W. C. Boop, Chief Civil Engineer, 405 UB

W. N. Calvert, Head Civil Engineer (Highway and Railroad), 204 AB

July 12, 1967

KINGSTON STEAM PLANT - ASH DIKES

On July 3, 1967, J. P. Hillier Stivers and Robert J. Bowman met with Meigs Brewer, Jr., and Shelton Johnson of Power Production and Buford Cross, Assistant Superintendent, and Buford Street, Mechanical Supervisor, of the Kingston Steam Plant at Kingston Steam Plant for an inspection of the ash dikes.

All dikes look to be in good shape. There is very little erosion by wave action on the outside slopes which are about 6:1. Noticeable wave action erosion has occurred on the inside but is not serious. All the dikes, with the exception of 200 to 300 feet on the south end of the east dike, are made of earth with a roadway surface of ash. The south end of the east dike for about 200 to 300 feet is composed entirely of ash, but has flat slopes and has withstood the wave action as good, if not better, than the earth dikes. Vegetation has been established on the dikes except where the dikes are made of ash.

At the time of our visit the people at the plant were talking about a 3-foot increase in the elevation of the water on the inside of the dike. This would require raising of the dike to prevent the 4- to 6-foot waves that have been observed from overtopping the dike. Even a 2-foot increase in water elevation without raising the dike would reduce the freeboard below a safe minimum. The reason for raising the water level was understood to be to provide more dilution. Unless additional depth is proved to be required, the depth of water on the inside should be kept about as it now is, in order to minimize wave action and head against the dikes.

Both pipe spillways are flowing full at the top with water only a few inches above the lip and seem to have no difficulty in taking care of the water that is discharged into the pond. Consideration should be given to installing an additional spillway to allow crossdiking to reduce the inside wave heights. At the present time the ash at the end of the sluice pipes is being worked by mechanical equipment. The recommendation was made that an immediate start be made on raising the dikes. We will make a revision on the 10W400 drawing giving specifications for raising the dikes.

W. C. Boop
July 12, 1967

KINGSTON STEAM PLANT - ASH DIKES

On July 3, 1967, there was approximately an area of two acres of floating ash from 1-1/2 to 2 inches thick. The location varies with the wind, but usually is diametrically opposite the spillways. A square wooden skimmer floating on metal drums (see photo) is used here instead of the circular metal type we have designed. We see no objection to the wood type except this one does not extend far enough below and above the water level to hold back floating ash.

The outlets of the pipe culverts under the access railroad and Swan Pond Road that discharge into the ash pond are considerably lower than the ultimate top of ash, and special provisions will have to be made to keep them open when the ash reaches their outlet elevations which will not be for some time. DPP is aware of this situation, but our plan will be revised to show recommended solution.

An inspection of the pavement was made along the access highway and truck roads. The pavement was in fair shape with the asphalt concrete showing signs of impending failure at places where lumps and valleys were present. The Portland cement concrete pavement was in excellent condition except at the point where the asphalt concrete ends and the Portland cement concrete begins (see attached photos). One corner of the concrete pavement is badly broken.

In summary, the dikes show no signs of being in any danger of failure provided proper cross section is used in raising them to higher elevations. The skimmer at the spillways should be made more effective.

W. N. Calvert

JPHS:RJB:NCF
Attachments
CC (Attachments):
Meigs Brewer, Jr., 1022 KB, Chattanooga
J. R. Parrish, 505 UB

North Dike

Ash Disposal Area

WATTS BAR RESERVOIR

Clinch River

East - West Base Line of Unit 1

Utility Bldg.

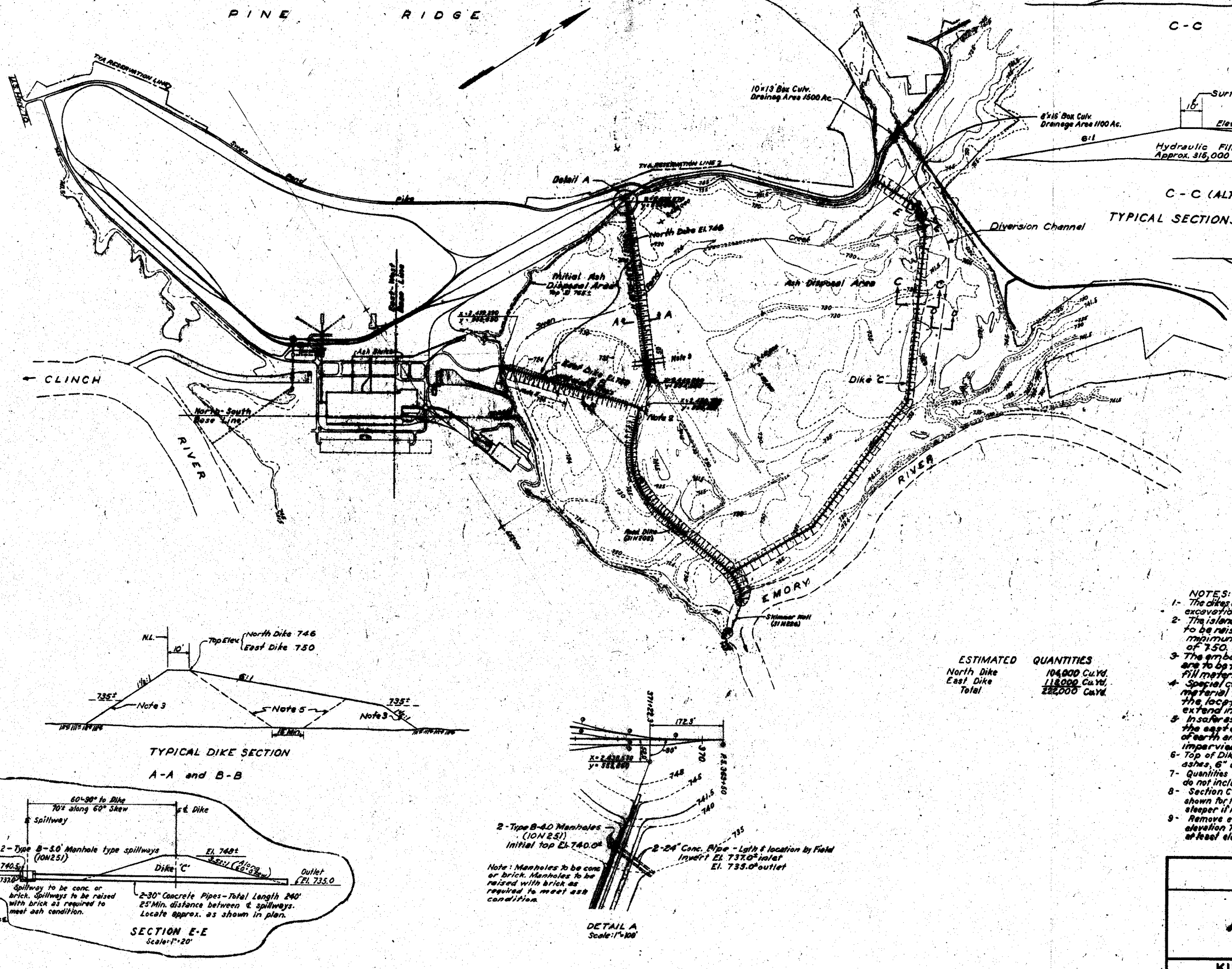
Coal Storage Area

Empty Storage Yard

TO KINGSTON

CONSTRUCTION PLAN

TVA-00013818



NOTES:-

1- The dikes are to be constructed of unclassified excavation.
2- The island between the east ends of the dikes, is to be raised and widened, if necessary, to provide a minimum width of 10 feet and minimum elevation of 750.
3- The embankment slopes below elevation 735± are to be the angle of repose of the submerged fill material.
4- Special care is to be taken to select firm shale material to be placed below the water level, at the location indicated, so that slope will not extend into the area of the intake channel.
5- In so far as it is feasible and practical the core of the east dike, as indicated, should be constructed of earth and fine material to provide a relatively impervious dam.
6- Top of Dike 'C' to be surfaced with slag and ashes, 6" compacted thickness.
7- Quantities shown for Dike C are net fill for section shown and do not include shrinkage etc.
8- Section C-C is the minimum section to be used. The slopes shown for the hydraulic fill section are assumed and may be steeper if material can be placed on steeper slopes.
9- Remove existing dike for minimum width of 50 ft. and to elevation 742 or lower after Dike 'C' has been completed to at least elevation 748.

Scale: 1"=500' except as noted

ESTIMATED QUANTITIES

North Dike	104,000 Cu.Yd.
East Dike	118,000 Cu.Yd.
Total	222,000 Cu.Yd.

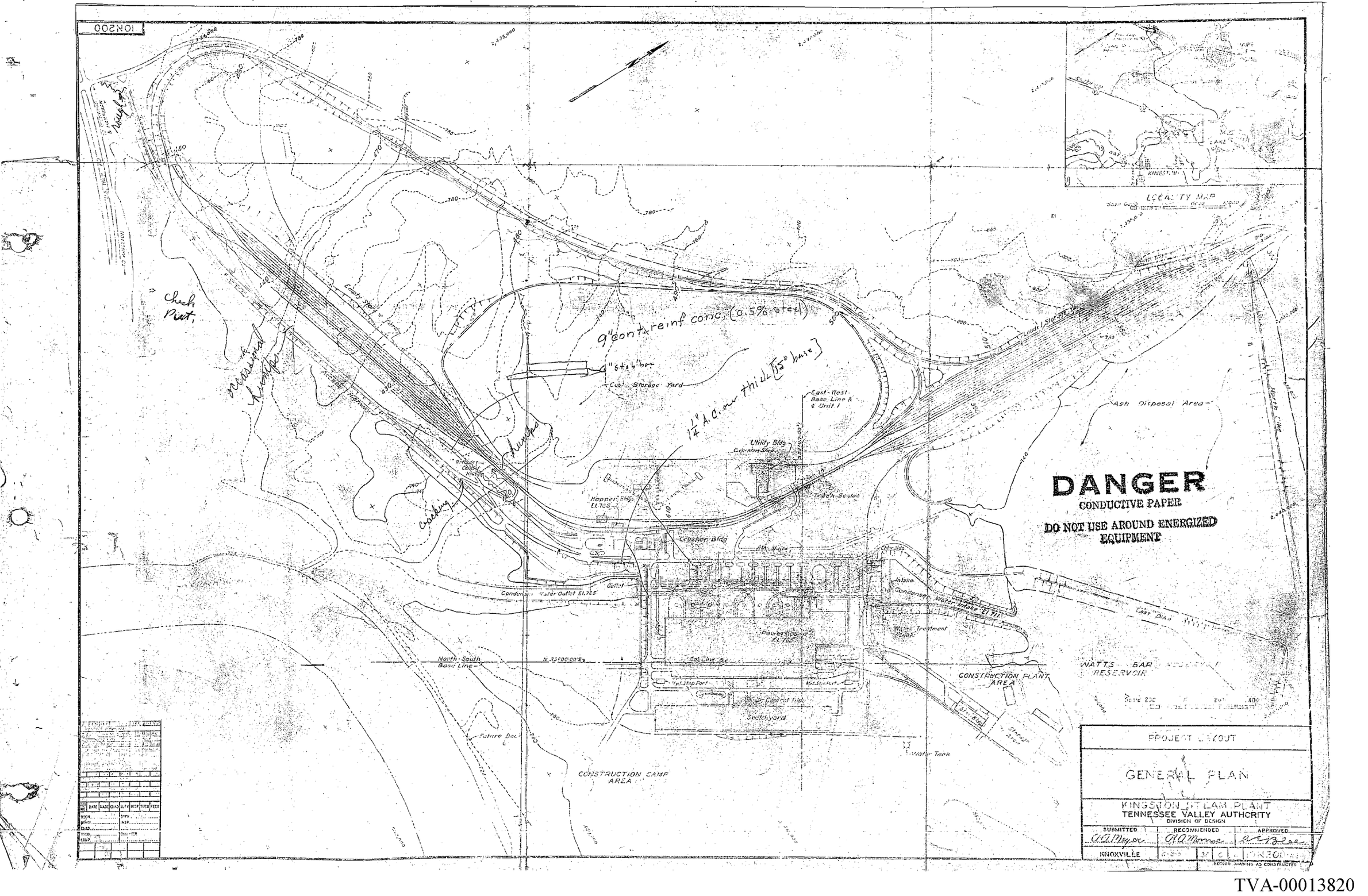
GENERAL

ASH DISPOSAL AREA

KINGSTON STEAM PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF DESIGN

SUBMITTED	RECOMMENDED	APPROVED
W. M. Edwards Jr.	D. A. Mayes	R. O. Morrow

KNOXVILLE	8-8-51	36	C	4	10N400 R4



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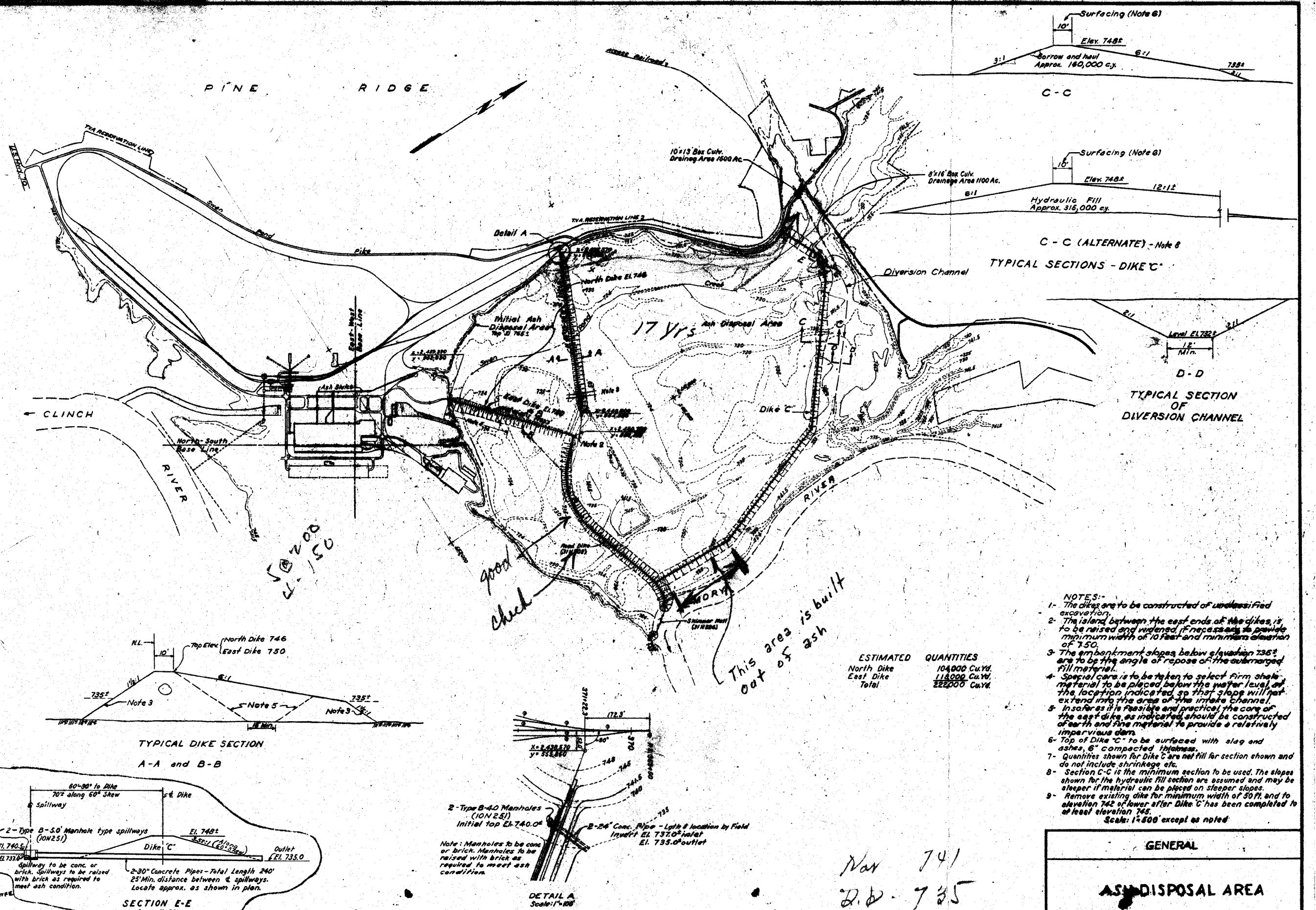
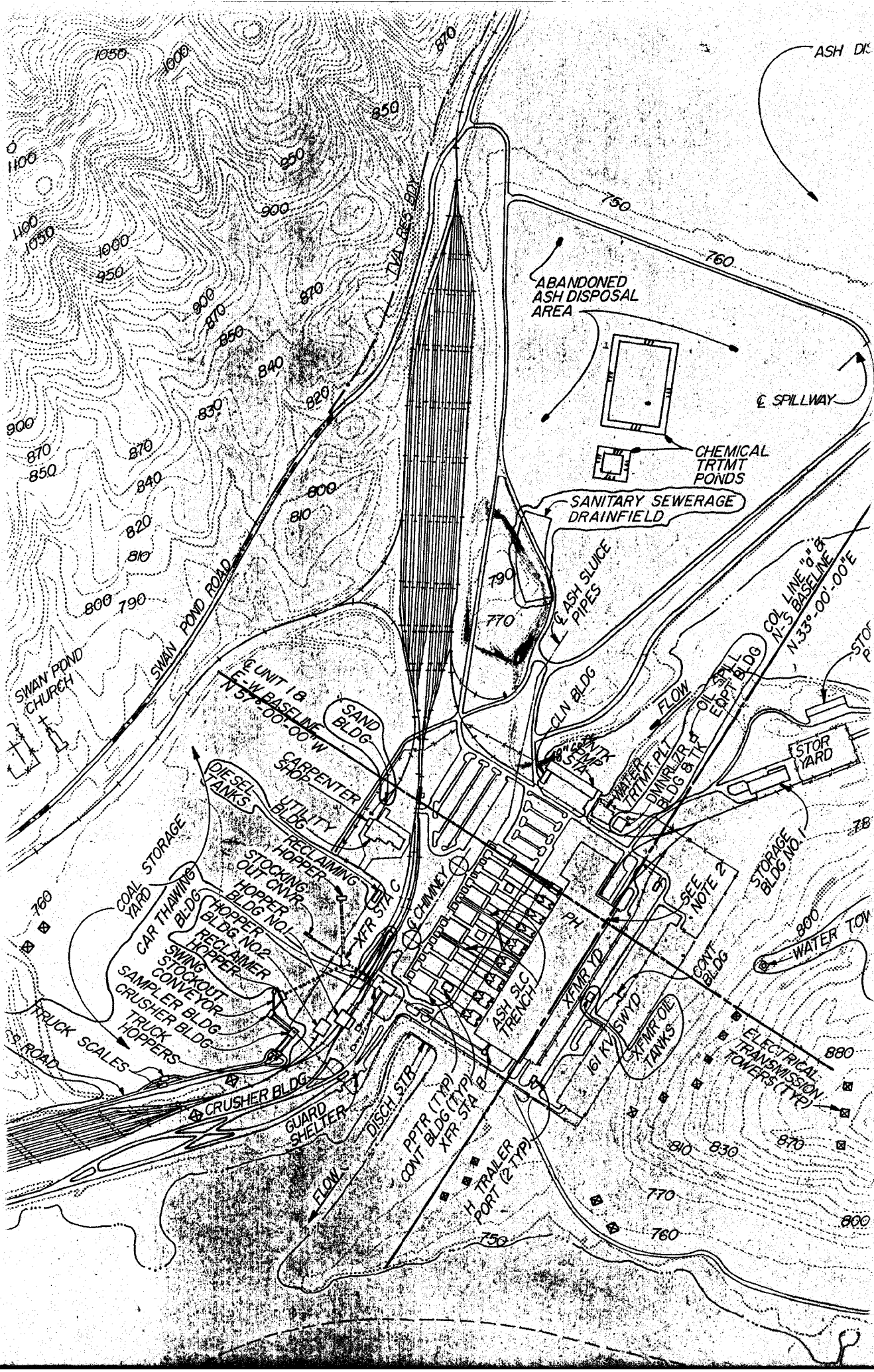
765


PINE RIDGE
TVA RESERVATION LINE
South Pond
Pike
Detail A
TVA RESERVATION LINE 2
10'x13' Box Culv. Drainage Area 1600 Ac.
8'x16' Box Culv. Drainage Area 1100 Ac.
North Dike El. 746
Creek
Diversion Channel
Initial Ash Disposal Area Top El 765±
17 Yrs Ash Disposal Area
East-West Base Line
Ash Sluice
Road Ditch El 730±
Note 3
Note 2
Dike 'C'
CLINCH RIVER
North-South Base Line
Road Ditch (Drains West)
Shimmer Mill (Drains East)
Shimmer Mill (Drains West)
Road Ditch (Drains East)
Access Railroad
Spillway
Outlet
Existing Ash Disposal Area
Proposed Ash Disposal Area
Ash Sluice
Ash Disposal Area
Dike 'C'
Diversion Channel
Outlet
Spillway
Dike 'C'
Outlet



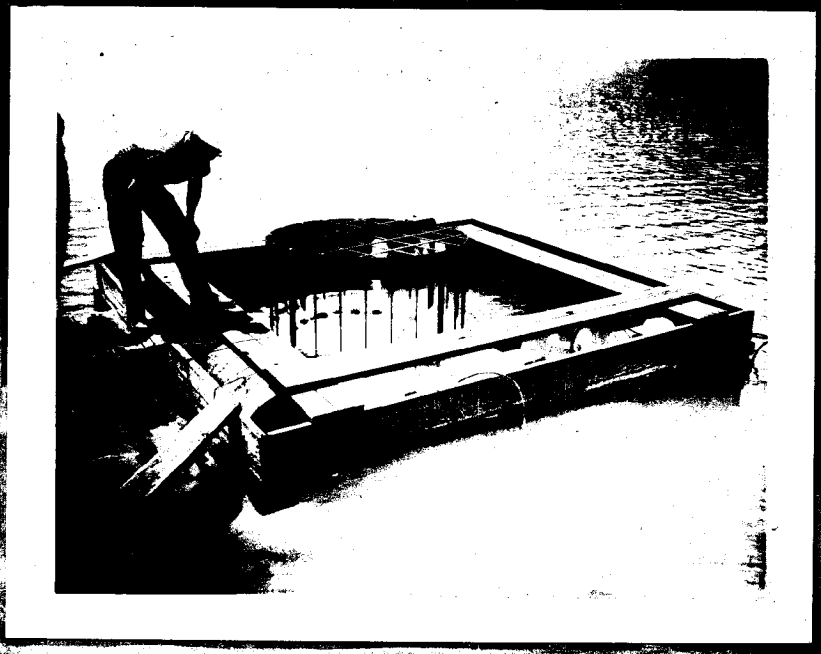
Flat slopes inside and outside of dike
7-3-67

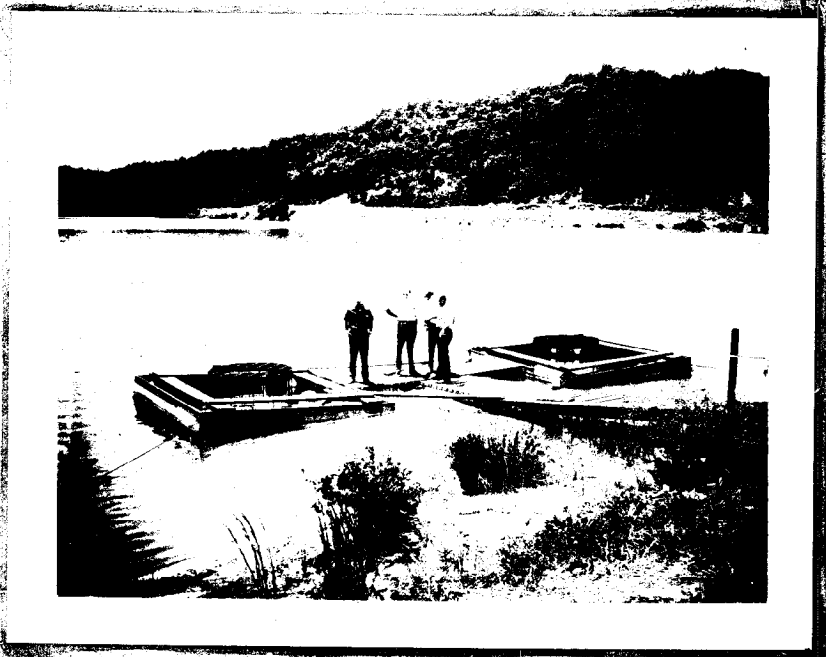
Kingston

Wave action inside dike cuts back into fill,
7-3-67

Point where asphaltic concrete joins Portland cement concrete showing break

Kingston S.P.





Pictures showing Spillway inside [illegible] to. Structure is too short to extend far enough [illegible] water to skim off all ash and to prevent [illegible] from going over. 7-3-67

Kingston S.P.