HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

12 October 2016
File No. 40373-345

SUBJECT: CCR History of Construction
Pond 6
Dayton Power & Light Company
J.M. Stuart Electric Generating Station
Aberdeen, Ohio

Haley & Aldrich, Inc. (Haley & Aldrich) has assisted Dayton Power & Light Company (DP&L) with compiling the history of construction for Pond 6 at the J.M. Stuart Electric Generating Station. This work was performed in accordance with the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 CFR Part 257, specifically §257.73(c)(1).

To the extent feasible, Dayton Power & Light Co. has provided documentation supporting the history of construction. Information on the history of construction Pond 6 is presented in the following sections.

§257.73(c)(1)(i): The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and the identification number of the CCR unit if one has been assigned by the state.

Owner: Dayton Power & Light Company
745 US Route 52
P.O. Box 468
Aberdeen, OH 45101

Name of Unit: Pond 6

NID[1] ID/ODNR ID Number: OH03184/8535-013

§257.73(c)(1)(ii): The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7 ½ minute or 15 minute topographic quadrangle map or a topographic map of equivalent scale if a USGS map is not available.

Latitude: 38°37'57"
Longitude: 83°40'34"
The general facility location map is included in **Appendix 1**.

[1] National Inventory of Dams is a database which documents dams in the United States and is maintained by the USACE.

§257.73(c)(1)(iii): A statement of the purpose for which the CCR unit is being used.

Pond 6 is a CCR impoundment that receives ash sluicing water from Ponds 3A, 7, and 10, coal storage area drainage, and Landfill 11 stormwater, contact water, and leachate. Pond 6 is an NPDES treatment facility prior to discharge to the Ohio River at NPDES Outfall 002.

§257.73(c)(1)(iv): The name and size, in acres, of the watershed within which the CCR unit is located.

Watershed Name: DP&L Pond 6
Watershed Area: 48 acres

Watershed delineation and associated area are included in **Appendix 2**, from a memorandum titled, "Pond 6 Inflow Design Flood Control System Plan," by Haley & Aldrich, dated October 2016.

§257.73(c)(1)(v): A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed.

A description of the physical and engineering properties of the foundation and abutment materials on which Pond 6 is constructed are presented in a report entitled, "Ponds 3A, 5, 6 & 7 Slope Stability Investigation" by BBC&M Engineering, Inc., dated May 2010.

Additional information on foundation soils is included in a report entitled, "Assessment of Dam Safety, Coal Combustion Surface Impoundments" by CHA, dated 26 March 2010 and a drawing entitled "Site General Grading – Sh. 1" by Ebasco Services Inc., dated 9 May 1972. Pertinent pages from these reports providing the required information are included in **Appendix 3**.

A subsurface exploration program, including work around Pond 6, was performed as part of the CCR Rule compliance Safety Factor Assessment. The final report, entitled "Initial Safety Factor Assessment, J.M. Stuart Station, Ponds 3A, 5, 6 7, and 10" by Haley & Aldrich, Inc., dated October 2016 details test borings and cone penetrometer soundings performed adjacent to the unit (see pages 5-7 and Appendix A). This report in its entirety is available to the public via the DP&L CCR Rule compliance website.

§257.73(c)(1)(vi): A statement of the type, size, range, and physical engineering properties of the materials of each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.

To the extent that it is available, the above information is provided in the following reports:

- "Ponds 3A, 5, 6, & 7 Slope Stability Investigation" by BBC&M Engineering Inc., dated May 2010.

- "Assessment of Dam Safety, Coal Combustion Surface Impoundments" by CHA, dated 26 March 2010.

Pond 6 was constructed in 1 zone/stage. The approximate date of construction for this zone/stage is as follows:

- Zone/Stage 1: Approximately 1973

Pertinent pages from the above referenced reports providing the required information to the extent it is available are included in **Appendix 4**.

§257.73(c)(1)(vii): At a scale that details engineering structures and appurtenances relevant to the design, construction, operation and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation.

Design drawings providing information listed above, as available are included in **Appendix 5**. Should the provided design drawings not include information identified in 257.73(c)(1)(vii), it should be assumed that design drawings including this information are not available.

§257.73(c)(1)(viii): A description of the type, purpose, and location of existing instrumentation.

The following instrumentation exists at Pond 6:

- Staff Gage

The staff gage was installed to regularly monitor the water level in Pond 6.

§257.73(c)(1)(ix): Area- capacity curves for the CCR unit.

A large number of DP&L historical facility documents were provided to Haley & Aldrich, Inc. by DP&L, within which no record of area-capacity curves for Pond 6 was found.

§257.73(c)(1)(x): A description of each spillway and diversion design features and capacity calculations used in their determination.

Pond 6 maintains the following spillways/diversion design features:

- Outlet works for Pond 6 consist of a concrete open channel with adjustable weirs which conveys water to a treatment building for pH adjustment and sampling. After pH

adjustment, treated water is directed to Pond 7A through a 4-ft diameter corrugated metal pipe (CMP) for final polishing before flowing to a drop inlet sluiceway for final discharge to the Ohio River through NPDES Outfall 013.

- An emergency overflow structure/skimmer exists adjacent to the east interior slope of Pond 6. The overflow structure consists of a 60-in. diameter steel vertical standpipe which transitions to a 36-in. lined CMP. Flow from the emergency overflow is conveyed via the 36-in. CMP to the Pond 7A drop inlet sluiceway described above for final discharge through Outfall 013.

A description of each spillway and diversion design feature for Pond 6 are discussed in "Assessment of Dam Safety Coal Combustion Surface Impoundments (Task 3) Final Report" by CHA, dated 26 March 2010, and in a report entitled, "J.M. Stuart Station, Ash Pond 6 Annual Inspection," by DP&L, dated December 21, 2015. Pertinent pages from these reports providing the required information are included in **Appendix 6**.

§257.73(c)(1)(xi): The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.

The construction specifications and provisions for surveillance, maintenance, and repair of Pond 6 are discussed in the following documents:

- "Operation Maintenance and Inspection Manual Ash Impoundment Dike Stuart Electric Generating Station" dated October 2014 prepared by DP&L.

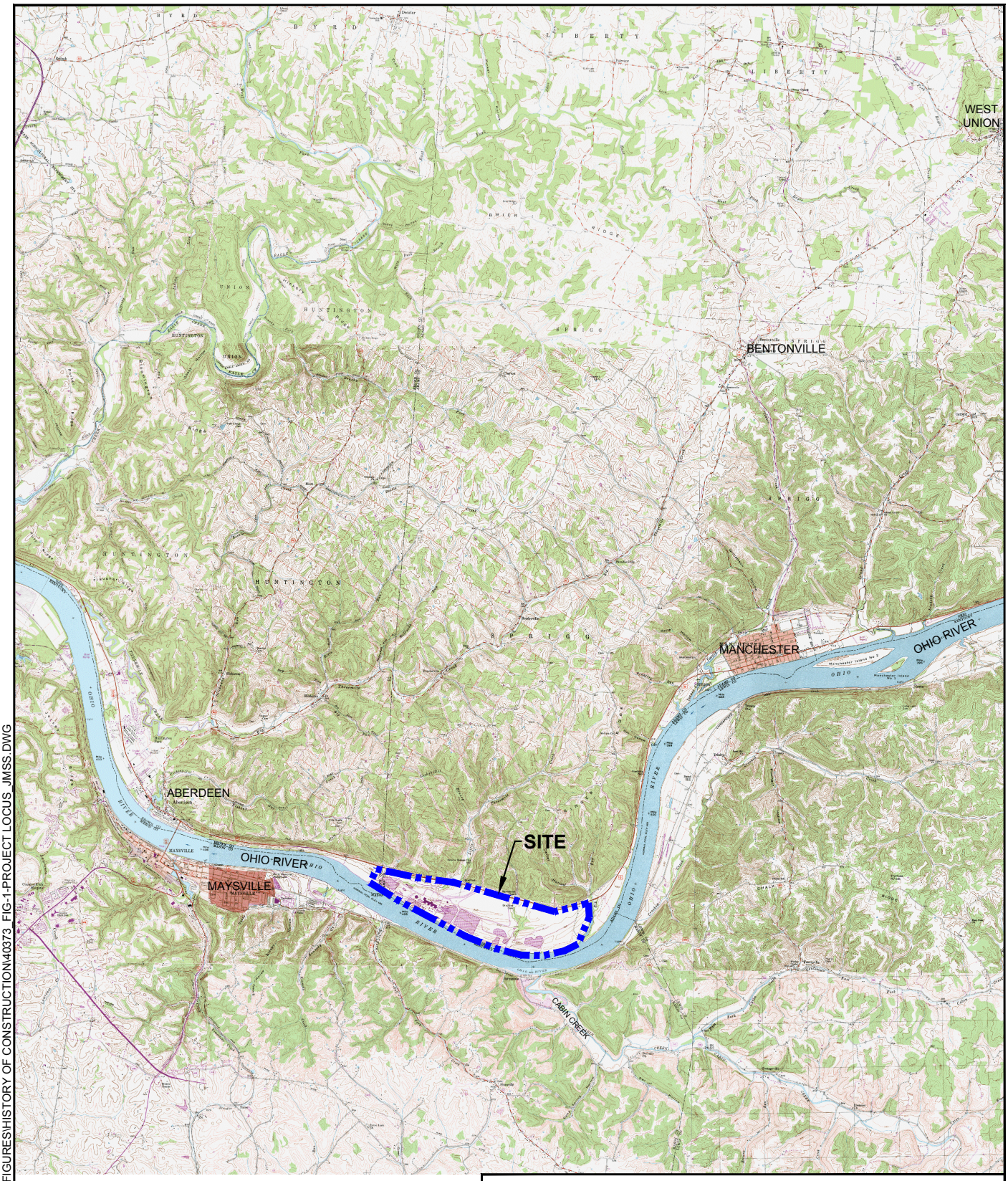
- "Assessment of Dam Safety Coal Combustion Surface Impoundment (Task 3) Final Report" dated 26 March 2010 prepared by CHA.

Pertinent pages from the above referenced reports providing the required information are included in **Appendix 7**.

§257.73(c)(1)(xii): Any record or knowledge of structural instability of the CCR unit.

There are no records or knowledge of structural instability associated with Pond 6.

APPENDIX 1
Site Locus



TOPO SOURCE: USGS TOPOGRAPHIC MAPS
RUSSELLVILLE, DECATUR, WEST UNION, MAYSVILLE EAST, MAYSVILLE WEST , MANCHESTER ISLANDS - OHIO
MAYS LICK, ORANGEBURG, TOLLESBORO - KENTUCKY
QUADRANGLES (2013)

HALEY ALDRICH

DAYTON POWER & LIGHT COMPANY
J. M. STUART GENERATING STATION
745 U.S. ROUTE 52
ABERDEEN, OHIO

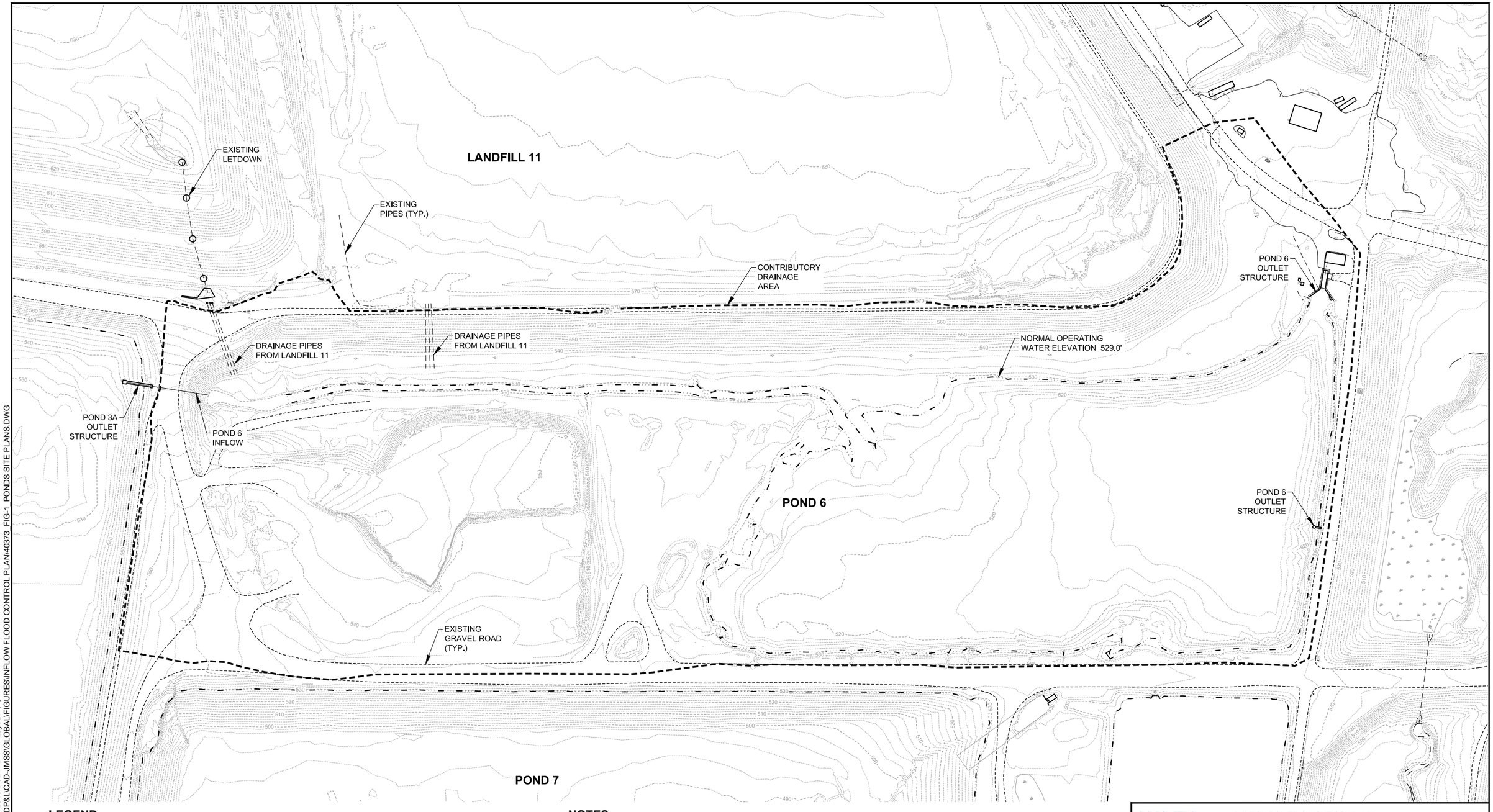
PROJECT LOCUS

APPROXIMATE SCALE: 1" = 10 000'
OCTOBER 2016

FIGURE 1

LUCAS, ANDY Printed: 9/30/2016 11:16 AM Layout: FIGURE 1
G:\40373_DP&LICAD-JMSS\GLOBAL\FIGURES\HISTORY OF CONSTRUCTION\40373_FIG-1-PROJECT LOCUS_JMSS.DWG

APPENDIX 2
Figure 1 and Appendix from:
Pond 6 Inflow Design Flood Control System Plan
By Haley & Aldrich, Dated October 2016



LEGEND

- EXISTING PROPERTY LINE
- 500 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING PIPES
- EXISTING GRAVEL ROAD
- NORMAL OPERATING WATER
- CONTRIBUTORY DRAINAGE AREA
- TYPICAL OPERATING WATER LEVEL

NOTES

1. TOPOGRAPHY FROM GROUND CONTROL SURVEYS DATED APRIL 2013 BY L.R. KIMBALL, AND FROM AERIAL PHOTOGRAPHY DATED APRIL 18, 2013.
   - HORIZONTAL CONTROL IS BASED ON NAD83 OH STATE PLANE DATUM.
   - VERTICAL CONTROL IS BASED ON NAVD88 DATUM, ADJUSTED IN VERTICAL TO PLANT VERTICAL.
2. TOPOGRAPHY FROM 2013 SURVEY WAS COMBINED WITH POND BATHYMETRY (POND 7 FROM 2012, POND 10 FROM 2013, PONDS 3A, 5, 6 FROM 2014).

0 200
SCALE IN FEET

HALEY ALDRICH

DAYTON POWER & LIGHT COMPANY
J.M. STUART STATION
ABERDEEN, OHIO

POND 6 SITE PLAN

SCALE: AS SHOWN
OCTOBER 2016

FIGURE 1

LUCAS, ANDY
Printed: 7/7/2016 3:32 PM Layout: P6
\\CLE\COMMON\PROJECTS\40373_DP&L\CAD-JMSS\GLOBAL\FIGURES\INFLOW FLOOD CONTROL PLAN\40373_FIG-1_PONDS SITE PLANS.DWG

Summary for Subcatchment P6S: Pond 6 Subcatchment

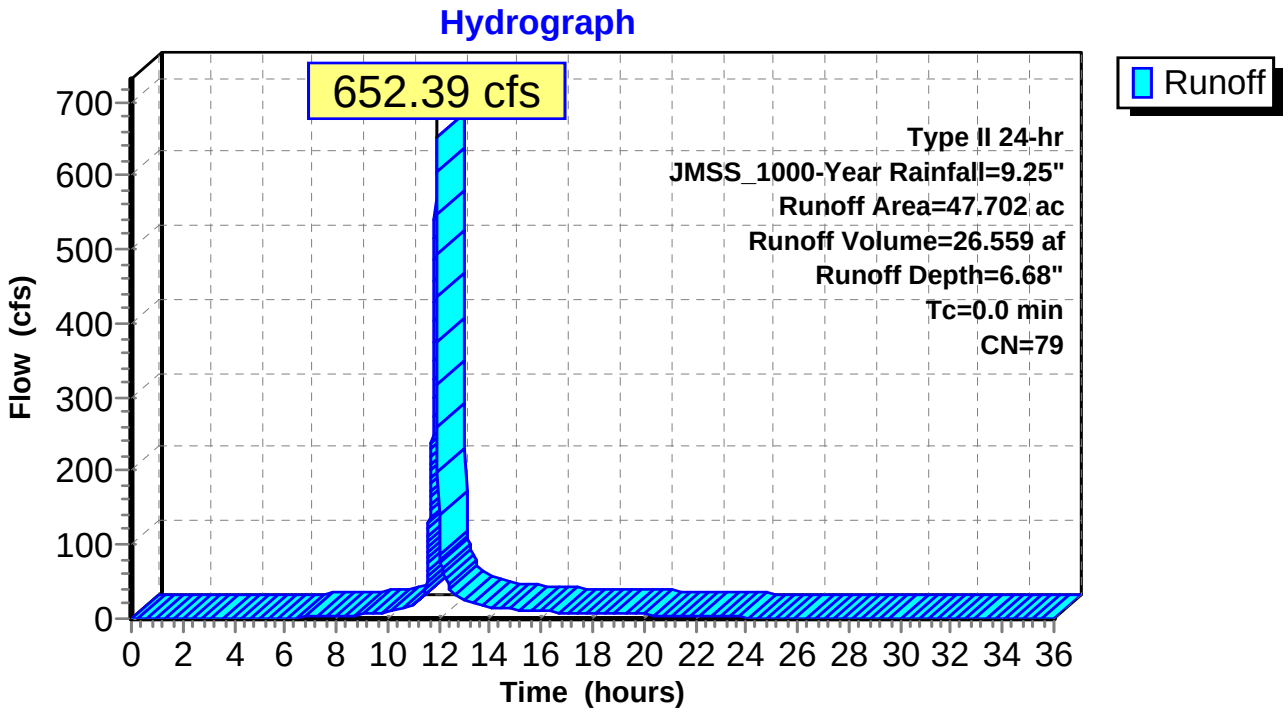
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 652.39 cfs @ 11.90 hrs, Volume= 26.559 af, Depth= 6.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr JMSS_1000-Year Rainfall=9.25"

Area (ac)	CN	Description
16.821	98	Water Surface, HSG B
30.881	69	Pasture/grassland/range, Fair, HSG B
47.702	79	Weighted Average
30.881		64.74% Pervious Area
16.821		35.26% Impervious Area

Subcatchment P6S: Pond 6 Subcatchment



APPENDIX 3.1
Excerpt from:
Ponds 3A, 5, 6 & 7 Slope Stability Investigation
By BBC&M Engineering, Inc., Dated May 2010
Pages 5 & 6, Log of Boring B-6-1 & B-6-2, B-6-1 Gradation Curve

GENERAL SUBSURFACE CONDITIONS

Stratigraphy Description

The general subsurface conditions are listed below for the site as encountered during drilling.

Embankment Fill

- Pond 5

Based on previously performed borings (by others) at Pond 5 and the descriptions of the samples recovered in the borings and laboratory testing, the embankment material encountered in the borings consisted mostly of stiff to very stiff brown and brown mottled with gray silty clay. However within the overall predominantly silty clay fill soil, many seams and/or zones of fill containing a greater amount of sand were encountered. Of particular note is a 6 foot thick zone of medium-dense fine to coarse sand encountered at a depth of 5 feet in Boring A-3 and the predominantly medium dense sand stratum beginning at 7 feet in Boring C-1. Standard Penetration Test (SPT) N values within the fill ranged from 6 to 26 with an average of 19. Pocket penetrometer measurements (a tool used to estimate the unconfined compressive strength of the soil) ranged from 1.0 to 4.5 tsf. Logs for previous boring performed by URS and the explorations performed by BBCM at Pond 5 are included in the Ash Pond 5 Seepage Assessment Report prepared by BBCM for Phase 1 of this study.

- Ponds 3A, 6 and 7

At the locations of the borings performed through the crest of the pond embankments, 12 to 26 inches of gravel road base was encountered in the borings. Beneath the surficial materials, the embankment material consisted predominantly of very-stiff to hard brown and gray silty clay, which contains varying amounts of fine to coarse sand and fine gravel. Many small zones and/or thin seams of fine to coarse sand or cohesive fill containing a greater amount of sand were encountered. The amounts of sand within the embankment fill encountered in the borings appear erratic in profile, typical of the alluvial soils located at the site which were excavated from within the pond footprints to construct the embankments. SPT N_{60} values within the fill ranged from 7 to 34 with an average of 19. Pocket penetrometer measurements ranged from 1.0 to 4.5+ tsf, but were typically in the range of 3.5 to 4.5+ tsf.

In Boring B-3A-2 and B-3A-3, the cohesive embankment fill was underlain by approximately 5 feet of dense to very dense brown fine to coarse sand. The sand fill layer was consistent with the conditions encountered in the borings performed in this area by Bowser-Morner prior to the pond expansion. The sand layer in Boring B-3A-2 was underlain by very loose to loose gray fly ash.

Natural Soils

All borings in Ponds 6 and 7 were terminated after penetrating a minimum of 15 feet in natural soils. With the exception of Boring B-3A-2, natural alluvium soils were encountered in the borings underlying the embankments consisting of interbedded silt, clay and fine sand. This stratum contained many zones of silty clay interbedded with loose silt and/or fine to medium sand, as well as many fine to medium sand seams and lenses or thin layers. A few of the samples recovered near the top of this stratum were described as slightly organic. Hand penetrometer measurements within this stratum ranged from 0.0 to 4.5+ tons per square foot (tsf), while SPT N60-values (corrected for 60% energy) ranged from 0 to 30 with an average of 13. Index testing results, including liquid limit and plasticity index of samples tested within this

stratum are summarized on Plate 2 of Appendix C. Classification of samples under the Unified Soil Classification System tested varied from Lean Clay, CL, to Silty, Clayey Sand, SC-SM.

Very-loose to medium-dense fine to coarse sand was encountered in several of the borings beneath the alluvial soils. SPT N_{60}-values within this stratum ranged from 1 to 14 bpf with an average of 9. The percent passing the 200 sieve ranged between 6.0 and 42.

For a more detailed description of the stratigraphy, including the presence of minor variations and inclusions, the logs of the individual borings should be examined in conjunction with the summary above.

Groundwater

Groundwater observations were made as each boring was advanced and measurements were made at the completion of drilling. Extended groundwater measurements were made up to 24 hours after the completion. Groundwater observations are summarized in Table 1 below. No observation wells were installed for future monitoring. For reference purposes, the normal pool for this stretch of the Ohio River is El. 485.

Table 1: Groundwater Elevation Measurements

Boring	*Seepage Encountered During Drilling*	*Groundwater Encountered During Drilling*	*Groundwater Elevation at Completion*
B-3A-1	Dry	Dry	Dry
B-3A-2	528.7	-	525.2
B-3A-3	530.6	Dry	Dry
B-6-1	490.6	487.6	488.1
B-6-2	495.0	492.0	485.5
B-7-1	-	483.7	483.7
B-7-2	487.6	484.6	480.9
B-7-3	492.0	492.0	488.0
B-7-4	488.0	485.5	486.3

Elevation Datum: NAD 83

SEEPAGE AND STABILITY ANALYSIS

Assessment of Existing Conditions

Embankment dams should exhibit adequate factors of safety against a slope stability failure for static and seismic conditions. In accordance with our work plan, BBCM examined four cross-sections through the ash pond embankments of Pond 5, 6 and 7 for stability and reviewed the stability analysis of Pond 3A performed by Bowser-Morner as part of their vertical expansion investigation and design. The sections were selected as representative of the overall embankments as well as to assess stability at specific critical locations based on slope inclination and height.

LOG OF BORING NO. B-6-1
PHASE 2 - STABILITY INVESTIGATION
DP&L STUART STATION - ABERDEEN, OHIO

LOCATION: **N. 2322, E. 163** ELEVATION: **533.6** DATE: **3/30/10**

DRILLING METHOD: **3-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **55.2'**

SAMPLER(S): **2" O.D. Split-barrel Sampler 2" and 2-1/2" O.D. Split-barrel Samplers**

ELEV.	DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	N_{60}	SAMPLE REC-%	DESCRIPTION	NATURAL CONSISTENCY INDEX / NATURAL MOISTURE CONTENT (PLASTIC LIMIT — LIQUID LIMIT)	TEST RESULTS
	0						ROADWAY GRAVEL - 17 INCHES	10 20 30 40	
532.0		1A		32 / 12 / 23	50				
		1B				100	FILL: Hard brown and gray silty clay, little to some fine to coarse sand, trace fine gravel, damp.		H=4.5+
		2		4 / 6 / 10	23	80			H=4.5+
527.6	5								
		3		8 / 9 / 7	23	100	FILL: Medium-dense brown fine to coarse sand, trace fine gravel, "and" silty clay, damp.		H=4.5+
525.6									
		4		3 / 5 / 10	21	100	FILL: Hard brown silty clay, some fine sand, trace medium-to coarse sand, trace fine gravel, damp.		H=4.5+
523.1	10								
		5		5 / 7 / 6	18	100	FILL: Medium-dense brown fine to coarse sand, trace fine gravel, some silt, little clay, damp.	●	H=4.5+ G
520.6									
		6		4 / 6 / 7	18	87	FILL: Very-stiff to hard brown and gray silty clay, little to "and" fine to coarse sand (% varies), trace fine gravel, contains few pockets of medium-dense brown fine to coarse sand, contains roots near bottom of stratum, damp.		H=3.0-4.5+
	15								
		7		4 / 6 / 6	17	100			H=2.5-4.5+
				P					
	20								
		8		4 / 6 / 7	18	67			H=2.25-2.7
				P					
	25								
		9		8 / 10 / 11	30	100			H=4.5+
					21				
		10		3 / 5 / 10		60		●×	G
	30								

WATER LEVEL: ▽ **45.5** ▼ **42.5**

WATER NOTE: **Inside HSA**

DATE: **3/30/10** **3/31/10**

SYMBOLS USED TO INDICATE TEST RESULTS

G - Gradation, Q - Uncon Comp, T - Triax Comp, C - Consol. } See Separate Curves

H - Penetrometer (tsf)
W - Unit Dry Wt (pcf)
D - Relative Dens (%)

Drill Rod Energy Ratio : 0.85
Last Calibration Date : 02/17/09
Drill Rig Number : ATV 550X

JOB: 011-12608-000 -CONTINUED- **PLATE 13**

LOG OF BORING NO. B-6-1
PHASE 2 - STABILITY INVESTIGATION
DP&L STUART STATION - ABERDEEN, OHIO

LOCATION: **N. 2322, E. 163** ELEVATION: **533.6** DATE: **3/30/10**

DRILLING METHOD: **3-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **55.2'**

SAMPLER(S): **2" O.D. Split-barrel Sampler 2" and 2-1/2" O.D. Split-barrel Samplers**

ELEV.	DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	N_{60}	SAMPLE REC-%	DESCRIPTION	NATURAL CONSISTENCY INDEX / NATURAL MOISTURE CONTENT (PLASTIC LIMIT — LIQUID LIMIT; 10 20 30 40)	TEST RESULTS
	30								
		11		3 / 4 / 5	13	53	FILL: Very-stiff to hard brown and gray silty clay, little to "and" fine to coarse sand (% varies), trace fine gravel, contains few pockets of medium-dense brown fine to coarse sand, contains roots near bottom of stratum, damp.		H=3.75-4.5+
500.6									
		12		4 / 9 / 8	24	33	Very-stiff to hard brown and gray silty clay, trace fine to coarse sand, trace fine gravel, many roots.		H=3.5-4.5+
	35	2S							
		13		3 / 5 / 9	20	87			H=4.5+
495.6									
493.6		14		4 / 5 / 8	18	67	Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, little clay, damp.		G
	40								
		15		4 / 6 / 8	20	60	Very-stiff to hard brown silty clay, "and" fine to coarse sand, trace fine gravel, damp.	●	H=3.8-4.5+
490.6									
		16		3 / 3 / 5	11	80	Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay, moist becoming wet.		
	45								
		17		3 / 4 / 4	11	67			G
		18		3 / 4 / 5	13	60			
	50								
		19		7 / 4 / 5	13	100			
478.6	55								
	60						- Encountered seepage at 43.0'. - Encountered water at 46.0'. - Boring backfilled with grout. - Boring location and elevation provided by DP&L. - DATUM: NAD 83, Ohio South.		

WATER LEVEL: ▽ **45.5** ▼ **42.5**

WATER NOTE: **Inside HSA**

DATE: **3/30/10** **3/31/10**

SYMBOLS USED TO INDICATE TEST RESULTS

G - Gradation, Q - Uncon Comp, T - Triax Comp, C - Consol. (See Separate Curves)

H - Penetrometer (tsf), W - Unit Dry Wt (pcf), D - Relative Dens (%)

Drill Rod Energy Ratio : 0.85

Last Calibration Date : 02/17/09

Drill Rig Number : ATV 550X

JOB: 011-12608-000

PLATE 14

LOG OF BORING NO. B-6-2
PHASE 2 - STABILITY INVESTIGATION
DP&L STUART STATION - ABERDEEN, OHIO

LOCATION: **N. 2321, E. 163** ELEVATION: **503.0** DATE: **4/1/10**

DRILLING METHOD: **3-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **25.0'**

SAMPLER(S): **2" O.D. Split-barrel Sampler 2" and 2-1/2" O.D. Split-barrel Samplers**

ELEV.	DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	N_{60}	SAMPLE REC-%	DESCRIPTION	NATURAL CONSISTENCY INDEX / NATURAL MOISTURE CONTENT (PLASTIC LIMIT — LIQUID LIMIT)	TEST RESULTS
502.4	0						TOPSOIL - 7 INCHES	10 20 30 40	
		1		2 / 5 / 3	11	100	FILL: Stiff to very-stiff brown and gray silty clay, some fine to coarse sand, trace fine gravel, damp.		H=1.25-2.5
		2		6 / 9 / 8	24	100			H=3.75
497.0	5								
		3		4 / 3 / 7	14	93	Very-stiff gray mottled with brown silty clay, trace fine to coarse sand, trace fine gravel, damp.		H=2.5-3.5 LL=52
495.0									
		4		P		43	Stiff to very-stiff brown silty clay, "and" fine to coarse sand, trace fine gravel, moist.		H=1.75-2.0
492.5	10								
		5		5 / 6 / 5	16	60	Medium-dense brown fine to coarse sand, trace fine gravel, little silt, wet.		
490.0									
488.9		6A		2 / 3 / 2	7	100	Loose brown fine to coarse sand, trace fine gravel, "and" silty clay, wet.		
		6B					Stiff brown and orange-brown silty clay, "and" fine to coarse sand, trace fine gravel, wet.		H=1.0-1.25
487.0	15								
		7		1 / 3 / 3	9	80	Loose brown fine to coarse sand, trace fine gravel, little silt, wet.		
485.0									
		8		SH / 1 / 2	4	47	Very-loose to loose brown fine to medium sand, trace coarse sand, trace fine gravel, trace silt, wet.		G
	20								
		9		SH / SH / 1	0	53			
		10		1 / 1 / 3	6	87			
478.0	25								
							- Encountered seepage at 8.0'. - Encountered water at 11.0'. - Boring backfilled with grout. - Boring location and elevation provided by DP&L. - DATUM: NAD 83, Ohio South.		
	30								

WATER LEVEL: ▽ **17.5** ▼ **6.2**

WATER NOTE: **Inside HSA** **Caved at 14.8'**

DATE: **4/1/10** **4/1/10 PM**

SYMBOLS USED TO INDICATE TEST RESULTS

G - Gradation, Q - Uncon Comp, T - Triax Comp, C - Consol. (See Separate Curves)

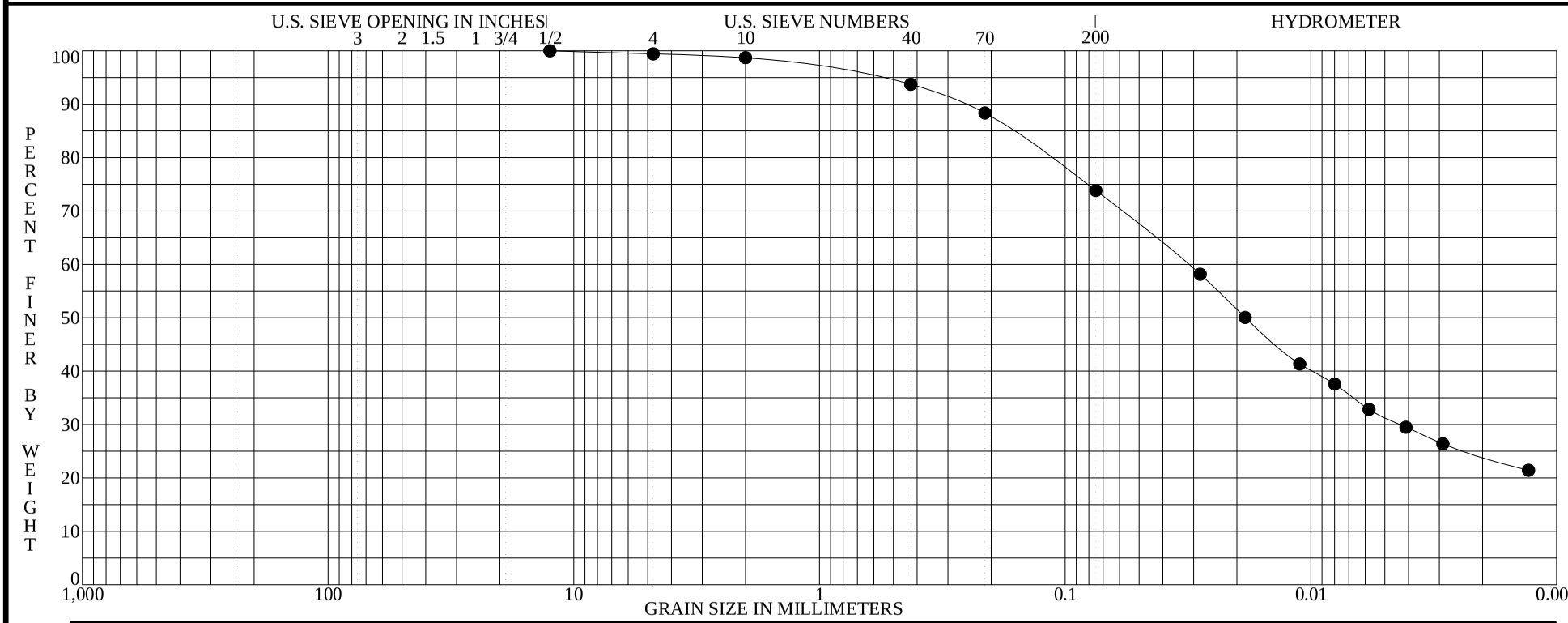
H - Penetrometer (tsf)
W - Unit Dry Wt (pcf)
D - Relative Dens (%)

Drill Rod Energy Ratio : 0.85
Last Calibration Date : 02/17/09
Drill Rig Number : ATV 550X

JOB: 011-12608-000

PLATE 15

GRN-EPA BBCM FILL



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification - Depth	Classification	MC%	LL	PL	PI	UWW	UDW
●	**B-6-1 S-10 28.5' to 29.4'**	**FILL : Brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel, contains wood fragments.**	**15**	**30**	**17**	**13**		
⊠								
▲								
★		**LEAN CLAY with SAND CL**						
⊙								

	Specimen Identification - Depth	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-6-1 S-10 28.5' to 29.4'**	**12.5000**	**0.6312**	**0.0316**	**0.0184**		**0.6**	**25.6**	**49.7**	**24.1**
⊠										
▲										
★										
⊙										

ASTM D422

GRADATION CURVE

PROJECT PHASE 2 - STABILITY INVESTIGATION

LOCATION DP&L STUART STATION - ABERDEEN, OHIO

JOB NO. 011-12608-000 **DATE** 5/18/10

PLATE 12

APPENDIX 3.2
Excerpt from:
Assessment of Dam Safety Coal Combustion Surface Impoundments (Task 3)
Final Report
By CHA, Dated 26 March 2010
Pages 104-105

foot-thick and 40-foot-wide sand drainage blanket is indicated at the base of the downstream slope.

Clearing and grading specifications address vegetation, rubbish, deleterious material, "structures scheduled for demolition" removal and disposal, formation of fill areas, subgrade preparation, and compaction requirements (90% of the maximum modified Proctor dry density). These specifications and drawing do not, however, indicate if the existing dikes were scheduled for demolition, or if the ash was considered deleterious and subsequently stripped or excavated from beneath the dikes,. Given that the available stability analyses for Pond 3A include the impounded ash below the dike section, it is highly likely that the impounded ash was allowed to remain in place. Additional comments related to this foundation condition and liquefaction potential appear in Section 4 of this document.

3.4.2 Foundation Conditions – Ponds 5, 6, and 7/7A

CHA was not provided with geotechnical subsurface information for Ponds 5, 6, and 7/7A. However, several record drawings related to construction of the ash ponds at the site were made available. The information provided is described below in chronological order as it relates to the aforementioned ponds.

Drawings 300-12-1020, -1022, and -1023 (1966) are related to construction of the Station, an ash pond west of the plant, and a coal storage area and ash disposal area east of the plant. The cross section on the 1966 drawings implies that the Station buildings are supported on pile foundations. The notes on the 1966 drawings provide the following information regarding construction of the dikes:

- The area shall be stripped of "all fences, timber, stumps, structures, or other obstructions, and striped of topsoil, unsuitable or excessively wet earth, vegetation, stubble, surface trash, and perishable matter of all sorts."
- Embankment fill material shall be excavated from the borrow areas on the site.

- Fill material shall have a maximum particle size of 6 inches and stone shall not constitute more than 20 percent of the volume.
- No brush, roots, ice, snow, perishable, or other unsuitable shall be included in the fill material.
- Embankments shall be constructed in horizontal 8-inch-thick layers "insofar as is feasible".
- Fill must be compacted to 90 percent of the maximum dry density as determined by the modified Proctor method.
- Fill shall not be placed on excessively wet or frozen subgrade.

Drawing 300-13-1143 (1969) shows plan and sections views for Ash Pond 5. Ash Pond 5 was constructed within the ash pond located west of the power plant shown on the 1966 drawings. Notes on the 1969 drawing indicate that existing muck is to be removed to the top of the compacted clay and replaced with compacted backfill. Specifications for the backfill gradation or compaction requirements are not provided on this drawing.

Drawing 300-12-1020A (1972) shows a site plan and sections for Ash Ponds 6 and 7. Section A-A indicates that the western dike is to be constructed by placing additional fill above the existing ash pond dike. Sections B-B and C-C indicate that riprap was to be placed on the upstream side of the dikes.

3.4.3 Foundation Conditions – Pond 10

The subsurface investigation for Pond 10 and the immediate area around it consisted of eighteen (18) geotechnical soil borings, four (4) Geoprobe™ borings, and three (3) test pits. Figures 13A and 13B depict the boring locations and a summary of selected soil logs for the borings performed for the investigation. The soil profile beneath the pond and dike areas generally consisted of up to 1 foot of topsoil with occasional miscellaneous fill and granular deposits to depths ranging from 2 to 4 feet below the surface. These surficial materials were encountered

APPENDIX 3.3
Design Drawing 300-12-1020A
By Ebasco Services, Inc., dated 9 May 1972

300-12-1020A

NOTES:

THE BORROW AREAS AND THE AREAS TO BE COVERED BY THE EARTH DIKES OR FILL SHALL BE CLEARED OF ALL FENCES, TIMBER, STUMPS, STRUCTURES, OR OTHER OBSTRUCTIONS, AND STRIPPED OF TOP SOIL, UNSUITABLE OR EXCESSIVELY WET EARTH, VEGETATION, STUBBLE, SURFACE TRASH AND PERISHABLE MATTER OF ALL SORTS.

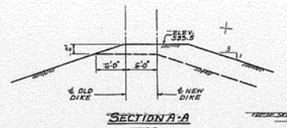
THE EMBANKMENTS AND FILLS SHALL BE CONSTRUCTED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. ALL EMBANKMENTS AND FILLS SHALL BE BUILT UP IN CONTINUOUS HORIZONTAL LAYERS INSOFAR AS IS FEASIBLE. THE TOP OF EMBANKMENTS, DURING CONSTRUCTION, SHALL BE SLOPED FOR DRAINAGE. NO BRUSH, ROOTS, ICE, SNOW, DEBRIS, PERISHABLE OR OTHER UNSUITABLE MATERIALS SHALL BE PLACED IN THE EMBANKMENTS OR FILLS. EMBANKMENT OR FILL SHALL NOT BE PLACED WHEN EITHER THE MATERIAL OR FOUNDATION ON WHICH THEY ARE TO BE PLACED ARE EXCESSIVELY WET OR FROZEN.

FILL FOR ALL AREAS SHALL BE MATERIAL FREE OF ROOTS, ICE, SNOW, PERISHABLE OR OTHER UNSUITABLE MATERIALS AND SHALL BE EXCAVATED FROM THE BORROW AREAS INDICATED ON THE DRAWINGS. STONE WHICH MAY BE INCORPORATED IN THE FILLS SHALL HAVE A MAXIMUM DIMENSION OF SIX INCHES, AND SHALL NOT CONSTITUTE MORE THAN TWENTY PERCENT OF THE VOLUME OF THE MASS. ALL STONE INCORPORATED IN THE FILL SHALL BE UNIFORMLY DISTRIBUTED AND AMPLY BEDDED IN THE FINER MATERIALS. THE INCOMING MATERIAL SHALL BE DUMPED IN WINDROWS OR RIDGES LENGTHWISE OF DIKE EMBANKMENTS AND FILL AREAS BEING CONSTRUCTED, AND SO PLACED THAT THE WINDROWS CAN BE SPREAD TO A UNIFORM LAYER EIGHT INCHES THICK OVER THE SECTION. IN GENERAL, FILL AREA MATERIAL SHALL BE DEPOSITED SO THAT UNIFORM LAYERS OF FILL EIGHT INCHES THICK MAY BE BROUGHT UP OVER THE ENTIRE AREA BEING FILLED TO COMPLETE A PARTICULAR STAGE AS SCHEDULED.

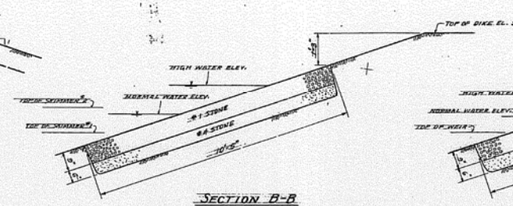
ALL EMBANKMENT AND FILL SHALL BE COMPACTED TO A MINIMUM DENSITY OF NINETY PERCENT OF THE MAXIMUM DENSITY OBTAINED IN THE MODIFIED AASHO COMPACTION TEST (ASTMD 1557 - METHOD C).

EXISTING TREES ALONG OHIO RIVER AND BUZZARD ROOST CREEK, OUTSIDE CONSTRUCTION AREA, ARE TO BE PROTECTED FROM DAMAGE BY EQUIPMENT, FIRE, ETC.

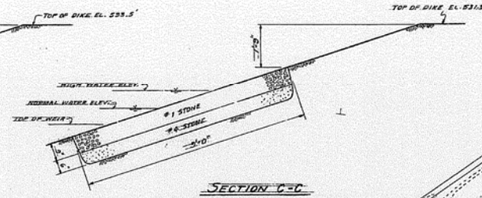
LEVEES AROUND ASH PIT SHALL BE MADE WITH IMPERVIOUS MATERIAL. ANY PERMEABLE SANDY MATERIAL EXPOSED INSIDE PITS SHALL BE LINED WITH A MINIMUM OF 12" OF IMPERMEABLE MATERIAL.



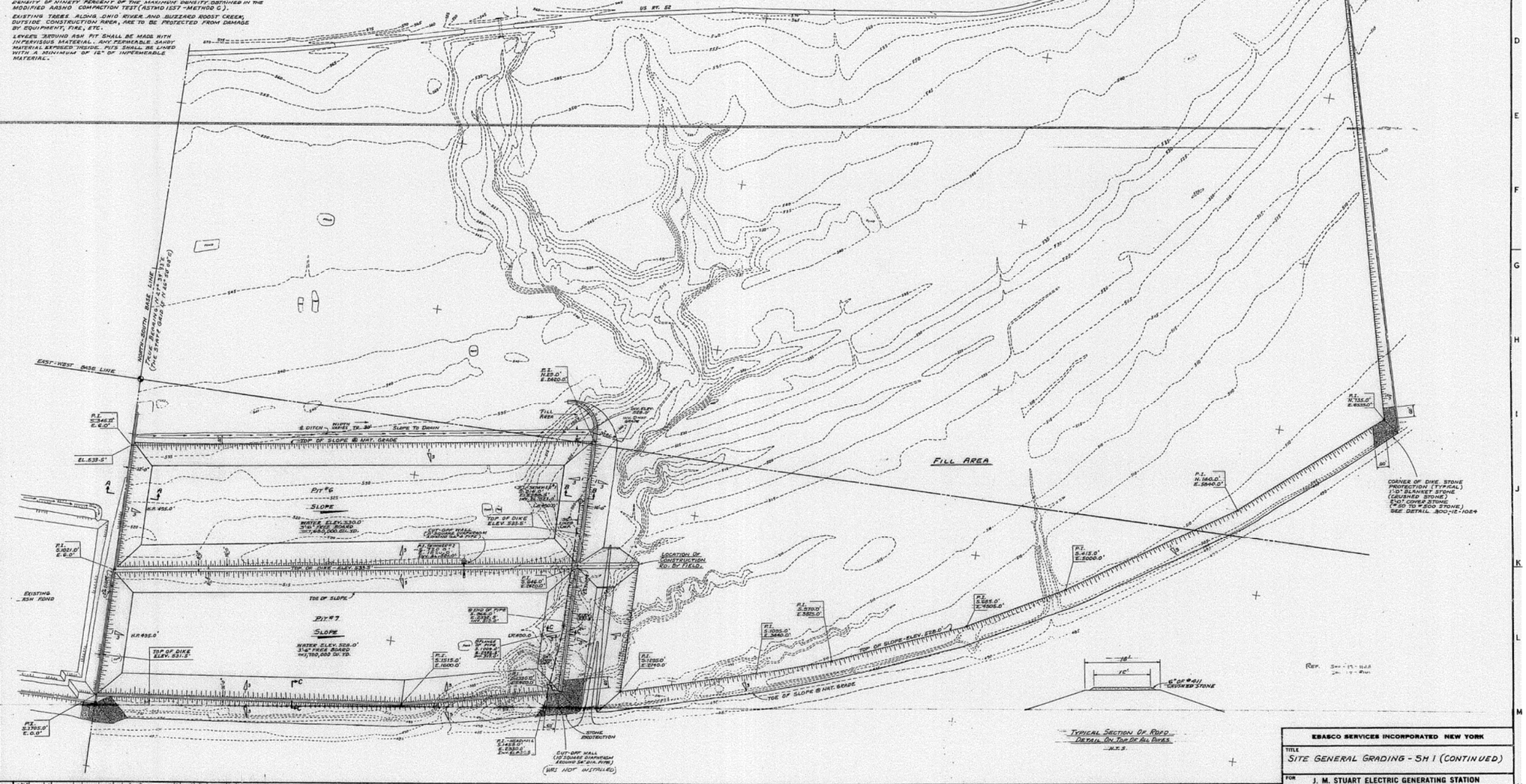
SECTION A-A
N.T.S.



SECTION B-B
RIP-RAP AROUND TOP OF PIT #6
N.T.S.



SECTION C-C
RIP-RAP AROUND TOP OF PIT #7
N.T.S.



TYPICAL SECTION OF POPO DETAIL ON TOP OF ALL DIKES
N.T.S.

REVISIONS

EBASCO SERVICES INCORPORATED NEW YORK

TITLE: SITE GENERAL GRADING - SH I (CONTINUED)

FOR: J. M. STUART ELECTRIC GENERATING STATION
1974 - 600,000 KW INSTALLATION—UNIT NO.

SCALE 1"=200'	DIV.	PROJECT	
DRAWN Tokowski	8-8-72	APPROVED	8-9-72
CHECKED		APPROVED	
ENGINEER	5-3-72	APPROVED	

THE CINCINNATI GAS & ELECTRIC CO.
THE DAYTON POWER AND LIGHT COMPANY

300-12-1020A
SHEET OF SHEETS
FILE

APPENDIX 4.1
Excerpt from:
Ponds 3A, 5, 6 & 7 Slope Stability Investigation
By BBC&M Engineering, Inc., Dated May 2010
Pages 5 & 6, Log of Boring B-6-1 & B-6-2, B-6-1 Gradation Curve

GENERAL SUBSURFACE CONDITIONS

Stratigraphy Description

The general subsurface conditions are listed below for the site as encountered during drilling.

Embankment Fill

- Pond 5

Based on previously performed borings (by others) at Pond 5 and the descriptions of the samples recovered in the borings and laboratory testing, the embankment material encountered in the borings consisted mostly of stiff to very stiff brown and brown mottled with gray silty clay. However within the overall predominantly silty clay fill soil, many seams and/or zones of fill containing a greater amount of sand were encountered. Of particular note is a 6 foot thick zone of medium-dense fine to coarse sand encountered at a depth of 5 feet in Boring A-3 and the predominantly medium dense sand stratum beginning at 7 feet in Boring C-1. Standard Penetration Test (SPT) N values within the fill ranged from 6 to 26 with an average of 19. Pocket penetrometer measurements (a tool used to estimate the unconfined compressive strength of the soil) ranged from 1.0 to 4.5 tsf. Logs for previous boring performed by URS and the explorations performed by BBCM at Pond 5 are included in the Ash Pond 5 Seepage Assessment Report prepared by BBCM for Phase 1 of this study.

- Ponds 3A, 6 and 7

At the locations of the borings performed through the crest of the pond embankments, 12 to 26 inches of gravel road base was encountered in the borings. Beneath the surficial materials, the embankment material consisted predominantly of very-stiff to hard brown and gray silty clay, which contains varying amounts of fine to coarse sand and fine gravel. Many small zones and/or thin seams of fine to coarse sand or cohesive fill containing a greater amount of sand were encountered. The amounts of sand within the embankment fill encountered in the borings appear erratic in profile, typical of the alluvial soils located at the site which were excavated from within the pond footprints to construct the embankments. SPT N_{60} values within the fill ranged from 7 to 34 with an average of 19. Pocket penetrometer measurements ranged from 1.0 to 4.5+ tsf, but were typically in the range of 3.5 to 4.5+ tsf.

In Boring B-3A-2 and B-3A-3, the cohesive embankment fill was underlain by approximately 5 feet of dense to very dense brown fine to coarse sand. The sand fill layer was consistent with the conditions encountered in the borings performed in this area by Bowser-Morner prior to the pond expansion. The sand layer in Boring B-3A-2 was underlain by very loose to loose gray fly ash.

Natural Soils

All borings in Ponds 6 and 7 were terminated after penetrating a minimum of 15 feet in natural soils. With the exception of Boring B-3A-2, natural alluvium soils were encountered in the borings underlying the embankments consisting of interbedded silt, clay and fine sand. This stratum contained many zones of silty clay interbedded with loose silt and/or fine to medium sand, as well as many fine to medium sand seams and lenses or thin layers. A few of the samples recovered near the top of this stratum were described as slightly organic. Hand penetrometer measurements within this stratum ranged from 0.0 to 4.5+ tons per square foot (tsf), while SPT N60-values (corrected for 60% energy) ranged from 0 to 30 with an average of 13. Index testing results, including liquid limit and plasticity index of samples tested within this

stratum are summarized on Plate 2 of Appendix C. Classification of samples under the Unified Soil Classification System tested varied from Lean Clay, CL, to Silty, Clayey Sand, SC-SM.

Very-loose to medium-dense fine to coarse sand was encountered in several of the borings beneath the alluvial soils. SPT N_{60}-values within this stratum ranged from 1 to 14 bpf with an average of 9. The percent passing the 200 sieve ranged between 6.0 and 42.

For a more detailed description of the stratigraphy, including the presence of minor variations and inclusions, the logs of the individual borings should be examined in conjunction with the summary above.

Groundwater

Groundwater observations were made as each boring was advanced and measurements were made at the completion of drilling. Extended groundwater measurements were made up to 24 hours after the completion. Groundwater observations are summarized in Table 1 below. No observation wells were installed for future monitoring. For reference purposes, the normal pool for this stretch of the Ohio River is El. 485.

Table 1: Groundwater Elevation Measurements

Boring	*Seepage Encountered During Drilling*	*Groundwater Encountered During Drilling*	*Groundwater Elevation at Completion*
B-3A-1	Dry	Dry	Dry
B-3A-2	528.7	-	525.2
B-3A-3	530.6	Dry	Dry
B-6-1	490.6	487.6	488.1
B-6-2	495.0	492.0	485.5
B-7-1	-	483.7	483.7
B-7-2	487.6	484.6	480.9
B-7-3	492.0	492.0	488.0
B-7-4	488.0	485.5	486.3

Elevation Datum: NAD 83

SEEPAGE AND STABILITY ANALYSIS

Assessment of Existing Conditions

Embankment dams should exhibit adequate factors of safety against a slope stability failure for static and seismic conditions. In accordance with our work plan, BBCM examined four cross-sections through the ash pond embankments of Pond 5, 6 and 7 for stability and reviewed the stability analysis of Pond 3A performed by Bowser-Morner as part of their vertical expansion investigation and design. The sections were selected as representative of the overall embankments as well as to assess stability at specific critical locations based on slope inclination and height.

LOG OF BORING NO. B-6-1
PHASE 2 - STABILITY INVESTIGATION
DP&L STUART STATION - ABERDEEN, OHIO

LOCATION: **N. 2322, E. 163** ELEVATION: **533.6** DATE: **3/30/10**

DRILLING METHOD: **3-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **55.2'**

SAMPLER(S): **2" O.D. Split-barrel Sampler 2" and 2-1/2" O.D. Split-barrel Samplers**

ELEV.	DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	N_{60}	SAMPLE REC-%	DESCRIPTION	NATURAL CONSISTENCY INDEX / NATURAL MOISTURE CONTENT (PLASTIC LIMIT — LIQUID LIMIT)	TEST RESULTS
	0						ROADWAY GRAVEL - 17 INCHES	10 20 30 40	
532.0		1A		32 / 12 / 23	50				
		1B				100	FILL: Hard brown and gray silty clay, little to some fine to coarse sand, trace fine gravel, damp.		H=4.5+
		2		4 / 6 / 10	23	80			H=4.5+
527.6	5								
		3		8 / 9 / 7	23	100	FILL: Medium-dense brown fine to coarse sand, trace fine gravel, "and" silty clay, damp.		H=4.5+
525.6									
		4		3 / 5 / 10	21	100	FILL: Hard brown silty clay, some fine sand, trace medium-to coarse sand, trace fine gravel, damp.		H=4.5+
523.1	10								
		5		5 / 7 / 6	18	100	FILL: Medium-dense brown fine to coarse sand, trace fine gravel, some silt, little clay, damp.	●	H=4.5+ G
520.6									
		6		4 / 6 / 7	18	87	FILL: Very-stiff to hard brown and gray silty clay, little to "and" fine to coarse sand (% varies), trace fine gravel, contains few pockets of medium-dense brown fine to coarse sand, contains roots near bottom of stratum, damp.		H=3.0-4.5+
	15								
		7		4 / 6 / 6	17	100			H=2.5-4.5+
				P					
	20								
		8		4 / 6 / 7	18	67			H=2.25-2.7
				P					
	25								
		9		8 / 10 / 11	30	100			H=4.5+
					21				
		10		3 / 5 / 10		60		●×	G
	30								

WATER LEVEL: ▽ **45.5** ▼ **42.5**

WATER NOTE: **Inside HSA**

DATE: **3/30/10** **3/31/10**

SYMBOLS USED TO INDICATE TEST RESULTS

G - Gradation, Q - Uncon Comp, T - Triax Comp, C - Consol. } See Separate Curves

H - Penetrometer (tsf)
W - Unit Dry Wt (pcf)
D - Relative Dens (%)

Drill Rod Energy Ratio : 0.85
Last Calibration Date : 02/17/09
Drill Rig Number : ATV 550X

JOB: 011-12608-000 -CONTINUED- **PLATE 13**

LOG OF BORING NO. B-6-1
PHASE 2 - STABILITY INVESTIGATION
DP&L STUART STATION - ABERDEEN, OHIO

LOCATION: **N. 2322, E. 163** ELEVATION: **533.6** DATE: **3/30/10**

DRILLING METHOD: **3-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **55.2'**

SAMPLER(S): **2" O.D. Split-barrel Sampler 2" and 2-1/2" O.D. Split-barrel Samplers**

ELEV.	DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	N_{60}	SAMPLE REC-%	DESCRIPTION	NATURAL CONSISTENCY INDEX / NATURAL MOISTURE CONTENT (PLASTIC LIMIT — LIQUID LIMIT; 10 20 30 40)	TEST RESULTS
	30								
		11		3 / 4 / 5	13	53	FILL: Very-stiff to hard brown and gray silty clay, little to "and" fine to coarse sand (% varies), trace fine gravel, contains few pockets of medium-dense brown fine to coarse sand, contains roots near bottom of stratum, damp.		H=3.75-4.5+
500.6									
		12		4 / 9 / 8	24	33	Very-stiff to hard brown and gray silty clay, trace fine to coarse sand, trace fine gravel, many roots.		H=3.5-4.5+
	35	2S							
		13		3 / 5 / 9	20	87			H=4.5+
495.6									
493.6		14		4 / 5 / 8	18	67	Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, little clay, damp.		G
	40								
		15		4 / 6 / 8	20	60	Very-stiff to hard brown silty clay, "and" fine to coarse sand, trace fine gravel, damp.	●	H=3.8-4.5+
490.6									
		16		3 / 3 / 5	11	80	Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay, moist becoming wet.		
	45								
		17		3 / 4 / 4	11	67			G
		18		3 / 4 / 5	13	60			
	50								
		19		7 / 4 / 5	13	100			
478.6	55								
	60						- Encountered seepage at 43.0'. - Encountered water at 46.0'. - Boring backfilled with grout. - Boring location and elevation provided by DP&L. - DATUM: NAD 83, Ohio South.		

WATER LEVEL: ▽ **45.5** ▼ **42.5**

WATER NOTE: **Inside HSA**

DATE: **3/30/10** **3/31/10**

SYMBOLS USED TO INDICATE TEST RESULTS

G - Gradation, Q - Uncon Comp, T - Triax Comp, C - Consol. (See Separate Curves)

H - Penetrometer (tsf), W - Unit Dry Wt (pcf), D - Relative Dens (%)

Drill Rod Energy Ratio : 0.85

Last Calibration Date : 02/17/09

Drill Rig Number : ATV 550X

JOB: 011-12608-000

PLATE 14

LOG OF BORING NO. B-6-2
PHASE 2 - STABILITY INVESTIGATION
DP&L STUART STATION - ABERDEEN, OHIO

LOCATION: **N. 2321, E. 163** ELEVATION: **503.0** DATE: **4/1/10**

DRILLING METHOD: **3-1/4" I.D. Hollow-stem Auger** COMPLETION DEPTH: **25.0'**

SAMPLER(S): **2" O.D. Split-barrel Sampler 2" and 2-1/2" O.D. Split-barrel Samplers**

ELEV.	DEPTH, FEET	SAMPLE NUMBER	SAMPLE	SAMPLE EFFORT	N_{60}	SAMPLE REC-%	DESCRIPTION	NATURAL CONSISTENCY INDEX / NATURAL MOISTURE CONTENT (PLASTIC LIMIT — LIQUID LIMIT)	TEST RESULTS
502.4	0						TOPSOIL - 7 INCHES	10 20 30 40	
		1		2 / 5 / 3	11	100	FILL: Stiff to very-stiff brown and gray silty clay, some fine to coarse sand, trace fine gravel, damp.		H=1.25-2.5
		2		6 / 9 / 8	24	100			H=3.75
497.0	5								
		3		4 / 3 / 7	14	93	Very-stiff gray mottled with brown silty clay, trace fine to coarse sand, trace fine gravel, damp.		H=2.5-3.5 LL=52
495.0									
		4		P		43	Stiff to very-stiff brown silty clay, "and" fine to coarse sand, trace fine gravel, moist.		H=1.75-2.0
492.5	10								
		5		5 / 6 / 5	16	60	Medium-dense brown fine to coarse sand, trace fine gravel, little silt, wet.		
490.0									
488.9		6A		2 / 3 / 2	7	100	Loose brown fine to coarse sand, trace fine gravel, "and" silty clay, wet.		
		6B					Stiff brown and orange-brown silty clay, "and" fine to coarse sand, trace fine gravel, wet.		H=1.0-1.25
487.0	15								
		7		1 / 3 / 3	9	80	Loose brown fine to coarse sand, trace fine gravel, little silt, wet.		
485.0									
		8		SH / 1 / 2	4	47	Very-loose to loose brown fine to medium sand, trace coarse sand, trace fine gravel, trace silt, wet.		G
	20								
		9		SH / SH / 1	0	53			
		10		1 / 1 / 3	6	87			
478.0	25								
							- Encountered seepage at 8.0'. - Encountered water at 11.0'. - Boring backfilled with grout. - Boring location and elevation provided by DP&L. - DATUM: NAD 83, Ohio South.		
	30								

WATER LEVEL: ▽ **17.5** ▼ **6.2**

WATER NOTE: **Inside HSA** **Caved at 14.8'**

DATE: **4/1/10** **4/1/10 PM**

SYMBOLS USED TO INDICATE TEST RESULTS

G - Gradation, Q - Uncon Comp, T - Triax Comp, C - Consol. (See Separate Curves)

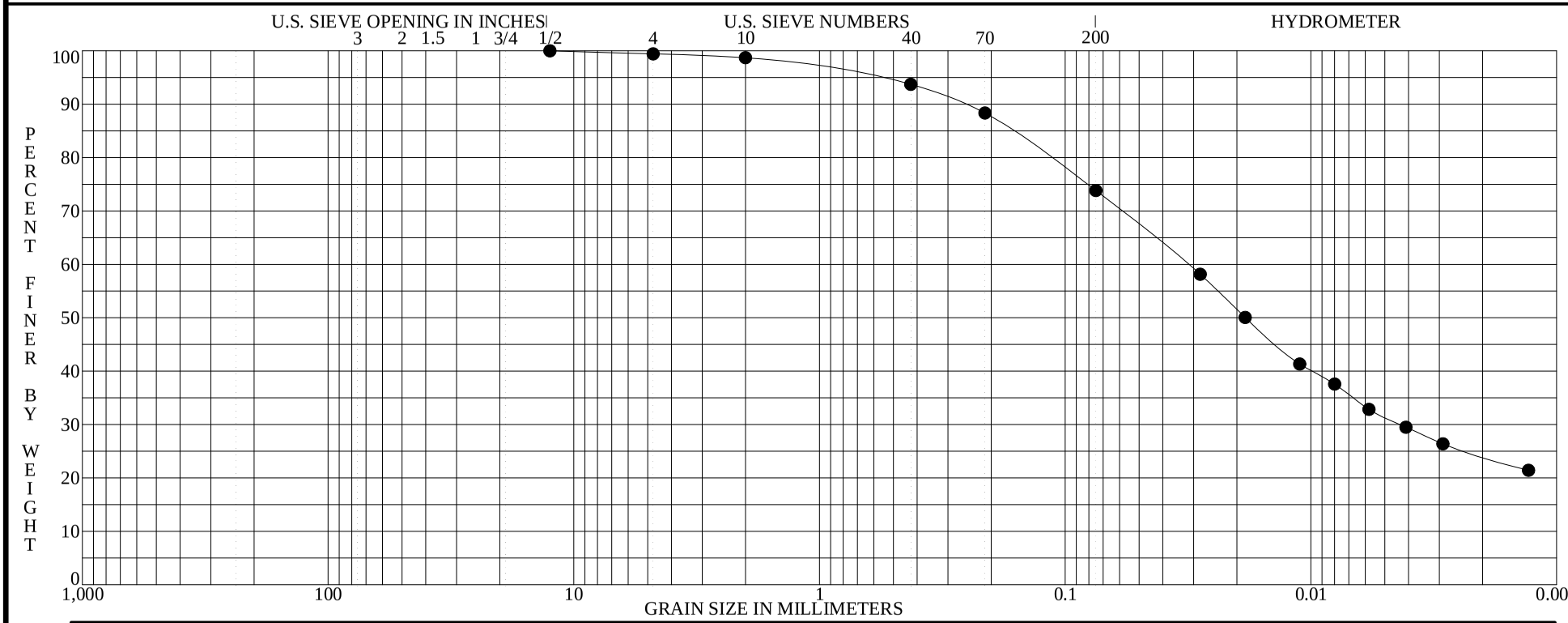
H - Penetrometer (tsf)
W - Unit Dry Wt (pcf)
D - Relative Dens (%)

Drill Rod Energy Ratio : 0.85
Last Calibration Date : 02/17/09
Drill Rig Number : ATV 550X

JOB: 011-12608-000

PLATE 15

GRN-EPA BBCM FILL



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		coarse	fine	coarse	medium	fine	

	Specimen Identification - Depth	Classification	MC%	LL	PL	PI	UWW	UDW
●	**B-6-1 S-10 28.5' to 29.4'**	**FILL : Brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel, contains wood fragments.**	**15**	**30**	**17**	**13**		
⊠								
▲								
★		**LEAN CLAY with SAND CL**						
⊙								

	Specimen Identification - Depth	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-6-1 S-10 28.5' to 29.4'**	**12.5000**	**0.6312**	**0.0316**	**0.0184**		**0.6**	**25.6**	**49.7**	**24.1**
⊠										
▲										
★										
⊙										

ASTM D422

GRADATION CURVE

PROJECT PHASE 2 - STABILITY INVESTIGATION

LOCATION DP&L STUART STATION - ABERDEEN, OHIO

JOB NO. 011-12608-000 **DATE** 5/18/10

PLATE 12

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Drawing 300-12-1020A (1972) shows a site plan and sections for Ash Ponds 6 and 7. Section A-A indicates that the western dike is to be constructed by placing additional fill above the existing ash pond dike. Sections B-B and C-C indicate that riprap was to be placed on the upstream side of the dikes.

3.4.3 Foundation Conditions – Pond 10

The subsurface investigation for Pond 10 and the immediate area around it consisted of eighteen (18) geotechnical soil borings, four (4) Geoprobe™ borings, and three (3) test pits. Figures 13A and 13B depict the boring locations and a summary of selected soil logs for the borings performed for the investigation. The soil profile beneath the pond and dike areas generally consisted of up to 1 foot of topsoil with occasional miscellaneous fill and granular deposits to depths ranging from 2 to 4 feet below the surface. These surficial materials were encountered

APPENDIX 5
Design Drawings
By Ebasco Services, Inc.

300-12-1020A

NOTES:

THE BORROW AREAS AND THE AREAS TO BE COVERED BY THE EARTH DIKES OR FILL SHALL BE CLEARED OF ALL FENCES, TIMBER, STUMPS, STRUCTURES, OR OTHER OBSTRUCTIONS, AND STRIPPED OF TOP SOIL, UNSUITABLE OR EXCESSIVELY WET EARTH, VEGETATION, STUBBLE, SURFACE TRASH AND PERISHABLE MATTER OF ALL SORTS.

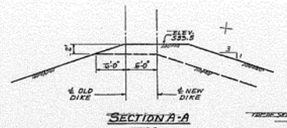
THE EMBANKMENTS AND FILLS SHALL BE CONSTRUCTED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. ALL EMBANKMENTS AND FILLS SHALL BE BUILT UP IN CONTINUOUS HORIZONTAL LAYERS INSOFAR AS IS FEASIBLE. THE TOP OF EMBANKMENTS, DURING CONSTRUCTION, SHALL BE SLOPED FOR DRAINAGE. NO BRUSH, ROOTS, ICE, SNOW, DEBRIS, PERISHABLE OR OTHER UNSUITABLE MATERIALS SHALL BE PLACED IN THE EMBANKMENTS OR FILLS. EMBANKMENT OR FILL SHALL NOT BE PLACED WHEN EITHER THE MATERIAL OR FOUNDATION ON WHICH THEY ARE TO BE PLACED ARE EXCESSIVELY WET OR FROZEN.

FILL FOR ALL AREAS SHALL BE MATERIAL FREE OF ROOTS, ICE, SNOW, PERISHABLE OR OTHER UNSUITABLE MATERIALS AND SHALL BE EXCAVATED FROM THE BORROW AREAS INDICATED ON THE DRAWINGS. STONE WHICH MAY BE INCORPORATED IN THE FILLS SHALL HAVE A MAXIMUM DIMENSION OF SIX INCHES, AND SHALL NOT CONSTITUTE MORE THAN TWENTY PERCENT OF THE VOLUME OF THE MASS. ALL STONE INCORPORATED IN THE FILL SHALL BE UNIFORMLY DISTRIBUTED AND AMPLY BEDDED IN THE FINER MATERIALS. THE INCOMING MATERIAL SHALL BE DUMPED IN WINDROWS OR RIDGES LENGTHWISE OF DIKE EMBANKMENTS AND FILL AREAS BEING CONSTRUCTED, AND SO PLACED THAT THE WINDROWS CAN BE SPREAD TO A UNIFORM LAYER EIGHT INCHES THICK OVER THE SECTION. IN GENERAL, FILL AREA MATERIAL SHALL BE DEPOSITED SO THAT UNIFORM LAYERS OF FILL EIGHT INCHES THICK MAY BE BROUGHT UP OVER THE ENTIRE AREA BEING FILLED TO COMPLETE A PARTICULAR STAGE AS SCHEDULED.

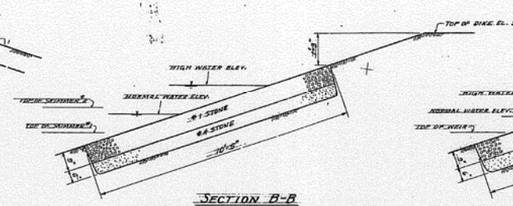
ALL EMBANKMENT AND FILL SHALL BE COMPACTED TO A MINIMUM DENSITY OF NINETY PERCENT OF THE MAXIMUM DENSITY OBTAINED IN THE MODIFIED AASHO COMPACTION TEST (ASTMD 1557 - METHOD C).

EXISTING TREES ALONG OHIO RIVER AND BUZZARD ROOST CREEK, OUTSIDE CONSTRUCTION AREA, ARE TO BE PROTECTED FROM DAMAGE BY EQUIPMENT, FIRE, ETC.

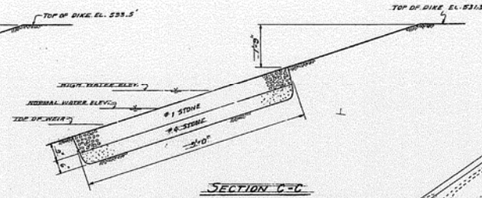
LEVEES AROUND ASH PIT SHALL BE MADE WITH IMPERVIOUS MATERIAL. ANY PERMEABLE SANDY MATERIAL EXPOSED INSIDE PITS SHALL BE LINED WITH A MINIMUM OF 12" OF IMPERMEABLE MATERIAL.



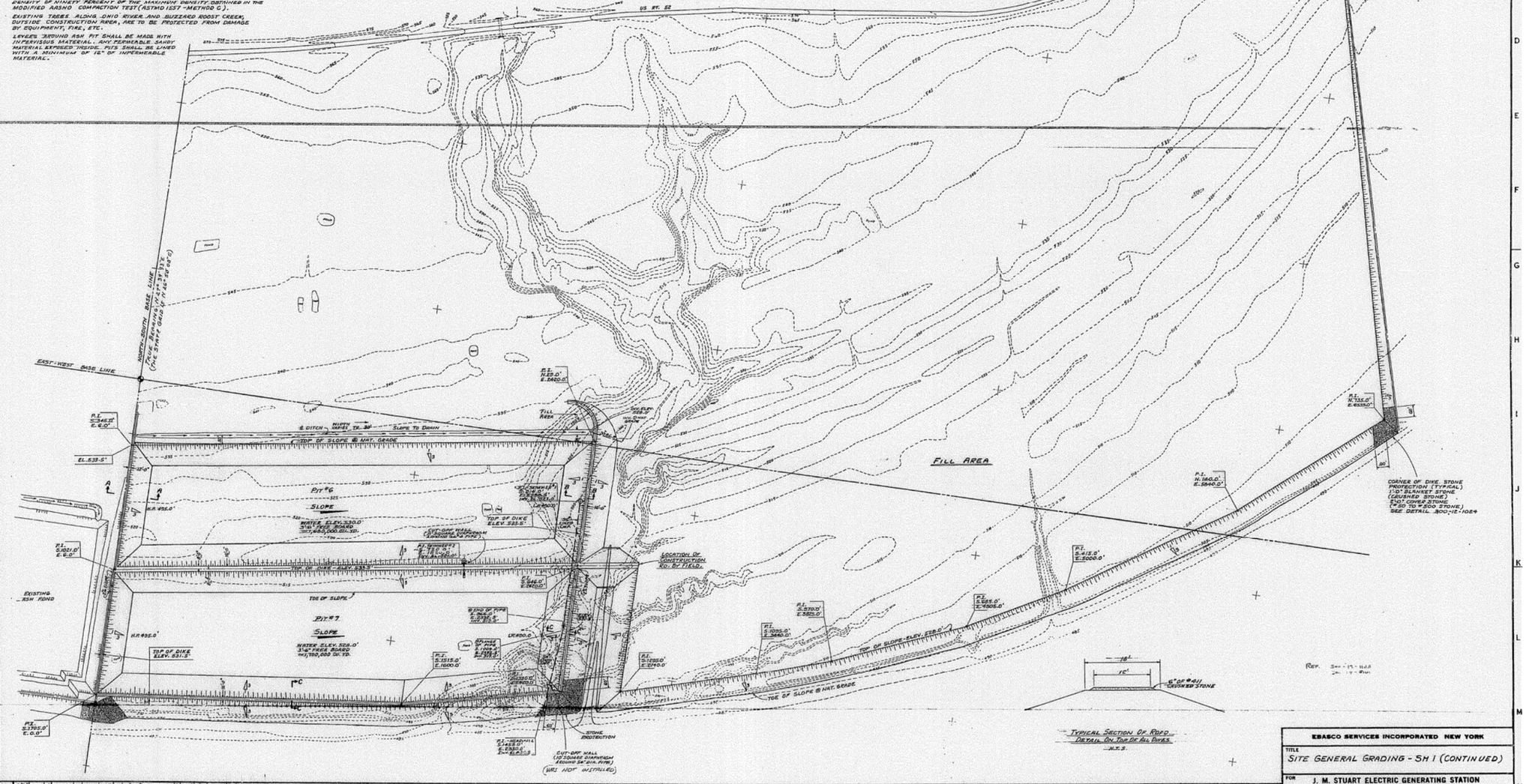
SECTION A-A
N.T.S.



SECTION B-B
RIP-RAP AROUND TOP OF PIT #6
N.T.S.



SECTION C-C
RIP-RAP AROUND TOP OF PIT #7
N.T.S.



TYPICAL SECTION OF POPO DETAIL ON TOP OF ALL DIKES
N.T.S.

REVISIONS

EBASCO SERVICES INCORPORATED NEW YORK

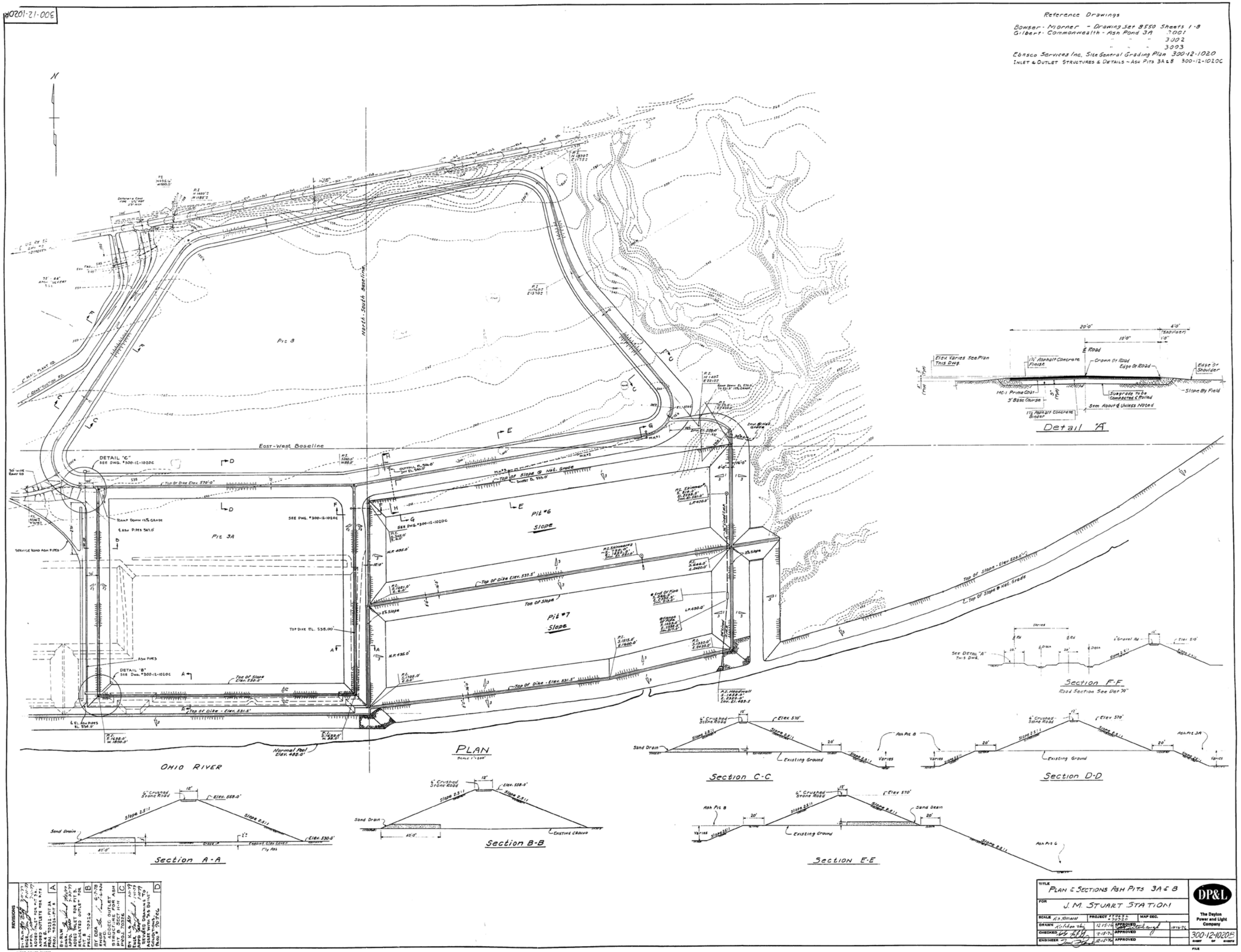
TITLE: SITE GENERAL GRADING - SH I (CONTINUED)

FOR: J. M. STUART ELECTRIC GENERATING STATION
1974 - 600,000 KW INSTALLATION—UNIT NO.

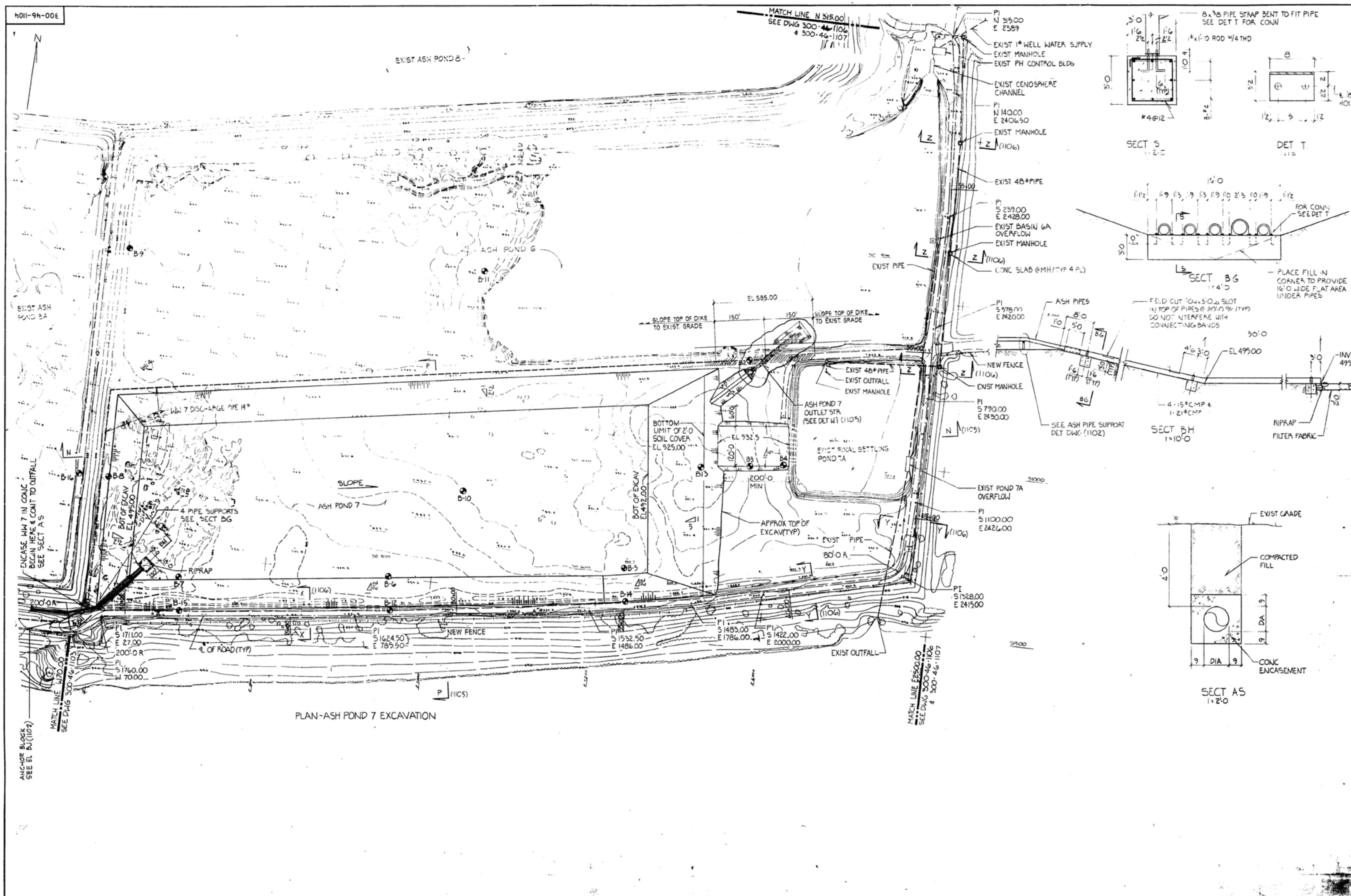
SCALE 1"=200'	DIV.	PROJECT	
DRAWN Tokowski	8-8-72	APPROVED	8-9-72
CHECKED		APPROVED	
ENGINEER	5-3-72	APPROVED	

THE CINCINNATI GAS & ELECTRIC CO.
THE DAYTON POWER AND LIGHT COMPANY

300-12-1020A
SHEET OF SHEETS
FILE



300-12-1020B
Reference Drawings
Bowser-Morner - Drawing Set 8550 Sheets 1-8
Gilbert-Commonwealth - Ash Pond 3A 3001
" " " 3002
" " " 3003
Ebasco Services Inc. Site General Grading Plan 300-12-1020
INLET & OUTLET STRUCTURES & DETAILS ~ ASH PITS 3A & B 300-12-1020C
N
Pit B
North - South Baseline
East-West Baseline
DETAIL "C" SEE DWG. #300-12-1020C
DETAIL "B" SEE DWG. #300-12-1020C
Pit 3A
Pit #6 Slope
Pit #7 Slope
Top Of Dike Elev. 570.0'
Top Of Dike Elev. 533.5'
Top Of Dike - Elev. 531.5'
Top Dike EL. 538.00'
Top Of Slope Elev. 528.0'
Top Of Slope @ Nat. Grade
Normal Pool Elev. 485.0'
OHIO RIVER
PLAN
Detail "A"
Section F-F
Road Section See Det "A"
Section C-C
Section D-D
Section A-A
Section B-B
Section E-E
TITLE PLAN & SECTIONS ASH PITS 3A & B
FOR J. M. STUART STATION
SCALE AS SHOWN
DRAWN
CHECKED
ENGINEER
APPROVED
The Dayton Power and Light Company
300-12-1020B



APPROVED FOR CONSTRUCTION
Rev D - 5/10/84
REV E 11/21/84

NOTES:
FOR QUANTITIES & NOTES SEE DWG 300-46-1110.

REFERENCE DRAWINGS:
ASH DISPOSAL PROJECT-WO NO. 72028 SH 5 300-46-1105
ASH DISPOSAL PROJECT-WO NO. 72028 SH 6 300-46-1106
ASH DISPOSAL PROJECT-WO NO. 72028 SH 10 300-46-1110

EBASCO SERVICES INCORPORATED

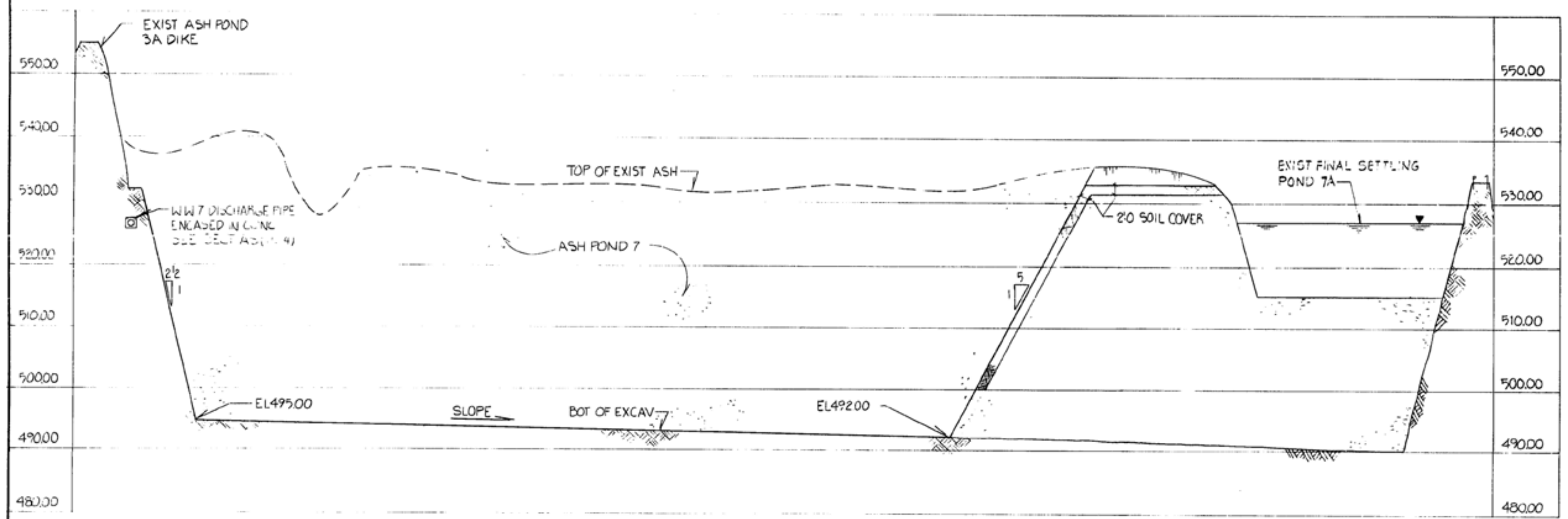
TITLE ASH DISPOSAL PROJECT-WO NO. 72028
SHEET 4

FOR J M STUART ELECTRIC GENERATING STATION

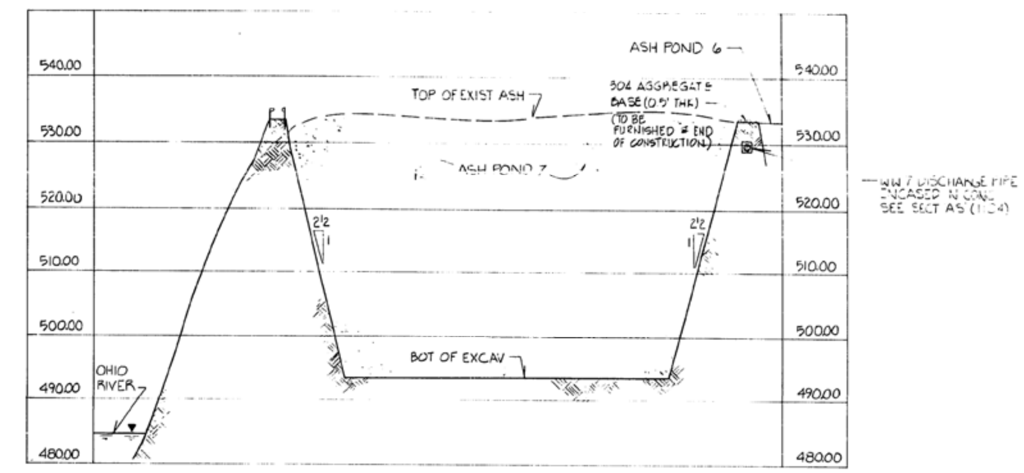
SCALE 1=100-0 UN

300-46-1104
SHEET 4 OF 10
REV E

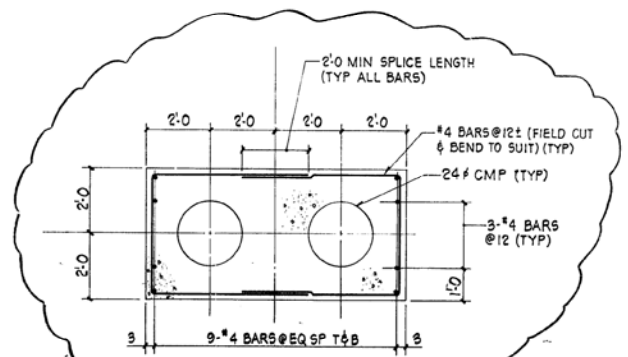
S011-9h-00E



SECT N (1104)
1=100'0 HOR



SECT P (1104)
100'0 HOR

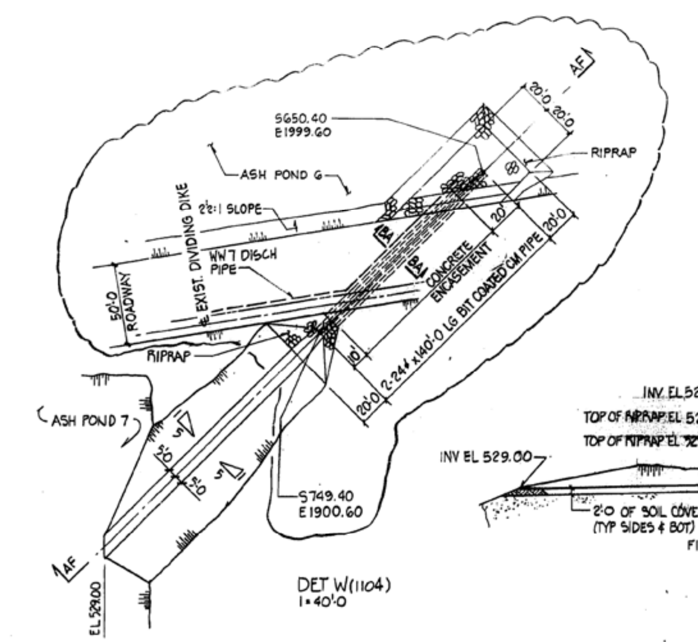


SECT BA
1=2'0

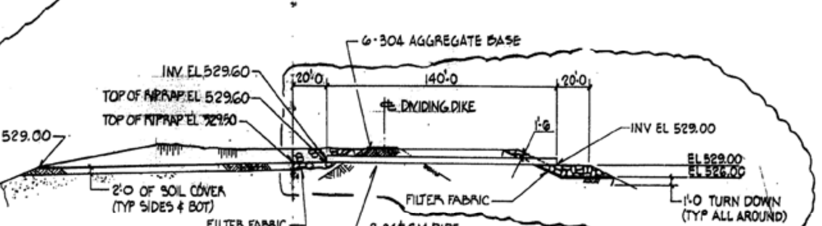
NOTES:
FOR QUANTITIES & NOTES SEE DWG 300-46-1110

REFERENCE DRAWINGS:

ASH DISPOSAL PROJECT - WO NO. 72028 SH 4	300-46-1104
ASH DISPOSAL PROJECT - WO NO. 72028 SH 10	300-46-1110



DET W (1104)
1=40'0



SECT AF
1=40'0 HOR
1=20'0 VERT

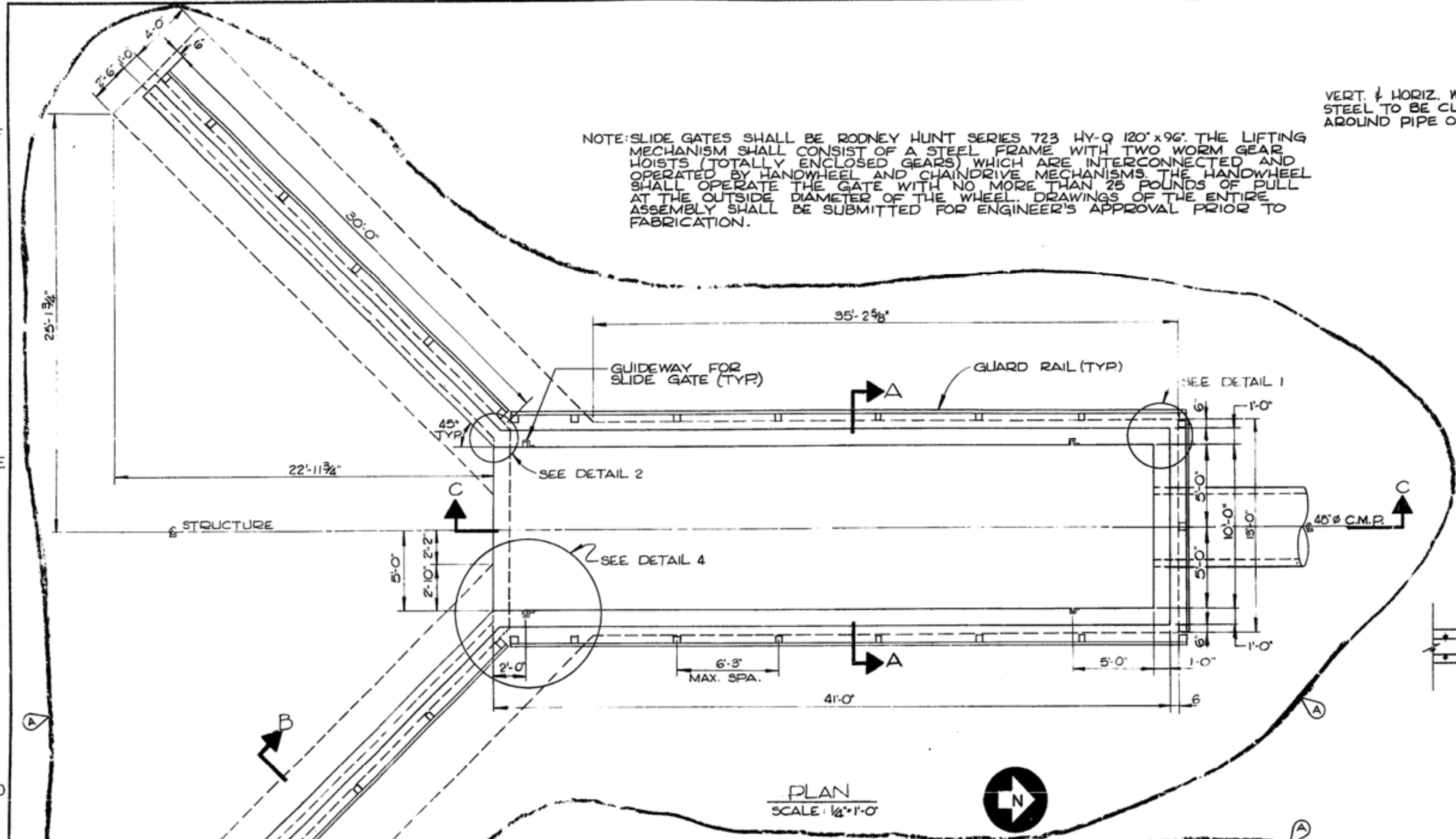
APPROVED FOR CONSTRUCTION
Rev. D - 5/10/84
Rev. E - 11/21/84

EBASCO SERVICES INCORPORATED

TITLE ASH DISPOSAL PROJECT-WO NO. 72028 SHEET 5				DP&L
FOR J M STUART ELECTRIC GENERATING STATION				The Dayton Power and Light Company
SCALE AS NOTED	PROJECT	MAP SEC.		
DRAWN BBC	12/16/83	APPROVED	12-16-83	300-46-1105
CHECKED BJD	12/16/83	APPROVED		SHEET 5 OF 10 SHEETS
ENGINEER ALO	12/16/83	APPROVED		FILE REV E

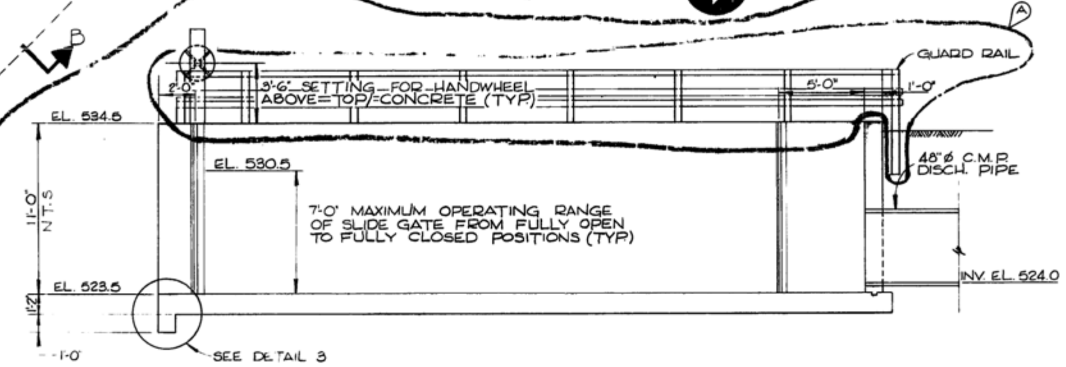
REVISIONS

NOTE: SLIDE GATES SHALL BE RODNEY HUNT SERIES 723 HY-Q 120"x96". THE LIFTING MECHANISM SHALL CONSIST OF A STEEL FRAME WITH TWO WORM GEAR HOISTS (TOTALLY ENCLOSED GEARS) WHICH ARE INTERCONNECTED AND OPERATED BY HANDWHEEL AND CHAINDRIVE MECHANISMS. THE HANDWHEEL SHALL OPERATE THE GATE WITH NO MORE THAN 25 POUNDS OF PULL AT THE OUTSIDE DIAMETER OF THE WHEEL. DRAWINGS OF THE ENTIRE ASSEMBLY SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION.



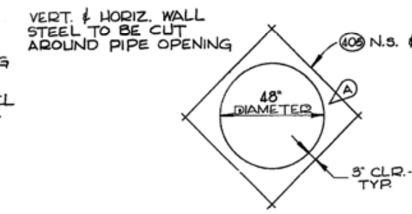
PLAN

SCALE: 1/8"=1'-0"



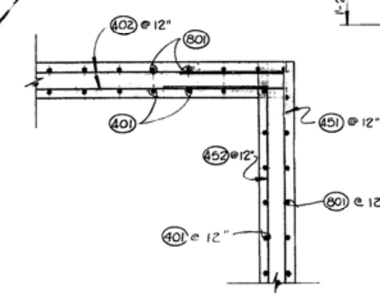
SECTION C-C

SCALE: 1/4"=1'-0"



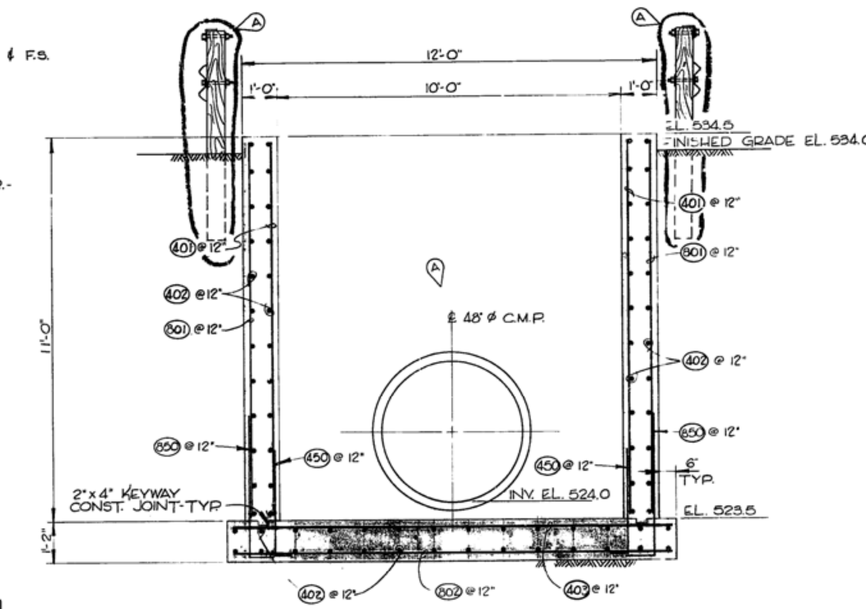
WALL PENETRATION

SCALE: NONE



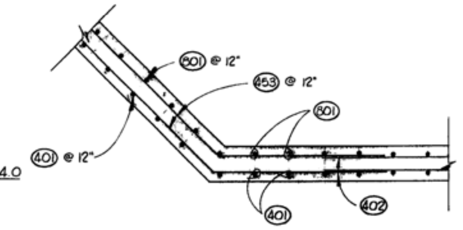
DETAIL 1

SCALE: 1/2"=1'-0"



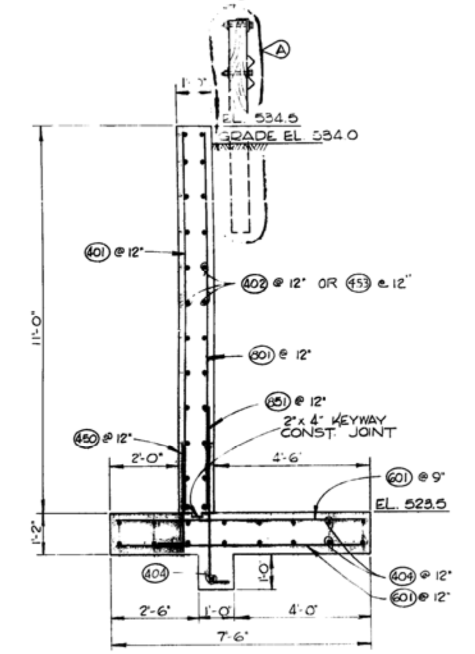
SECTION A-A

SCALE: 1/2"=1'-0"



DETAIL 2

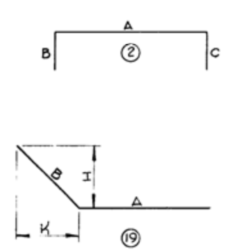
SCALE: 1/2"=1'-0"



SECTION B-B

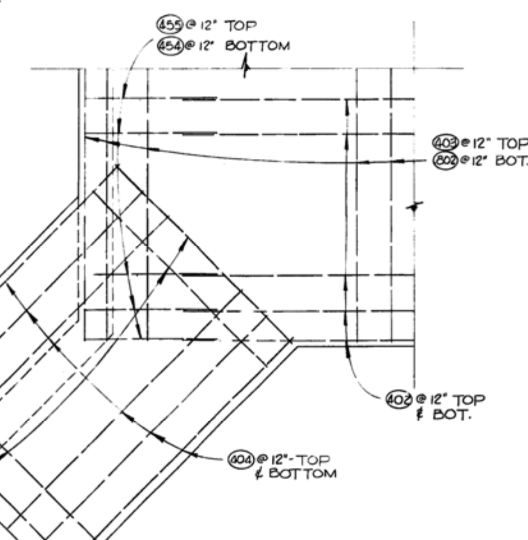
SCALE: 1/2"=1'-0"

BENT BARS																	
MARK NO.	QUAN.	SIZE	LGTH	TYPE	A	B	C	D	E	F	G	H	J	K	O	R	WEIGHT
1317-450	156	#4	3'-0	2	2'-5	7"											313
451	12	#4	15'-6	2	11'-6	2'-0	2'-0										124
452	12	#4	14'-6	2	10'-6	2'-0	2'-0										116
453	48	#4	16'-0	19	11'-9	4'-3						3'-0"		3'-0"			513
454	14	#4	5'-3	2	4'-3	1'-0											49
455	14	#4	6'-5	2	4'-9	1'-8											60
1317-850	94	#8	5'-7	2	4'-5	1'-2											1401
851	62	#8	6'-7	2	5'-5	1'-2											1090



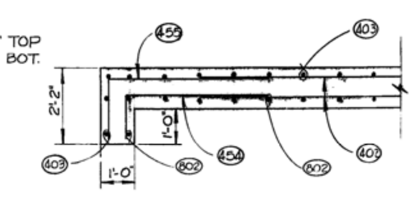
STRAIGHT BARS									
MARK NO.	QUAN.	SIZE	LGTH	WEIGHT	MARK NO.	QUAN.	SIZE	LGTH	WEIGHT
1317-401	156	#4	10'-9	1120	1317-601	158	#6	7'-2	1701
402	200	#4	20'-0	2672					
403	45	#4	12'-8	381	1317-801	156	#8	10'-9	4478
404	68	#4	17'-0	772	802	43	#8	12'-8	1454
405	8	#4	5'-0	27					

TOTAL WEIGHT STEEL = 16,271 LBS.



DETAIL 4

SCALE: 1/2"=1'-0"

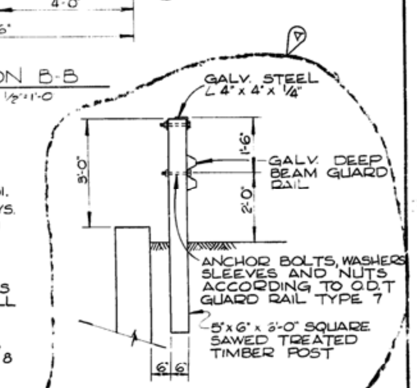


DETAIL 3

SCALE: 1/2"=1'-0"

GENERAL NOTES

1. THIS DRAWING TO BE CONSTRUCTED IN ACCORDANCE W/ SPECIFICATION SC-01.
2. CONCRETE SHALL BE f'_c=3500 @ 28 DAYS.
3. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4".
5. MIN. COVERING FOR REINFORCING BARS 2" EXCEPT BOTTOM STEEL WHICH SHALL BE 3" MIN.
6. MIN. LAP FOR NO. 4 BARS SHALL BE 1'-9", MINIMUM LAP FOR NO. 6 BARS SHALL BE 2'-6" AND MIN. LAP FOR NO. 8 BARS SHALL BE 3'-6".
7. FIELD CUT REINF. BARS AS REQ'D TO PROVIDE 3" CLR. AROUND OPENINGS.



GUARD RAIL DETAIL

SCALE: 1/2"=1'-0"

DATE	RELEASED FOR	ENG
	PRELIMINARY NOT FOR CONSTRUCTION	
7-16-79	FOR COMMENTS	BJR
	FOR BID ONLY	
8-6-79	APPROVED FOR CONSTRUCTION	BJR

REV.	DATE	DESCRIPTION	BY	APPROVED
A	12/4/79	ADDED GUARD RAIL	JLB	BJR

DESIGN AND DRAFTING: J.L. BEEHLER DATE 6/5/79

DSN: B.J. RASMUSSEN DATE 5/18/79

APPROVED: BJ Rasmussen PE E433 DATE 8/6/79

STATE OF OHIO — NORBERT MUELLER 39406 — REGISTERED PROFESSIONAL ENGINEER

PREPARED UNDER RESPONSIBLE SUPERVISION OF N. N. MUELLER, P.E.

MICHIGAN PROFESSIONAL REGISTRATION NO. 21889

OHIO PROFESSIONAL REGISTRATION NO. 39406

AT OFFICES OF COMMONWEALTH ASSOCIATES INC.

THE GILBERT COMMONWEALTH COMPANIES

209 E. WASHINGTON AVE. JACKSON, MICH.

OWNER AND LOCATION: DP&L — DAYTON POWER & LIGHT CO., P.O. BOX 1247, COURTHOUSE PLAZA SOUTHWEST, DAYTON, OHIO 45401 — J.M. STUART STATION

CIVIL

CENOSPHERE CHANNEL DETAILS

64-8064-000 DRAWING NO. 300-12-1317 REV. A

CENOSPHERE CHANNEL DET.

APPENDIX 6.1
Excerpt from:
Assessment of Dam Safety Coal Combustion Surface Impoundments (Task 3)
Final Report
By CHA, Dated 26 March 2010
Pages 6-8, 34

remaining pond area. The maximum pond elevation, based on the Ohio DIS and assuming a 5-foot freeboard is maintained as required by ODNR, is 524 feet. The surface area of the pond is approximately 34 acres and has a maximum capacity of 2,300,000 CY. A concrete wet well structure with metal sheeting and skimmer forms the outlet for the pond and is currently set at approximately El. 525, the present operating pool elevation. Water entering the intake structure is discharged into the water treatment plant.

1.3.3 Ponds 6 and 7/7A

The 1972 drawing provided by DP&L shows grading and dike cross section information for Ponds 6 and 7. Figures 6A and 6B show the plan view and sections from the 1972 drawing. DP&L reported to the EPA that Ponds 6 and 7 were constructed c. 1977 and Pond 7A was constructed c. 1977. Pond 6 receives ash pond discharge and ash landfill storm water. Pond 7 receives fly ash and Pond 7A is utilized for final polishing.

Table 2 provides a summary of the pond configuration information for Ponds 6 and 7/7A.

Table 2 - Ponds 6 and 7/7A

Ash Pond	Dike Length (feet)	Maximum Height (feet)	Area (acres)	Storage Capacity (CY)
6	3,400	31.5	37	2,500,000
7	3,150	33.5	37	2,500,000
7A			3	61,900

The northern side of Pond 6 is incised. Based upon the physical site assessment, the western edge of Ponds 6 and 7 appears to be partially incised, with a crest at least 16 feet wide. Plans indicate that the crest elevation along this western edge varies from El. 531.5 on the southern end to El. 533.5 on the northern end (Figure 6A). This area also carries a gravel access drive and forms part of the foundation for the Pond 3A eastern dike. It is unclear from the drawings how

much of this area is actually earth fill. The southern side of Ponds 7A and 7 is partially incised and bounded by an earth dike with a 16 foot-wide crest at El. 531.5. According to the plans, the divider dike between Ponds 6 and 7 is an earth dike 16 foot-wide crest at El. 531.5. Measurements taken in the field indicate that the crest width is on the order of 60 feet as a result of grading activities over time. The 1972 drawing shows 3H:1V slopes on the upstream and downstream side of the dikes. The Ohio DIS indicates that the upstream and downstream slopes at Ponds 6 and 7 is at 2H:1V. Ebasco Services, Inc. Drawing No. 300-46-1104 (Figure 6C) indicates that the divider dike between Ash Ponds 7 and 7A was originally constructed with approximately a 200-foot crest width, a top crest elevation at about El. 536, and 5H:1V slopes along the sides retaining open water. Most of this dike comprises sluiced ash, and it formed when the original Pond 7 was dewatered and subsequently dredged. A 2-foot thick soil cover was also placed on the west facing slope of the divider dike. The eastern boundary of the Pond 6 and 7 is mostly an earth embankment with a crest elevation at approximately El. 535 and what appears to be 2.5H:1V exterior or downstream slopes.

Sluiced ash material enters the southwest corner of Pond 7 via HDPE sluice lines when Pond 7 is actively receiving waste ash as it was at the time of the site assessment. A maximum pool and present operating pool elevation of 530 feet is maintained in this pond. Pond 7 discharges decanted water to Pond 6 via a dual 24-inch diameter, bitumen coated CMP culvert beneath the access drive separating the two pond areas where the internal dike separating Pond 7 and 7A intersects the dike between Ponds 6 and 7 (Figure 6D). Pond 6 also receives decanted water from Pond 3A (when Pond 3A is actively receiving ash) at the northwest corner of Pond 6 via the discharge channel as described previously. The maximum operating pool for Pond 6 is listed as 530 feet, identical to the Pond 7 operating level. To facilitate gravity flow, the operating level in Pond 6 is slightly lower by about 0.5 feet to 1.0 foot in elevation.

The outlet works for Pond 6 consists of a concrete open channel sluiceway that conveys decanted water to a treatment and sampling structure at the northeast corner of the pond. From that point, water discharges beneath the eastern dike to Pond 7A for final decanting or “polishing” before

entering another concrete drop inlet sluiceway and final discharge to the Ohio River. Based upon Section N shown on Ebasco Services, Inc. Drawing No. 300-46-1105 9 (Figure 6C), this drop inlet sluiceway is set at about El. 527, the maximum and operating pool level in Pond 7A.

1.3.4 Pond 10

Pond 10, the newest of the disposal basins at the J.M. Stuart facility, comprises a dike 23 feet in height, 15 feet wide at the crest, and approximately 3,700 feet in length (Figure 7A). It has a downstream blanket drain and is constructed against the west dike of an older impoundment, Pond 8 that has since been converted into a dry ash landfill facility. Pond 10 is partially incised, with the basin floor varying from El. 528 to El. 524, placing it about 20 to 25 feet below the original ground surface which varied from approximately El. 545 to El. 555 in the pond area.. It comprises two separate dike structures, with the north, west, and southwest sides being one structure constructed out of bottom ash, and the east side being the dike for the Ash Pond 8 impoundment. Available plans indicate that the dikes were constructed with 2.5H to 1V side slopes and have a crest elevation at 568. These plans also depict a compacted clay liner on the basin floor and along the incised portion of the basin walls. This liner extends to the top of the inboard or upstream slope of the newer dike structure forming the north, west, and southwest sides of the basin and is terminated just above the elevation of the downstream drainage blanket of the older dike structure. Figure 7B presents the typical dike cross sections for Pond 10.

The outlet structure for Pond 10 is an 8.5-foot by 8.5-foot reinforced concrete riser approximately 24 feet in height, bearing at El. 544 on a 2-foot thick, 10-foot by 10-foot concrete mat. It accommodates a 30-inch diameter HDPE outlet pipe with an invert elevation at 545 and is configured with a 3-foot wide vertical opening that accepts concrete stoplogs to control the ash level in the pond as the water level rises above El 544. A knife gate located on the interior of the concrete riser controls the flow to the outlet pipe and can shut off flow from the pond as the need arises. It should be noted that the outlet tower cannot completely empty the pond due to the fact that the basin bottom is up to 20 feet below the base of the outlet riser. The maximum pond

and gullies are relatively old. Other visible features on the east dike slope included a potential animal burrow or cave (Photo 68) adjacent to the northern end of the dike next to a vegetated rock lined groin (Photo 67). A creek has begun to back up near the toe of the slope (Photos 69 and 70) which may be attributed to the recent rain combined with possible beaver activity or a partially blocked culvert.

The dike separating Pond 6 and Pond 7/7A is a bottom ash and gravel covered dike. As discussed previously, the crest width has increased from 16 feet as initially constructed to roughly 60 feet in some places as a result of grading activities and changes in pond operations. In addition, as material was pushed toward the slopes, they became incrementally steeper and the loose, unconsolidated material at the crest edge became subject to erosion. The deep erosion rills observed on the Pond 6 side of the dike (Photo 98) and the shallower erosion rills on the Pond 7 side (Photo 99) of the dike are evidence of this behavior.

The free-board on either side of the dike varied from less than 1 foot to as much as 4 to 5 feet, depending upon the location. In areas closer to the western end of the dike, the freeboard was on the higher end of that range in Pond 7. No water was observed in Pond 6 adjacent to the west end of the separation dike. A 1 to 2 foot difference between the Pond 6 and Pond 7 water levels was visually estimated at the time of the site visit, which facilitated flow from Pond 7 to Pond 6.

2.5.2 Pond 6 Outlet Structure

The Pond 6 outlet structure is located at the northeast corner of the pond. The water from Pond 6 flows by gravity from the outlet structure (Photo 55) to the nearby pH control building. In addition to the present outlet configuration, Pond 6 has an older outfall along the eastern dike (Photo 72). According to DP&L, this outfall serves as an emergency overflow and is set at El 530.5. It is connected to the existing outlet structure for Pond 7A. CHA was not provided information detailing when this structure was taken out of service, but water exiting this structure would by-pass the treatment and sampling facility in the northeast corner of Pond 6.

APPENDIX 6.2
Excerpt from:
J.M. Stuart Station, Ash Pond 6 Annual Inspection
By DP&L, Dated 21 December 2015
Pages 1 & 2

Purpose

I have conducted the following annual inspection in compliance of the Federal CCR Rule, 40 CFR Part 257 and Ohio Department of Natural Resources OAC 1501-21.

Statement of Qualifications

I am a practicing Civil/Geotechnical Engineer registered with the State of Ohio employed by the Dayton Power & Light Company. I am experienced in the design, maintenance and operation of earthen dams and impoundments.

Review of Impoundment Documentation [§ 257.83(b)(1)(i)]

Design, History, and Operation of the Facility

Pond 6 is a partially-incised, upland reservoir that was constructed in 1973 as an ash sluice pond. The pond was partially re-excavated in c1983 to elevation 523.0 (indicated on drawing 300-46-1101 as 6A) and now serves as a collection pond for ash sluicing water from Ponds 3A, 7 and 10, coal storage area drainage, and Landfill 11 storm water, contact water and leachate. The original pond has an area of 36.7 acres at the crest, is 31-feet deep (the re-excavated depth is 10.5 feet) and has a volume of 1,390 acre-feet to the crest. 18.6 acres of this pond are permanently filled leaving an operating area of 18.1 acres and volume of 308 acre-feet to the crest. The Maximum Operating Level of this pond is three feet below the crest.

The outlet is a concrete structure with adjustable weirs which discharges through the pH treatment building into the 7A portion of Pond 7. A standpipe with a sluice gate is located along the east dam which discharges to NPDES Outfall 013. The elevation of this standpipe is 530.32 feet per the 2013 survey. (Drawing 300-46-1315 sheet 1 indicates that the elevation of this standpipe is 530.50 feet.)

The east dam (the only exposed dam) was rehabilitated and re-graded in 2010. A piezometer was also installed in this dam at that time, but is no longer active.

Periodic Inspections

A thorough review of monthly and weekly facility inspections was conducted. Monthly inspections were conducted through September 2015. Weekly inspections were conducted from October 2015 through the present. These periodic inspections do not indicate any structural weakness or concerns.

Previous Structural Assessments

Annual inspections from previous years were reviewed as well as a 2009 inspection by Civil Environmental Consultants, the 2013 inspection by Ohio Department of Natural Resources and a 2010 structural assessment by BBC&M.

Visual Inspection of Impoundment [§ 257.83(b)(1)(ii)]

The Pond 6 dam is in good structural condition based on the visual inspection. No maintenance items are noted for this impoundment.

Changes in Geometry [§ 257.83(b)(2)(i)]

There were no changes to the upstream face of the dam. Rock/concrete rubble erosion protection is in place and in good condition on the west interior slope and bottom ash fill on the south and west sides. The south dam of the pond is shared with Pond 7 which was full at the time of inspection preventing inspection of the majority of the slope. The top of the dam is showing some wave erosion which is discussed in the Pond 7 Report. The east dam is in very good condition and is very well maintained. There were no changes to the geometry of the downstream face of the dam

pond or other indications of structural weakness. Slopes have no indication of deformation or other indicators of instability.

Instrumentation [§ 257.83(b)(2)(ii)]

Pond 7 is equipped with a staff gauge near the pH building. This gauge is in good condition.

Structural Weakness [§ 257.83(b)(2)(vi)]

No indication was found of an actual or potential structural weakness of the CCR unit or any existing condition that was disrupting or had the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.

Other Changes [§ 257.83(b)(2)(vii)]

No changes were found to the CCR unit which could affect the stability or operation of the impounding structure since the previous annual inspection.

Visual Inspection of Hydraulic Structures [§ 257.83(b)(1)(iii)]

The hydraulic structures for this pond consist of a concrete flume with adjustable underflow/overflow gates to control exit flow. This flume directs water through the pH building and is then carried to Pond 7A through a four-foot diameter corrugated metal pipe. The concrete and gates are in good conditions showing no signs of deterioration. The corrugated metal pipe was inspected earlier in the year by Consulting Services Incorporated using a robotic video camera and was determined to be in good condition.

This pond also has an emergency overflow structure which discharges into the Pond 7A outlet structure. The outlet structure is a metal riser with a underflow baffle. The baffle is showing indications of corrosion but is still in serviceable condition.

Water and Material Depths and Volumes

[§ 257.83(b)(2)(iii), § 257.83(b)(2)(iv), § 257.83(b)(2)(v)]

Physical Parameters of Impoundment		
Depth of water[1]	6	Feet
Min. depth of water[1]	4.5	Feet
Max. depth of water[1]	7.5	Feet
Elevation of water	527.50	Feet (review of weekly inspection reports show normal fluctuation of the depth/water level)
Storage Capacity	2,240,000	Cubic Yards ,Crest Full Volume
Volume of water	410,000	Cubic Yards
Volume of CCR	1,750,000	Cubic Yards

[1]to re-excavated bottom of pond

APPENDIX 7.1
Excerpt from:
Operation Maintenance and Inspection Manual Ash Impoundment Dike Stuart Electric Generating Station
By DP&L, Dated October 2012
Pages 1, 2, 4, 5, 8-11, Appendix C

OPERATION MAINTENANCE AND INSPECTION MANUAL

ASH IMPOUNDMENT DIKE

STUART ELECTRIC GENERATING STATION

ODNR FILE No.

POND 3A	POND 5	POND 6	POND 7	POND 10
8535-012	8535-003	8535-013	8535-002	8535-011

SPRIGG TOWNSHIP, ADAMS COUNTY
CLASS 2

OWNER:
DAYTON POWER & LIGHT COMPANY
745 U.S. ROUTE 52
MANCHESTER, OH 45144

(937) 549-2641 TEL
(937) 549-4281 FAX

PREPARED BY:

The Dayton Power & Light Company

Revised
April 8, 2014

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LIST OF APPENDICES

Master document located in:
G:\Central Services\Equipment - System Owners\Ponds-Landfills\Stuart\OM&I Manual Stuart RA.doc

1.0 DESCRIPTION OF FACILITY

1.1 LOCATION

DP&L has 5 impoundments located at the J.M. Stuart Station in Sprigg Township, Adams County, Ohio as shown on Figure 1.1, Location Map and Figure 1.2, Facility Map. The purpose of this manual is to increase the safety of the impoundments by defining the procedures for operating, maintaining and inspecting the dams on a regular basis. The facility's characteristics are shown in Section 1.2's tables. The Operation, Maintenance & Inspection Manual (OM&I Manual) was prepared as required by OAC 1501:21-15-06.

Figure 1.1, Location Map

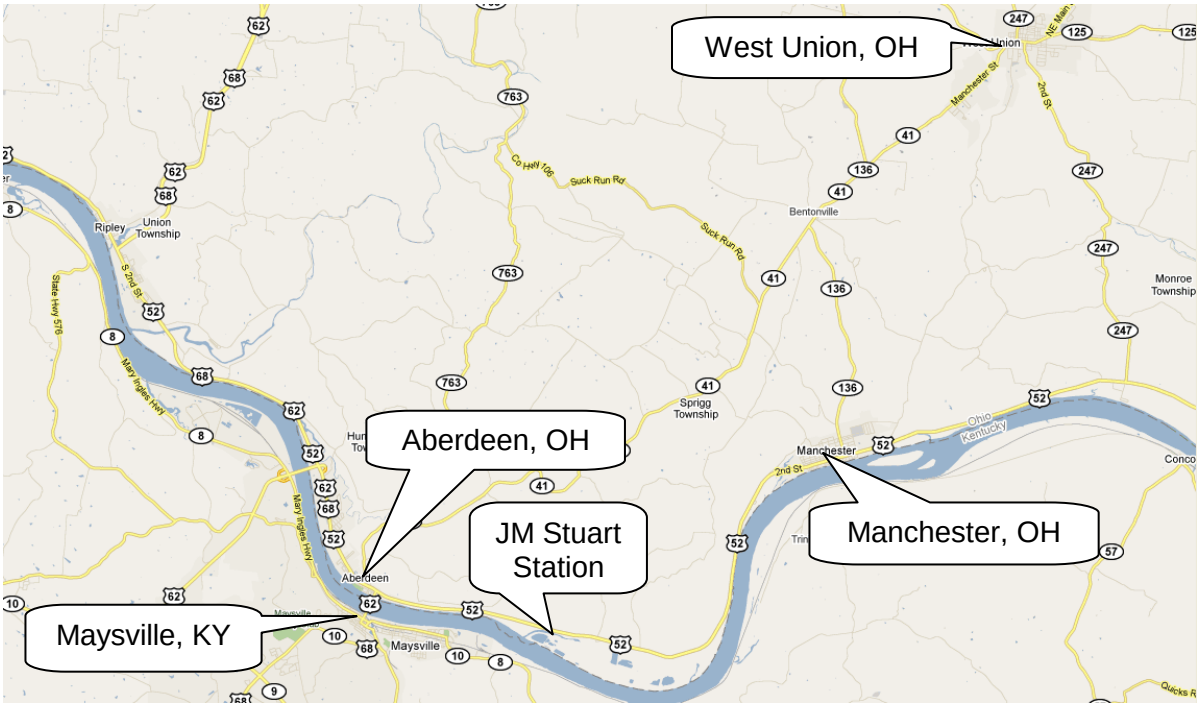
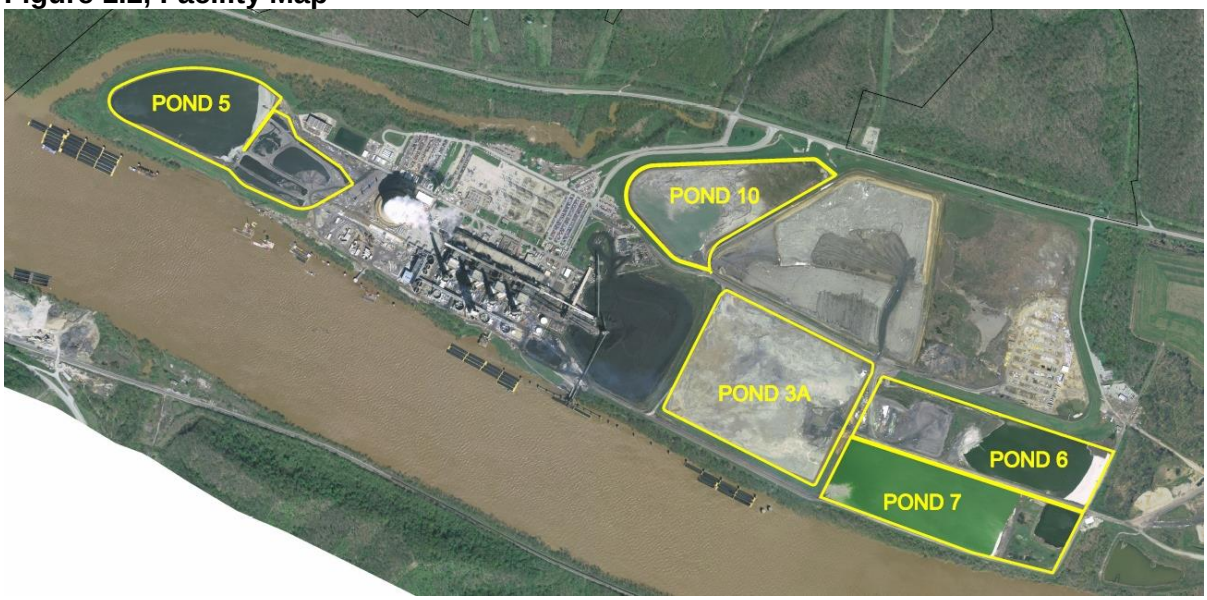


Figure 1.2, Facility Map



1.2 GENERAL ARRANGEMENT

Ponds 3A, 7 and 10 are primary fly ash settling ponds. They receive ash sluiced from the fly ash collection system from the plant. Pond 6 receives water from plant sumps and ash sluice water from the above mentioned ponds. Under normal operation only one of the three ash sluice ponds will discharge water at any given time. Pond 5 is divided into two sections. The east section contains primary settling lagoons for bottom ash and other plant area drainage sumps.

In 2012 a survey of the crest of the ponds was performed. The elevations in this document have been revised to reflect these elevations which are now referenced to the NAVD 1983.

1.2.1 Ash Pond 3A – ODNR File No. 8535-012

Ash pond 3A is an upland reservoir that was constructed in c1978 under ODNR Permit No. 77-97. A portion of this pond is constructed over the previously closed and abandoned Pond 3 which was capped with 2' of cohesive material. In 2010-11 a new liner was installed in the bottom consisting of 2 ft of 10^{-7} clay. The dam is constructed with a solid clay core. This pond is used for settling wet sluiced fly ash produced from the combustion of coal in the station generating units. The pond has an area of 52.7 acres at the crest, is 26 ft deep and has a volume of 1,257 acre-ft (427 million gal.) to the crest. This pond is periodically drained and the settled fly ash excavated which is then sent to a dry ash landfill.

A sand curtain drain was installed along the toe of the south dam to alleviate water in the pond 3 below this structure as indicated in drawing 300-46-1109.

The inlets for this pond are 5 HDPE pipes entering the pond typically in the southwest corner. Sluice lines are moved as the pond fills with solids. The Maximum Operating Level of this pond is 3 ft below the crest. The outlet is a concrete structure with removable stop logs to control the level and facilitate dewatering the pond for cleaning. Effluent is conveyed from this structure to pond 6 through a 30" reinforced concrete pipe.

During the normal excavation process the dam on the east side is breeched to facilitate ash hauling. Repair of the breech at the end of the excavation cycle shall be monitored and by a qualified technician under the supervision of a Professional Engineer.

Table 1.1 – Pond 3A Properties

Item	Description
IDENTIFICATION	
ODNR File Number	8535-012 / 77-97
LOCATION	
State	Ohio
County	Adams
Township	Sprigg
Stream	Ohio River
USGS Quadrangle Map	Maysville east, KY-Ohio
Community Distance from Dam	4 miles, Aberdeen, Ohio / Maysville, KY
DESIGN/CONSTRUCTION INFORMATION	
Original Designer	Bowser Mourner
Date Completed	1978
Contractor	Ucon Construction Co.
Purpose of Dam	Industrial
Type of Impoundment	Up ground
Type of Structure	Earth fill

Type of Impoundment	Up ground reservoir
Type of Structure	Earth fill
Area at Crest	39 acres
Entire Length of Dam	4,260ft
Bottom of Pond [1, 2]	El 498 ft.
Maximum Height	34.0 ft
Top Berm Width	10.0 ft
Top of Dam	El 529.30 ft
Maximum Operating Level (Posted)	523.50 ft
Maximum Operating Level	524.30ft
Freeboard	5.0 ft
Upstream Slope [1, 2]	2.5H:1V
Downstream Slope [1, 2]	2.5H:1V
INLETS	
Bottom Ash	Northeast or northwest settling lagoon
FGD Area Sumps	Southern settling lagoon
Plant area sumps	Center settling lagoon
OUTLETS	
Outlet structure	West end, Latitude = 38° 38' 31.8" N; Longitude = 83° 43' 21.8 W sheet pile structure with a 36: CMP which flows to the wet well in the filter building
Emergency Spillway	The wet well is designed with an overflow weir (elevation 523.82 ft) that bypasses the normal filter process.

1.2.3 Ash Pond 6 – ODNR File No. 8535-013

Pond 6 is a partially incised, upland reservoir that was constructed in 1973 as an ash sluice pond. The pond was partially re-excavated in c1983 to elevation 523.0 (indicated on drawing 300-46-1101 as 6A) and now serves as a collection pond for ash sluicing water from ponds 3A, 7 and 10, coal storage area drainage, and landfill 11 stormwater, contact water and leachate. The original pond has an area of 36.7 acres at the crest, is 31 ft deep(the re-excavated depth is 10.5 ft) and has a volume of 1,390 acre-ft to the crest. 18.6 acres of this pond are permanently filled leaving an operating area of 18.1 acres and volume of 308 acre-ft to the crest. The Maximum Operating Level of this pond is 3 ft below the crest.

The outlet is a concrete structure with adjustable weirs which discharges through the pH treatment building into the 7A portion of pond 7. A stand pipe with a sluice gate is located along the east dam which discharges to NPDES outfall 013. The elevation of this stand pipe is 530.32 ft per the 2013 survey. (Drawing 300-46-1315 sheet 1 indicates that the elevation of this standpipe is 530.50.)

The east dam (the only exposed dam) was rehabilitated and re-graded in 2010. A piezometer was also installed in this dam at that time.

Table 1.3 – Pond 6 Properties

Item	Description
IDENTIFICATION	
ODNR File Number	8535-013
LOCATION	
State	Ohio

County	Adams
Township	Sprigg
Stream	Ohio River
USGS Quadrangle Map	Maysville east, KY-Ohio
Community Distance from Dam	4 miles, Aberdeen, Ohio / Maysville, KY
DESIGN/CONSTRUCTION INFORMATION	
Original Designer	Ebasco Services, Inc, Atlanta, GA
Date Completed	1968
Contractor	
Purpose of Dam	Industrial
Type of Impoundment	Up ground
Type of Structure	Earth fill
Area at Crest	18.1 acres (originally 39.2 acres)
Entire Length of Dam	2,000 ft
Bottom of Pond [1, 2]	490 to 495 original 423 as re-excavated ft.
Maximum Height	16 ft with 44' of compacted bottom ash on the upstream side which now serves as an ash haul road.
Top Berm Width	10.0 ft
Top of Dam	El 532.82 ft
Maximum Operating Level	529.82
Freeboard	3.0 ft
Upstream Slope [1, 2]	2.5H:1V
Downstream Slope [1, 2]	2.75H:1V
INLETS	
Ash sluice water (3A & 10)	Northwest corner
Ash sluice water (7)	South side at Station
WW-7	South side at Station
OUTLETS	
Outlet structure (pH Treatment Building)	Northeast corner. Latitude = 38° 37' 59.0" N; Longitude = 83° 40' 16.8 W Concrete masonry structure flowing into a 48" CMP which discharges to the Ohio River through 7A and NPDES Outfall 013.
Emergency Spillway	Standpipe located on the east end.

1.2.4 Ash Pond 7 – ODNR File No. 8535-002

Ash pond 7 is an upland reservoir that was constructed in 1978. This pond is used for settling wet sluiced fly ash produced from the combustion of coal in the station generating units. This pond is rectangular and incised to the north and to the west. The dam to the south is the north side of pond 7. It has an area of 38.4 acres at the crest, is 39.5 ft deep and has a volume of 42,400,000 cf to the crest. In c1983 a portion of this filled and capped pond was excavated to form Ponds 7 and 7A. Pond 7 is periodically drained and the settled fly ash excavated which is then sent to a dry ash landfill. As originally constructed the normal operating level of this pond was 2 ft below the crest. In 2013 the Outlet of this pond was replaced to provide a Maximum Operating Level of 3 ft. This new outlet is composed to two 36" HDPE pipes incased in concrete with a concrete flume structure at the inlet and concrete headwall at the outlet.

Pond 7A, located in the northeast corner of the original pond 7, was excavated to elevation 515.0. The area of approximately 3 acres at the crest and is 16.5 feet deep from the crest. Pond 7A overflow is a concrete weir with a skimmer. The weir discharges to the Ohio River through a 48" lined, corrugated metal pipe.

2.0 OPERATION

Specific procedures for operation of mechanical equipment are as follows:

Table 2.1		
Frequency (Min.)	**Personnel**	**Maintenance Item**
Continuously	Owner's Representative	Monitor water levels and operation of filter system
		Monitor water levels
Semiannually	Owner's Representative	Exercise pond 6 weir gates to ensure operability.
		Exercise pond 10 sluice gate. Sluice gate shall otherwise be locked in the open position.

3.0 MAINTENANCE

Table 3.1 lists the type and frequency of the maintenance activities to be performed at the dam.

Table 3.1

Frequency (Min.)	Personnel	Maintenance Item
Semi Annually	Owner's Representative	All broadleaf vegetation on the dam shall be sprayed with a broadleaf herbicide or cut and treated to prevent re-growth. This includes trees, shrubs and all other woody plants.
		Lubricate and inspect pond 6 weir gates.
		Lubricate and test operate Pond 10 discharge vlave
As Needed	Owner's Representative	• Repair erosion and re-establish proper vegetative cover. Reseeding of bare or eroded areas should be performed immediately to allow re-vegetation. The seed mixture shall meet the species requirement of ODOT 659.09 class 2 or class 3B. All alternates must be approved by ODNR. • Mow the grass to maintain a height of less than 12". • Make repairs to all structures and elements as required. • All rodent damage shall be repaired immediately by filling the burrows or holes utilizing the mud packing method. (*To backfill a burrow, place a length of metal stove pipe or PVC in a vertical position over the entrance to the burrow and fill with slurry clay and cement. After the burrow is filled, the pipe should be removed and dry earth tamped into the burrow entrance and the vegetation re-established.)* • Maintain a permanent record of all maintenance actions. Maintenance records may be maintained on Form 3 or maintained in an electronic maintenance management system.

3.1 SAFE DRAWDOWN RATE PLAN

The following section includes the method to be used for drawing the impoundment down under emergency conditions. Drawdown should be limited to 12" per week for normal operation and 6" per day for emergencies. Excessive drawdown can cause sloughing or slides of the upstream face of the dam.

For 3A and 10 the level should be lowered by removing stop logs to maintain the safe drawdown rate. Once the bottom of the outlet structure is reached, portable pumps shall be used to lower the level further. The water level in pond 7 must be lowered with portable pumps. Ponds 5 and 6 are critical to plant operation and cannot be lowered beyond the normal operating range without shutting the plant down. If an emergency necessitates that this be done the ponds will have to be drained with portable pumps. When possible pumps used for drawdown should be discharged into other ponds or the pond normal outfall.

4.0 INSPECTION

DP&L shall perform three types of inspections. Two periodic inspections include monthly and biannual. The third type is monitoring as needed during and after heavy rainfall events. Table 3.1 lists the type and frequency of the inspection activities to be performed at the dam. Inspection forms are included under Appendix A. DP&L's operations representative or operations contractor may complete the monthly inspections. The biannual (every 6 months) inspections should be completed by a person qualified Dam Safety and may be performed

by DP&L personnel or a Registered Professional Engineer. Inspections shall be documented on the forms provided with this manual.

Table 4.1

Frequency	Personnel	Inspection Item	Form No. or Reference
As Needed (After heavy rainfall event such as 2" in a 24 hour period)	Owner's Representative (Operations Shift Supervisor)	Monitor the rainfall at NOAA, National Weather Service or KYmesonet weather station in Mason County,	Form No. 1 www.nws.noaa.gov www.kymesonet.org
		Flow though overflow pipe	
		Water level of the impoundment	
Monthly *(Visual Observation)*	Owner's Representative (Plant Operations)	Seepage and/or wet areas	Form No. 2
		Flow through spillway or outlet pipe	
		Water level of the impoundment	
		Slides and cracks	
		Rodent activity along the waterline	
		Vandalism	
Biannually *(Visual Observation)*	Owner's Representative or consultant PE or other qualification. (Central Services)	Slope protection	Form No. 2
		Condition of earthen dam	
		Outfall discharge to plunge pool area	
		Condition of vertical riser and culvert *(visual)*	
		Pond drain and valve *(operational)*	
		Review dam maintenance records	
Periodic 5 years *(Visual Observation)*	ODNR/Division of Soil & Water Resources/Dam Safety Engineering Program	Engineer's Safety Inspection Checklist	Form provided by ODNR

5.0 RESPONSIBILITIES

Plant Manager

The Plant Manager is responsible for implementation of this manual. The Plant Manager or designee shall also be responsible for the annual review and revision of this manual.

Plant Commodities Manager

The Plant Commodities Manager or designee is responsible for the maintenance of the facility and record keeping of all maintenance activities.

Material Handling Shift Supervisor

The Shift Supervisors are responsible for the routine monthly inspections included those after a significant rainfall and monthly and adherence to operational practices. Supervisors are also responsible for periodic operation of drain valves. The shift supervisor may designate others to perform these suties

Central Services Engineer

The Central Services Engineer is responsible for conducting the semi-annual inspections and coordinating with ODNR for compliance of deficiencies and 5-year inspections.

6.0 APPENDICIES

APPENDIX A

Reference Drawings used in this manual.

APPENDIX B

Future Arrangement Drawings

APPENDIX C

Inspection forms.

APPENDIX C

INSPECTION FORMS

FORM 1

RAINFALL MONITORING

This form should record all inspections triggered by significant rainfall events (greater than 2” in a 24 hour period) in the area. The National Weather Service (NOAA) web site is useful for monitoring these events. Note any significant decrease of freeboard or obstructions to flow in the outlet structures.

POST RAINFALL EVENT MONITORING FORM				
DATE (M/D/Y)	PERSONNEL NAME	RAINFALL (in)	ESTIMATED FREEBOARD (ft)	COMMENTS

FORM 2

Stuart Station Pond _____
Dam Inspection Report
ODNR File No. _____

MONTHLY/SEMIANNUAL INSPECTION FORM

Where appropriate, indicate conditions below as "**none**" or "**acceptable**" if no further action is required. Check "**repair**", "**monitor**", or "**investigate**" if further action is required. Obvious problems will require repair. Monitoring will be recommended if there is potential for a problem to occur in the future. Investigation is necessary if the reason that the problem is occurring is not obvious. More than one box may be checked if necessary. The locations of any observed conditions can be noted on photographs.

CONDITIONS AT THE TIME OF INSPECTION			
DATE		INSPECTED BY:	

AREA	ITEM	OBSERVATIONS	ACTION		
			REPAIR	MONITOR	INVESTIGATE
DAM EMBANKMENT					
BOTTOM ASH UPSTREAM SLOPE	VEGETATION/TREES/ BRUSH				
	RODENT BURROWS				
	RIPRAP				
	BREACHING/SLIDES/ CRACKS				
	UNDERMINING/ EROSION				
	OTHER				
FLY ASH UPSTREAM SLOPE	VEGETATION/TREES/ BRUSH				
	RODENT BURROWS				
	RIPRAP				
	BREACHING/SLIDES/ CRACKS				
	UNDERMINING/ EROSION				
	OTHER				
CREST	RUTS/EROSION				
	CRACKS/ SETTLEMENT				
	OTHER				

DOWNSTREAM SLOPE	VEGETATION/TREES/ BRUSH				
	RODENT BURROWS				
	SLOUGHS/SLIDES/ CRACKS				
	SEEPAGE/WETNESS				
	OTHER				
TOE	CRACKS/SLUMPS				
	SEEPAGE/WETNESS				
	OTHER				
INFLUENT/EFFLUENT STRUCTURES					
INLET STRUCTURE	OBSTRUCTIONS				
	DETERIORIATION				
	ACCESS/GRATING				
	OTHER				
OUTLET STRUCTURE	OBSTRUCTIONS				
	DETERIORIATION/ SEEPAGE				
	UNDERMINING				
	ACCESS/GRATING				
	OTHER				

FORM 3

Stuart Station Pond _____ **Dam Maintenance Report** **ODNR File No. _____**		
DAM MAINTENANCE RECORD FORM		
This form may be used to record all maintenance tasks performed including preventative maintenance, corrective maintenance and emergency maintenance.		
DATE	WORK ORDER NO.	ACTION

Alternate spreadsheet used in lieu of this form. A mowing log is kept separately.

APPENDIX 7.2
Excerpt from:
Assessment of Dam Safety Coal Combustion Surface Impoundment (Task 3) Final Report
By CHA, Dated 26 March 2010
Pages 106-110

above approximately 1 to 12 feet of fine grained, generally cohesive alluvial deposits comprising medium stiff to hard clay, silty clay and silt. Granular alluvial deposits comprising silty and clayey sand to poorly graded and well graded sand with gravel at lower elevations was evident below the cohesive soils. This granular deposit was divided into an upper and lower zone. Very loose to medium dense conditions were apparent in the upper zone noted to between 9 and 25 feet below grade, and loose to very dense conditions in the deeper, cleaner sand with gravel noted to more than 100 feet below grade. Under seismic load conditions, the very loose to loose sand and silty sand soils in evident in the upper zone closest to the dike foundation may be susceptible to liquefaction behavior during which they lose shear strength and flow like a viscous liquid. Additional discussion regarding liquefaction appears in Section 4 of this report.

A generalized cross section of Pond 10 and its associated dikes (Figure 13C) indicates that the dikes are founded above the cohesive alluvium and the basin bottom is in the upper granular alluvium comprising silty to clayey sand. Available specifications indicate that the dike foundation was to be "stripped to the depths required to remove vegetative matter, roots, and other perishable, loose, or objectionable material". This directive would likely address the topsoil and miscellaneous fill materials encountered in the surficial zone in the foundation area. Furthermore, the foundation soils were to be proof rolled to delineate soft or yielding subgrade. Any poor subgrade conditions exposed in the field was to be excavated and replaced with the appropriate compacted material for the foundation location.

3.5 Operations & Maintenance

DP&L provided CHA with a copy of the Operations, Maintenance, and Inspection Manual (OMI) and a copy of the Emergency Action Plan (EAP), both dated May 15, 2000. A copy of Addendum No.1 to the OMI dated December 20. 2001 was also included with the DP&L submittal. These items address Pond 10, the most recent impoundment commissioned at the site. Tasks required under the OMI are supposed to be performed by J.M. Stuart plant personnel and address the following:

- Operation of Reservoir – Discharge fly ash/water slurry into the pond at a location away from the outlet structure and allow ash to settle/decant. Add stop logs as ash levels rise to prevent ash flow through outlet structure.
    - Initial filling of Ash Pond 10
    - Installation of stop logs

- Dike Inspections – Outlines field inspection schedule and highlights critical items.
    - Inspection procedures and general inspection recommendations
    - Featured inspection items – Addendum No.1 adds discharge pipe, sand toe drain, and abutment areas with Pond 8W (now Landfill 11) dike to list
    - Repair Order/Work Performed Items

- Maintenance Items – Identifies appurtenant structures needed for effective operation and important dam safety concepts. A Dike Inspection Checklist along with a dike inspection plan and site operation schematic are included as a part of this OMI.
    - Concrete/Steel Structures and associated mechanisms
    - Skimmer, Walkway, and Safety Barriers
    - Crest and Access Roads
    - Vegetation and Rodent Control
    - Debris/Obstructions in Outlet Structure
    - Erosion
    - Seepage
    - Cracks/slides/slumps and gross deformations

- Emergency Procedures – Emergent or critical problems beyond routine maintenance. Separates them into two categories
    - Non-Failure or Potential Failure
    - Imminent or Failure has Occurred

Based upon conversations during our site visit, we understand that Plant personnel make visual observations on a daily basis during the course of their work on-site. However, a formal documented inspection procedure is not in place.

The Emergency Action Plan (EAP) for Pond 10 includes the following items:

- Communication Flow Charts for the type of emergency situation.
  - Non-Failure/Potential Failure – Flow Chart II
  - Failure Imminent/Failure Occurred – Flow Chart III
  - Flow Chart I is a general communication flow chart.

- Emergency Criteria to establish the level of deficiency and determine if a company or public notification is warranted.
  - Minor, Non-Emergency – Typically a maintenance issue
  - Serious Deficiency - Non-Failure/Potential Failure, requires immediate repair and company alert
  - Emergent Deficiency – Failure Imminent/Failure Occurred, requires public alert

- Personnel Responsibilities – Delegates specific responsibilities during an emergency situation
  - Notification Responsibility – critical communication with required personnel and agencies.
  - Evacuation Responsibility –if US 52 is threatened
  - Security, Follow-up, and Duration Responsibility
  - EAP Coordinator – EAP revision, training, etc.

In addition to the items listed above, the EAP for Pond 10 also included an inundation map showing the extent of an ash flow from the pond should a breach occur, site specific concerns associated with U.S. 52, and the EAP approval from the Adams County Emergency Action Agency.

3.6 Inspections

3.6.1 State Inspections

Ohio Revised Code Section 1521.062 states that the owners of dams must monitor, maintain, and operate their dams safely. The owner is to maintain a safe structure and appurtenances through inspection, maintenance, and operation. For Engineering Repairs and Investigations, the dam owner must retain the services of a professional engineer to address the plans, specification, investigative reports, and other supporting documentation. The owner is required to complete the items within five (5) years. Owner repairs may be performed by the dam owner or by a hired contractor.

Representatives of the ODNR Dam Safety Program inspected Ash Pond 10 structures on June 12, 2008 and their observations were summarized in a Dam Safety Inspection Report. The report included required remedial measures based on observation made during the inspection, calculations performed, and requirements of the Ohio Administrative Code. The Dam Safety Inspection Report identified the following required remedial measures:

- Remove trees growing in the rip-rap at the toe of the northeast embankment.
- Establish a regular mowing routine to permit inspection of the upstream slope.
- Keep detailed records of quarterly inspections by site personnel using the checklists included in the Operations, Maintenance, & Inspection Manual.

Representatives of the ODNR Dam Safety Program accompanied CHA and site representatives during CHA's site assessment on October 27, 2009 and October 28, 2009. Subsequently, ODNR issued a letter to DP&L on November 5, 2009 indicating that a Professional Engineer must be engaged to investigate observed seepage and corresponding stability of the dike at Ash Pond 5. ODNR indicated that the investigation must be completed within six months of the date of their letter.

3.6.2 Inspections by Engineering Consultants

DP&L's letter to the USEPA responding to the request for information indicates that Civil & Environmental Consultants performed an assessment of Ash Ponds 3A, 5, 6, 7, 7A, and 10 in 2009 and that no significant issues were identified at the time of the inspection. CHA has not been provided with a copy of the inspection report.