2021 Annual Landfill Inspection Report

Landfill

Rockport Plant

Indiana Michigan Power Company

Rockport, Indiana

December 2021

Prepared for: Indiana Michigan Power Company – Rockport Plant

Prepared by: American Electric Power Service Corporation

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Document ID: GERS-21-077

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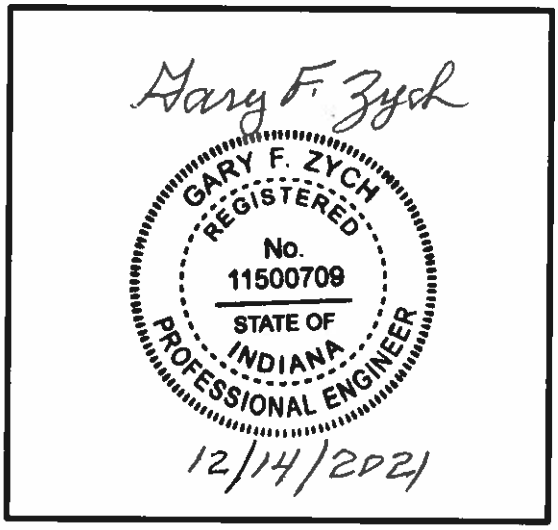

I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

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Attachments

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 2021 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. Larry Hofius, the landfill projects coordinator for the Plant, was the facility contact. The inspection was performed on November 15, 2021 Weather conditions were mostly cloudy and the temperature was in the mid 30's (°F) with good visibility. There was 0.25 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.

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 2020 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 2021 inspection date of November 15, 2021 was estimated to be 1,992,100 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.

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 8 feet of freeboard.
2. 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. (Photograph 1)
3. The West pond concrete lined portion was operating with about 6.5 feet of freeboard. The concrete lined section in general is in good condition with no signs of damage (except for small crack noted above). There was evidence of moisture wicking through the joints of the concrete lining. Since there is a LLDPE liner underneath the concrete, this is not an issue. (Photograph 2)
4. The 002 Pond was generally in good condition and operating with about 8 feet of freeboard. A new LLDPE liner has been installed in leachate pond 002. The exterior slopes of 002 Pond have been armored with riprap, and a new gravel wearing course added to the crest. There was minor cracking

observed along the anchor trench for the liner, believed to be from minor settlement of the anchor trench backfill. (Photograph 3 – 5)

5. The concrete lined cell of the North Pond 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. There was evidence of moisture wicking through the joints of the concrete lining. Since there is a LLDPE liner underneath the concrete, this is not an issue. (Photograph 6-7)
6. 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. (Photograph 8-9)
7. A small leak in the 8-inch-diameter steel discharge pipe from the 002 Pond has been reported and there are plans to install a cured-in-place pipe liner to address the small leak. The leak was detected when the pond was filled with fresh water after the new liner was installed and the pond has been lowered and the leak has stopped.

2015 CONSTRUCTION AREA (CELL 1A)

1. A 10-foot tall soil containment berm has been constructed along the northern edge of Cell 1A in advance of future waste placement. The berm has been seeded and grass is beginning to emerge. A 20 foot wide strip of bottom ash has been placed along the waste side of the berm to facilitate leachate percolation and is connected to the leachate collection system. (Photograph 11-12)
2. There were signs of erosion at the edges of a riprap rock check dam along a surface water drainage feature draining Cell 1A. (Photograph 13)
3. 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.

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

1. During the inspection, ash was being placed in the active disposal areas. Wet bottom ash from the cleanout of the East Bottom Ash Pond was drying out in areas of the active landfill. The chimney drains were functioning as designed and there was no pooling of water around the drains.
2. Grade stakes noting the permitted top of ash surface were observed in the active areas of the landfill. A minus 1-foot vertical offset was also marked on the grade stakes. (Photograph 15)
3. The ash surface leading to the chimney drain on the north slope of the active area should be graded to better direct runoff to the chimney drain pipe. (Photograph 16)

CLOSED LANDFILL AREAS

1. 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. Rodent burrows were also found in this area.
2. 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. (Photograph 19-20)

2016 CONSTRUCTION AREA (CELL 4A & 5)

1. Cell 4A & 5 had temporary grass cover that was in good condition. There were no signs of settlement, movement or distress in this area. The resoiling efforts performed last year have improved the grass coverage.

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.
2. Repairs to the intermediate berm were recently completed to address a leachate seepage deficiency. Grass cover was beginning to emerge. (Photograph 10).
3. A culvert underneath the haul road and discharging onto Cell 7 has been recently flushed out. Standing water was noted around the inlet of this culvert, between Cell 3 and the haul road. (Photograph 17-18)

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) In general, the landfill is functioning as intended and the active cells, inactive cells, closed areas, leachate ponds and ditches are in good condition. Several improvement to the facility have been completed in the past two years, including efforts to improve the temporary grass cover, new pond liner installation in leachate pond 002 and the leachate seepage repair to address a previous deficiency.

   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 peeling circular patch on the exposed liner in the north leachate pond.

2) Repair the erosion rill occurring at the edges of the rock check dam in Cell 1A

3) Improve the drainage patterns to direct contact water runoff towards the chimney drain on the north slope of Cell 3.

4) Repair the erosion rill and rodent burrow noted adjacent to the riprap channel located on the closed landfill.

5) Install a suitable sealant in the crack in the concrete lined section of the west pond, located above the leachate discharge pipe.

6) Consider improving drainage patterns in the area of standing water between the haul road and Cell 3.

7) Continue with plans to repair the leaking 8-inch-diameter steel discharge pipe at pond 002.

5.3 ITEMS TO MONITOR

1) Monitor the interim berm seepage repair area for any signs of seepage.

2) Monitor the anchor trench backfill for any additional cracking or settlement of the crest of pond 002.

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.

Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions. 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.

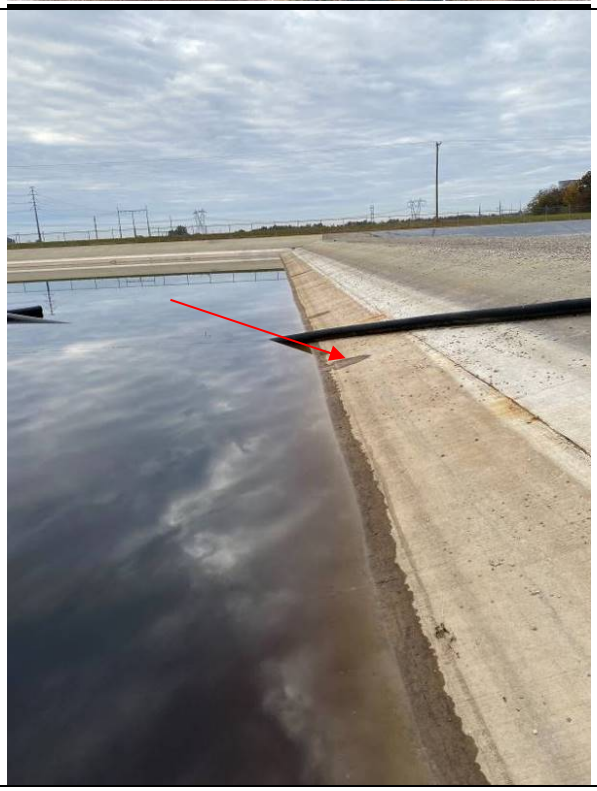
A deficiency related to leachate seeping through the intermediate berm (Deficiency #12 on AEP's Deficiency Index) has been repaired and the deficiency is considered corrected by AEP Geotechnical Engineering. The overall corrective measure repair scheme consisted of geomembrane liner repair & seaming and the construction of an additional leachate collection pipe. Temporary measures were installed to collect leachate seepage and divert into the existing leachate collection system. The repair construction was completed in accordance with the landfill CQA/QC Manual.

Milestones related to the deficiency are captured below:

- April 5, 2021 – Leachate seepage observed by Rockport plant staff
- April 8, 2021- Site visit by AEP Geotechnical Engineering
- April 12, 2021- Leachate seepage issue determined to be a deficiency. Notification made to IDEM
- April 13, 2021- Temporary measures installed to collect leachate seepage and discharge into proper system
- August 2, 2021- Corrective measure repair construction started.
- October 13, 2021- Corrective measured completed.
- November 24, 2021- Construction repair documentation & certification report submitted to IDEM

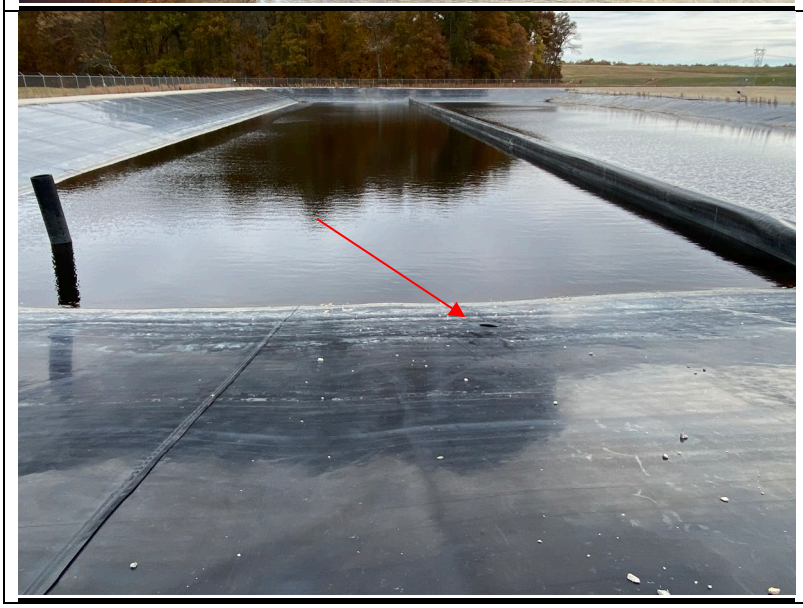
ATTACHMENT A

Photos

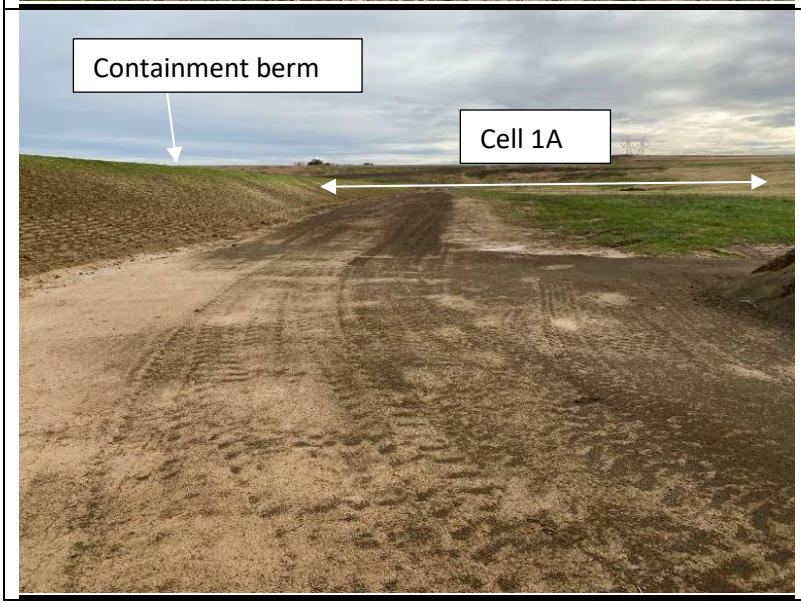
		Photograph 1: View of the leachate influent line at the west leachate pond. The crack in the concrete noted by the red arrow.
		Photograph 2: View of the west leachate pond. Notice the signs of moisture weeping through the joints of the protective concrete.

	Photograph 3: View of the discharge structure at leachate pond 002.
	Photograph 4: View of the new riprap slope protection at leachate pond 002.

	Photograph 5: View of the minor cracking observed along the surface of backfill in the anchor trench for the new liner at Pond 002.
	Photograph 6: View of the leachate influent line at the north leachate pond.

	Photograph 7: View of moisture wicking through the joints of the protective concrete at the north leachate pond.
	Photograph 8: View showing the north leachate pond. The red arrow shows location of the circular patch in Photograph 8.

	Photograph 9: View of a circular patch on the north leachate pond that appears to be peeling.
	Photograph 10: View showing the interim berm in the area where the leachate seepage deficiency has been repaired and grass cover establishing.

	Photograph 11: View showing the containment berm constructed in Cell 1A for future ash placement.
	Photograph 12: View showing the bottom ash placed on the waste side of the containment berm in Cell 1A.

	Photograph 13: View of the erosion occurring at the edge of the rock check dam in Cell 1A.
	Photograph 14: View of the active placement waste area.

	Photograph 15: View showing survey stakes noted the elevation of permitted top of ash grades in Phase 1.
	Photograph 16: View showing a chimney drain on the north slope of Phase 1.

	Photograph 17: View of standing water upstream of the culvert into Cell 7. The crown of the culvert is a few inches above the water surface.
	Photograph 18: View of the outlet of the culvert shown in Photograph 17.

	Photograph 19: View of a riprap let down channel on the southeastern side of the closed landfill area.
	Photograph 20: Typical view of the closed landfill area.

ATTACHMENT B

Inspection Map

N

HORIZONTAL DATUM NAD27
INDIANA WEST ZONE
VERTICAL DATUM NGVD29

ENERGY RIP RAP APRONS
BRIDGE
RIP RAP ENERGY DISSIPATER
STREAM LINE
APPROXIMATE WETLAND AREA
RIP RAP CHANNEL
MAIN HAUL ROAD
RIP RAP EMERGENCY SPILLWAY
NORTH POND
ENERGY RIP RAP APRONS
CULVERT
CULVERT
CIRCULAR LINER PATCH LOOSE
EROSION & RODENT BURROW ON NORTH SIDE OF RIPRAP
DRAINAGE DITCH
CELL 4B
CELL 4A
2016 CONSTRUCTION (TYPE I LINER)
TWO 8" HDPE
CONTAINMENT BERM FOR FUTURE WASTE PLACMENT IN CELL 1A
CELL 5
CLOSED LANDFILL (TYPE II LINER)
LEACHATE
CELL 6
CULVERT
CELL 7
002 POND
SEEPAGE REPAIRS COMPLETED IN THIS AREA
CULVERT
WEST POND
GRAVEL HAUL ROAD
CELL 1A
RIP RAP DOWN SLOPE CHANNEL
EROSION NEXT TO CHECK DAM
PAVED ACCESS ROAD
CELL 1B
CULVERT
STANDING WATER NEAR CULVERT
CELL 3 (TYPE I LINER)
CELL 2 (TYPE I LINER)
CLOSED LANDFILL
IMPROVE DRAINAGE AROUND CHIMNEY DRAIN
DRAINAGE DITCH
RIP RAP DOWN SLOPE CHANNEL
2015 CONSTRUCTION (TYPE I LINER)
NEW HAUL ROAD

LEGEND:

- 510 — TOPOGRAPHIC CONTOURS ASBUILT SURFACE FOR CERTIFICATION
- 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
- MH — LEACHATE MANHOLE

GRAPHIC SCALE
500 250 0 500 1000
SCALE: 1"=500'

Annual Inspection
By Dan Murphy
Date: November 15, 2021

DRN BY:	GEOTECHNICAL INDIANA MICHIGAN POWER COMPANY ROCKPORT PLANT (ROCKPORT, INDIANA) LANDFILL FIGURE 1	AEP AMERICAN ELECTRIC POWER AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
DATE:		
SCALE: 1"=500'		