

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

B65 900928 072

TO : J. E. Varner, Manager, Inspections and Small Projects, BR 4N 83A-C
FROM : Joel D. Paris, Civil Engineer, Site Development, MR 3S 131D-C
DATE : SEP 28 1990
SUBJECT: KINGSTON FOSSIL PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE)
INSPECTION OF ASH DISPOSAL AREAS

1.0 General

- 1.1 I inspected the ash disposal area on June 26, 1990 and was accompanied by Raymond Gutiner, Power Production (P PROD) Coal Yard Foreman.
- 1.2 The last inspection was on April 29, 1988 (B65 880524 014).
- 1.3 The ash disposal area is shown on the attached print of drawing 10N420.

2.0 Change in Dike Since Last Inspection

- 2.1 Dike "C" appears to be stable although there are three wet areas on the berm.
 - 2.1.1 The exterior slopes have a good vegetative cover. The dikes have not been mowed recently. Due to the extreme dry weather, the ground is cracking (picture 1 and 2).
 - 2.1.2 Wet area number 2 identified during a 1988 inspection at the time was not wet but was dark green with everything around it dry.
 - 2.1.3 The third wet area observed during the 1988 inspection was also dry. This area should be watched closely because at the time of this inspection, dredging has been in operation for 12 days. "Water boils" and "water piping" occurred in this area in 1987 that caused the original dredging operation to shut down.



J. E. Varner

SEP 28 1990

KINGSTON FOSSIL PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE)
INSPECTION OF ASH DISPOSAL AREAS

2.1.4 There is a good gravel surface on the dike "C" roads. Additional drainage pipes should be added to add drainage from the berm (see 10N420).

2.2 Seepage of redwater still persists along the exterior slope of the southeast dike. The redwater is collected in an interception ditch (picture 13) and routed to an engineered wetland (picture 14). The water is pumped to the ash pond (picture 15). Cattail and other aquatic growth continues to increase in the wetland and removal and replacement will not be necessary for several years.

2.3 The divider dike at the stilling pool appears to be stable.

3.0 Changes in Pond Operations Since Last Inspection

3.1 The bottom ash continues to be sluiced into a channel at the south end of the initial ash pond and removed by dragline (picture 4). The bottom ash continues to be sluiced faster than it is being used for dike building.

3.2 The fly ash continues to be sluiced into a rubber-lined ditch that is showing signs of deterioration. This should be watched and replaced if necessary (pictures 5 through 8).

3.3 The fly ash and bottom ash waters are routed through a spillway skimmer into the stilling basin and then discharged through five of six spillways to the intake channel.

3.4 Cell No. 1 has been raised to elevation 795 and a new return spillway constructed in the east end (picture 9). The cell is almost cleaned out and ready for dredging.

3.5 Cell No. 3, center cell, is being cleaned out but the ash is wet and hard to remove (picture 10). The discharge spillway has been removed from the northwest corner and reconstructed in the dike running northeast and now discharges back into the original pond without going to Cell No. 2.

3.6 Cell No. 3, northern cell, is being dredged into at this time, (12 days). The dike is at elevation 775. Raymond Gutiner was cautioned to watch the wet areas and keep the water head low in the pond. He has been lowering the discharge on weekends after the dredging stops.

2708K

J. E. Varner

SEP 28 1990.

KINGSTON FOSSIL PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE)
INSPECTION OF ASH DISPOSAL AREAS

3.7 The original north dike drainage (now south toe of cell 1) has been lowered to remove the ponding. The road crossing at the east end of the ditch was reworked and the pipe lowered four feet. An additional section at pipe was also added (picture 12). This allows an extra four foot fall in the 1800-foot ditch (picture 11).

3.8 A baseball diamond has been constructed on the southwest corner of the "north dike" (picture 16).

4.0 Condition of Spillways, Skimmers, and Outlets

4.1 The plant constructed spillway and skimmer discharging water from the pond area into the stilling pool area appear to be in good condition as there is very little floating ash on the stilling basin.

4.2 Five of the six standard spillways and skimmers in the stilling pool area appear to be in good condition and functioning properly. The spillway on the west end has been raised one section higher than the other five and is not discharging. The algae should be periodically removed for accurate discharge readings.

4.3 The riprap looks good at the discharges.

5.0 Action on Recommendation of Last Inspection

5.1 All trees were removed from the dike except for a small patch of sourwood at the top of the dike at the discharges.

5.2 The floating ash has been removed from the stilling pool.

5.3 The limbs have been removed from the spillways and skimmers but some algae remains. This is an ongoing problem.

6.0 Recommendations

6.1 Action Items

6.1.1 Remove the patch of sourwood trees from the top of the dike at the spillway by pulling them up with tractor and chain.

2708K

J. E. Varner

SEP 28 1990

KINGSTON FOSSIL PLANT - ANNUAL FOSSIL AND HYDRO ENGINEERING (FHE)
INSPECTION OF ASH DISPOSAL AREAS

6.2 Improvement Items

6.2.1 Add two drains under the road (berm) on the north original dike to improve storm drainage.

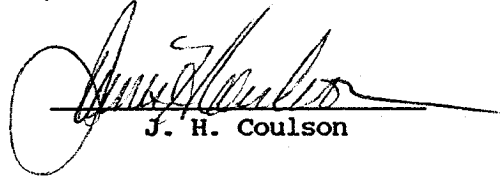
6.2.1.1 Add one drain at the east end of the island and another one drain at the middle of the island.

6.2.2 Add riprap at the outlet end of the exterior dike storm drains to prevent erosion. The size of stone should range from 60 to 100 lb.



J. D. Paris

Concur:



J. H. Coulson

JDP:HLF

cc: RIMS, MR 4N 35A-C
J. H. Coulson, MR 3S 125D-C

2708K

KINGSTON F. P.
JUNE 1990

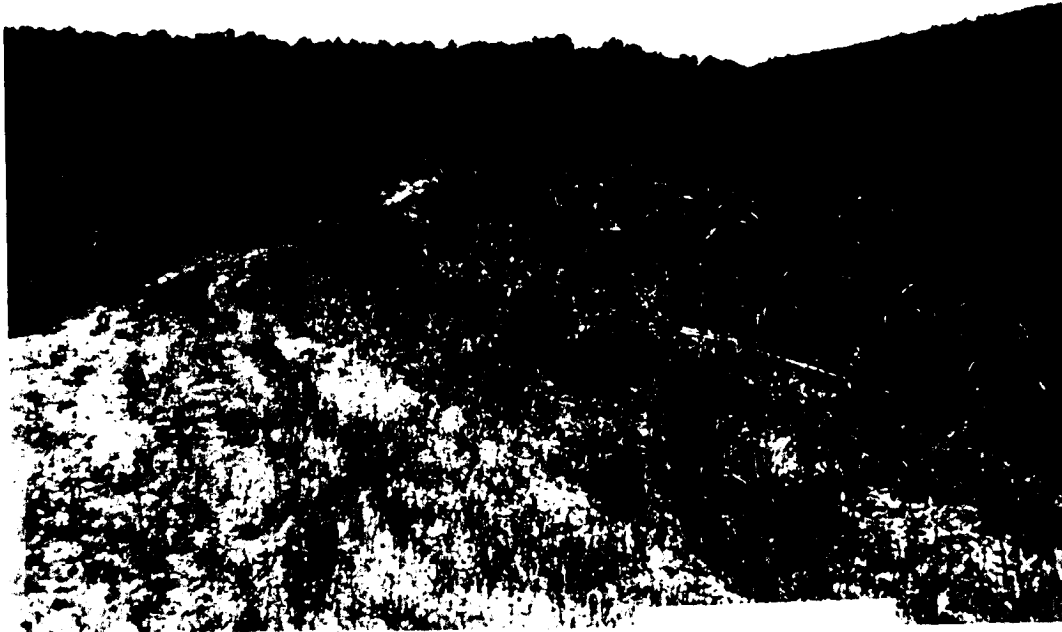


① DIKE "C" DRY GRASS
WITH GROUND CRACKS.



② DIKE "C" DRY GRASS WITH GROUND CRACKS.

KINGSTON F.P.
JUNE 1990



③ WET AREA NUMBER 1.



④ RECLAIMING ASH FROM DISCHARGE.

KINGSTON F. P.
JUNE 1990



⑤ FLY ASH DISCHARGE - NOTE LINER DAMAGE.

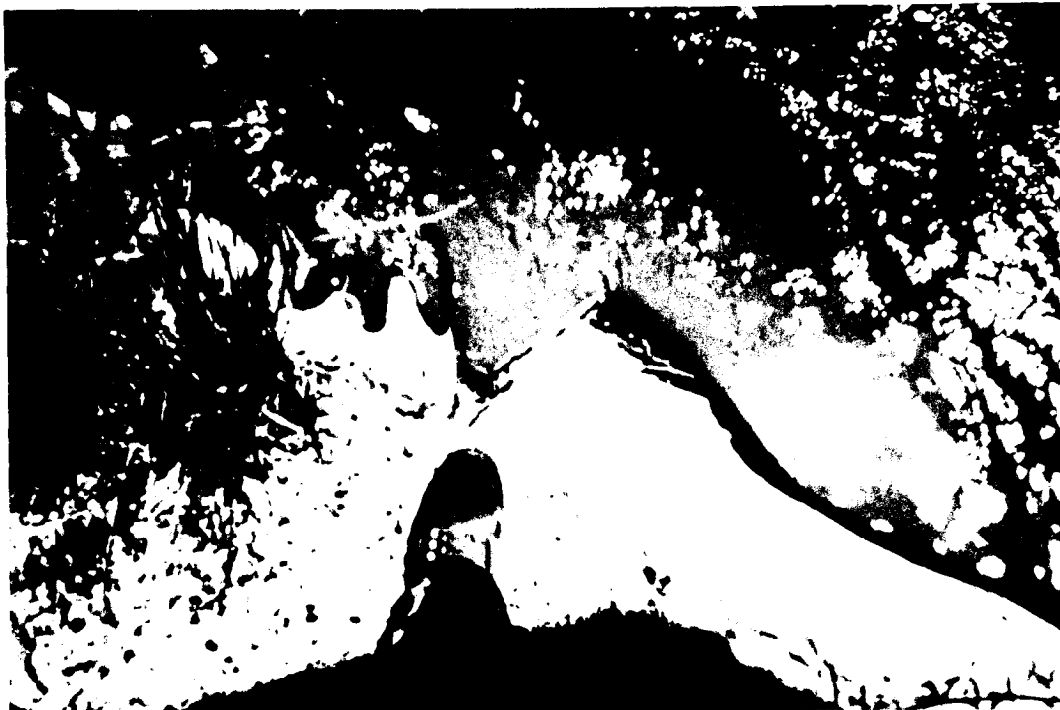


⑥ FLY ASH TRENCH

KINGSTON F. P.
JUNE 1990



⑦ LINER DAMAGE



⑧ LINER DAMAGE

KINGSTON F. P.
JUNE 1990



⑨ ONE OF THREE DISCHARGES FROM THE THREE
DREDGE CELLS.



⑩ ASH RECOVERY FROM CELL NO. 3 THE ASH IS DOUBLE
HANDLED BECAUSE OF MOISTURE.

KINGSTON F. P.
JUNE 1990



11

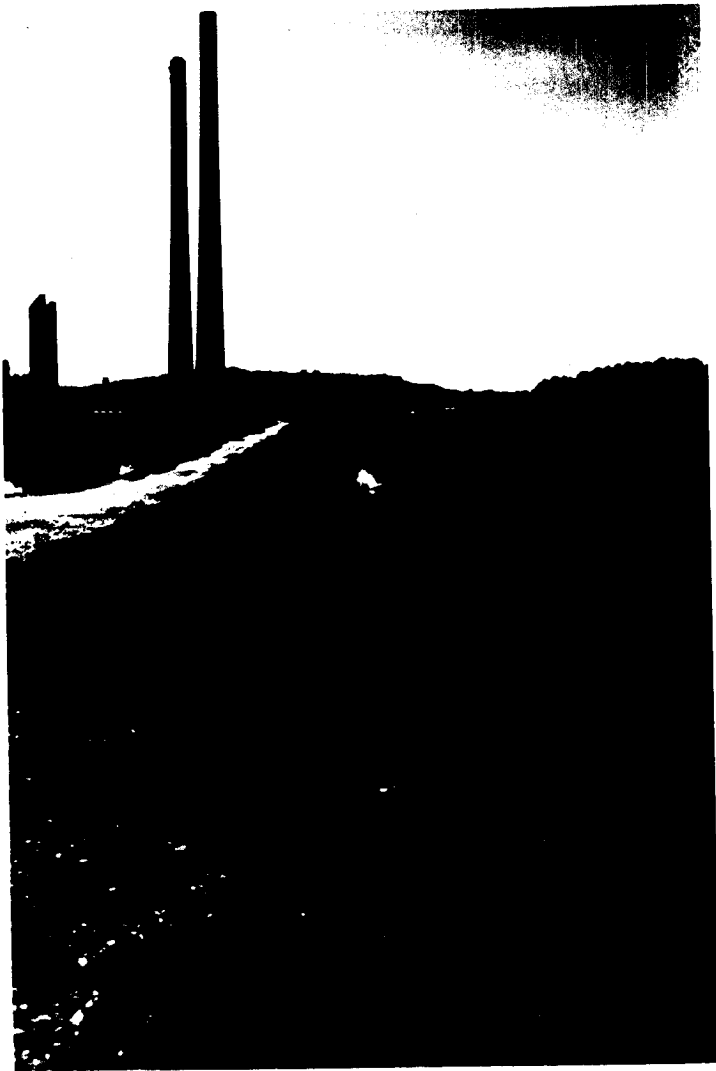
LOWERING OF DRAINAGE
DITCH TO STOP STANDING
WATER.



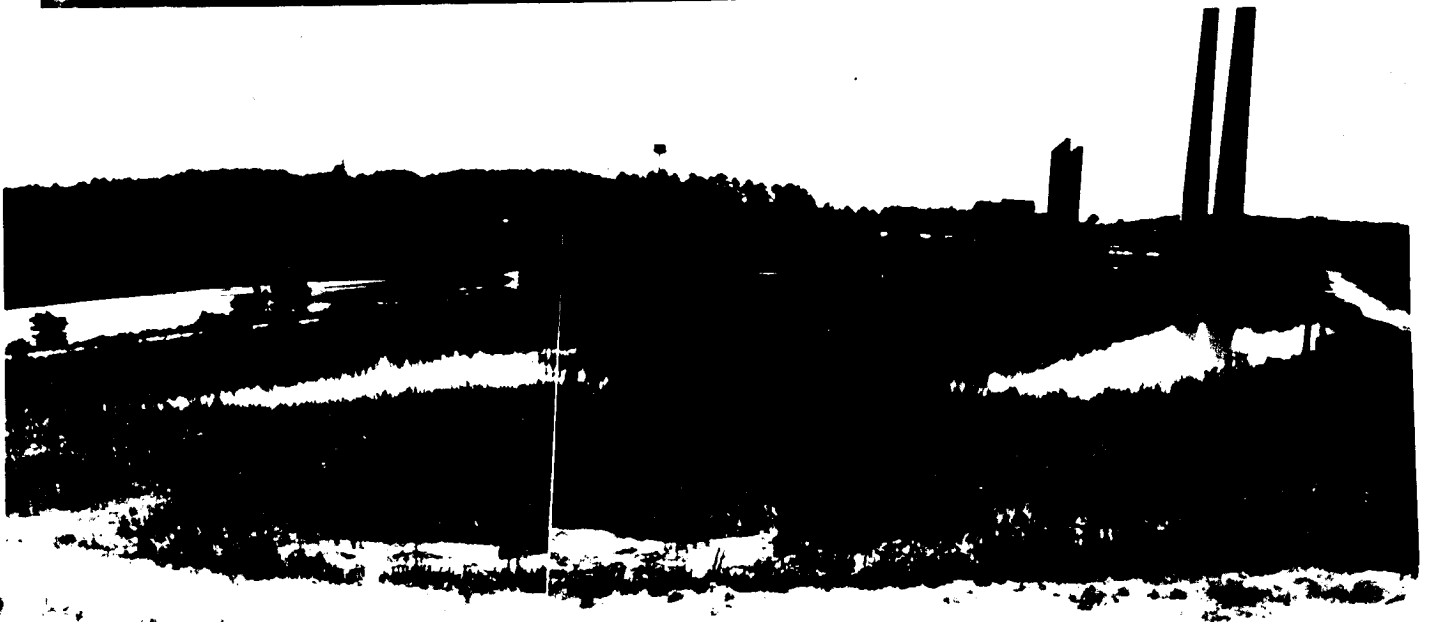
12

DISCHARGE END AT LOWERED
DRAINAGE DITCH.

KINGSTON F. P.
JUNE 1990

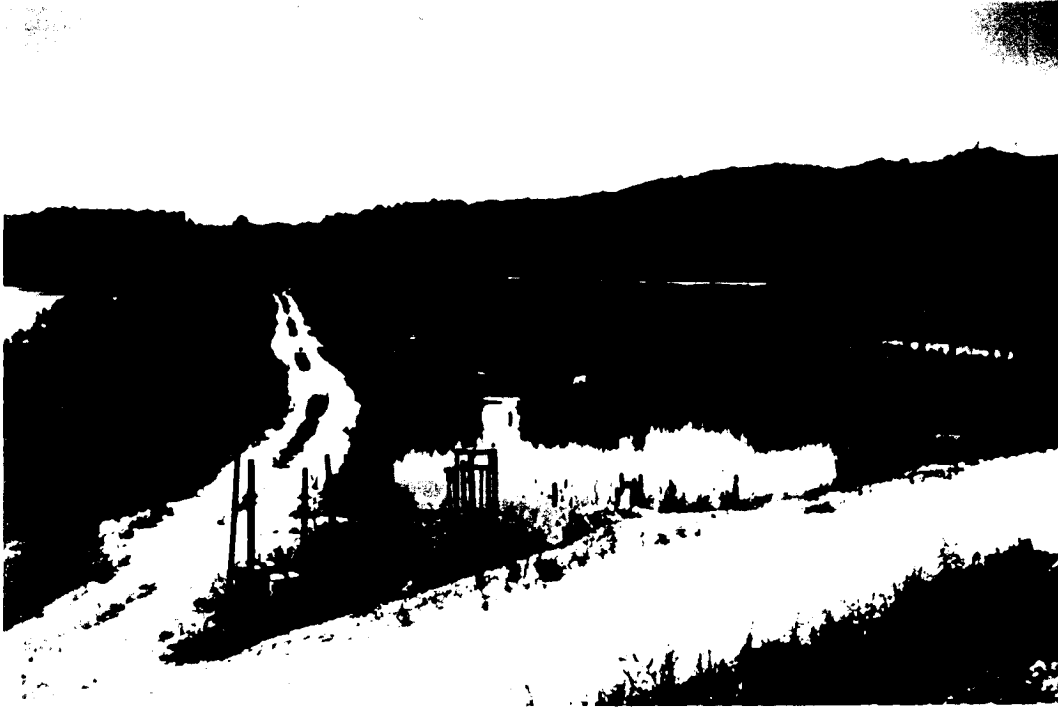


(13) INTERCEPTOR DITCH
FOR RED WATER.

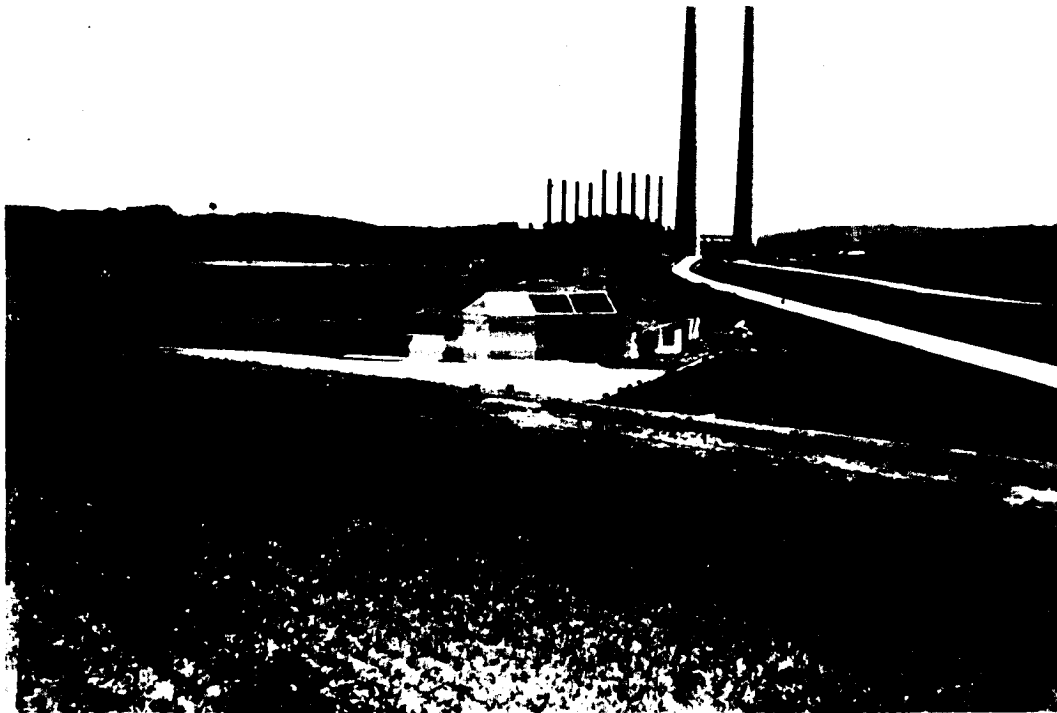


(14) ENGINEERED WETLAND & LAGOON

KINGSTON F. P.
JUNE 1990

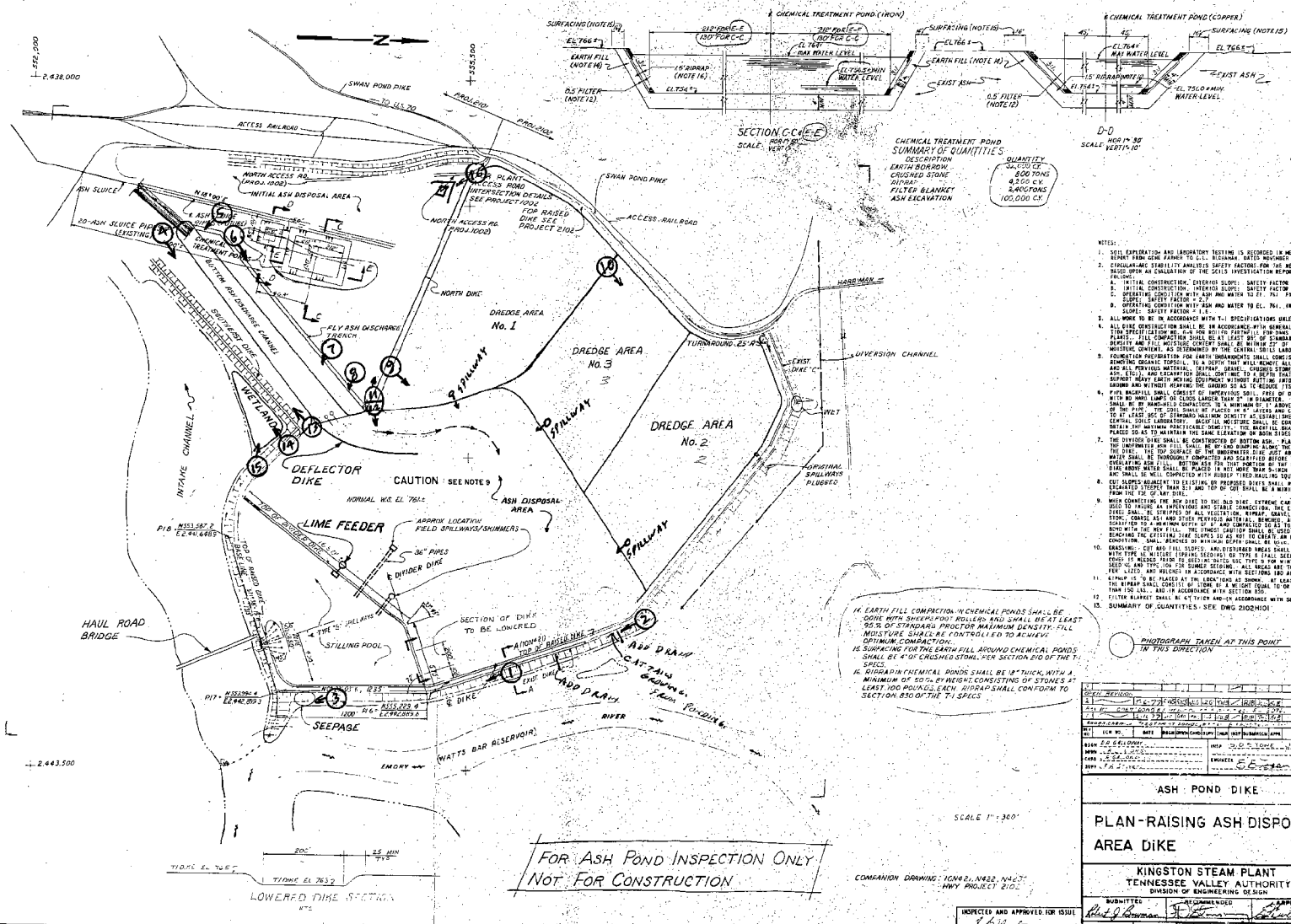


15) ENGINEERED WETLAND LIFT PUMP TO ASH POND.



16) NEW BALL FIELD.

A
B
C
D
E
F
G



CHEMICAL TREATMENT POND SUMMARY OF QUANTITIES

DESCRIPTION	QUANTITY
EARTH ROOFING	800 TONS
CRUSHED STONE	4500 CY
FILTER BLANKET	240000 SQ YD
ASH EXCAVATION	100,000 CY

- NOTES:
- SOIL EXPANSION AND LABORATORY TESTING IS REQUIRED IN HEADQUARTERS... (Note 1)
 - CIRCULAR SLOPE STABILITY ANALYSIS SAFETY FACTORS FOR THE NEW DIKE... (Note 2)
 - INITIAL CONSTRUCTION: EXTERIOR SLOPE: SAFETY FACTOR = 2.0... (Note 3)
 - OPERATING CONDITIONS: EXTERIOR SLOPE: SAFETY FACTOR = 2.0... (Note 4)
 - OPERATING CONDITIONS: INTERIOR SLOPE: SAFETY FACTOR = 1.0... (Note 5)
 - ALL WORK TO BE IN ACCORDANCE WITH THE SPECIFICATIONS UNLESS NOTED... (Note 6)
 - FOUNDATION INVESTIGATION FOR EXTERIOR AND INTERIOR SLOPES SHALL BE... (Note 7)
 - THE DIVIDER DIKE SHALL BE CONSTRUCTED BY BOTTOM DOWN... (Note 8)
 - BEFORE CONSTRUCTION THE INTERIOR AND EXTERIOR SLOPES SHALL BE... (Note 9)
 - SOIL SAMPLES TO BE TAKEN AT THE FOLLOWING LOCATIONS: (Note 10)
 - ALL WORK IS TO BE PLACED AT THE LOCATIONS AS SHOWN... (Note 11)
 - SIXTER BLANKET SHALL BE 4" THICK AND IN ACCORDANCE WITH SECTION 210... (Note 12)

14. EARTH FILL COMPACTION IN CHEMICAL PONDS SHALL BE DONE WITH SHEEPSFOOT ROLLERS AND SHALL BE AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DENSITY...
15. SURFACING FOR THE EARTH FILL AROUND CHEMICAL PONDS SHALL BE 4" OF CRUSHED STONE, PER SECTION 210 OF THE T-1 SPEC.
16. RIPRAP IN CHEMICAL PONDS SHALL BE 18" THICK WITH A MINIMUM OF 80% BY WEIGHT CONSISTING OF STONES AT LEAST 100 POUNDS EACH. RIPRAP SHALL CONFORM TO SECTION 230 OF THE T-1 SPEC.

PHOTOGRAPH TAKEN AT THIS POINT IN THIS DIRECTION

DATE	TIME	LOCATION	PERSONS

ASH POND DIKE
PLAN-RAISING ASH DISPOSAL AREA DIKE
KINGSTON STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN
SUBMITTED: [Signature] RECOMMENDED: [Signature] APPROVED: [Signature]
DATE: 5-20-76
KNOXVILLE 5-20-76 36 C ION 420 R

FOR ASH POND INSPECTION ONLY
NOT FOR CONSTRUCTION

SCALE 1" = 300'

CONSTRUCTION DRAWING: ION 420, 1432, 4421
ENVY PROJECT 210