

2020 Annual Landfill Inspection Report

Landfill

**Rockport Plant
Indiana Michigan Power Company
Rockport, Indiana**

September 2020

Prepared for: Indiana Michigan Power Company – Rockport Plant

Prepared by: American Electric Power Service Corporation

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Columbus, OH 43215



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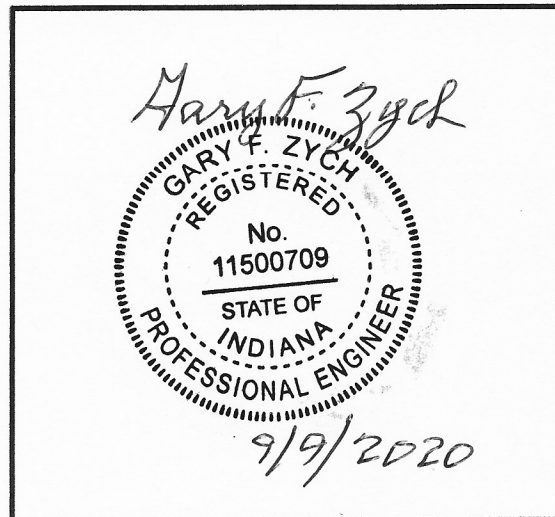
Landfill

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I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

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1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.84 and to provide the Rockport Plant an evaluation of the facility.

Mr. Dan Murphy performed the 2020 inspection of the Landfill at the Rockport Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Mr. Mitch Montgomery, the landfill supervisor for the Plant, was the facility contact. The inspection was performed on August 26, 2020. Weather conditions were mostly sunny and the temperature was in the mid 80's (°F) with good visibility. There was 1.5 inches of rainfall recorded over the seven days prior to the inspection.

2.0 DESCRIPTION OF LANDFILL

The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Closed Landfill Area
- Active Landfill Disposal Areas (Cells 1B, 2, and 3)
- 2015 Landfill Construction Area (Cell 1A)
- 2016 Landfill Construction Area (Cell 5 and 4A)
- Inactive Landfill Areas (Cells 4B, 6, and 7)
- Leachate Ponds
- Storm Water Drainage Ditches

These features, including the approximate limits of each area, are shown on the Figure 1 of Attachment B.

The Closed Landfill Area is located on the north and east sides of the landfill as shown on Figure 1. This area of the landfill was constructed between 1985 and 1987 and was used for disposal of Type II ash. The area was closed and final cover was placed between 2000 and 2007. The final cover consists of twenty-four (24) inch thick compacted clay cover and a six (6) inch thick topsoil cover to support vegetation.

The Active Landfill Disposal Area (Cells 1B, 2 and 3) is currently where waste is being placed. The constructions of these lined cells were completed in 2015 in order to dispose of the Type I Dry Sorbent Injection Ash.

The 2015 Landfill Construction Area (Cell 1A) was completed in 2015. A portion of this cell was constructed over the slope of the previously filled Type II landfill area and a perimeter berm constructed along the southeastern edge of the cell is tied into the existing landfill cap. Intermediate cover over the area consisting of soil and vegetative cover was placed over the area in 2016.

The 2016 Landfill Construction Area (Cell 5 and 4A) was completed in 2016. A portion of this cell was built over the slope of the previously filled Type II landfill area and a perimeter berm construction along the eastern edge of Cell 5 is tied into the existing landfill cap. A soil and vegetative cover was placed over the entire area in 2017.

Inactive Landfill Areas (Cell 4B, 6, and 7) consist of a Perimeter berm and Type II soil liner construction that was completed for these cells during the period from 2012 to 2014 and the area is reserved for future composite liner construction. A layer of intermediate cover soils is in place over part of the Type II soil liner area and is generally vegetated.

3.0 REVIEW OF AVAILABLE INFORMATION (257.84(b)(1)(i))

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

4.0 INSPECTION (257.84(b)(1)(ii))

4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.84(b)(2)(i))

No modifications have been made to the geometry of the Landfill since the 2019 annual inspection. The geometry of the landfill has remained essential unchanged, except for the changes in topography of the active landfill area due to placement of ash.

4.2 VOLUME (257.84(b)(2)(ii))

The total volume of ash disposed at the landfill up to the 2020 inspection date of August 26, 2020 was estimated to be 1,815,380 tons of Type I ash and 5,647,448 tons of Type II ash.

4.3 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is as follows:

- Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.
- Fair/Satisfactory: A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.
- Poor: A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.
- Minor: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.
- Significant: A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually conditions that have been identified in the previous inspections, but have not been corrected.
- Excessive: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what it is normal or desired, or which may have affected the ability of the observer to properly evaluate the structure or particular area of interest or which may be a concern from a structure safety or stability point of view.

This document also uses the definition of a “deficiency” as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, “Qualifications for Impoundment Inspection” CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not identified as a deficiency are considered routine maintenance items or items to be monitored.

A “deficiency” is some evidence that a landfill has developed a problem that could impact the structural integrity of the landfill. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage (Leachate Outbreak)

Leachate outbreak is the uncontrolled release of leachate from the landfill.

2. Displacement of the Embankment

Displacement of the embankment is large scale movement of part of the landfill or perimeter berm. Common signs of displacement are cracks, scarps, bulges, depressions, sinkholes and slides.

3. Blockage of Control Features

Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.

4. Erosion

Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

4.4 VISUAL INSPECTION (257.84(b)(1)(ii))

A visual inspection of the Landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, temporary and final covers, drainage features, leachate ponds, open cells, and appurtenances such as chimney drains etc.

Overall the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the landfill. Inspection photos are included in Attachment A. Additional pictures taken during the inspection can be made available upon request. A map presenting locations of the inspection observations is included in Attachment B.

CLOSED LANDFILL AREAS

1. The closed landfill area was observed to have a thick grass cover over the entire capped area that had recently been mowed. There were no signs of settlement, signs of movement or distress of the landfill area. The closed landfill area was in good condition and well maintained. The closed landfill area had been mowed the day before the inspection.
2. There was an area of erosion occurring on the northern edge of a riprap channel adjacent to the landfill access road. The erosion rill was about 2 feet deep.
3. There was an erosion rill noticed where the bench ties into the riprap channel on the southeastern side of the closed landfill area. The erosion rill was about 1.5 to 2 feet deep and was observed on both sides of the riprap channel.

4. There was an area of poorly drained soils located where the bench meets the riprap channel on the southwestern corner of the closed landfill area. This was observed on both sides of the riprap channel.
5. There was a small depression associated with a culvert outlet pipe that is on the verge of beginning to cut into the access road width on the northeast perimeter of the landfill. Otherwise, access roads on top and adjacent to the landfill area were in good condition.

ACTIVE LANDFILL DISPOSAL AREAS (CELL 1B, 2 & 3)

1. During the inspection, ash was being placed in the active disposal areas and the ash was being compacted as it was placed. The chimney drains were functioning as designed and there was no pooling of water around the drains.
2. There was a patch of grass cover on the perimeter berm to the south of Cell 2 & Cell 3 that had been repaired by seeding and installing straw matting.

2015 CONSTRUCTION AREA (CELL 1A)

1. Recent maintenance efforts to improve the temporary vegetation cover have been completed in Cell 1A. The repairs occurred between June 22 and July 10, 2020. Additional details of the repair are described in a separate report (GERS-20-020). The repair efforts stripped about 1 foot of soil that was difficult for grass to grow. It is believed that the SBC ash leaches upwards through the temporary soil cover and kills the vegetation. In general, the repairs consisted of:
 - Stripping 1 foot of soil and placing in the active section of the landfill as waste.
 - Fresh, new soil was imported and placed, (AKA resoiling) and tracked in with a dozer to match the existing grade.
 - Erosion rills were repaired by placing new soil, coconut fiber matting and placement of riprap check dams.
 - All disturbed areas were seeded.

The fresh soil had been seeded and some grass was beginning to emerge. There were no signs of erosion noted on the areas where the grass has not starting emerging. This area is estimated to be roughly 3 acres.

2. Other areas of Cell 1A were well vegetated. There were no signs of depressions, cracks, sloughs or other signs of distress. In general the area was in good condition.

2016 CONSTRUCTION AREA (CELL 4A & 5)

1. Maintenance was being performed to improve the vegetation in an area on the northern section of Cell 5 during this inspection. The repairs consisted of removing 1 foot of soil that has been difficult for grass to grow on. The removed soil was placed in the active landfill area as waste. New soil was imported, placed and tracked in with a dozer to match the existing grades. This area is estimated to be roughly 1.5 acres.
2. The surface of Cell 4A and 5 has a soil and vegetative layer which was placed as protective cover in 2017.

INACTIVE LANDFILL AREAS (CELL 4B, 6 & 7)

1. The inactive landfill cells 4B, 6 and 7 were in good condition. The vegetative cover was well established and in good condition. The perimeter drainage culverts appeared to be functioning as designed. The general area was in good condition and well maintained with the area being mowed recently.

LEACHATE PONDS

1. The North Pond was generally in good condition. At the time of the inspection both cells were filled and operating with about 5.5 feet of freeboard.
2. The concrete lined cell did not appear to have any signs of damage, cracks or spalling. There were no signs of blockage of the inlet and outlet piping. The fence surrounding the leachate pond was in good condition.
3. Several small holes in the exposed liner system were observed at both the North Pond, the West Pond and 002 Pond. With the exception of one area at the North Pond, these holes are well above the leachate water level, close to the edge of the gravel drive. In general, these holes were about an inch in diameter or less. There was one area at the North Pond, close to the leachate sump, where a circular liner patch appeared to be separating from the liner and was a few inches under the leachate pond level.
4. The West pond concrete lined portion was operating with about 4 feet of freeboard. The concrete lined section in general is in good condition with no signs of damage. A new flow measuring sensor has been placed at the leachate collection system discharge into the ponds from the south.
5. A small crack in the concrete liner of the West Pond was observed, and is located just above the leachate outlet pipes entering the pond from the south. There was about 3/8 inch vertical offset across this crack.
6. The 002 Pond was generally in good condition. A few holes or tears were visible on the exposed liner.
7. There was a small gash observed in the metal shielding wrapped around the leachate discharge pipe exiting 002 pond. This metal shielding is only to protect the pipe from the elements and does not impact the pipes ability to convey the pond discharge. Further, the leachate pond discharge pipe can function as designed.
8. There was a damaged boundary marker noted along the ditch to the east of the north pond, apparently damaged by mowing equipment.

STORM WATER DRAINAGE DITCHES

1. The perimeter ditches to the West and South were in good condition with no signs of erosion or blockage and appeared to be functioning as designed.

4.5 CHANGES THAT EFFECT STABILITY OR OPERATION (257.84(b)(2)(iv))

Based on interviews with plant personnel and field observations there were no changes to the landfill since the last annual inspection that would affect the stability of the landfill.

5.0 SUMMARY OF FINDINGS

5.1 GENERAL OBSERVATIONS

The following general observations were identified during the visual inspection:

- 1) The resoiling efforts to improve the vegetation cover on Cells 1A and Cell 5 should greatly improve the quality of the vegetation cover.
- 2) In general, the landfill is functioning as intended and the active cells, inactive cells, closed areas, leachate ponds and ditches are in good condition. The Plant is performing regular maintenance and inspections as required. Maintenance items have been noted and are described in Section 5.2.

5.2 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection, see inspection map for locations. Contact GES for specific recommendations regarding repairs:

- 1) Repair the small holes in the liner systems for the leachate ponds. These were noted in a few locations the North Pond, West Pond and 002 pond.
- 2) Repair the small erosion rills noted adjacent to the riprap downslope channels located to the north and southeastern sides of the closed landfill section.
- 3) Install flexible sealant in the crack in the concrete lined section of the west pond, located above the leachate discharge pipe.
- 4) Improve the surface drainage to prevent ponding water at the location where the bench meets the riprap let down channel on the southwestern side of the closed landfill.
- 5) Repair the damaged boundary marker near the ditch to the east of the north pond.

5.3 ITEMS TO MONITOR

- 6) Monitor the small depression adjacent to the access road on the northeast side of the landfill. Ensure that this area does not enlarge and reduce the width of the access road.
- 7) Monitor the recently placed soil at Cells 1A and Cell 5 for erosion after heavy rain events until the grass cover has become established.

5.4 DEFICIENCIES (257.84(b)(2)(iii))

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection or during any of the periodic 7-day inspections. A deficiency is defined as either 1) uncontrolled seepage (leachate outbreak), 2) displacement of the embankment, 3) blockage of control features, or 4) erosion, more than minor maintenance. If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

ATTACHMENT A

Photos



Photograph 1:

Typical view of the vegetated cap on the closed section of the landfill.



Photograph 2:

View of an erosion rill noted along the edge of a riprap let down channel on the north side of the landfill.



Photograph 3:

View of the maintenance efforts (resoiling) on the north side of cell 5.



Photograph 4:

View of the completed maintenance efforts (resoiling) on Cell 1A and Cell 1B.



Photograph 5:

Another view of the closed section of the landfill.



Photograph 6:

View of the erosion rill occurring at the bench/riprap at the southeast corner of the landfill.



Photograph 7:

View of a culvert outlet under the access road on the northeastern side of the landfill. The depression was about 3 feet deep and was on the edge of cutting into the access road.



Photograph 8:

View of a bare area that was reseeded and a straw matting applied. This area is on the perimeter berm on south side of the active landfill area.



Photograph 9:

View of poor drainage area where the bench meets the riprap let down channel on the south side of Cell 1B.



Photograph 10:

View of chimney drain construction in the active section of the landfill.



Photograph 11:

View of the active ash placement.



Photograph 12:

View of the completed maintenance efforts (resoiling) on Cells 1A/1B.



Photograph 13:

View of a check dam completed on Cells 1A/1B.



Photograph 14:

View of a small crack in the concrete lined section of the west pond, above the leachate discharge pipe.



Photograph 15:

View of the flow measuring equipment installed on the leachate discharge pipe coming into the west pond.



Photograph 16:

View of small holes in the exposed membrane section of the west pond.



Photograph 17:

View of a small gash in the metal shielding around the discharge pipe coming out of pond 002, heading towards outfall 002.



Photograph 18:

View of the exterior dike of pond 002.



Photograph 19:

View of a circular patch coming off the liner at the north pond, near the leachate sump.



Photograph 20:

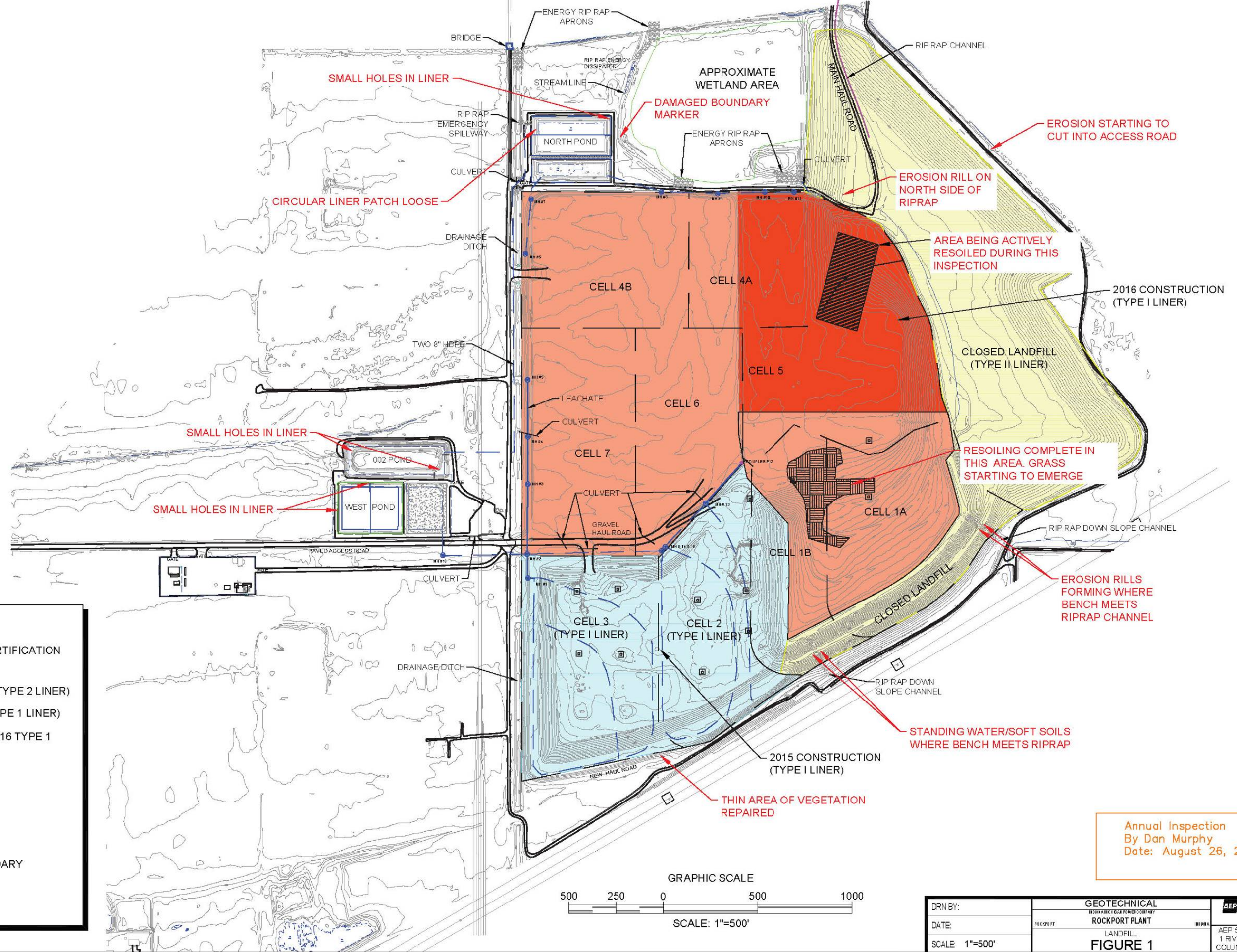
View of the concrete lined section of the north pond.

ATTACHMENT B

Inspection Map

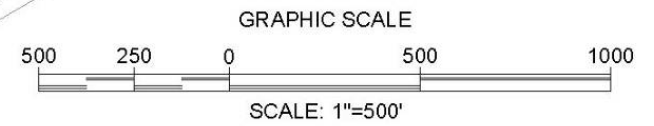


HORIZONTAL DATUM NAD27
INDIANA WEST ZONE
VERTICAL DATUM NGVD29



LEGEND:

- TOPOGRAPHIC CONTOURS
- CLOSED LANDFILL AREA
- INACTIVE DISPOSAL AREA (TYPE 2 LINER)
- ACTIVE DISPOSAL AREA (TYPE 1 LINER)
- APPROXIMATE LIMITS OF 2016 TYPE 1 LINER CONSTRUCTION
- RIP RAP
- CONCRETE
- SURFACE WATER STREAM OR DRAINAGE CHANNEL
- CULVERT PIPE
- LEACHATE PIPE
- APPROXIMATE CELL BOUNDARY
- CONTROL POINT
- CHIMNEY DRAIN
- LEACHATE MANHOLE



Annual Inspection
By Dan Murphy
Date: August 26, 2020

DRN BY:	GEOTECHNICAL	
DATE:	ROCKPORT PLANT	
SCALE 1"=500'	LANDFILL	
FIGURE 1		AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215