DAM & DIKE INSPECTION REPORT

Bottom Ash Complex
Stingy Run Fly Ash Dam

GAVIN PLANT
CHESHIRE, OHIO

INSPECTION DATE October 25, 2016

PREPARED BY _____ **DATE** 11-18-2016
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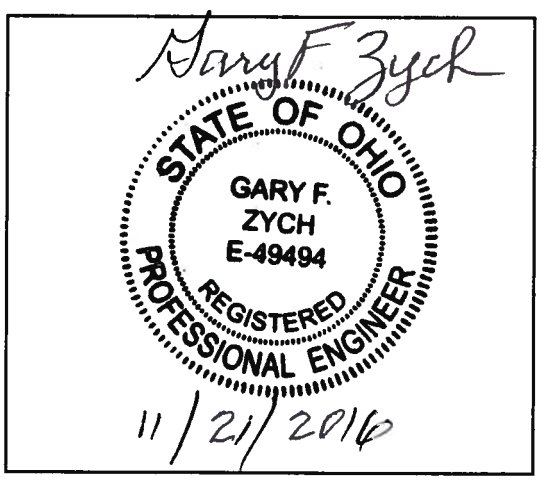

PROFESSIONAL ENGINEER
SEAL & SIGNATURE

2016 DAM AND DIKE INSPECTION REPORT

Bottom Ash Complex and Stingy Run Fly Ash Dam

GERS-16-151

GAVIN PLANT
CHESHIRE, OHIO

PREPARED BY
GEOTECHNICAL ENGINEERING
AEP SERVICE CORPORATION
1 RIVERSIDE PLAZA
COLUMBUS, OHIO

2016 ANNUAL DIKE AND DAM INSPECTION REPORT
Bottom Ash Complex and Stingy Run Fly Ash Dam
Gen. James M. Gavin Plant
Cheshire, OH

November 16, 2016

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1.0 INTRODUCTION

The Annual Dike and Dam Inspection Report has been prepared by AEP-Civil Engineering in part to fulfill the requirements of the Ohio Department of Natural Resources (ODNR), Division of Water, Dam Inspection Section and also to comply with the requirements of the April 17, 2015 published United States Environmental Protection Agency (USEPA) rule 40 CFR Part 257, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities (CCR rules). This inspection report includes two facilities as follows illustrated in Figures 1 and 2: (i) Bottom Ash Complex, and (ii) Stingy Run Fly Ash Dam. The report presents the inspection findings, photographic description, instrumentation data, conclusions, and recommendations.

Mr. Douglas E. Workman, landfill supervisor at the Gavin Plant, was the facility contact and facilitated the inspection activities. The inspection was performed by Mr. Shah Baig, P.E. on October 25, 2016. Weather conditions were generally good with clear skies, light wind, visibility fair, and temperatures ranging in the 43-65 degrees Fahrenheit. In the last 7 days the recorded precipitation was about 0.13 inch.

2.0 SUMMARY OF VISUAL INSPECTION TERMS

The terms used for visual observations to describe the general appearance or condition of an observed item, activity, or structure are listed and defined as follows.

Good A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.

Fair/Satisfactory A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.

Poor A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.

Minor A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.

Significant A reference to an observed item (e.g. erosion, seepage, vegetation, cracks, concrete surface etc.) where the current maintenance program has neglected to improve the condition. Usually, conditions that have been identified in previous inspections, but have not been corrected.

Excessive A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse that what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure safety or stability point of view.

3.0 BOTTOM ASH COMPLEX

The bottom ash complex consists of the main bottom ash pond and an interior reclaim water pond as shown in Figure 1. Results of the visual inspection are summarized below.

3.1 West Dike Section (Figure 3)

(i) The crest of the dike appeared in good condition as indicated in Photograph No. 1. No misalignment, settlement, or excessive rutting was noticed. The typical view of the upstream slope is shown in Photograph No. 2. Overall, the upstream slope appeared in good and stable condition with controlled vegetation. The bottom section of the slope was repaired due to minor erosion by placing riprap (Photograph No. 2).

(ii) View of the downstream slope is illustrated in Photographs No. 3 and 4. Also shown is the service road to the west of the dike in these photographs. In general the entire slope appeared in good and stable condition with well-maintained and controlled vegetation growth. The service road and drainage ditch along the toe of the downstream slope were in good condition, positive grade, and clear from weeds and bushes.

(iii) The pipe culvert at the end of the ditch to the south is illustrated in Photographs No. 5 and 6. The pipe culvert indicated some standing water but flow was still exiting the ditch through the culvert indicating positive drainage. The inlet and outlet end of the pipe was covered with vegetation.

(iv) The southwest corner adjacent to the downstream slope is illustrated in Photograph No. 7. The water from the toe ditch exit the property via pipe culvert illustrated in Photograph 7. The pipe indicated positive drainage but was covered with vegetation and some standing water.

3.2 South Dike Section (Figures 4A and 4B)

(i) An overall view of the downstream slopes of the south dike is illustrated in Photographs No. 8 and 9. Overall the vegetation cover on the slopes was well maintained and in good condition. The toe ditch along the chain link fence appeared clear, dry with positive flow.

(ii) Photograph No. 10 shows an area where the underground culvert is located and collects the surface runoff and drains to the ditch on the other side of the property boundary. A chain link fence is located where the underground pipe culvert is present. The fence is the boundary line between the Gavin and Kyger Creek plants. The function of the culvert is to discharge surface runoff from this area at the toe of the dike (Gavin plant) to the ditch on the other side of the property

boundary (Kyger plant). The pipe indicated positive flow and in good functional condition.

(iii) Photographs No. 11 and 12 illustrate the upstream slope of the south dike. A buttress at the toe of the interior slope was placed using bottom ash. Overall the upstream slope appeared in good and stable condition. Erosion gullies previous backfilled and repaired appeared in place and good condition.

3.3 East Dike Section (Figure 5)

(i) Photograph No. 13 illustrate the bottom ash temporary storage and management area and also an overall view of the upstream slope of the east dike. Most of the interior slope was buttressed with stockpiles of bottom ash. This area of the pond is historically used for bottom ash management (excavating and hauling operations). The upstream slope appeared good and in stable condition.

(ii) Photographs No. 14-16 illustrate the three sets of ash pipes and support structures. The pipes and structure appeared to be in good and functional condition.

(iii) Photographs No. 17 and 18 illustrate upper downstream slope, intermediate bench, and the lower section of the downstream slope and State Route 7 located east of the dike. The intermediate bench also used as access road appeared in good condition and no sign of settlement or misalignment was noticed. The toe of the slope appeared dry and no standing water or soft areas were noticed.

(iv) The bottom ash sluice pipes are illustrated in Photograph No. 19. Sluice pipes, pipe support, and alignment appeared in good condition.

3.4 North Dike Section (Figure 6A and 6B)

(i) The upstream slope of the north dike is illustrated in Photographs No. 20 and 21. The slope appeared in good and stable condition. Several discharge pipes are present along this slope. The discharge pipes and support structures were in good functional condition.

(ii) A typical view of the crest of this dike and in general is illustrated in Photograph No. 22. The crest appeared in good and stable condition and no sign of misalignment, settlement or cracks was observed.

(iii) The downstream slope is illustrated in Photographs No. 23-25. Overall, the downstream slope was in good and stable condition. Some minor erosion was noticed along the slope (Photograph No. 24) that appeared to be from leakage of the conveyor along the crest.

3.5 Reclaim Pond (Figure 7)

(i) Overall typical view of the interior slope of the reclaim pond is shown in Photographs No. 26 and 27. The slope appeared in good and stable condition with controlled vegetation. As noted in previous inspections, sloughing and scarping along the interior slope was noticed. This section of the slope is repaired by placing riprap as seen in these photographs.

(ii) The overflow decant structures at the north and south dikes are illustrated in Photographs No. 28 through 30. These structures including visible concrete, metal steps, railing, and deck platform appeared in good and functional condition.

(iii) The decant structure near the toe of the downstream slope is illustrated in Photographs No. 31 and 32. No leak or settlement around the structure was noticed. Some minor erosion was noticed around the structure. The plant

was notified and repair will be performed by backfilling and compacting the eroded area with stone.

4.0 STINGY RUN FLY ASH DAM (Figure 8A and 8B)

At present, the flyash reservoir water level has being lowered for the closure project. The reservoir closure project activities were started in March 2015. The water level in the pond has been lowered to approximately 663 feet and maintained consistently around this level.

(i) Photograph No. 33 illustrates the hillside and right (south) abutment. The hillside is excavated to about the elevation of the crest for the construction of the landfill. The abutment and remaining hillside appeared in good and stable condition. Photograph No. 34 illustrate the north berm for the landfill at the groin of the downstream slope.

(ii) The entire upstream slope was protected by riprap cover placed over a geotextile fabric. The riprap is mostly removed and used in the construction of the new landfill. The upstream slope appeared in fair and stable condition (Photographs No. 35 and 37). Along upstream edge of the crest the erosion gullies were formed due to construction activities. A typical view of the erosion gully is shown in Photograph No. 36.

(iii) The north (left) abutment is illustrated in Photograph No. 38. The hillside and abutment appeared in good and stable condition.

(iv) Photographs No. 39-41 illustrate the overflow discharge and supporting structures. A new access deck structure from the dam was installed. The stop logs from the overflow structure have been removed and syphons are installed for lowering water level (Photograph No. 41). The overflow structure and the supporting structure are in stable condition.

(v) The left and right groins of the downstream slope are illustrated in Photographs No. 42-45. Temporary access road is installed at the groins for landfill related construction activities. Overall, the downstream slope along the groins appeared good and in stable condition with controlled vegetation and intact riprap.

(vi) Overall view of the downstream slope is illustrated in Photograph No. 46. The intermediate bench, lower section of the downstream slope with riprap is illustrated in Photographs No. 47 and 48. A new gravel base is placed at the intermediate bench to be used for access road. The downstream slope appeared in good and stable condition with well controlled vegetation.

(vii) The toe ditch (Photograph No. 49) is functioning with positive drainage but need clearing of vegetation growth on a regular basis. A stockpile of soil is temporarily stored to the east side of the ditch and appeared to be in place. V-notched weirs (VW-1, VW-2, and VW-3) are located in the toe ditch. Photographs No. 50-52 illustrate weirs VW-1, VW-2, and VW-3 located on the north at the downstream end of the ditch. All the weirs indicated negligible amount and unobstructed flow condition.

(viii) The channel downstream of the weir was in fair and stable condition and indicated positive flow (Photograph 53). Overgrown vegetation was noticed along the channel but still indicated positive drainage.

(ix) Two pipes culvert is located at the Outfall #001 (Photographs No. 54 and 55). Both the inlet and outlet ends of the pipes are illustrated in these photographs. Typically, one pipe culvert carries majority of the flow and the other pipe culvert is used during high flows. During inspection, both pipes indicated water flowing through them. These pipes connect the open channel and a tributary that lead to the Stingy Creek. The culvert appeared to have enough capacity for the present flow condition and increased flow due to lowering of the reservoir.

5.0 POND COMPLEX CAPACITY AND DEPTH DATA

Based on the previous measurements and estimates and operational variation in the pond system, the capacity and volume estimates for the Flyash, Bottom ash, and Reclaim ponds are provided below.

Pond	Media	Maximum	Minimum	Present
		Depth/Elevation (feet)		
Flyash	Water	3/665.1	2/664	3/665.1
	Solid	60/662.1	5/662	60/662.1
Bottom Ash	Water	15.1/578.3	13.3/576.5	13.4/576.6
	Solid	7.2/563.2		
Reclaim	Water	577.3	574.5	575.5
	Solid	NA		

Notes:

1) The ash thickness in the flyash pond varies approximately between 5-60 feet.
2) The bottom elevation of the Bottom Ash Pond varies between 562-550 ft. The depth and elevation of solids and water is based on an average bottom elevation of 556 ft, surface area 78 acre, and CCR quantity 561 acre-ft.
3) The water elevations are based on 2016 readings.
4) Elevations are provided for the Reclaim pond.

Pond	Capacity (acre-feet)		
	Water	Solid	Total
Fly Ash	1,500	8,400	9,900
Bottom Ash	187	40	227
Reclaim	116	NA	116

6.0 ASSESSMENT OF RECENT INSTRUMENTATION DATA

6.1 Bottom Ash Complex

Three piezometers are installed at the Bottom Ash Pond shown on Figure 9a. Two piezometers (BAP-1 and BAP-2) are present at the downstream on the west and south dikes of the complex. Piezometer BAP-3 is located at the east dike and was apparently damaged in the past. Based on AEP Drawing # 12-3015 and 12-3015A, the top elevation of the dikes is approximately 600 feet. Figure 9b provides the static water elevation at the west and southwest section of the pond between April 2002 and November 2016. In last five years the highest static water elevation reading recorded was about 540 feet. The bottom ash and reclaim ponds water elevations are less than 580 feet during normal operations. At these levels there is available freeboard of greater than 15 feet. The fluctuation in water elevation is considered normal and within historic range.

6.2 Stingy Run Fly Ash Dam

6.2.1 Observation Wells and Piezometers

The present revised monitoring plan includes four observation wells (OB-24, OB-28, OB-29, and OB-31) illustrated in Figure 10a. Recently OB-32 and OB-33 were abandoned and removed for the new landfill project and OB-24 appeared to be dry since 5/2012. All the other observation wells shown in Figure 10a have been discontinued. The locations of the observation wells are shown in Figure 10a. A historical plot of the observation wells water elevation is provided in Figure 10b. In the last 15 years, the static water levels are steady with very minor fluctuation. The historical water elevation data of the fly ash pond is shown in Figure 10b. The original crest elevation of the dam is approximately 735 feet, the south half of the crest was lowered about 4 feet. In 2014, the water elevation in the pond was lowered to approximately 663 feet which provides more than 50 feet of freeboard. At present, the water level in the flyash pond (near the dam) is maintained at approximately 664 (+/-1) feet. Piezometer OB-28 is located at the crest of the dam on the north side and installed to the depth of the bottom ash drain. The static water elevation readings closely match the pond level.

6.2.2 Seepage Measurement Weirs

Three "V" notched weirs designated VW-1, VW-2, and VW-3, are located at the toe of the dam within the 10-foot wide toe ditch. Weir VW-3 is located upstream, followed by VW-2 and VW-1 at the downstream of the ditch. VW-3 is intended to measure seepage flow from the groin drain of the right abutment. VW-2 is intended to measure seepage flow collected from the dam clay core drain and VW-3. VW-1 is intended to measure VW-2 and flow from the left groin drain. Weirs location is illustrated in the Weir Location Map, Figure 11. Available data from field measurements at each weir from April 2001 through November 2016 are presented in Table 1. Since 2010, typically the discharge rates at all the weirs have recorded less than 2 gpm and lately dropped even further to less than 0.5 gpm due to lowering of the reservoir. Some minor fluctuation is observed due to rain events for short duration, but then it goes back to normal discharge rates.

6.2.3 Slope Inclinometer and Deformation Monuments

In addition to the observation well, piezometers, and weirs mentioned above, the Fly Ash Dam consists of Slope Inclinometers and Deformation Monuments. Due to recent construction activities and lowering of the reservoir and partially a section of the dam, a revised instrumentation plan will be developed. There are 15 deformation monuments designated SM-6 through SM-20 installed at toe, lower bench, face, and crest of the dam. The monument locations are included in Figure 12, Deformation Reference Points Location Map. Two slope inclinometers are shown in Figure 13. Two slope inclinometers SI-1 and SI-2 are located on the lower bench at an approximate elevation 660 ft. Resultant horizontal and vertical deformation rate per year shown in the table is calculated until reading of 11/2016 from the initial base reading of 1988. The historical data indicates that the horizontal deformation of the main dam is generally in the east and north direction and the ranges between 0.01 to 0.26 inch/year. The maximum total vertical deformation ranged between 0.44 to 8.5 inches throughout the sections of the dam.

Based on the visual inspection, the Bottom Ash Complex and the Singy Run Flyash Dam are in good condition. Maintenance, inspection, and monitoring activities are being performed. Following are the specific maintenance and/or repair recommendations.

7.0 REVIEW OF CCR OPERATING RECORD DOCUMENTS (257.83(b)(1)(i))

A review of available information regarding the status and condition of the Bottom Ash Pond and the Stingy Run Flyash Dam, which include files available in the operating record, such as design and construction information, previous periodic structural stability assessments, previous 7 day inspection reports, and previous annual inspections has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

8.0 2015 INSPECTION ITEMS

All the repair items including the routing maintenance items mentioned in the 2015 annual inspection such as animal holes, erosion gullies, sloughing, and vegetation control were completed. The plant continues to address any deficiencies noted in the 7-day inspections as soon as possible.

9.0 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Fly ash pond closure construction activities are in progress and will continue until completion of the entire pond (expected by end of year 2020). A section of the dam will be lowered at a later time with the closure of the pond.

Based on the visual inspection, the Bottom Ash Complex and the Stingy Run Fly Ash Dam are in good condition. Maintenance, inspection, and monitoring activities are being performed. Following are the specific maintenance and/or repair recommendations.

RECOMMENDATIONS

Bottom Ash Complex

(i) Clear the areas around the pipe culverts free from excessive vegetation as much as possible.

(ii) If the erosion gullies at the north dike downstream slope degrades further, plan on backfilling and compacting with compatible material.

(iii) Perform backfilling of the area around the decant structure at the downstream slope of the north dike.

Stingy Run Fly Ash Dam

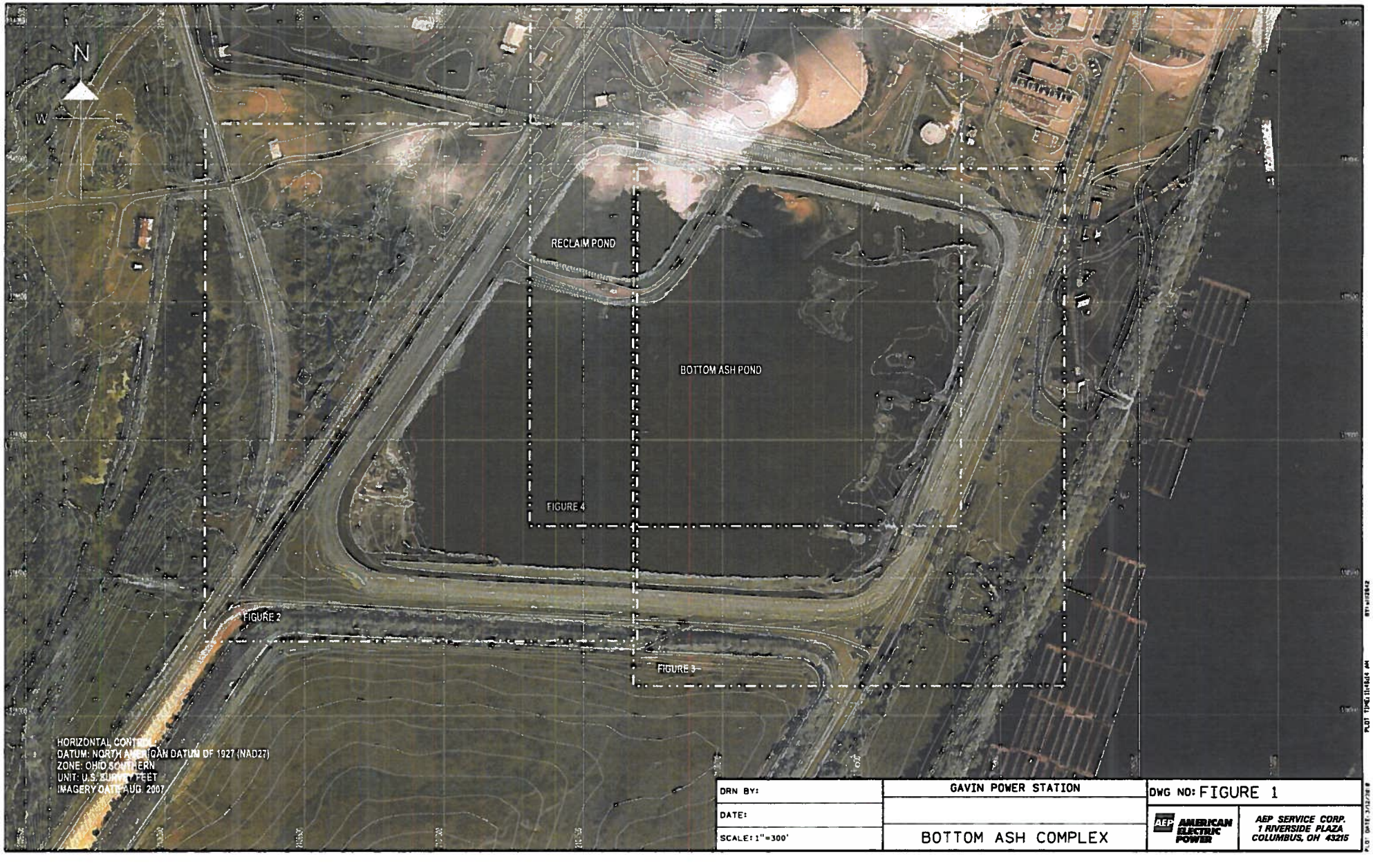
(i) Erosion gullies at the crest shall be repaired on a regular basis before the area is significantly degraded further. Alternately, permanent letdown notches should be formed with riprap in order to drain runoff due to construction activities.

(ii) The channels, toe ditch, and intermediate pipe culverts downstream of the dam shall be kept clear of debris and vegetation with positive flow condition.

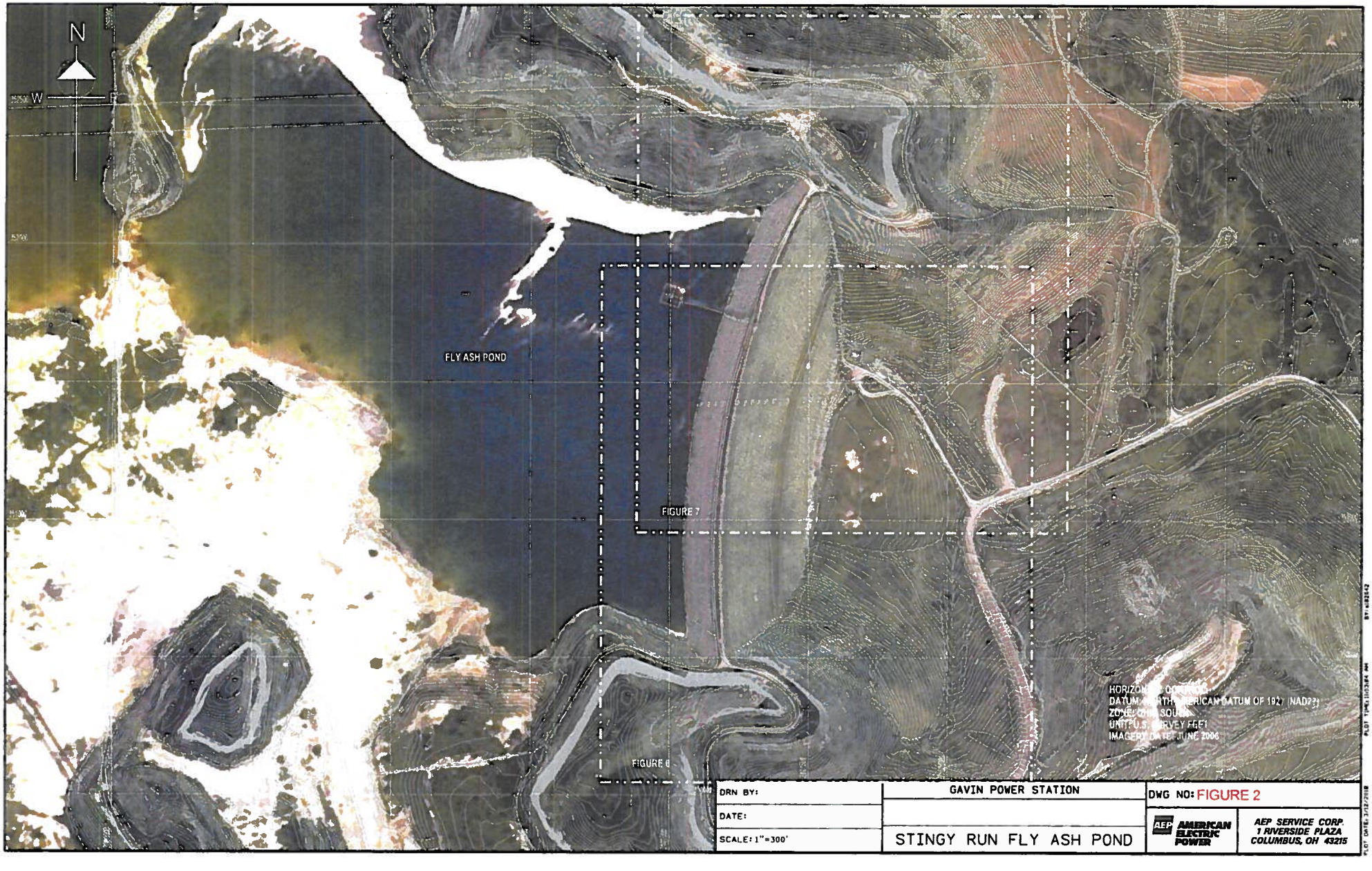
Based on this inspection and review of relevant 7-day and monthly inspection reports, the Bottom Ash Complex and Stingy Run Fly Ash Dam are in good condition considering the construction activities in the vicinity of the dam. Gavin Plant is planning to complete few items recommended in this report quickly during the next mowing or maintenance schedule. Specific conclusions and recommendations for repair, maintenance, monitoring, and safety at those structures are presented above. Inspections, monitoring, and reporting by plant personnel should continue. If you have any questions with regard to this report, please do not hesitate to contact Shah Baig (Ph: 614-716-2241, or Gary Zych (614-716-2917).

APPENDIX A

- Figure 1 - Bottom Ash Complex
- Figure 2 - Stingy Run Fly Ash Dam

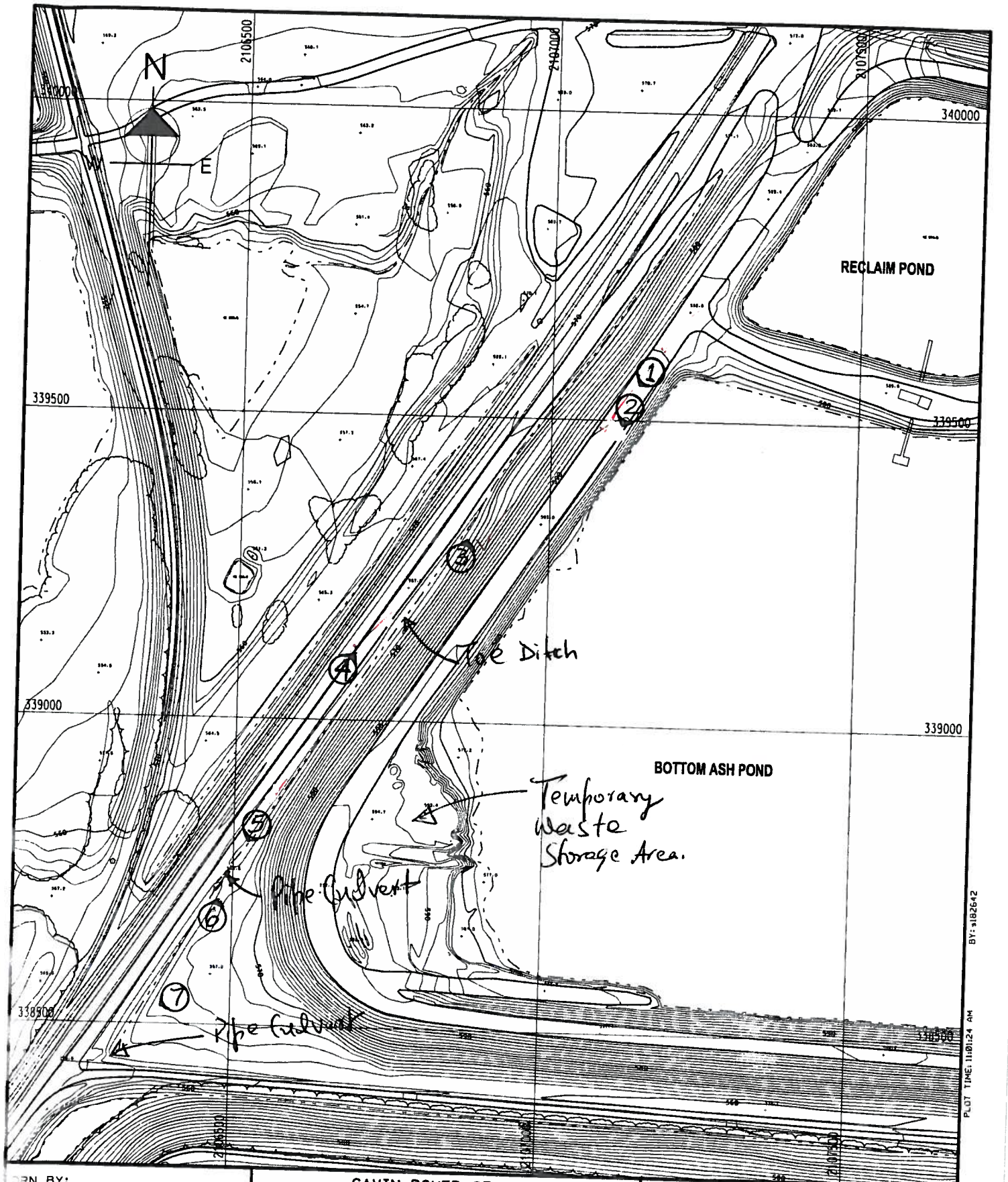


DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 1
DATE:		AEP AMERICAN ELECTRIC POWER — AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=300'	BOTTOM ASH COMPLEX	


N
W
FLY ASH POND
FIGURE 7
FIGURE 6
HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1927 (NAD27)
ZONE: OHIO SOUTH
UNIT: U.S. SURVEY FEET
IMAGERY DATE: JUNE 2006
DRN BY:
DATE:
SCALE: 1"=300'
GAVIN POWER STATION
STINGY RUN FLY ASH POND
DWG NO: FIGURE 2
AEP AMERICAN ELECTRIC POWER
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

APPENDIX B

- Figures 3 - 7 Inspection Maps (Bottom Ash Complex)
- Figure 8 - Inspection Maps (Stingy Run Fly Ash Dam)
- Inspection Photographs



DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 3
DATE:	WEST DIKE	AEP AMERICAN ELECTRIC POWER — AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	BOTTOM ASH COMPLEX	

PLOT DATE: 10/14/2011 PLOT TIME: 11:01:24 AM BY: s182642

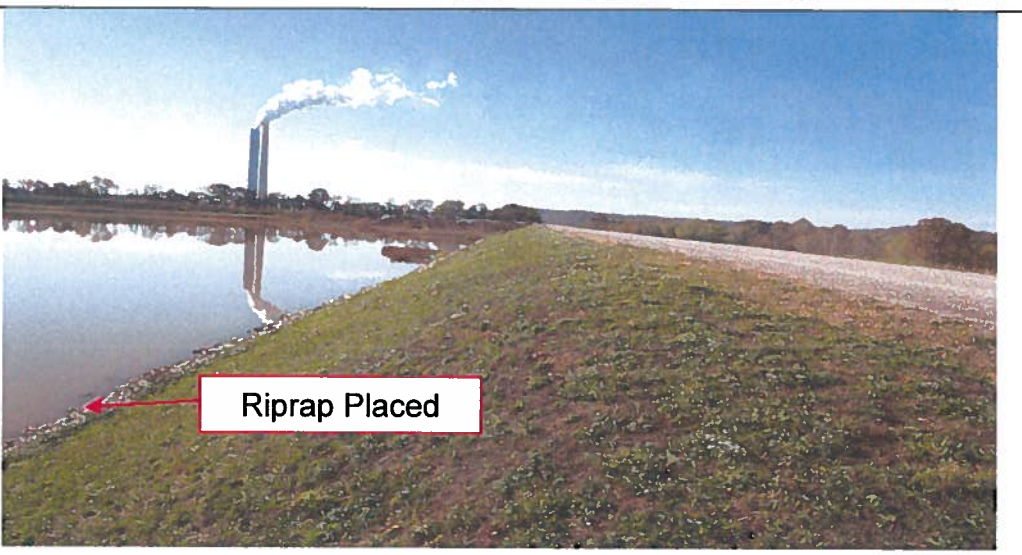
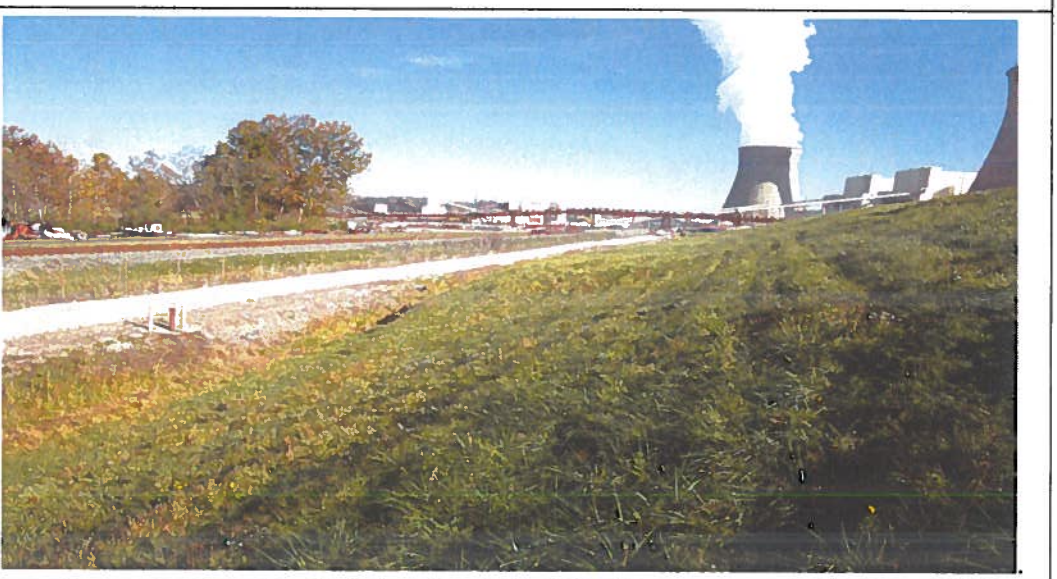
Photo # 1 An overall view of the crest (looking south).	
Photo # 2 Upstream slope of the dike (looking south).	
Photo # 3 The downstream slope of the west dike (north section).	

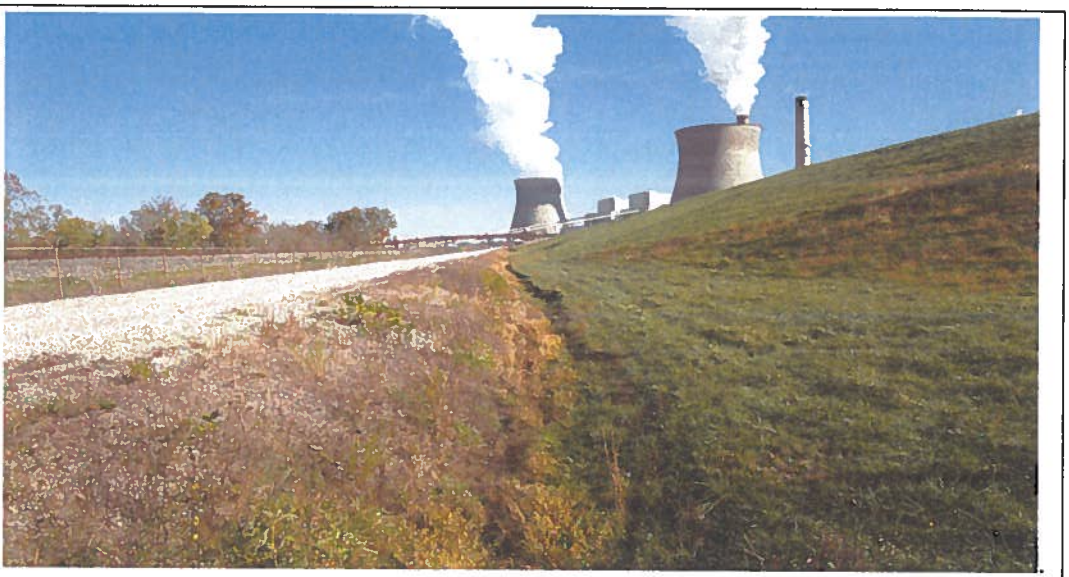
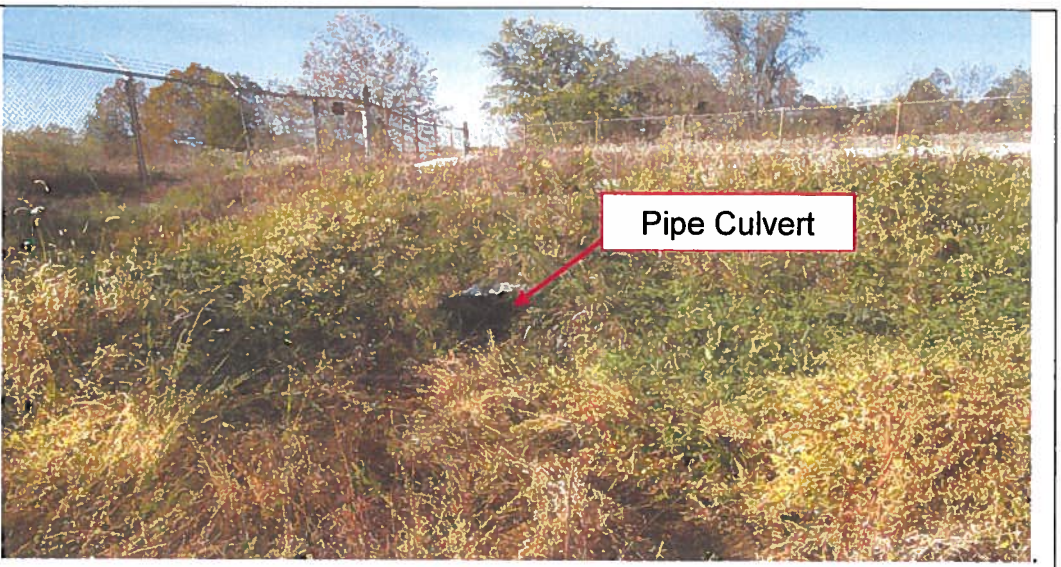
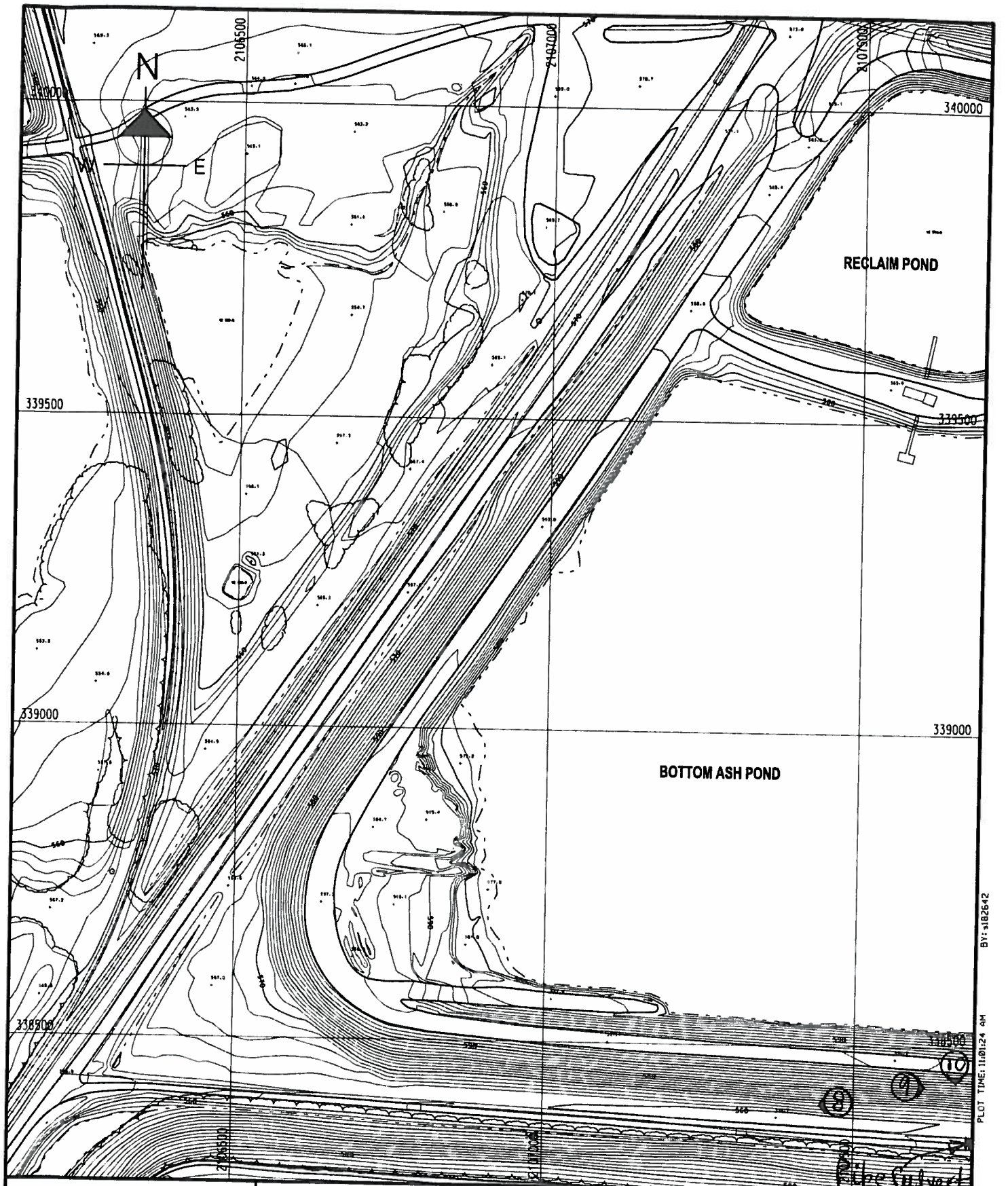
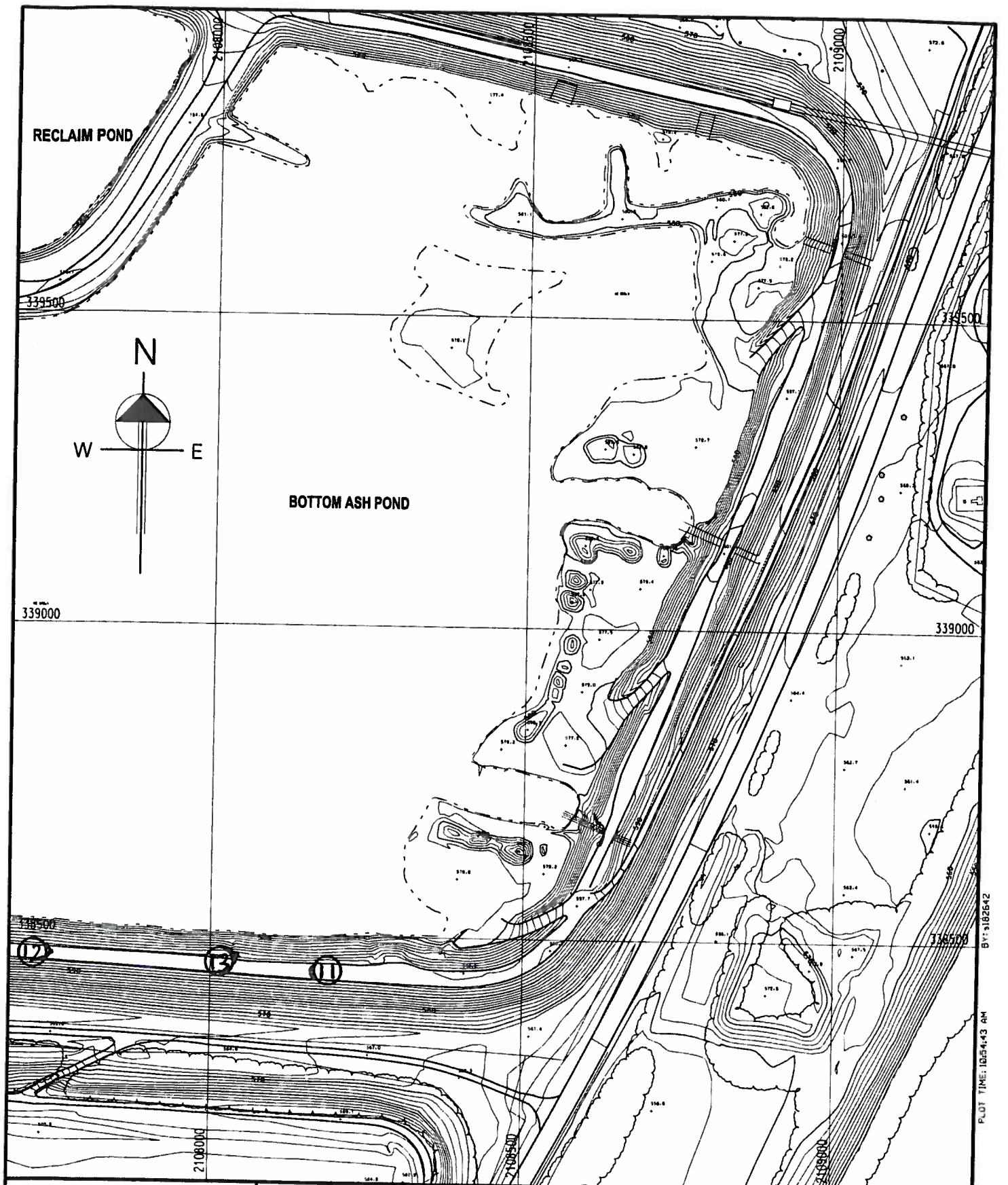
Photo # 4	
The downstream slope of the west dike and toe ditch (south section).	
Photo # 5	
The pipe culvert inlet along the ditch.	
Photo # 6	
The pipe culvert outlet along the ditch.	

Photo # 7	
The pipe culvert at the exit point.	



DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 4A
DATE:	SOUTH DIKE	AEP AMERICAN ELECTRIC POWER
SCALE: 1"=200'	BOTTOM ASH COMPLEX	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215

PLOT DATE: 10/14/2011 PLOT TIME: 11:01:24 AM BY: s182642



DRN BY:	GAVIN POWER STATION	DWG NO: **FIGURE 4B**	
DATE:	**SOUTH DIKE**	AEP AMERICAN ELECTRIC POWER	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	BOTTOM ASH COMPLEX		

PLOT TIME: 10:54:43 AM BY: s182642
PLOT DATE: 10/14/2011

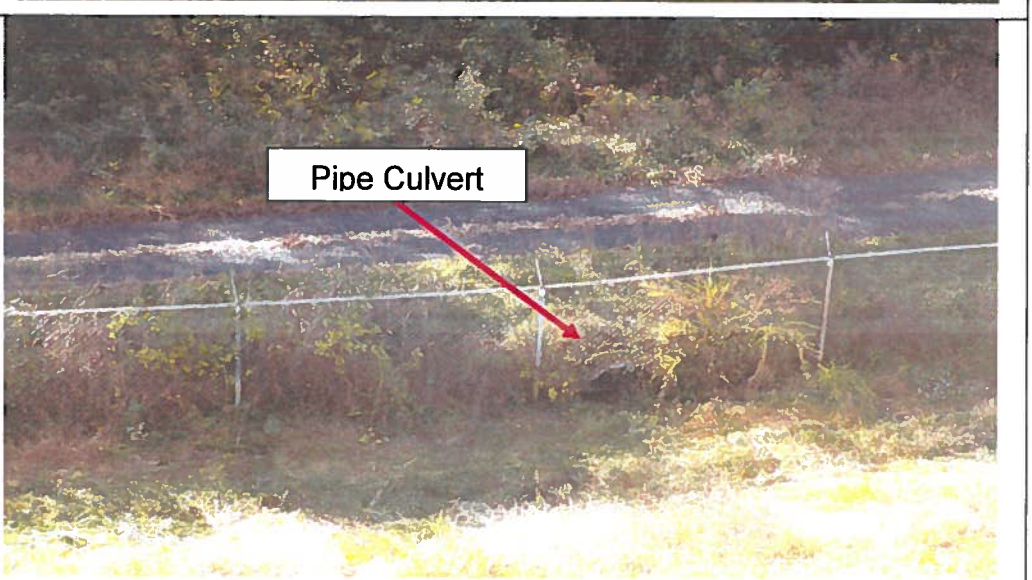
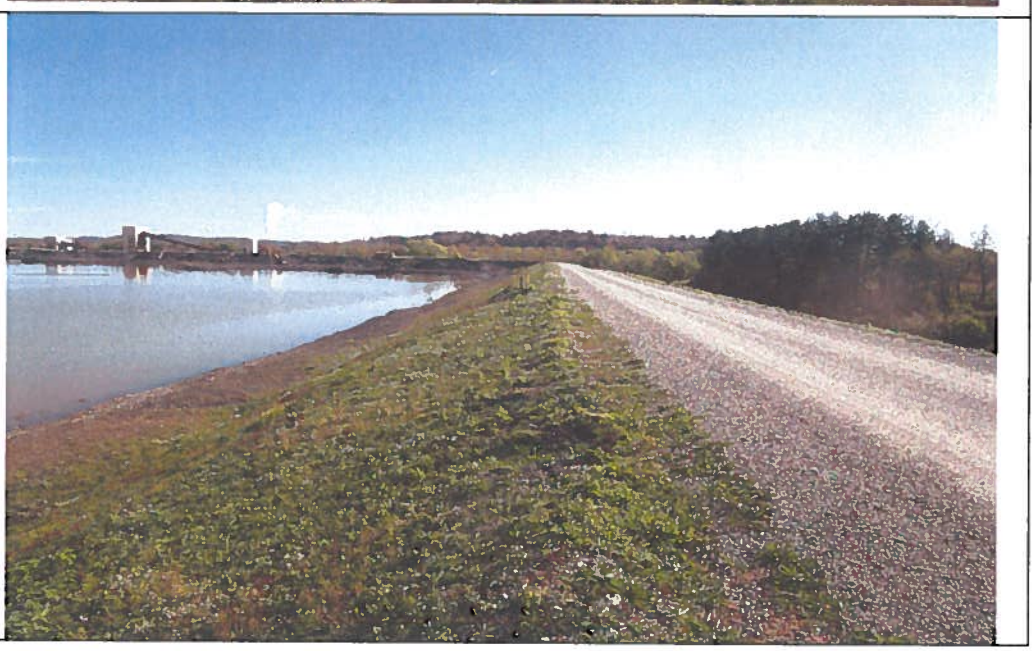
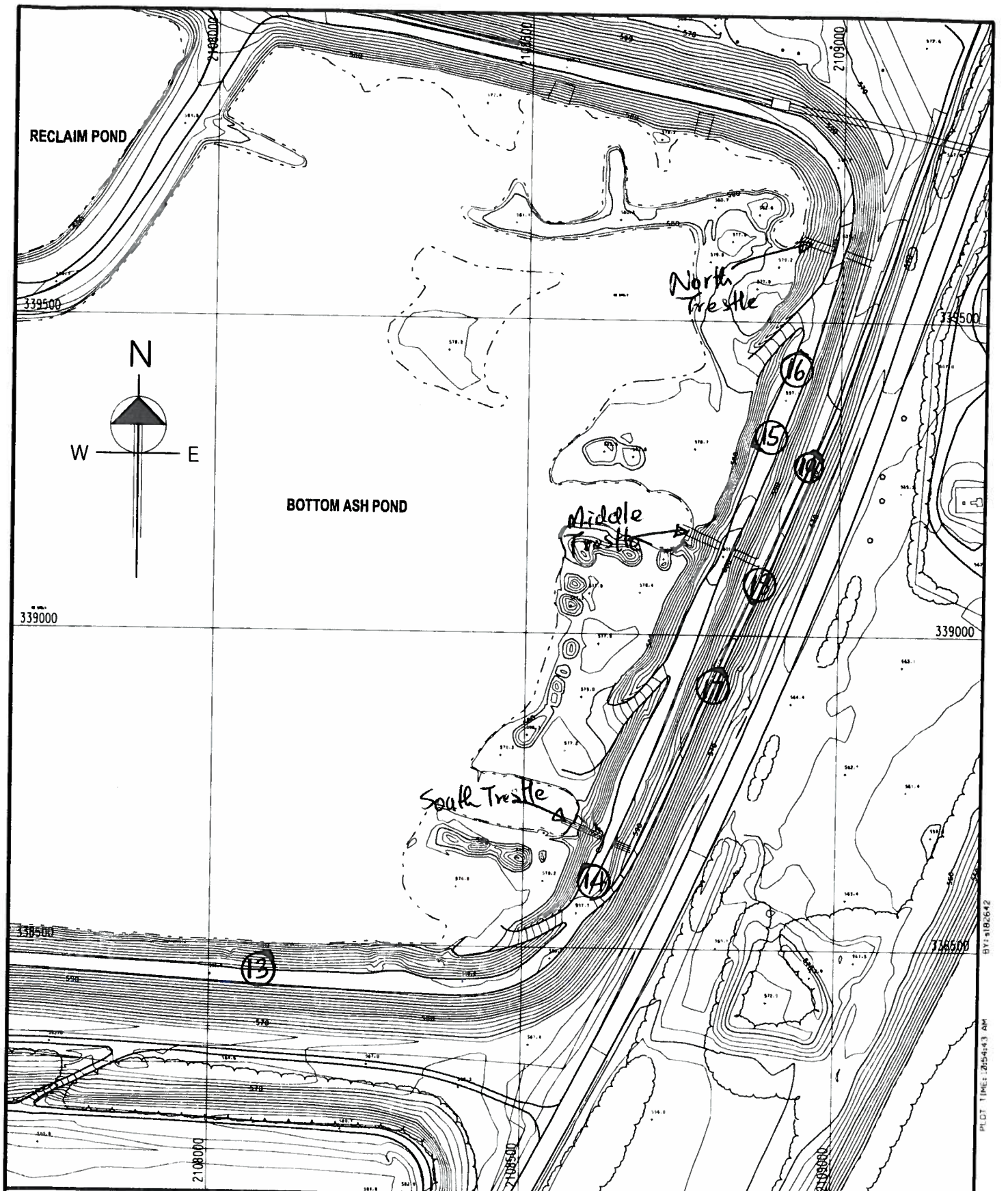
Photo # 8 View of the downstream slope and crest (looking west).	
Photo # 9 Another view of the downstream slope (looking east).	
Photo # 10 The area around the culvert at the toe of the slope in good condition.	

Photo # 11	
Upstream slope and crest of the dike (looking west).	
Photo # 12	
Another view of the upstream slope of the dike (looking east).	



DRN BY:	GAVIN POWER STATION	DWG NO: **FIGURE 5**	
DATE:	**EAST DIKE**	AEP AMERICAN ELECTRIC POWER	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	BOTTOM ASH COMPLEX		

PLOT TIME: 2:54:43 AM BY: s182642

PLOT DATE: 10/14/2011

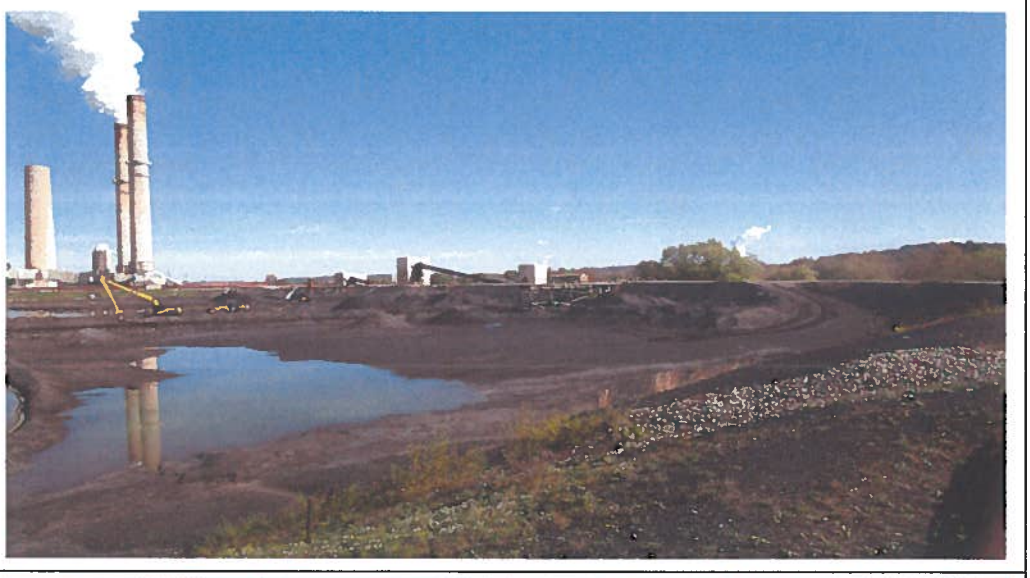
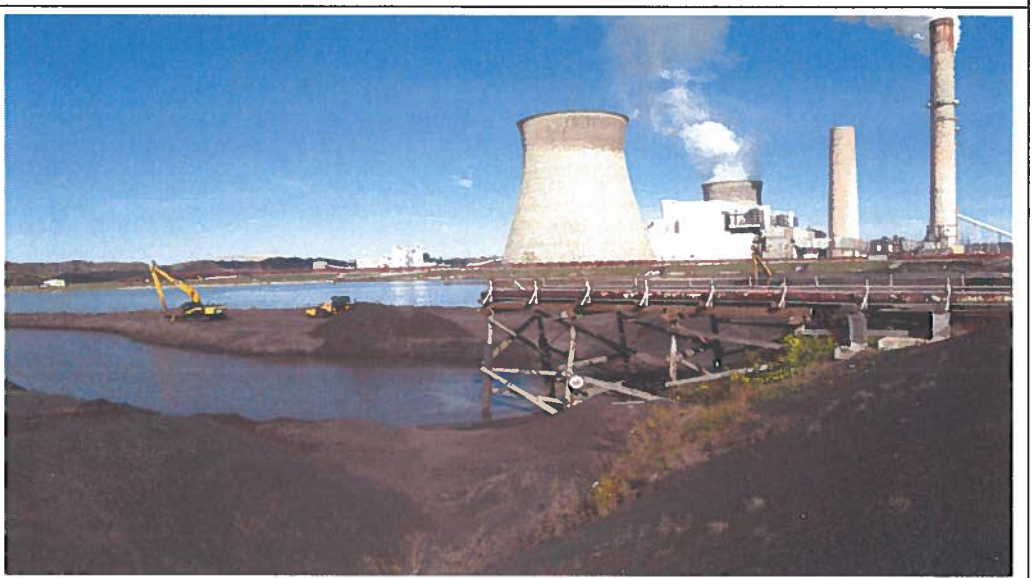
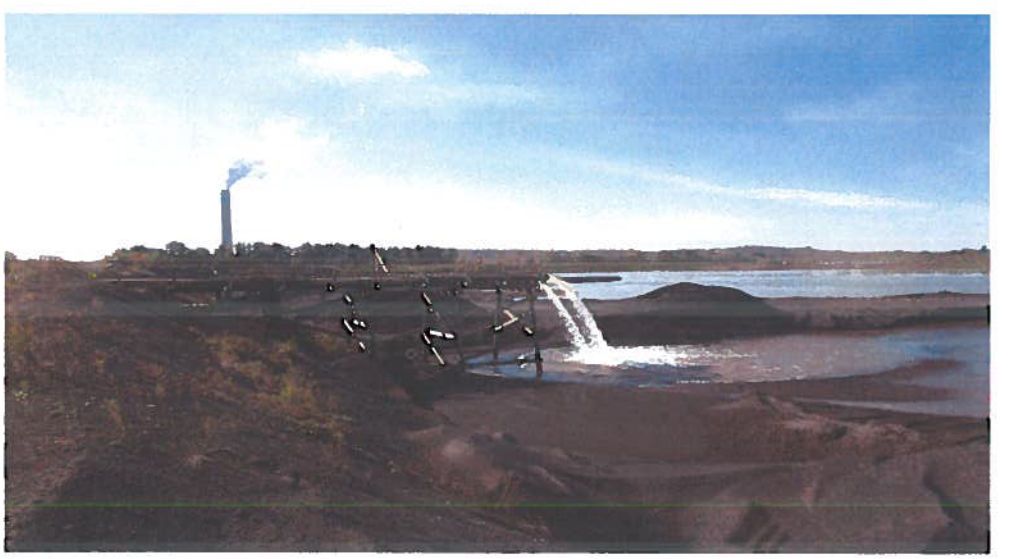
Photo # 13	
Bottom ash management area.	
Photo # 14	
Ash sluice pipes and support structure (south).	
Photo # 15	
Ash sluice pipes and support structure (middle).	

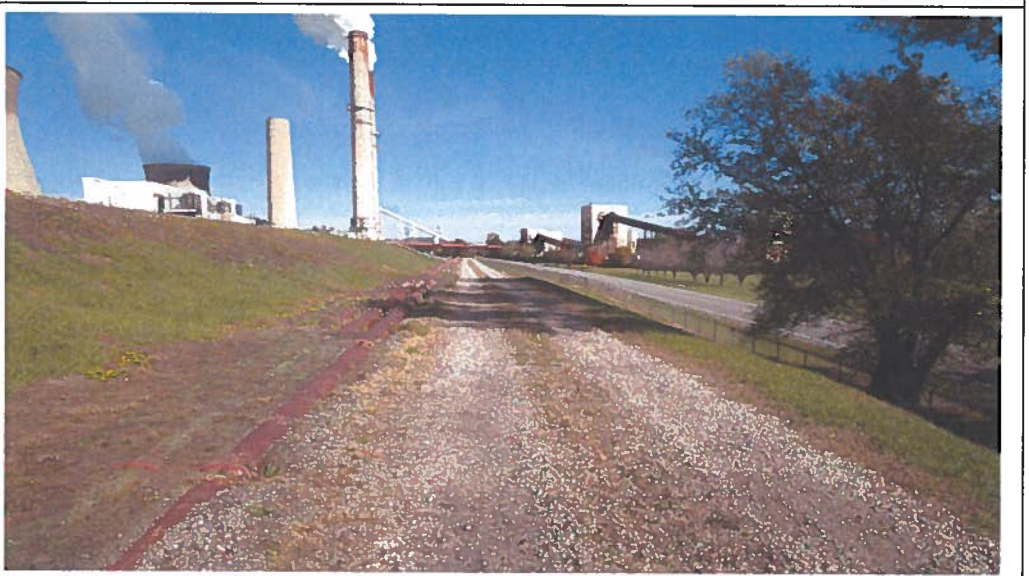
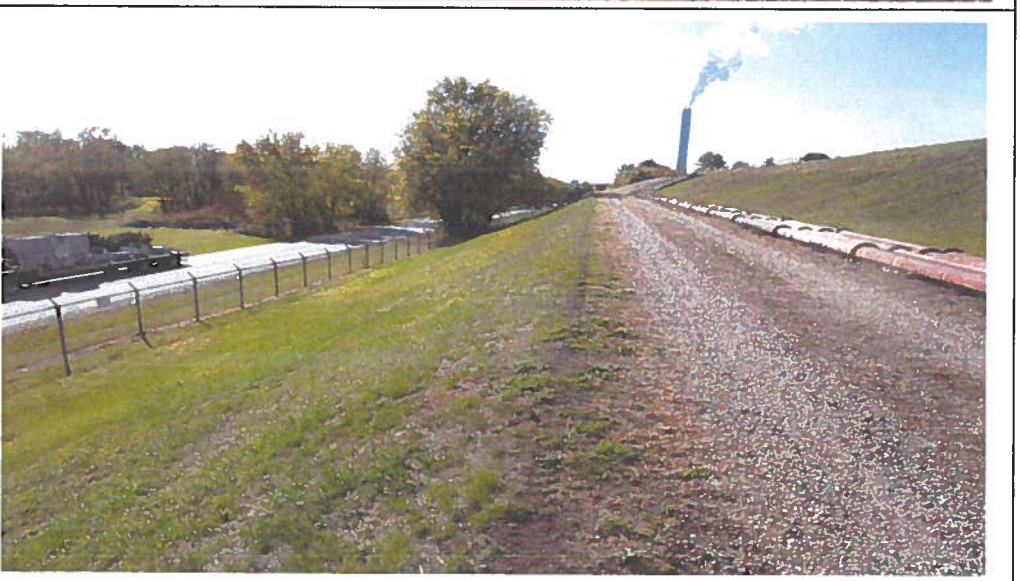
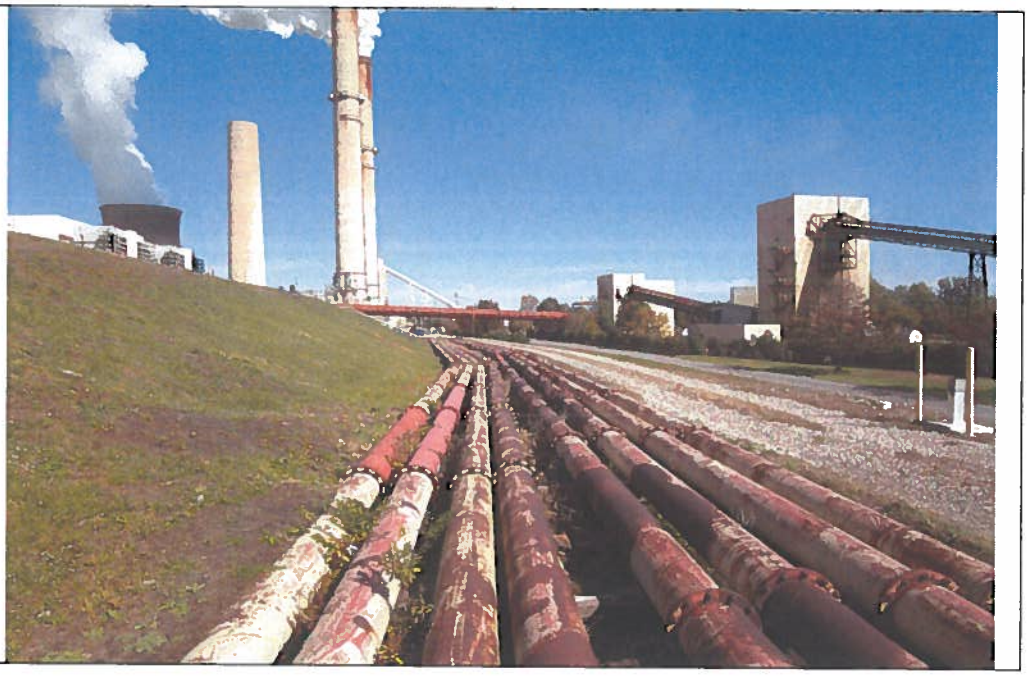
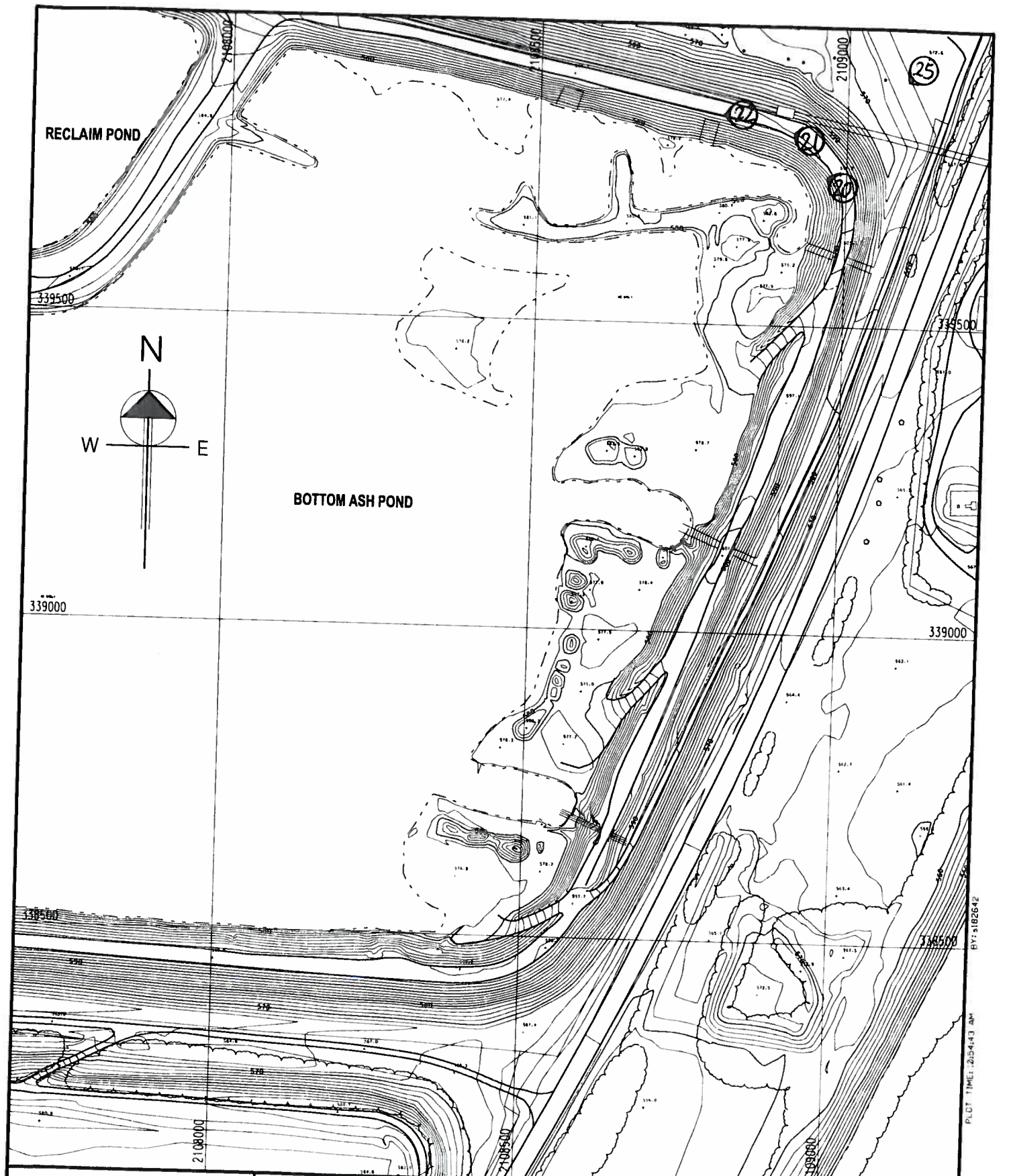
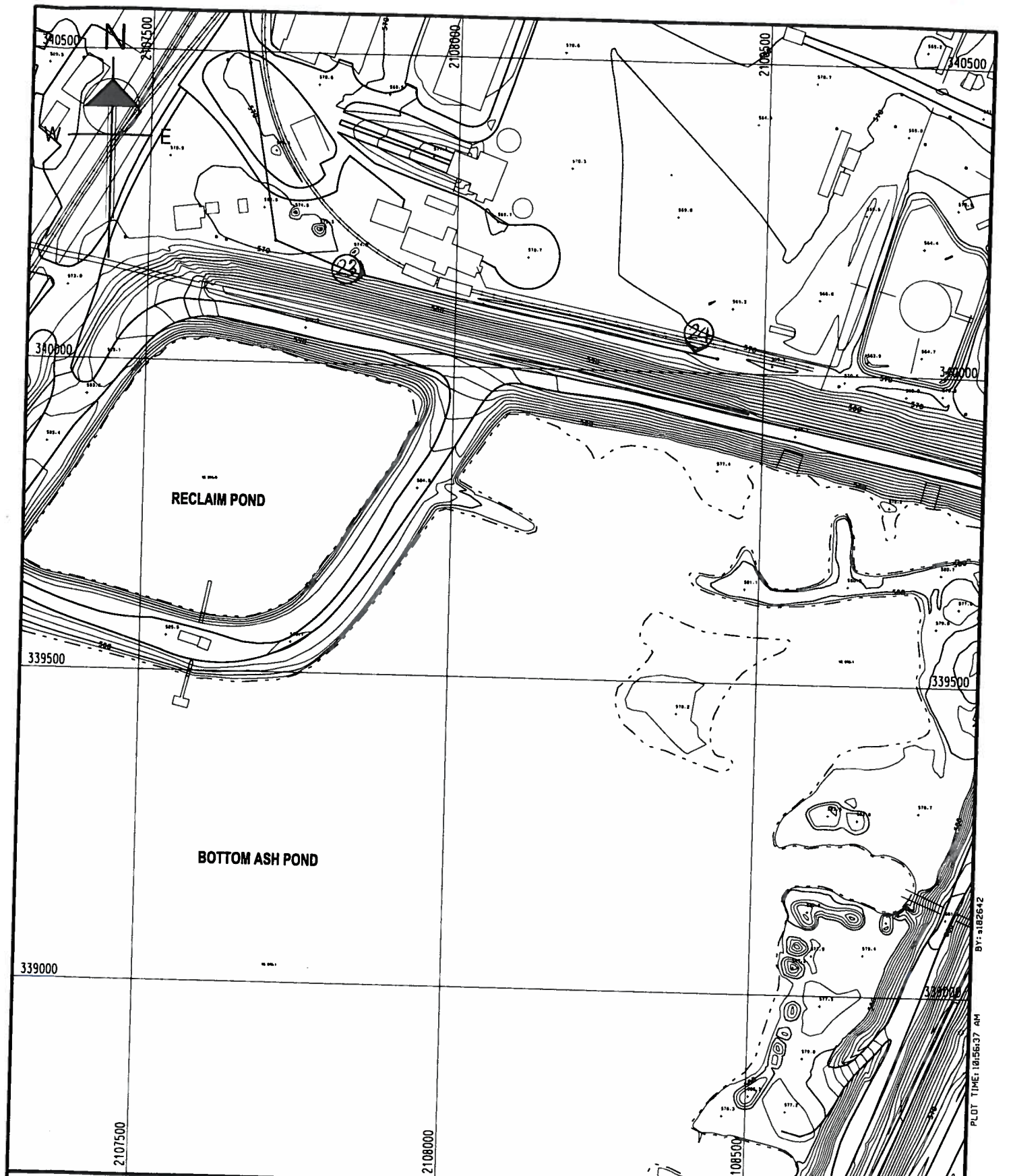
Photo # 16	
Ash sluice pipes and support structure (north).	
Photo # 17	
Intermediate bench.	
Photo # 18	
Downstream slope, sluice pipes and intermediate bench.	

Photo # 19	
Upstream slope and sluice pipes.	



DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 6A	
DATE:	NORTH DIKE	AEP AMERICAN ELECTRIC POWER	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	BOTTOM ASH COMPLEX		

PLOT DATE: 11/14/2011 PLOT TIME: 2:54:43 AM BY: s182642



DRN BY:	GAVIN POWER STATION	DWG NO: **FIGURE 6B**
DATE:	**NORTH DIKE**	AEP AMERICAN ELECTRIC POWER — AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	BOTTOM ASH COMPLEX	

PLOT DATE: 10/14/2011 PLOT TIME: 10:56:37 AM BY: a182642

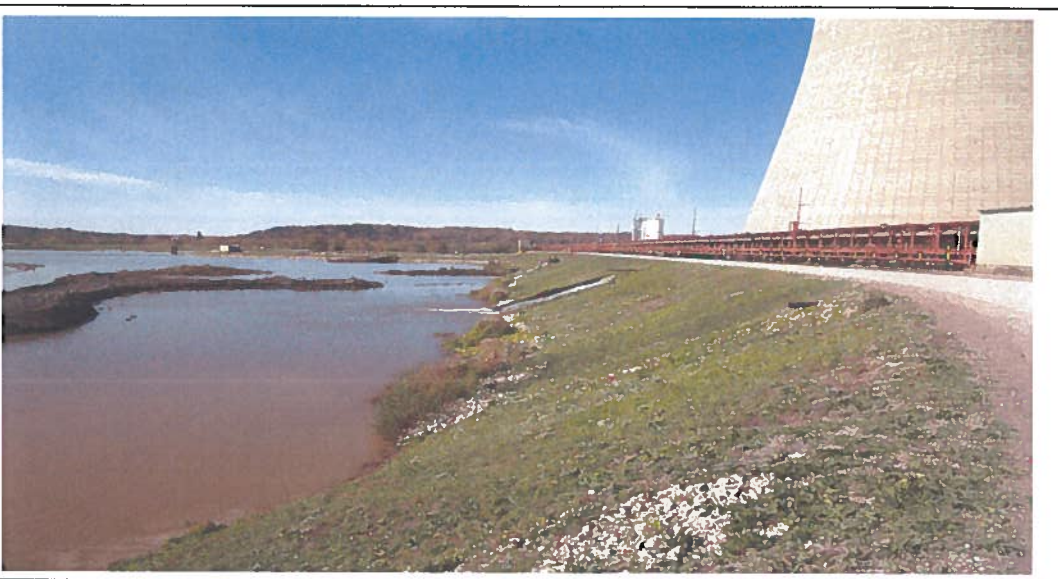
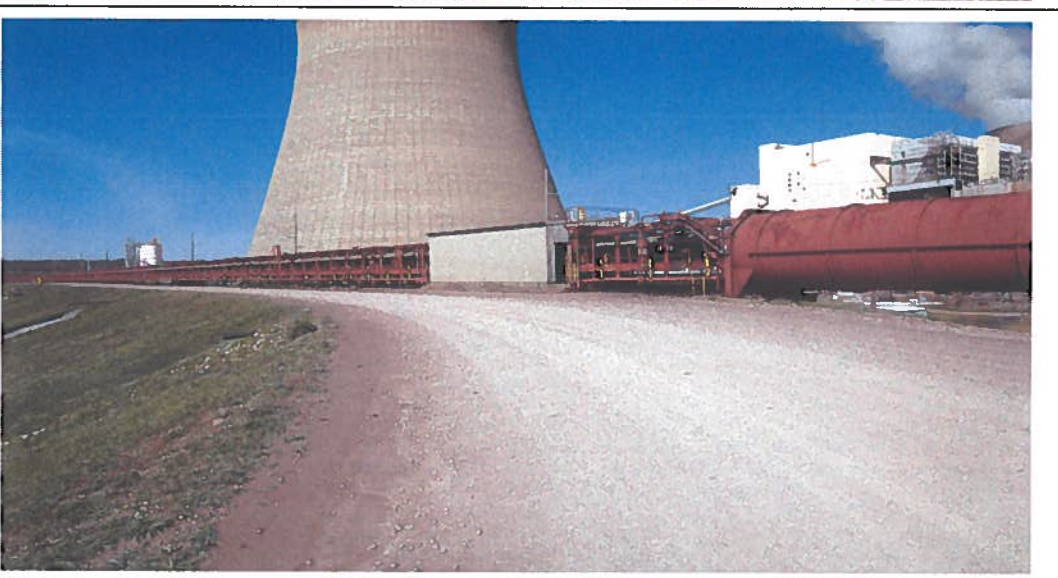
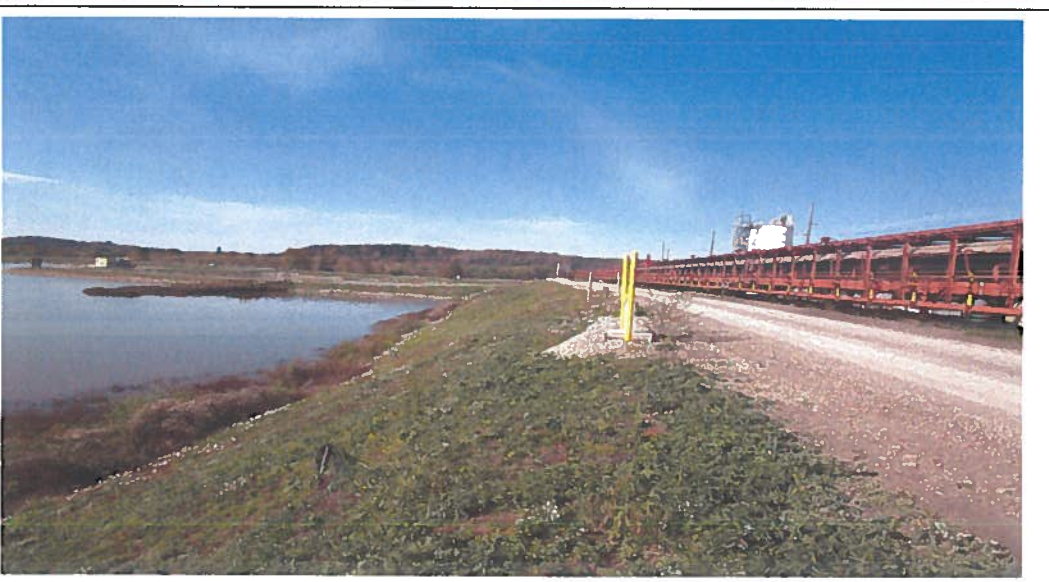
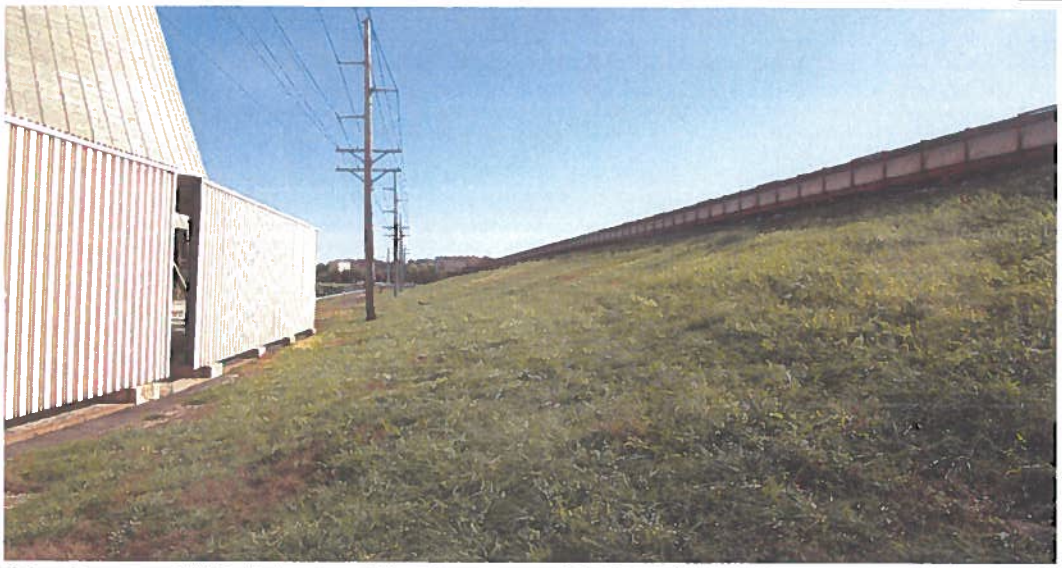
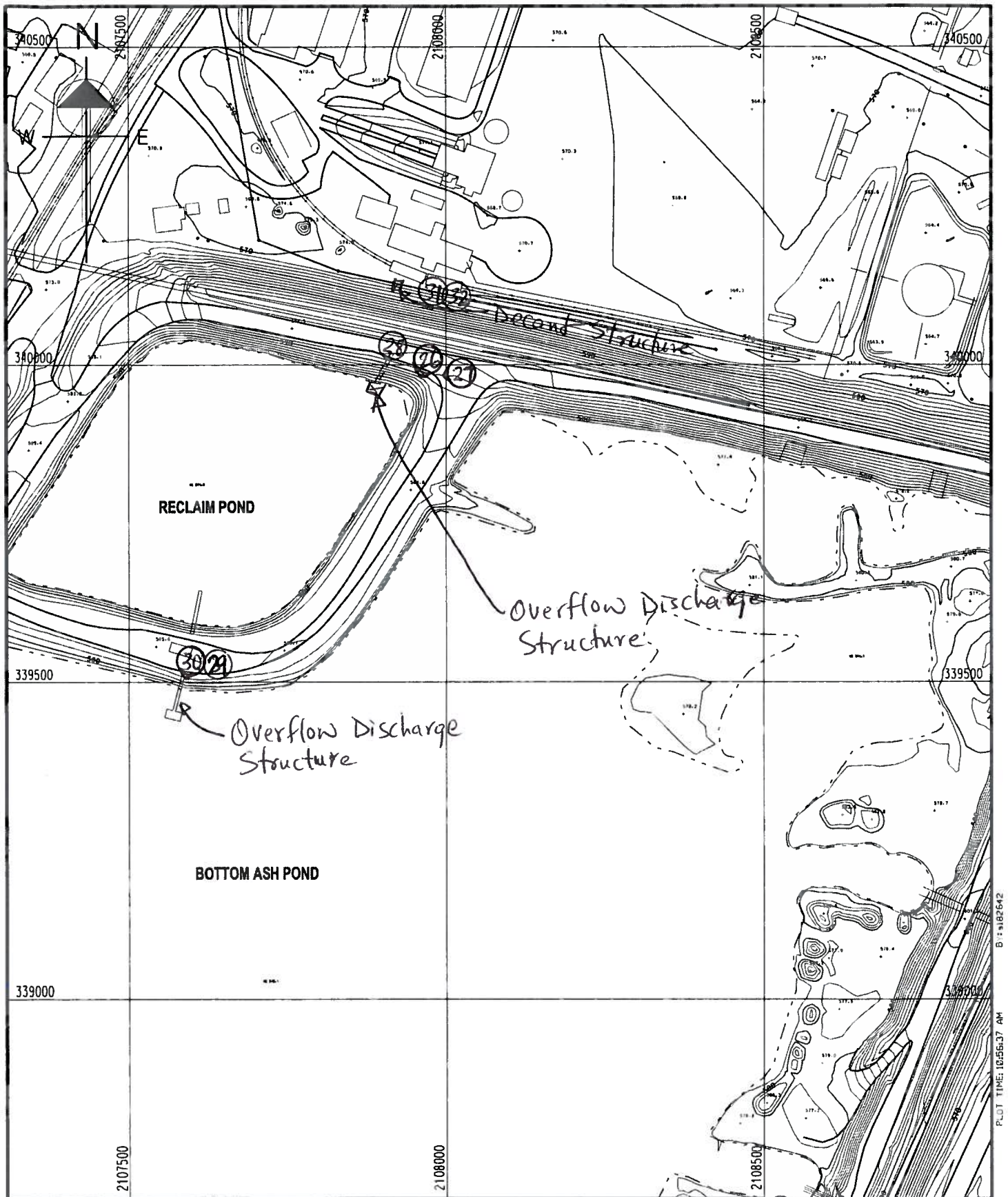
Photo # 20	
Overall view of the north dike upstream slope.	
Photo # 21	
Crest of the dike.	
Photo # 22	
Upstream slope (looking west).	

Photo # 23 Downstream slope of the dike (looking east).	
Photo # 24 A typical erosion gully (as shown by arrow) along the downstream slope.	
Photo # 25 Downstream slope (northwest corner).	



DRN BY:	GAVIN POWER STATION	DWG NO: **FIGURE 7**
DATE:	**RECLAIM POND**	AEP AMERICAN ELECTRIC POWER
SCALE: 1"=200'	BOTTOM ASH COMPLEX	*AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215*

PLOT DATE: 10/14/2011 PLOT TIME: 10:56:37 AM B:\182642

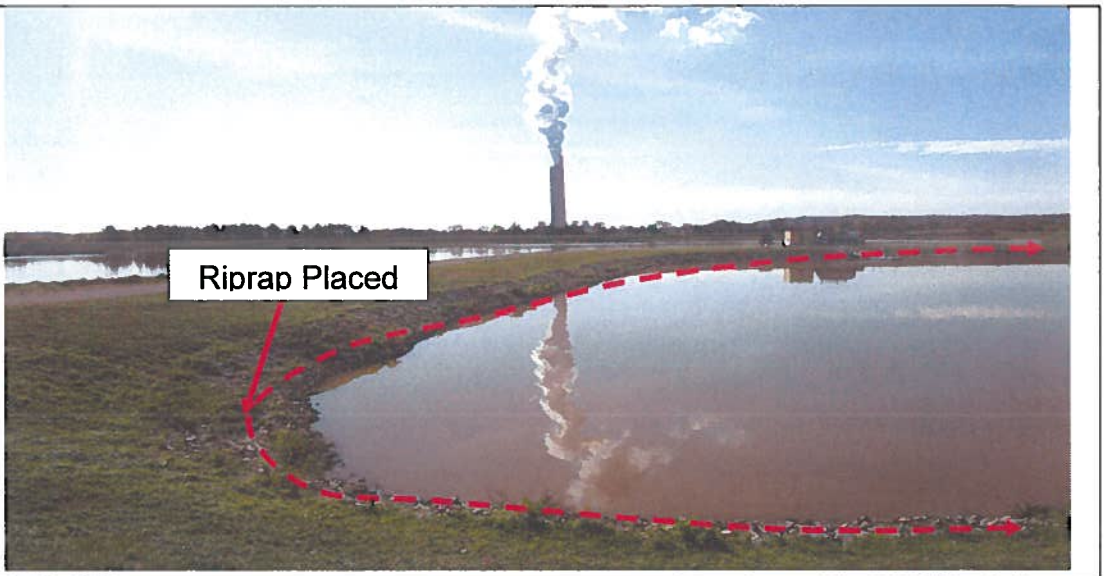
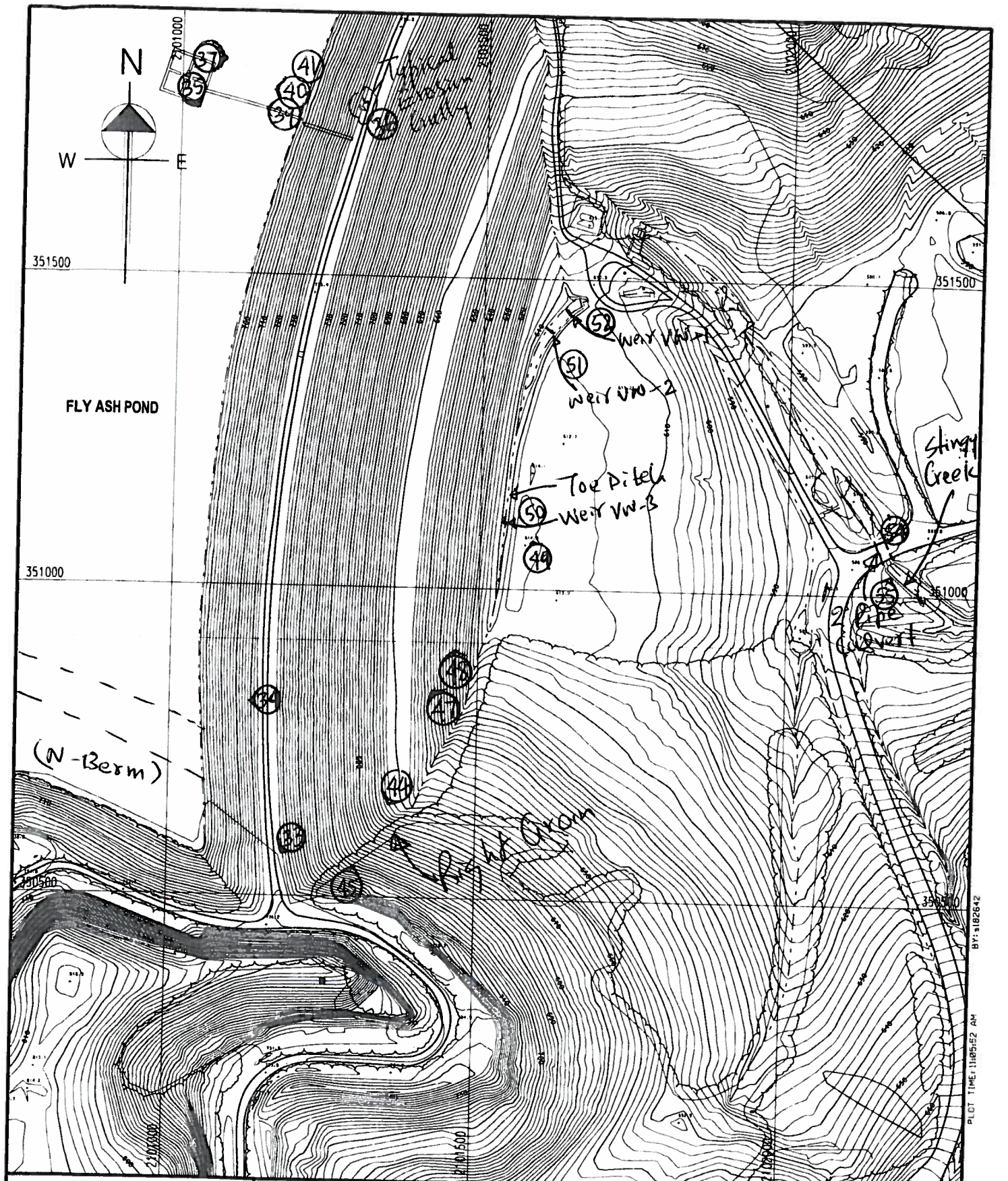
Photo # 26 Interior slope with lower section having riprap.	
Photo # 27 Another view of the interior slope with riprap.	
Photo # 28 Overflow discharge structure at the north dike.	

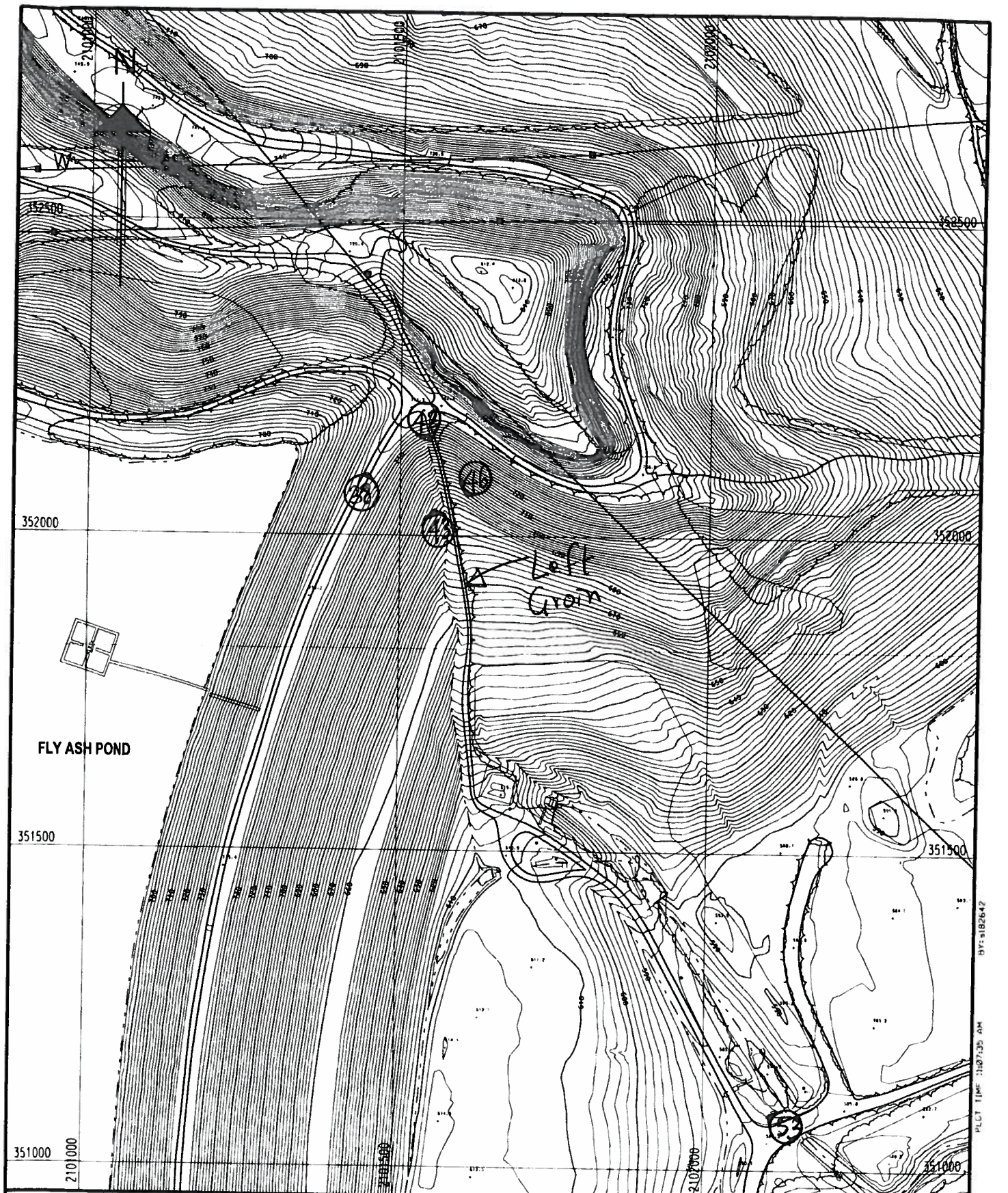
Photo # 29 Overflow discharge structure at the south dike.	
Photo # 30 Interior of the overflow discharge structure.	
Photo # 31 Decant structure at the toe of north dike exterior slope.	

Photo # 32	
Another view of the decant structure.	



DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 8A	
DATE:		AEP AMERICAN ELECTRIC POWER	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	STINGY RUN FLYASH DAM		

PLOT DATE: 10/14/2011 PLOT TIME: 11:05:52 AM BY: s182642



DRN BY:	GAVIN POWER STATION	DWG NO: **FIGURE 8B**
DATE:		
SCALE: 1" =200'	**STINGY RUN FLYASH DAM**	AEP AMERICAN ELECTRIC POWER AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215

PLOT DATE: 10/14/2011 PLOT TIME: 10:07:35 AM BY: s182642

Photo # 33	
The hillside and the right (south) abutment.	
Photo # 34	
Right abutment, groin at the upstream slope.	
Photo # 35	
This photograph illustrates typical condition of the slope and riprap along the upstream slope.	

Photo # 36 Typical erosion gullies along the edge of the crest of the upstream slope.	
Photo # 37 Another view of the upstream slope (north end).	
Photo # 38 The hillside and the left (north) abutment.	

Photo # 39 This photograph illustrates the overflow discharge structure.	
Photo # 40 Close up view of the overflow discharge supporting structures.	
Photo # 41 Syphon pipes installed at the overflow structure.	

Photo # 42	
Left groin at the downstream slope.	

Photo # 43	
Another view of the left groin, riprap good.	

Photo # 44	
The right abutment and hillside, and downstream slope.	

Photo # 45	
The right groin at the downstream slope.	

Photo # 46	
Overall view of the downstream slope (looking south).	

Photo # 47	
Another view of the downstream slope (looking north).	

Photo # 48 Downstream slope below the intermediate bench.	
Photo # 49 Toe ditch.	
Photo # 50 Seepage control weir VW-3.	

Photo # 51	
Seepage control weir VW-2.	
Photo # 52	
Seepage control weir VW-1.	
Photo # 53	
Open channel downstream of the chemical feed building.	

Photo # 54	
Pipe culvert inlet end at the Outfall 001.	
Photo # 55	
Outlet end of the pipe culverts to the Stingy Creek.	

APPENDIX C

- Figure 9a – Piezometers Location Map
- Figure 9b – Piezometer Data of the Bottom Ash Pond
- Figure 10a – Observation Wells Location Map
- Figure 10b – Observation Wells Water Elevation
- Figure 11 – Weirs Location Map
- Table 1 – Flow Measurements of Weirs
- Figure 12 – Deformation Monuments Location Map
- Figure 13 – Slope Inclinometers Location Map

Figure 9a – Piezometers Location Map

Gen. James M. Gavin Plant
Bottom Ash Pond Complex

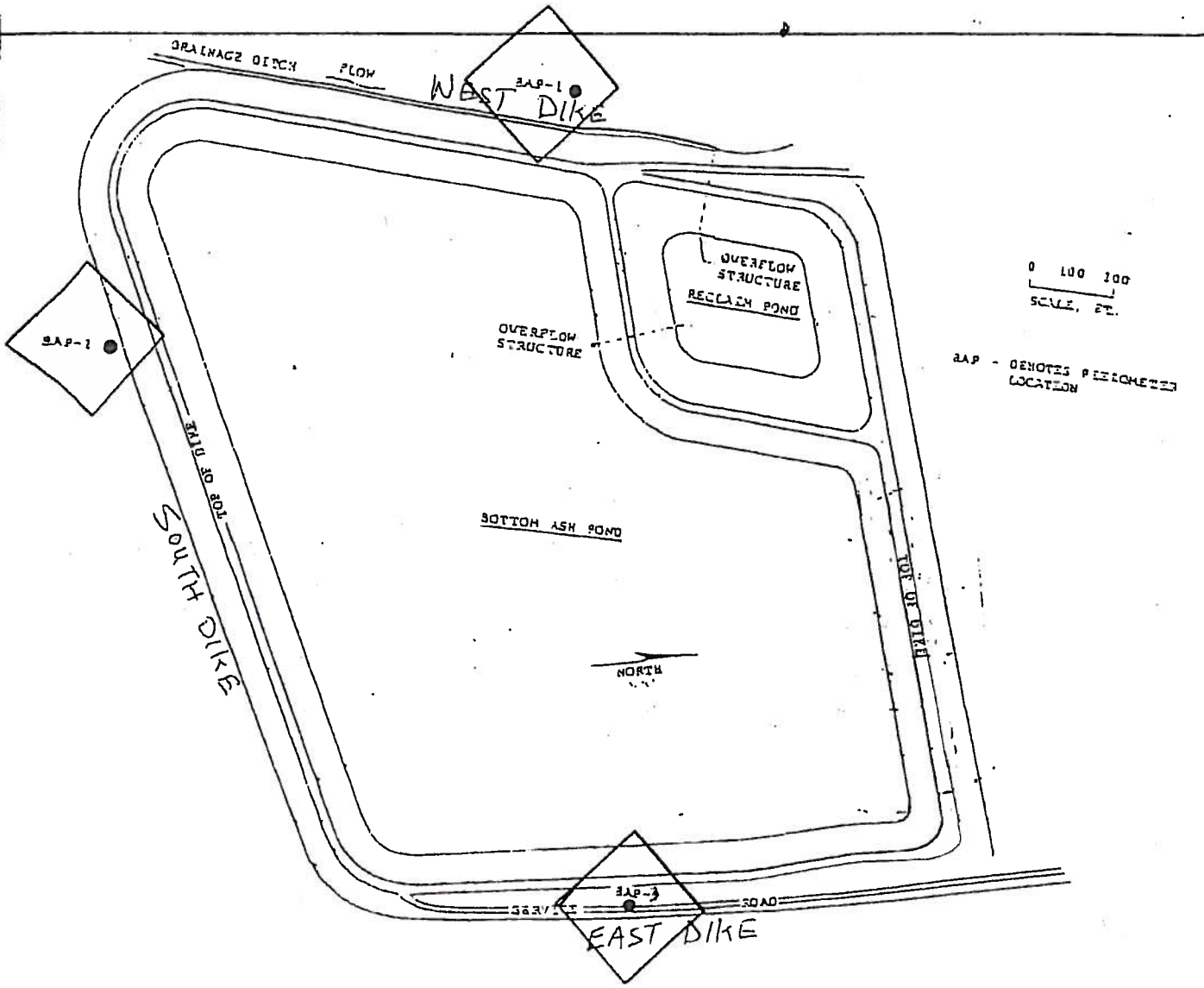


FIGURE 9b - Piezometer Data of the Bottom Ash Pond.

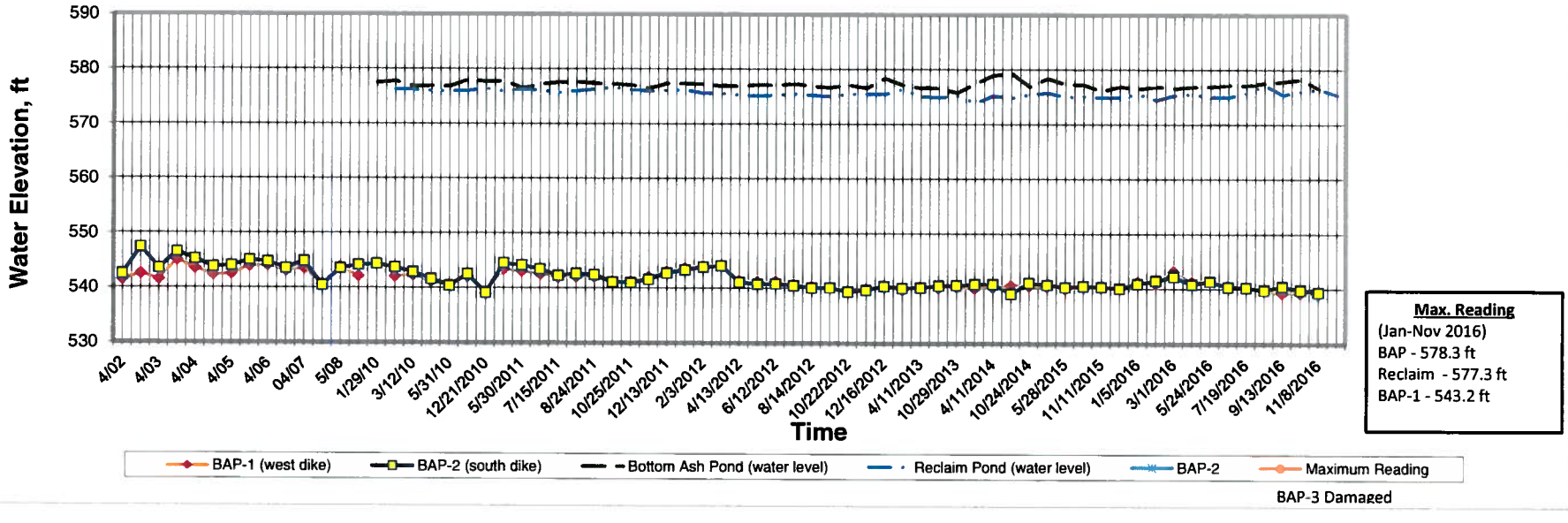


Figure 10a – Observation Wells Location Map

Gen. James M. Gavin Plant
Stingy Run Flyash Dam

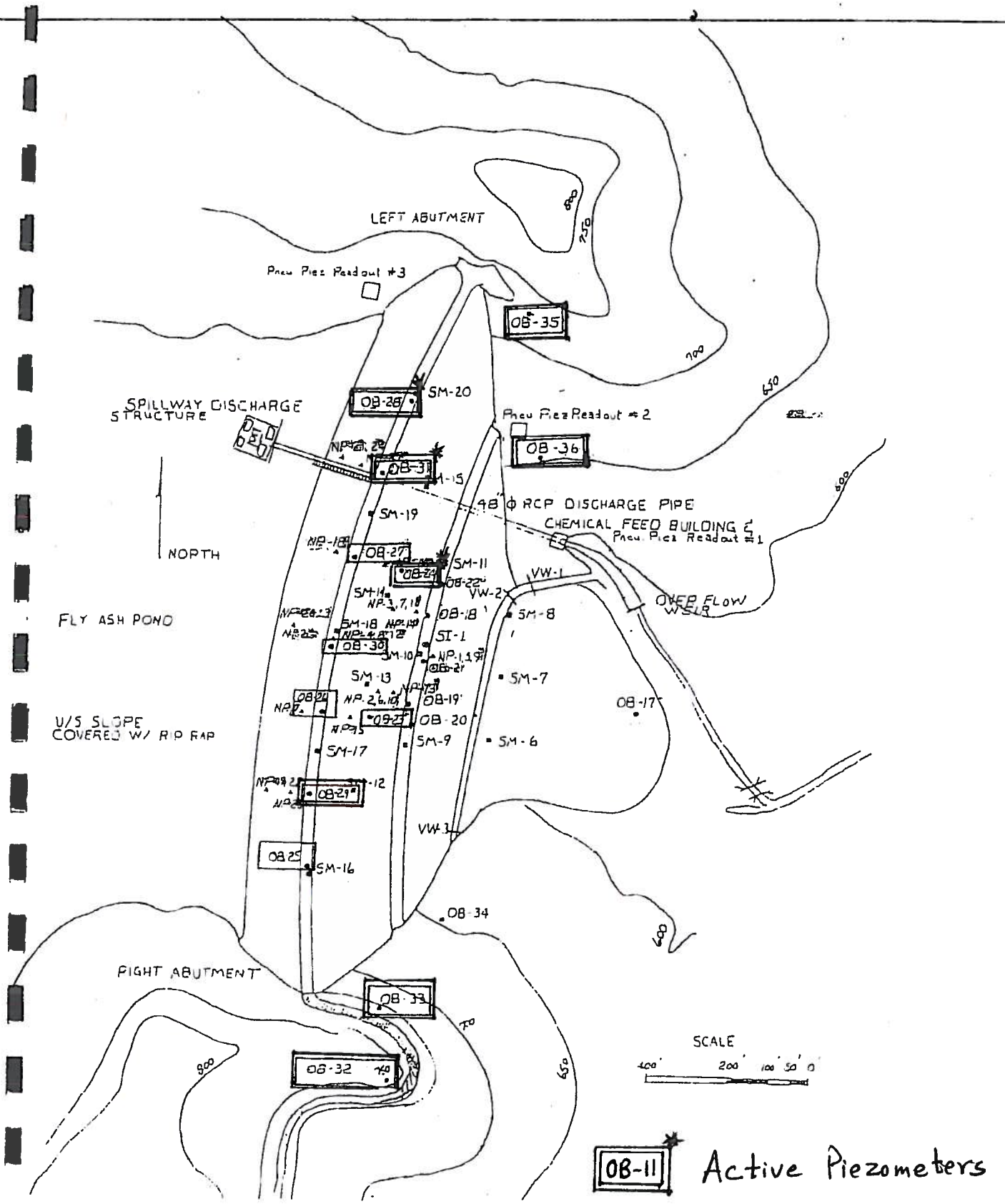
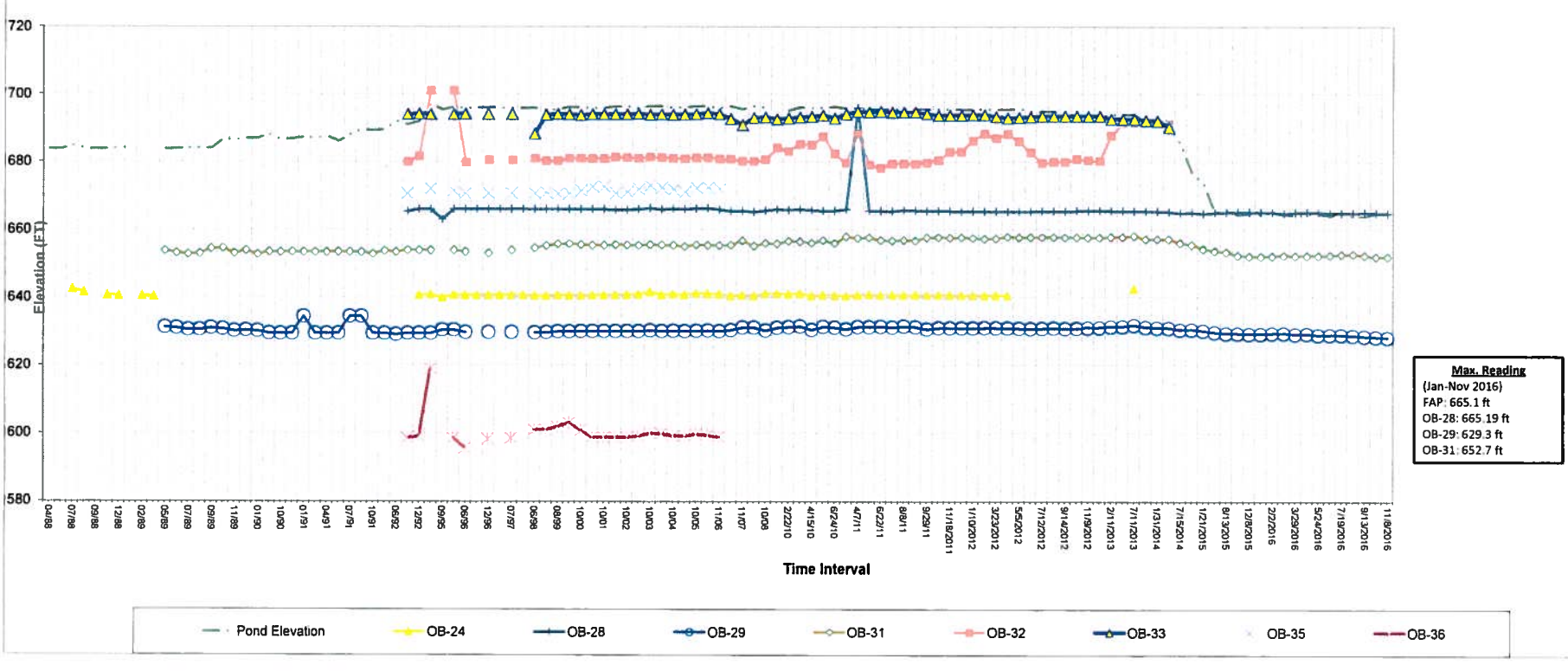


FIGURE 10b - Observation Well Water Elevation.



Max. Reading
(Jan-Nov 2016)
FAP: 665.1 ft
OB-28: 665.19 ft
OB-29: 629.3 ft
OB-31: 652.7 ft

Figure 11 – Weirs Location Map

Gen. James M. Gavin Plant
Stingy Run Flyash Dam

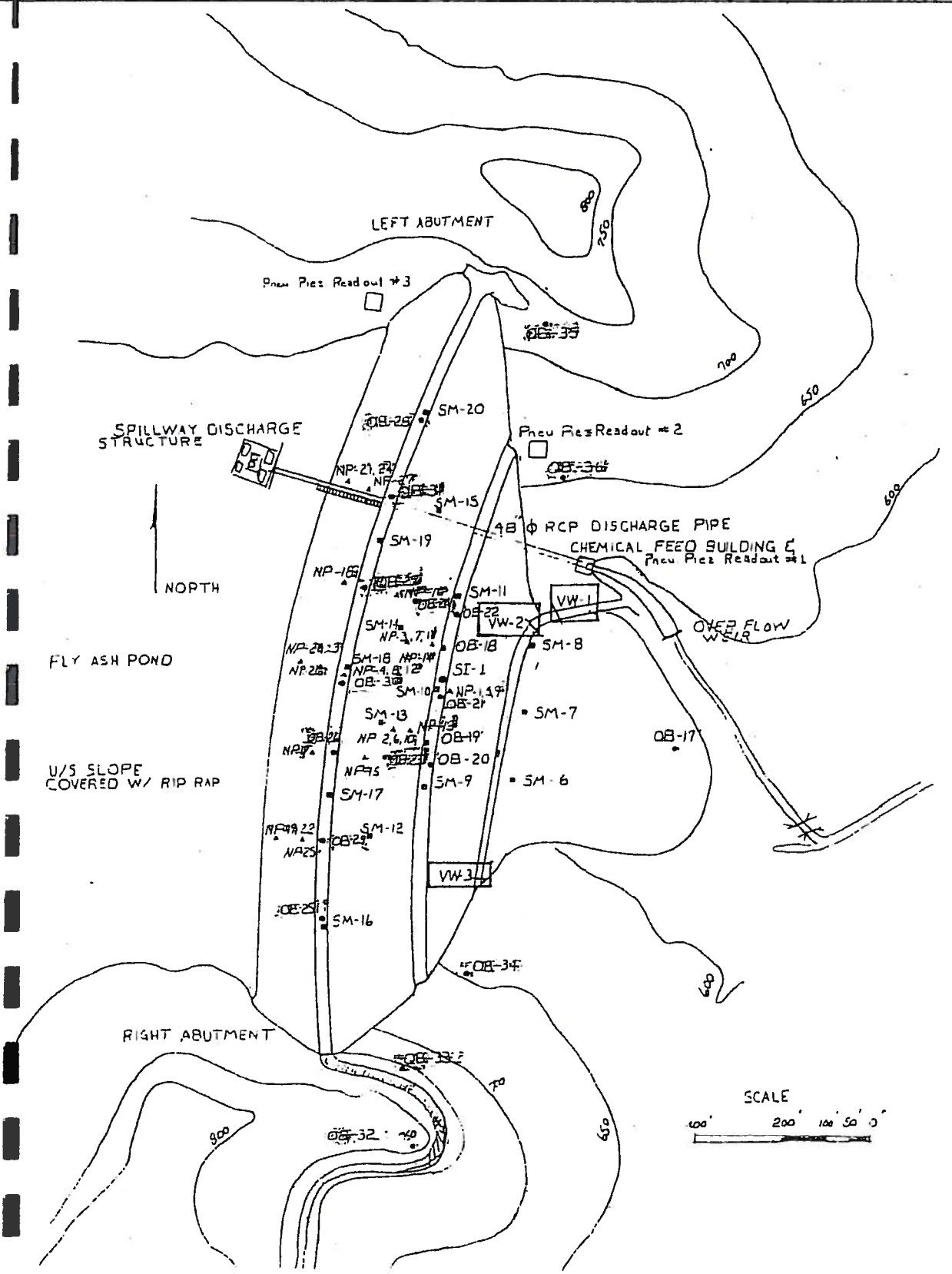


Table 1 - Flow Measurements of Weirs.

Date	Weir					
	VW-1		VW-2		VW-3	
	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)
1-Apr	0.11	2.06	0.1	1.64	0.06	0.5
1-Oct	0.11	2.06	0.1	1.64	0.06	0.5
2-Apr	1.4	1080	1.3	897.98	0.6	131.38
2-Oct	0.016	0.03	0.015	0.025	0.009	0.01
3-Apr	0.041	0.208	0.035	0.147	0.02	0.045
3-Oct	0.051	0.341	0.044	0.244	0.024	0.065
4-Apr	0.0425	0.226	0.033	0.129	0.018	0.036
4-Oct	0.02	0.045	0.015	0.025	0.006	0.005
5-Apr	0.2	8.77	0.18	6.78	0.1	1.64
5-Oct	0.4	48.16	0.33	29.96	0.18	6.788
6-Apr	0.8	268.34	0.5	83.63	0.2	8.77
6-Nov	0.25	15.14	0.19	7.74	0.1	1.64
7-Apr	0.3	23.7	0.25	15.14	0.19	7.74
7-Nov	0.03	0.105	0.03	0.105	0.02	0.045
8-May	0.07	0.709	0.07	0.709	0.05	0.32
8-Oct	0.18	6.788	0.16	5.09	0.09	1.28
10-Jan	See Note 1					
10-Feb	0.1	1.64	0.07	0.709	0.05	0.32
10-Mar	0.11	2.06	0.08	0.97	0.06	0.5
10-Apr	0.05	0.32	0.04	0.197	0.02	0.045
10-May	0.09	1.28	0.07	0.709	0.05	0.32
10-Jun	0.2	8.77	0.15	4.36	0.12	2.54
10-Dec	See Note 1					
11-Apr	0.18	6.78	0.16	5.09	0.11	2.06
11-May	0.14	3.69	0.12	2.54	0.08	0.97
11-Jun	0.14	3.69	0.11	2.06	0.07	0.709
11-Jul	0.17	5.9	0.13	3.08	0.1	1.646
8/8/2011	0.2	8.77	0.16	5.09	0.13	3.08
8/24/2011	0.15	4.36	0.11	2.06	0.08	0.97
11-Sep	0.12	2.54	0.08	0.97	0.06	0.495
11-Oct	0.15	4.36	0.13	3.08	0.09	1.28
11-Nov	0.15	4	0.13	2.8	0.1	1.5
11-Dec	0.09	1.13	0.08	0.84	0.06	0.41
12-Jan	0.08	0.84	0.07	0.6	0.05	0.26
12-Feb	0.1	1.47	0.08	0.84	0.07	0.6
12-Mar	0.08	0.84	0.06	0.41	0.04	0.15
12-Apr	0.07	0.6	0.05	0.26	0.03	0.07
12-May	0.16	4.76	0.14	3.41	0.1	1.47

12-Jun	0.07	0.6	0.06	0.41	0.03	0.07
12-Jul	0.07	0.6	0.05	0.26	0.03	0.07
12-Aug	0.09	1.13	0.07	0.6	0.05	0.26
12-Sep	0.09	1.13	0.06	0.41	0.04	0.15
12-Oct	0.08	0.84	0.06	0.41	0.05	0.26
12-Nov	0.08	0.84	0.06	0.41	0.05	0.26
12-Dec	0.1	1.47	0.08	0.84	0.07	0.6

Date	Weir					
	VW-1		VW-2		VW-3	
	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)
13-Feb	0.09	1.12	0.08	0.84	0.06	0.41
13-Apr	0.05	0.26	0.04	0.15	0.03	0.07
13-Jul	0.21	9.3	0.2	8.3	0.17	5.5
13-Oct	0.08	0.84	0.05	0.26	0.03	0.07
14-Jan	0.09	1.13	0.06	0.41	0.04	0.15
14-Apr	0.08	0.84	0.05	0.26	0.03	0.07
14-Jul	0.12	2.32	0.1	1.47	0.08	0.84
10/24/2014	0.11	1.86	0.09	1.13	0.08	0.84
1/21/2015	0.09	1.13	0.07	0.6	0.06	0.41
5/28/2015	0.09	1.13	0.08	0.84	0.06	0.41
8/13/2015	0.15	4	0.12	2.3	0.1	1.5
11/11/2015	0.11	1.9	0.08	0.8	0.06	0.4
12/9/2015	0.12	2.3	0.1	1.5	0.09	1.1
1/5/2016	0.16	4.7	0.13	2.8	0.09	1.1
2/2/2016	0.16	4.7	0.14	3.4	0.11	1.9
3/1/2016	0.17	5.53**	0.16	4.76**	0.13	2.8**
3/29/2016	0.14	3.4	0.13	2.8	0.1	1.5
4/26/2016	0.12	2.32	0.11	1.86	0.9	1.13
5/24/2016	0.09	1.13	0.08	0.84	0.06	0.41
6/21/2016	0.05	0.26	0.04	0.15	0.03	0.07
7/19/2016	0.07	0.602	0.06	0.41	0.05	0.26
8/16/2016	0.05	0.26	0.04	0.15	0.03	0.07
9/13/2016	No Flow					
10/11/2016	No Flow					
11/8/2016	0.05	0.26	0.04	0.15	0.02	0.03

(i) Note 1 – No reading due to ice.

(ii) The high discharge volume of 4/02 at all the weirs is attributed to heavy rainfall

(iii) (**) Maximum reading during period Jan-Nov 2016.

Figure 12 – Deformation Monuments Location Map

Gen. James M. Gavin Plant

Stingy Run Flyash Dam

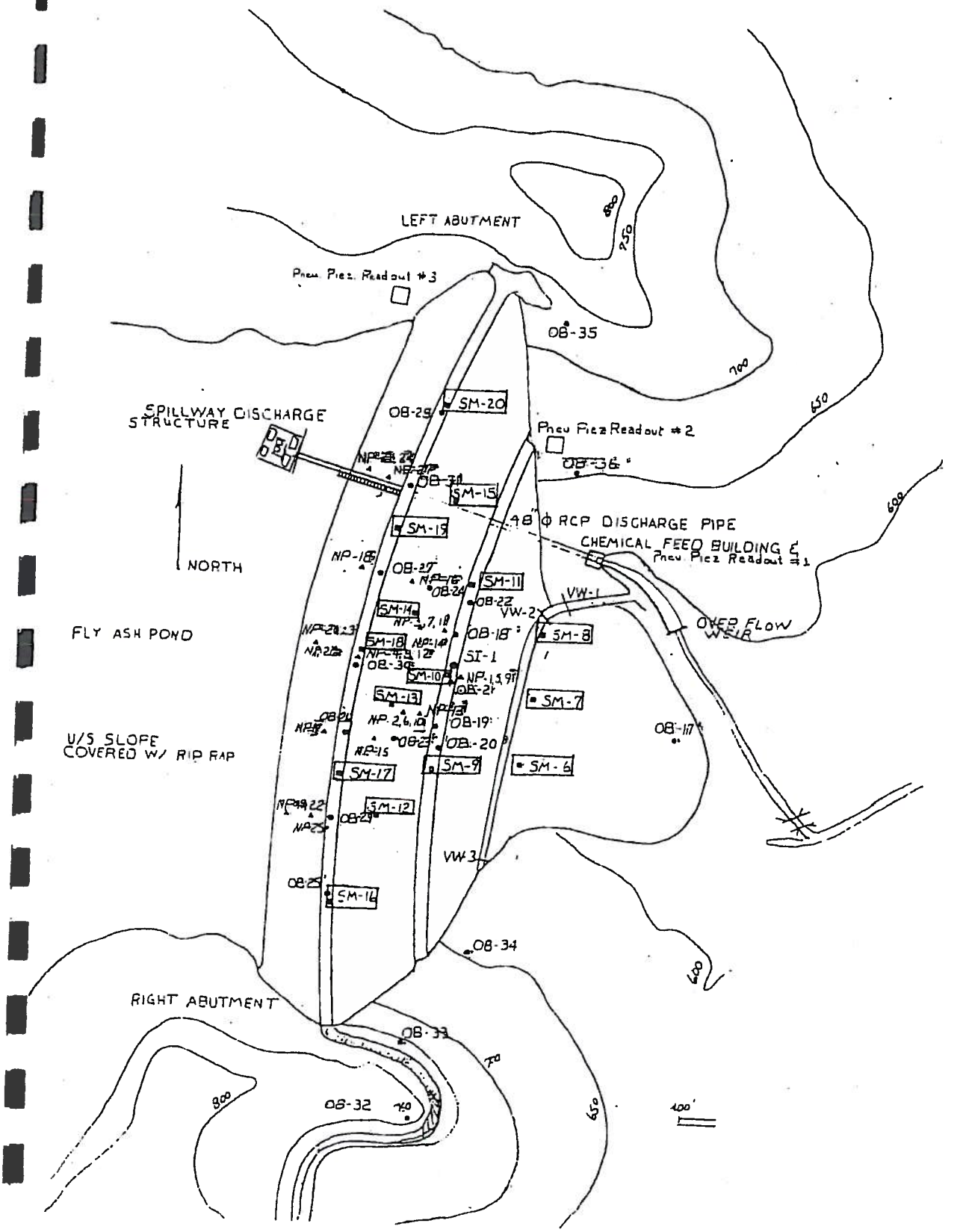
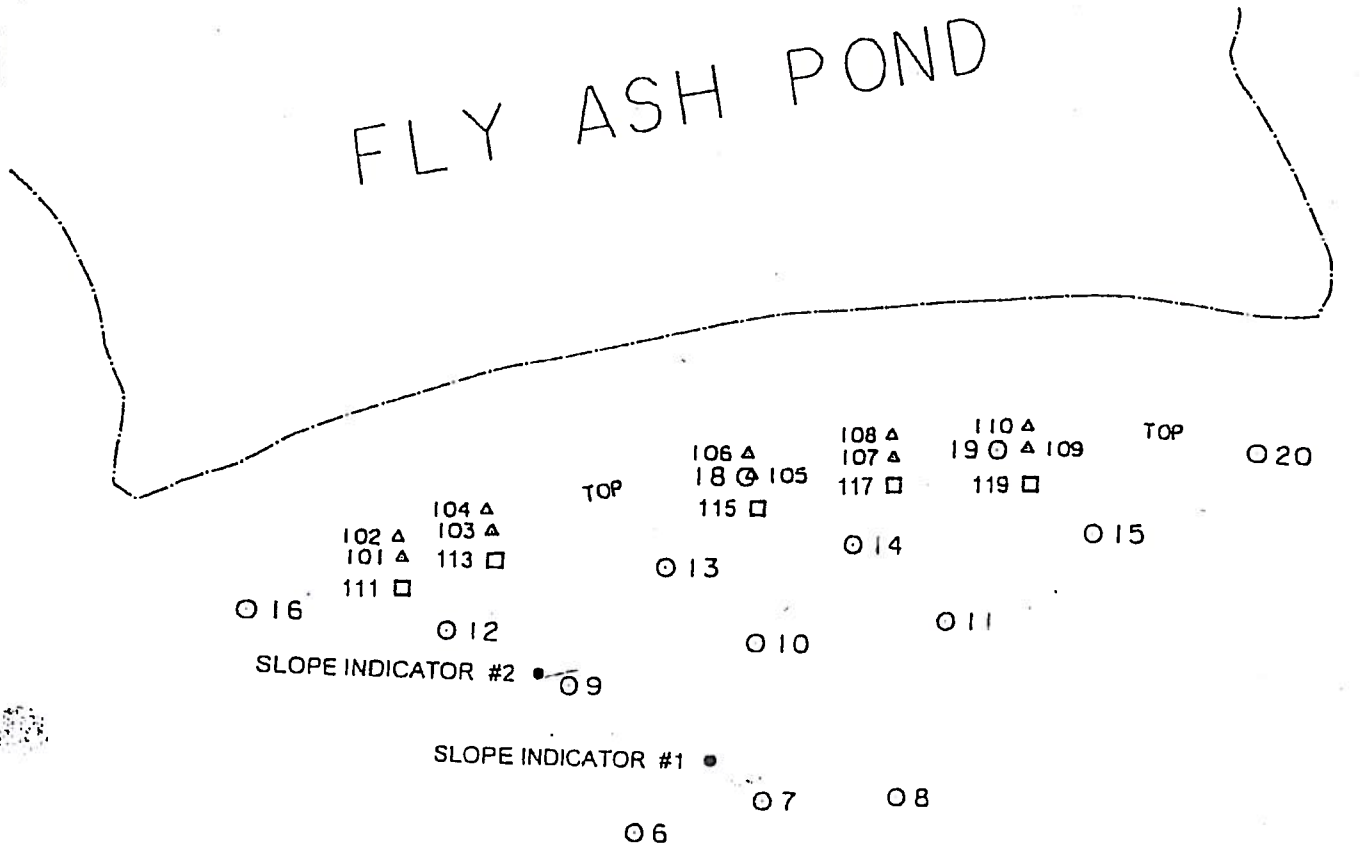


Figure 13 – Slope Inclinometers Location Map

Gen. James M. Gavin Plant
Stingy Run Flyash Dam



GAVIN PLANT

FLY ASH DAM

DEFORMATION MONUMENTATION

MAIN DAM