



INDIANA-KENTUCKY ELECTRIC CORPORATION

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WRITER'S DIRECT DIAL NO:
740-897-7768

February 4, 2022

Delivered Electronically

Mr. Brian Rockensuess, Commissioner
Indiana Department of Environmental Management
100 N. Senate Avenue
Mail Code 50-01
Indianapolis, IN 46204-2251

Dear Mr. Rockensuess:

**Re: Indiana-Kentucky Electric Corporation
Clifty Creek Station's 2021 Annual Landfill Inspection**

As required by 40 CFR 257.106(g)(7), the Indiana-Kentucky Electric Corporation (IKEC) is providing notification to the Commissioner (State Director) of the Indiana Department of Environmental Management that a qualified professional engineer has completed the 2021 CCR annual landfill inspection for OVEC's Clifty Creek Station. The inspection report has been placed in the facility's operating record as well as on the company's publicly accessible internet site, which can be viewed at <http://www.ovec.com/CCRCCompliance.php>.

If you have any questions, or require any additional information, please call me at (740) 897-7768.

Sincerely,

A handwritten signature in black ink that reads "Tim Fulk".

Tim Fulk
Engineer II

TLF:klr



**2021 CCR Rule Inspection
Clifty Creek Landfill**



Clifty Creek Generating Station
Madison, Indiana
Jefferson County

February 2, 2022

Prepared for:

Indiana-Kentucky Electric Corporation
Piketon, Ohio

Prepared by:

Stantec Consulting Services Inc.
Cincinnati, Ohio

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Sign-off Sheet

This document entitled 2021 CCR Rule Inspection Clifty Creek Landfill was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Indiana-Kentucky Electric Corporation (IKEC) (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule, and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use that a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by John G. Banton

(signature)

John G. Banton, P.E.

Reviewed by Kyle R. Blakley

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Kyle R. Blakley, P.E.

Reviewed by Jacqueline S. Harmon

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Jacqueline S. Harmon, P.E.



Table of Contents

1.0	OVERVIEW	1
2.0	DESCRIPTION OF CLIFTY CREEK LANDFILL	2
3.0	OBSERVATIONS	3
3.1	SURFACE CHANNELS TO WEST BOILER SLAG POND	4
3.2	FINAL GRADE SURFACE/STORM WATER CHANNELS – EAST OF PHASE I TYPE I LANDFILL	4
3.3	PHASE I TYPE I LANDFILL	5
4.0	RECOMMENDATIONS	5
5.0	REFERENCES	6

LIST OF APPENDICES

- APPENDIX A** **PLAN VIEW AND TABLE OF INSPECTION LOCATIONS**
- APPENDIX B** **PHOTOGRAPHIC LOG**
- APPENDIX C** **REFERENCE DRAWINGS**

2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Overview

February 2, 2022

1.0 OVERVIEW

Stantec Consulting Services Inc. (Stantec) performed the annual inspection of the existing coal combustion residuals (CCR) landfill at the Clifty Creek Generating Station in Madison, Indiana on October 26, 2021.

This annual landfill inspection is intended to fulfill the requirements of 40 CFR 257.84(b) for the *Disposal of Coal Combustion Residuals from Electric Utilities* rule (CCR Rule) signed by the U.S. Environmental Protection Agency (EPA) Administrator on December 19, 2014 and published in the Federal Register on April 17, 2015.

The landfill is a Restricted Waste Site Type I, operating permit number 39-04, managed in accordance with the Indiana Department of Environmental Management's (IDEM's) regulations. Below is a summary of conditions for the day of the inspection:

Date performed:	October 26, 2020
Weather:	Mostly cloudy, breezy, 50°F - 62°F
Rainfall over previous 72 hours:	October 23, 2021 – 0.00 October 24, 2021 – 0.05 inch October 25, 2021 – 0.55 inch October 26, 2021 – 0.60 inch

Precipitation data was collected by the National Centers for Environmental Information, NOAA, for Clifty Creek, Madison County, Indiana. Precipitation during the 72-hour period prior to the site visit was 1.20 inches. Rain was not observed during the actual site visit.

Stantec's team that performed the fieldwork included:

- Jacqueline Harmon, P.E., Principal, Project Manager
26 years of experience in geotechnical exploration and general civil engineering design.
- Kyle R. Blakley, P.E., Senior Project Engineer/Geotechnical Engineer
13 years of geotechnical engineering experience for supervision of geotechnical field explorations, design of dams, landslide remediation, and CCR storage facility design, closure, and operation.

The estimated volume of CCRs contained in the landfill is 2,862,566 cubic yards.

IDEM regulations require monthly inspections of the landfill facility, which are performed by plant personnel. Inspections of the landfill facility have commenced in accordance with the CCR Rule as of October 17, 2015 and are being conducted at least once every seven days. Available (January 6 through October 12) weekly and monthly (January through September) inspection reports encompassing the 2021

2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Description of Clifty Creek Landfill
February 2, 2022

calendar year were provided by plant personnel for review. The reports indicated only minor problems were observed, such as minor erosion and reseeding of bare areas due to heavy precipitation.

IDEM is routinely scheduled to inspect the facility on a quarterly basis through the year. Inspections and report issuance during 2021 may have been impacted by the COVID-19 pandemic. The 2021 inspection reports dated March 24, 2021, and June 7, 2021 were 2 reports available in IDEM's online virtual filing cabinet (IDEM, 2021). The plant provides annual submittals to IDEM, including drawings showing existing conditions.

Fieldwork was coordinated with Mr. Danny Hunt, Clifty Creek Station's Landfill Operator. Observations were briefly discussed with onsite personnel during and after completion of the field activities. Mr. Hunt tracks the maintenance needs and activities through the weekly and monthly inspections.

2.0 DESCRIPTION OF CLIFTY CREEK LANDFILL

The Clifty Creek Generating Station is a coal-combustion generating station located in Madison, Jefferson County, Indiana. It is owned and operated by Indiana-Kentucky Electric Corporation (IKEC), a wholly-owned subsidiary of Ohio Valley Electric Corporation (OVEC). The Clifty Creek Generating Station began operating in 1955. Currently it has six generating units with a total capacity of 1,304 megawatts.

In the late 1980s, IKEC converted the plant from ash sluicing to dry fly ash collection facilities. IKEC submitted a restricted waste construction/operation permit application to IDEM in 1986 to begin landfilling boiler slag and fly ash produced by the Clifty Creek Station. IDEM approved the fly ash landfill permit application as a Type III restricted waste landfill in 1988, and operations began in 1991.

In December 2006, IKEC applied for a major modification to its landfill permit to modify the existing Type III landfill to a Type I landfill. The modification would enable the landfill to accept synthetic gypsum materials generated by the newly constructed flue gas desulfurization (FGD) systems. IKEC's major permit modification application proposed repurposing 109 acres of the originally permitted 200-acre Type III facility as a Type I facility to accept fly ash, boiler slag, synthetic gypsum, and other miscellaneous gypsum-related materials. IDEM approved IKEC's major permit modification in April 2008.

The Type I landfill has a capacity of 13.9 million cubic yards (FMSM, 2006) and includes:

- A composite liner system consisting of a Type 3 geosynthetics clay liner and a 30-mil flexible polyvinyl chloride (PVC) geomembrane in all phases;
- A leachate collection system, directing flow eastward from part of Phase 1 to the West Boiler Slag Pond and the remainder flowing westward to the Landfill Runoff Collection Pond;
- A contact and non-contact surface water management system, including sedimentation ponds, multiple sediment traps, drainage channels, and chimney drains that segregates water that comes into contact with the CCRs and water that does not encounter the CCRs;
- A groundwater monitoring system, and
- A final closure cap design.

2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Observations
February 2, 2022

Initial site development and construction activities for Phase 1 of the new Type I landfill began in May 2008. The original Type III facility was soil capped during the site development. Subphases 1A, 1B, and portions of 1C were constructed and certified for waste by late 2012. See Appendix A for a plan view of the CCR for the current constructed footprint. Other features associated with the landfill include:

- West Boiler Slag Pond – a permanent pond accepting sluiced boiler slag, which is periodically dredged and material is transported to the landfill for beneficial reuse. The pond also accepts most of the leachate from Subphases 1A and 1B, as well as surface water from the eastern side of the landfill.
- Landfill Runoff Collection Pond – a permanent pond at the southwestern end of the landfill that accepts the remainder of the leachate and surface water from Subphases 1A, 1B, 1C, and the area between Phase I and the pond.

At the time of this annual inspection, the landfill consisted of Subphases 1A, 1B, and 1C. Subphases 1A and 1B are subdivided into Areas 1A1, 1A2, 1B1, and 1B2. Areas 1A1 and 1B1 were approved for waste placement in 2008. Areas 1A2 and 1B2 were approved for waste placement in 2013. Area 1C was approved for waste placement in 2016. IKEC's five-year landfill permit was renewed by IDEM in October 2019. IKEC notified IDEM of the intent to begin construction of Subphase 1D in August 2018. IDEM attended a pre-construction meeting for Subphase 1D at the Clifty Creek Plant on August 28, 2018 and a second pre-construction meeting for Phase 2 on October 9, 2019.

Subphases 1A and 1B are near permitted grade for CCRs and have been covered with temporary soil and vegetation. Subphase 1C is actively receiving CCRs, which are being placed in one-foot lifts in accordance with the facility's Construction Quality Assurance/Quality Control Plan (FMSM, 2008). CCR material was at grade with filling entering cell 1D airspace. The expansion of the cell 1D liner was on hold at the beginning of 2020 pending possible changes in the landfill permit. The clearing of the hillsides in the footprint of Phase 2A was completed in February 2020. The Phase 2 underdrain layer (boiler slag) was completed in May 2020.

Appendix C includes figures showing the recent survey plot and the final cover topography for the current constructed landfill.

3.0 OBSERVATIONS

The following sections present observations made during the site visit within the Type I active Subphase I (A through C) footprint and pertinent surface drainage to the West Boiler Slag Pond. Refer to the GPS point descriptions and figure in Appendix A along with the photographs and descriptions in Appendix B for observations.

2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Observations
February 2, 2022

3.1 SURFACE CHANNELS TO WEST BOILER SLAG POND

Four riprap-lined surface water drainage channels are constructed east of the Type I active landfill. See reference Drawing No. 16-30870-05 in Appendix C showing the four surface water channels observed east of the Type I landfill. Two channels, one nearest the paved haul road to the north and one nearest the natural ridge (Devil's Backbone) to the south, convey flow from the surrounding watershed. Two drainage channels towards the middle are intended to manage stormwater flow once final cover is placed in Phase I and flow into a collection ditch at the east end of the closed portion of the landfill. The four channels merge east of the landfill and flow to the West Boiler Slag Pond and its associated National Pollutant Discharge Elimination System (NPDES)-permitted outfall.

This section includes observations on October 26, 2021 beginning with the visible pipes and headwalls at the east end of a single merged channel.

- The channel upstream of the east Conspan headwall is densely vegetated between Points 1 and 2. Refer to Points 1 and 2, Appendix A and Photos 1 and 2, Appendix B.
- The channel downstream (Photo 1, Appendix B) of the east Conspan headwall is fairly clear of vegetation.
- The rock fill of the gabion mattress of the north stormwater channel near the confluence with the south channel was observed to be somewhat displaced and bulging beneath the wire gabion fabric (Point 2, Appendix A; Photos 3 and 4, Appendix B). The condition of this rock lining has not changed since 2019 and does not appear to impact functionality.

3.2 FINAL GRADE SURFACE/STORM WATER CHANNELS – EAST OF PHASE I TYPE I LANDFILL

As discussed in Section 3.1, the final cover storm water channels are the two interior channels flowing eastward from the landfill into the West Boiler Slag Pond.

- The northern, southern, and eastern channels appear to be fairly clear of vegetation and maintained. Vegetation is dense at some isolated locations, as described in the GPS Points table in Appendix A.
- The closed Type III landfill cap appears uniform, mowed, and maintained.
- An inlet of a small pipe culvert beneath an access road on the south side of the closed Type III landfill is nearly buried in channel lining, as reported in previous years. (Point 6, Appendix A)
- An outlet pipe from the truck wash that was lower than the invert of the ditch has now been properly adjusted. (Point 20, Appendix A, Photo 14, Appendix B)

2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Recommendations
February 2, 2022

- A few shallow sloughs were observed along the southern edge of the access road. (Points 16 – 19, Appendix A)

3.3 PHASE I TYPE I LANDFILL

The Phase I Type I landfill began accepting CCRs in 2008. No subphases within the waste footprint have been permanently capped and closed. Areas nearing final grades have temporary cover and are vegetated. The slopes are relatively uniform.

- Erosion rills of the past have been repaired, and slopes are well-vegetated.
- As observed in 2019, Subphases 1A1 and 1B1 are at or near permitted final CCR grades. The CCR of the subphases has been temporarily covered with soil and vegetation has been established.
- Active waste placement was ongoing in Cell 1C. Structural fill below the liner was being placed in Phase 2.
- The temporary cover outslopes of Subphase 1A/1B were consistent with the previous inspections and were well vegetated.

4.0 RECOMMENDATIONS

The following recommendations are offered for the Clifty Creek Station's Type I Restricted Waste Landfill. The recommendations are listed in no particular order.

Stability Issues:

None noted.

Operational Issues:

- Conduct field surveys to measure current topography and compare to design geometry. Regrade surface as needed to conform to design. Areas near permitted CCR grades are recommended to be capped, closed, and vegetated (Subphases 1A1, 1B1, 1A2, 1B2, and 1C).
- Seepage was noted in previous inspection reports near the leachate pipe outlets on the northeast corner of the closed Type III landfill. While not observed during this inspection, the area should continue to be monitored for seeps. Consider ways to segregate and reduce the various source of flows into the eastward stormwater and leachate collection channel.

2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

References

February 2, 2022

Maintenance Issues:

- Continue to conduct weekly and monthly field inspections to schedule and maintain the necessary best management practices for the stormwater channels, sediment traps, and rock check dams serving the landfill. Consider cleaning out sediment traps/rock check dams.
- Maintain the vegetation along the exterior slopes and within the surface drainage channels to facilitate inspections. Remove taller weeds and woody vegetation or reestablish vegetation as needed. Temporary cover should be monitored and maintained.
- Remove excess vegetation from drainage channels, pipe inlets, and outlets. Flow was visible at the pipes observed by Stantec during the October 2021 site visit.
- Continue to repair erosion features, reestablish vegetation, and monitor in future inspections.
- Continue to monitor the surface water channel headwalls and culverts east of the landfill. Repair as needed.
- Monitor the integrity of the exposed corrugated metal in the southernmost of the culverts near the temporary construction trailers. If needed, remediation of the culvert should be considered to reestablish an internal liner for the pipe.
- Consider repairing shallow sloughs along the southern edge of the access road.

5.0 REFERENCES

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2021 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

References

February 2, 2022

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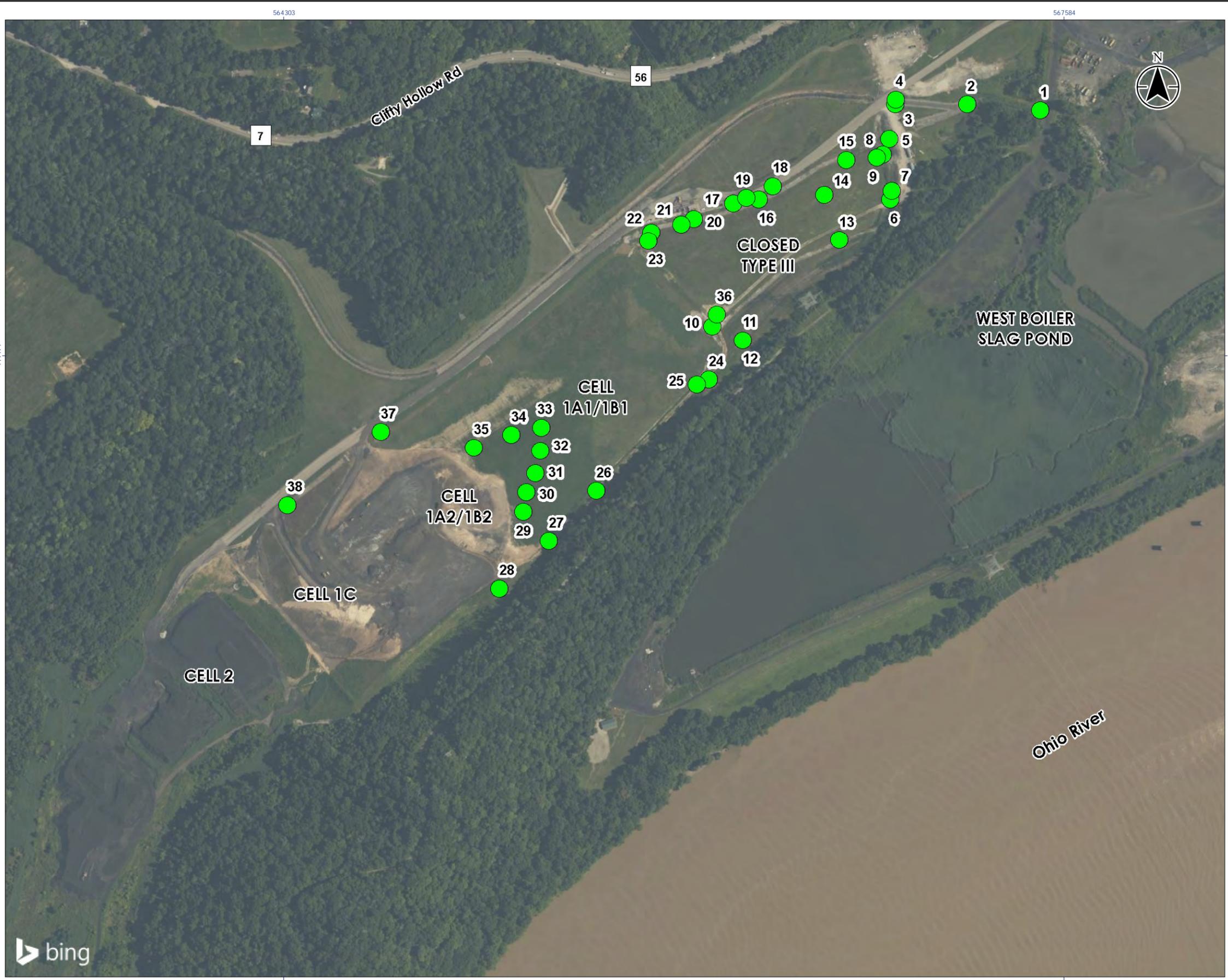
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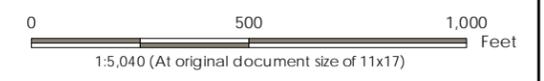
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Stantec Consulting Services Inc. (2018). "2018 CCR Rule Inspection, Clifty Creek Landfill (January, 2019)." Indiana-Kentucky Electric Corporation. Clifty Creek Coal Ash Landfill

**APPENDIX A – PLAN VIEW AND TABLE OF
INSPECTION LOCATIONS**



Legend
 ● Inspection Location



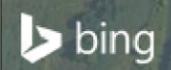
Notes
 1. Coordinate System: Latitude/Longitude NAD83
 2. Base features - BNG
 3. Ortho-imagery does not represent current conditions.



Project Location: Clifty Creek Plant, Jefferson County, IN
 Prepared by ANP on 2022-1-11
 Technical Review by JSH on 2022-1-15
 Independent Review by JGB on 2022-2-2

Client/Project: Indiana - Kentucky Electric Corporation, Clifty Creek Plant

Figure No.: 1
 Title: 2021 Annual CCR Landfill Inspection



VA:175531033\068\mxd\Report_Figures.mxd - Revised: 2022-02-02 By: AFooder

Point ID No.	Comment	Latitude	Longitude
1	heavy vegetation in channel at conspan 1	38.73690767827	-85.43009521158
2	heavy vegetation in channel at conspan 2	38.73697950167	-85.43116834739
3	low backfill at headwall	38.73698400632	-85.43222813174
4	cracks in headwall	38.73703688421	-85.43222291181
5	heavy vegetation in channel	38.73657865591	-85.43232207266
6	roadway drainage pipe inundated	38.73588487208	-85.43231072698
7	edge of vegetation in channel	38.73598667557	-85.43228561443
8	orange sheen seepage at headwall	38.73640063735	-85.43241778590
9	wet spot on cover	38.73636442012	-85.43250181621
10	standing water southeast corner	38.73442780809	-85.43493401846
11	heavy vegetation in exterior channel	38.73426641764	-85.43448636690
12	sediment in exterior channel	38.73426662596	-85.43448627424
13	change to taller vegetation in channel	38.73542057384	-85.43305933977
14	undulating low spots on cover	38.73593827266	-85.43327778808
15	edge of taller vegetation in channel	38.73634008460	-85.43295570407
16	slough next to roadway	38.73589185205	-85.43424263764
17	end of low area next to road	38.73584673227	-85.43462188807
18	end of low area next to road	38.73604253087	-85.43403893330
19	top of scarp	38.73590550863	-85.43442685588
20	low pipe in channel	38.73566789562	-85.43520489007
21	sediment and grass in channel	38.73560414074	-85.43538611040
22	sediment and grass in channel	38.73551120920	-85.43583124127
23	standing water area on cover	38.73541641918	-85.43587481090
24	erosion rill on back side	38.73381314998	-85.43498823309
25	sediment in channel	38.73375668381	-85.43516166877
26	sediment in channel	38.73253812655	-85.43665143899
27	edge riprap and estab vegetation	38.73196360829	-85.43735328112
28	top of back ditch	38.73141327023	-85.43807937834
29	approximate edge of new vegetation	38.73229763827	-85.43772249320
30	approximate edge of new vegetation	38.73252081028	-85.43767924596
31	approximate edge of new vegetation	38.73274225412	-85.43754935808
32	approximate edge of new vegetation	38.73300131712	-85.43747223532
33	approximate edge of new vegetation	38.73326932612	-85.43745744271
34	approximate edge of new vegetation	38.73318431056	-85.43789802403
35	approximate edge of new vegetation	38.73303902714	-85.43844799491
36	low bare area near check dam	38.73456493793	-85.43486749334
37	edge of new vegetation	38.73322592652	-85.43982220723
38	standing water at active access	38.73238248243	-85.44120182146

APPENDIX B – PHOTOGRAPHIC LOG



Photo 1

Outlet of Conspan upstream of Boiler Slag Pond showing clear channel.



Photo 2

Dense vegetation growing in front of west face of Conspan in stormwater drainage ditch from landfill to West Boiler Slag Pond. Photo taken atop access road. Ditch is in center of photograph. (Point 1, Appendix A)



Photo 3

Looking east (downstream) between access road and landfill at controlled vegetation in stormwater drainage ditch from landfill to West Boiler Slag Pond. Log and other debris are also present. (Point 2, Appendix A, beyond)



Photo 4

Looking west at stormwater drainage ditch confluence between access road and landfill. Gabion fill rock has shifted within baskets creating uneven channel lining. Condition is unchanged from previous year. (Point 2, Appendix A)



Photo 5

Looking south along channel connecting north and south storm water drainage channels. (Point 5, Appendix A)



Photo 6

Leachate line headwalls at east end of closed Type III landfill. (Point 5, Appendix A)



Photo 7

Vegetation cover of closed Type III landfill. (Point 15, Appendix B)



Photo 8

Temporary access road on south edge of closed Type III landfill crossing riprap ditch near toe of Phase 1 landfill. (Point 10, Appendix A)



Photo 9

Temporary access road on south edge of closed Type III landfill crossing riprap ditch near toe of Phase 1 landfill. Continued from Photo 8. (Point 10, Appendix A)



Photo 10

Riprap ditch along south edge of closed Type III landfill looking downstream or east. (Point 36, Appendix A)



Photo 11

View along south side of Phase 1 landfill looking west.



Photo 12

Riprap ditch along north edge of closed Type III landfill looking upstream or west.



Photo 13

Surface of closed Type III landfill north of road.



Photo 14

Truck wash outlet into ditch. (Point 20, Appendix A)



Photo 15

Riprap ditch along north edge of closed Type III landfill near truck wash outlet looking downstream or east. (Point 21, Appendix A)

**Photo 16**

Vegetative cover and surveying panel point on north side of closed Type III landfill looking south along toe of Phase 1 landfill. (Point 22, Appendix A)

**Photo 17**

Vegetative cover on north side and in ditch of Phase 1 landfill looking west. (Point 22, Appendix A)

**Photo 18**

Temporary access road and riprap ditch on south side of Phase 1 landfill looking east. (Point 25, Appendix A)



Photo 19

Temporary access road and riprap ditch on south side of Phase 1 landfill looking west. (Point 26, Appendix A)



Photo 20

Temporary access road and riprap ditch on south side of Phase 2 landfill looking downstream or east. (Point 27, Appendix A)



Photo 21

Temporary access road and riprap ditch on south side of Phase 2 landfill looking upstream or west. (Point 27, Appendix A)



Photo 22

Vegetated cover of Phase 1 landfill western slope looking north showing recently seeded areas and rills.



Photo 23

Vegetated cover of Phase 1 landfill slope looking west showing recently seeded areas and rills.
(Point 28, Appendix A)



Photo 24

Typical view of vegetated cover of Phase 2 landfill top looking north.
(Point 30, Appendix A)



Photo 25

Vegetated cover of Phase 1 landfill top looking west. (Point 34, Appendix A)



Photo 26

Underdrain layer and structural fill placement in Cell 2A looking west.



Photo 27

Temporary silt trap in Cell 1C looking northwest.



Photo 28

Western face of Phase 1 landfill at west toe looking east.



Photo 29

Temporary silt pond at end of Cell 1C.



Photo 30

North side of Phase 1 landfill showing drainage at toe. (Point 38, Appendix A.)

APPENDIX C – REFERENCE DRAWINGS

LEGEND	
	UTILITY POLE
	TRANSMISSION LINE
	TRANSMISSION TOWER
	VEGETATION
	EDGE OF WATER
	PROPERTY LINE
	WASTE BOUNDARY
	GRADING LIMITS

MAPPING SOURCE NOTE:
 TOPOGRAPHIC, BATHYMETRIC, AND PLANIMETRIC SURVEY INFORMATION FOR THE PLANS WERE OBTAINED FROM MAPPING PROVIDED BY INDIANA-KENTUCKY ELECTRIC CORPORATION (IKEC) AND AMERICAN ELECTRIC POWER (AEP). FIELD SURVEY OF THE WEST BOILER SLAG POND ARE WAS PERFORMED JULY THROUGH OCTOBER 2020 BY HREZO ENGINEERING, INC. FIELD SURVEY OF THE LANDFILL RUNOFF COLLECTION POND WAS PERFORMED SEPTEMBER THROUGH DECEMBER 2020 BY HREZO ENGINEERING, INC. ACTIVE WORK AREAS NOT COVERED IN THE 2020 SURVEYS ARE BASED ON AERIAL AND FIELD SURVEYS DATED APRIL 2018, MAY 2018, AND SEPTEMBER 2019. SOME AREAS OUTSIDE OF RECENT WORK ZONES WERE SUPPLEMENTED WITH DATA USED IN THE LANDFILL PERMIT AND CONSTRUCTION DRAWINGS (AERIAL AND FIELD SURVEYS DATED 1992, 2005, 2007, 2008) AND 2011-2013 INDIANA STATEWIDE LIDAR (EAST). THE ACTIVE LANDFILL CELLS REFLECT THE QUARTERLY TOPOGRAPHY FROM APRIL 2021 PROVIDED BY IKEC. HORIZONTAL DATUM IS NAD27 AND VERTICAL DATUM IS NAVD88.

- NOTES:**
1. OTHER BASEMAP INFORMATION BASED ON ORIGINAL DESIGN PLAN SHEETS.
 2. ANY REMAINING PHASE 1 CONSTRUCTION WILL BE PERFORMED DURING FUTURE CONSTRUCTION SEASONS. PHASE 2 SUBGRADE CURRENTLY UNDER CONSTRUCTION.
 3. CELLS WITH TEMPORARY SOIL COVER ARE MULCHED AND SEEDED.



Project Number: 175531033

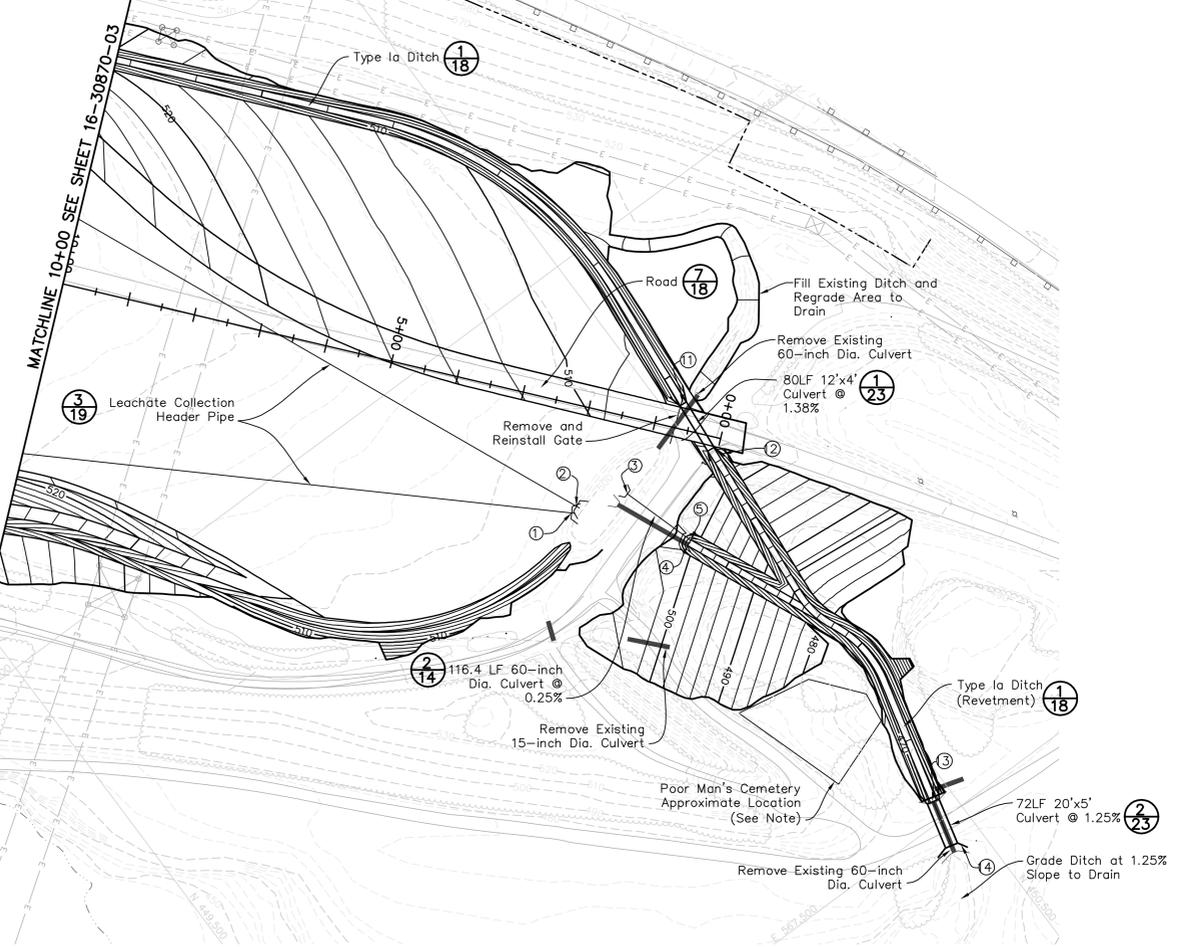
Notes:

1. Topographic mapping for the hill sides and areas east of the existing landfill are supplied by Photogrammetric Services, Inc., Reynoldsburg, Ohio (April 28, 1992). Topographic mapping for the surface of the existing ash pond and landfill was supplied by Henderson Aerial Surveys, Inc., Grove City, Ohio (April 16, 2005) and Bowen, Inc. (June, 2007). Hydrographic survey of existing fly ash pond performed on May 4, 2005.
2. Information presented in Indiana State Plane coordinate system (NAD27/NAVD88 Indiana East, feet).
3. IKEC will locate and stake the limits of the Poor Man's Cemetery. The Contractor shall not operate within the limits of the Cemetery.
4. The flow line of all surface ditches shall be adjusted to match headwalls and wingwalls.
5. See Drawing 16-30870-21 for Headwall Details. See Drawing 16-30870-23 for Culvert Details.

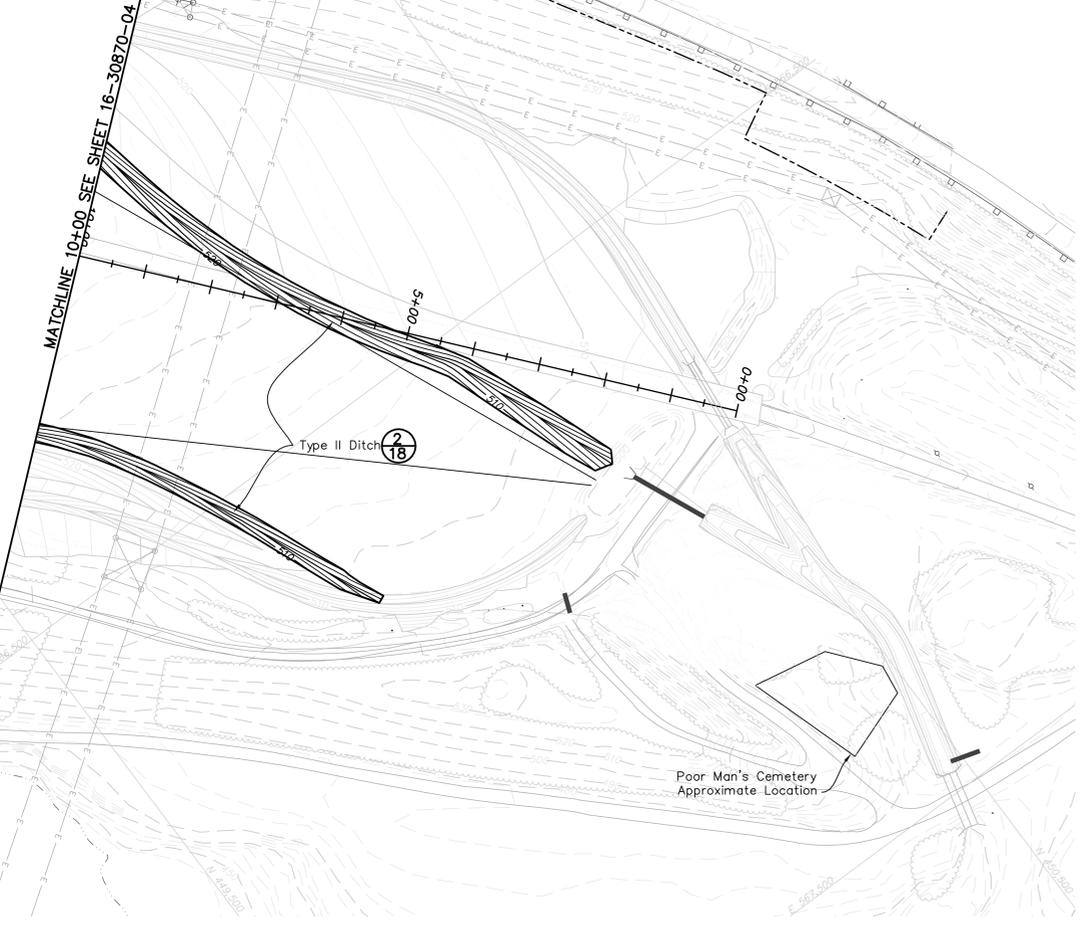
Legend

- Utility Pole
- Transmission Line
- ⊕ Transmission Tower
- ~ Vegetation
- - - Edge of Water
- - - Property Line
- - - Grading Limits
-) Headwall

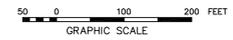
Structures							
Structure ID	Type	Size	Northing (Feet)	Easting (Feet)	Rim Elevation (Feet)	Inlet Invert Elevation (Feet)	Outlet Invert Elevation (Feet)
1	Headwall	16-inch	450,297.83	566,806.52	-	-	502.49'
2	Headwall	16-inch	450,309.73	566,803.32	-	-	502.32'
3	Headwall	60-inch	450,380.92	566,832.97	-	496.00'	-
4	Headwall	60-inch	450,407.47	566,947.48	-	-	495.71'
5	Headwall	60-inch	450,414.75	566,944.34	-	-	495.71'
11	Culvert	12 x 4' Inlet	450,527.17	566,774.52	-	499.38'	-
12	Culvert	12 x 4' Outlet	450,519.57	566,854.16	-	-	498.28'
13	Culvert	20 x 5' Inlet	450,470.28	567,470.12	-	466.90'	-
14	Culvert	20 x 5' Outlet	450,452.61	567,539.92	-	-	466.00'



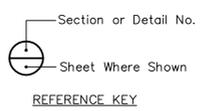
INITIAL CONSTRUCTION



FINAL GRADE



DATE	NO.	DESCRIPTION	APPR.
REVISIONS			
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INDIANA - KENTUCKY ELECTRIC CO. CLIFTY CREEK PLANT MADISON INDIANA COAL ASH LANDFILL SUBPHASE 1A INITIAL CONSTRUCTION AND FINAL GRADE			
DWG. NO. 16-30870-05			
CIVIL ENGINEERING DIVISION			
SCALE:	APPROVED BY		
DR: CW			
CH: DMD			
ENGR: DPG			
DATE: JAN., 2010			
		AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215	



SCALE: AS SHOWN

DR: CW

CH: DMD

ENGR: DPG

DATE: JAN., 2010

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Des Moines, Ore.
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