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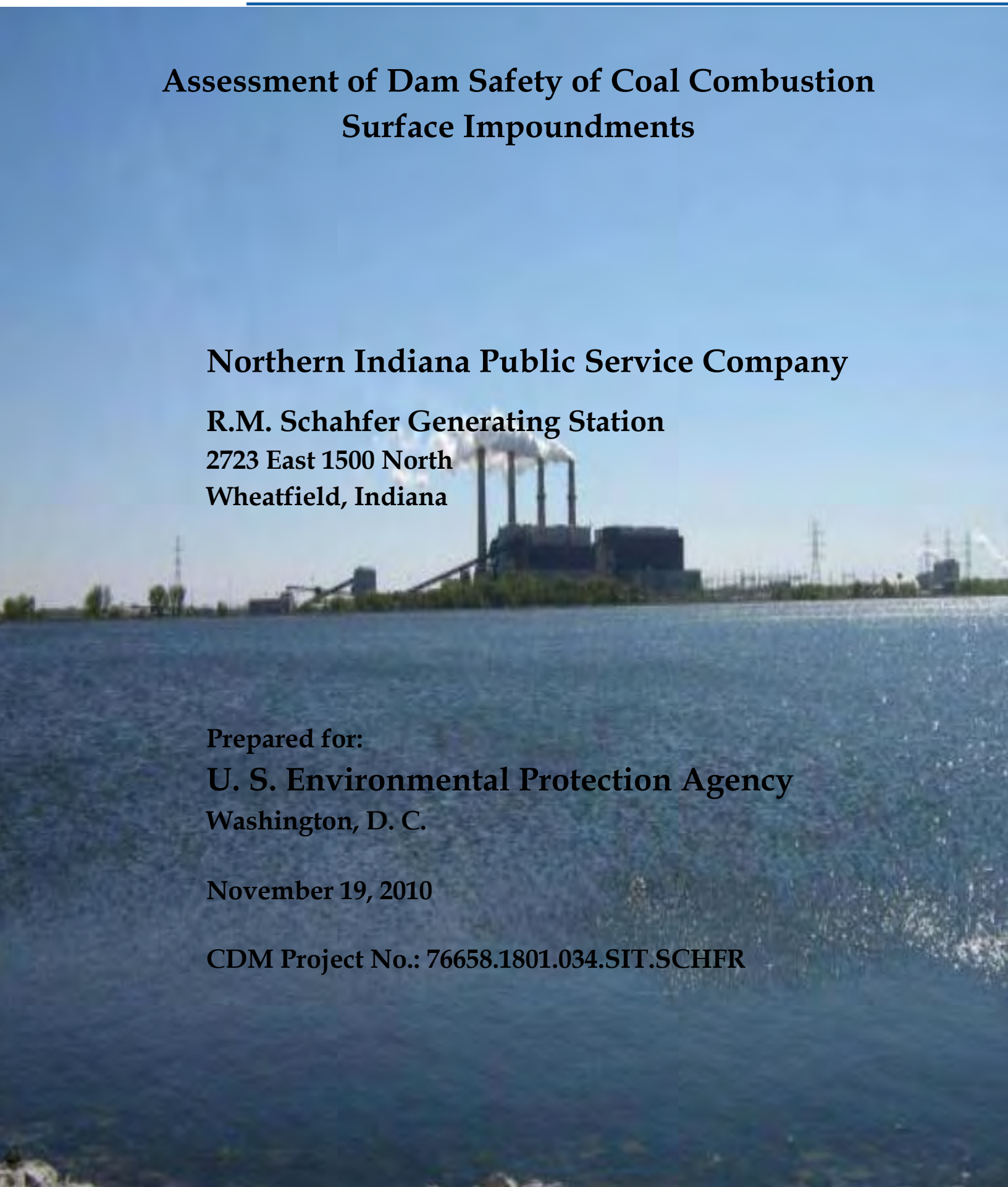
Assessment of Dam Safety of Coal Combustion Surface Impoundments



Northern Indiana Public Service Company

R.M. Schahfer Generating Station
2723 East 1500 North
Wheatfield, Indiana

Prepared for:
U. S. Environmental Protection Agency
Washington, D. C.

November 19, 2010

CDM Project No.: 76658.1801.034.SIT.SCHFR

Preface

The assessment of the general condition of the impoundments is based upon available data and visual observations. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be realized that the reported condition of the impoundments is based on observations of field conditions at the time of assessment, along with data made available to the assessment team. In cases where an impoundment may have been lowered or drained prior to the assessment, such action, while improving the stability and safety of the impoundment, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is critical to note that the condition of impoundments depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the present condition of the impoundment at the time of the assessment is representative of the condition of the impoundment at some point in the future. Only through continued care and assessment can there be any chance that unsafe conditions will be detected.

Prepared By:

CDM

I certify that the management unit (s) referenced herein have been assessed on April 26 and 27, 2010:

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Section 1
Introduction & Project Description

1.1 Introduction

Camp Dresser & McKee Inc. (CDM) was contracted by the United States Environmental Protection Agency (USEPA) to perform site assessments of selected coal combustion waste (CCW) surface impoundments. As part of this contract, CDM performed a site assessment of ten CCW impoundments at the Rollin M. (R.M.) Schahfer Generating Station, owned by Northern Indiana Public Service Company (NIPSCO).

CDM made a site visit to the R.M. Schahfer Generating Station on April 26 and 27, 2010 to collect relevant information, inventory the impoundments, and perform visual assessments of the impoundments.

CDM representatives William J. Friers, P.E., Michael L. Schumaker, P.E., Michael P. Smith. and Kyle R. King were accompanied by the following individuals:

Company	Name and Title
NIPSCO*	Gregory Costakis, Environmental Health and Safety Manager
NIPSCO*	Catherine Ortiz-Wiegele, Environmental Coordinator
USEPA	Craig Dufficy, Environmental Engineer

***NiSource is the Owner of Northern Indiana Public Service Company.**

1.2 State Regulation

The Indiana Department of Natural Resources (IDNR) Water Division is responsible for the State's dam safety program, for dams that meet one or more of the following criteria:

- Drainage area of more than 1 square mile
- Height in excess of 20 feet
- Impoundment of more than one hundred acre-feet.

Four of the impoundments at R.M. Schahfer Generating Station fall under the jurisdiction of the IDNR: Final Settling Basin; Intake Settling Basin; Recycle Basin; and the Waste Disposal Area. It is our understanding that to date IDNR has not been actively involved in the regulation of CCW impoundments. NIPSCO staff stated there are no State inspection reports for the impoundments at the R.M. Schahfer Generating Station.

1.2.1 Permits

The NIPSCO R.M. Schahfer Generating Station was issued a permit authorizing discharge under the National Pollutant Discharge Elimination System (NPDES) into the Kankakee River in accordance with effluent limitations, monitoring requirements, and other conditions set forth in the permit. The station's current permit will expire April 30, 2015. The permit number is IN00053201.

1.3 Datum

Elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29). Directional coordinates are referenced to magnetic north.

1.4 Site Description and Location

The R.M. Schahfer Generating Station is outside the corporate limits of the Town of Wheatfield, Jasper County, Indiana as shown on **Figure 1**. The state boundaries with Illinois and Michigan are approximately 30 miles west and 40 miles north of the site, respectively. A map of the region, indicating the location of the R.M. Schahfer Station and identifying critical infrastructure located within approximately five miles downgradient of the impoundments, is shown on **Figure 2.** A private residence is located approximately 200 feet north of the Final Settling Basin, as shown on Figure 2. An aerial view of the Ash Pond Impoundments assessed under this contract is shown on **Figure 3.**

1.4.1 CCW Impoundment Construction and Historical Information

The R.M. Schahfer Generating Station began operations in 1976. CCW is generated by Units 14 (online since 1976), 15 (online since 1979), 17 (online since 1983), and 18 (online since 1986).

The original construction of the Ash Pond Complex began in 1976, concurrent with the construction of Unit 14. The first three CCW impoundments constructed at the R.M. Schahfer Generating Station were the Final Settling Basin, Waste Disposal Area, and Dry Ash Staging Area that were placed into service in 1976. The Waste Disposal Area and the Dry Ash Staging Area were back-filled and taken out of service in 1982. Neither of these impoundments was formally decommissioned.

The Dry Ash Staging Area was a 4.7-acre impoundment with an embankment height of approximately 2 feet. Dry and dredged material was staged in this area and periodically removed to a disposal site. Information reviewed indicated the Dry Ash Staging Area was adjacent to and south of the current Material Storage Runoff and Metal Cleaning Water Basins.

The Retired Waste Disposal Basin was constructed in the vicinity of the footprint of the present day Gypsum Storage Area for Units 14 and 15. The impoundment covered an area of approximately 50 acres. The embankment was constructed to

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approximately 13 feet above existing grade to an elevation of approximately 681.0. The embankment interior and exterior slopes were constructed at 3H:1V with compacted fill. Based on information reviewed, a 2.5-foot-wide slurry cutoff wall was constructed along the centerline of the embankment and extended from El. 679.0 to the top of existing low-permeability material. Sargent & Lundy issued drawings in June 1976, which showed a new 12-inch-thick layer of riprap over an existing slag liner on the interior slope of the Retired Waste Disposal Basin embankment. The drawings also called for installation of crushed stone fill in areas of erosion at or near the Retired Waste Disposal Basin water surface line. A typical cross section of the Retired Waste Disposal Basin is shown on **Figure 4.** Information reviewed also indicated that an embankment was constructed sometime between 1976 and 1981, which segregated the east leg of the Retired Waste Disposal Basin from the remainder of the impoundment. As noted above, the Retired Waste Disposal Basin was back-filled in 1982.

The Final Settling Basin (FSB) was constructed in 1976 with fill material (CCFI) to an elevation of 677.0. NIPSCO correspondence of March 26, 2009 to the USEPA states the FSB currently contains *de minimus* CCW residuals. The embankment crest is approximately 15.5 feet wide and the interior and exterior slopes are constructed to a 3 Horizontal: 1 Vertical (3H:1V) slope. Based on information reviewed, a 2.5-foot-wide slurry cutoff wall was constructed along the centerline of the embankment. The cutoff extends from elevation 672.0 to the top of existing impervious material. In 1982 the overflow weir was raised by approximately 1.5 feet to increase the maximum storage capacity of the impoundment. A typical cross section of the FSB is shown on **Figure 5.**

The current Waste Disposal Area and the Recycle Basin were constructed in 1982 to a crest elevation of approximately 681.0 with interior and exterior slopes of approximately 3H:1V. NIPSCO correspondence of August 11, 2010 to the USEPA states the Recycle Basin currently contains *de minimus* CCW residuals and the Waste Disposal Area is designed to handle CCW. The impoundments share a common divider embankment that runs north to south. Typical cross sections for the Waste Disposal Area and Recycle Basin are shown on **Figure 6.** The information reviewed indicated that the embankments were constructed on undisturbed existing site soils using compacted fill. Based on information reviewed, an approximate 2.5–foot-wide slurry cutoff wall was constructed along the centerline of the embankment extending from El. 679 to the top of the shale bedrock, approximately El. 630. A slurry wall was not constructed in the divider embankment.

The Material Storage Runoff Basin and the Metal Cleaning Waste Basin were commissioned in 1982. NIPSCO correspondence of August 11, 2010 to the USEPA states the Material Storage Runoff Basin and the Metal Cleaning Waste Basin are designed to handle CCW. The embankment crest was constructed to an elevation of 667.0. The embankment interior and exterior slopes were constructed at a 3H:1V slope with a compacted fill with a 2.5-foot-wide slurry cutoff wall along the centerline of the embankment crests based on the information reviewed. The cutoff extends from

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approximately El. 665 to the top of the existing impervious material (maximum depth of El. 624). The slurry wall was not constructed in the divider embankment between the Material Storage Runoff Basin and the Metal Cleaning Waste Basin. The crest was constructed to be approximately 15.5 feet wide where a roadway was located and 12.25 feet wide along the divider embankment. Four inches of topsoil was used to cover the exterior slope, 12 inches of crushed stone on the crest, and 9 inches of crushed stone covering the interior slope. Typical cross sections for the Material Storage Runoff Basin and Metal Cleaning Waste Basin are shown on **Figure 7.**

Based on information reviewed, the Intake Settling Basin was commissioned in 1982. NIPSCO correspondence of August 11, 2010 to the USEPA states the Intake Settling Basin does not receive even *de minimus* quantities of CCW. The embankment interior and exterior slopes were designed to be constructed at 3H:1V. An approximately 2.5–foot-wide slurry cutoff was constructed along the centerline of the embankment crest, and extends from El. 673.0 to the top of existing impermeable material, which is present between approximate El. 627 and El. 603 (top of gray silty clay and top of shale respectively). A typical cross section of the Intake Settling Basin is shown on **Figure 8**.

The Yard Drain Stormwater Retention Pond (Retention Pond) was commissioned in 1999 to capture general site runoff. NIPSCO correspondence of August 11, 2010 to the USEPA states the Retention Pond is designed to handle CCW. The Retention Pond is approximately 1 acre in size, is incised, and is lined with cast-in-place concrete. The cast-in-place concrete lining in the interior face of the impoundment was designed to be sloped at approximately 10H:1V. Finished grade around the exterior of impoundment is at approximately El. 665.0. Details regarding concrete thickness, reinforcing size and spacing, and properties of materials used in the construction of the Retention Pond were not available at the time of the assessment

The FGD Landfill Stormwater Runoff Pond (FGD Landfill Runoff Pond) was commissioned in 1983. NIPSCO correspondence of March 26, 2009 to the USEPA states the FGD Landfill Runoff Pond currently contains *de minimus* CCW residuals. Plans and details from the construction of the FGD Landfill Runoff Pond were not available at the time of the assessment. NIPSCO personnel indicate that that the storage capacity of the impoundment had not been expanded since it was placed in service.

1.4.2 Current CCW Impoundment Configuration

The impoundments at the R.M. Schahfer Generating Station currently are used as settling ponds for CCW waste and other plant wastes. CCW sluiced into the impoundments include:

- Bottom ash;
- Fly ash;

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- Boiler slag;
- Boiler, condenser, air pre-heater, and cooling cleaning wastes;
- Flue gas emission control residuals; and
- Boiler blowdown.

Other plant wastes sluiced into the ash ponds include liquids from:

- Recirculating cooling tower blowdown;
- Demineralizer regenerant wastes;
- Flue gas desulfurization (FGD) system blowdown;
- Miscellaneous FGD wastes;
- Boiler room sump effluent;
- Stormwater runoff;
- Water treatment wastes. and
- Metal cleaning wastes

Nine Units were included as part of the visual assessment at the R.M. Schahfer Generating Station. They include the: Final Settling Basin, Intake Settling Basin, Retention Pond, FGD Landfill Runoff, Retired Waste Disposal Basin, Material Storage Runoff Basin, Metal Cleaning Waste Basin, Waste Disposal Area and Recycle Basin. The approximate crest elevations of the embankments and Unit areas are shown on **Table 1.**

The FSB is charged with influent flows from a 4-inch-diameter welded steel pipe (sewage treatment pipe), four 18-inch-diameter welded metal pipes (cooling tower blowdown pipes), and one 30-inch-diameter welded metal pipes (originating from the Material Storage Runoff Basin and Metal Cleaning Waste Basin pump house). Water from the FSB is discharged from a Pump Station into the Kankakee River. An 18-foot-wide overflow weir, with a crest elevation of approximately El. 674.0 discharges water into a concrete-lined channel with an invert at El. 660.0. The channel ties into a drainage ditch that discharges via the Davis Ditch to the Kankakee River. The discharge through the Pump Station of the Final Settling Basin is shown on **Figure 9.**

The Intake Settling Basin is charged with water pumped from the Kankakee River through a 42-inch-diameter welded steel pipe. The discharge pipe invert is at El. 655.0. Details of the intake structure are shown on **Figure 10**. Water is discharged through a pump station to the R.M. Schahfer Generating Station and is used as process cooling

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water. Two (2) 24-inch-diameter Corrugated Metal Pipe (CMP) overflows are located along the north embankment. The elevation of the overflow pipe inverts was not available at the time of the assessment. NIPSCO correspondence of August 11, 2010 to the USEPA states the Intake Settling Basin does not receive even *de minimus* quantities of CCW.

Table 1 – Approximate Unit Low Crest Elevations and Areas

Unit Name	Approximate Low Crest Elevation	Approximate Unit Area (Acres)
Final Settling Basin	677.0	214
Intake Settling Basin	675.0	30
Retention Pond	Not	1
FGD Landfill Runoff	663.0	5
Retired Waste Disposal Basin	681.0	54
Material Storage Runoff Basin	667.0	12
Metal Cleaning Waste Basin	667.0	12
Waste Disposal Area	681.0	75
Recycle Basin	681.0	30

The Retention Pond receives site stormwater inflow from two (2) 12-inch-diameter Corrugated HPDE Pipes with approximate inverts at El. 661.5. The outflow of the pond is controlled through the pump station. No construction records of the Retention Pond's outlet/inlet structures were supplied.

The FGD Landfill Runoff Pond is charged with runoff water from the adjacent landfill. Runoff from the capped sections of the landfill is collected in perimeter ditches that feed by gravity into the FGD Landfill Runoff Pond. Runoff from the landfill enters the pond from the southeast corner through a weir constructed in the crest of the earthen embankment. The FGD Landfill Runoff Pond discharges to a branch of the Stahlbaum Ditch through an overflow pipe located along the north embankment. The discharge appears to be controlled with a gate. No construction records of the FGD Landfill Runoff Pond's outlet/inlet structures were supplied.

The Retired Waste Disposal Basin has been filled with Coal Combustion Residual (CCR) and had no visible outlet/inlet structures. Based on information reviewed the outflow for the impoundments was controlled through a pump station along the east embankment, which sluiced water from the impoundments into the Material Storage Runoff Basin and Metal Cleaning Waste Basin.

The Material Storage Runoff Basin is charged with coal storage runoff, yard drain effluent including fly ash and gypsum from the Retention Pond, and material from the FGD process pumps. In-flows are through two (2) 24-inch-diameter CMPs and a 6-

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inch-diameter welded steel pipe, with inverts of approximately El. 665.4. Water is discharged from the Material Storage Runoff Basin to the Final Settling Basin via pumps located at the northeast corner of the Material Storage Runoff Basin and also to the Metal Cleaning Waste Basin through an open channel that is approximately 8 feet wide by 3 feet deep and is located near the south end of the divider embankment. The Metal Cleaning Waste Basin is charged with flow from plant sluice pipes carrying demineralizer regenerant waste and air heater wash water and discharges to the Final Settling Basin via pumps located at the northwest corner of the Metal Cleaning Waste Basin.

The Waste Disposal Area is charged with influent flows at the northwest corner of the impoundment by through four (4) 16-inch-diameter and four (4) 10-inch-diameter welded steel pipes, with inverts of approximately El. 680.2. In addition, further sluicing enters the impoundment from one (1) 12-inch-diameter welded steel pipe along the north embankment, just north of the pump station, with an invert at El. 679.1. Water flows from the Waste Disposal Area into the Recycle Basin through a weir located in the east divider embankment. The outlet for the impoundment is two (2) 24-inch-diameter CMP pipes, which discharge into a 5-foot-wide, concrete-lined channel, in which the pipe invert from interior to exterior slope is EL. 663.8 to El. 662.0 respectively.

The Recycle Basin is charged through water from the Waste Disposal Area, which flows into the Recycle Basin through a weir located on the west embankment (being used as a divider embankment). Stoplogs for the weir are not readily available in case of an emergency. No CCW is directly sluiced into the impoundment, although CCW can enter the impoundment via Waste Disposal Area discharges. The outlet for the impoundment is via a pump station along the north embankment.

1.4.3 Other Impoundments

An impoundment labeled as the Coal Pile Runoff Basin is shown on drawings dated 1978. The drawings show the impoundment to be located west of the Waste Disposal Area/Basin, south of Unit 19. However, this impoundment was not present during our site visit.

1.5 Previously Identified Safety Issues

Based on our review of the information provided by plant personnel, there have been two identified impoundment-related safety issues at the R.M. Schahfer Generating Station within the last 10 years. A summary of the two safety issues is discussed below.

1.5.1 June 2008 Failure

In June 2008 the mechanical failure of a pump led to an overtopping of the east embankment of the Metal Cleaning Waste Basin. Subsequent to the overtopping, the embankment breached. NIPSCO personnel indicated the breach was repaired by their

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personnel and that discharge from the breach was contained within plant property. Documentation of this failure was not provided for review.

1.5.2 March 10, 2009 Failure

On March 10, 2009 the mechanical failure of a pump led to an overtopping of the east embankment of the Metal Cleaning Waste Basin. Subsequent to the overtopping, the embankment breached. NIPSCO personnel indicated the breach was repaired by their personnel and that discharge from the breach was contained within plant property. Documentation of this failure was not provided for review.

1.6 Site Geology

The R.M. Schahfer Ash Pond Complex is located in the Kankakee River Basin. The Basin lies across the crest of the Kankakee Arch, a major structural feature that separates the Michigan and Illinois Basins., According to the Indiana Geological Survey bedrock is likely comprised of Devonian Aged shale and dolomitic limestones that exhibit other sedimentary features generally ascribed to penesaline or hypersaline depositional regimes and fine-grained sandy dolomite of the Muscatatuck Group. Based on a review of the subsurface information and reports, the top of bedrock is present approximately 40 to 70 feet below existing site grades. Soil overburden consists of lacustrine silts and clays interbedded with fine to coarse-grained outwash sediments.

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Section 2
Field Assessment

2.1 Visual Observations

CDM performed a visual assessment of the CCW impoundments at the R.M. Schahfer Generating Station. The perimeter embankments of the impoundments total approximately 46,590 feet in length and are up to 17 feet high. The assessments were completed following the general procedures and considerations contained in Federal Emergency Management Agency's (FEMA's) Federal Guidelines for Dam Safety (April 2004) relative to observations concerning settlement, movement, erosion, seepage, leakage, cracking, and deterioration. A Coal Combustion Dam Inspection Checklist and CCW Impoundment Inspection Form, developed by USEPA, were completed on-site for each impoundment during the site visit. Copies of these forms are included in **Appendix A**. Photograph location plans are shown on **Figures 11a through 11j**, and photographs are included in **Appendix B.** Photograph locations were logged using a GPS device. The photograph coordinates are listed in **Appendix C**.

CDM visited the site on April 26, 2010 and April 27, 2010 to make visual assessments of the impoundments. The weather was generally overcast with daytime high temperatures between 48 and 55 degrees Fahrenheit. The daily total precipitation prior to the site visit is shown in **Table 2**. The data was recorded at the Valparaiso, Indiana airport, which is approximately eighteen miles north of the R.M. Schahfer Generating Station.

Table 2 – Approximate Precipitation Prior to Site Visit

Dates of Site Visits - April 28, 2010 & April 29, 2010		
Day	**Date**	**Precipitation (inches)**
Monday	April 19	0
Tuesday	April 20	0
Wednesday	April 21	0
Thursday	April 22	0
Friday	April 23	0.12
Saturday	April 24	0.89
Sunday	April 25	0.27
Monday	April 26	0
Tuesday	April 27	0
Total	**Week Prior to Site Visit**	**1.28**
Total	**Month Prior to Site Visit**	**3.28**

2.2 Final Settling Basin

An overview of the Final Settling Basin photograph locations is shown on Figure 11a. A private residence is located approximately 200 feet from the north embankment of the Final Settling Basin (Photographs 27, 28, and 29). A breach of the Final Settling Basin north embankment could likely adversely impact this structure and could result in loss of life. The Final Settling Basin was impounding water at the time of the assessment with approximately 4 feet of freeboard.

2.2.1 Exterior Slope

The exterior slopes appear to be in fair condition. The exterior slopes of the Final Settling Basin are approximately 3H: 1V. Several areas of minor surface erosion, erosion rills, and localized surface failures were observed along the exterior slopes (Photographs 4, 6, 8, 12, 13, 15, 32, and 38). A localized slope failure (approximately 32 feet in length) was observed along the west embankment (Photograph 36). Riprap has been placed on the southwest embankment exterior slope apparently to mitigate areas of erosion (Photograph 8 and 10). Little to no vegetation is growing along the top of the south and west embankment exterior slopes. In these areas, stone access road (crest) surfacing has been displaced onto the upper portions of the embankment exterior slope (Photographs 5, 6 and 15).

A surface depression was observed on the southwest embankment exterior slope below the 10-inch-diameter welded metal intake pipe (Photograph 9). A rodent burrow was located on the southwest embankment exterior slope (Photograph 14).

The east embankment was covered with multiple species of grass, which was generally 10 to 16 inches high. Grasses, shrubs, and small trees (up to 3 inches in diameter) were observed near the toe of the west, southwest, and north embankments exterior slopes (Photograph 5, 6, 8, 10, 14, 24, and 26). Several brush piles were observed in the open field at the toe of the slope, south of the Final Settling Basin (Photograph 11). The piles were identified by NIPSCO personnel as debris from previous embankment maintenance.

An area of possible seepage was identified where an unusual amount of localized sedimentation was observed in a perimeter ditch located approximately 150 feet south of the Final Settling Basin's south embankment (Photograph 19). An area of moss was observed on the north embankment exterior slope, which may be indicative of seepage (Photograph 30). The area was dry at the time of the assessment.

2.2.2 Crest

The crest appeared to be in satisfactory condition (Photographs 7, 17, 20, 22, and 29). The average width of the embankment crest is approximately 16 feet. The crest is surfaced with compacted gravel and serves as an access road around the perimeter of the impoundment. There were no deficiencies observed in this area.

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2.2.3 Interior Slope

The interior slopes appear to be in fair condition. In general, the embankment's interior slope is armored with riprap (Photograph 3, 7, 16, 21, 23, 34, 35 and 39) and has a slope of approximately 3H: 1V. Riprap has been eroded near the waterline along the majority of the interior slope (Photograph 16 and 39 are typical). Riprap located on the east embankment interior slope has eroded from the top of the slope (Photograph 21).

2.2.4 Outlet Structures

Water is discharged from the Final Settling Basin pump station into the Kankakee River. An overflow weir located on the west embankment appears to be in satisfactory condition (Photographs 1 and 40). The outlet channel is free of debris. Woody brush (approximately 2 inches in diameter) was growing along and overhanging the channel walls (Photographs 2 and 40).

2.3 Intake Settling Basin

An overview of the Intake Settling Basin photograph locations is shown on Figure 11b. The Intake Settling Basin had standing water at the time of the assessment, with approximately 3 feet of freeboard. NIPSCO correspondence of August 11, 2010 to the USEPA indicates the Intake Settling Basin does not receive even *de minimus* quantities of CCR.

2.3.1 Exterior Slope

The exterior slope of the Intake Settling Basin appeared to be in poor condition. The exterior slopes were approximately 3H: 1V. Two 24-inch-diameter CMP overflow pipes discharge onto the exterior slope of the north embankment exterior slope. The invert of these pipes projects from the slope face and is approximately 16 inches above the surface of the exterior slope. Riprap has been placed at the discharge outlet and along an erosion rill apparently created by historic discharges from these pipes. The rill varies in depth and width, with a maximum depth of approximately 30 inches and a maximum width of approximately six feet (Photograph 65). An erosion rill was observed on the west embankment exterior slope (Photograph 66). A small rodent burrow was observed on the on the south embankment exterior slope (Photograph 43). The exterior slopes were generally covered with grass, brush, small shrubs, and trees. Grasses were generally 8 to 14 inches high. The maximum diameter of shrubs was approximately 2 inches (Photographs 41, 44, 45, 51, 67 and 74) and the maximum diameter of trees was approximately 12 inches (Photographs 41, 50, and 58) .

Areas of possible seepage were observed on the east, north, and west embankment exterior slopes (Photographs 47, 48, 49, 51, 52, 55, 60, 61, and 71). Standing water was also observed along the toe of the east and north embankment exterior slopes (Photograph 55 and 61). Due to the significant recent rainfall, the observed standing water could not be clearly identified as seepage.

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2.3.2 Crest

The crest appeared to be in satisfactory condition (Photographs 53, 58 and 69). The average width of the embankment crest is approximately 15 feet. The crest is surfaced with compacted gravel and serves as an access road around the perimeter of the impoundment. Grass is starting to become established along the centerline of the crest (Photographs 53 and 58 are typical).

2.3.3 Interior Slope

The embankment interior slopes appear to be in fair condition. The interior slope was approximately 3H: 1V and armored with riprap (Photograph 44, 46, 62, 63, 69, 70, 75, and 76). Sparse vegetation, consisting of grasses, brush, and saplings was observed on all interior slopes near the embankment crest (Photographs 42, 46, 53, 56, 57, 58, 59, 62, 63, 65, 69, 70, and 75). Brush was generally 12 to 36 inches high and the maximum diameter of saplings was approximately 1 inch.

Minor erosion of riprap near the waterline and beaching was observed on the north embankment interior slope (Photograph 57). Beaching is defined as the progressive erosion of the interior embankment slope caused by repeated wave action striking the embankment just above the water line, displacing material from the face of the slope and depositing it at a point farther down the slope as the wave recedes, creating a beach.

2.3.4 Outlet Structures

The outlets appear to be in fair condition. The normal outflow of the Intake Settling Basin is conducted via the pump station. Two (2) 24-inch-diameter CMP's, located on the north embankment, act as an overflow along (Photographs 63, 64, and 65). Riprap was observed in one of the outlet pipes (Photograph 63) and sediment was visible inside of the outlet pipes (Photograph 64).

2.4 Retention Pond

An overview of the Retention Pond photograph locations is shown on Figure 11c. The Retention Pond is an incised impoundment, lined with cast-in-place concrete. The retention pond had standing water at the time of the assessment with approximately 3 feet of freeboard.

2.4.1 Interior Slope

The interior slope of the concrete incised pond appears to be in satisfactory condition (Photograph 81 and 82). A surface crack in the concrete was observed at the top of the slope near the pipe inlets (Photograph 79). Construction joints have been sealed with an apparently elastic caulk.

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2.4.2 Outlet Structure

Outflow from the Retention Pond is through the pump station located on the northeast corner of the pond.

2.5 FGD Landfill Runoff Pond

An overview of the FGD Landfill Runoff Pond photograph locations is shown on Figure 11d. The FGD Landfill Runoff Pond had standing water at the time of the assessment with approximately 3 feet of freeboard. Runoff from the landfill enters the pond from the west through a weir constructed in the crest of the earthen embankment (Photograph 89). The weir depression is approximately 60 feet long and 24 to 30 inches deep.

2.5.1 Exterior Slope

The exterior slopes of the FGD Landfill Runoff Pond appear to be in fair condition. The exterior slopes were approximately 3H: 1V. Portions of the embankment's exterior slopes were assessed that were located within NIPSCO's secured property. The embankment's exterior slopes located beyond a NIPSCO security fence were observed from the secured area.

2.5.2 Crest

The crest appeared to be in fair condition (Photograph 87). The average width of the embankment crest is approximately 15 feet. A localized depression was observed along the north embankment crest (Photograph 87). Uncontrolled grass cover was observed along the centerline between apparent tire ruts and on the ends of the north embankment crest (Photograph 87). The crest is apparently being used as an access road. Uncontrolled grass cover was encountered on the entire east, south, and west embankment crest (Photograph 92 typical). An inlet to the FGD Runoff Pond in the crest close to water line was observed on the east embankment (Photograph 89).

2.5.3 Interior Slope

The interior slopes appear to be in poor condition. The embankments' interior slopes are armored with riprap and have a slope of approximately 3H: 1V. Heavy vegetation is prevalent on all interior slopes (Photographs 84, 88, and 90). Trees, up to 24 inches in diameter, were observed on all of the interior slopes (Photographs 85, 86, 87, 88, 90, 91, and 93). The largest trees were observed on the east embankment interior slope (Photographs 88 and 93). An approximate 12-inch-diameter tree was growing on the south embankment exterior slope (Photograph 92).

2.5.4 Outlet Structures

The outlet pipe that discharges into a perimeter ditch is located outside of a fence beyond the owner's secured property and could not be observed. An overflow pipe, (12-inch-diameter CMP) is located along the north embankment (Photograph 84). The pipe appears to be in satisfactory condition. Discharges are controlled by a gate/valve

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located immediately adjacent to the pond and within the secured/fenced area of NIPSCO property.

2.6 Retired Waste Disposal Basin

An overview of the Retired Waste Disposal Basin photograph locations is shown on Figure 11e. The Retired Waste Disposal Basin has been back-filled. NIPSCO indicates in correspondence dated August 11, 2010, to USEPA that a dividing structure and road were apparently constructed when the unit was retired. NIPSCO personnel indicated fill materials consisted of ash and other on-site material. NIPSCO personnel indicated that the unit has not been decommissioned but is presently closed from usage as a disposal facility from an operational standpoint. This area is currently being used by Georgia Pacific to stockpile synthetic gypsum.

2.6.1 Exterior Slope

The exterior slopes appear to be in poor condition. The exterior slopes were approximately 3H: 1V. Localized sloughing, scarps and numerous erosion rills were observed on the west and north embankment exterior slopes (Photographs 99, 100, 108, 111, 114, 115, 116, 117, 118, 119 and 120). Localized erosion features were observed on the west embankment exterior slope (Photographs 100 and 101). Up to two feet of embankment material had been eroded in this area. Seepage was also observed at this same location near the toe of the slope (Photograph 101). Areas outside of and adjacent to the south embankment have been back-filled to an elevation equal to or higher than the original embankment crests. Material appeared to have been excavated from a portion of the toe of the north embankment exterior slope, leaving it unprotected against possible erosion (Photograph 122).

Grassy vegetation and brush were observed on the north, east and west embankment exterior slopes. The vegetation was approximately 6 to 12 inches tall. Trees (up to 12 inches in diameter) were observed near the toe of the exterior slopes of the north and west embankments (Photographs 96 and 112). Rodent burrows were observed on the west and north embankment exterior slopes (Photographs 98 and 109). A possible abandoned monitoring well was located on the east embankment exterior slope (Photograph 107).

2.6.2 Crest

The crest appeared to be in satisfactory condition (Photograph 96, 97, 104, 112, 120 and 121). The crest is surfaced with compacted gravel and serves as an access road around the perimeter of the impoundment. Light vegetation was present along the centerline of the west embankment crest (Photographs 96 and 97). Some rutting was observed on the east embankment crest (Photograph 120). The crests appear to consist of compacted ash materials.

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2.6.3 Interior Slope

As discussed, the impoundment had been previously back-filled. The embankment interior slope was not distinguishable. Some standing water was observed within the limits of the pond (Photograph 105) and (Photograph 113).

2.6.4 Outlet Structures

No outlets are currently active at the Retired Waste Disposal Area, as the pond has been filled in.

2.7 Material Storage Runoff Basin

An overview of the Material Storage Runoff Basin photograph locations is shown on Figure 11g. The Material Storage Runoff Basin had standing water and ash at the time of the assessment, with approximately 3 feet of freeboard. NIPSCO personnel indicated that the Material Storage Runoff Basin had been compartmentalized into cells through installation of several internal divider embankments to assist in the settlement of solids (Photographs 125, 129, 130, and 133). The divider embankments appear to be constructed of compacted ash.

2.7.1 Exterior Slope

The exterior embankments appear to be in poor condition. The exterior slopes are approximately 3H: 1V. Erosion rills were observed on approximately 50 percent of the north embankment exterior slope (Photograph 124). Areas of standing water were observed at the toe of the slope.

The north embankment exterior slope is sparsely vegetated with grass (Photograph 124).

2.7.2 Crest

The embankment crest appears to be in fair condition (Photograph 123, 132, 133, and 134). The north, south and west embankment crests are approximately 30 feet wide. The crest of the east embankment, which divides the Material Storage Runoff Basin and the Metal Cleaning Water Basin, is approximately 12 feet wide. The west embankment crest appears to be constructed of ash (Photograph 132). The north, south, and east embankments appear to be constructed of granular soils (Photograph 132, 134, and 136).

2.7.3 Interior Slope

The interior slope appears to be in poor condition. The interior slopes were constructed to 3H: 1V, however the north and west embankments interior slopes have eroded to approximately 1H: 1V. Approximately 60% of the north and 100 % of the east embankment interior slopes are armored with riprap (Photographs 123 and 136). When the impoundment was compartmentalized into cells, it appears riprap was not replaced on the interior slopes. Erosion was observed along the north divider

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embankment interior slope (Photograph 126). The west embankment interior slope is not armored and light vegetation has started to grow on the slope (Photograph 133).

Heavy vegetation (approximately 60 inches in height) and small trees (approximately 12 to 24 inches in diameter) have grown along the south embankment interior slope (Photograph 135). Some erosion of riprap near the waterline has occurred in this area.

2.7.4 Outlet Structures

Water from the Material Storage Runoff Basin is pumped to the Final Settling Basin. Two 24-inch-diameter CMP's located along the southern embankment, are in satisfactory condition (Photograph 135). Water flows into the Metal Cleaning Water Basin through an open channel located at the southeastern corner of the pond (Photograph 136).

2.8 Metal Cleaning Waste Basin

An overview of the Metal Cleaning Waste Basin photograph locations is shown on Figure 11h. The Metal Cleaning Waste Basin had standing water at the time of the assessment with approximately 3 feet of freeboard. The basin is currently used as a secondary settling area for solids from the scrubber process. An open channel exists between the Material Storage Runoff Basin and the Metal Cleaning Waste Basin (Photograph 136).

2.8.1 Exterior Slope

The exterior slopes appear to be in satisfactory condition. The exterior slopes were constructed to approximately 3H: 1V. Small saplings (approximately 6 inches in height) sporadically cover the embankment's exterior slopes (Photograph 141 typical).

2.8.2 Crest

The crest appears to be in fair condition (Photograph 137, 138, 139, and 143). The embankment's north, south and east embankment crests are approximately 30 feet wide. The crest of the east embankment, which divides the Material Storage Runoff Basin and the Metal Cleaning Waste Basin, is approximately 12 feet wide. Minor rutting was observed along the east embankment crest (Photograph 137). A low area was observed along the southern portion of the east embankment crest (Photograph 139) in the vicinity of the reported breach. It was not apparent if the slurry wall was reconstructed after the breach.

2.8.3 Interior Slope

The interior slopes appear to be in fair condition with a slope of approximately 3H: 1V. Vegetation, including "swamp grass" and saplings (approximately 6 inches in height), were present along the south and east embankment (Photographs 137 and 139). A fresh rodent burrow was encountered along the east embankment interior slope (approximately 2 feet in length, 1 foot deep, Photograph 140).

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2.8.4 Outlet Structures

Water is pumped from the Material Storage Runoff Basin to the Metal Cleaning Waste Basin (Photograph 142). In addition, water and ash flow through an open channel weir located at the southeastern corner of the pond (Photograph 136).

2.9 Waste Disposal Area

An overview of the Waste Disposal Area photograph locations is shown on Figure 11i. The Waste Disposal Area had standing water at the time of the assessment, with approximately 18 inches of freeboard.

2.9.1 Exterior Slope

The exterior slopes appear to be in fair condition. The exterior slopes were approximately 3H: 1V. Grass cover was prevalent over the exterior slope (Photograph 144, 148, 149, 151, 156, and 158). Small shrubs and trees (up to 12 inches in diameter) were observed along the exterior slope (Photograph 144, 148, and 159) and line the outlet channel located on the west embankment (Photograph 151).

High grass cover made it difficult to observe surface erosion features. However, a low area was encountered on the west embankment exterior slope (Photograph 149). In addition, an area of surface erosion was observed along the west embankment exterior slope (Photograph 158).

2.9.2 Crest

The crest appears to be in satisfactory condition (Photograph 154, 155, and 162). The crest is being used as an access road and has a width of approximately 15 feet.

2.9.3 Interior Slope

The embankment interior slopes were in fair condition. The interior slope is approximately 3H: 1V. The interior slope is generally armored (Photograph 161 typical) with riprap. Vegetation (up to 36 inches in height) has grown through the riprap and lines the interior slope (Photograph 147, 157, 160, and 161). Erosion of the riprap has begun to take place along the east embankment (Photograph 167).

2.9.4 Outlet Structures

The outlet structure for the Waste Disposal Area is in fair condition. The outlet structure consists of two (2) 24-inch-diameter CMP pipes that discharge into a 5–foot-wide concrete-lined channel (Photographs 150, 151, and 153). Tree branches were obstructing the channel (Photograph 152). An outlet structure constructed to accommodate stop logs was located at the southeast corner of the pond and is used to balance pond levels between the Waste Disposal Area and Recycle Settling Basins (Photograph 163 and 164). Site personnel indicated that they did not know where the stop logs for the outlet structure were located.

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2.10 Recycle Basin

An overview of the Recycle Basin photograph locations is shown on Figure 11j. The Recycle Basin had standing water at the time of the assessment, with approximately 1.5 feet of freeboard.

2.10.1 Exterior Slope

The embankment's exterior slopes are in fair condition. The exterior slopes are approximately 3H: 1V. The embankments were generally covered with grass up to 12 inches in height (Photographs 171 and 176). Trees (up to 12 inches diameter) were located near to toe of the south embankment exterior slope (Photograph 170). A tree was also observed near the top of the east embankment exterior slope (Photograph 176).

Numerous erosion features were observed along the south embankment exterior slope (Photograph 169, 173, and 174). Little to no vegetation is growing along the top of the south and west embankment exterior slopes. In these areas stone used for surfacing the access road on the crest has been displaced onto the upper portions of the embankment exterior slope face (Photograph 171, 172). An erosion rill was observed on the south embankment exterior slope (Photograph 175). A localized slope failure (approximately 80 feet in length) was observed along the east embankment exterior slope (Photograph 176).

2.10.2 Crest

The embankment crest appears to be in satisfactory condition (Photograph 170, 177, and 178). The crest is approximately 15 feet wide.

2.10.3 Interior Slope

The interior slopes were in fair condition. The interior slopes are generally armored with riprap (Photograph 179 and 181). The embankment slopes are approximately 3H: 1V. Vegetation (up to 36 inches in height) has grown through the riprap and lines approximately 80 percent of the interior slope (Photograph 168 and 179). Erosion of the riprap has begun to take place along the west embankment (Photograph 181).

2.10.4 Outlet Structures

The outflow from the Recycle Basin is through a pump station (Photograph 180). An outlet structure constructed to accommodate stop logs was located at the southwest corner of the pond and provides inflow to the Recycle Basin (Photograph 163 and 164). Site personnel indicated that they did not know where the stop logs for the outlet structure were located. The function of the structure as reported by NIPSCO is to provide clarified water to the Recycle Basin for reuse in boiler slag/bottom ash sluicing.

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2.11 Monitoring Instrumentation

The water surface elevations for the Final Settling Basin, the Recycle Basin, and the Intake Settling Basin are monitored and recorded daily by plant personnel. Plots showing water elevations over a period extending from May 4, 2009 to April 26, 2010 are shown on **Figure 12, Figure 13, and Figure 14** for the Final Settling Basin, Recycle Basin, and Intake Settling Basin respectively.

The water level variance for the Final Settling Basin is approximately 2.3 feet. The high and low water levels observed during the observation period were El. 674.0 and El. 671.7 respectively. The variance for the Recycle Basin is approximately 6.1 feet. The high and low water levels observed during the observation period were El. 679.0 and El. 672.9 respectively. The variance for the Intake Settling Basin is approximately 1.6 feet. The high and low water levels observed during the observation period were El. 670.5 and El. 668.9 respectively.

Based on information reviewed there are no active piezometers or monitoring wells installed at the R.M. Schahfer Generating Station. NIPSCO correspondence of August 11, 2010 to the EPA states there are a number of monitoring wells installed at R.M. Schahfer Generating Station. The referenced monitoring wells were not observed.

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Section 3
Data Evaluation

3.1 Design Assumptions

Requested information including plans and cross sections, construction field reports, correspondence and material test reports were provided by NIPSCO to CDM; however, the original NIPSCO design assumptions for the CCW impoundments were not able to be located in these materials.

3.2 Hydrologic and Hydraulic Design

CDM was not provided with any hydrologic and hydraulic designs and analyses for the impoundments.

CDM performed a preliminary evaluation of the hydraulic capacity of the impoundments to estimate if the ponds are adequately sized to store or pass the design storm event. Based on "General Guidelines for New Dams and Improvements to Existing Dams in Indiana", IDNR (February 2010), the Probable Maximum Precipitation (PMP) for a 6-hour storm event over a 10 square-mile area in the vicinity of the site is approximately 26.2 inches. IDNR requires low/significant and high hazard structures to pass 50% PMP and 100% PMP, respectively. The drainage area contributing to the ponds at this site is limited to the storage area within the impoundments. Preliminary evaluations indicate that there is enough storage capacity and freeboard in the significant hazard Retention Pond, FGD Landfill Runoff Pond, Material Storage Runoff Basin, Metal Cleaning Waste Basin, Waste Disposal Basin and Recycle Basin at the current operating pools to safely store a 50% of the PMP event without being overtopped. Preliminary evaluation of the high hazard Final Settling Basin and Intake Settling Basin indicates that there is enough storage capacity and freeboard at the current operating pool to safely store 100% of the PMP event without being overtopped.

3.3 Structural Adequacy and Stability

The IDNR requires new and existing structures to be evaluated under standard design guidelines. Procedures established by the United States Army Corps of Engineers (USACE), the United States Bureau of Reclamation, the Federal Energy Regulatory Commission, and the Natural Resources Conservation Service are generally accepted engineering practice. Minimum required factors of safety outlined by the USACE in EM 1110-2-1902, Table 3-1 and seismic factors of safety by FEMA Federal Guidelines for Dam Safety, Earthquake Analyses and Design of Dams (pgs. 31, 32 and 38, May 2005) are provided in **Table 3**.

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Table 3 - Minimum Required Factors of Safety

Load Case	Minimum Required Factor of Safety
Steady-State Condition at Normal Pool or Maximum Storage Pool Elevation	1.5
Rapid Drawdown Condition from Normal Pool Elevation	1.2
Maximum Surcharge Pool (Flood) Condition	1.4
Seismic Condition at Normal Pool Elevation	1.0
Liquefaction	1.3

3.3.1 Ash Pond Impoundments

CDM was not provided with embankment stability analyses, design calculations or the properties of the embankment soils necessary to perform stability analyses. Without these soil properties, CDM was not able to perform a stability analyses for the R.M. Schahfer Generating Station ash pond embankments.

3.4 Foundation Conditions

Based on our review of the drawings provided it appears that the ponds were not constructed on wet ash or slag since the power facilities were not yet on line when they were constructed. Construction drawings supplied by NIPSCO showed that the embankments were constructed of "C.C.F.I." or "compacted fill," however no further information was provided showing the properties of these materials. NIPSCO construction drawings show a 26-inch-wide slurry wall, centered on the embankments, extending down to bedrock.

3.5 Operations and Maintenance

NIPSCO personnel indicated that there is no written formal operation or maintenance program and there is no formal periodic (Weekly or monthly) visual inspection procedure for the CCW impoundments at the R.M. Schahfer Generating Station. NIPSCO personnel indicated a formal dam inspection of the R.M. Schahfer Generating Station Ash Ponds had been performed by Professional Engineers from Golder Associates, Lansing MI. Copies of the report were not available for review, however NIPSCO indicated the inspection had been performed in a manner consistent with IDNR regulations.

Water levels for the Final Settling Basin, Intake Settling Basin, and Recycle Basin are monitored and pond elevations are recorded on a daily basis by plant personnel. NIPSCO personnel indicated water levels are not monitored in the other impoundments. NIPSCO personnel indicated there is no formal vegetation control or

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maintenance program for the CCW impoundments. NIPSCO personnel also indicated there is no Emergency Action Plan for the impoundments.

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Section 4
Conclusions and Recommendations

4.1 Hazard Classification

The R.M. Schahfer Generating Station impoundments currently do not have an IDNR-developed Hazard Potential Classification. Based on the USEPA classification system as presented on page 2 of the USEPA check list (**Appendix A**) and our review of the site and downstream areas, recommended hazard ratings have been assigned to the impoundments as summarized in **Table 4** below:

Table 4 – Recommended Impoundment Hazard Classification Ratings

Impoundment	Recommended Hazard Rating [1]	Basis
Final Settling Basin	High Hazard	• A breach of embankment will probably adversely affect the Kankakee River, surrounding roadways, a residence (north of pond), and the owner's property, and also result in probable loss of life, due to the close proximity of the basin to the private residence.
Intake Settling Basin	High Hazard	• A breach of embankment will adversely affect the Kankakee River, surrounding roadways, and the Owner's property; and also result in probable loss of life, due to the close proximity of the basin to the private residence.
Retention Pond	Low Hazard	• Because the retention pond is incised, there is minimal potential for release into the environment.
FGD Landfill Runoff Pond	Low Hazard	• A breach of the embankment will likely result in low economic and environmental loses. • A breach could damage County Route 1400, located approximately 800 feet to the south. • A breach will likely not impact the adjacent Final Settling Basin due to the location of the pond (approximately 0.3 miles southeast of the Final Settling Basin).
Retired Waste Disposal Basin	Significant Hazard	• Although this basin has been backfilled, an undetermined volume of water is likely still held within the embankments as evidenced by the seepage observed on the west embankment. • A breach of embankment, may cause environmental losses and damage to the Owner's facility. It is also possible that adjacent Waste Disposal Area and Recycle Basin will be drained in the event of a breach of the Retired Waste Disposal Basin.

Table 4 – Recommended Impoundment Hazard Classification Ratings
(continued)

Impoundment	Recommended Hazard Rating [1]	Basis
Material Storage Runoff Basin	Low Hazard	• If breach of embankment occurs, it is possible that both the Material Storage Runoff Basin and Metal Cleaning Waste Basin will be drained (open channel located on divider embankment). Economic losses will be principally limited to Owner's property.
Metal Cleaning Waste Basin	Low Hazard	• If breach of embankment occurs, it is possible that both the Material Storage Runoff Basin and Metal Cleaning Waste Basin will be drained (open channel located on divider embankment). Economic losses will be principally limited to Owner's property.
Waste Disposal Basin	Significant Hazard	• A breach of embankment will adversely affect Kankakee River, surrounding roadways, and the Owner's property. • If breach of embankment occurs, it is possible both the Waste Disposal Area and Recycle Basin will be drained (stoplogs for divider embankment are not readily available in the event of an emergency).
Recycle Basin	Significant Hazard	• A breach of embankment will adversely affect Kankakee River, surrounding roadways, and the Owner's property. • If breach of embankment occurs, it is possible that both the Waste Disposal Area and Recycle Basin will be drained (stoplogs for divider embankment are not readily available in the event of an emergency.

Notes:

1. Dams assigned the low hazard potential classification are those where failure or misoperation would result in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property; Dams assigned the significant hazard potential classification are those dams where failure or misoperation would result in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns; Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

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4.2 Acknowledgement of CCW Impoundment Unit Condition

CDM acknowledges that the management units (Final Settling Basin, Intake Settling Basin, Retention Pond, FGD Landfill Runoff Pond, Retired Waste Disposal Basin, Material Storage Runoff Basin, Metal Cleaning Waste Basin, Waste Disposal Basin, and Recycle Basin) referenced herein were assessed by Michael L. Schumaker, P.E., William J. Friers, P.E., Kyle R. King, and Michael P. Smith. The Final Settling Basin, Intake Settling Basin, FGD Landfill Runoff Pond, Retired Waste Disposal Basin, Material Storage Runoff Basin, Metal Cleaning Waste Basin, Waste Disposal Basin, Recycle Basin appeared to be in **FAIR** condition based on site observations. The Retention Pond appeared to be in **SATISFACTORY** condition based on site observations. However there is a lack of documentation relative to the design and construction of these facilities, as identified in Section 3 of this report. It is not known if critical studies or investigations (stability, hydrologic, hydraulic, seismic) have been performed to confirm that potential safety deficiencies do not exist. Therefore, despite the **FAIR** and SATISFACTORY condition assessments based upon field observations, the Final Settling Basin, Intake Settling Basin, Retention Pond, FGD Landfill Runoff Pond, Retired Waste Disposal Basin, Material Storage Runoff Basin, Metal Cleaning Waste Basin, Waste Disposal Basin, and the Recycle Basin are judged to be in **POOR** condition. Additional documentation and future studies performed to confirm the condition and performance of these impoundments may be sufficient to substantiate an improved condition assessment. An assessment of **POOR** for these ponds is due to the need for additional studies or investigations to confirm that other potential safety deficiencies do not exist. Observations at the time of the site assessment revealed eroded pond embankments, excessive vegetation, and possible seepage concerns.

As described in the following sections further studies, such as confirmation of sufficient storage capacity and slope stability analysis; maintenance; and monitoring may improve the condition of these impoundments.

4.3 Maintaining and Controlling Vegetation Growth

Large trees and/or uncontrolled vegetation have established themselves along the exterior slopes of the Final Settling Basin, Intake Settling Basin, Retired Waste Disposal Basin, Metal Cleaning Waste Basin, Recycle Basin, and Waste Disposal Area and along the interior slopes of the FGD Landfill Runoff Pond, Material Storage Runoff Basin. Tree roots can concentrate seepage through the embankments, which could lead to internal erosion. Internal erosion would weaken the embankment, reduce stability, and could result in a slope failure and potential release of stored water and ash. In addition, uprooting of trees during storms or other adverse conditions can create voids in the embankment that are then susceptible to erosion. Brush also obscures the embankment surface limiting visual observations, provides a haven for burrowing animals, and retards growth of desirable grass vegetation.

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CDM recommends that all trees and brush be cleared from the interior and exterior slopes of all ash pond embankments under the supervision of a Professional Engineer in accordance with the procedures outlined in "FEMA 534 Technical Manual for Dam Owners – Impacts of Plants on Earthen Dams". CDM further recommends that stumps and all roots greater than 1 inch in diameter be removed. Disturbed areas should then be graded to adjacent contours, using compacted structural fill and reseeded with desirable grass vegetation. CDM also recommends that vegetation be cut on a regular basis to ensure that adequate visual observations can be made during scheduled inspections.

Areas of sparse vegetation were observed on the exterior slopes of the Final Settling Basin, Material Storage Runoff Basin, Metal Cleaning Basin and the Recycle Settling Basin. CDM recommends performing reseeding maintenance as required yearly to maintain a good grass cover in these areas.

4.4 Erosion Protection and Repair

Erosion rills, surfical slope failures and subsequent loss of grass cover were observed on multiple embankment slopes as discussed in Section 2. CDM recommends NIPSCO take the following corrective actions:

- Surfical slides/scarps - Excavate un-compacted and eroded materials and organics (grass, brush, other vegetation) in the slide area to neat lines at the slide limits down to competent undisturbed materials. Place and compact structural fill to restore the embankment slope, grading to adjacent existing contours. The area should be reseeded with desirable grass vegetation.

- Erosion rills - Place and compact structural fill in the rills and grade to adjacent existing contours. Where rills exists on slopes exceeding 25 feet in length, install temporary erosion resistant matting or sod after regrading. If sod is not installed, the area should be reseeded with desirable grass vegetation.

All repairs should be designed by a professional engineer familiar with earthen dam construction.

4.5 Seepage

Areas of possible seepage and and seepage were observed on embankment slopes of the Final Settling Basin, Intake Settling Basin, and Gypsum Storage (Units 14&15) A, as discussed in Section 2. Regular monitoring is essential to detect and monitor seepage and to reduce the potential for failure. Without knowledge of the dam's history, the owner may not be able to determine whether the seepage condition is in a steady or changing state. CDM recommends NIPSCO take the following actions:

- Install v-notch weir(s) to facilitate quantifiable seepage volume and flow rate measurements and sample collection.

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- Develop a regular surveillance program to monitor areas of seepage and potential seepage to determine the rate, volume, and turbidity of flow emerging from the embankment slopes.

- Develop and execute a geotechnical exploration program that includes test borings and installation of piezometers and other instrumentation to analyze and regularly monitor embankment seepage and stability.

All repairs should be designed by a professional engineer familiar with earthen dam construction.

4.6 Animal Control

Evidence of rodent burrows was observed on the south and southwest embankment exterior slope of the Final Settling Basin, the south embankment exterior slope of Intake Settling Basin, and the west embankment exterior slope of the Gypsum Storage Area (Units 14&15) A. Although not observed on other embankments, vegetation cover may have hidden additional rodent burrows. CDM recommends NIPSCO accurately document burrows and other areas disturbed by animal activity, remove the burrowing animals, and backfill the burrows with compacted structural fill to protect the integrity of the embankments.

4.7 Instrumentation

NIPSCO provided CDM the most recent 12 months of pond level readings for the Final Settling Basin, Intake Settling Basin, and Recycle Settling Pond. No information regarding further instrumentation was available to CDM.

An earth embankment that is safe under current conditions may not be safe in the future if conditions change. Conditions that may change include changes in the phreatic surface, embankment deformation, or changes in seepage patterns. CDM recommends the installation of staff gauges to all outlet structures to monitor the water levels in all active impoundments and routinely monitoring water levels installed as recommended in Section 4.5 of this report.

4.8 Impoundment Hydraulic and Stability Analysis

NIPSCO was not able to provide CDM with a hydraulic analysis showing the ability of the ash ponds to safely pass the 50% or 100% PMP event. However, a preliminary evaluation performed by CDM suggests there is enough storage capacity at the current operating pool levels to safely store precipitation. CDM recommends NIPSCO perform a complete study to confirm this opinion and update the study if operating parameters of the ponds change in the future.

CDM was not provided with information regarding stability analyses performed prior to or following construction of the R.M. Schahfer Generating Station's CCW surface impoundments or information regarding properties of the embankment and

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foundation materials. It is recommended that detailed stability analyses be performed for these embankments utilizing the results of the subsurface program noted Section 4.5 above. The geotechnical investigation should also evaluate the existing soil conditions and engineering characteristics in the embankments and their supporting foundation soils.

Stability analyses should consider all appropriate operating and loading conditions including rapid drawdown if applicable, and a seismic stability and liquefaction analysis of the upstream and downstream embankment slopes and foundation.

4.9 Retired Waste Disposal Basin Closure

The Retired Waste Disposal Basin has been back-filled and is inactive. Although it has been back-filled, an undetermined volume of water is likely still held within the embankments as evidenced by the seepage observed on the west embankment of Retired Waste Disposal Basin. If NIPSCO does not plan to re-activate these impoundments, then CDM recommends that NIPSCO cap and decommission the Retired Waste Disposal Basin impoundment in a manner consistent with Indiana and USEPA regulations. Closure should include a geotechnical evaluation of the long term stability of the embankments. The evaluation should include test borings and piezometers to characterize subsurface conditions for use in the stability analysis.

4.10 Inspection Recommendations

Based on the information reviewed by CDM it appears that NIPSCO is currently performing periodic informal inspections, however they are not fully documented. CDM recommends that NIPSCO develop detailed inspection documentation procedures to aid in ensuring that they are adequately documenting observations over time. Documentation should include a sketch of relevant features observed, and the documentation should be periodically reviewed to identify if conditions are worsening and/or if significant changes are occurring that could lead to additional maintenance issues or safety concerns.

Inspections should be made following heavy rainfall and/or severe weather and should be documented. It is recommended that inspection records be retained at the facility for a minimum of three years.

4.11 Emergency Action Plan

NIPSCO does not have an Emergency Action Plan (EAP) for the Final Settling Basin and Intake Settling Basin, judged by CDM to be High Hazard structures. CDM recommends that NIPSCO develop an EAP for the Final Settling Basin and Intake Settling Basin.

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Section 5
Closing

The information presented in this report is based on visual field observations and review of reports and data provided to CDM by NIPSCO for the R.M. Schahfer Generating Station surface impoundments. The conclusions and recommendations presented are based, in part, on limited information available at the time of this report. This report has been prepared in accordance with generally accepted engineering practices. No warranty, expressed or implied, is made. Should additional information become available or changes in field conditions occur, the conclusions and recommendations provided in this report should be re-evaluated by a qualified professional engineer.

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Section 6
Reports and References

The following is a list of reports and drawings that were provided by Northern Indiana Public Service Company and were utilized during the preparation of this report and the development of the recommendations presented herein.

1. Company Correspondence, "Recycle Basin Slurry Wall Repairs," prepared by L.E. Androskaut, Northern Indiana Public Service Company, October 3, 1983

2. Company Correspondence, "Recycle Basin Slurry Wall Repairs," prepared by L.E. Androskaut, Townsend, Northern Indiana Public Service Company, August 11, 1983

3. Meeting Notes for Slurry Wall Repair, prepared by Sargent & Lundy Engineers, August 10, 1983

4. Letter to Mr. Francesco Brunner of ICOS Corporation of America, Recycle Pond Slurry Wall Subcontract SC-00034, prepared by J.M. McLaughlin, Northern Indiana Public Service Company, July 12, 1983

5. Exhibit 3 Background, Recycle Pond Dike Seepage, prepared by Sargent & Lundy Engineers, May 13, 1983

6. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.15 (Vibrating Beam Slurry Wall), April 16, 1975

7. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.16 (Vibrating Beam Slurry Wall), April 25, 1975

8. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.17 (Vibrating Beam Slurry Wall), May 2, 1975

9. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.18 (Vibrating Beam Slurry Wall), May 9, 1975

10. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.19 (Vibrating Beam Slurry Wall), May 15, 1975

11. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.27 (Vibrating Beam Slurry Wall), July 10, 1975

12. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.28 (Vibrating Beam Slurry Wall), July 17, 1975

13. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.29 (Vibrating Beam Slurry Wall), July 23, 1975

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14. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.30 (Vibrating Beam Slurry Wall), July 31, 1975

15. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.31 (Vibrating Beam Slurry Wall), August 7, 1975

16. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.32 (Vibrating Beam Slurry Wall), August 15, 1975

17. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.33 (Vibrating Beam Slurry Wall), September 1, 1975

18. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.34(Vibrating Beam Slurry Wall), September 11, 1975

19. Rollin M. Schahfer Generating Station – Unit 14, Weekly Report No.35(Vibrating Beam Slurry Wall), September 18, 1975

20. Drawing. Unidentified "Designated Evacuation Areas," prepared by Northern Indiana Public Service Company, Date Unknown

21. Drawing No. M-8A "Plant Development," prepared by Sargent & Lundy Engineers, November 15, 1978

22. Drawing No. S-11 "Site Clearing and Grading Plan", Sheet 1, Rev G , 11/21/74

23. Drawing No. S-48 "Dikes in Slag Area," prepared by Sargent & Lundy Engineers, September 18, 1974, updated May 29, 1975

24. Drawing No. S-49 "Dikes in Slag Area," prepared by Sargent & Lundy Engineers, December 2, 1974, updated May 29, 1975

25. Drawing No. S-49-1 "Typical Dike Cross Sections, Sheet 1," prepared by Sargent & Lundy Engineers, December 2, 1974, updated May 29, 1975

26. Drawing No. S-430 "Waste Disposal Area & Slag Area, Inlet Structure," prepared by Sargent & Lundy Engineers, December 2, 1974, revised October 29, 1975

27. Drawing No. S-431 " Secondary Settling Basin, Inlet Structure," prepared by Sargent & Lundy Engineers, December 2, 1974, revised May 30, 1975

28. Drawing No. S-432 "Waste Disposal Area & Slag Area, Drainage Structures," prepared by Sargent & Lundy Engineers, December 2, 1974, revised March 4, 1977

US EPA ARCHIVE DOCUMENT

29. Drawing No. S-435 "Final Settling Basin, Inlet Structure," prepared by Sargent & Lundy Engineers, December 2, 1974

30. Drawing No. S-435 "Final Settling Basin, Overflow Spillway Plan & Elev.," prepared by Sargent & Lundy Engineers, December 2, 1974

31. Drawing No. S-448 "Final Settling Basin, Overflow Spillway Earthwork.," prepared by Sargent & Lundy Engineers, June 2 1975

32. Drawing No. S-471 "Interior Dike Slope Protection," prepared by Sargent & Lundy Engineers, June 2, 1976

33. Drawing No. C-1 "Site Plan, General Arrangement," prepared by Sargent & Lundy Engineers, September 13, 1979, revised September 23, 1983

34. Drawing No. C-5 "Grading, Roadwork & Drainage Plan, Sheet 1," prepared by Sargent & Lundy Engineers, September 17, 1980, revised April 6, 1982

35. Drawing No. C-11 "Grading, Roadwork & Drainage Plan, Sheet 7," prepared by Sargent & Lundy Engineers, June 2, 1981, revised April 6, 1982

36. Drawing No. C-12 "Grading, Roadwork & Drainage Plan, Sheet 8," prepared by Sargent & Lundy Engineers, June 2, 1981, revised April 6, 1982

37. Drawing No. C-15 "Grading, Roadwork & Drainage Plan, Sheet 10," prepared by Sargent & Lundy Engineers, June 2, 1981, revised January 19, 1983

38. Drawing No. C-18, "Recycle Settling Basin Pumphouse Grading Plan, Sections, and Details," prepared by Sargent & Lundy Engineers, March 15, 1982, revised July 16, 1982

39. Drawing No. C-19, "Settling Basins Dikework Sections & Details" prepared by Sargent & Lundy Engineers, June 2, 1981, revised August 13, 1982

40. Drawing No. C-21, "Settling Basins Dikework, Sections & Details Sheet 3" prepared by Sargent & Lundy Engineers, June 2, 1981, revised May 28, 1982

41. Drawing No. C-28, "Slurry Cutoff Wall Profiles, Sheet 1" prepared by Sargent & Lundy Engineers, November 6, 1981

42. Drawing No. C-29, "Slurry Cutoff Wall Profiles, Sheet21" prepared by Sargent & Lundy Engineers, November 6, 1981

43. Boring Logs File, Unit 17/18 F-3561; Letter with attachments, June 16, 1981, subject "Soil Borings Phase IV" from T.L. Tarpley to D.L. Leone.

US EPA ARCHIVE DOCUMENT

44. Boring Logs File, Unit 17/18 F-3561; Letter with attachments, June 226, 1981, Reference files: 5524 and 5527 with attachments

45. Boring Logs File, Unit 17/18 F-3561; Letter with attachments, June 226, 1981, Reference files: 5524 and 5527 with attachments

46. Boring Logs File, Unit 17/18 F-3561; Memo from Salisbury Engineers (SE) dated 5/28/81 to D.E. Nevers with attached boring logs. TW1 to TW5 and Sieve Analysis

47. Boring Logs File, Unit 17/18 F-3561; 11/16/81 report from SE to Sargent Lundy. Laboratory tests and soil samples from FGD. Product Disposal Area

48. Boring Logs File, Unit 17/18 F-3561; SE reports 10.9.81 boring logs.

49. Boring Logs File, Unit 17/18 F-3561; SE lab testing units 17 and 18, November 17, 1978.

50. Letter and attachment, dated July 8, 1981, file 5524, unit 17 and 18 laboratory

51. Dikework A2987 Folder; June 13, 1975, letter regarding Unit 14, slurry wall installation

52. Dikework A2987 Folder; October 19, 1976, letter with as-built drawing attachments

53. Dikework A2987 Folder; Report, copy of specification pages 2-1-1 to 2-7-4 regarding Unit 14, slurry wall installation

54. Dikework A2987 Folder; June Copy of blueprints

55. Dikework A2987 Folder; Drawing SK-14, Rev A; dated 9/16/72;titled “Site Clearing and Grubbing Plan (job 4412-3)

56. Dikework A2987 Folder; Drawing S-1; Titled Soil Boring Location Plans, Sheet 1, Rev G; Dated 4/23/74 (job 4412-3)

57. Dikework A2987 Folder; Drawing S-22; Titled: Site Clearing and Grubbing Plan, Rev B; Dated 5/1/74 (job 4412-3)

58. Dikework A2987 Folder; Addendum 4 to specification A-2987; A4-1 – August 28, 1974

59. Dikework A2987 Folder; Addendum 3 ; dated June 10, 1974

60. Dikework A2987 Folder; Addendum 2 ; dated May 29, 1974

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61. Dikework A2987 Folder; Addendum 1 ; dated May 5, 1974, including sheets TC-1 to TC-4

62. Dikework A2987 Folder; Exhibit B-5, page 1-1-1 to page 1-1-6

63. Dikework A2987 Folder; Division 2 – Site Work, page 2-1-1 to 2-7-4

64. Dikework A2987 Folder; Division 3 – Pages 3-1-1 to 3-2-1Standard Specifications for Earthwork (Form 1714), page 1 to page 11

65. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 5 – Reports 24 to 26

66. Dikework Engineering (Hanson Engineering) PO 511-72 ; Folder 6 – Reports 27 to 27

67. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 7 – Reports 30 to 32

68. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 8 – Reports 33 to 35

69. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 9 – 9/16/75, Page 1 and weekly report 37

70. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 10 – 9/30/75 Report page 1

71. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 11 – 10/13/75 Report page 1

72. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 12 – sheets starting with A & H Engineering Report for 11/14/74 to Boring Log TH-75-00. Date completed 11/7/75 (total 6 pages)

73. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 13 – sheets starting with "10/29/75 A & H Engineering Report" to "Report of Measurement of Bedding Material – Final Settling Basin. Station 121+00 (Total of 7 sheets)

74. Dikework Engineering (Hanson Engineering) PO 511-72; Report of Grain Size Analysis, 10/24/75 (Rip-Rap – 4 ft by 4 ft area)

75. Dikework Engineering (Hanson Engineering) PO 511-72; A & H Reports: 10/21/75; 10/22/75;10/23/75 – station 46+00 to 58+00; 10/23/75 – station 60+00.

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76. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 1

77. Dikework Engineering (Hanson Engineering) PO 511-72; Folder 2, 2-75 to 4-11-75

78. Dikework Engineering (Hanson Engineering) PO 511-72; Folder No. 3; 4/17/75 to 5/16/75, Reports 15 to 19

79. Dikework Engineering (Hanson Engineering) PO 511-72; Folder No. 1; 11/12/74 to 2/75

80. Dikework Engineering (Hanson Engineering) PO 511-72; Folder No. 4; 5/15/75 to 7/19/75, Reports 20 to 23

81. Dikework Engineering (Hanson Engineering) PO 511-72; Subcontract Slurry Cut-off Wall. T & B GWC F-3407, Construction R.M. Schahfer Gen. Station, Units 17/18 (Complete file)

82. Dikework Engineering (Hanson Engineering) RMSGS UNIT 14 PO 511-72. FOLDER NO. 14 REPORTS 47, 48 & 49; A & H Engineering Corporation 12/2/75, EDC-8-74 through Report on Grain Size Analysis; Rip-Rap EDC-10-88

83. Dikework Engineering (Hanson Engineering) RMSGS UNIT 14 PO 511-72. FOLDER NO. 14 REPORTS 47, 48 & 49; A & H Engineering Corporation 11/28/75, ERC-8-73

84. Dikework Engineering (Hanson Engineering) RMSGS UNIT 14 PO 511-72. FOLDER NO. 14 REPORTS 47, 48 & 49; Report on Grain Size Analysis 11/19/75 Rip Rap to end of file

85. Dikework A-2987, RMSGS UNIT 14, PO 490-72, FOLDER NO. 2, 3-11-1974 TO 12-30-1974; Report on Proposed Revisions to the Provisions Stated in the Indiana Dept. of Natural Resources Permit for Proposed Generating Station Site on the Kankakee River, 12/4/72

86. Dikework A-2987, RMSGS UNIT 14, PO 490-72, FOLDER NO. 2, 3-11-1974 TO 12-30-1974; Letter dated 2/21/75, Project 4412; Subject: NIPSC RMS Generating Station 14; 2 pages about Crusher Run Blast Furnace Slag from Sargent and Lundy Engineers W.S. Adaska

87. Dikework A-2987, RMSGS UNIT 14, PO 490-72, FOLDER NO. 2, 3-11-1974 TO 12-30-1974; Letter dated 1/29/75, from Sargent and Lundy Engineers W.S. Adaska; received 2/2/75, 1 page front and back regarding slag slope protection

88. Dikework A-2987, RMSGS UNIT 14, PO 490-72, FOLDER NO. 2, 3-11-1974 TO 12-30-1974; Letter dated 12/17/74, from Sargent and Lundy Engineers W.S. Adaska;

received 12/13/74, 2 page letter on Quality Control Program; included comments on Site Preparation front and back regarding slag slope protection

89. Dikework A-2987, RMSGS UNIT 14, PO 490-72, FOLDER NO. 2, 3-11-1974 TO 12-30-1974; Sargent and Lundy Engineers Specifications, Division Site Work, Section 2-7-1 to 2-7-4

90. Dikework A-2987, RMSGS UNIT 14, PO 490-72, FOLDER NO. 21, 4-72 TO 8-1-73 ; Sargent and Lundy Letter to G.C. Kuhlman, Dated 1/4/73, Received 1/9/73; H.P. Lyle: Subject NIPSCO Unit 14; 4 pages

91. Salisbury Engineering Compaction Tests, dated: October 118, 1974 (Report No. 3 and 4); October 22, 1974, (Report No. 5); October 25, 1974, (Report No. 6); November 5, 1974, (Report No. 7); November 6, 1974, (Report No. 8); November 11, 1974, (Report No. 9); November 14, 1974, (Report No. 10); November 21, 1974, (Report No11) ; November 26, 1974, (Report No. 12) ; December 3, 1974, (Report No. 13); and December 17, 1974 (Report No. 14 and 15)

92. Salisbury Engineering, Inc. – Moisture Density Relationship dated October 20, 1973; October 30, 1973; October 18, 1974 (3)

93. Salisbury Engineering, Inc. – Concrete Aggregate Tests dated April 17, 1972 (Reports 1 through 5)

94. Salisbury Engineering, Inc. – Concrete Aggregate Tests dated May 2, 1972 (Reports 1 and 2)

95. Salisbury Engineering, Inc. – Field Compaction Tests dated October 31, 1973 (Report 1)

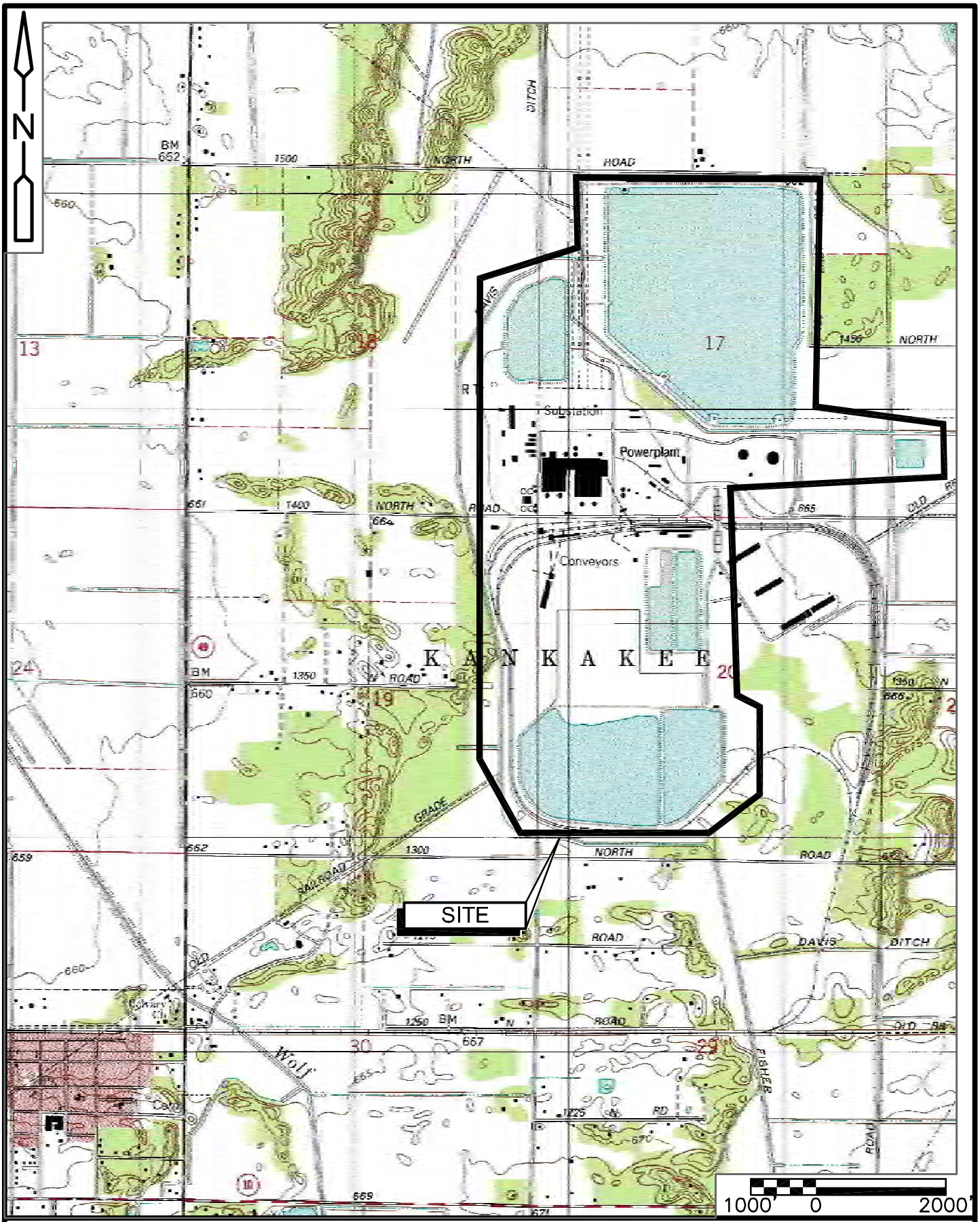
96. Salisbury Engineering, Inc. –Correspondence dated November 24, 1974 To NIPSCO William Kibble, regarding Relative Density of Cohesionless Soil, ASTM D-2049, Unit 14

97. Drawings: C-6; C-7; C-8; C-9; C-10; C-11; C-13; C-14; C-16; C-17; C-20; C-22; C-23; C-24; C-27; C-60; C-61 (1 of 2); C-61 (2 of 2); C-62;C-63; C-64; C-75; C-76; C-77; C-78; C-79; C-80; C-81; C-82; C-83 ; C-84; C-85; C-86; S-1; S-2; S-3; S-4; S-5 ;S-10; S-11; S-12; S-13; S-14; S-14P; S-21; S-22;S-23; S-27; S-44; S-436; S-437; S- 44; S-441; S-446; S-446; S-447; S-448; S-449; S-450; S-451; S-452; S-453; S-454; S-456; S-457; S-458; S-459; S-467; S-3335; S-3337; S-3338; S-3339; S-4025; S-4028; and S-4030

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

Figures



USGS TOPOGRAPHIC MAPS
WHEATFIELD QUADRANGLE MAP
CONTOURS AND ELEVATIONS IN FEET

WHEATFIELD, INDIANA
NORTHERN INDIANA PUBLIC SERVICE COMPANY
R.M. SCHAHFER GENERATING STATION

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LOCUS PLAN
FIGURE 1

PW: \\CAMXMSVR01:PW_XM1\DOCUMENTS\51119\76658_SCHAHFER\03 REPORT AND STUDIES\09 CADD FIGURES AND GRAPHICS\TCIFG001.dwg

PW: \\CAMXMSVR01:PW_XM1\DOCUMENTS\51119\76658_SCHAHFER\03 REPORT AND STUDIES\09 CADD FIGURES AND GRAPHICS\TCIFG002.dwg

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CRITICAL INFRASTRUCTURE MAP
FIGURE 2

AERIAL PHOTOGRAPH SOURCE:
GOOGLE EARTH PRO. (IMAGERY DATED MAY 13, 2010)

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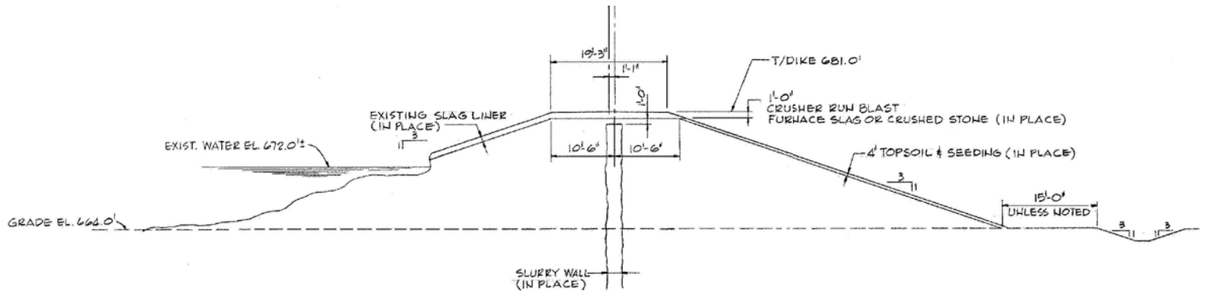
NORTHERN INDIANA PUBLIC SERVICE COMPANY
WHEATFIELD, INDIANA

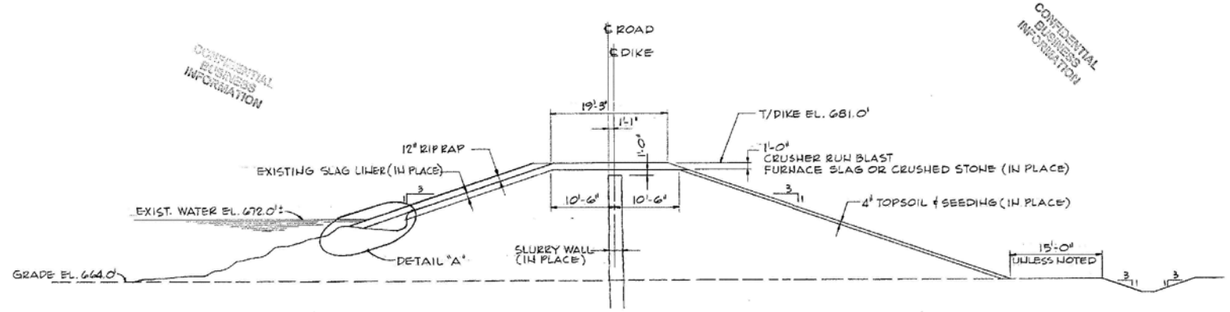
AERIAL MAP
FIGURE 3

PW:\\CAMXMSVR01:PW_XM1\DOCUMENTS\51119\76658_SCHAHFER\03 REPORT AND STUDIES\09 CADD FIGURES AND GRAPHICS\TCIFG003.dwg



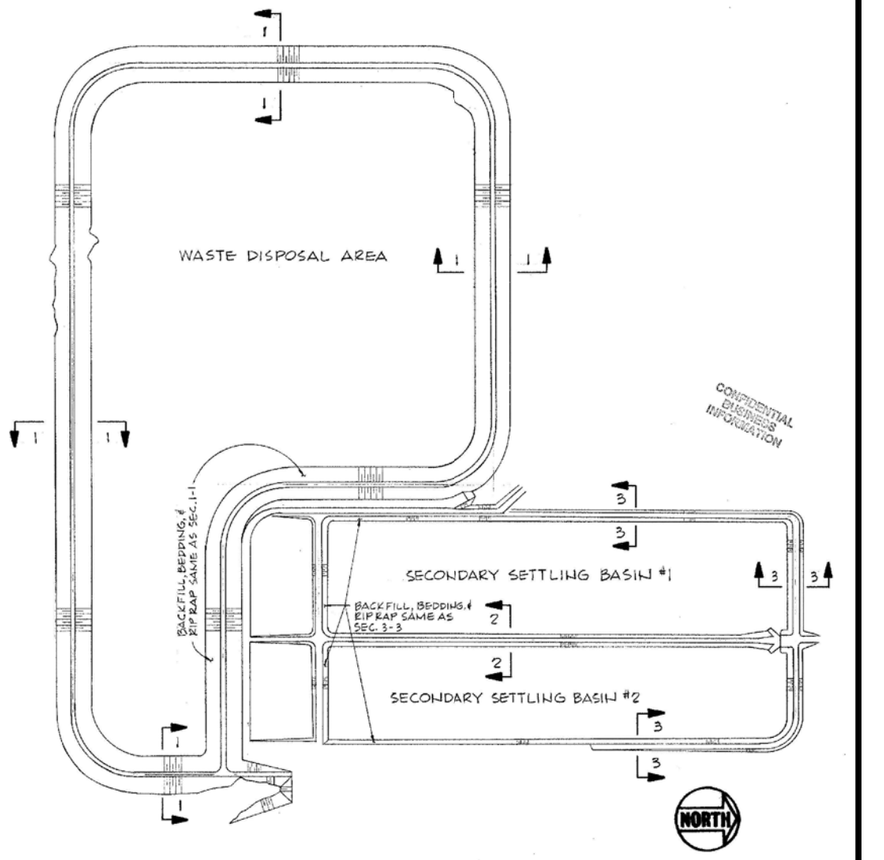
SECTION 1-1
EXISTING CONDITION

12.5' 0 25'



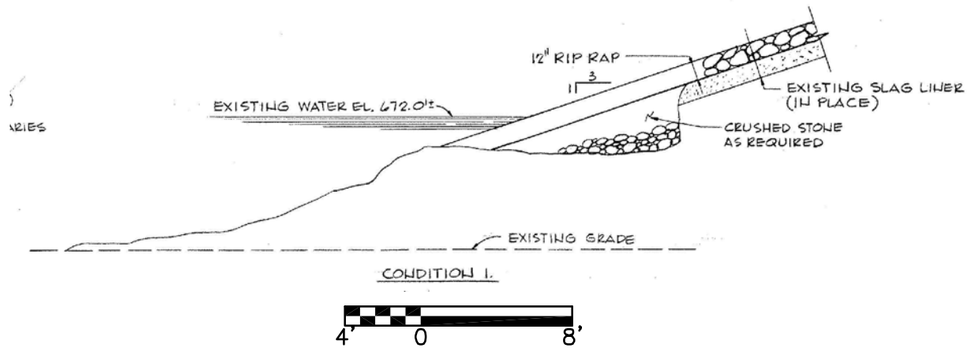
SECTION 1-1
AFTER SLOPE PROTECTION

12.5' 0 25'



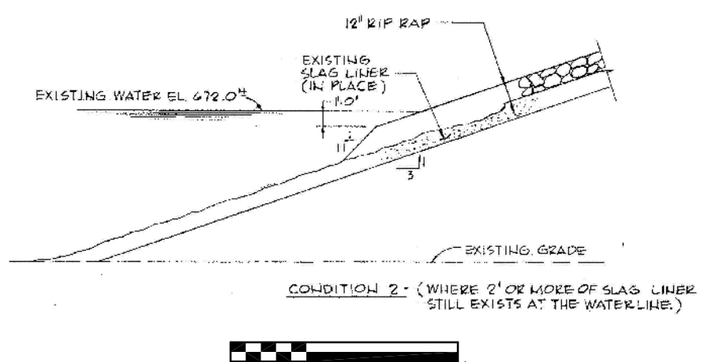
PLAN

250' 0 500'



CONDITION 1.

4' 0 8'



CONDITION 2 - (WHERE 2' OR MORE OF SLAG LINER STILL EXISTS AT THE WATERLINE.)

4' 0 8'

NOTES:

1. SECTIONS AND PLAN FROM SARGENT & LUNDY ENGINEERS, "INTERIOR DIKE SLOPE PROTECTION" JUNE 2, 1976

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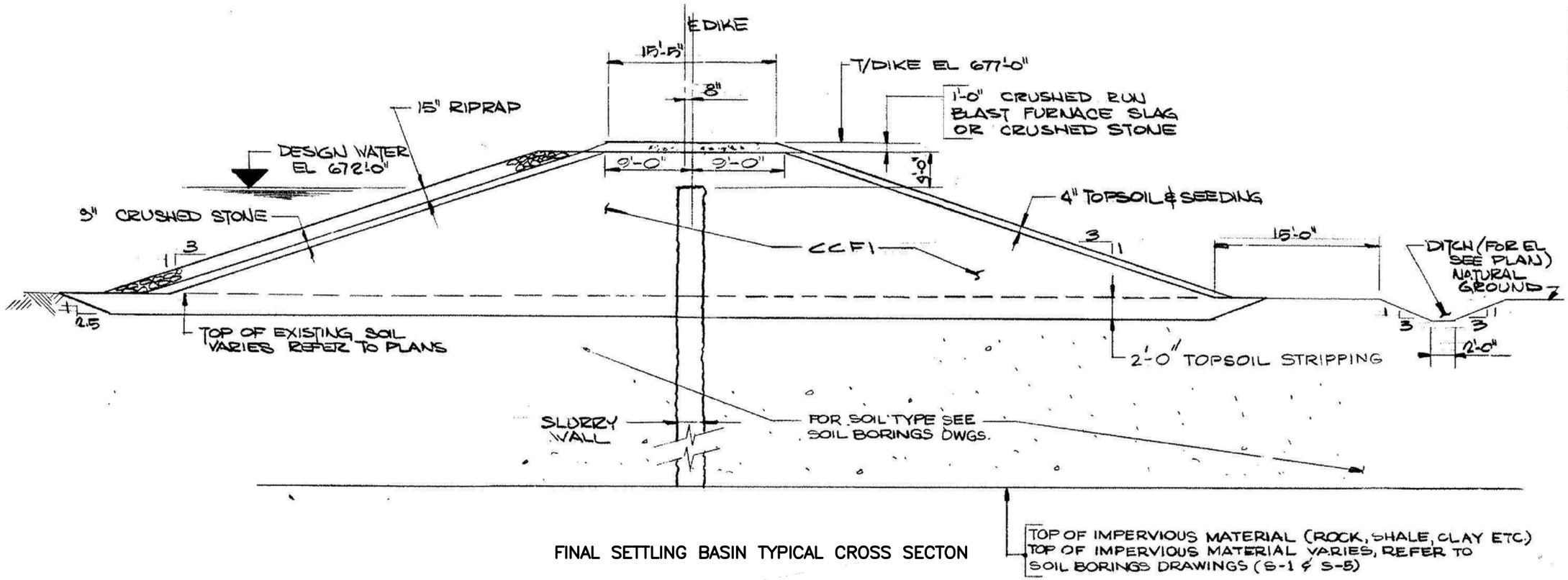
WHEATFIELD, INDIANA

WASTE DISPOSAL AREA TYPICAL CROSS SECTIONS
FIGURE 4

PW: \\camxmsvr01: PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG004.dwg



FINAL SETTLING BASIN TYPICAL CROSS SECTON

NOTES:

1. SECTION FROM SARGENT & LUNDY ENGINEERS, "TYPICAL DIKE CROSS SECTIONS, SHEET 1" APRIL 1, 1974

5' 0 10'

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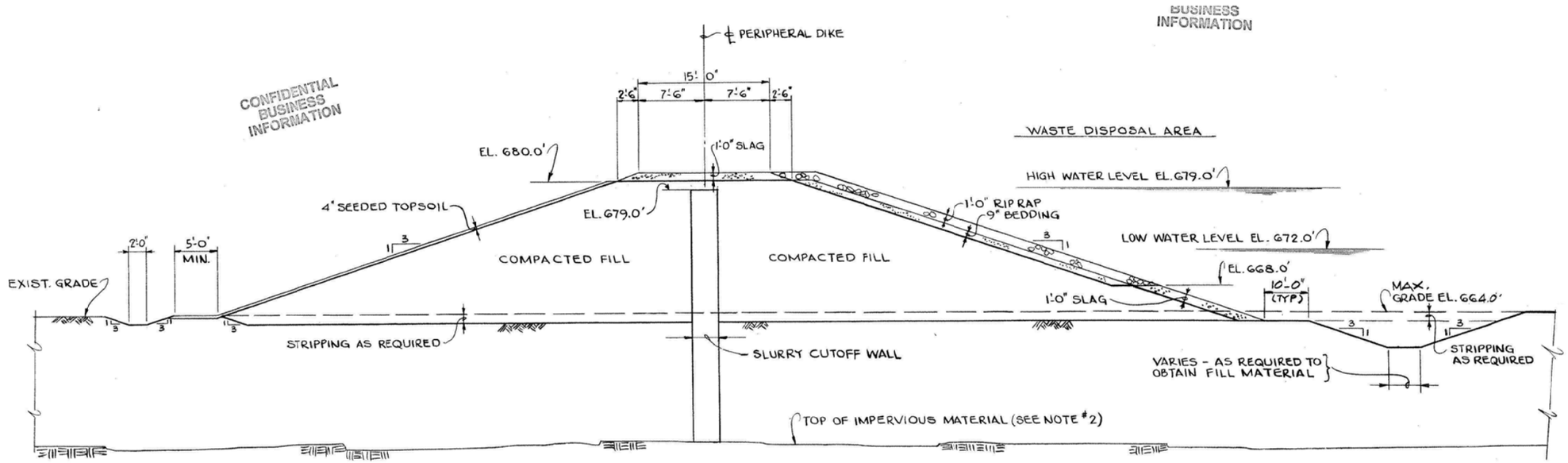
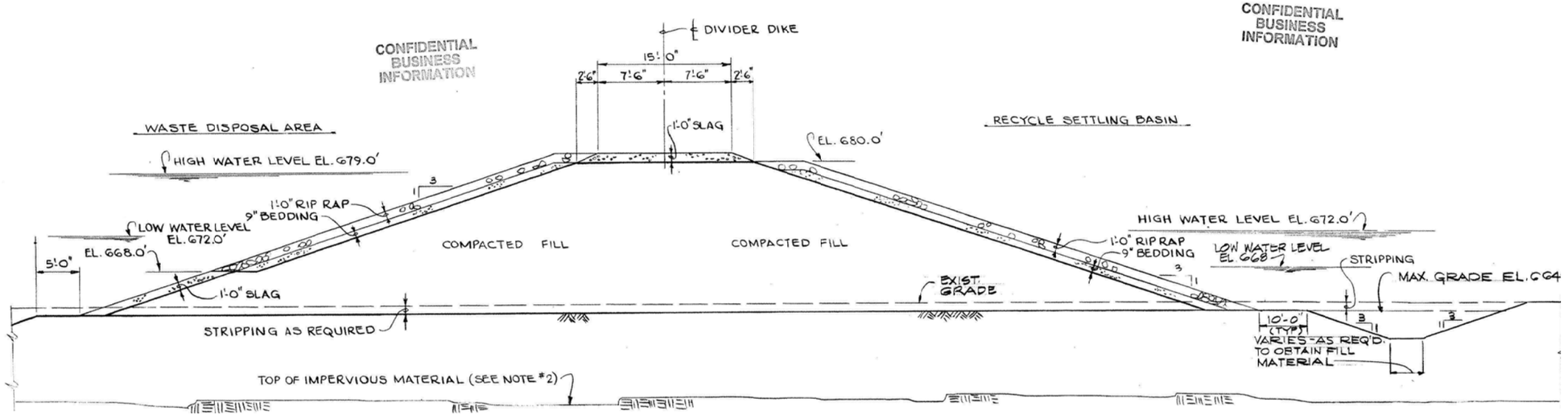
WHEATFIELD, INDIANA

FINAL SETTLING BASIN TYPICAL CROSS SECTION
FIGURE 5

PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG005.dwg



WASTE DISPOSAL AREA AND RECYCLE BASIN TYPICAL CROSS SECTION



WASTE DISPOSAL AREA AND RECYCLE BASIN DIVIDER EMBANKMENT TYPICAL CROSS SECTION

NOTES:

1. SECTIONS FROM SARGENT & LUNDY ENGINEERS, "SETTLING BASINS DIKEWORK SECTIONS & DETAILS, SHEET 1" JUNE 2, 1981

7' 0 14'

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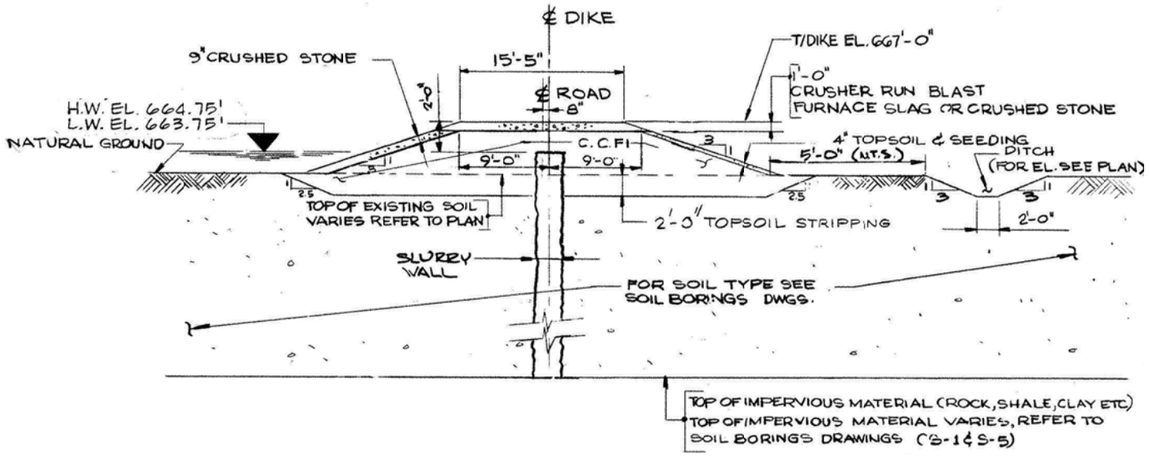
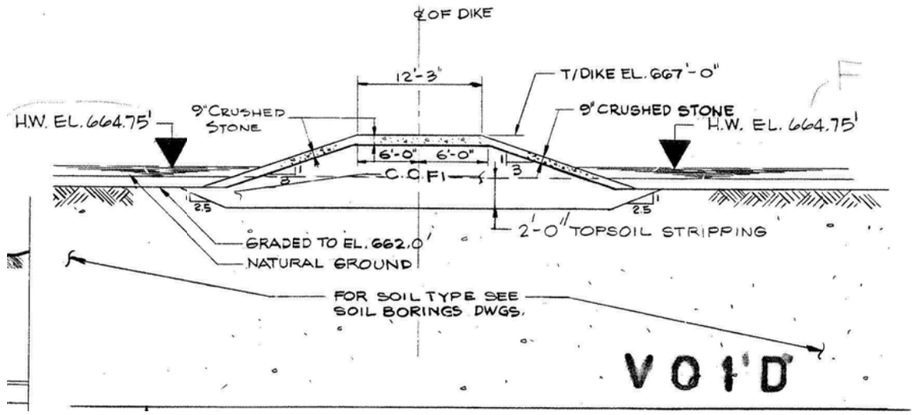
WHEATFIELD, INDIANA

WASTE DISPOSAL AREA AND RECYCLE BASIN TYPICAL CROSS SECTIONS
FIGURE 6

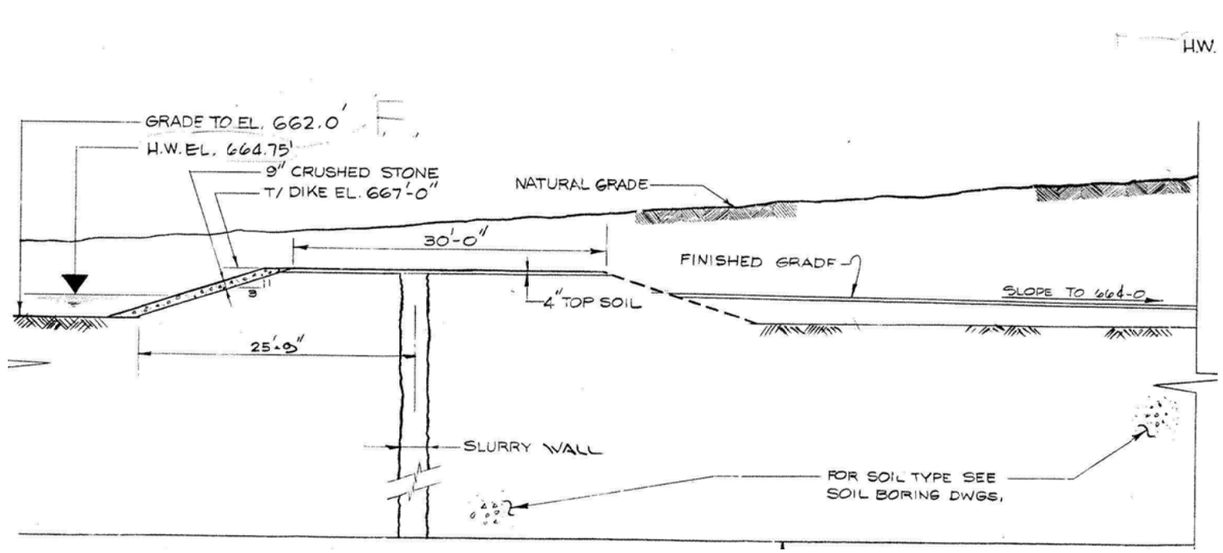
PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG006.dwg



MATERIAL STORAGE RUNOFF BASIN AND METAL CLEANING WASTE BASIN ROADWAY TYPICAL CROSS SECTION



MATERIAL STORAGE RUNOFF BASIN AND METAL CLEANING WASTE BASIN DIVIDER EMBANKMENT TYPICAL CROSS SECTION



MATERIAL STORAGE RUNOFF BASIN AND METAL CLEANING WASTE BASIN NON-ROADWAY TYPICAL CROSS SECTION

NOTES:

1. SECTIONS FROM SARGENT & LUNDY ENGINEERS, "TYPICAL DIKE CROSS SECTIONS, SHEET 1" APRIL 1, 1974

7' 0 14'

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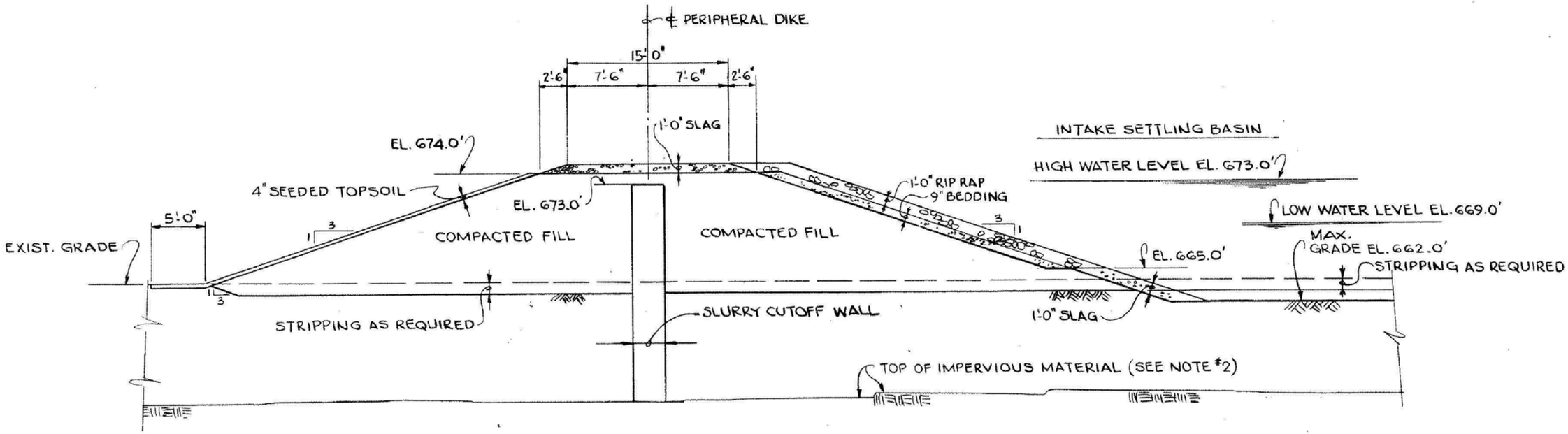
MATERIAL STORAGE RUNOFF BASIN AND METAL CLEANING WASTE BASIN TYPICAL CROSS SECTIONS
FIGURE 7

PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG007.dwg



INTAKE SETTLING BASIN TYPICAL CROSS SECTON

NOTES;

1. SECTION FROM SARGENT & LUNDY ENGINEERS, "SETTLING BASINS DIKEWORK SECTIONS & DETAILS, SHEET 1" JUNE 2, 1981

5' 0 10'

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INTAKE SETTLING BASIN TYPICAL CROSS SECTION
FIGURE 8

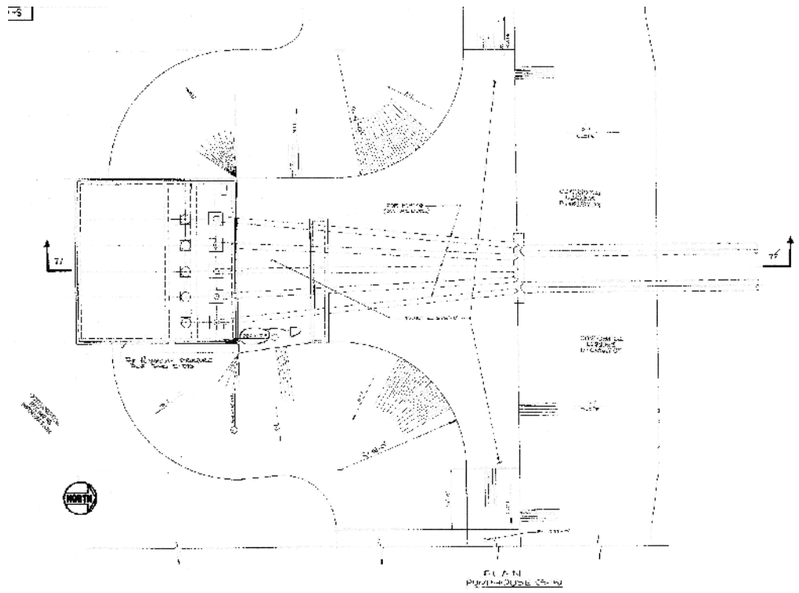
PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG008.dwg

PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG009.dwg

N

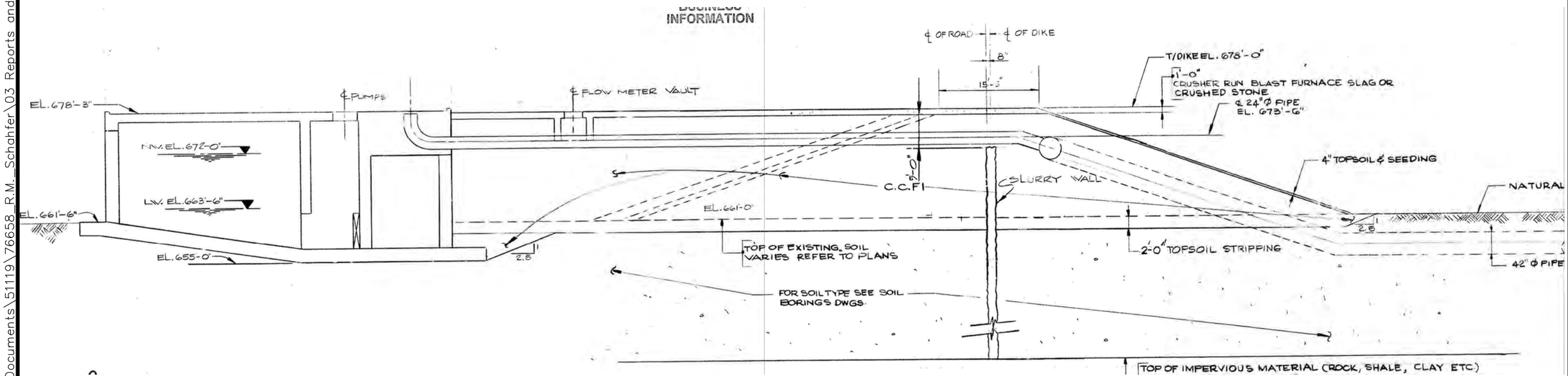
NOTES;

1. SECTION AND PLAN FROM SARGENT & LUNDY ENGINEERS, "SETTLING BASINS DIKEWORK SECTIONS & DETAILS, SHEET 3" JUNE 2, 1981



PLAN VIEW

25' 0 50'



OUTLET OF FINAL SETTLING BASIN INTO PUMP STATION

10' 0 15'

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NORTHERN INDIANA PUBLIC SERVICE COMPANY
WHEATFIELD, INDIANA

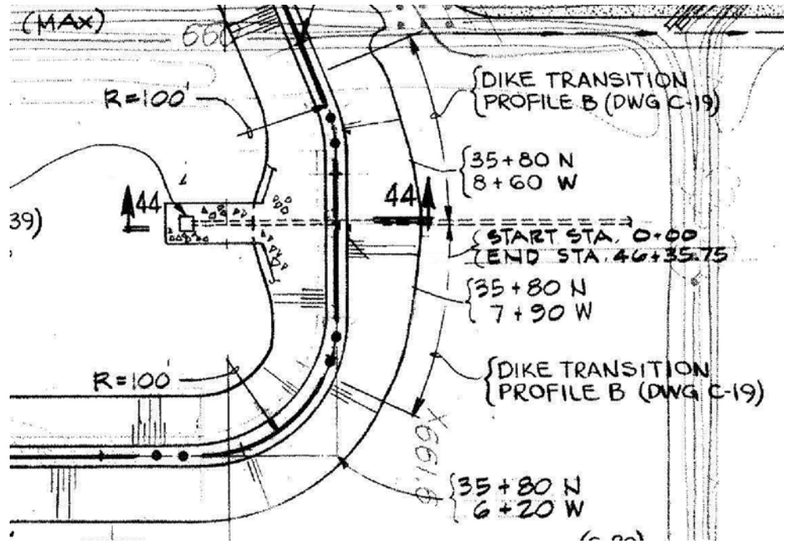
OUTLET OF FINAL SETTLING BASIN INTO PUMP STATION
FIGURE 9

PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0010.dwg

N

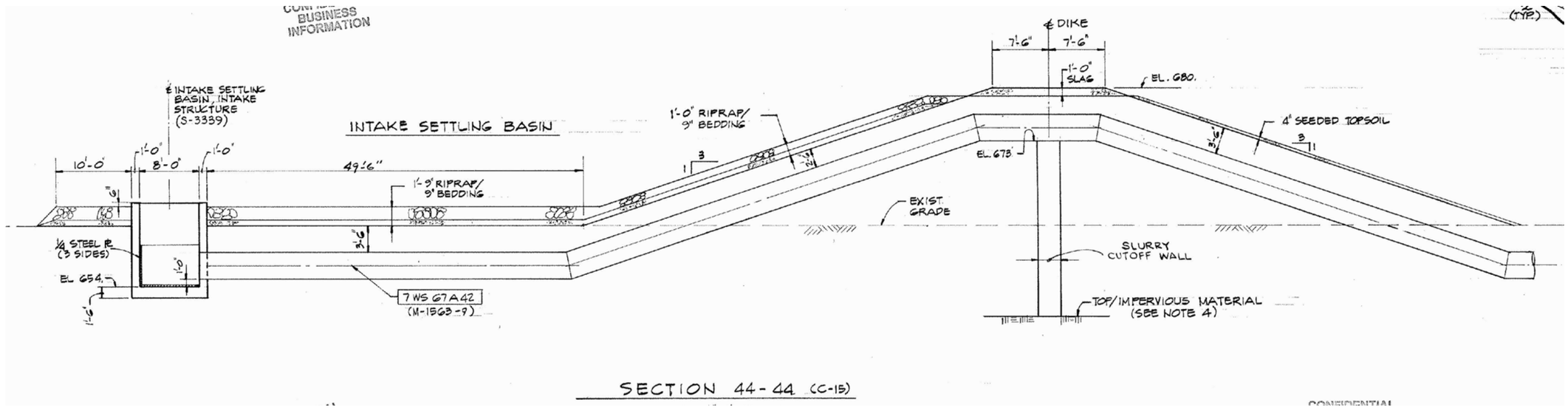
NOTES:

1. SECTION FROM SARGENT & LUNDY ENGINEERS, "SETTLING BASINS DIKEWORK SECTIONS & DETAILS, SHEET 3" JUNE 2, 1981
2. PLAN VIEW FROM SARGENT & LUNDY ENGINEERS, "GRADING, ROADWORK & DRAINAGE PLAN, SHEET 10" JUNE 2, 1981



PLAN VIEW

50' 0 100'



SECTION 44-44 (C-15)

INTAKE FROM KANKAHEE RIVER AT INTAKE SETTLING BASIN

7.5' 0 15'

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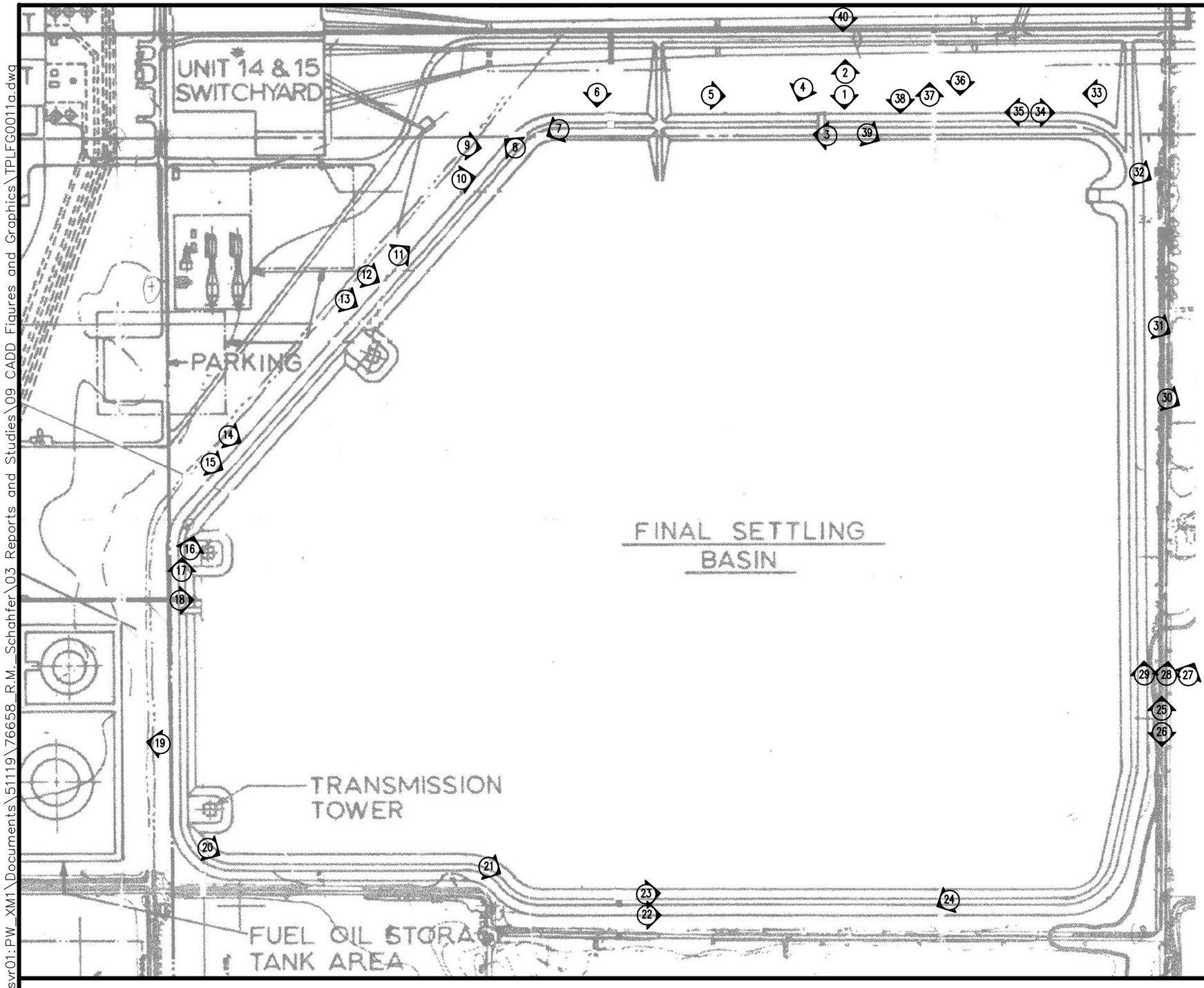
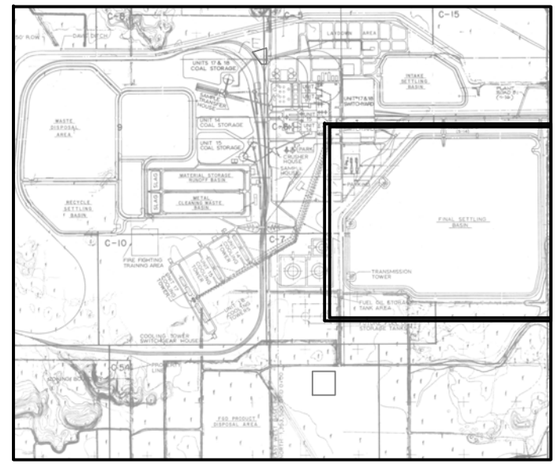
NORTHERN INDIANA PUBLIC SERVICE COMPANY
WHEATFIELD, INDIANA

INTAKE FROM KANKAHEE RIVER AT INTAKE SETTLING BASIN
FIGURE 10





KEY MAP

N

LEGEND:

2 — PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

200' 0 400'

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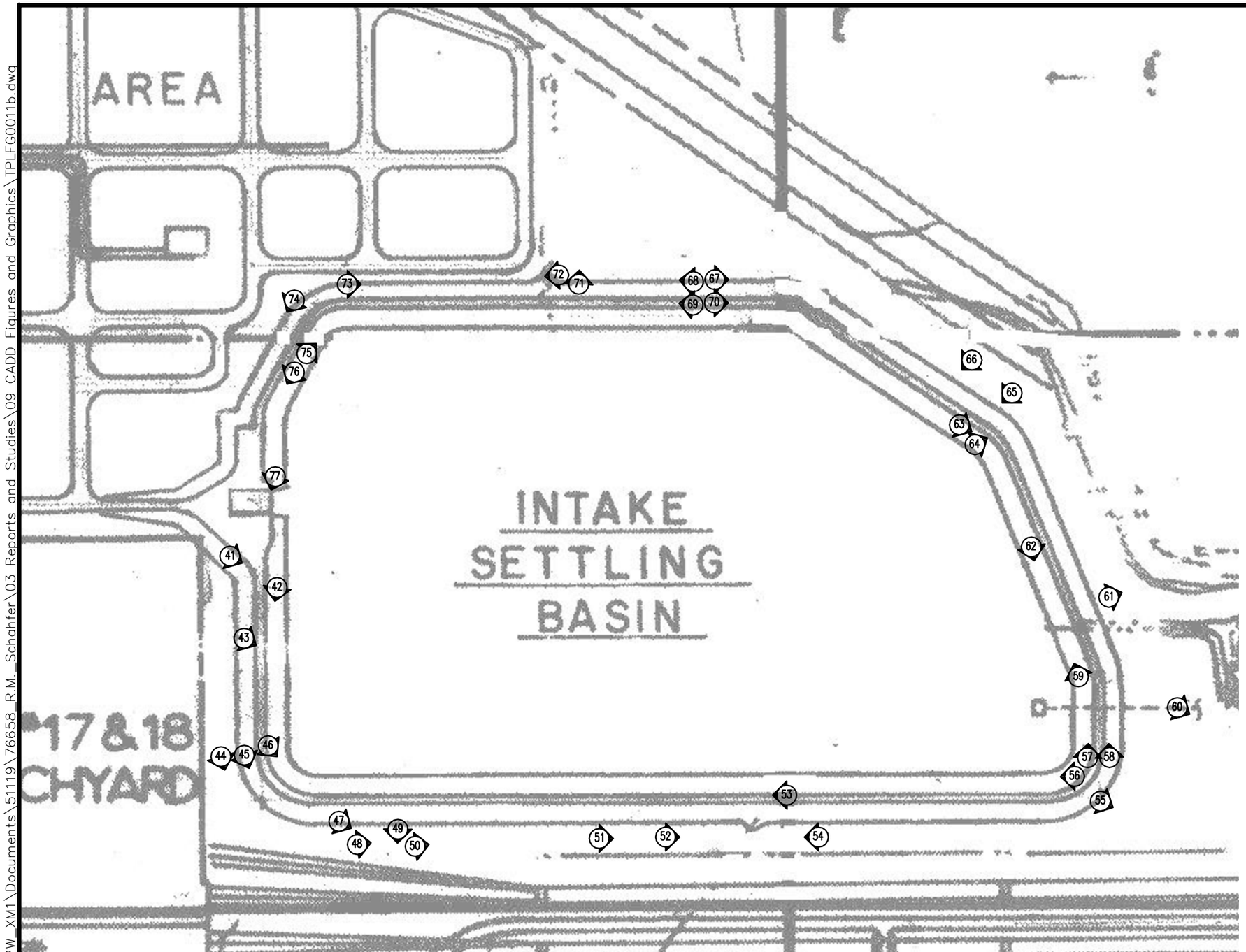
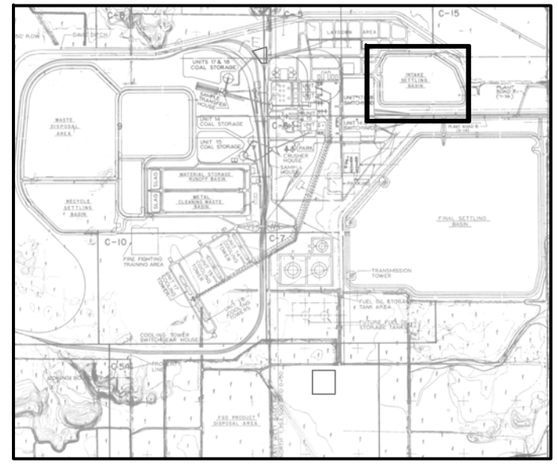
WHEATFIELD, INDIANA

FINAL SETTLING BASIN PHOTOGRAPH LOCATION PLAN
FIGURE 11a

PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011a.dwg





KEY MAP

LEGEND:

(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

200 0 400

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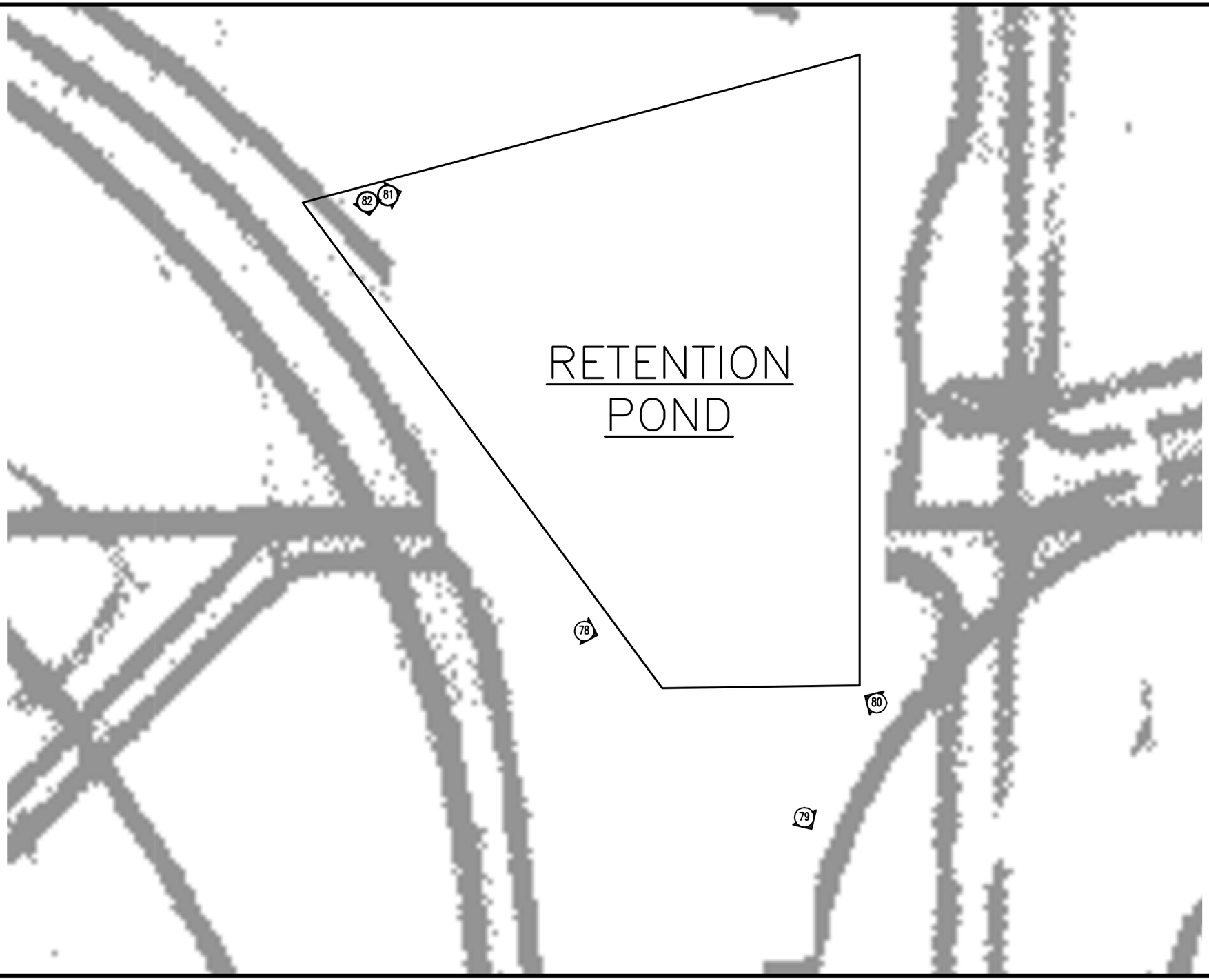
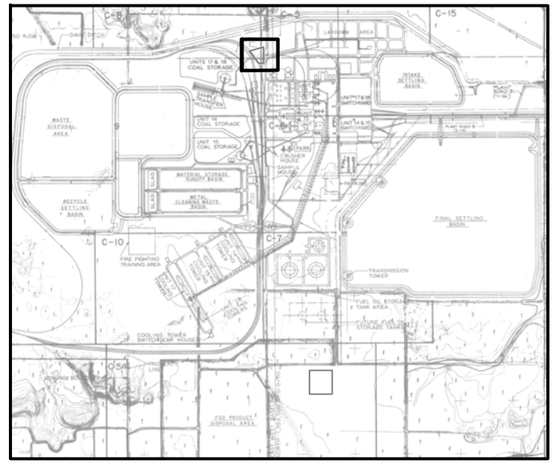
INTAKE SETTLING BASIN PHOTOGRAPH LOCATION PLAN
FIGURE 11b

PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011b.dwg



N



KEY MAP

LEGEND:

2 PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

25' 0 50'

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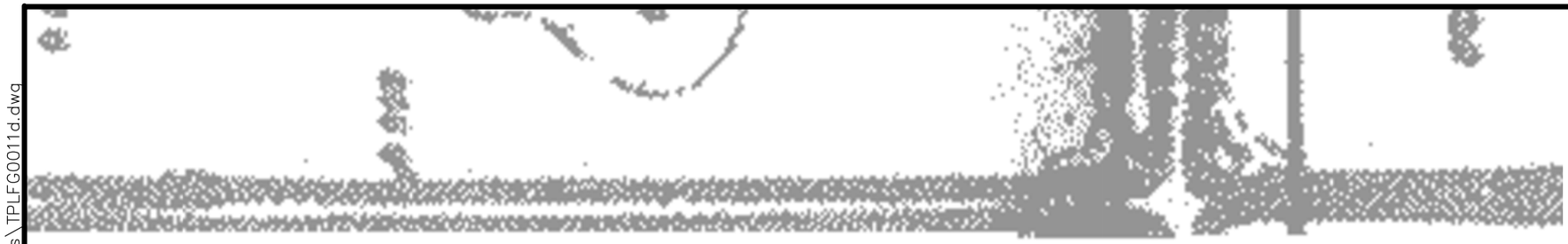
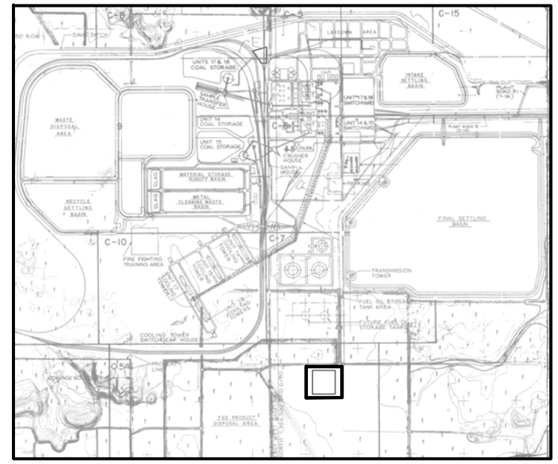
RETENTION POND PHOTOGRAPH LOCATION PLAN
FIGURE 11c

PW: \\camxmsvr01: PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011c.dwg





KEY MAP

LEGEND:

(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

50' 0 100'

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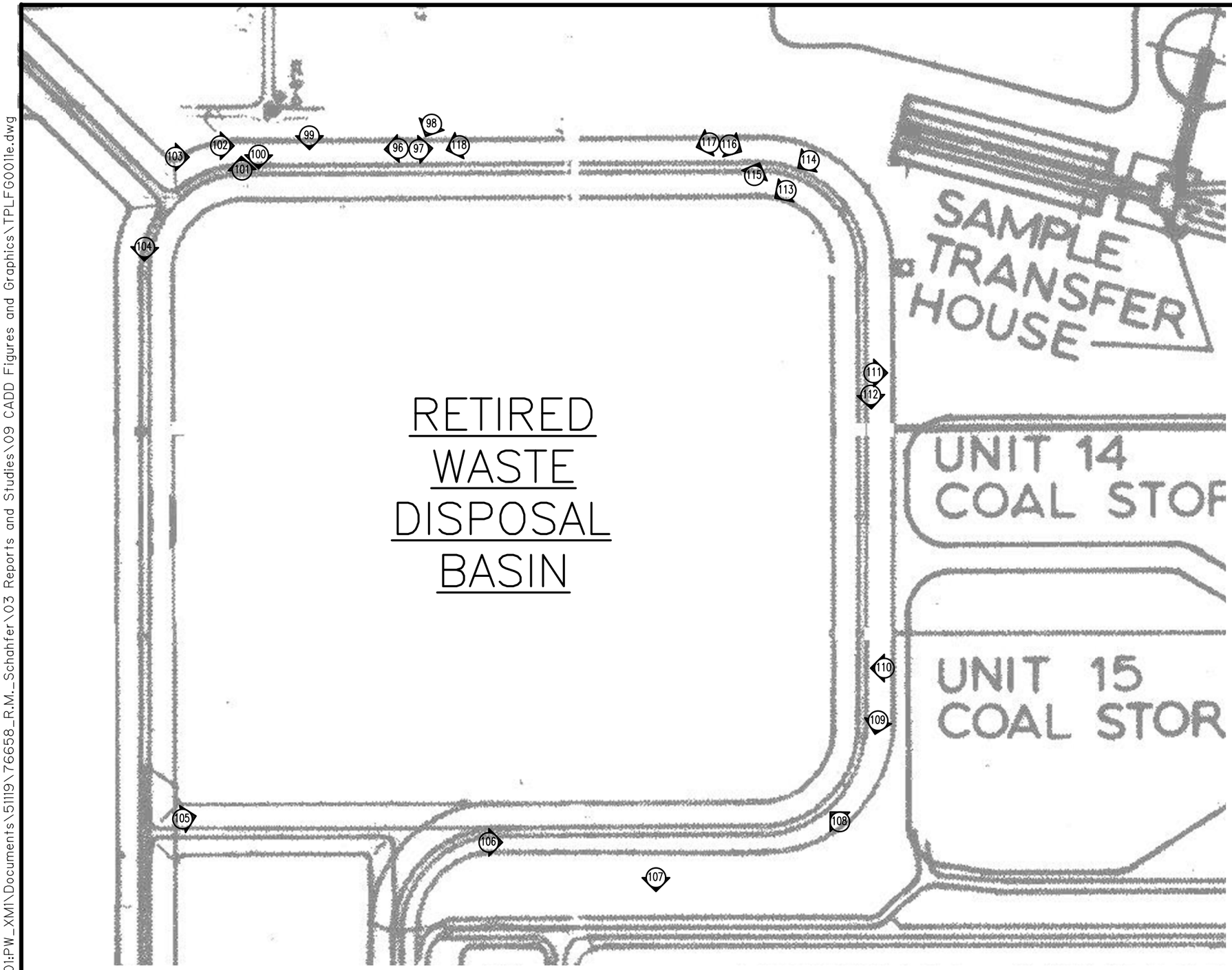
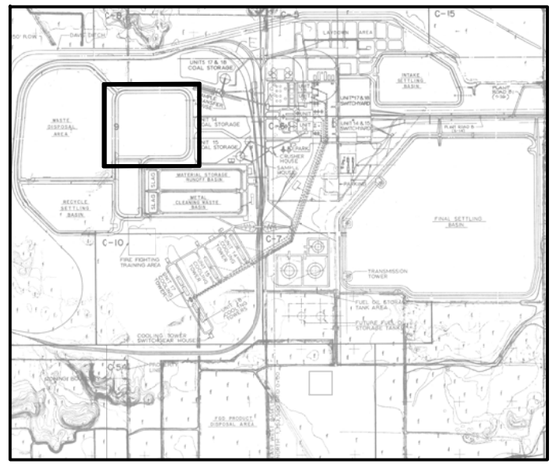
FGD LANDFILL RUNOFF POND PHOTOGRAPH LOCATION PLAN
FIGURE 11d

PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011d.dwg





KEY MAP

LEGEND:

(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

100' 0 200'

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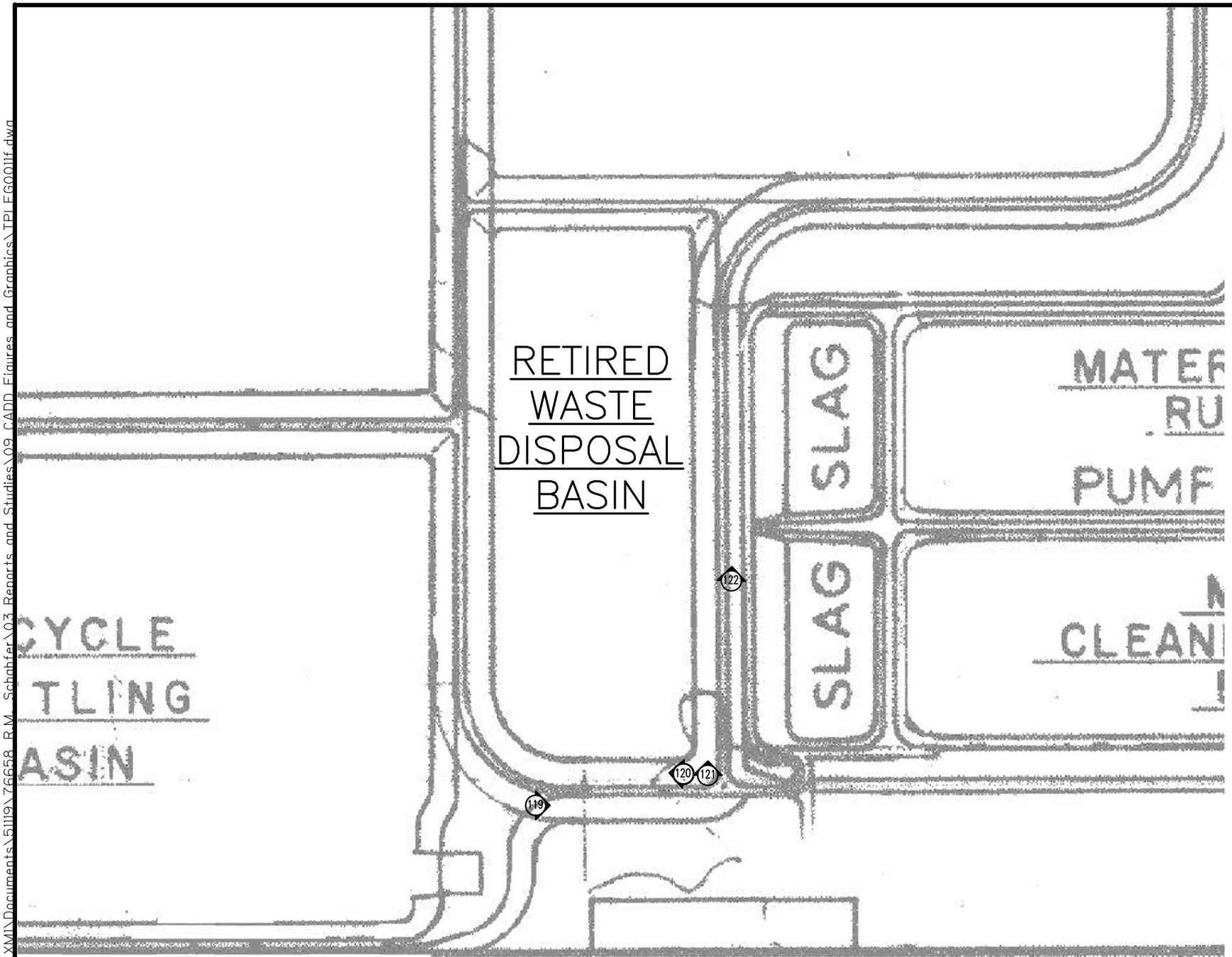
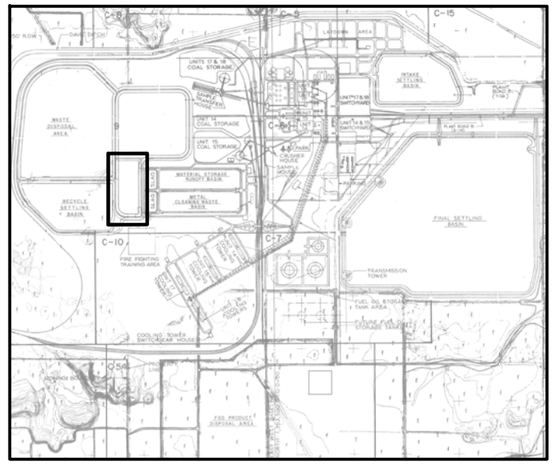
RETIRED WASTE DISPOSAL BASIN PHOTOGRAPH LOCATION PLAN 1 OF 2

FIGURE 11e

PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011e.dwg





KEY MAP

LEGEND:

(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

100' 0 200'

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RETIRED WASTE DISPOSAL BASIN PHOTOGRAPH LOCATION PLAN 2 OF 2

FIGURE 11f

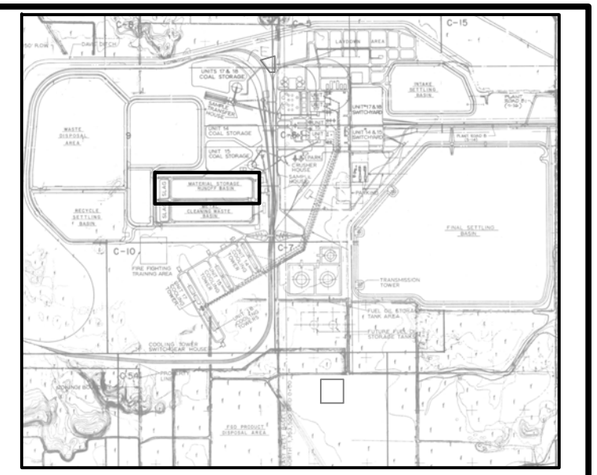
PW:\\cgamxmsvr01:PW_XMLDocuments\51119\76658_R.M._Schahfer\03_Reports_and_Studies\09_CADD_Figures_and_Graphics\TPLFG0011f.dwg

LEGEND:

② PHOTOGRAPH NUMBER AND ORIENTATION

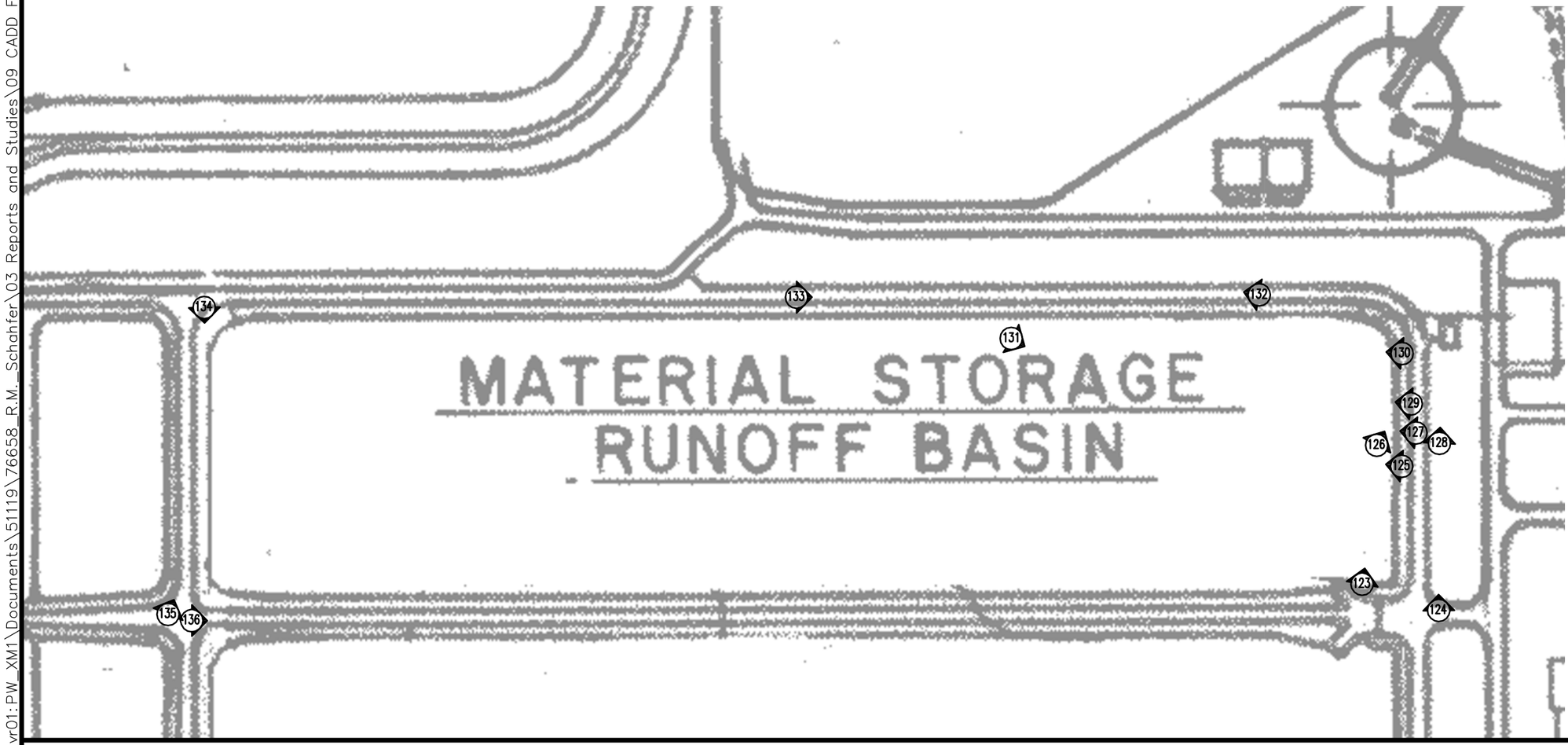
NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY



KEY MAP

N



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WHEATFIELD, INDIANA

MATERIAL STORAGE RUNOFF BASIN PHOTOGRAPH LOCATION PLAN
FIGURE 11g

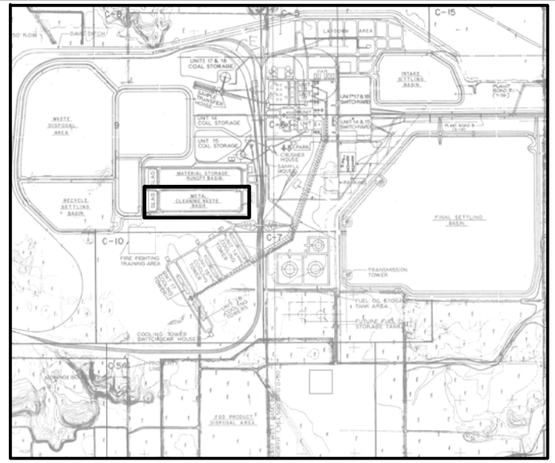
PW: \\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011g.dwg

LEGEND:

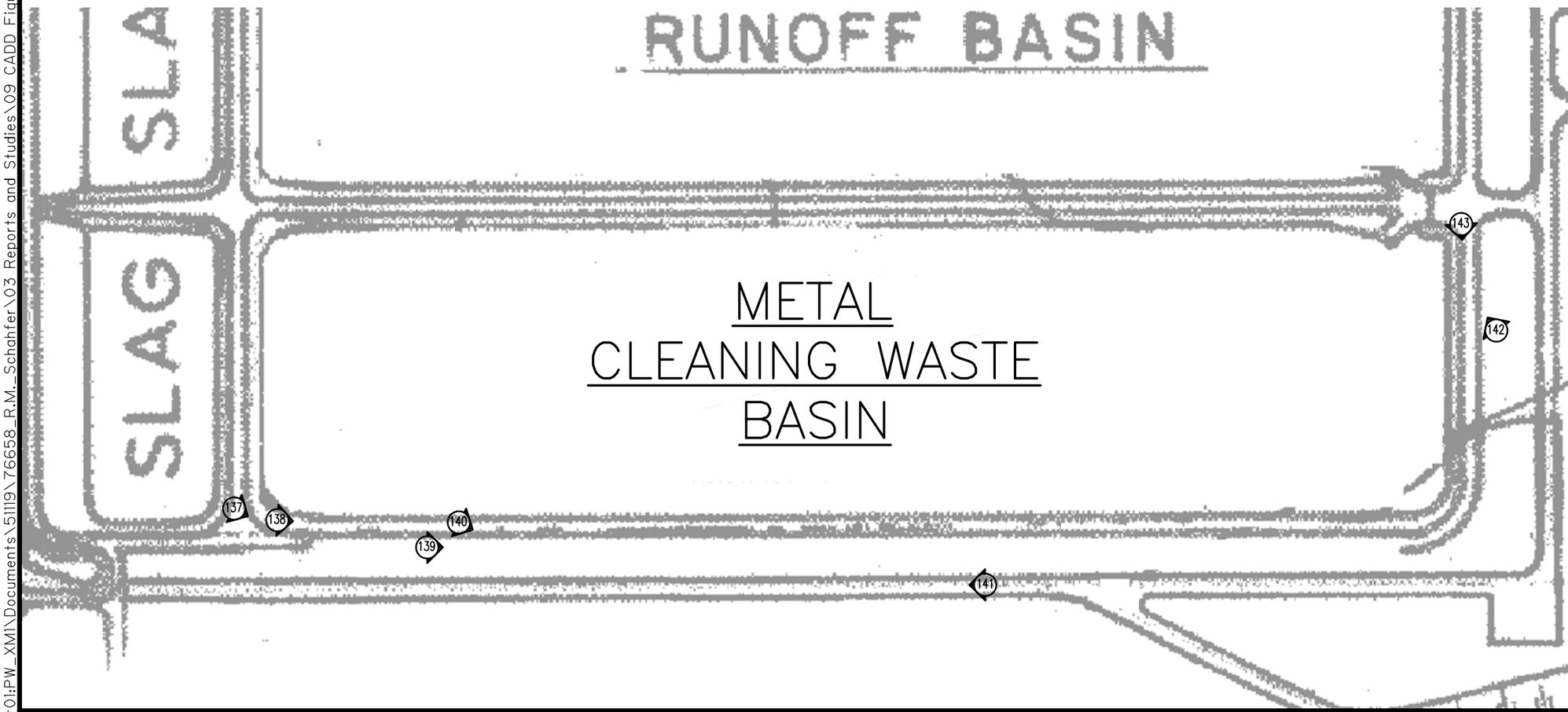
(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY



KEY MAP



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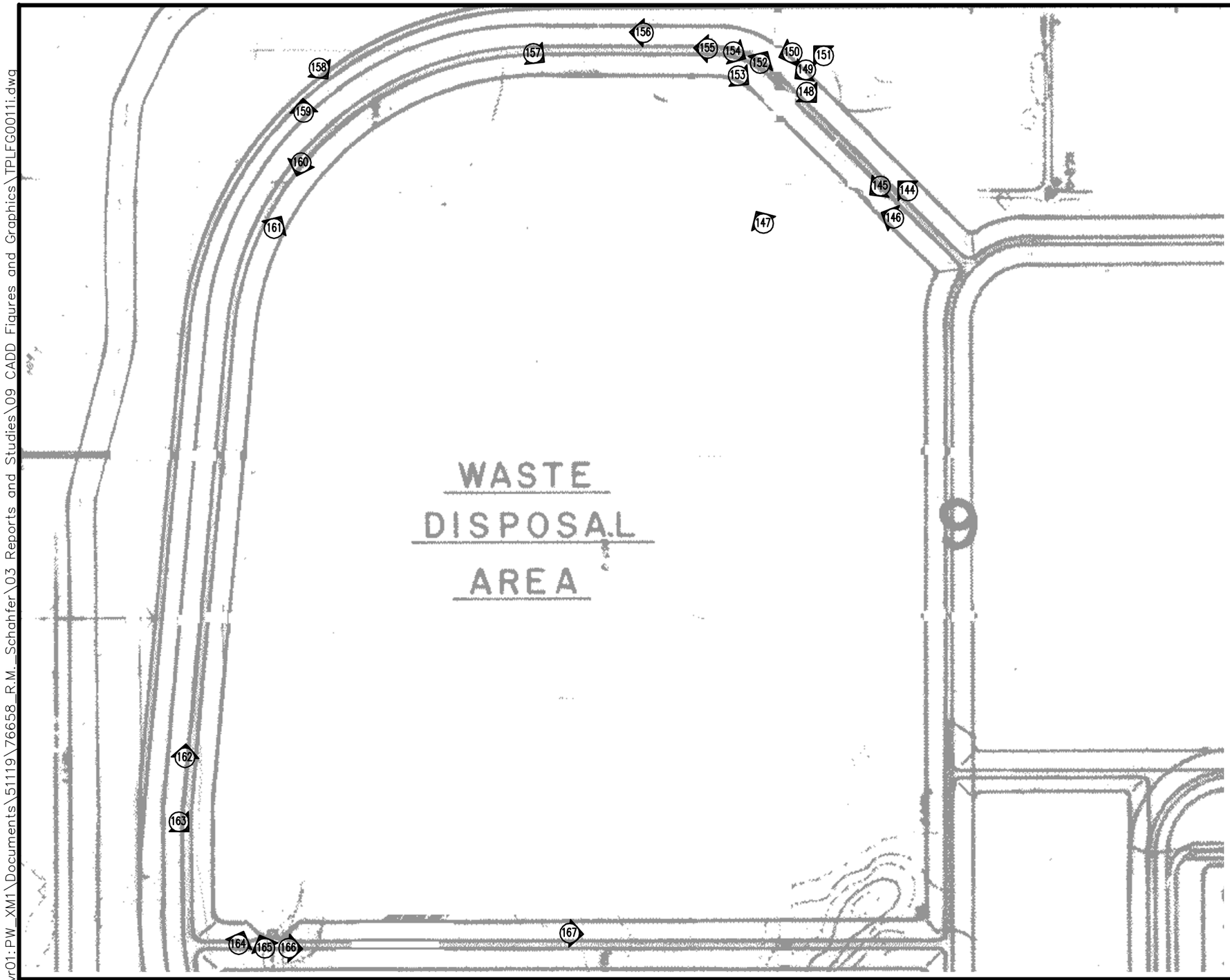
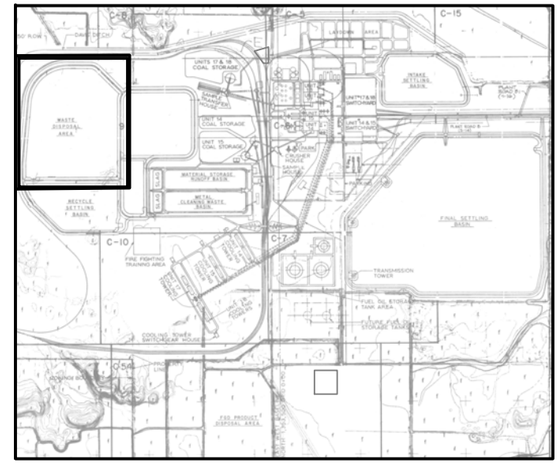
METAL CLEANING WASTE BASIN PHOTOGRAPH LOCATION PLAN
FIGURE 11h

PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011h.dwg





KEY MAP

LEGEND:

(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

125' 0 250'

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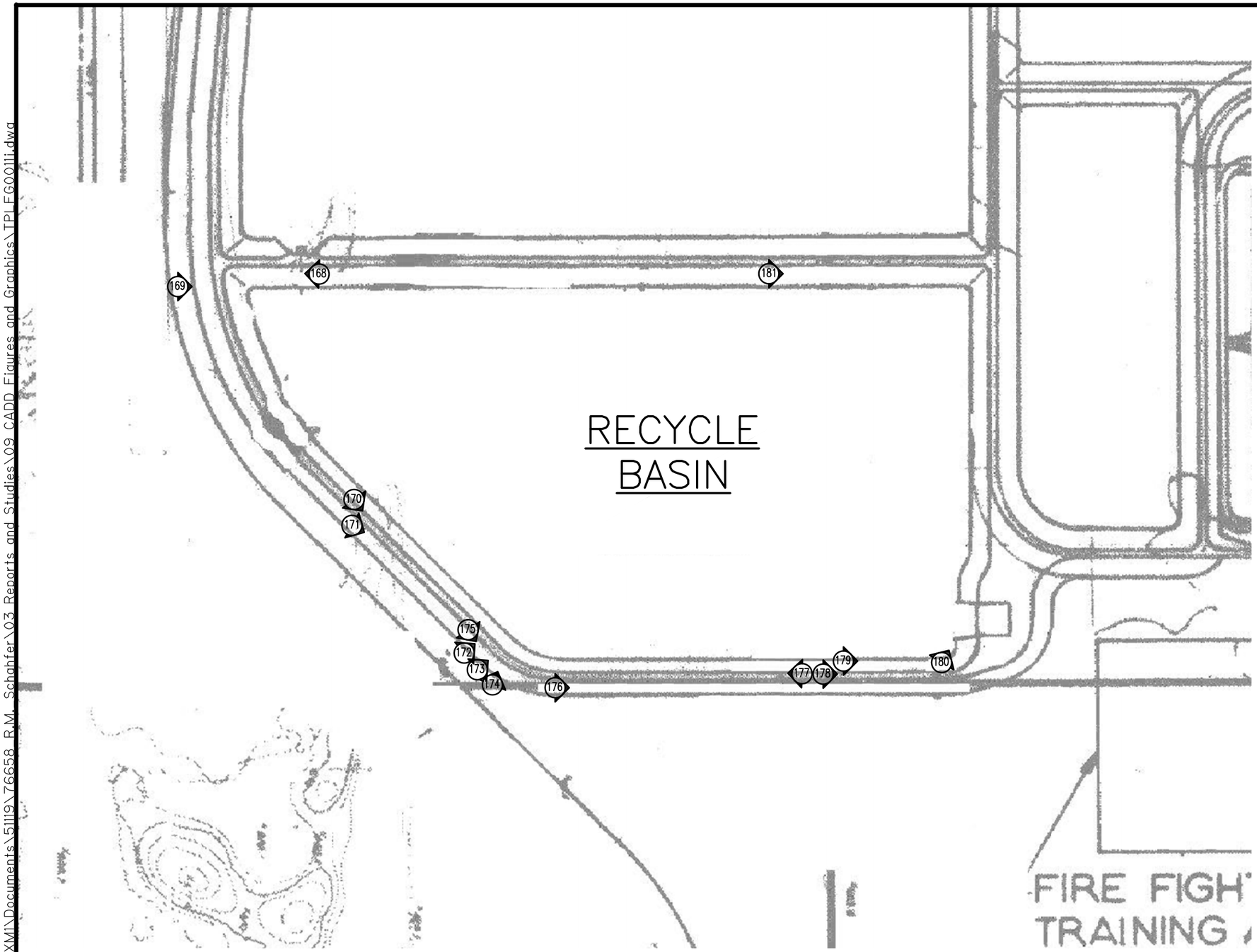
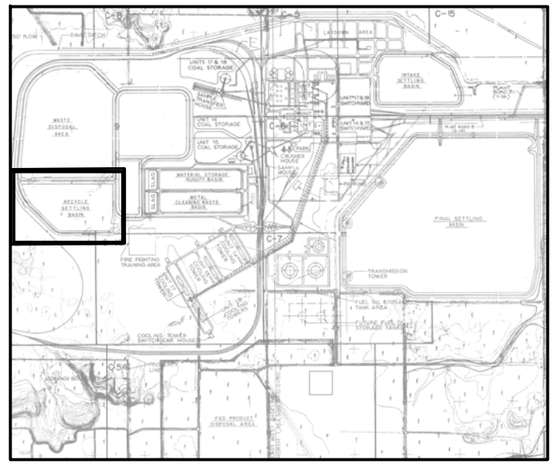
WASTE DISPOSAL AREA PHOTOGRAPH LOCATION PLAN

FIGURE 11i

PW: \\camxmsvr01: PW_XM1\Documents\51119\76658_R.M._Schahfer\03 Reports and Studies\09 CADD Figures and Graphics\TPLFG0011i.dwg





KEY MAP

LEGEND:

(2) PHOTOGRAPH NUMBER AND ORIENTATION

NOTES:

1. BASE PLAN DEVELOPED FROM SEPTEMBER 13, 1979 (REVISED SEPTEMBER 23, 1982) DRAWING PREPARED BY NORTHERN INDIANA PUBLIC SERVICE COMPANY

125' 0 250'

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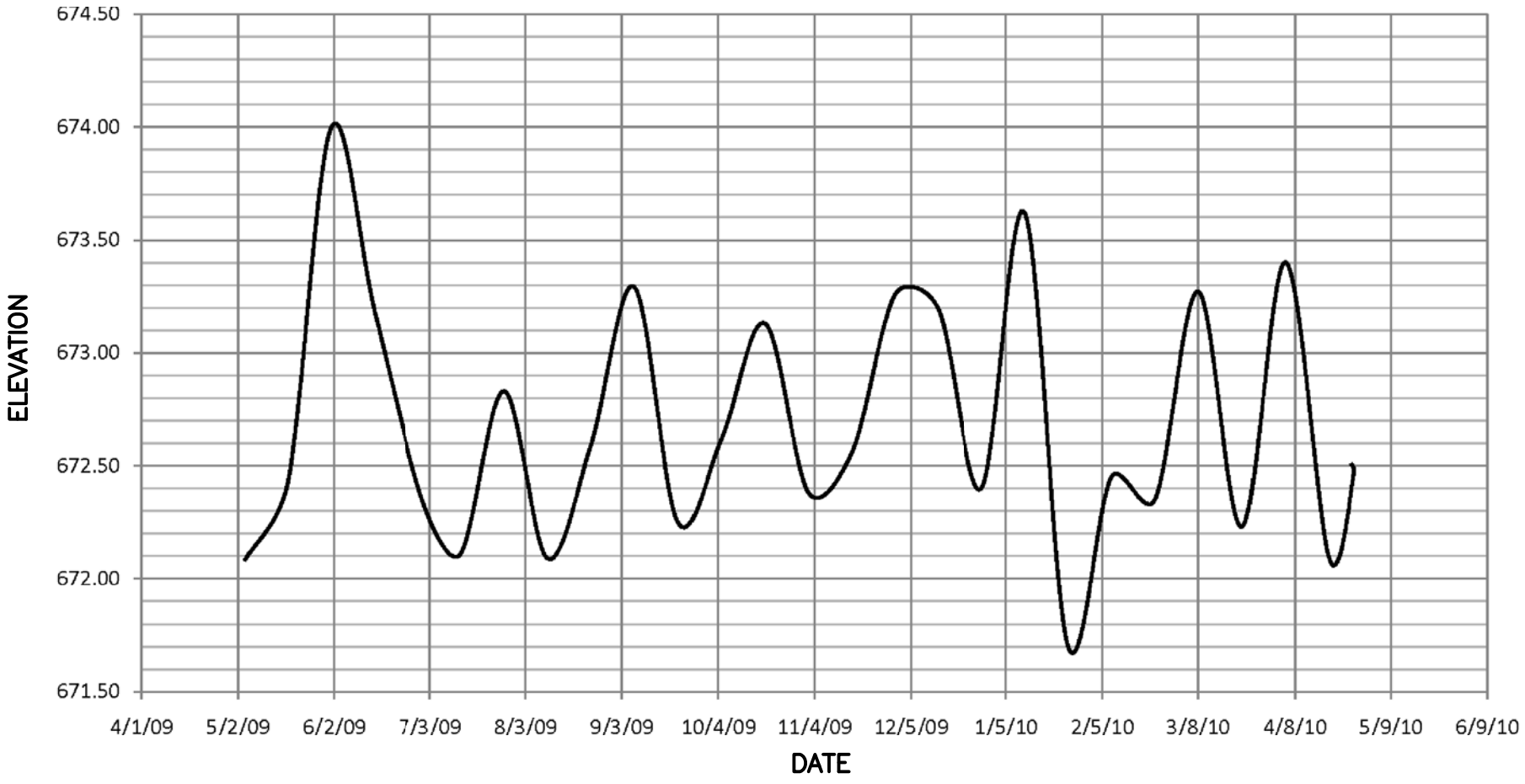
RECYCLE BASIN PHOTOGRAPH LOCATION PLAN
FIGURE 11j

PW:\\camxmsvr01:PW_XM1\Documents\51119\76658_R.M._Schahfer\03_Reports_and_Studies\09_CADD_Figures_and_Graphics\TPLFG00111.dwg

PW: \\CAMXMSVR01:PW_XM1\DOCUMENTS\51119\76658_SCHAHFER\03 REPORT AND STUDIES\09 CADD FIGURES AND GRAPHICS\TCIFG012.dwg



NOTES;

1. WATER LEVELS WERE SUPPLIED BY NIPSCO.

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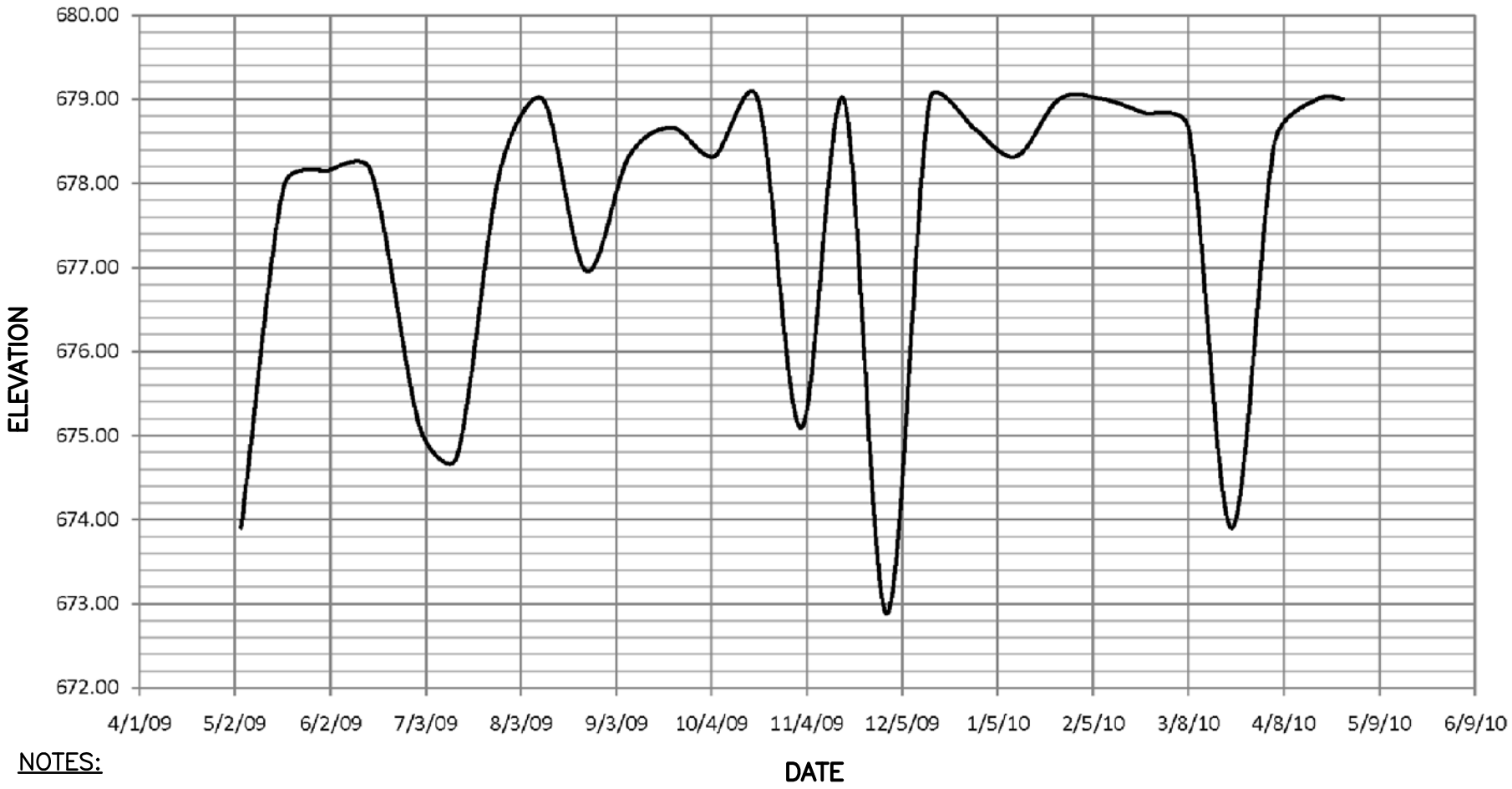
FINAL SETTLING BASIN WATER LEVELS
FIGURE 12

PW:\\CAMXMSVR01:PW_XM1\DOCUMENTS\51119\76658_SCHAHFER\03 REPORT AND STUDIES\09 CADD FIGURES AND GRAPHICS\TCIFG013.dwg



NOTES:

1. WATER LEVELS WERE SUPPLIED BY NIPSCO.

2. DUE TO THE ABSENCE OF STOPLOGS AT THE WEIR SEPORATING THE RECYCLING SETTLING BASIN AND WASTE DISPOSAL AREA, THESE WATER LEVELS ARE ASSUMED TO BE CONSISTANT WITH THOSE FOR THE WASTE DISPOSAL AREA.

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WHEATFIELD, INDIANA

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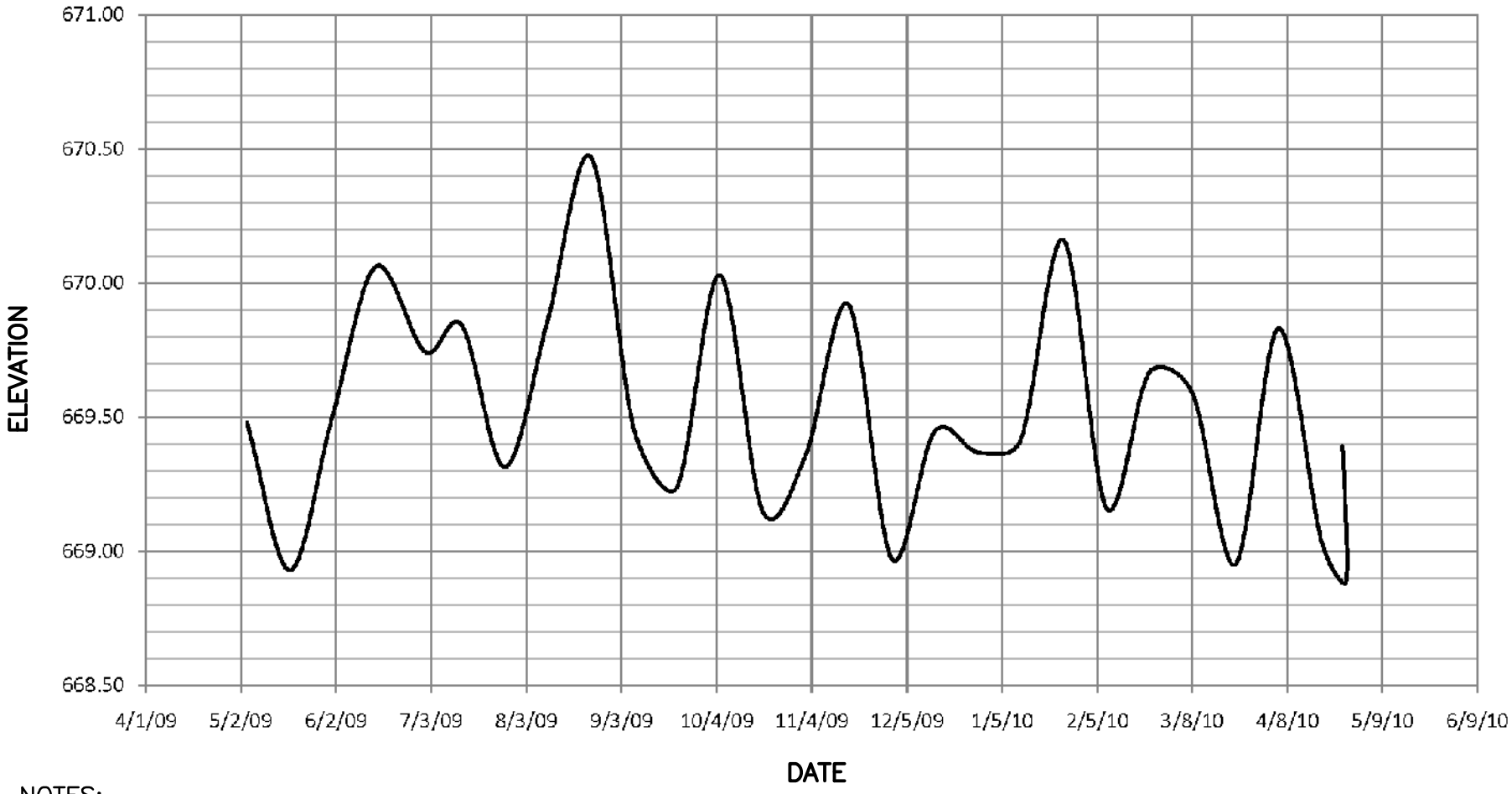
RECYCLE BASIN WATER LEVELS

FIGURE 13

PW: \\CAMXMSVR01:PW_XM1\DOCUMENTS\51119\76658_SCHAHFER\03 REPORT AND STUDIES\09 CADD FIGURES AND GRAPHICS\TCIFG014.dwg



NOTES:

1. WATER LEVELS WERE SUPPLIED BY NIPSCO.

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INTAKE SETTLING BASIN WATER LEVELS
FIGURE 14

US EPA ARCHIVE DOCUMENT

Appendix A
USEPA Coal Combustion Dam Inspection Checklist Forms

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 27, 2010
Unit Name:	Final Settling Basin	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	(High) Significant Low
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	see note 18	
2. Pool elevation (operator records)?	see note 2		19. Major erosion or slope deterioration?	see note 19	
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	see note 20	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	see note 20	
6. If instrumentation is present, are readings recorded (operator records)?	x		Is water exiting outlet flowing clear?	see note 20	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?	n/a	
9. Trees growing on embankment? (If so, indicate largest diameter below)	x		At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?	see note 17		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
2,6. The Final Settling Basin pond level readings are calibrated to read 10 feet at the top of the overflow weir. No monitoring wells are installed.
2,3,4,5. Owner is in process of making copies of drawings and reports.
9. Brush and small saplings (1 to 2 inches in diameter) located along the east embankment.
12. No trash racks. Bar screens installed at pump station.
17,18,19. Depressions, minor erosion rills, surface erosion, localized failures, and soft soils noted noted along west embankment exterior slope. Surface erosion (approximately 1-2') and rodent burrows noted along southwest embankment exterior slope. Depression at intake pipe along the southwest embankment exterior slope. Riprap slide along the east embankment interior slope. Surface erosion noted at the north embankment exterior slope (east edge).
20. There are no decant pipes. Outlet controlled by overflow weir and Pump Station.
21. Possible historic seepage area located along the north embankment exterior slope The area is currently dry, however moss indicates moisture.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201 INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker,

Date April 27, 2010

Impoundment Name Final Settling Basin

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Final Settling Basin

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: Receives Cooling Tower blowdown and discharges directly into the Kankahee River

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 00 Minutes 58.28 Seconds W
Latitude 41 Degrees 13 Minutes 30.13 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

US EPA ARCHIVE DOCUMENT

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

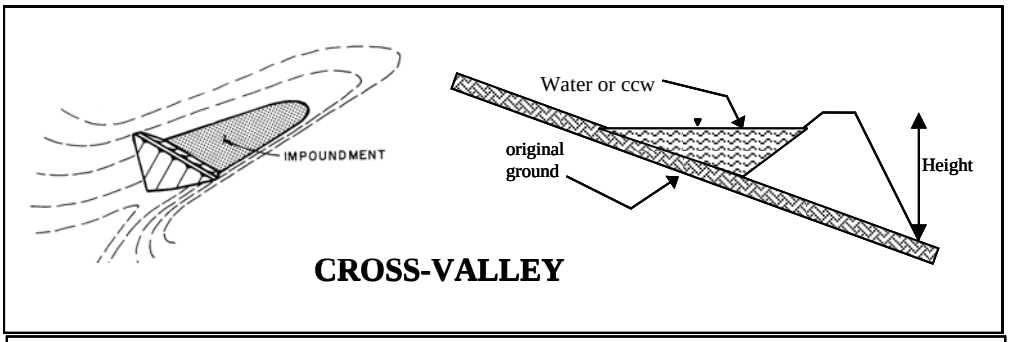
_X__ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

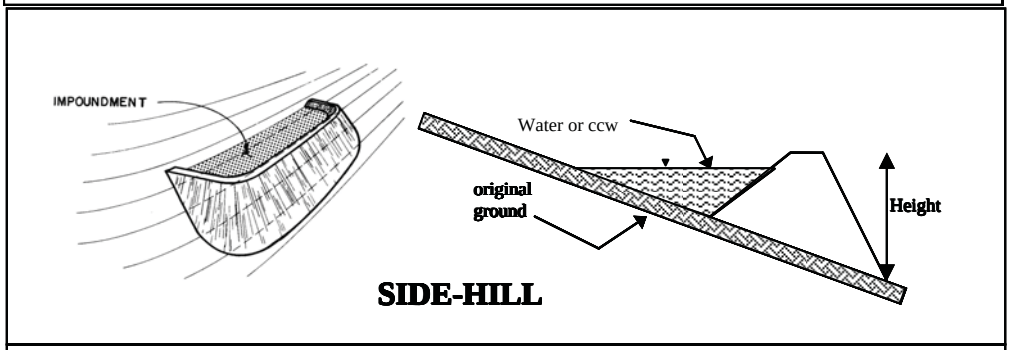
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

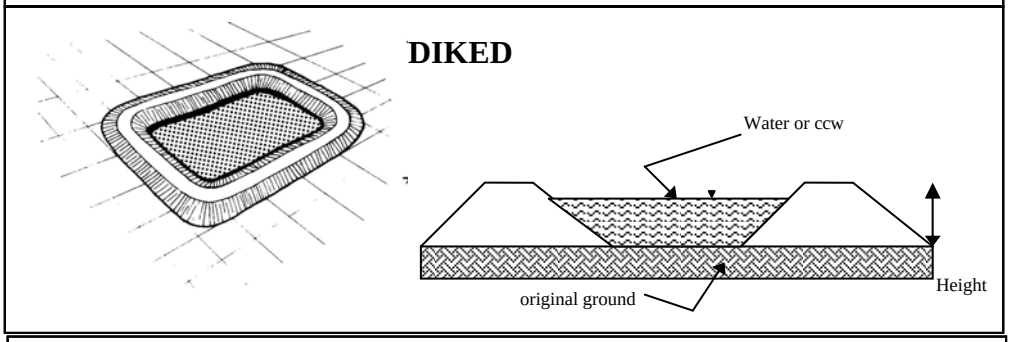
Breach of embankment will probably adversely affect the Kankahee River, surrounding roadways, residential areas (north of pond), and the owner's property, and also result in probable loss of life.

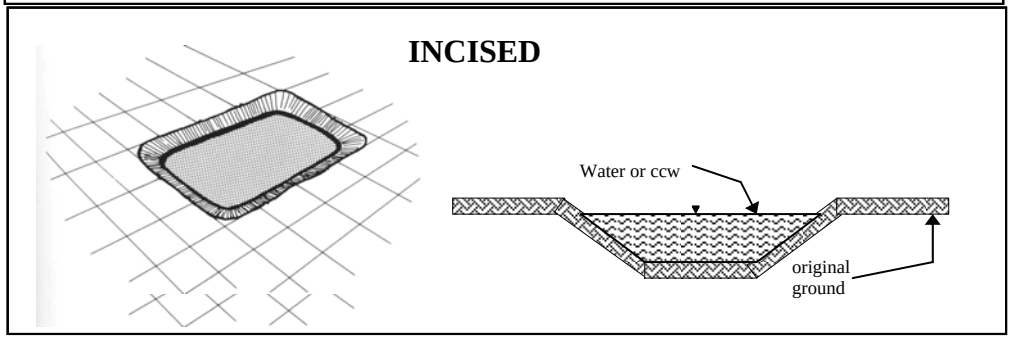
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
_X_ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

Embankment Height _13*_____ feet
Pool Area _____214_____ acres
Current Freeboard __4*_____ feet

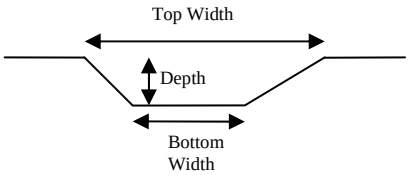
Embankment Material_Earthen_____
Liner __None_____
Liner Permeability _d/n/a_____

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

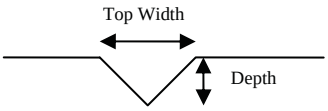
TYPE OF OUTLET (Mark all that apply)

d/n/a **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

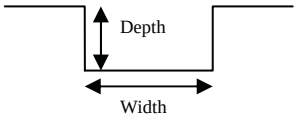


TRIANGULAR

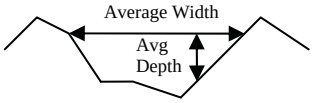


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR

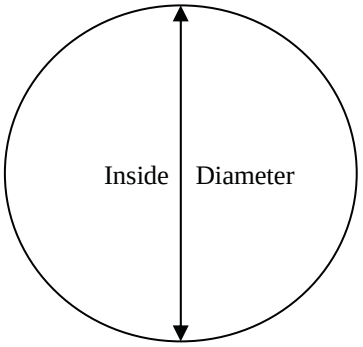


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _____ NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) Overflow weir and Pump Station

The Impoundment was Designed By n/a

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO X_____

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X_____

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 26, 2010
Unit Name:	Intake Settling Basin	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification	(High) Significant Low
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	see note 18	
2. Pool elevation (operator records)?	see note 2		19. Major erosion or slope deterioration?	see note 19	
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	see note 20	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	see note 20	
6. If instrumentation is present, are readings recorded (operator records)?	x		Is water exiting outlet flowing clear?	see note 20	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		x	From underdrain?	d/n/a	
9. Trees growing on embankment? (If so, indicate largest diameter below)	n/a		At isolated points on embankment slopes?	x	
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?	see note 17		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
2,6. The Intake Settling Basin pond level readings are calibrated to read 100 percent a the point of overflow through the culverts. No monitoring wells are installed.
2,3,4,5. Owner is in process of making copies of drawings and reports.
9. Vegetation (1" to 2" in diameter) located along the east embankment exterior slope. Large trees (approximately 12" in diameter) located along north embankment exterior slope.
12. No trash racks. Bar screens installed at pump station.
17,18,19. Rodent burrow located along south embankment exterior slope. Surface erosion along east embankment exterior slope. Low area noted along the north embankment exterior slope in which ponding is occurring. Small amounts of settlement at outfall pipes at southwestern corner of pond. Surface erosion along the north embankment exterior slope (western edge).
20. No decant pipes.
21. Saturated areas located along east embankment exterior slope. Possible seepage in the north embankment exterior slope (eastern edge, approximate 40'x15' area), water is clear. Saturated area located along north embankment exterior slope (approximate 25'x8' area). Saturated area located along west embankment exterior slope (approximate 40'x7' area).

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201

INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker

Date April 26, 2010

Impoundment Name Intake Settling Basin

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Intake Settling Basin

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	_____	X

IMPOUNDMENT FUNCTION: Receives water out of Kankahee River and is used as cooling water.

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 01 Minutes 32.20 Seconds W
Latitude 41 Degrees 13 Minutes 23.63 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_X_ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

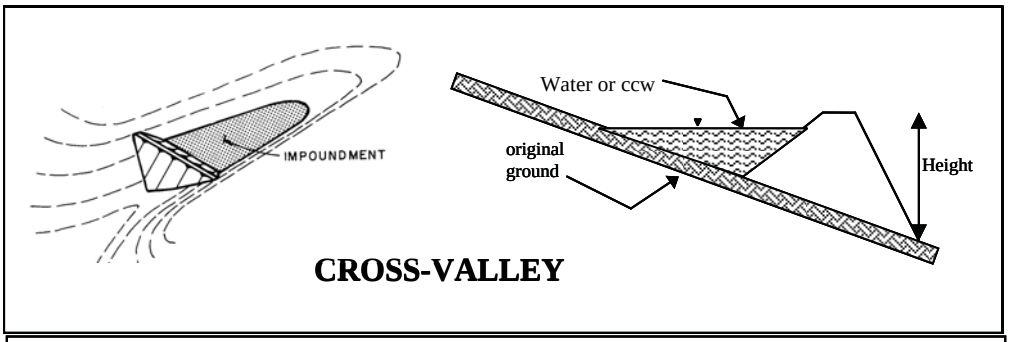
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

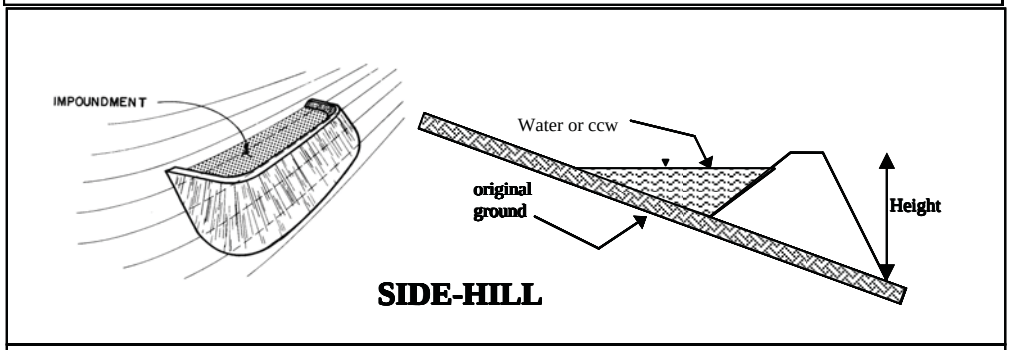
Breach of embankment will adversely affect Kankahee River, surrounding roadways, and the owner's property, also result in probable loss of life.

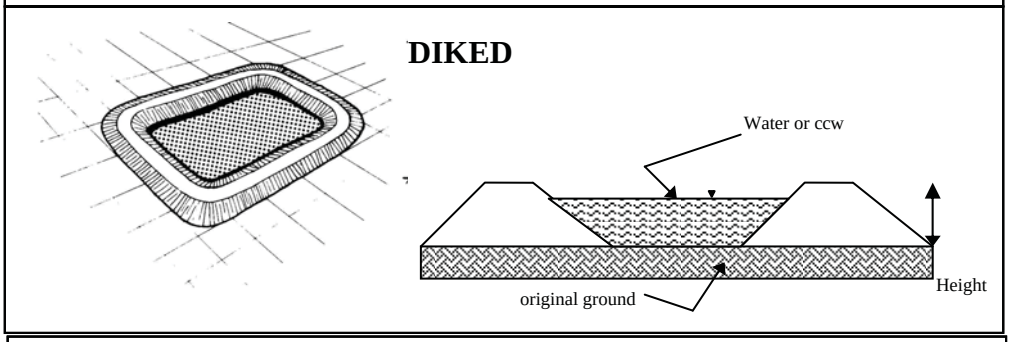
US EPA ARCHIVE DOCUMENT

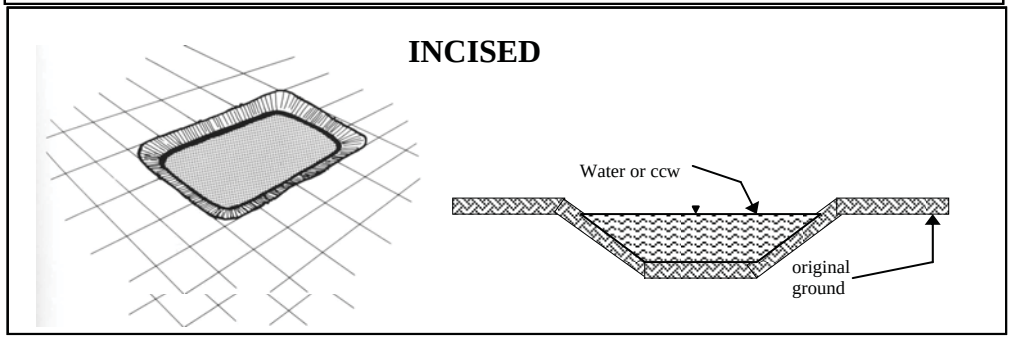
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
_X_ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

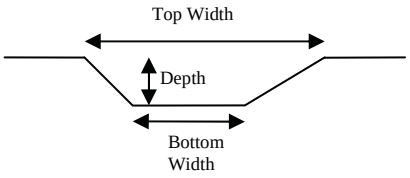
Embankment Height 10* feet
Pool Area 30 acres
Current Freeboard 3* feet
Embankment Material Earthen
Liner None
Liner Permeability d/n/a

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

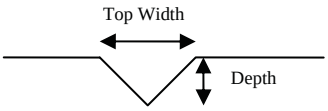
TYPE OF OUTLET (Mark all that apply)

_d/n/a_ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

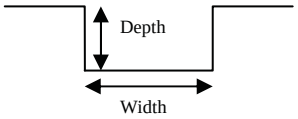


TRIANGULAR



_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR



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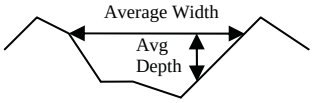
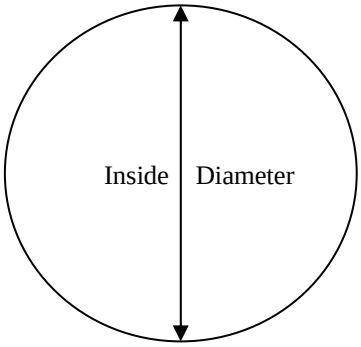


_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) Pump Station

The Impoundment was Designed By n/a

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 26, 2010
Unit Name:	Retention Pond	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High Significant (Low)
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	d/n/a	
2. Pool elevation (operator records)?	n/a		19. Major erosion or slope deterioration?	d/n/a	
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	d/n/a	
5. Lowest dam crest elevation (operator records)?	d/n/a		Is water exiting outlet, but not entering inlet?	d/n/a	
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	d/n/a	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)		x	At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?	d/n/a		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
1.	Informal dam inspections performed but not documented.
3,4,5.	Owner is in process of making copies of drawings and reports.
20.	No decant pipes.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201

INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker

Date April 26, 2010

Impoundment Name Retention Pond

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Retention Pond

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: Receives site stormwater

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:

Longitude 87 Degrees 01 Minutes 37.53 Seconds W

Latitude 41 Degrees 12 Minutes 55.93 Seconds N

State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

X **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

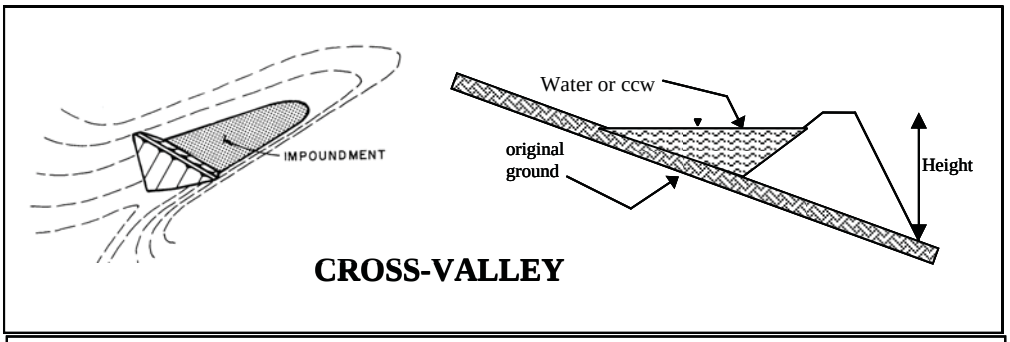
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

Because the retention pond is incised, there is minimal potential for release into the environment.

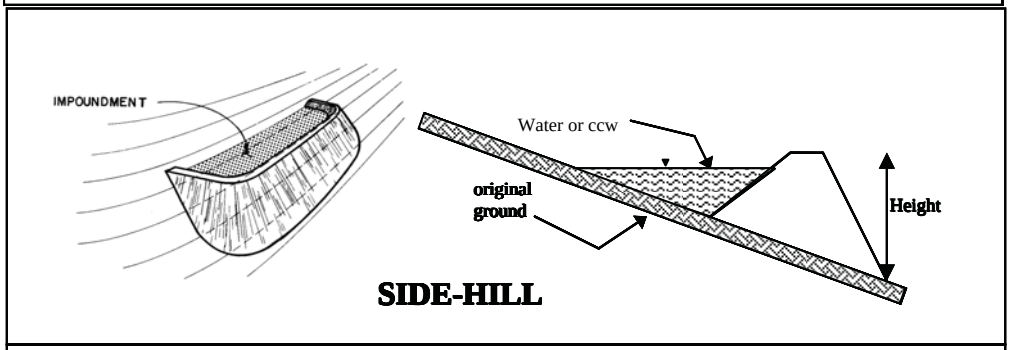
US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

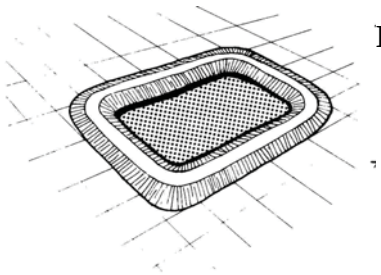
CONFIGURATION:



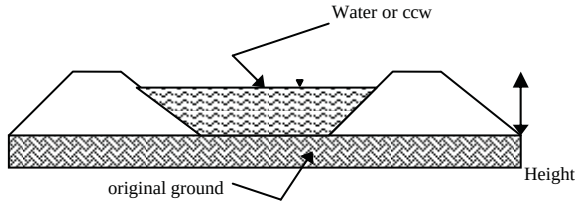
CROSS-VALLEY

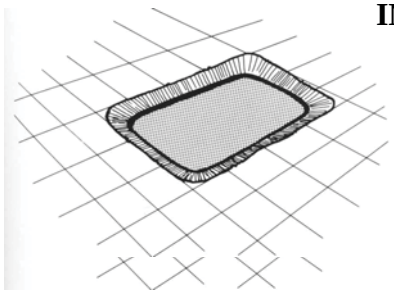


SIDE-HILL

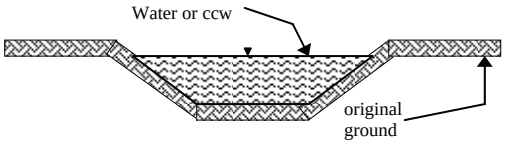


DIKED





INCISED



_____ Cross-Valley
_____ Side-Hill
_____ Diked
_X_ Incised (form completion optional)
_____ Combination Incised/Diked

Embankment Height _n/a_____ feet
Pool Area _____2_____ acres
Current Freeboard __3*_____ feet

Embankment Material____Concrete_____
Liner ___Concrete _____
Liner Permeability

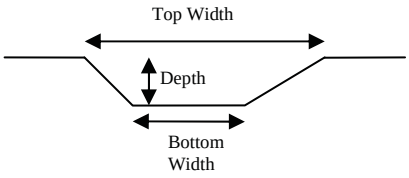
Permeability of concrete is dependent on concrete strength and amount/size of cracks

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

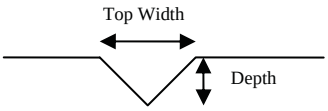
TYPE OF OUTLET (Mark all that apply)

_d/n/a_ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

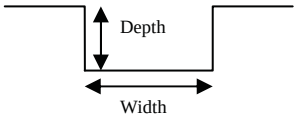


TRIANGULAR

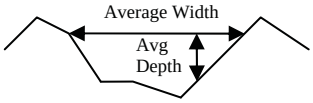


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR

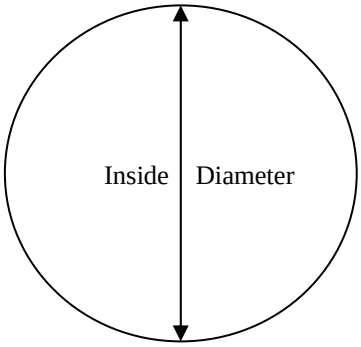


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _X_ NO _____

_____ **No Outlet**

_X_ **Other Type of Outlet** (specify) Pump Station

The Impoundment was Designed By n/a

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO __X_____

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO _X_____

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 26, 2010
Unit Name:	FGD Landfill Runoff Pond	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High Significant (Low)
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?		x
2. Pool elevation (operator records)?	n/a		19. Major erosion or slope deterioration?		x
3. Decant inlet elevation (operator records)?	n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	n/a		Is water entering inlet, but not exiting outlet?	see note 20	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	see note 20	
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	see note 20	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?	d/n/a	
9. Trees growing on embankment? (If so, indicate largest diameter below)	x		At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?	see note 11		Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?		x	24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
6. No monitoring wells are installed.
3,4,5. Owner is in process of making copies of drawings and reports.
9. Large trees (approximately 18 and 24") located along the east embankment interior slope.
11. A low area was noted along the crest along the northern limits. Area appears to be a spillway.
20. Outlet to ditch not visible/outside of owner's secured property.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201 INSPECTOR Kyle King, Bill Friers, Mike Smith, Mike Schumaker

Date April 26, 2010

Impoundment Name FGD Landfill Runoff Pond

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment FGD Landfill Runoff Pond

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	_____	X

IMPOUNDMENT FUNCTION: Receives landfill runoff

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 00 Minutes 20.36 Seconds W
Latitude 41 Degrees 13 Minutes 06.95 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

US EPA ARCHIVE DOCUMENT

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__X__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

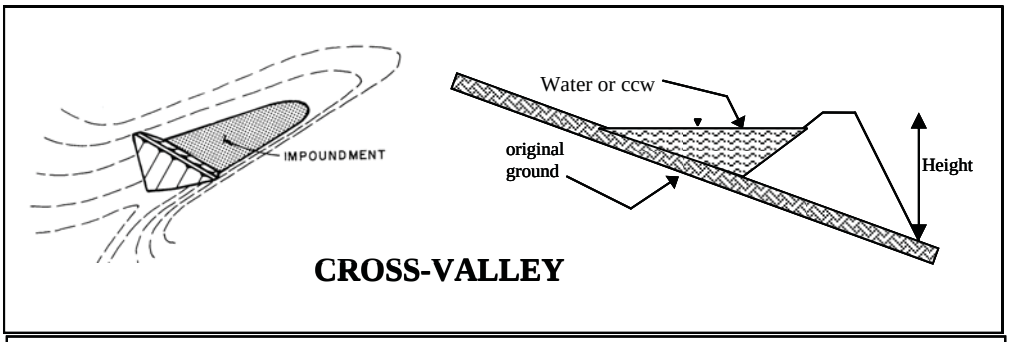
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

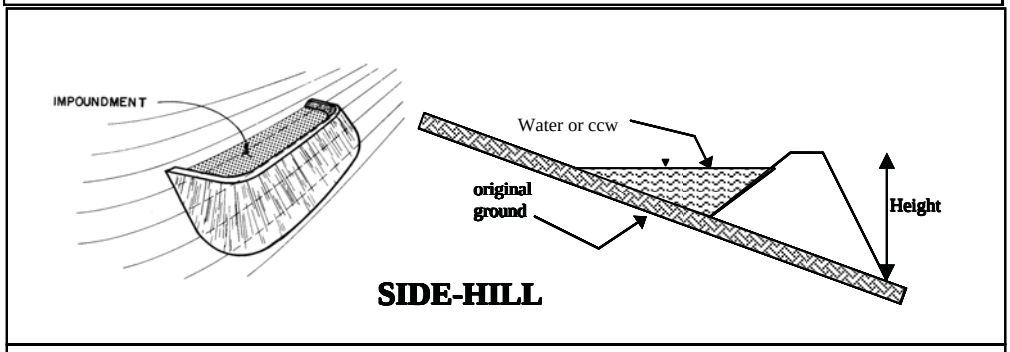
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

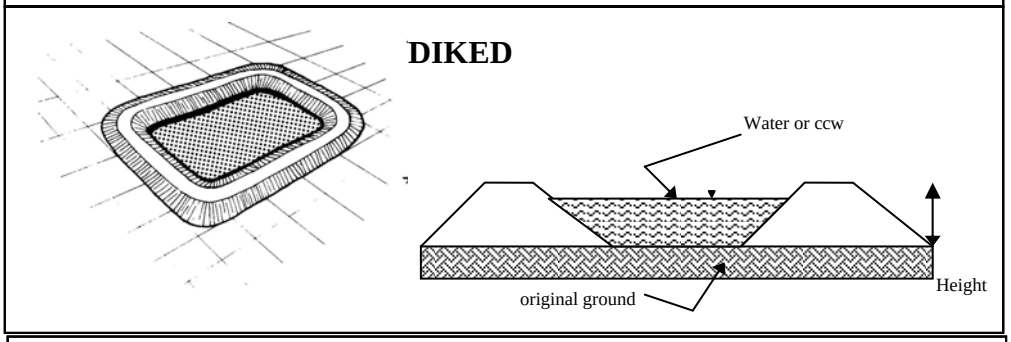
A breach of embankment will have low economic and environmental loses due to the location of the pond (approximately 0.3 miles southeast of the Final Settling Basin).

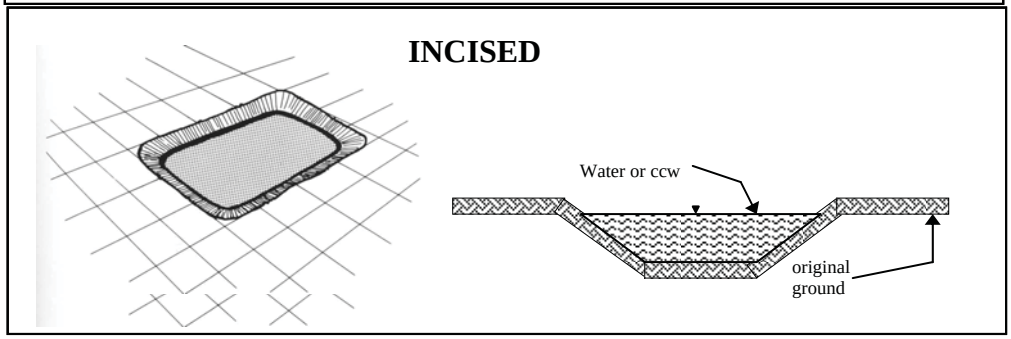
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

Embankment Height __5*_____ feet
Pool Area _____5_____ acres
Current Freeboard ___3*_____ feet

Embankment Material_____Earthen_____
Liner ____None_____
Liner Permeability _d/n/a_____

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

TYPE OF OUTLET (Mark all that apply)

Possible spillway from low on northern crest

n/a **Open Channel Spillway**

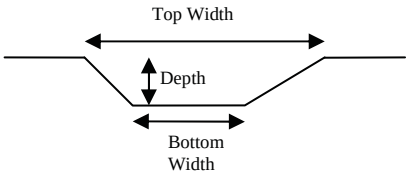
_____ Trapezoidal

_____ Triangular

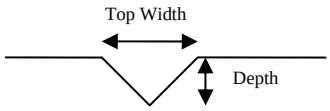
_____ Rectangular

_____ Irregular

TRAPEZOIDAL



TRIANGULAR

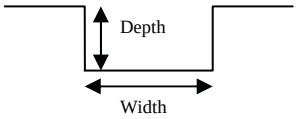


_____ depth

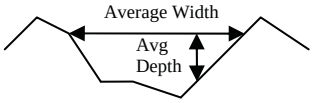
_____ bottom (or average) width

_____ top width

RECTANGULAR

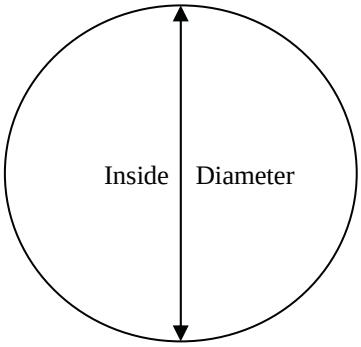


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material

_____ corrugated metal

_____ welded steel

_____ concrete

_____ plastic (hdpe, pvc, etc.)

_____ other (specify) _____

X Outlet to ditch not visible/outside of owner's secured property

Is water flowing through the outlet? YES _____ NO X

_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By n/a

_____

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____NO __X___

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 26-27, 2010
Unit Name:	Retired Waste Disposal Area	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	see note 18	
2. Pool elevation (operator records)?	d/n/a		19. Major erosion or slope deterioration?	see note 19	
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	d/n/a	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	d/n/a	
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	d/n/a	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)	x		At isolated points on embankment slopes?	x	
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	d/n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?	d/n/a		"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?	see note 17		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
2,3,4,6,12,20. Pond is filled in, however has not been officially closed by State or Federal Agencies.
5. Owner is in process of making copies of drawings and reports.
9. Brush and trees (approximately 12'' in diameter) located along the east embankment exterior slope.
17,18,19. Low area, rodent burrow, and a small surface depression (2' deep) and located along the west embankment exterior slope. Rodent burrows, possible sloughs, and erosion rills located along north embankment exterior slope.
19,21. Large eroded area/slope failure located at the west embankment exterior slope. Seepage occurs through the bottom of the eroded area (approximately 3' wide and 8' deep).

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201

INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker,

Date April 26-27, 2010

Impoundment Name Retired Waste Disposal Area

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Retired Waste Disposal Area

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	_____	X

IMPOUNDMENT FUNCTION: Pond is filled in; reportedly with ash and other on-site material

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 01 Minutes 21.89 Seconds W
Latitude 41 Degrees 12 Minutes 36.17 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

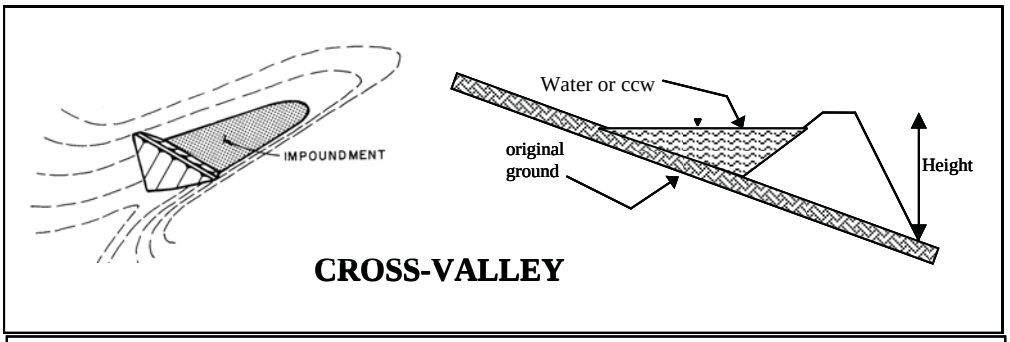
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

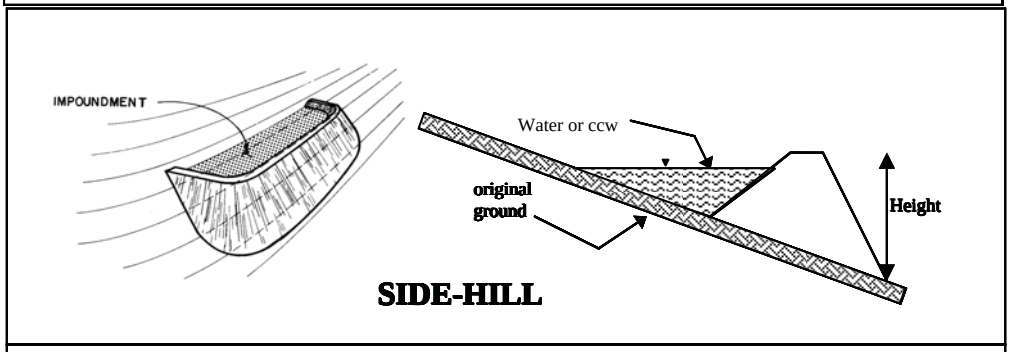
The failure of embankment, under full pond, may cause environmental losses and damage to the facility.

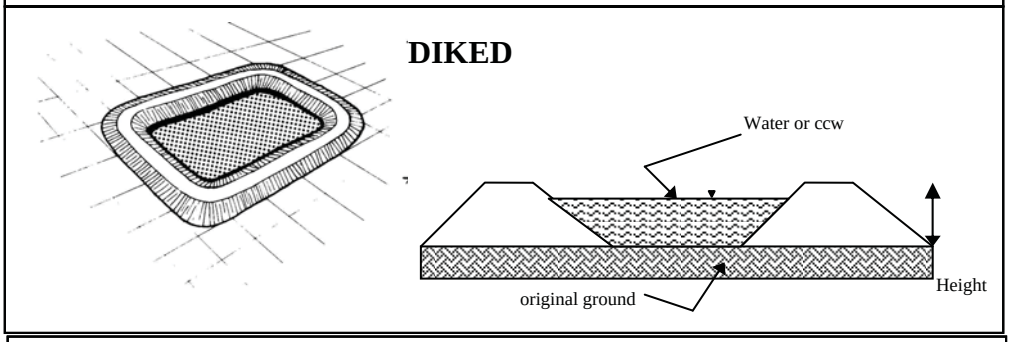
US EPA ARCHIVE DOCUMENT

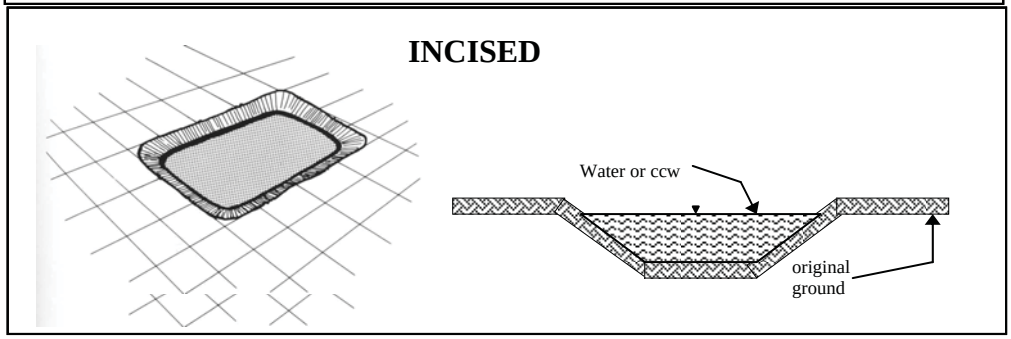
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
_X_ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

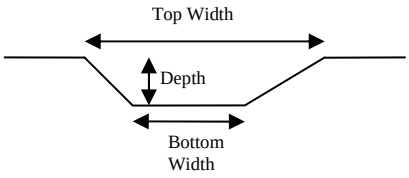
Embankment Height _15*_____ feet Embankment Material_Earthen_____
Pool Area ___54 _____ acres Liner __None_____
Current Freeboard _____d/n/a_____ feet Liner Permeability d/n/a_____

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

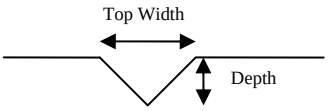
TYPE OF OUTLET (Mark all that apply)

_ d/n/a_ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

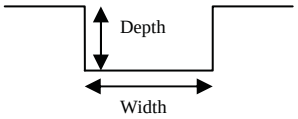


TRIANGULAR

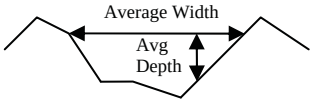


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR

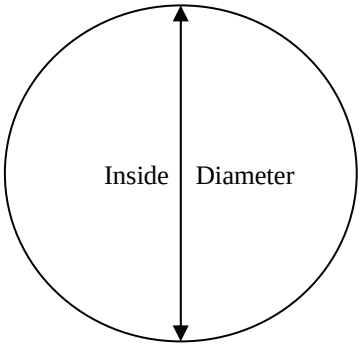


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _____ NO _____

X
_____ **No Outlet**

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By n/a
_____

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO ___X_____

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 27, 2010
Unit Name:	Material Storage Runoff Basin	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High **Significant** (Low)
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?		x
2. Pool elevation (operator records)?	n/a		19. Major erosion or slope deterioration?		x
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	see note 20	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	see note 20	
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	see note 20	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)	x		At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?		x	24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
6. No monitoring wells are installed.
3,4,5. Owner is in process of making copies of drawings and reports. The basin is currently compartmentalized to assist in the settlement of solids.
9. Trees (approximately 3" in diameter) noted along south embankment interior slope.
12. No trash racks. Bar screens installed at pump station.
20. Decant pipes are between divider dikes. Outlet is via Pump Station.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201

INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker

Date April 27, 2010

Impoundment Name Material Storage Runoff Basin

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Material Storage Runoff Basin

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?		X
Is water or ccw currently being pumped into the impoundment?	X	

IMPOUNDMENT FUNCTION: Used as settling area for solids from scrubber process

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:

Longitude 87 Degrees 01 Minutes 09.89 Seconds W

Latitude 41 Degrees 12 Minutes 44.62 Seconds N

State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

US EPA ARCHIVE DOCUMENT

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__X__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

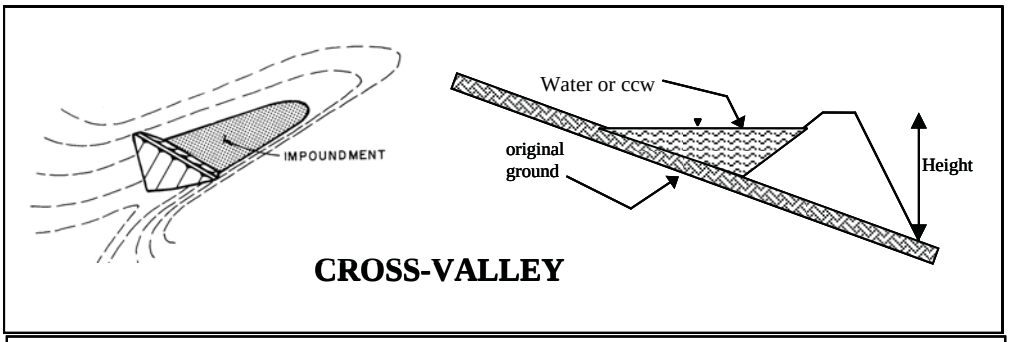
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

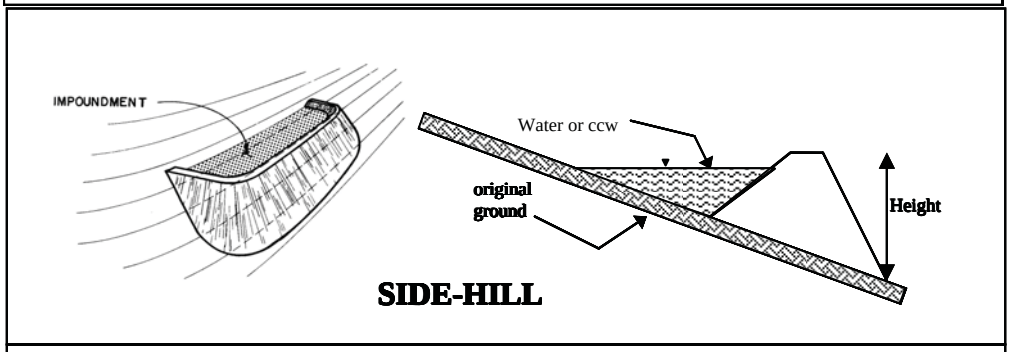
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

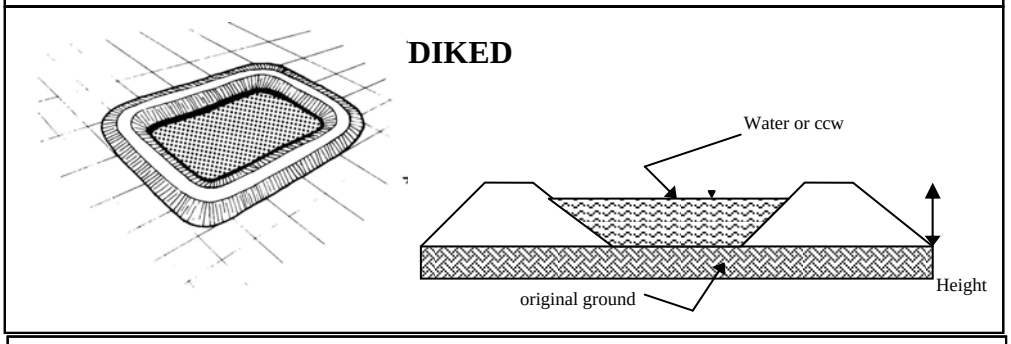
If breach of embankment occurs, it is likely that both the Material Storage Runoff Basin and Metal Cleaning Water Basin will be drained (open channel located on divider embankment). Economic losses will be principally limited to owner's property.

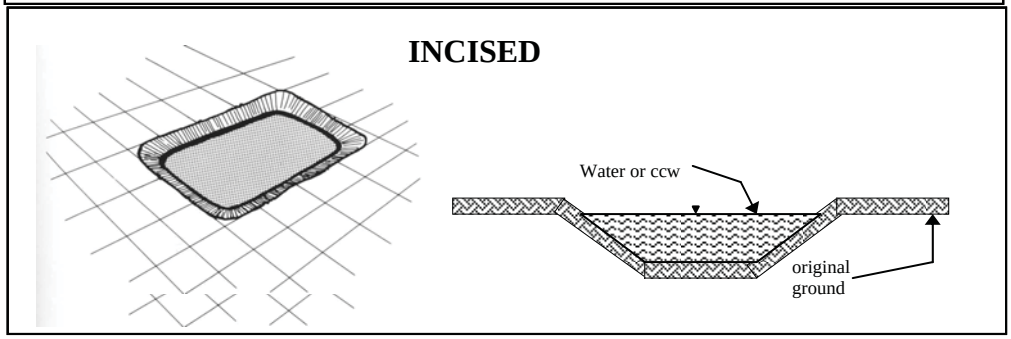
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
_X_ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

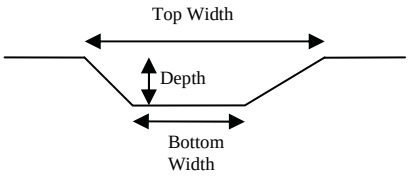
Embankment Height _4*_ ___ feet
Embankment Material ___Earthen_____
Pool Area ____12_____ _ acres
Liner ____None_____
Current Freeboard _3*_____ feet
Liner Permeability d/n/a _____

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

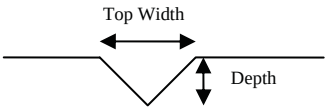
TYPE OF OUTLET (Mark all that apply)

d/n/a **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

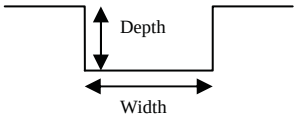


TRIANGULAR

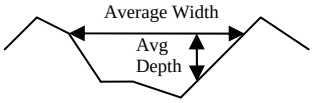


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR

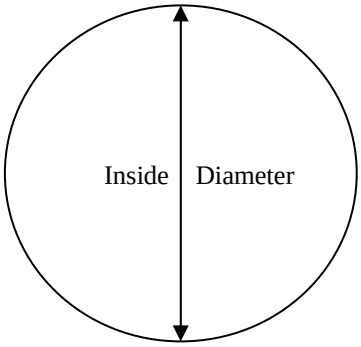


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES X NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) Outlet via Pump Station

The Impoundment was Designed By n/a

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO ___X___

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 27, 2010
Unit Name:	Metal Cleaning Waste Basin	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High Significant (Low)
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	see note 18	
2. Pool elevation (operator records)?	n/a		19. Major erosion or slope deterioration?	see note 19	
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	see note 20	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	see note 20	
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	see note 20	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)		x	At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?	x		Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?		x	24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments

1. Informal dam inspections performed but not documented.
6. No monitoring wells are installed.
3,4,5. Owner is in process of making copies of drawings are reports.
9. Some vegetation located along the east embankment, no trees.
11. Previous breach occurred along the east embankment approximately 200 feet north of the southeastern corner of the pond. A low area was noted at this location.
12. No trash racks. Bar screens installed at pump station.
18,19. Hole (approximately 2' in diameter and 1' deep) and small rodent burrow holes located along east embankment interior slope.
20. Outlet is via Pump Station.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201

INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker

Date April 27, 2010

Impoundment Name Metal Cleaning Waste Basin

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Metal Cleaning Waste Basin

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: Used as settling area for solids from scrubber process

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 00 Minutes 58.91 Seconds W
Latitude 41 Degrees 12 Minutes 42.92 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__X__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

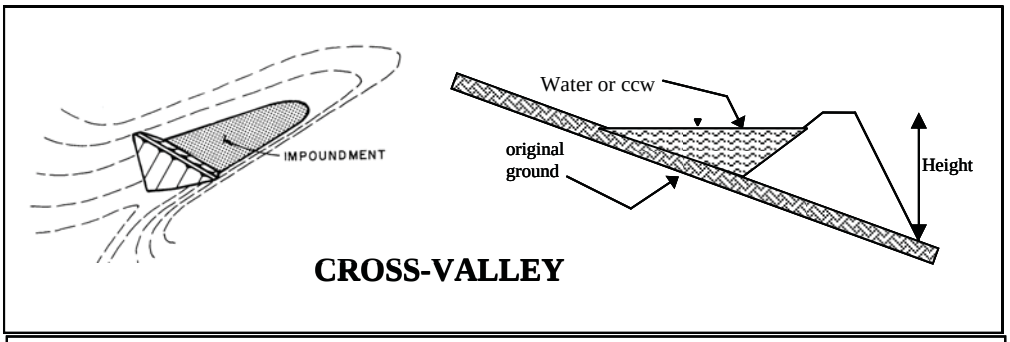
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

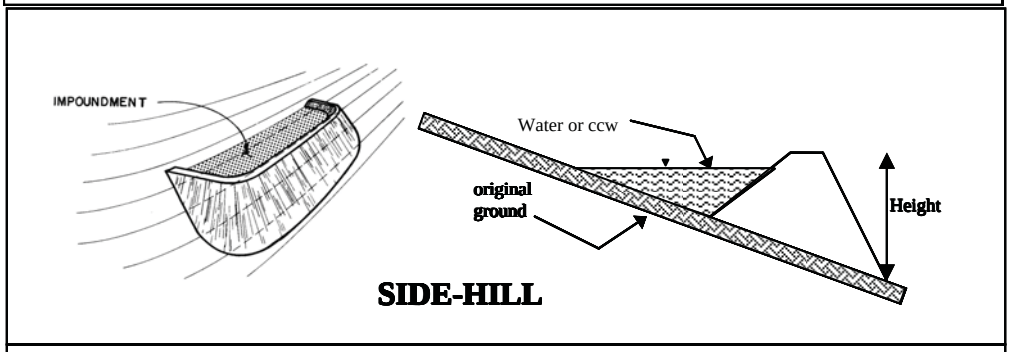
If breach of embankment occurs, it is likely that both the Material Storage Runoff Basin and Metal Cleaning Water Basin will be drained (open channel located on divider embankment). Economic losses will be principally limited to owner's property.

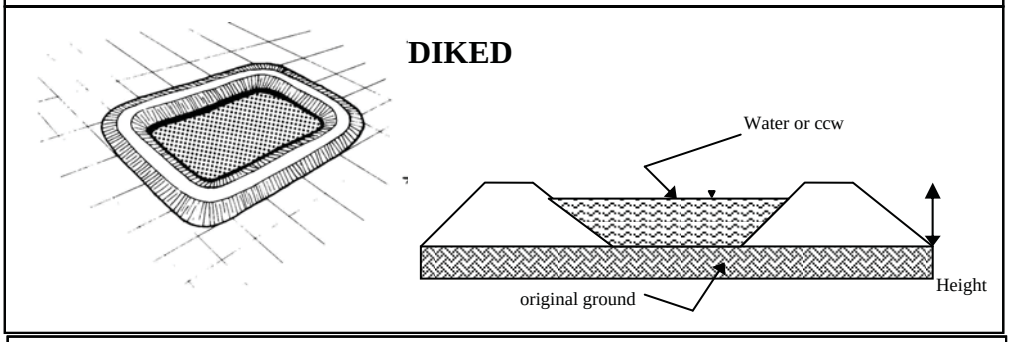
US EPA ARCHIVE DOCUMENT

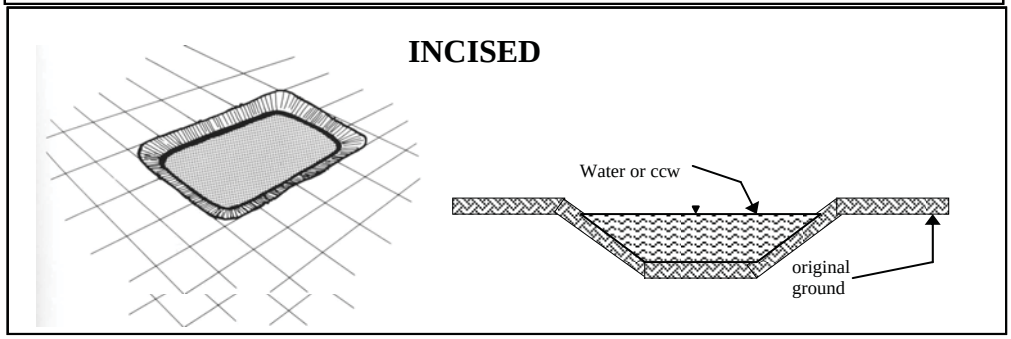
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

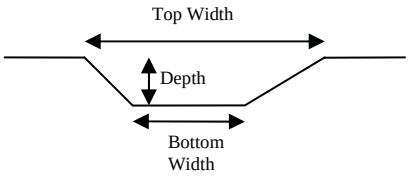
Embankment Height _4*_ ___ feet Embankment Material_Earthen_____
Pool Area _____12_____ acres Liner ___None_____
Current Freeboard __3*_ _____ feet Liner Permeability d/n/a_____

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

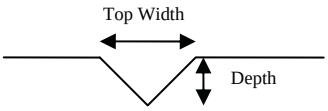
TYPE OF OUTLET (Mark all that apply)

d/n/a **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

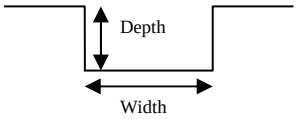


TRIANGULAR

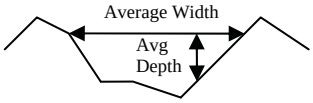


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR

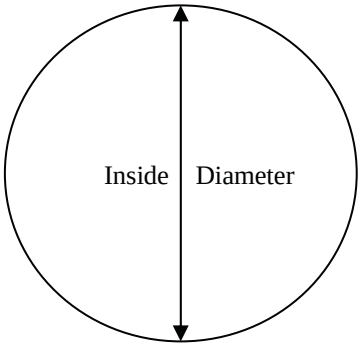


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _X___ NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) Outlet via Pump Station

The Impoundment was Designed By n/a

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES X NO _____

If So When? Date Not Supplied

If So Please Describe : _____

No records are available on extent of breach or how it was repaired. The breach in the east embankment was repaired by NIPSCO Personnel. Plant personnel reported that the pond discharge from the breach was contained within plant property.

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 27, 2010
Unit Name:	Waste Disposal Area	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	see note 18	
2. Pool elevation (operator records)?	n/a		19. Major erosion or slope deterioration?	see note 19	
3. Decant inlet elevation (operator records)?	n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?		x
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?		x
6. If instrumentation is present, are readings recorded (operator records)?	d/n/a		Is water exiting outlet flowing clear?	x	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?	d/n/a	
9. Trees growing on embankment? (If so, indicate largest diameter below)	x		At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?	x		Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?	see note 17		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
6. No monitoring wells are installed.
3,4,5. Owner is in process of making copies of drawings and reports.
9. Trees (approximately 12" in diameter) located along the west embankment exterior slope. Tree (approximately 12" in diameter) located on south embankment exterior slope.
12. No trash racks. Bar screens installed at pump station.
14. Tree branches in outlet channel along west embankment exterior slope.
17,18,19. Surface erosion and low areas along west embankment exterior slope. Minor erosion of riprap along the east embankment interior slope.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201 INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker

Date April 27, 2010

Impoundment Name Waste Disposal Area

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Waste Disposal Area

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: Receives bulk slag and bottom ash

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 01 Minutes 20.56 Seconds W
Latitude 41 Degrees 12 Minutes 18.18 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

US EPA ARCHIVE DOCUMENT

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

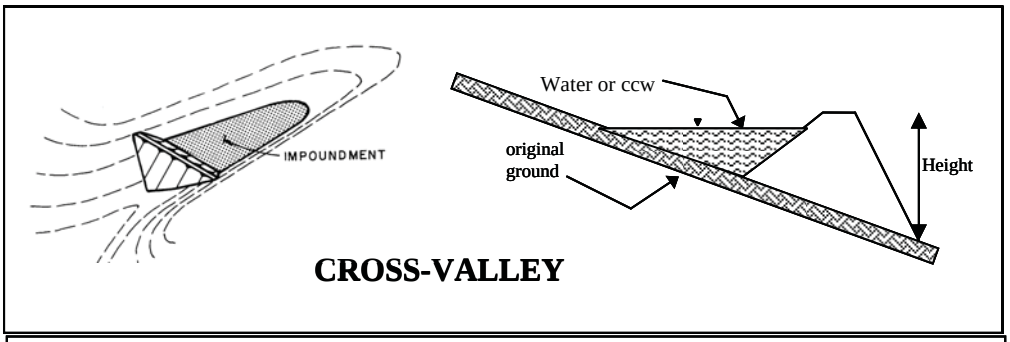
_X_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

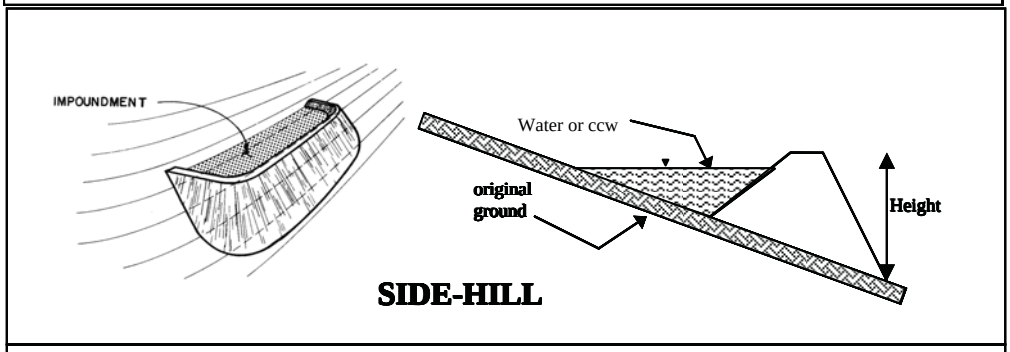
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

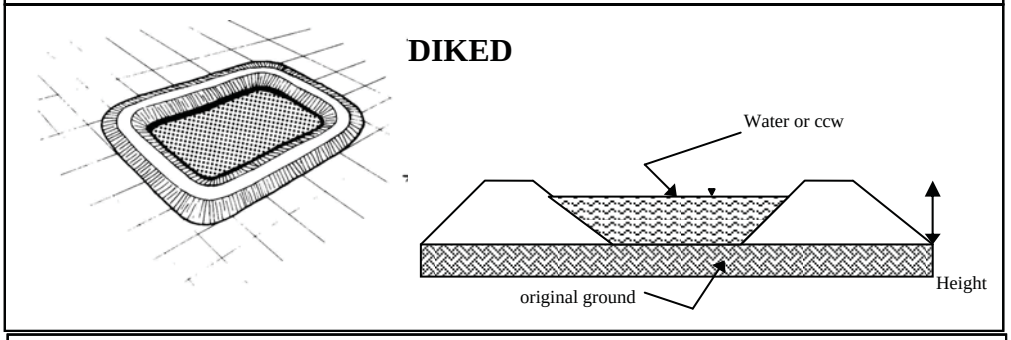
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

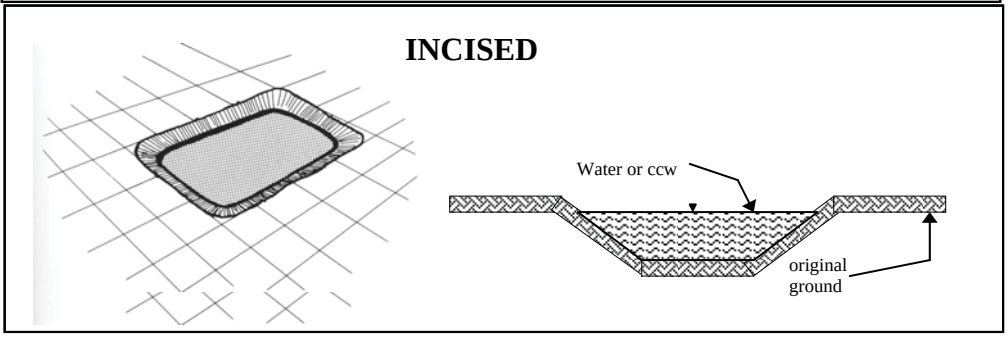
1) A breach of embankment will adversely affect Kankahee River, surrounding roadways, and the owner's property.
2) If breach of embankment occurs, it is likely that both the Waste Disposal Area and Recycle Settling Basin will be drained (stoplogs for divider embankment are not readily available in the event of an emergency).

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
_X_ Diked
_____ Incised (form completion optional)
_n/a_ Combination Incised/Diked

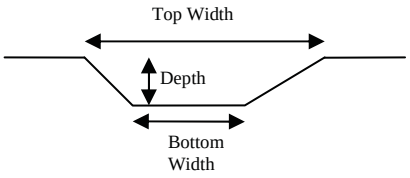
Embankment Height _17*_ feet Embankment Material_____Earthen_____
Pool Area ____75_____ acres Liner ___None_____
Lowest Current Freeboard _1.5*_____ feet Liner Permeability d/n/a

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

TYPE OF OUTLET (Mark all that apply)

d/n/a **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL



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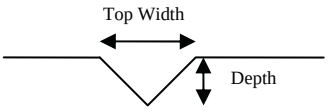
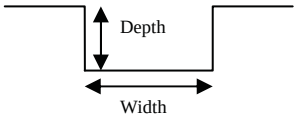


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR



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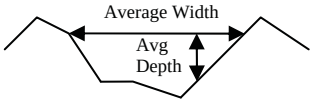
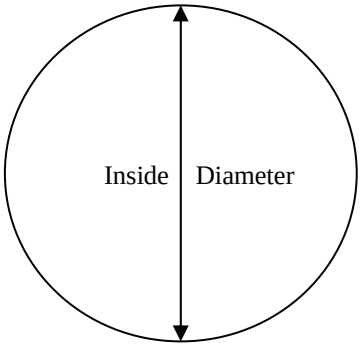


_X_ **Outlet**

Twin-24" inside diameter discharges to open channel



Material
_X_ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _X_ NO _____

_____ **No Outlet**

_X_ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By n/a

_____

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO ___X_____

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	R.M. Schahfer Generating Station	Date:	April 27, 2010
Unit Name:	Recycle Basin	Operator's Name:	NIPSCO
Unit I.D.:	n/a	Hazard Potential Classification:	High (Significant) Low
Inspector's Name:	Kyle King, Bill Friers, Mike Smith, Mike Schumaker		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	d/n/a		18. Sloughing or bulging on slopes?	see note 18	
2. Pool elevation (operator records)?	see note 2		19. Major erosion or slope deterioration?	see note 19	
3. Decant inlet elevation (operator records)?	d/n/a		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	d/n/a		Is water entering inlet, but not exiting outlet?	see note 20	
5. Lowest dam crest elevation (operator records)?	n/a		Is water exiting outlet, but not entering inlet?	see note 20	
6. If instrumentation is present, are readings recorded (operator records)?	x		Is water exiting outlet flowing clear?	see note 20	
7. Is the embankment currently under construction?		x	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?	n/a		From underdrain?		x
9. Trees growing on embankment? (If so, indicate largest diameter below)	x		At isolated points on embankment slopes?		x
10. Cracks or scarps on crest?		x	At natural hillside in the embankment area?		x
11. Is there significant settlement along the crest?		x	Over widespread areas?		x
12. Are decant trashracks clear and in place?	n/a		From downstream foundation area?		x
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		x	"Boils" beneath stream or ponded water?		x
14. Clogged spillways, groin or diversion ditches?		x	Around the outside of the decant pipe?		x
15. Are spillway or ditch linings deteriorated?		x	22. Surface movements in valley bottom or on hillside?		x
16. Are outlets of decant or underdrains blocked?		x	23. Water against downstream toe?		x
17. Cracks or scarps on slopes?	see note 17		24. Were Photos taken during the dam inspection?	x	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue # Comments

1. Informal dam inspections performed but not documented.
2,6. The Recycling Settling Basin pond level readings are calibrated to read 100 percent a the point of overflow through the culverts. No monitoring wells are installed.
2,3,4,5. Owner is in process of making copies of drawings and reports.
9. Trees (approximately 12" in diameter) located along toe of southeastern embankment exterior slope.
12. No trash racks. Bar screens installed at pump station.
17,18,19. Numerous small shallow slope movements, low areas, and surface erosion located on southeast embankment exterior slope. Localized slope movements along east embankment exterior slope (approximately 80' in length). Local wave erosion on riprap along east embankment interior slope. Erosion of riprap along west embankment interior slope.
20. There are no decant pipes. Outlet controlled by Pump Station.

n/a = Not Available
d/n/a = Does Not Apply

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

U. S. Environmental Protection Agency

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # IN0053201 INSPECTOR Bill Friers, Kyle King, Mike Smith, Mike Schumaker

Date April 27, 2010

Impoundment Name Recycle Basin

Impoundment Company Northern Indiana Public Service Company (NIPSCO)

EPA Region 5

State Agency (Field Office) Addresss 402 West Washington Street, Room W264
Indianapolis, IN 46204

Name of Impoundment Recycle Basin

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	_____	X

IMPOUNDMENT FUNCTION: Receives flow from overflow weir from waste disposal area

Nearest Downstream Town : Name Thayer, Indiana

Distance from the impoundment 20 Miles

Impoundment Location:
Longitude 87 Degrees 01 Minutes 02.27 Seconds W
Latitude 41 Degrees 12 Minutes 20.18 Seconds N
State Indiana County Jasper

Does a state agency regulate this impoundment? YES _____ NO X*

If So Which State Agency?_____

*Indiana Department of Natural Resources (IDNR) is responsible for the State's dam safety program, however IDNR has not been actively involved in the regulation of Coal Combustion Waste Impoundments to date. The owner indicates there are no State inspection reports for this impoundment.

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

__X__ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

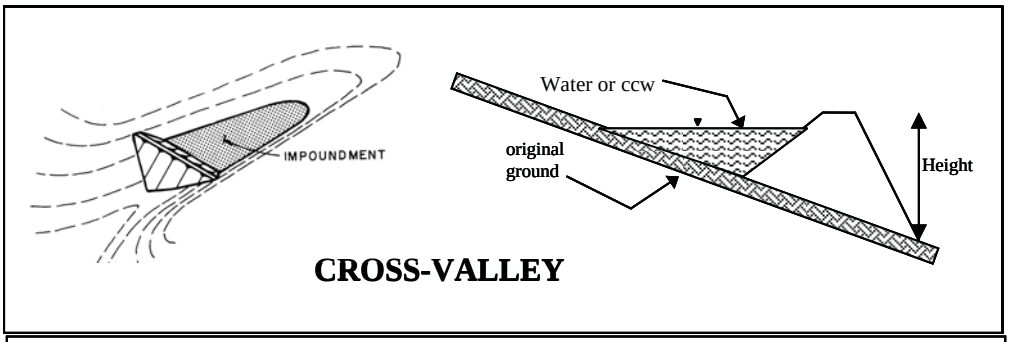
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

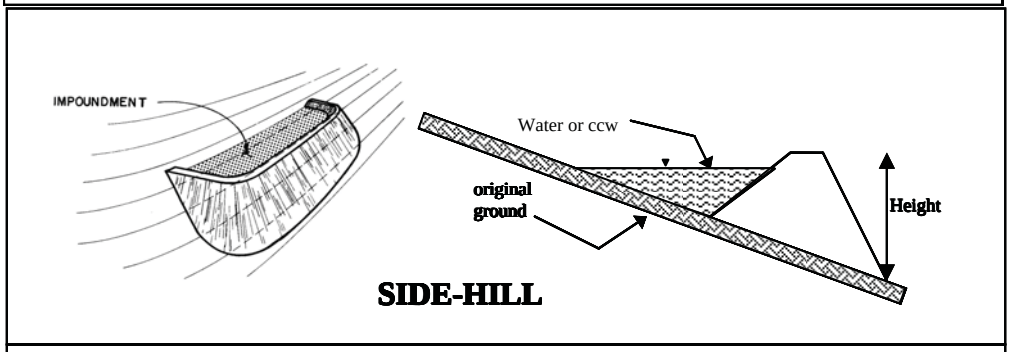
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

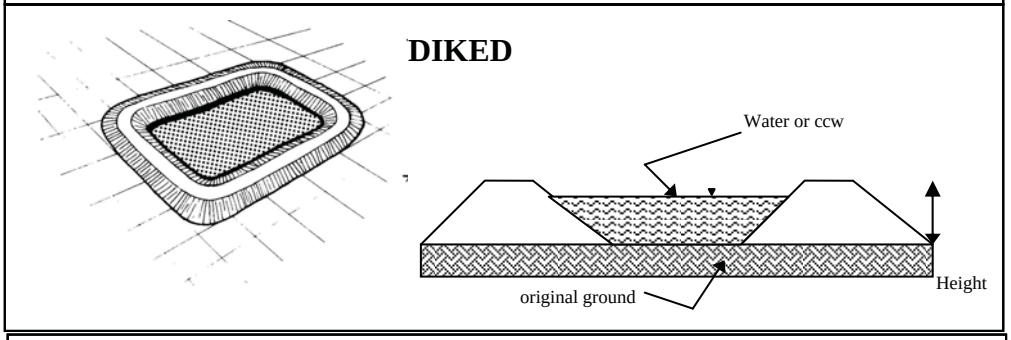
1) A breach of embankment will adversely affect Kankahee River, surrounding roadways, and the owner's property.
2) If breach of embankment occurs, it is likely that both the Waste Disposal Area and Recycle Settling Basin will be drained (stoplogs for divider embankment are not readily available in the event of an emergency).

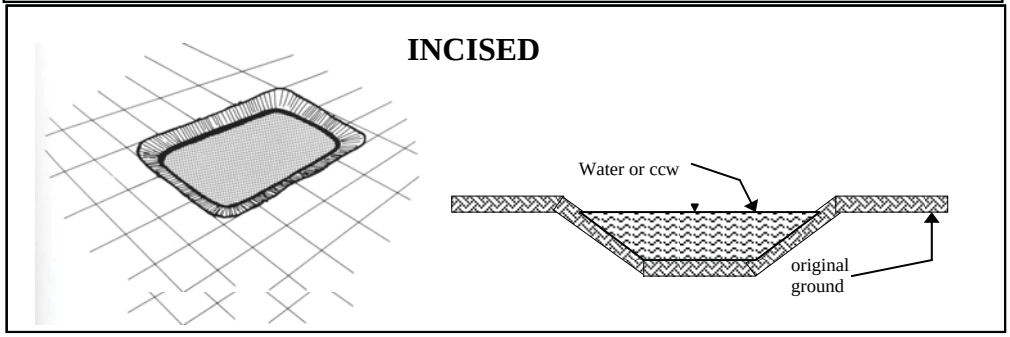
US EPA ARCHIVE DOCUMENT

CONFIGURATION:









_____ Cross-Valley
_____ Side-Hill
_ X _ Diked
_____ Incised (form completion optional)
_ n/a _ Combination Incised/Diked

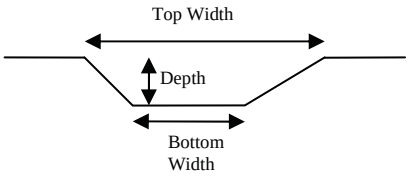
Embankment Height __ 17* __ feet Embankment Material __ Earthen _____
Pool Area ____ 30 ____ __ acres Liner ___ None _____
Lowest Current Freeboard __ 1.5* _____ feet Liner Permeability _ d/n/a _____

n/a = Not Available
d/n/a = Does Not Apply
* = Estimated

TYPE OF OUTLET (Mark all that apply)

d/n/a **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL



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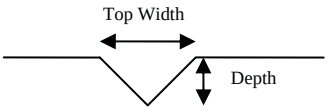
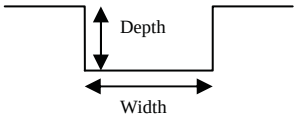


_____ depth
_____ bottom (or average) width
_____ top width

RECTANGULAR



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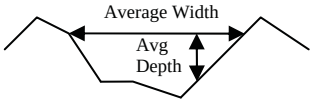
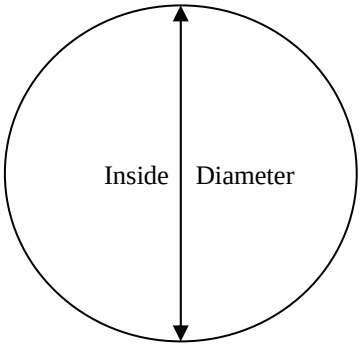


_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

Is water flowing through the outlet? YES _____ NO _____

_____ **No Outlet**

X **Other Type of Outlet** (specify) Pump Station

The Impoundment was Designed By n/a

US EPA ARCHIVE DOCUMENT

Has there ever been a failure at this site? YES _____ NO X

If So When? _____

If So Please Describe : _____

US EPA ARCHIVE DOCUMENT

Has there ever been significant seepages at this site? YES _____ NO _X___

If So When? _____

IF So Please Describe: _____

US EPA ARCHIVE DOCUMENT

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

US EPA ARCHIVE DOCUMENT

US EPA ARCHIVE DOCUMENT

Appendix B
Photographs

US EPA ARCHIVE DOCUMENT

1. Final Settling Basin - Overflow Weir on West Embankment, Looking East

2. Final Settling Basin - Outlet Channel, Looking West from Overflow Weir

US EPA ARCHIVE DOCUMENT

3. Final Settling Basin - Embankment Interior Slope, Looking South, Armoring of the Slope is Observed

4. Final Settling Basin - West Embankment Exterior Slope Scarp (Approximately 36 feet Long)

US EPA ARCHIVE DOCUMENT

5. Final Settling Basin - West Embankment Exterior Slope, Looking North

6. Final Settling Basin - Erosion Rill West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

7. Final Settling Basin - South Embankment Interior Slope, Looking Southeast

8. Final Settling Basin - Erosion Rills on South Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

9. Final Settling Basin - Depression at Intake Pipe (10 inch diameter Metal) on South Embankment Exterior Slope

10. Final Settling Basin - South Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

11. Final Settling Basin - Brush Pile Located on South Embankment

12. Final Settling Basin - Surface Erosion Located on South Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

13. Final Settling Basin - Surface Erosion on South Embankment Exterior Slope

14. Final Settling Basin - Rodent Burrow on South Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

15. Final Settling Basin – Scarp on South Embankment Exterior Slope

16. Final Settling Basin - Erosion on South Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

17. Final Settling Basin – South Embankment Crest

18. Final Settling Basin – Sluice Lines Discharge into Pond

US EPA ARCHIVE DOCUMENT

19. Final Settling Basin - Possible Seepage into Drainage Ditch

20. Final Settling Basin - East Embankment Crest and Interior Slope

US EPA ARCHIVE DOCUMENT

21. Final Settling Basin - Riprap Slide on East Embankment Interior Slope

22. Final Settling Basin - East Embankment Exterior Slope, Well Established Vegetation

US EPA ARCHIVE DOCUMENT

23. Final Settling Basin - East Embankment Interior Slope, Riprap Erosion

24. Final Settling Basin – Shrubs and Brush at Exterior Slope at Toe of East Embankment

US EPA ARCHIVE DOCUMENT

25. Final Settling Basin - North Embankment Exterior Slope, Looking West

26. Final Settling Basin - North Embankment Exterior Slope, Looking East

US EPA ARCHIVE DOCUMENT

27. Final Settling Basin – North Embankment Exterior Slope, Private Residence in Background

28. Final Settling Basin – North Embankment Crest and Exterior Slope

US EPA ARCHIVE DOCUMENT

29. Final Settling Basin – North Embankment Crest Looking West

30. Final Settling Basin – North Embankment Exterior Slope, Possible Seepage Area, Currently with Moss

US EPA ARCHIVE DOCUMENT

31. Final Settling Basin - Water Meter on North Embankment Exterior Slope

32. Final Settling Basin - Erosion Rill on North Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

33. Final Settling Basin - West Embankment Exterior Slope, Sparse Vegetation

34. Final Settling Basin - West Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

35. Final Settling Basin - West Embankment Crest and Interior Slope

36. Final Settling Basin – Active Scarp on West Embankment Exterior Slope (Approximately 32 feet in Length)

US EPA ARCHIVE DOCUMENT

37. Final Settling Basin - Manhole Located on West Embankment Exterior Slope

38. Final Settling Basin – Scarp on West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

39. Final Settling Basin - Riprap Erosion on West Embankment Interior Slope

40. Final Settling Basin - Drainage Ditch

US EPA ARCHIVE DOCUMENT

41. Intake Settling Basin - South Embankment Exterior Slope, Tree near Slope Toe

42. Intake Settling Basin - South Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

43. Intake Settling Basin - Rodent Burrow on South Embankment Exterior Slope

44. Intake Settling Basin - South Embankment Exterior Slope, Vegetation

US EPA ARCHIVE DOCUMENT

45. Intake Settling Basin - South Embankment Exterior Slope

46. Intake Settling Basin - South Embankment Interior Slope, Vegetation

US EPA ARCHIVE DOCUMENT

47. Intake Settling Basin - Saturated Area Located on East Embankment Exterior Slope

48. Intake Settling Basin - Saturated Area Located on East Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

49. Intake Settling Basin - Saturated Area Located on East Embankment Exterior Slope

50. Intake Settling Basin - Vegetation and Trees on Base of East Embankment Exterior Slope Toe

US EPA ARCHIVE DOCUMENT

51. Intake Settling Basin - Brush on East Embankment Exterior Slope

52. Intake Settling Basin - Saturated Area in Brush on East Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

53. Intake Settling Basin - East Embankment Crest

54. Intake Settling Basin – Drainage Ditch at East Embankment Exterior Slope Toe

US EPA ARCHIVE DOCUMENT

55. Intake Settling Basin – Standing Water on East Embankment Exterior Slope Toe

56. Intake Settling Basin - East Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

57. Intake Settling Basin - North Embankment Interior Slope

58. Intake Settling Basin – North Embankment Crest and Interior Slope

US EPA ARCHIVE DOCUMENT

59. Intake Settling Basin - North Embankment Interior Slope

60. Intake Settling Basin - Saturated Area on North Embankment Exterior Slope (Approximately 25 feet long by 8 feet wide)

US EPA ARCHIVE DOCUMENT

61. Intake Settling Basin – Standing Water at Slope Toe of North Embankment Exterior Slope

62. Intake Settling Basin - North Embankment Interior Slope, High Water Line

US EPA ARCHIVE DOCUMENT

63. Intake Settling Basin - North Embankment Interior Slope, Two (2) 24-inch-diameter CMP Overflow Pipes

64. Intake Settling Basin - North Embankment Interior Slope, Overflow Pipe, Sedimentation

US EPA ARCHIVE DOCUMENT

65. Intake Settling Basin - North Embankment Exterior Slopes, Overflow Pipe Discharge

66. Intake Settling Basin - Erosion Rills on West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

67. Intake Settling Basin - West Embankment Exterior Slope, Vegetation

68. Intake Settling Basin - West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

69. Intake Settling Basin - West Embankment Interior Slope, Vegetation and Saplings

70. Intake Settling Basin - West Embankment Interior Slope, Vegetation, Brush, and Saplings

US EPA ARCHIVE DOCUMENT

71. Intake Settling Basin - Saturated Area on West Embankment Exterior Slope (Approximately 40 feet wide by 7 feet in length)

72. Intake Settling Basin - Vegetation on West Embankment Exterior Slope, Vegetation, Brush, and Small Trees

US EPA ARCHIVE DOCUMENT

73. Intake Settling Basin - West Embankment Exterior Slope

74. Intake Settling Basin - South Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

75. Intake Settling Basin - South Embankment Interior Slope

76. Intake Settling Basin - South Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

77. Intake Settling Basin – Pump Station Trash Racks

US EPA ARCHIVE DOCUMENT

78. Retention Pond – Pump Station, looking North

79. Retention Pond – Pond Inlets

US EPA ARCHIVE DOCUMENT

80. Retention Pond – Inlets

81. Retention Pond – West Interior Wall

US EPA ARCHIVE DOCUMENT

82. Retention Pond – Ramp on South Wall

US EPA ARCHIVE DOCUMENT

83. FGD Landfill Runoff Pond - West Embankment Interior Slope, Looking South

84. FGD Landfill Runoff Pond - North Embankment Interior Slope, Heavy Vegetation

US EPA ARCHIVE DOCUMENT

85. FGD Landfill Runoff Pond - West Embankment Interior Slope, Vegetation, Tree and Brush

86. FGD Landfill Runoff Pond - Large Tree Located on North Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

87. FGD Landfill Runoff Pond - North Embankment Crest

88. FGD Landfill Runoff Pond - East Embankment Interior Slope, Vegetation, Brush, and Trees

US EPA ARCHIVE DOCUMENT

89. FGD Landfill Runoff Pond - Inlet into Pond on East Embankment Crest

90. FGD Landfill Runoff Pond - East Embankment Interior Slope, Vegetation

US EPA ARCHIVE DOCUMENT

91. FGD Landfill Runoff Pond - South Embankment Interior Slope, Heavy Vegetation on East Embankment Interior Slope Seen in Background

92. FGD Landfill Runoff Pond - South Embankment Crest, Looking West, Trees on Interior and Exterior Slopes

US EPA ARCHIVE DOCUMENT

93. FGD Landfill Runoff Pond - Trees at Base of East Embankment Interior Slope

94. FGD Landfill Runoff Pond - West Crest

US EPA ARCHIVE DOCUMENT

95. FGD Landfill Runoff Pond - West Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

96. Retired Waste Disposal Area - West Embankment Exterior Slope

97. Retired Waste Disposal Area - West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

98. Retired Waste Disposal Area - Rodent Burrow on West Embankment Exterior Slope

99. Retired Waste Disposal Area - Scarp on West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

100. Retired Waste Disposal Area - Slough on West Embankment Exterior Slope (Approximately 2 feet Deep)

101. Retired Waste Disposal Area - Very Steep Slope on West Embankment Exterior Slope, Seepage

US EPA ARCHIVE DOCUMENT

102. Retired Waste Disposal Area – West Embankment Exterior Slope, Erosion Rills

103. Retired Waste Disposal Area - West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

104. Retired Waste Disposal Area - South Embankment Crest

105. Retired Waste Disposal Area – East Embankment Crest, Sluice Lines on Crest, Vegetation

US EPA ARCHIVE DOCUMENT

106. Retired Waste Disposal Area - East Embankment Crest

107. Retired Waste Disposal Area - East Embankment Exterior Slope, Heavy Vegetation and Possible Abandoned Monitoring Well

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108. Retired Waste Disposal Area - North Embankment Exterior Slope, Surface Erosion

109. Retired Waste Disposal Area – Abandoned Rodent Burrow on North Embankment Exterior Slope

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110. Retired Waste Disposal Area - Erosion Rill Down North Embankment Exterior Slope

111. Retired Waste Disposal Area - Active Erosion Rill Channel on North Embankment Exterior Slope

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112. Retired Waste Disposal Area - North Embankment Crest and Exterior Slope

113. Retired Waste Disposal Area – Standing Water at Northwestern Corner of Filled-in Pond, Note Heavy Vegetation on South Embankment Interior Slope in Background

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114. Retired Waste Disposal Area – Slough on North Embankment Exterior Slope

115. Retired Waste Disposal Area - North Embankment Exterior Slope, Erosion Rill

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116. Retired Waste Disposal Area - West Embankment Exterior Slope, Erosion Rill (Approximately 3 feet Deep)

117. Retired Waste Disposal Area - Slough on West Embankment Exterior Slope

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118. Retired Waste Disposal Area – Slough on West Embankment Exterior Slope (Approximately 2 feet Deep)

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119. Retired Waste Disposal Area - East Embankment Exterior Slope, Looking North

120. Retired Waste Disposal Area - East Embankment Crest and Exterior Slope, Looking South

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121. Retired Waste Disposal Area - North Embankment Crest, Looking West

122. Retired Waste Disposal Area - North Embankment Exterior Slope, Looking West

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123. Material Storage Runoff Basin – North Embankment Interior Slope

124. Material Storage Runoff Basin - North Embankment Exterior Slope

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125. Material Storage Runoff Basin – Interior Divider Embankment Constructed within Material Storage Runoff Basin

126. Material Storage Runoff Basin – North Embankment Interior Slope, Looking west at Inflow Pipes

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127. Material Storage Runoff Basin – North Embankment Crest, Sluice Line Identification

128. Material Storage Runoff Basin - North Embankment Exterior Slope, Looking West

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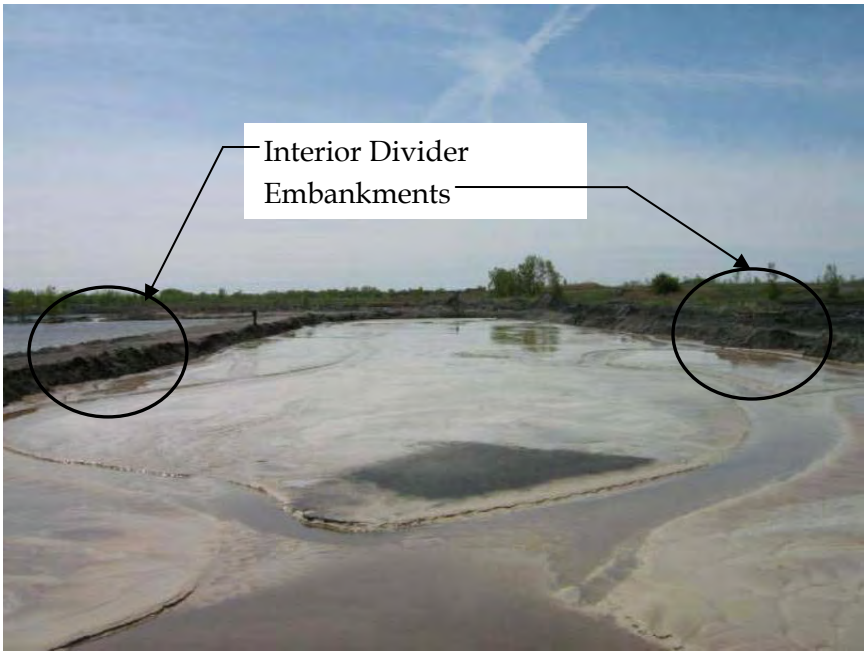

129. Material Storage Runoff Basin – Overview of Sluicing Interior Divider Embankments

130. Material Storage Runoff Basin – Interior Divider Embankments Constructed to Create Center and Western Compartments, Looking South

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131. Material Storage Runoff Basin – East Embankment Interior Slope, 6-inch-diameter Steel Outlet Pipe

132. Material Storage Runoff Basin - West Embankment Crest, Looking South

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133. Material Storage Runoff Basin – West Embankment Crest and Interior Slope, Looking North, Showing Overview of Divider Embankment Constructed Within Material Storage Runoff Basin

134. Material Storage Runoff Basin - South Embankment Crest and Interior Slope, Looking East

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135. Material Storage Runoff Basin – South Embankment Interior Slope Looking at Two (2) 24-inch-diameter CMP Outlets

136. Material Storage Runoff Basin - Channel between Material Storage Runoff Basin and Metal Cleaning Basin, Looking North

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137. Metal Cleaning Waste Basin - East Embankment Crest, Looking North

138. Metal Cleaning Waste Basin - South Embankment Crest, Looking West

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139. Metal Cleaning Waste Basin - East Embankment Crest, Looking North, Depression (Area of Breach)

140. Metal Cleaning Waste Basin - East Embankment Interior Slope, Possible Start of Rodent Burrow (Approximately 2 feet in Length, 1 foot Deep)

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141. Metal Cleaning Waste Basin - East Embankment Exterior Slope, Looking South, Sparse Vegetation

142. Metal Cleaning Waste Basin - Pump Station at Northwestern Corner of Pond

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143. Metal Cleaning Waste Basin - North Embankment Crest, Looking East

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144. Waste Disposal Area - West Embankment Exterior Slope, Looking South

145. Waste Disposal Area – Northwest Embankment Crest, Sluice Line Identification

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146. Waste Disposal Area – Northwest Embankment Interior Slope Inlet Pipes

147. Waste Disposal Area - West Embankment Interior Slope, Looking West

US EPA ARCHIVE DOCUMENT

148. Waste Disposal Area - West Embankment Exterior Slope, Looking North

149. Waste Disposal Area - Low Area Noted on West Embankment Exterior Slope

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150. Waste Disposal Area – West Embankment Exterior Slope, Discharge Pipes and Channel

151. Waste Disposal Area - West Embankment Exterior Slope, Trees at Toe of Slope

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152. Waste Disposal Area - Outlet Channel on West Embankment Exterior Slope

153. Waste Disposal Area - West Embankment Interior Slope, Two (2) 3-inch-diameter CMP Outlets

US EPA ARCHIVE DOCUMENT

154. Waste Disposal Area - West Embankment Crest, Looking North

155. Waste Disposal Area - West Embankment Crest, Looking South

US EPA ARCHIVE DOCUMENT

156. Waste Disposal Area - West Embankment Exterior Slope, Looking South

157. Waste Disposal Area - West Embankment Interior Slope, Looking North

US EPA ARCHIVE DOCUMENT

158. Waste Disposal Area - Surface Erosion on West Embankment Exterior Slope

159. Waste Disposal Area - West Embankment Exterior Slope

US EPA ARCHIVE DOCUMENT

160. Waste Disposal Area – South Embankment Interior Slope, Looking East

161. Waste Disposal Area - Wave Action at South Embankment Interior Slope

US EPA ARCHIVE DOCUMENT

162. Waste Disposal Area - South Embankment Crest, Looking West

163. Waste Disposal Area – East Embankment Interior Slope, Outlet Structure

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164. Waste Disposal Area - East Embankment Outlet Structure, Slots for Stoplogs

165. Waste Disposal Area - South Embankment Interior Slope, Looking South

US EPA ARCHIVE DOCUMENT

166. Waste Disposal Area - East Embankment Crest, Looking North

167. Waste Disposal Area - East Embankment Interior Slope, Erosion Rill

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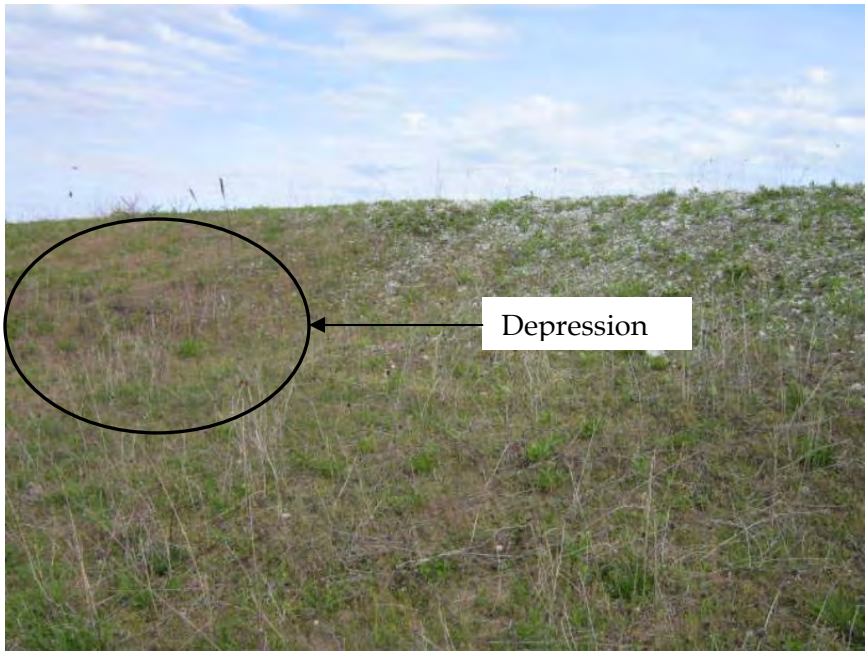
168. Recycle Basin - West Embankment Interior Slope, Looking South



169. Recycle Basin - Depression on South Embankment Exterior Slope

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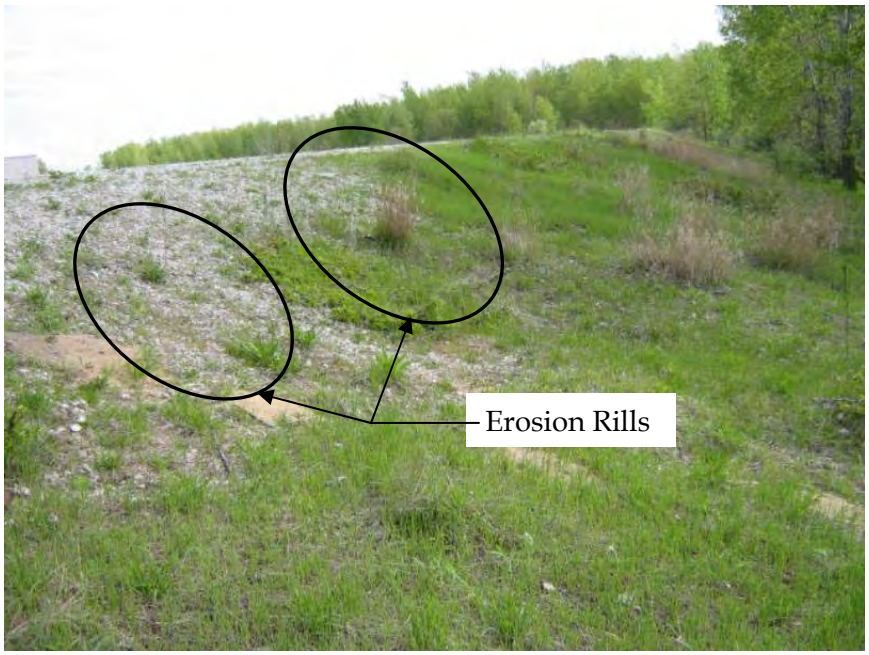
170. Recycle Basin - South Embankment Crest and Exterior Slope, Looking East, Trees at Toe



171. Recycle Basin – Erosion Rills on Southeast Embankment Exterior Slope

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172. Recycle Basin - Southeast Embankment Exterior Slope

173. Recycle Basin - Southeast Embankment Exterior Slope

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174. Recycle Basin – Erosion Feature on Southeast Embankment Exterior Slope

175. Recycle Basin - Erosion Rill on Southeast Embankment Exterior Slope

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176. Recycle Basin – Sloughing on East Embankment Exterior Slope
(Approximately 80 feet in length)

177. Recycle Basin - East Embankment Crest, Looking South

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178. Recycle Basin - East Embankment Crest, Looking North

179. Recycle Basin - East Embankment Interior Slope, Vegetation and Minor Erosion of Riprap Armoring

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180. Recycle Basin - Intake Structure on North Embankment

181. Recycle Basin - Riprap Erosion on West Embankment Interior Slope

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Appendix C
Photo GPS Locations

Appendix C
Photo GPS Locations

Site: NIPSCO R.M. Schahfer Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983
Coordinate Units: Feet

Photo No.	Northing	Easting
1	2,177,576.26	2,969,632.09
2	2,177,576.26	2,969,632.09
3	2,177,438.34	2,969,679.14
4	2,177,515.53	2,969,721.56
5	2,177,089.66	2,969,686.15
6	2,176,642.04	2,969,673.28
7	2,176,481.42	2,969,729.87
8	2,176,317.82	2,969,852.90
9	2,176,210.74	2,969,857.38
10	2,176,186.44	2,969,957.35
11	2,175,890.19	2,970,280.25
12	2,175,808.05	2,970,348.91
13	2,175,735.28	2,970,451.25
14	2,175,279.17	2,970,983.82
15	2,175,220.04	2,971,044.04
16	2,175,122.05	2,971,309.45
17	2,175,064.14	2,971,322.76
18	2,175,049.07	2,971,589.09
19	2,174,933.30	2,972,156.35
20	2,175,167.59	2,972,571.63
21	2,176,233.33	2,972,611.18
22	2,176,236.15	2,972,610.13
23	2,176,873.75	2,972,720.60
24	2,177,983.08	2,972,741.06
25	2,178,777.68	2,971,946.49
26	2,178,777.68	2,971,946.49
27	2,178,731.12	2,971,940.53
28	2,178,731.12	2,971,940.53
29	2,178,731.12	2,971,940.53
30	2,178,797.65	2,970,788.82
31	2,178,797.66	2,970,518.55
32	2,178,731.05	2,969,962.76
33	2,178,562.51	2,969,691.98
34	2,178,293.57	2,969,719.60
35	2,178,293.57	2,969,719.60
36	2,178,016.73	2,969,673.10
37	2,177,947.02	2,969,643.57
38	2,177,910.13	2,969,661.31
39	2,177,770.46	2,969,716.26
40	2,177,592.29	2,969,387.63
41	2,175,678.15	2,968,680.48
42	2,175,729.06	2,968,685.38
43	2,175,678.39	2,968,802.80
44	2,175,692.63	2,969,035.13

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Appendix C
Photo GPS Locations

Site: NIPSCO R.M. Schahfer Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983
Coordinate Units: Feet

Photo No.	Northing	Easting
45	2,175,692.12	2,969,035.96
46	2,175,727.72	2,969,054.43
47	2,175,855.49	2,969,164.33
48	2,175,882.80	2,969,172.84
49	2,175,944.33	2,969,161.19
50	2,176,350.00	2,969,154.86
51	2,176,450.12	2,969,161.06
52	2,176,684.71	2,969,127.64
53	2,176,757.52	2,969,188.13
54	2,176,774.13	2,969,178.67
55	2,176,849.58	2,969,165.69
56	2,177,298.86	2,969,108.43
57	2,177,299.84	2,969,092.98
58	2,177,306.87	2,969,081.19
59	2,177,324.26	2,968,975.76
60	2,177,323.98	2,968,974.92
61	2,177,432.27	2,968,933.06
62	2,177,282.96	2,968,741.77
63	2,177,219.61	2,968,628.35
64	2,177,044.99	2,968,378.62
65	2,177,063.31	2,968,397.75
66	2,177,088.83	2,968,341.36
67	2,177,031.49	2,968,316.82
68	2,176,552.58	2,968,160.33
69	2,176,549.94	2,968,160.26
70	2,176,543.00	2,968,186.86
71	2,176,545.56	2,968,186.23
72	2,176,295.24	2,968,123.73
73	2,176,268.35	2,968,118.81
74	2,175,849.29	2,968,162.67
75	2,175,798.72	2,968,190.67
76	2,175,791.26	2,968,252.89
77	2,175,792.48	2,968,255.28
78	2,173,412.01	2,968,182.46
79	2,173,535.30	2,968,293.87
80	2,173,544.70	2,968,230.37
81	2,173,329.91	2,967,952.22
82	2,173,330.05	2,967,952.20
83	2,174,855.80	2,974,160.54
84	2,174,791.50	2,974,130.38
85	2,174,791.50	2,974,130.38
86	2,174,867.29	2,974,346.59
87	2,174,880.81	2,974,341.63
88	2,174,807.05	2,974,583.73

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Appendix C
Photo GPS Locations

Site: NIPSCO R.M. Schahfer Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983
Coordinate Units: Feet

Photo No.	Northing	Easting
89	2,174,467.09	2,974,600.88
90	2,174,372.21	2,974,545.68
91	2,174,371.70	2,974,359.64
92	2,174,377.79	2,974,313.17
93	2,174,389.04	2,974,214.50
94	2,174,482.19	2,974,094.78
95	2,174,654.75	2,974,126.88
96	2,171,338.53	2,968,821.66
97	2,171,338.53	2,968,821.66
98	2,171,370.49	2,968,795.18
99	2,171,114.31	2,968,784.46
100	2,171,015.21	2,968,820.86
101	2,170,980.02	2,968,821.56
102	2,170,960.95	2,968,796.65
103	2,170,874.02	2,968,834.89
104	2,170,773.16	2,968,892.59
105	2,170,847.89	2,970,203.18
106	2,171,462.04	2,970,238.23
107	2,171,818.16	2,970,283.12
108	2,172,206.45	2,969,923.73
109	2,172,207.64	2,969,922.10
110	2,172,202.90	2,969,818.77
111	2,172,170.14	2,969,251.98
112	2,172,170.14	2,969,251.98
113	2,172,094.67	2,968,892.49
114	2,172,080.73	2,968,840.14
115	2,172,021.93	2,968,811.46
116	2,171,998.77	2,968,819.53
117	2,171,885.57	2,968,808.58
118	2,171,369.18	2,968,798.07
119	2,170,961.33	2,971,302.95
120	2,171,259.72	2,971,257.23
121	2,171,261.93	2,971,241.58
122	2,171,290.56	2,970,890.98
123	2,173,114.69	2,970,710.72
124	2,173,186.30	2,970,730.97
125	2,173,150.54	2,970,554.00
126	2,173,119.41	2,970,521.93
127	2,173,165.96	2,970,501.21
128	2,173,169.11	2,970,499.22
129	2,173,146.84	2,970,486.04
130	2,173,137.79	2,970,419.54
131	2,172,667.43	2,970,417.78
132	2,172,982.12	2,970,329.40

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Appendix C
Photo GPS Locations

Site: NIPSCO R.M. Schahfer Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983
Coordinate Units: Feet

Photo No.	Northing	Easting
133	2,172,396.26	2,970,340.67
134	2,171,575.74	2,970,365.04
135	2,171,651.31	2,970,742.10
136	2,171,651.31	2,970,742.10
137	2,171,565.17	2,971,173.04
138	2,171,565.17	2,971,173.04
139	2,171,767.41	2,971,180.12
140	2,171,821.78	2,971,173.67
141	2,172,485.13	2,971,194.86
142	2,173,155.04	2,970,895.98
143	2,173,147.90	2,970,772.54
144	2,170,737.36	2,968,778.00
145	2,170,671.66	2,968,758.67
146	2,170,663.83	2,968,762.70
147	2,170,646.88	2,968,834.10
148	2,170,475.32	2,968,522.15
149	2,170,477.66	2,968,510.55
150	2,170,468.57	2,968,444.26
151	2,170,468.26	2,968,457.11
152	2,170,427.19	2,968,459.16
153	2,170,377.43	2,968,473.99
154	2,170,318.14	2,968,397.55
155	2,170,279.39	2,968,374.45
156	2,170,108.25	2,968,333.62
157	2,170,053.82	2,968,374.39
158	2,169,337.46	2,968,474.48
159	2,169,242.44	2,968,576.78
160	2,169,255.76	2,968,595.08
161	2,169,125.84	2,968,761.34
162	2,168,909.75	2,970,070.12
163	2,168,915.34	2,970,220.46
164	2,169,100.58	2,970,528.46
165	2,169,099.30	2,970,534.17
166	2,169,110.90	2,970,545.21
167	2,170,172.77	2,970,537.46
168	2,169,101.69	2,970,555.29
169	2,168,886.72	2,970,586.69
170	2,169,234.01	2,971,121.23
171	2,169,282.66	2,971,206.48
172	2,169,522.03	2,971,475.04
173	2,169,522.03	2,971,475.04
174	2,169,524.91	2,971,481.64
175	2,169,541.14	2,971,470.99
176	2,169,695.24	2,971,572.33

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Appendix C
Photo GPS Locations

Site: NIPSCO R.M. Schahfer Generating Station
System: US State Plane 1983
Zone: Indiana West 1302
Datum: NAD 1983
Coordinate Units: Feet

Photo No.	Northing	Easting
177	2,170,272.40	2,971,540.86
178	2,170,293.55	2,971,535.95
179	2,170,351.12	2,971,527.50
180	2,170,600.41	2,971,538.10
181	2,170,205.30	2,970,556.74

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