



**INDIANA-KENTUCKY ELECTRIC CORPORATION**

3932 U. S. Route 23  
P. O. Box 468  
Piketon, Ohio 45661  
740-289-7200

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

January 21, 2021

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

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

Dear Mr. Pigott:

**Re: Indiana-Kentucky Electric Corporation**  
**Clifty Creek Station's 2020 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 2020 CCR annual landfill inspection for OVEC's Kyger 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/CCRCompliance.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". The signature is written in a cursive, slightly slanted style.

Tim Fulk  
Engineer II

TLF:klr



Stantec Consulting Services Inc.  
11687 Lebanon Road, Cincinnati OH 45241-2012

January 15, 2021  
File: 175530019.100.200

Ohio Valley Electric Corporation  
Indiana-Kentucky Electric Corporation  
Attention: Mr. Tim Fulk  
3932 U.S. Route 23  
P.O. Box 468  
Piketon, Ohio 45661

**Reference:** 2020 CCR Rule Inspection  
Annual Landfill Inspection  
Clifty Creek Generating Station  
Madison, Indiana

Dear Mr. Fulk,

Attached is the 2020 annual landfill inspection report for the Clifty Creek Generating Station's Type I Restricted Waste Landfill. The site visit was performed on October 28, 2020. Rainfall was not observed near the site on the day of the inspection and was 0.1 inch total during the three days prior. As a summary:

- In general, the slopes of the active coal combustion residual (CCR) landfill were uniform, mown, and well vegetated.
- Surface water channels were riprap lined with very little maintenance needed to reduce vegetation obscuring visual inspection; flow did not appear to be impeded. Pipes and culverts were actively flowing during the inspection.
- Rock check dams for erosion and sediment control were in place. Continue maintenance as needed for the best management practices. Address erosion features as part of the maintenance activities.
- Signs of slope instability or excessive ponding within the active cells were not noted during the site visit.

Observations and recommendations are detailed in the attached annual landfill inspection report. See the included figure, GPS coordinate table, and photographic log to support and identify the locations of the noted observations.

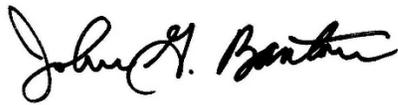
January 15, 2021  
Mr. Tim Fulk  
Page 2 of 2

**Reference:** 2020 CCR Rule Inspection  
Annual Landfill Inspection  
Clifty Creek Generating Station  
Madison, Indiana

Please contact us with any questions or concerns. We appreciate the opportunity to continue to work with the Clifty Creek Generating Station and the Indiana-Kentucky Electric Corporation.

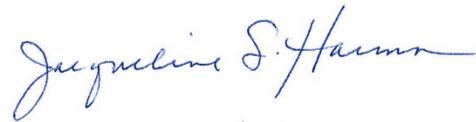
Regards,

**Stantec Consulting Services Inc.**



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John G. Banton P.E.  
Senior Project Engineer  
Phone: (513) 842-8200 ext 8215  
John.Banton@stantec.com



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Jacqueline S. Harmon P.E.  
Project Manager  
Phone: (513) 842-8200 ext 8220  
Jacqueline.Harmon@stantec.com

Attachment: 2020 CCR Rule Inspection Kyger Creek Landfill

c. Kyle Blakley, P.E., Stantec

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2020 CCR Rule Inspection  
Clifty Creek Landfill



Clifty Creek Generating Station  
Madison, Indiana  
Jefferson County

January 15, 2021

Prepared for:

Indiana-Kentucky Electric Corporation  
Piketon, Ohio

Prepared by:

Stantec Consulting Services Inc.  
Cincinnati, Ohio

# Sign-off Sheet

This document entitled 2020 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  
(signature)

**Kyle R. Blakley, P.E.**

Reviewed by Jacqueline S. Harmon  
(signature)

**Jacqueline S. Harmon, P.E.**



1/15/2021

Jacqueline S. Harmon

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## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Overview

January 15, 2021

### 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 28, 2020.

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 28, 2020
Weather:	Mostly cloudy, breezy, 50°F - 62°F
Rainfall over previous 72 hours:	October 25, 2020 – 0.0 inches October 26, 2020 – 0.0 inches October 27, 2020 – 0.1 inches October 28, 2020 – 0.0 inches

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 0.1 inch.

Stantec's team that performed the fieldwork included:

- John G. Banton, P.E., Senior Project Engineer  
25 years of experience in geotechnical exploration and general civil engineering design.
- Kyle R. Blakley, P.E., Senior Project Engineer/Geotechnical Engineer  
11 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 2,761,300 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. Weekly and monthly inspection reports encompassing the 2020 calendar year were provided by plant personnel for review.

## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Description of Clifty Creek Landfill  
January 15, 2021

IDEM routinely inspects the facility on a quarterly basis through the year. The 2020 inspection reports dated November 27, 2019, February 5, 2020, and August 19, 2020 were available in IDEM's online virtual filing cabinet (IDEM, 2020). 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.

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 IA, 1B, and

## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

### Observations

January 15, 2021

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.

### 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

## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

Observations

January 15, 2021

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 28, 2020 beginning with the visible pipes and headwalls at the east end of a single merged channel.

- The channel downstream of the east Conspan headwall is fairly clear of vegetation. Refer to Point 89, Appendix A and Photos 1-3, Appendix B.
- The channel upstream of the east Conspan headwall is fairly clear of vegetation to the next headwalls upstream (near the trailer area).
- 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 90, Appendix A; Photos 4 and 5, 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 at one location (Point 91, Appendix A; Photo 6, Appendix B.) appears to have been sprayed for control but is dense.
- The 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 Type III landfill is nearly buried in channel lining (Point 94, Appendix A)
- An outlet pipe from the truck wash is lower than the invert of the ditch (Point 92, Appendix A; Photo 7, Appendix B)

### 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.

## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

### Recommendations

January 15, 2021

- 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 generally been established.
- Most rock check dams surrounding the landfill appear to be well maintained. Sediment was observed in a rock check dam on the north side of the landfill. (Point 109, Appendix A; Photo 17, Appendix B)
- Erosion rills and/or small animal burrows observed at the eastern toe of the landfill in 2019 have been repaired. (Point 100, Appendix A)
- Exposed CCR was observed on south side near top of landfill. (Point 95, Appendix A; Photo 8, Appendix B)
- A bare area was observed at edge of temporary vegetative cover. (Point 96, Appendix A; Photo 9, Appendix B)
- Active waste placement was ongoing in Cell 1C. Piles of bottom ash, used as chimney drains in the landfill, were visible. (Point 101, Appendix A; Photo 10, Appendix B)
- The temporary cover outslopes of Subphase 1A/1B were consistent with the previous inspections and were generally flatter than and complying with the permitted final cover grades. (Points 102 through 105, Appendix A; Photos 13 and 14, Appendix B)
- The leachate pipe appeared unrestricted and actively flowing. The pipe terminated at a concrete headwall. A flow monitoring apparatus (housed in a plastic barrel) was set at the outlet. (Point 111, Appendix A; Photo 19, Appendix B).
- A drainage channel between Phase 1 and Phase 2, southwest of the west temporary face of the landfill, has been lined with riprap (toe is Point 112, Appendix A; Photo 18, Appendix B)
- Boiler slag has been placed to the western extent of the Phase 2 landfill. (Point 113, Appendix A; Photos 11, 12, and 20, Appendix B)

## 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.

## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

### References

January 15, 2021

### 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 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.

### 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 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 re-establish an internal liner for the pipe.
- Improve drainage from the truck wash pipe outlet into the northern perimeter ditch to prevent sedimentation inside of the pipe.
- Remove chemical (caustic soda) labels from the plastic barrel housing the flow monitoring device and apply label stating actual purpose of barrel.

## 5.0 REFERENCES

Fuller, Mossbarger, Scott & May Engineers, Inc. (FMSM) (2008). Clifty Creek Fly Coal Ash Landfill Construction. Construction Quality Assurance/Quality Control Plan. Coal Ash Landfill, Type I Restricted Waste Landfill. Attachment 21 (Revised). May 13.

## 2020 CCR RULE INSPECTION CLIFTY CREEK LANDFILL

### References

January 15, 2021

Fuller, Mossbarger, Scott & May Engineers, Inc. (FMSM) (2006). Permit Drawings. Indiana-Kentucky Electric Corporation. Clifty Creek Coal Ash Landfill Modification. Jefferson County, Madison Township, Indiana. Prepared for American Electric Power, Columbus, Ohio. November. Cincinnati, Ohio.

Indiana Department of Environmental Management (2020a). Virtual File Cabinet (<https://vfc.idem.in.gov/DocumentSearch.aspx>). Accessed December.

Indiana Department of Environmental Management (2020b). Inspection Summary Letter. IKEC Clifty Generating Station. EPA ID #: IND 085 048 700. SW Program ID: 39-04. Madison, Jefferson County. August 21.

Indiana Department of Environmental Management (2020c). Inspection Summary Letter. IKEC Clifty Generating Station. EPA ID #: IND 085 048 700. SW Program ID: 39-04. Madison, Jefferson County. February 7.

Indiana Department of Environmental Management (2008). "Approval of Major Modification and Renewal of Solid Waste Facility Permit FP 39-04." Letter to Indiana-Kentucky Electric Corporation, April 15, 2008.

Indiana-Kentucky Electric Corporation (2020). "Landfill Site: Inspection Log." Clifty Creek Landfill. January 2020 through September 2020 monthly reports.

Indiana-Kentucky Electric Corporation (2019). "7-Day Inspection Checklist. Clifty Creek Plant. Landfill." Weekly reports for January 3, 2020 to October 21, 2020.

Indiana-Kentucky Electric Corporation (2020). "Clifty Creek Station. Landfill Current Topography." Clifty Creek Landfill As-Built Map. October 7.

Indiana-Kentucky Electric Corporation (2006). "Type I Restricted Waste Landfill Permit Application, Coal Ash Landfill, Clifty Creek Power Plant, Madison, Jefferson County, Indiana, Attachment 22 – Design Report." Prepared by Fuller, Mossbarger, Scott, & May Engineers, Inc. November 2006.

Indiana-Kentucky Electric Corporation (2006). "Type I Restricted Waste Landfill Permit Application, Coal Ash Landfill, Clifty Creek Power Plant, Madison, Jefferson County, Indiana, Attachment 23 – Report of Geotechnical Exploration." Prepared by Fuller, Mossbarger, Scott, & May Engineers, Inc. November 2006.

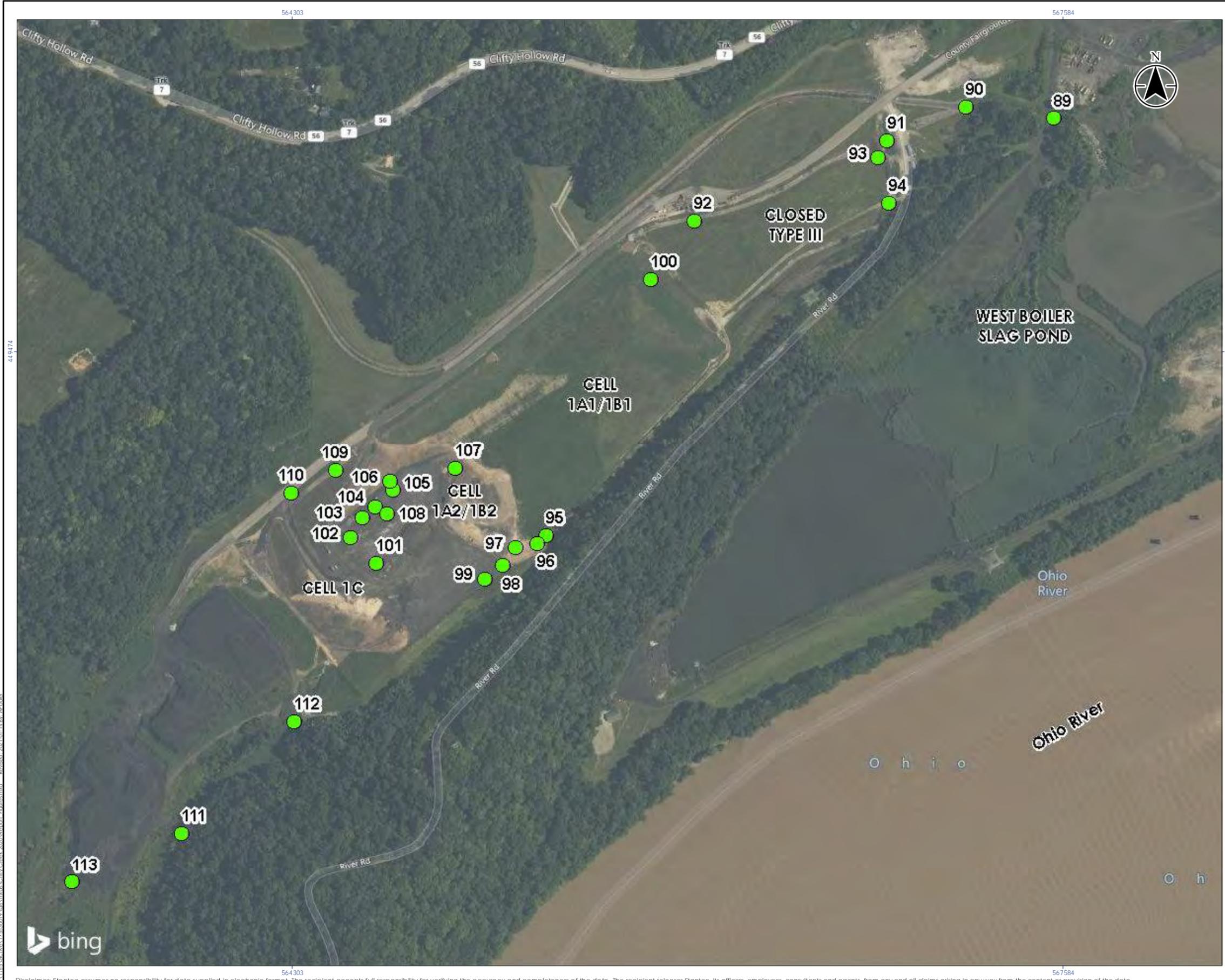
Stantec Consulting Services Inc. (2020a). "Phase 1 Existing Conditions (June 2020)." Indiana-Kentucky Electric Corporation. Clifty Creek Coal Ash Landfill. Drawing no. 30018c-01-econ-2020.dwg.

Stantec Consulting Services Inc. (2020b). "Estimated 5-Year Construction Limits (June 2025)." Indiana-Kentucky Electric Corporation. Clifty Creek Coal Ash Landfill. Drawing no. 30018c-02-5yrcl-2020.dwg.

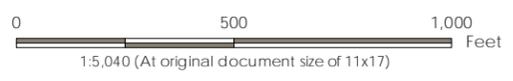
Stantec Consulting Services Inc. (2019). "2019 CCR Rule Inspection, Clifty Creek Landfill (January, 2020)." Indiana-Kentucky Electric Corporation. Clifty Creek Coal Ash Landfill

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 2020-12-15  
 Technical Review by JB on 2020-12-15  
 Independent Review by JSH on 2020-12-15

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

Figure No.: 1  
 Title: 2020 Annual CCR Landfill Inspection

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**Clifty Creek Ash Landfill  
2020 Inspection  
Appendix A**

<b>Point ID</b>	<b>Comment</b>	<b>Latitude, N.</b>	<b>Longitude, W.</b>
89	At east Conspan headwall	38.736861	-85.429847
90	Edge of vegetation in stormwater drainage ditch between access road and West Boiler Slag Pond.	38.736993	-85.431157
91	Vegetation under control in stormwater drainage ditch between access road and landfill.	38.736608	-85.432329
92	Invert of outlet pipe from truck wash is lower than invert of ditch	38.735677	-85.435208
93	Water monitoring instrument at leachate outlet pipes	38.736411	-85.432463
94	Invert of small pipe culvert below access road to Type 3 landfill is below invert of ditch	38.735886	-85.432304
95	Exposed ash near top of landfill	38.732014	-85.437436
96	Bare at edge of temporary vegetative cover near top of landfill	38.731927	-85.437562
97	Edge of temporary vegetative cover adjacent to active area	38.731872	-85.437890
98	Stockpile of clay soil	38.731671	-85.438080
99	Edge of upper fill slope	38.731512	-85.438340
100	Previously noted rills now stabilized	38.734997	-85.435854
101	Bottom ash chimney drain	38.731696	-85.439961
102	Slope shot 1	38.731997	-85.440344
103	Slope shot 2	38.732226	-85.440169
104	Slope shot 3	38.732352	-85.439979
105	Slope shot 4	38.732549	-85.439709
106	South edge of established temporary vegetation	38.732650	-85.439754
107	Top edge of east end of temporary vegetative cover	38.732799	-85.438786
108	Top edge west end of temporary vegetative cover	38.732277	-85.439796
109	Sediment in rock check dam	38.732784	-85.440569
110	Road to active area	38.732515	-85.441225
111	Leachate outlet at headwall with flow monitoring instrument	38.728553	-85.442877
112	Bottom of riprap in southeast landfill groin	38.729856	-85.441184
113	Western extents of boiler slag placement	38.727984	-85.444514

## **APPENDIX B – PHOTOGRAPHIC LOG**



Photo 1

Some dense vegetation growing in stormwater drainage ditch that flows to West Boiler Slag Pond. Photo taken at access road Conspan and looking east from downstream headwall. (Point 89, Appendix A)



Photo 2

Controlled 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 Conspan and looking west (upstream) toward landfill. Ditch is in center of photograph. (Point 89, 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 90, Appendix A)



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 90, Appendix A)



Photo 5

Looking west at uneven gabion fill rock in north stormwater drainage ditch. Condition is unchanged from previous year.



Photo 6

Looking north along channel connecting north and south storm water drainage channels. (Point 91, Appendix A)



Photo 7

Invert of outlet pipe from truck wash rack is lower than invert of ditch. (Point 92, Appendix B)



Photo 8

Exposed ash on south side of landfill near top looking west. (Point 95, Appendix A)



Photo 9

Bare temporary cover on south side of landfill near top looking east. (Point 96, Appendix A)



Photo 10  
Bottom ash chimney drain atop landfill.  
(Point 101, Appendix A)



Photo 11  
Overview of west end of landfill showing  
boiler slag fill.



Photo 12  
Overview of west end of landfill showing  
boiler slag fill.



Photo 13  
Typical view of newly vegetated west face of landfill with repaired rills.



Photo 14  
Typical view of north face of landfill showing second year of maintained vegetative growth.



Photo 15  
Engineer at top of slope (Point 107, Appendix A) and east edge of newly established temporary vegetation.



Photo 16  
View on top of slope (Point 107, Appendix A) looking west showing temporary cover/CCR boundary.



Photo 17  
Sediment in rock check dam on north side of landfill (Point 109, Appendix A)



Photo 18  
Toe of west end of landfill.



Photo 19  
Leachate outfall (Point 111, Appendix A)



Photo 20  
West end of boiler slag fill (Point 113, Appendix A)

**APPENDIX C – REFERENCE DRAWINGS**

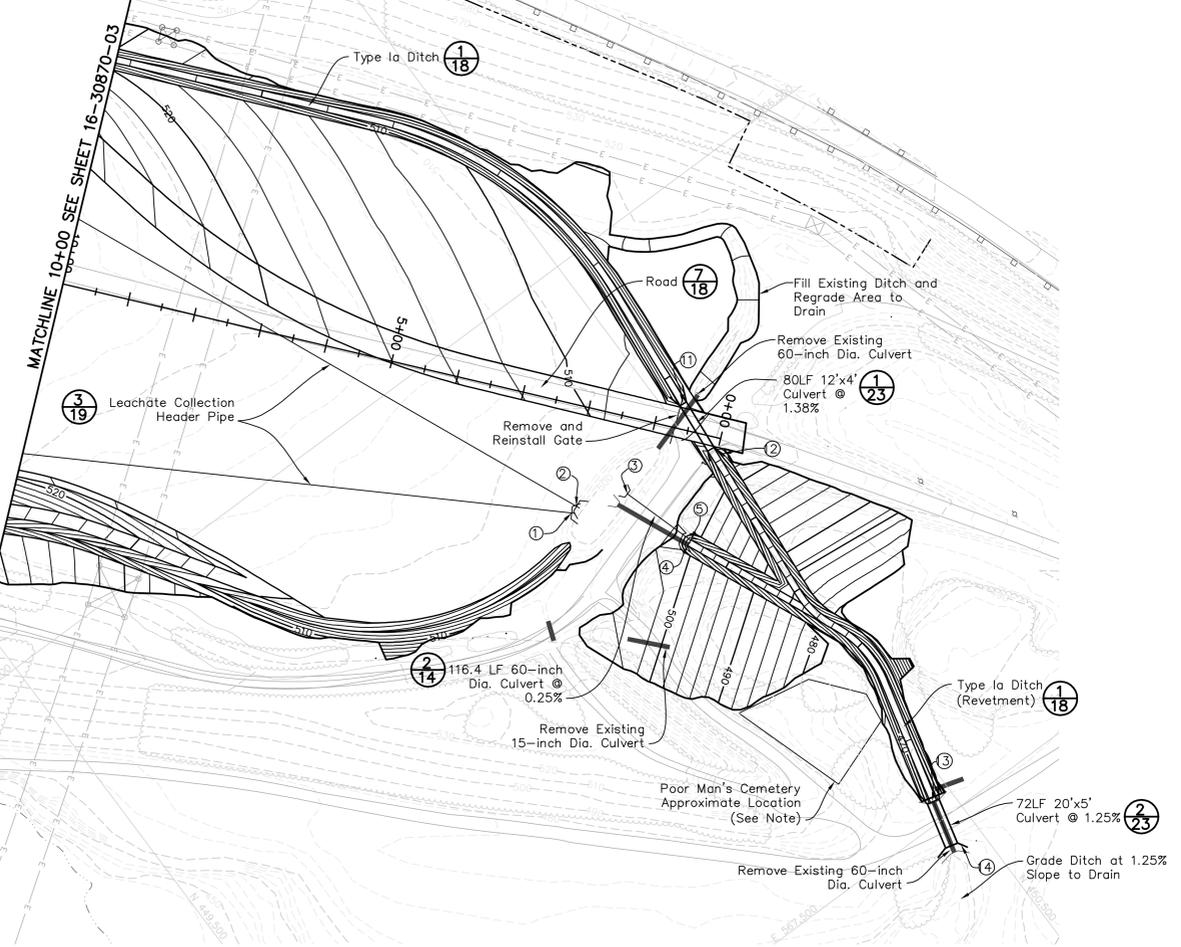
**Notes:**

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.

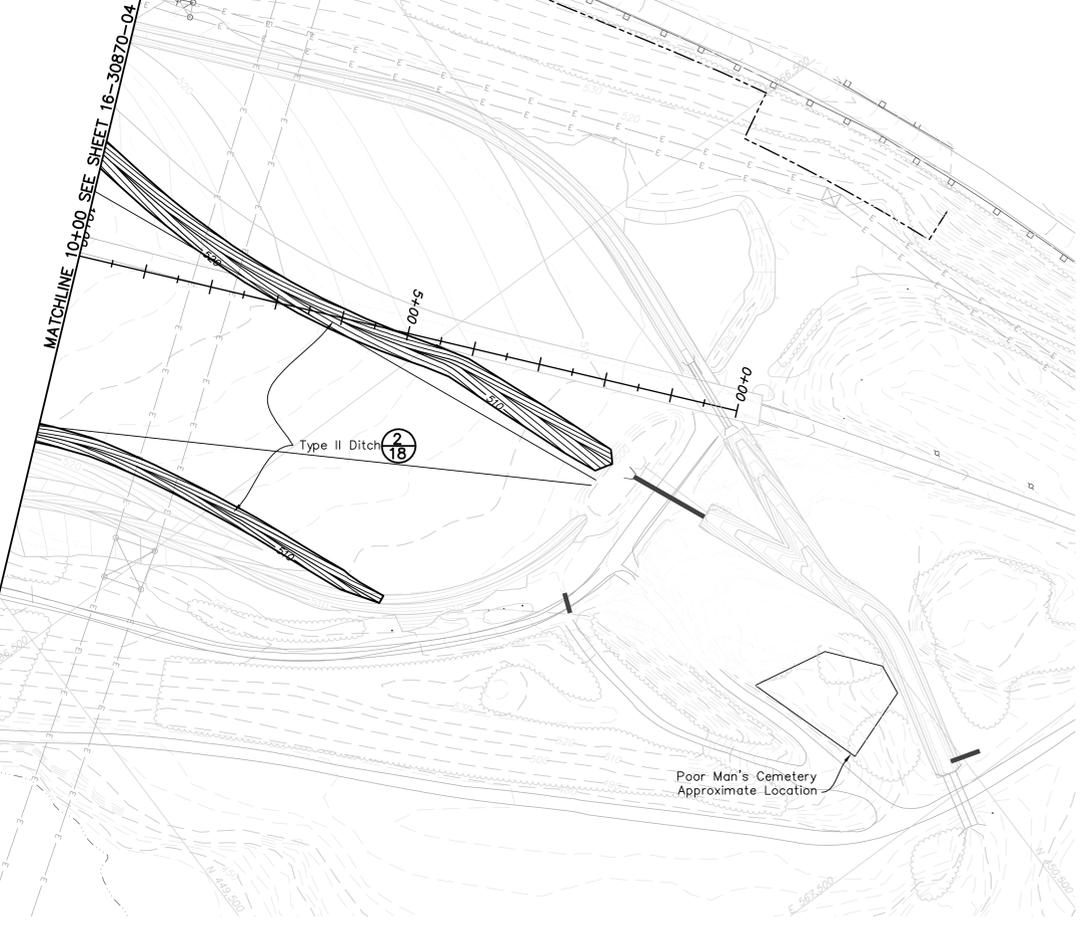
**Legend**

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

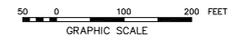
Structures							
Structure ID	Type	Size	Northing (Feet)	Easting (Feet)	Rim Elevation (Feet)	Inlet Invert Elevation (Feet)	Outlet Invert Elevation (Feet)
1	Headwall	16-inch	450,297.83	566,806.52	-	-	502.49'
2	Headwall	16-inch	450,309.73	566,803.32	-	-	502.32'
3	Headwall	60-inch	450,380.92	566,832.97	-	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 x4' Inlet	450,527.17	566,774.52	-	499.38'	-
12	Culvert	12 x4' Outlet	450,519.57	566,854.16	-	-	498.28'
13	Culvert	20 x5' Inlet	450,470.28	567,470.12	-	466.90'	-
14	Culvert	20 x5' Outlet	450,452.61	567,539.92	-	-	466.00'



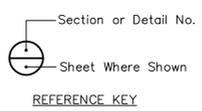
INITIAL CONSTRUCTION



FINAL GRADE



DATE	NO.	DESCRIPTION	APPR.
REVISIONS			
<p>THIS DRAWING IS THE PROPERTY OF THE AMERICAN ELECTRIC POWER SERVICE CORP. AND IS LOANED UPON CONDITION THAT IT IS NOT TO BE REPRODUCED, OR COPIED, IN WHOLE OR IN PART, OR USED FOR FURNISHING INFORMATION TO ANY PERSON WITHOUT THE WRITTEN CONSENT OF THE AEP SERVICE CORP., OR FOR ANY PURPOSE DETRIMENTAL TO THEIR INTEREST, AND IS TO BE RETURNED UPON REQUEST.</p>			
INDIANA - KENTUCKY ELECTRIC CO. <b>CLIFTY CREEK PLANT</b> MADISON INDIANA COAL ASH LANDFILL SUBPHASE 1A INITIAL CONSTRUCTION AND FINAL GRADE			
DWG. NO. 16-30870-05			
CIVIL ENGINEERING DIVISION			
SCALE:	APPROVED BY		
DR:			
CH:			
ARCH:			
ENGR:			
DATE:	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215		



SCALE: AS SHOWN

DR: CW

CH: DMD

ENGR: DPG

DATE: JAN., 2010

Stantec Consulting Services Inc.  
1001 Avenue H  
Des Moines, Ore.  
50314



- Notes:
1. Cell 1-B-1 is constructed above cell 1-A-1. Contours in green note area that has been covered with cover soil and grass is well established. Brown contours are active fill areas
  2. Cell 1-B-2 is being constructed above cell 1-A-2.
  3. Cell 1D is to be constructed above Cell 1C.
  4. Cell 1E is to be constructed above 1D and part of 1-B-2.
  5. Phase 2 construction - Laying under drain slag layer in foot print of Phase 2A.

Phase 2 Grading Limits



Cell 1A1/1B1

Cell 1A2/1B2

Cell 1C/1D

Cell 2A

Clifty Creek Station

Landfill Current  
Topography

Engineer: D. Hunt      Drawn: Rick Kempker  
Date: 10/7/2020



**Note 1:**

- Sediment traps and the ditchline across the east face are functioning properly, and are in good shape. Ponding is minimal after rain events.

**Note 2:**

- Runoff collection ditch on the South side of cell 1A1 - 1A2 is in good shape.

**Note 3:**

- Chimney drains in cell 1C were clear of foreign material. Some water was present from them being used by vacuum trucks but was less than 4 inches deep at the time.

**Note 4:**

- Grass areas marked by the number 4 are growing well. Landfill is scheduled to be mowed next week.

**Note 5:**

- This check dam is working well.

**Note 6:**

- Phase 2 under drain layer (boiler slag) is complete.

**Note 7:**

- The hillsides in the footprint of Phase 2A are cleared of vegetation.

**Note 8:**

- Open slope faces of the landfill are being covered with 6" of temporary cover soil. This is almost complete and will be ready for seed soon.

**Notes:**

1. Cell 1-B-1 is constructed above cell 1-A-1. Contours in green note area that has been covered with cover soil and grass is well established. Brown contours are active fill areas

2. Cell 1-B-2 is being constructed above cell 1-A-2.

3. Cell 1D is to be constructed above Cell 1C.

4. Cell 1E is to be constructed above 1D and part of 1-B-2.

5. Phase 2 construction - Laying under drain slag layer in footprint of Phase 2A.

Phase 2 Grading Limits



Clifty Creek Station

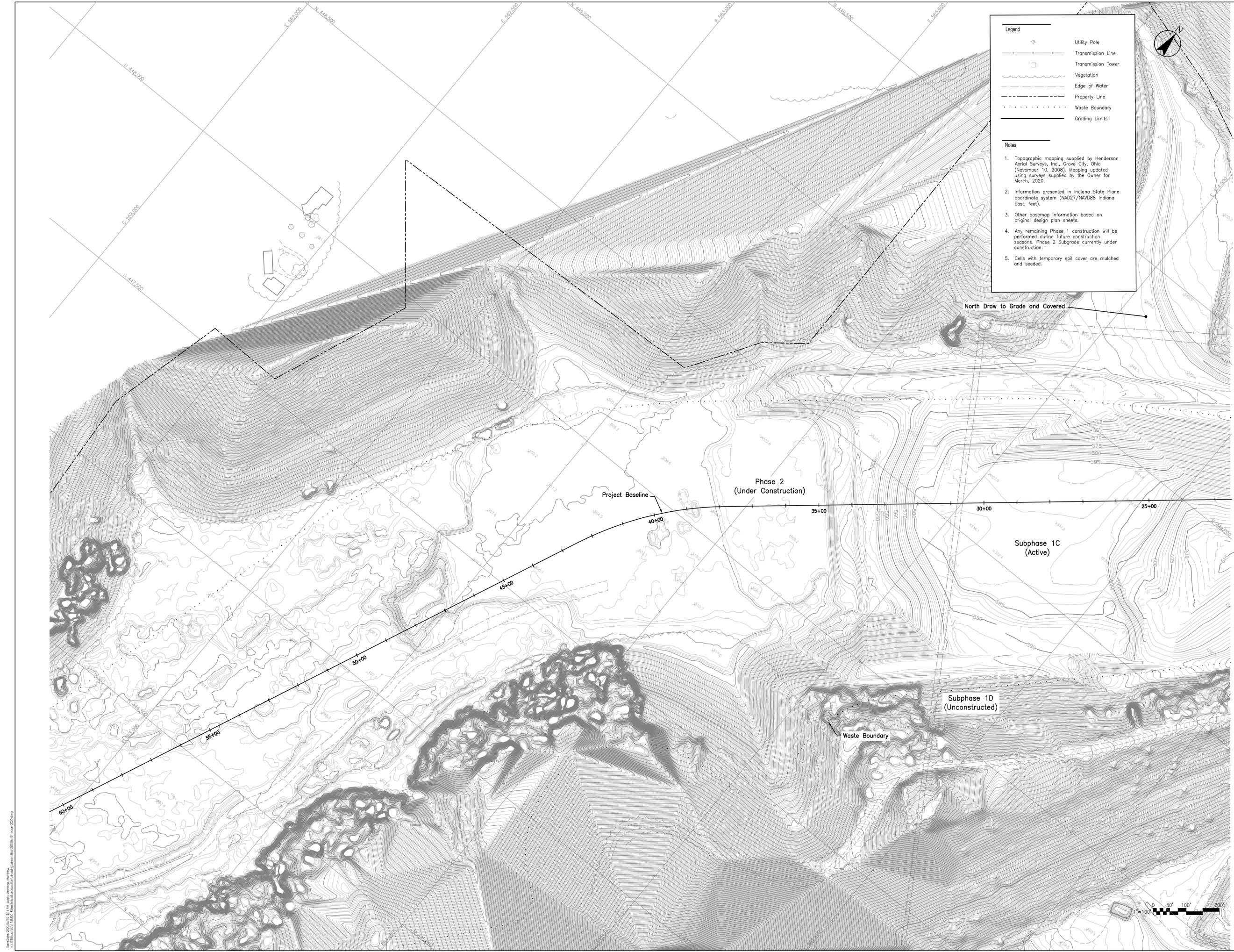
Landfill Current Inspection

Engineer: D. Hunt

Drawn: D. Hunt

Date: 09/21/2020





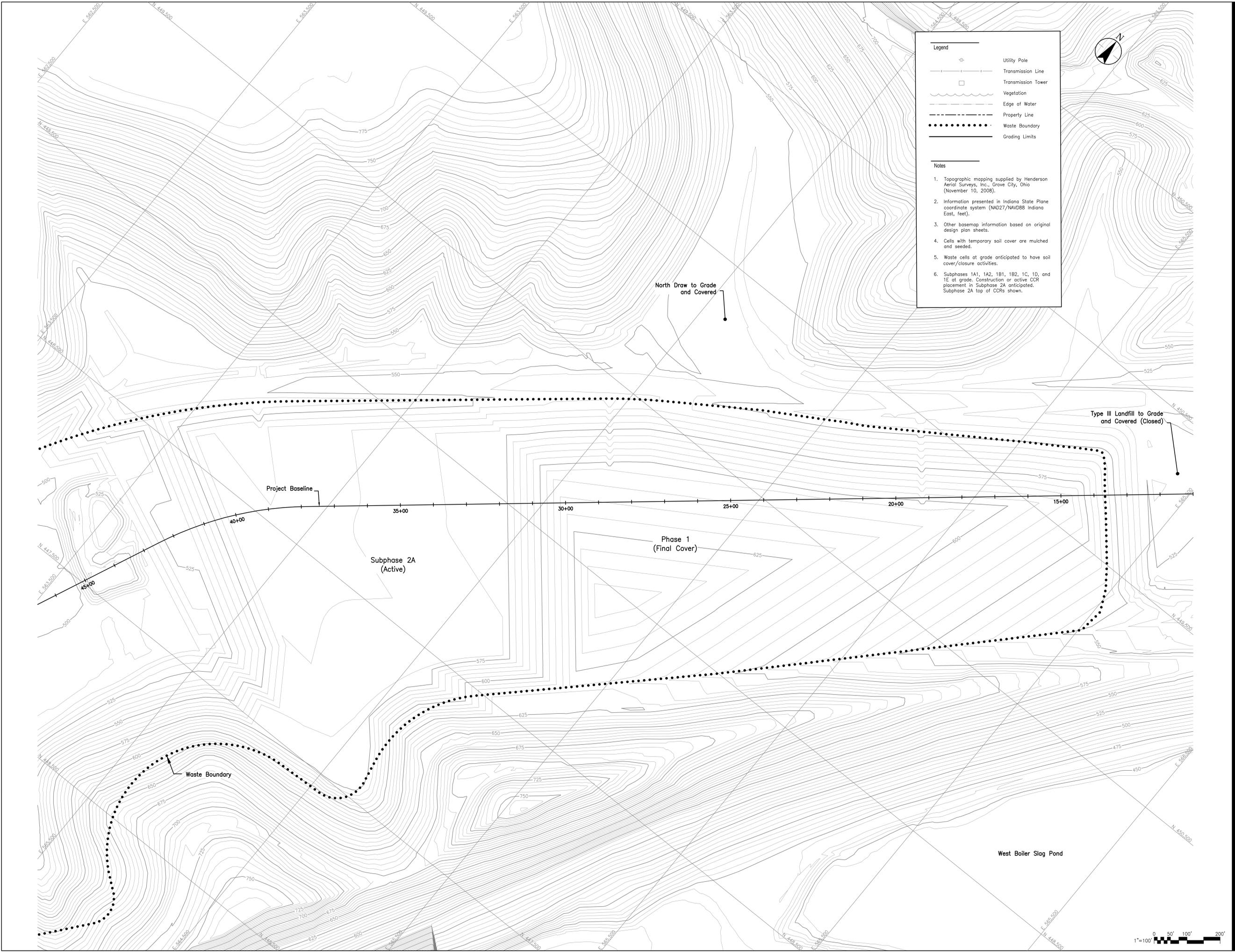
**Legend**

- Utility Pole
- Transmission Line
- Transmission Tower
- Vegetation
- Edge of Water
- Property Line
- Waste Boundary
- Grading Limits

**Notes**

1. Topographic mapping supplied by Henderson Aerial Surveys, Inc., Grove City, Ohio (November 10, 2008). Mapping updated using surveys supplied by the Owner for March, 2020.
2. Information presented in Indiana State Plane coordinate system (NAD27/NAVD88 Indiana East, feet).
3. Other basemap information based on original design plan sheets.
4. Any remaining Phase 1 construction will be performed during future construction seasons. Phase 2 Subgrade currently under construction.
5. Cells with temporary soil cover are mulched and seeded.

Sheet: 2023/06/10 3:19 PM Log: Jamming, Matthew  
17530018 (Internal Production/Utility/Plan/2500) 02-25-2024



**Legend**

- Utility Pole
- Transmission Line
- Transmission Tower
- Vegetation
- Edge of Water
- Property Line
- Waste Boundary
- Grading Limits

**Notes**

1. Topographic mapping supplied by Henderson Aerial Surveys, Inc., Grove City, Ohio (November 10, 2008).
2. Information presented in Indiana State Plane coordinate system (NAD27/NAVD88 Indiana East, feet).
3. Other basemap information based on original design plan sheets.
4. Cells with temporary soil cover are mulched and seeded.
5. Waste cells at grade anticipated to have soil cover/closure activities.
6. Subphases 1A1, 1A2, 1B1, 1B2, 1C, 1D, and 1E at grade. Construction or active CCR placement in Subphase 2A anticipated. Subphase 2A top of CCRs shown.

