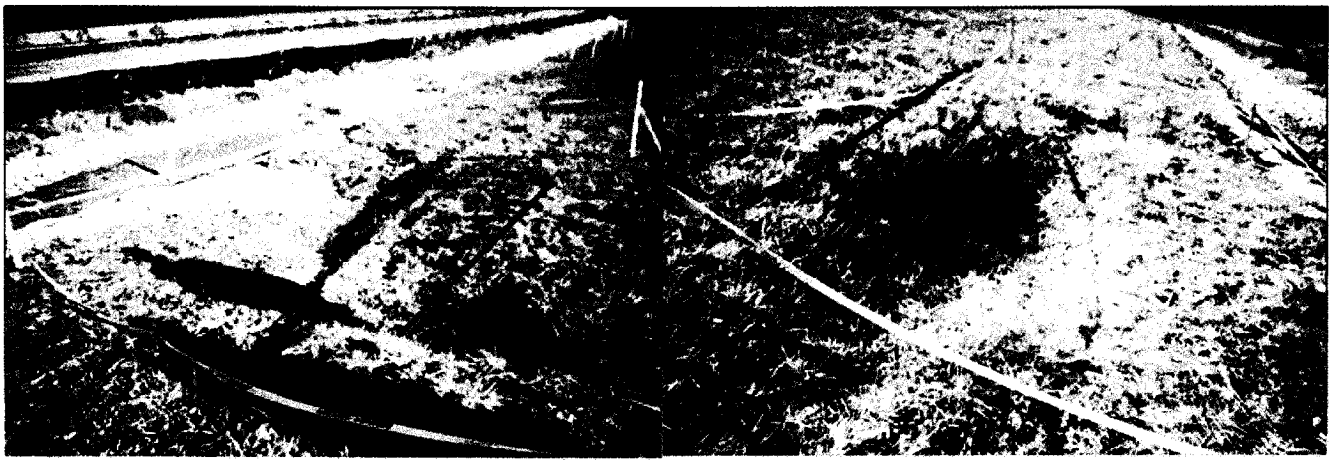
A 6 foot deep trench drain was installed in the 795 elevation bench, and 5 foot deep trench drains were installed in the 781 and 775 benches. A buttress toe drain was built and a rip-rap channel was installed at the toe drain. Each trench drain was one-and-a-half feet wide with a 6-inch perforated pipe surrounded by an open graded limestone. Filter fabric surrounded the limestone. The remainder of the trench was backfilled with ash material removed for the excavation.

The intermediate soil cover was removed from the dikes between elevations 775 and 760 and stockpiled for reuse as a vegetative layer for cover. A non-woven geo-composite drainage layer was placed on the exposed ash and then recovered with one foot of soil.

The rip-rap channel along Swan Pond Road and the toe of the dike has a high point approximately 400 feet north of the intersection with the plant access road.
North of the high point, the runoff and leachate drain into a new sump pond. South of the high point, runoff and leachate runs south and east to the ash pond. The sump pond is pumped to the ash pond. The pumps are electric powered with high water level alarm indicators at the control panel. The pond is sized to contain a 25 year storm event, and emergency overflow is to Swan Pond Embayment.

Plant operations does a commendable job of mowing the dredge cell slopes. A few small trees are growing on the slopes. They should be pulled or kept mowed to prevent further growth.

On November 1, 2006, after the original dredge cells had been back in operation for about 9 months, a localized slope failure occurred very near the 2003 failure. The November 2006 failure was caused by local anomalies allowing piping, that the 2005 repair was incapable of controlling. The 2005 repair was not designed to contend with localized piping. The severity of the piping was also not anticipated. The pictures below show the 2006 slope failure 3 weeks after it was discovered.



Since November 1, over 30 piezometers and a system of dewatering wells have been installed. The area has been excavated to investigate the cause of the failure. EDS and an outside consultant, Geosyntec, are working on a proposed solution, but as of this writing, a final recommendation has not been accepted.

Chemical Treatment Ponds

The chemical treatment ponds are located southwest of the active ash pond. Both ponds were excavated and have no exterior slopes. The internal dike slopes are covered with riprap. These slopes were in good condition. Sediment in the ponds was tested in FY 2004 and found to be non-hazardous.

Coal Yard Drainage Basin

The coal yard drainage basin is located at the southwest corner of the coal pile. This basin was excavated below grade; therefore, there are no exterior dikes. The interior slopes appeared to be in satisfactory condition. Normal discharge from this basin is pumped into the fly ash discharge ditch and flows to the active ash disposal area. The picture to the left shows one of two rock check dams built to keep the coal fines away from the pumps. The basin was dredged just over four years ago, but is in need of clean out, again. The bottom of the pond should be no higher than elevation 745 at the pump platform. Elevation 745 allows 2 feet of clearance below the pump intakes to prevent pumping solids. The pumps seem to have been pumping solids for some time. In addition, the "V-shaped" pond extensions added during the summer of 2001 to increase the pond storage volume contained coal yard sediment. TVA drawing 10W225-2 (attached as API 2006-2) shows the pond and its intended bottom contours.

Engineered Redwater Wetland

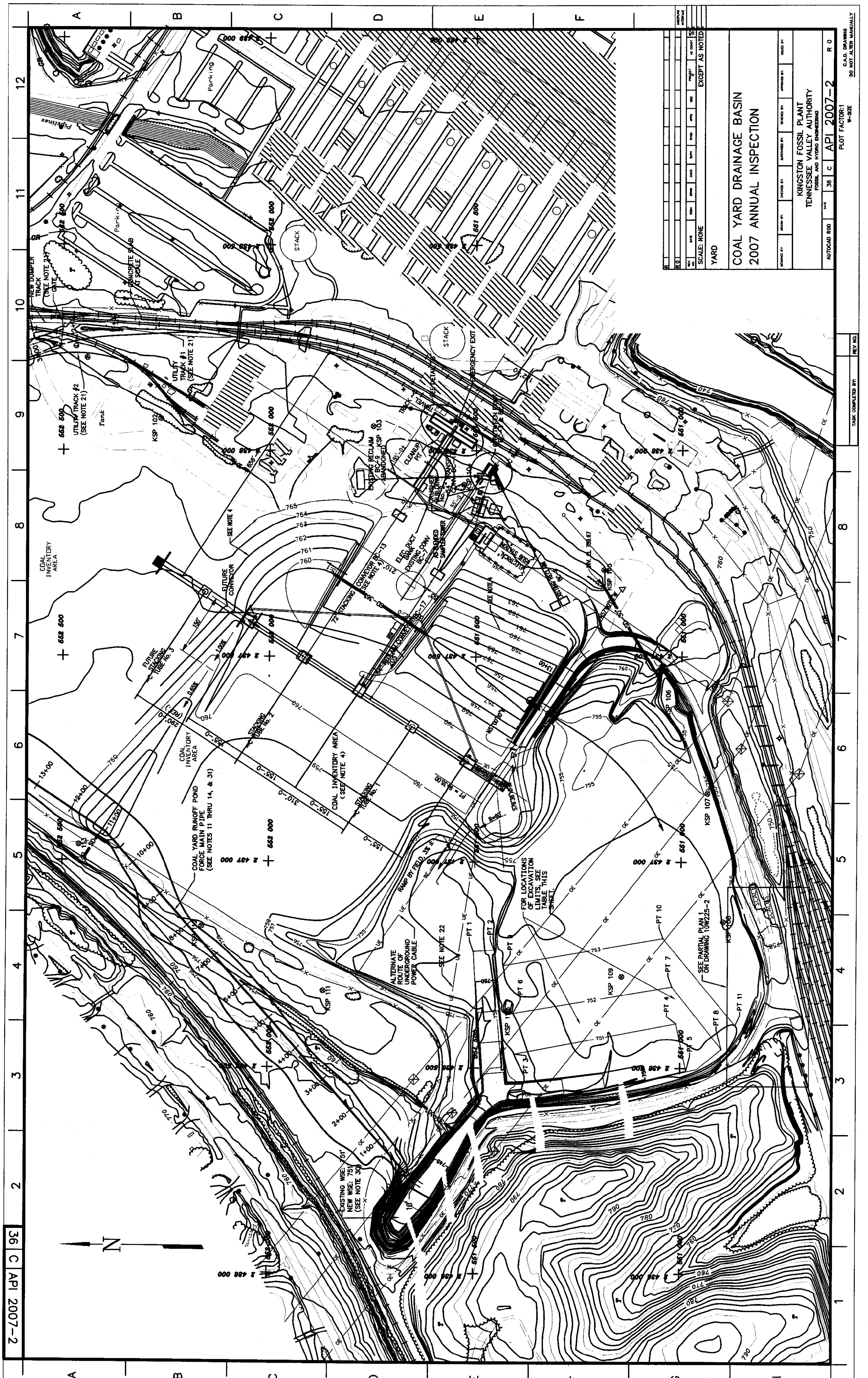
The engineered wetland along the southwest dike receives seepage that collects in the anoxic limestone drain below the bottom ash trench. The wetland appeared to be functioning, at least partially, though the discharged is still pumped to the ash pond.

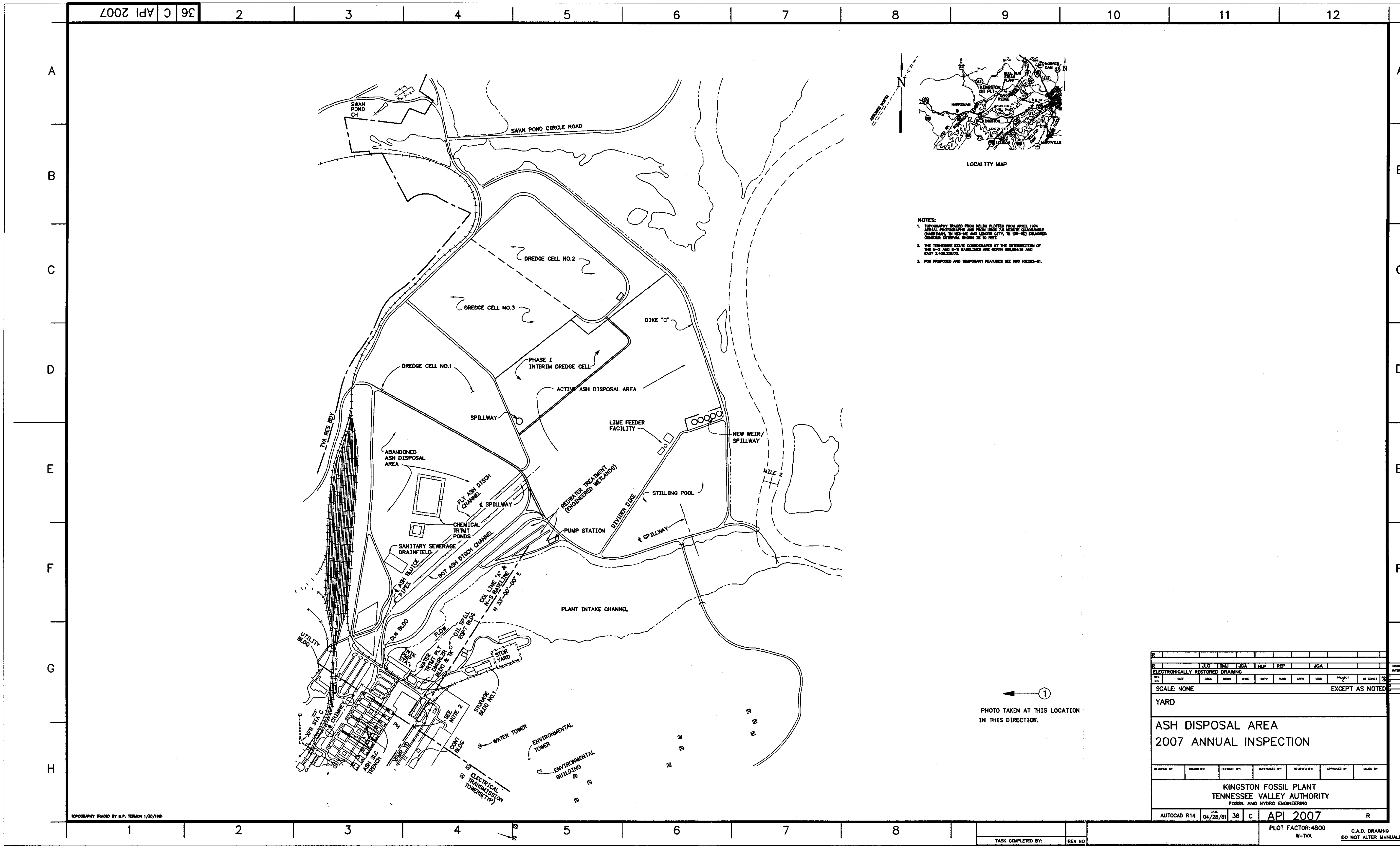
Actions on Recommendations of Last Inspection

- Sparsely vegetated areas on the dike slopes have been reseeded and appear to be in good condition. The upper lift of the dredge cells need a little more work.

Recommendations

- The divider dike between the ash pond and the stilling pool shows signs of erosion on the ash pond side. Erosion ditches larger than a standard railroad crosstie should be repaired with compacted bottom ash. Repeated repairs in the same location calls for rip-rap stabilization. EDS-Civil will assist in sizing the rip-rap and setting it limits, in needed.
- Dredge cell drainage ditches should be kept free of cattails so they will flow as well as possible. Any existing cattails should be removed.
- Remove trees from the slopes of the dikes. Mowing at least twice a year is recommended to control the size of the trees. Preventing the trees from getting larger than 1" in diameter at the ground is preferred. Any trees larger than 3" in diameter at the base must be pulled from the dikes, roots and all. Repair and reseed the damaged area.
- Monitor the Dredge Cell Dike and report any changes to Lynn Petty of FPG Engineering Design Services, 423-751-6704.
- Monitor the limestone drain area and all exterior dike slopes for seepages, soft wet spots, animal burrowing, sloughing, etc., and notify Lynn Petty of FPG Engineering Design Services, 423-751-6704, of any changes.
- Dredge the Coal Yard Drainage Basin to restore its design contours and protect the pumps from further damage. There is an estimated 2,800+ cubic yards of sediment in the original pond and an extra 3,400+ cubic yards in the "V" section that needs to be removed as soon as reasonable. See the attached copy of 10W225-2. We estimate $50,000 will be needed, depending on haul distance.


COAL YARD DRAINAGE BASIN
2007 ANNUAL INSPECTION
YARD
SCALE: NONE
EXCEPT AS NOTED
KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING
36 C API 2007-2
PLOT FACTOR:1
C.A.D. DRAWING
DO NOT ALTER MANUALLY
COAL INVENTORY AREA
STACK
N



36 C API 2007
LOCALITY MAP
NOTES:
1. TOPOGRAPHY TRACED FROM KELSH PLOTTED FROM APRIL 1974 AERIAL PHOTOGRAPHS AND FROM USGS 7.5 MINUTE QUADRANGLE (HARRIMAN, TN 123-NE AND LENOIR CITY, TN 130-SE) ENLARGED. CONTOUR INTERVAL SHOWN IS 10 FEET.
2. THE TENNESSEE STATE COORDINATES AT THE INTERSECTION OF THE N-S AND E-W BASELINES ARE NORTH 881,854.16 AND EAST 2,430,230.03.
3. FOR PROPOSED AND TEMPORARY FEATURES SEE DWG 10E202-01.
SWAN POND CH
SWAN POND CIRCLE ROAD
DREDGE CELL NO.2
DREDGE CELL NO.3
DREDGE CELL NO.1
DIKE "C"
PHASE I INTERIM DREDGE CELL
ACTIVE ASH DISPOSAL AREA
SPILLWAY
LIME FEEDER FACILITY
NEW WEIR/ SPILLWAY
MILE 2
TVA RES BDY
ABANDONED ASH DISPOSAL AREA
FLY ASH DISCH CHANNEL
℄ SPILLWAY
REDWATER TREATMENT (ENGINEERED WETLANDS)
STILLING POOL
DIVIDER DIKE
CHEMICAL TRTMT PONDS
PUMP STATION
℄ SPILLWAY
SANITARY SEWERAGE DRAINFIELD
BOT ASH DISCH CHANNEL
℄ ASH SLUICE PIPES
COL LINE "A" & N-S BASELINE N 33°-00'-00" E
PLANT INTAKE CHANNEL
UTILITY BLDG
CLN BLDG
FLOW
INTK PMP STA
WATER PLT TRTMT DMNRLZR BLDG & TK
OIL SPILL EQPT BLDG
STOR YARD
STORAGE BLDG NO.1
XFR STA C
CHIMNEY
PH
SEE NOTE 2
ASH SLC TRENCH
CONT BLDG
WATER TOWER
ENVIRONMENTAL TOWER
ENVIRONMENTAL BUILDING
ELECTRICAL TRANSMISSION TOWERS(TYP)
PHOTO TAKEN AT THIS LOCATION IN THIS DIRECTION.
TOPOGRAPHY TRACED BY M.P. TERMON 1/30/1981
ELECTRONICALLY RESTORED DRAWING
JLG TMJ JGA HLP REP JGA
SCALE: NONE EXCEPT AS NOTED
YARD
ASH DISPOSAL AREA
2007 ANNUAL INSPECTION
KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING
AUTOCAD R14 04/28/81 36 C API 2007 R
PLOT FACTOR: 4800 W-TVA
C.A.D. DRAWING DO NOT ALTER MANUALLY
TASK COMPLETED BY: REV NO