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

WRITER'S DIRECT DIAL NO:
740-289-7259

February 1, 2024

Delivered Electronically

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

Re: Indiana-Kentucky Electric Corporation
Clifty Creek Station's 2023 Annual Landfill
Inspection Posting Notification

Dear Mr. Rockensuess:

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 2023 CCR Annual Landfill Inspection for IKEC's Clifty Creek Station. The inspection report has been placed in the facility's operating record as well as 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) 289-7259.

Sincerely,

Jeremy Galloway
Environmental Specialist

JDG:tlf

2023 CCR Rule – Landfill
Clifty Creek Landfill Inspection

Clifty Creek Generating Station
Madison, Indiana
Jefferson County

January 19, 2024

Prepared for:

Indiana-Kentucky Electric Corporation
Piketon, Ohio

Prepared by:

Stantec Consulting Services Inc.
Cincinnati, Ohio

Sign-off Sheet

This document entitled 2023 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 **Nicholas Meador, E.I.T.**

Nick Meador

(signature)

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

Kyle R. Blakley

(signature)

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

Jacqueline S. Harmon

(signature)

JACQUELINE S. HARMON
REGISTERED
No. 10911138
STATE OF
INDIANA
PROFESSIONAL ENGINEER

Jacqueline S. Harmon

1/19/2024

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LIST OF APPENDICES

1.0 OVERVIEW

Stantec Consulting Services Inc. (Stantec) performed the annual landfill inspection of the existing coal combustion residuals (CCR) landfill at the Clifty Creek Generating Station in Madison, Indiana on October 26, 2023.

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 (RWS) 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, 2023
Weather:	Overcast, 60ºF - 70ºF
Rainfall over previous 72 hours:	October 23, 2023 – 0.00 inch October 24, 2023 – 0.00 inch October 25, 2023 – 0.00 inch October 26, 2023 – 0.00 inch

Precipitation data was collected by the National Centers for Environmental Information (NCEI), a service provided by the National Oceanic and Atmospheric Administration (NOAA), for the Madison Sewage Plant, Indiana (USC00125237). Precipitation during the 72-hour period prior to the site visit was 0.00 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
  28 years of experience in geotechnical engineering, including pump stations, levees, and CCR storage facility design, closure, and operation.
- Kyle R. Blakley, P.E., Senior Project Engineer/Geotechnical Engineer
  14 years of geotechnical engineering experience for supervision of geotechnical field explorations, design of dams, landslide remediation, and CCR storage facility design, closure, and operation.
- Nicholas Meador, EIT, Geotechnical Engineer EIT
  1 year of geotechnical engineering experience for supervision of geotechnical field explorations, design of dams and bridges.

The estimated volume of CCRs contained in the landfill is 2,916,012 cubic yards as of October 27, 2023.

IDEM regulations require monthly inspections of the landfill facility, which are performed by plant personnel. Inspections are being performed by plant personnel according to the CCR Rule at least once every seven days. Weekly reports performed between January 5 and October 26, 2023 and monthly reports for January through September 2023 were provided for review (IKEC 2023a and 2023b). The reports indicated minor issues were observed, such as development of erosion rills, maintenance of check dams, and reseeding of bare areas. Subsequent reports indicate the issues were addressed regularly following identification. Weekly and monthly inspection reports also tracked the progress of construction in Phase 1D of the Type 1 landfill and the minor landfill permit modification for construction of the sediment and leachate ponds.

IDEM is scheduled to inspect the facility on a routine/quarterly basis. The 2023 inspection reports dated January 10, June 14, and October 25 were available in IDEM's online virtual filing cabinet (IDEM, 2023a through 2023d). The plant also provides annual drawing submittals to IDEM, showing existing and estimated five-year conditions (Stantec, 2023a and 2023b).

Fieldwork was coordinated with Daniel Hunt, Clifty Creek Station's landfill manager. 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. Jeremy Galloway and Zachary Hammond of Ohio Valley Electric Corporation's (OVEC) Environmental Affairs group accompanied Stantec's personnel during the inspection. Observations were briefly discussed with onsite personnel during and after completion of the field activities.

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 OVEC. Clifty Creek Station's six units began producing electricity in 1955 and have a total generating capacity of 1,304 megawatts (IKEC, 2016).

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 restricted waste 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 included:

- 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, which historically directed flow eastward from part of Phase 1 to the West Boiler Slag Pond (WBSP) and the remainder flowed westward to the Landfill Runoff Collection Pond (LRCP),
- A contact and non-contact surface water management system, including sedimentation ponds, multiple sediment traps, drainage channels, and chimney drains that segregate 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.

See Appendix A for a station overview. Two ponds that have been historically associated with the landfill are:

- West Boiler Slag Pond (WBSP) – a permanent pond that accepted sluiced boiler slag, which was periodically dredged, and the material transported to the landfill for beneficial reuse. The pond also accepted most of the leachate from Subphases 1A and 1B, as well as surface water from the eastern side of the landfill.

- Leachate Runoff Collection Pond (LRCP) – a permanent pond at the southwestern end of the landfill that accepted the remainder of the leachate and surface water from Subphases 1A, 1B, 1C, and the area between Phase I and the pond.

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 portions of 1C were constructed and certified for waste by late 2012.

At the time of this annual inspection, the active 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. 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.

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 preconstruction meeting for Subphase 1D at the Clifty Creek Plant on August 28, 2018, and a second preconstruction meeting for Phase 2 on October 9, 2019. Phase 2 construction includes structural fill placement to create the bottom grades of the cell. IDEM attended a third preconstruction meeting on March 17, 2022, to include Phase 3 construction, allowing boiler slag underdrain placement. Construction of the Subphase 1D structural fill, subgrade, liner, and protective cover were completed by June 28, 2023. Subphase 1D was approved to accept waste by IDEM on December 8, 2023.

Structural fill placement for Phase 2A subgrade is in progress. The clearing of the hillsides in the footprint of Phase 2A was completed in February 2020. The Phase 2A underdrain layer (boiler slag) was completed in May 2020.

In June 2021, IKEC requested authorization under Indiana's Regional General Permit for initiation of a northern ditch to reroute noncontact stormwater around the WBSP and directing it to a National Pollutant Discharge Elimination System (NPDES) permitted stormwater outfall, reducing flows to the WBSP. Appendix C includes a reference drawing for the northern ditch (Stantec, 2021b).

In July 2021, IKEC requested a minor permit modification for the Type I RWS landfill and inactive Type III RWS landfill. The purpose was to manage anticipated plant flows and process water streams to meet new federal effluent guidelines. The minor modification allowed construction of two leachate collection ponds and two sediment basins at the Type I landfill. One leachate collection pond and one sediment basin were constructed on the Type III portion of the landfill (northeast ponds) and are permanent units at the facility, reducing flows to the WBSP. The other leachate collection pond and sediment basin were constructed within the boundaries of the Type I landfill (southwest ponds) near the LRCP and are temporary, reducing flows to the LRCP. The southwest ponds will be removed when the Type I landfill is developed to the landfill's permitted boundaries. IDEM approved IKEC's minor permit modification in May 2022. Construction of the two leachate collection ponds and two sediment basins was completed in 2023.

Long-term plans require reducing flows to the WBSP and LRCP (through diversion channels and lined pond construction), decommissioning and repurposing of the existing WBSP, closure of the LRCP, and modifications necessary to continue disposal of solids in the active landfill. These plans have been completed or are currently under construction at the time of this report. Appendices A and C include figures showing the recent aerial conditions and the proposed five-year conditions.

3.0 OBSERVATIONS

The following sections present observations made during the site visit within the active Type I footprint and including the associated surface drainage features, newly constructed leachate ponds and sediment basins, and remaining closed Type 3 landfill area. Observations identify maintenance items but also may include photograph and slope locations and items of interest. Refer to Appendix A for figures and observation points along with the photographs and descriptions in Appendix B. Where pertinent, nearby construction activities are noted. Slopes noted were estimated using a rangefinder on a handheld GPS unit.

3.1 SURFACE CHANNELS, STORMWATER/SEDIMENT BASINS, AND LEACHATE PONDS

Four riprap-lined surface water drainage channels are constructed east of the Type I active landfill. Two channels, one north of the paved haul road and one nearest the natural ridge (Devil's Backbone) to the south, convey flow from the surrounding watershed. These two channels have been rerouted to the northern stormwater ditch (Appendix C), bypassing the WBSP and flowing to a NPDES-permitted outfall.

The two drainage channels towards the middle (south of the paved haul road) are intended to manage stormwater flow once final cover is placed in Phase I. The two middle channels have been shortened to allow construction of the northeast sediment basin. The remaining channels flow eastward into the collection basin at the limits of the closed portion of the Type III landfill. A culvert connects the basin to the northern stormwater ditch, bypassing the WBSP.

This section includes observations made on October 26, 2023, beginning with the stormwater channel connecting the landfill to the WBSP, the new northern stormwater ditch, the northeast sediment basin and leachate pond, and the southwest sediment basin and leachate pond.

- The stormwater drainage channel from the landfill to the WBSP appears abandoned with its flows redirected to the northern stormwater ditch and the new northeast sediment basin and leachate collection pond. The culverts from the east end of the Type III landfill have been removed and backfilled. The slopes have been mulched and seeded. Some dense vegetation obscures the channel east towards the WBSP. No flow was observed in this channel. (Point 1, Appendix A; Photos 1 and 2, Appendix B)

- A new stormwater drainage channel has been constructed to the south of the existing drainage channel and Conspan that crosses the haul road. This connects the southern final cover stormwater channel to the northern stormwater ditch. (Point 1, Appendix A; Photos 3 and 4, Appendix B)

- Stormwater flows from the two final cover stormwater channels and the northeast sediment basin are collected in a riprap-lined basin at the eastern edge of the Type III landfill prior to flowing to the northern stormwater ditch. (Photos 5 and 6, Appendix B)

- The northeast sediment basin and northeast leachate pond have been constructed within the Type III landfill area east of the active landfill. Riprap lines both basins. Erosion or an excavation trench was observed on the south side of the northeast leachate pond. (Points 4 (leachate pond), 10 and 11 (sediment basin), Appendix A; Photos 10, 11 (leachate pond), and 15, 16 (sediment basin), Appendix B)

- Heavy vegetation was noted within the southern final cover stormwater channel. (Point 2, Appendix A; Photos 7 and 8, Appendix B)

- A dip in the access road allowed access to the Type III landfill. Erosion and accumulated sediment were observed. (Point 3, Appendix A; Photos 8-9, Appendix B)

- A plastic standpipe was located west of the northeast leachate pond. Water was observed within the standpipe. (Point 5, Appendix A; Photo 12, Appendix B)

- Heavy vegetation, exposed soil channel edges, and failed silt fence were observed in the northern final cover stormwater channel. (Point 6 and 7, Appendix A; Photos 13-14, Appendix B)

- An outlet pipe from the truck wash shows sediment buildup, erosion around the headwall, and a low pipe invert. (Point 8, Appendix A; Photo 17, Appendix B)

- An emergency spillway has been constructed along the south side of the northeast sediment basin. It connects to the existing final cover stormwater channel. This channel received new riprap during construction. Heavy vegetation was located in the southern final cover stormwater channel. (Points 10, 12, and 13, Appendix A; Photos 21-24, Appendix B)

- The southwest sediment basin and southwest leachate pond were constructed within the Phase 3 footprint of the Type I landfill. Riprap has been placed to construct lining of the sediment basin and leachate pond. (Point 14 (leachate pond) and 16 (sediment basin), Appendix A; Photos 25 (leachate pond) and 26 (sediment basin), Appendix B)

- A small amount of standing water was observed within the temporary cover area northeast of the southwest leachate pond. (Point 15, Attachment A; Photo 27, Attachment B)

3.2 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, are vegetated, or are mulched and seeded. The slopes are relatively uniform.

- Structural fill to create the liner subgrade was being placed in Subphase 2A. (Photo 28, Appendix B)

- Subphase 1D has been constructed and is waiting for approval from IDEM to place CCRs. (Photo 29, Appendix B)

- Subphases 1C and 1B are near final CCR grades and have temporary cover placed. Boundaries of temporary cover were noted during the inspection (Points 18,19, 21, 28, 29, and 30, Appendix A; Photos 30 and 35, Appendix B).

- A wet, soft area was noted at the toe of slope of the Type I landfill at the southeast corner. A soil stockpile was also located within the wet area. (Point 9, Appendix A; Photo 19, Appendix B)

- CCRs were stockpiled within Subphase 1C. (Point 20, Appendix A; Photo 35, Appendix B)

- Woody vegetation was noted near the southeast corner of the landfill. (Point 22, Appendix A)

- A bare spot with erosion was located in Subphase 1C. (Point 24, Appendix A; Photo 31, Appendix B)

- Minor ruts and erosion rills were identified during the inspection (Points 27 and 31, Appendix A; Photo 34, Appendix B)

- A small depression was identified along the eastern slope at Point 33 (Appendix A).
- The sediment trap/check dam near the haul road at the northwest corner of the Phase I landfill was full of sediment. (Point 32, Appendix A; Photos 36 and 37, Appendix B)
- Two areas at the toe of the north slope of the Phase I landfill appeared to have exposed CCR at the ground surface. (Points 34 and 35, Appendix A)

4.0 RECOMMENDATIONS

The following recommendations are offered for the Clifty Creek Station's Type I 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).
- Several ponds and basins have been recently constructed. As these features are new to the site, monitor the recently completed sediment basins and leachate ponds for settlement, erosion, and surface water/leachate drainage. Contact an engineer if anomalies are observed that may indicate that the channels or ponds are not functioning as intended.

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.
- 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, maintained, and regraded if needed to reduce ponding.
- Monitor the noted depressions, erosion rills, and areas of exposed ash and regrade or address the areas as needed.
- Monitor the soft, wet area at the toe of slope at the southeast corner of the Type I landfill for signs of seepage or slope instability. This area should be regraded to drain.

5.0 REFERENCES

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

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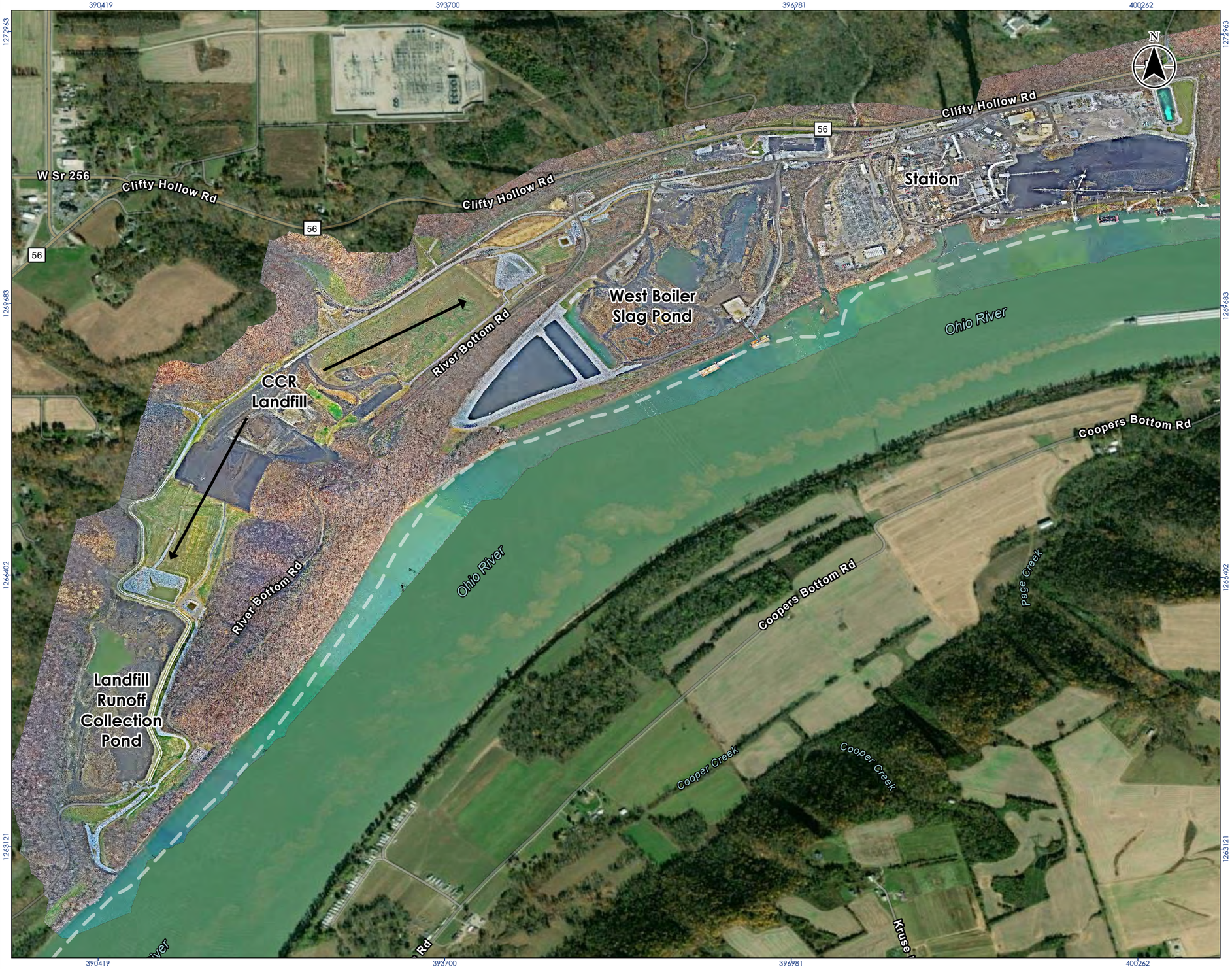
APPENDIX A

Figures



OVEC/IKEC
Ohio Valley Electric Corporation / Indiana-Kentucky Electric Corporation

0 1,000 2,000 Feet
1:14,400 (At original document size of 11x17)

Notes
1. Coordinate System: Latitude/Longitude NAD83
2. Base features - ESRI
3. Ortho-Imagery represents conditions from November 2023.

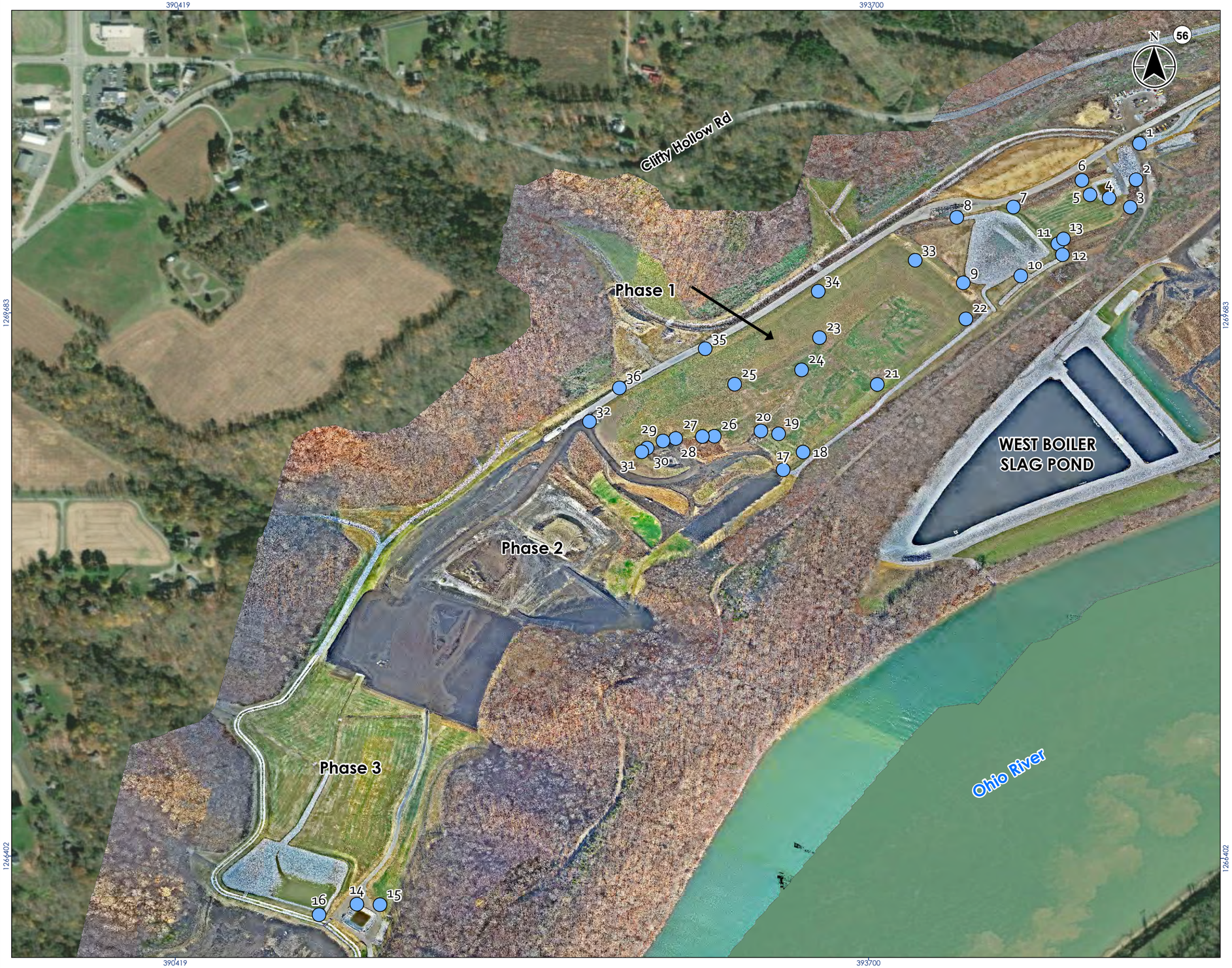
Project Location
Clifty Creek Station
Jefferson County, IN

175532014
Prepared by ANP on 2023-12-21
Technical Review by DP on 2023-12-21
Independent Review by JSH on 2023-12-21

Client/Project
Indiana - Kentucky Electric Corporation
Clifty Creek Station

Figure No.
1

Title
2023 Annual CCR Facility Inspections - Station Overview



OVEC/IKEC
Ohio Valley Electric Corporation / Indiana-Kentucky Electric Corporation

Legend

- **Inspection Locations 2023**

0 200 400 Feet
1:7,200 (At original document size of 11x17)

Notes

1. Coordinate System: Latitude/Longitude NAD83
2. Base features - ESRI
3. Ortho-Imagery represents conditions from November 2023.

Project Location
Clifty Creek Station
Jefferson County, IN

175532014
Prepared by ANP on 2023-12-21
Technical Review by DP on 2023-12-21
Independent Review by JSH on 2023-12-21

Client/Project
Indiana - Kentucky Electric Corporation
CCR Landfill

Figure No.
2

Title
2023 Annual CCR Landfill Inspection

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GPS Data Points **Clifty Creek Landfill**
2023 Annual Inspection **Jefferson County, Indiana**

Point ID No.	Comment	Latitude	Longitude
1	top of new headwall	38.73689945	-85.43218178
2	riprap/vegetation boundary in southwest channel	38.73629969	-85.43223757
3	dip and sediment near access road	38.73584334	-85.43233335
4	south edge of new leachate pond	38.73599529	-85.43268407
5	plastic standpipe west of leachate pond	38.73604936	-85.43300145
6	silt fence repair	38.73628811	-85.43313532
7	end of southwest ditch south of road	38.73584656	-85.43427265
8	truck wash culvert blocked	38.73567494	-85.43521236
9	wet soft toe southeast corner Type 1 landfill	38.73458938	-85.43510445
10	new sedimentation pond emergency spillway	38.73470372	-85.43414976
11	new sedimentation pond outlet headwall	38.73523811	-85.43353500
12	riprap/vegetation boundary southern ditch	38.73505556	-85.43345825
13	riprap/vegetation boundary southeast sedimentation outlet	38.73531721	-85.43344096
14	southwest leachate pond inlet top/slope	38.72428320	-85.44516286
15	standing water, grade to drain	38.72427524	-85.44477946
16	southwest sedimentation pond dike above outlet pipe	38.72410816	-85.44579061
17	top of new gravel road	38.73148836	-85.43809150
18	boundary seed/straw on top 1	38.73178193	-85.43776106
19	boundary seed/straw on top 2	38.73208482	-85.43816794
20	stockpile on top of Phase 1	38.73213187	-85.43846103
21	boundary between grass cover	38.73290348	-85.43653033
22	woody vegetation	38.73399057	-85.43506107
23	end of silt fence	38.73367998	-85.43748887
24	bare spot with small depression	38.73314540	-85.43778651
25	end of silt fence with ruts	38.73290756	-85.43889611
26	edge of temporary cover	38.73204426	-85.43923409
27	1 ft x 1 ft erosion rill 15 ft long (est.)	38.73204053	-85.43943199
28	edge of temporary cover	38.73200758	-85.43987411
29	edge of temporary cover	38.73196661	-85.44008458
30	edge of temporary cover	38.73184894	-85.44034749
31	erosion rill	38.73178669	-85.44043732
32	sediment trap northwest corner of Phase 1	38.73228827	-85.44130480
33	small depression, east slope	38.73496322	-85.43590168
34	exposed ash	38.73444989	-85.43751005
35	exposed ash	38.73349647	-85.43938523
36	undefined southwest ditch, north of road	38.73284640	-85.44080813

APPENDIX B

Photographic Log

Photo 1
Mulched and seeded area adjacent to the stormwater channel from the landfill to WBSP. Culverts were removed. The photo was taken from the end of channel, looking south. (Approx. 80 feet to the southeast of Point 1, Appendix A)

Photo 2
Stormwater drainage channel from the landfill to WBSP. Dense vegetation to the east (far left) within channel. The photo was taken on the channel edge looking east down the channel. (Approx. 80 feet to the southeast of Point 1, Appendix A)

Photo 3

Looking north at stormwater drainage ditch confluence crossing haul road and the eastern access road from the landfill. New stormwater drainage ditch constructed for southern stormwater flows. (Point 1, Appendix A)

Photo 4

Looking east at new northern stormwater ditch, flowing north of the WBSP. New gabion fill rock has been placed in channel. (Point 1, Appendix A)

Photo 5

Looking southwest towards the landfill at the new stormwater basin. Riprap lines the new the basin. Type III landfill footprint in the background. (Approx. 65 feet to the west of Point 1, Appendix A)

Photo 6

Looking west towards the landfill at the new stormwater basin. Riprap lines the new the basin. Type III landfill footprint in the background. (Approx. 65 feet to the west of Point 1, Appendix A)

Photo 7
New stormwater basin where the new riprap meets the existing southern final cover stormwater channel (Devils Backbone side). (Point 2, Appendix A)

Photo 8
A crossing for the final cover stormwater channel for access to the eastern side of Type III landfill. Accumulated sediment and limited stormwater management. (Point 3, Appendix A)

Photo 9
Erosion and accumulated sediment at the crossing to the Type III landfill. (Point 3, Appendix A)

Photo 10
Looking northeast at northeast leachate pond. Erosion/excavation observed south of the pond rim. (Point 4, Appendix A)

Photo 11
Looking northwest at northeast leachate pond. Topsoil stockpile in background. (Point 4, Appendix A)

Photo 12

Plastic standpipe located west of the northeast leachate pond. (Point 5, Appendix A)

Photo 13
Final cover stormwater channel north of the northeast leachate pond. Heavy vegetation in channel and failed silt fence (looking west). (Point 6, Appendix A)

Photo 14
Looking west at final cover stormwater ditch located northwest of northeast leachate pond. Heavy vegetation in ditch. (Near Point 7, Appendix A)

Photo 15
Newly constructed northeast sediment basin looking west at northeast side of the Type I landfill. (Point 7, Appendix A)

Photo 16
Newly constructed northeast sediment basin looking south at southeast side of the Type I landfill. (Point 7, Appendix A)

Photo 17
Drainage pipe south of truck wash. Sediment buildup, erosion around the headwall, and low pipe invert. (Point 8, Appendix A)

Photo 18
Silt fence located east of the Type I landfill footprint and west of the northeast sediment basin. (Close to Point 7, Appendix A)

Photo 19
Wet, soft area and temporary soil stockpile located at the toe of slope of the Type I landfill at the southeast corner. (Point 9, Appendix A)

Photo 20
Devil's Backbone access road improvements. Photo taken near southeast corner of Type I landfill, looking southwest.

Photo 21
Northeast sediment basin emergency spillway toward southern final cover stormwater channel. (Point 10, Appendix A)

Photo 22
Looking northwest, downstream outlet headwall from the northeast sediment basin. (Point 11, Appendix A)

Photo 23
Southern final cover stormwater channel boundary between new riprap and vegetation. Northeast sediment basin emergency spillway in the background. (Point 12, Appendix A)

Photo 24
Heavy vegetation in southern final cover stormwater channel. (Point 13, Appendix A)

Photo 25
Looking south at the southwest leachate pond located in Phase 3 landfill footprint. (Point 14, Appendix A)

Photo 26
Looking west at southwest sediment basin. (Point 16, Appendix A)

Photo 27
Looking northeast at temporary cover adjacent to the stormwater drainage channel east of the southwest leachate pond. Standing water was observed. (Point 15, Appendix A)

Photo 28
Construction stockpiles in Phase 2, looking north. Phase 2A structural fill placement in background. Temporary cover mulched and seeded in Phase 3.

Photo 29
Subphase 1D with boiler slag temporary cover (prior to waste placement), looking south.

Photo 30
Crest of Subphases 1B and 1C. Temporary cover straw and seed at locations near grade. (Typical of Points 18,19, 21, 28, 29, and 30, Appendix A)

Photo 31
Bare spot with erosion on top of Type I landfill. (Point 24, Appendix A)

Photo 32

Northern vegetated slope of Subphases 1A, 1B, and 1C, looking west. Paved haul road on right. (Point 23, Appendix A)

Photo 33
Northern vegetated slope of Subphases 1A, 1B, and 1C, looking east. Sediment control sock in center. (Point 25, Appendix A)

Photo 34
Typical minor ruts and erosion rills on northern slope of Type I landfill. (Points 27 and 31, Appendix A)

Photo 35
CCRs in active Phase 1 footprint. (Point 20, Appendix A)

Photo 36

Looking northeast at check dam located on northwest side of Type I landfill. (Point 32, Appendix A)

Photo 37
Looking southeast at check dam located on northwest side of Type I landfill. (Point 32, Appendix A)

Photo 38

Newly constructed stormwater channel located on the north side of paved haul road. The ditch is not well defined in this area. (Point 36, Appendix A)

Photo 39
Northern vegetated slope of Type I landfill, looking southwest. (Point 34, Appendix A)

APPENDIX C

Reference Drawings

Stantec (2023a)

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). AN AERIAL SURVEY OF THE SOUTHWEST LANDFILL AREA PERFORMED MAY 2022 WAS PROVIDED BY R. B. JERGENS. THE APRIL 2023 QUARTERLY LANDFILL SURVEY WAS PROVIDED BY IKEC AND RIVERSIDE CONTRACTING & EXCAVATING, LLC. 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. PHASES 2 AND 3 SUBGRADE CURRENTLY UNDER CONSTRUCTION.
3. CELLS WITH TEMPORARY SOIL COVER ARE MULCHED AND SEEDED.
4. MINOR LANDFILL PERMIT MODIFICATION TO THE LEACHATE AND STORMWATER MANAGEMENT ARE SHOWN IN THE PHASE 3 RWS TYPE 1 FOOTPRINT AND THE RWS TYPE III FOOTPRINT.

Stantec

Client/Project
INDIANA-KENTUCKY ELECTRIC CORPORATION
ANNUAL CONTOUR UPDATE AS REQUIRED BY 329 IAC 10-20-24
CLIFTY CREEK COAL ASH LANDFILL (ID 39-04)
MADISON, JEFFERSON COUNTY, INDIANA

Title
PHASES 1, 2, AND 3 EXISTING CONDITIONS
(JUNE 2023)

Permit-Seal

Project Number: 175532014

Drawing No. 1

Revision	Sheet
-	1 of 3

Stantec (2023b)

LEGEND

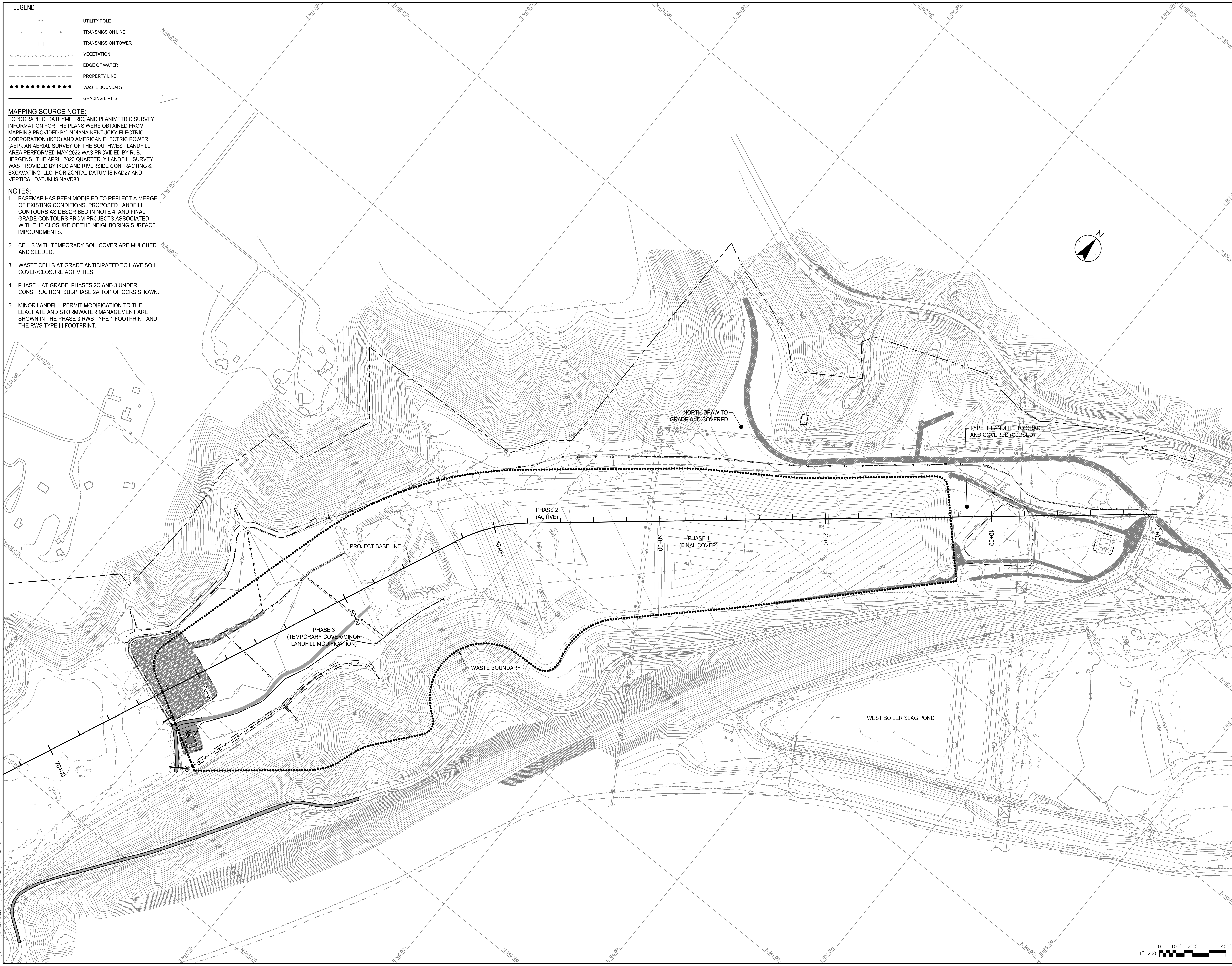
- UTILITY POLE
- TRANSMISSION LINE
- TRANSMISSION TOWER
- VEGETATION
- EDGE OF WATER
- PROPERTY LINE
- WASTE BOUNDARY
- GRADING LIMITS

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). AN AERIAL SURVEY OF THE SOUTHWEST LANDFILL AREA PERFORMED MAY 2022 WAS PROVIDED BY R. B. JERGENS. THE APRIL 2023 QUARTERLY LANDFILL SURVEY WAS PROVIDED BY IKEC AND RIVERSIDE CONTRACTING & EXCAVATING, LLC. HORIZONTAL DATUM IS NAD27 AND VERTICAL DATUM IS NAVD88.

NOTES:

1. BASEMAP HAS BEEN MODIFIED TO REFLECT A MERGE OF EXISTING CONDITIONS, PROPOSED LANDFILL CONTOURS AS DESCRIBED IN NOTE 4, AND FINAL GRADE CONTOURS FROM PROJECTS ASSOCIATED WITH THE CLOSURE OF THE NEIGHBORING SURFACE IMPOUNDMENTS.
2. CELLS WITH TEMPORARY SOIL COVER ARE MULCHED AND SEEDED.
3. WASTE CELLS AT GRADE ANTICIPATED TO HAVE SOIL COVER/CLOSURE ACTIVITIES.
4. PHASE 1 AT GRADE. PHASES 2C AND 3 UNDER CONSTRUCTION. SUBPHASE 2A TOP OF CCRS SHOWN.
5. MINOR LANDFILL PERMIT MODIFICATION TO THE LEACHATE AND STORMWATER MANAGEMENT ARE SHOWN IN THE PHASE 3 RWS TYPE 1 FOOTPRINT AND THE RWS TYPE III FOOTPRINT.



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Client/Project

INDIANA-KENTUCKY ELECTRIC CORPORATION

ANNUAL CONTOUR UPDATE AS REQUIRED BY 329 IAC 10-20-24
CLIFTY CREEK COAL ASH LANDFILL (ID 39-04)
MADISON, JEFFERSON COUNTY, INDIANA

Title

ESTIMATED 5-YEAR CONSTRUCTION LIMITS (JUNE 2028)

Permit-Seal

JACQUELINE S. HARMON REGISTERED No. 10911138 STATE OF INDIANA PROFESSIONAL ENGINEER

6/8/2023

Project Number: 175532014

File Name: 32010c-02-5yrcl-2023.dwg	RRP	PSS	JSH	23.06.08
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Drawing No. 2

Revision	Sheet
-	2 of 2

DWG. NO. 16–30870–05

Notes:

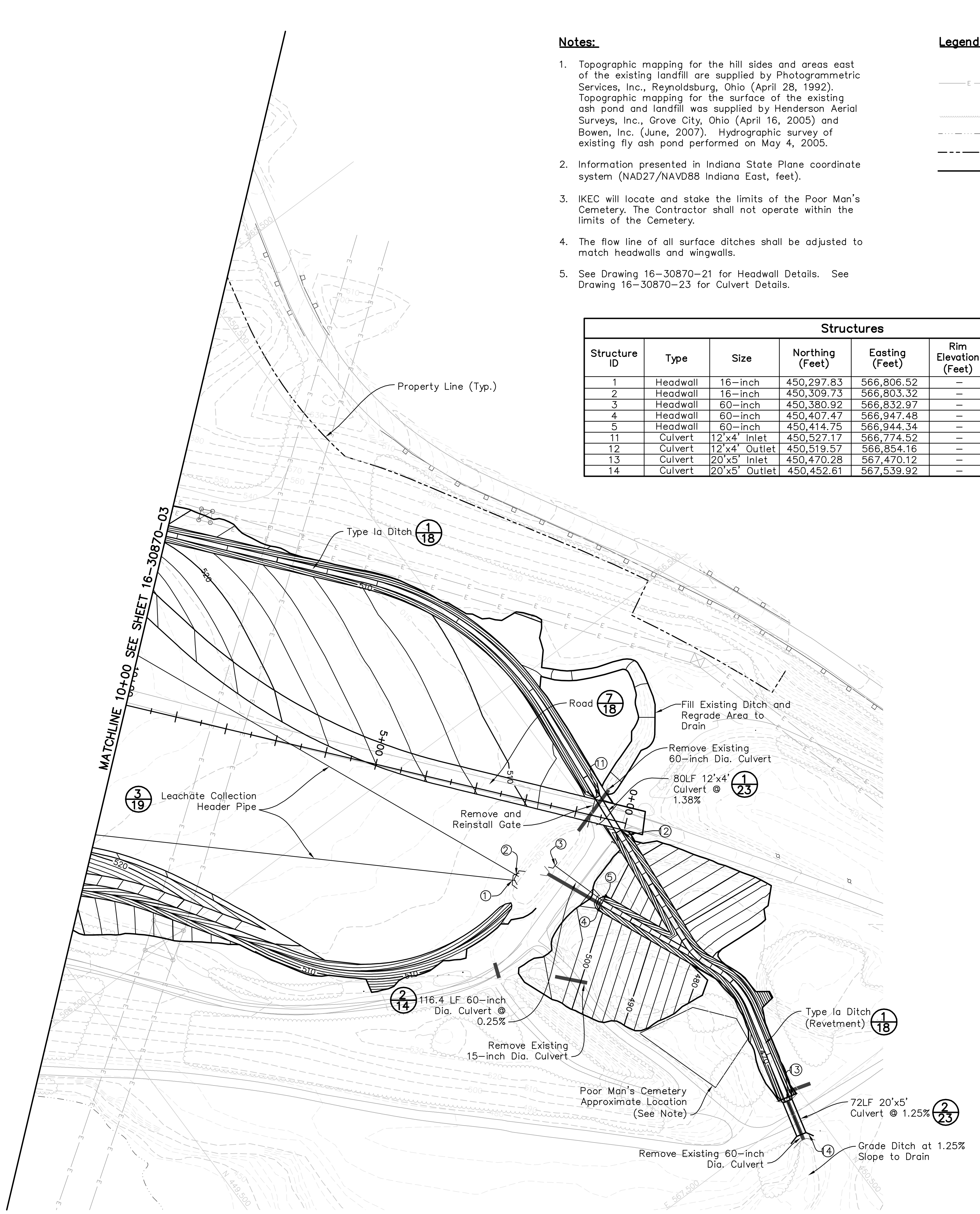
1. Topographic mapping for the hill sides and areas east of the existing landfill are supplied by Photogrammetric Services, Inc., Reynoldsburg, Ohio (April 28, 1992). Topographic mapping for the surface of the existing ash pond and landfill was supplied by Henderson Aerial Surveys, Inc., Grove City, 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

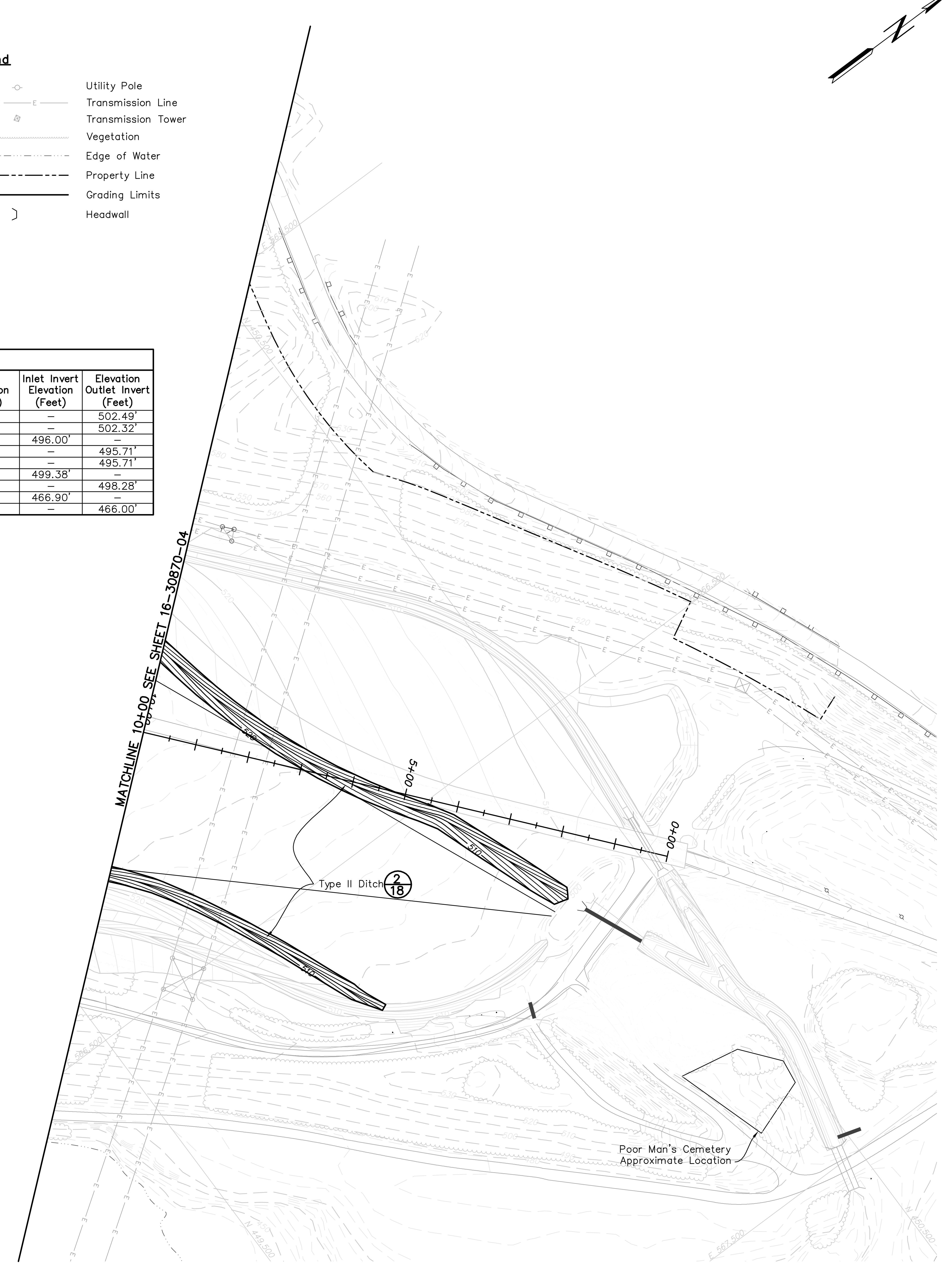
Structures

Structure ID	Type	Size	Northing (Feet)	Easting (Feet)	Rim Elevation (Feet)	Inlet Invert Elevation (Feet)	Elevation Outlet Invert (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

50 0 100 200 FEET
GRAPHIC SCALE



FINAL GRADE

50 0 100 200 FEET
GRAPHIC SCALE

Section or Detail No.
Sheet Where Shown
REFERENCE KEY

NOTES

REFERENCE DRAWINGS

DATE	NO.	DESCRIPTION	APPD.
5/08	A	ISSUED FOR CONSTRUCTION	

REVISIONS

INDIANA – KENTUCKY ELECTRIC CO.

CLIFTY CREEK PLANT

MADISON INDIANA

COAL ASH LANDFILL SUBPHASE 1A INITIAL CONSTRUCTION AND FINAL GRADE

DWG. NO. 16–30870–05

SCALE: | CIVIL ENGINEERING DIVISION
DR:
CH:
ARCH:
ENGR:
DATE:
APPROVED BY

SCALE: AS SHOWN
DR: CW
CH: DMD
ENGR: DPG
DATE: JAN., 2010

Stantec

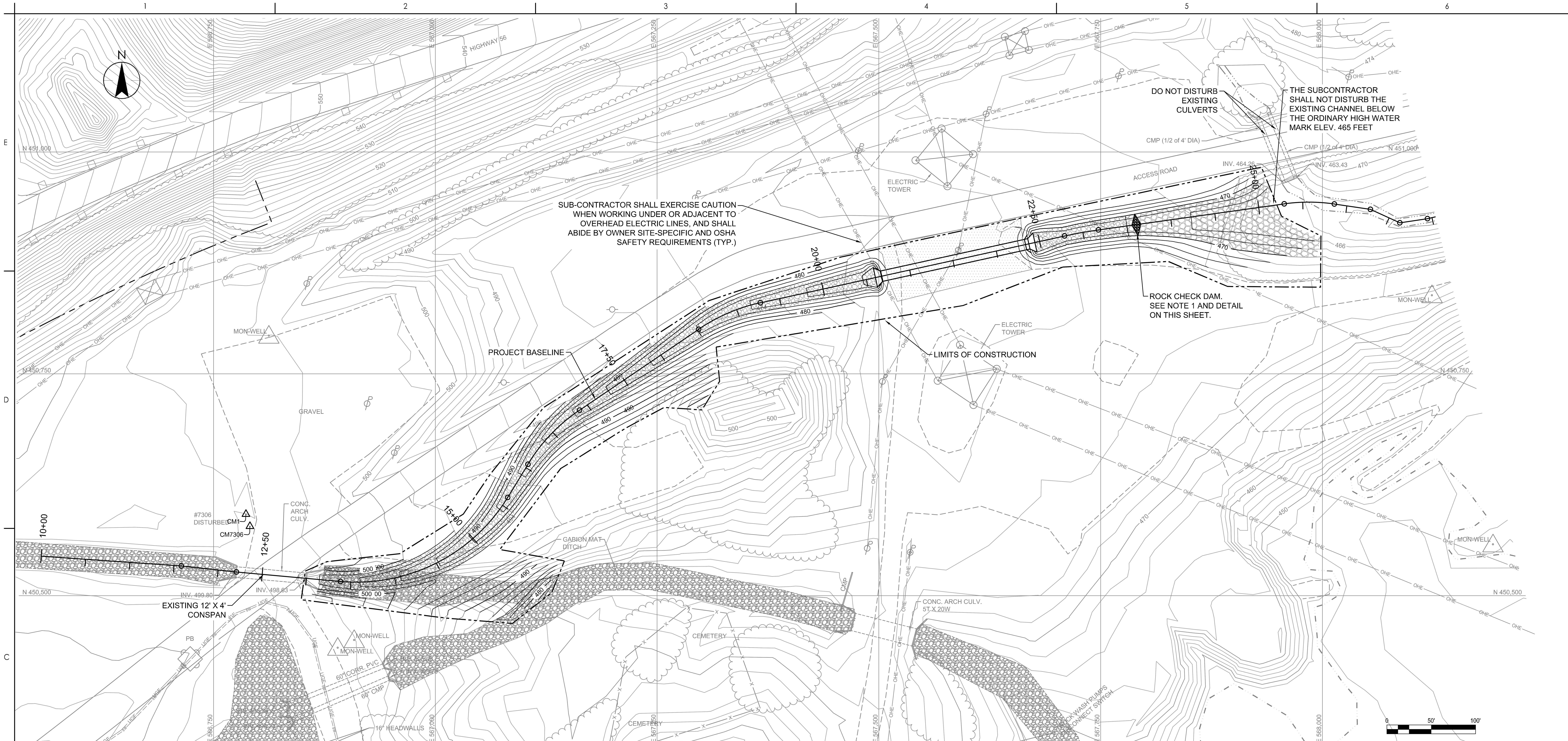
Stantec Consulting Services Inc.
11687 Lebanon Rd.
Cincinnati, Ohio
45241
513-842-8200
www.stantec.com

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

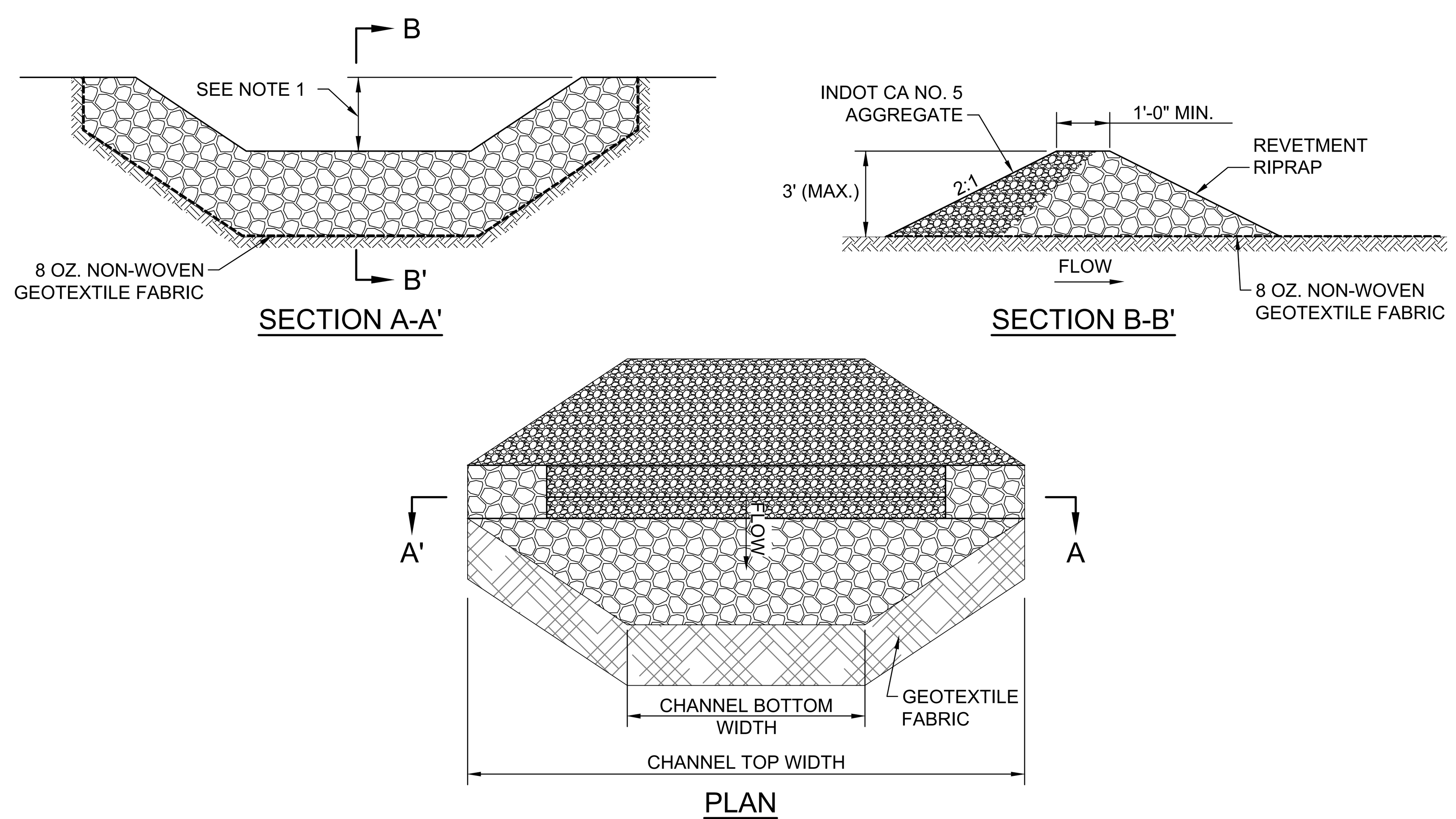
PLOT DATE: 01/11/2010 USER: WITHERS, CHEYENNE
U:\1744\174438101\CIVIL\CONSTRUCTION\DRAWING\CONSTRUCTION_1-10\38101C-105-1AICFG.DWG

Stantec (2021b)



LEGEND

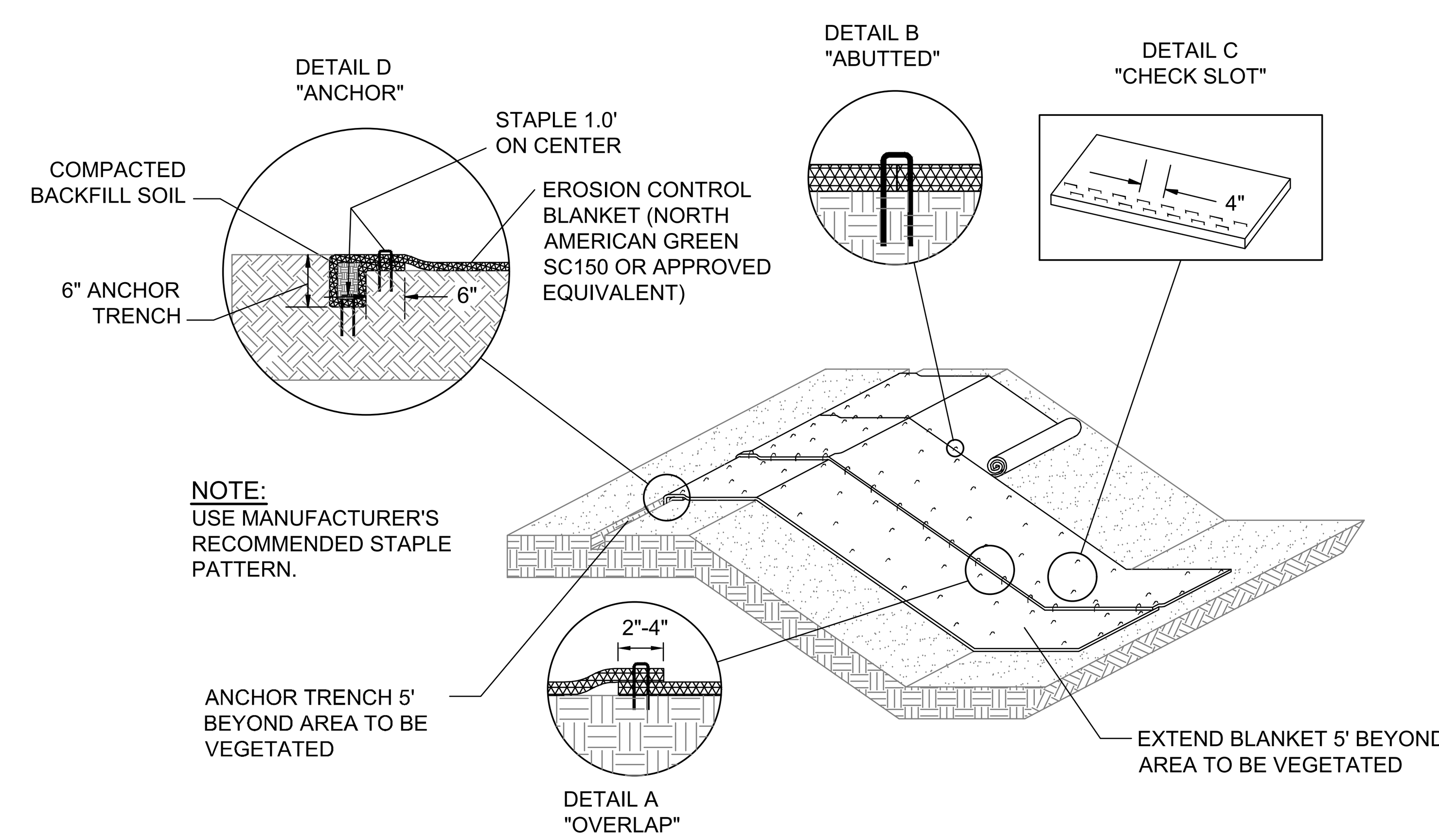
- ELECTRIC TOWER
- PB ELECTRIC PULLBOX
- TREE/SHRUB
- ELECTRIC POLE
- POWER POLE
- CB STORM CATCH BASIN
- OHE OVERHEAD ELECTRIC
- UGE UNDERGROUND ELECTRIC
- X FENCE
- PROPERTY LINE
- RAILROAD TRACKS
- ST STORM SEWER
- EDGE OF WATER
- TREELINE
- LIMITS OF CONSTRUCTION
- 450 EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- GROUNDWATER MONITORING WELL
- CONTROL MONUMENT
- ACCESS ROAD
- GABION MATTRESS
- RIPRAP
- PROJECT BASELINE
- 470 PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- ROCK CHECK DAM



NOTES:

1. MIDDLE OF ROCK CHECK DAM SHALL BE A MINIMUM OF 9-INCHES LOWER THAN SIDES SO FLOW WILL NOT BYPASS TRAP OR ERODE BANKS.
2. SPACE ROCK CHECK SO THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE OVERFLOW WEIR OF THE DOWNSTREAM DAM.
3. EXTEND GEOTEXTILE FABRIC 3'-0" BEYOND DOWNSTREAM TOE OF ROCK CHECK DAM TO PREVENT SCOUR.
4. INSTALL AND MAINTAIN ROCK CHECK DAMS IN ACCORDANCE WITH THE INDIANA STORM WATER QUALITY MANUAL, CURRENT EDITION.
5. REMOVE ROCK CHECK DAMS AFTER CONSTRUCTION IS COMPLETED AND DISTURBED AREAS ARE STABILIZED.

DETAIL - ROCK CHECK DAM
SCALE: NTS



NOTE:
USE MANUFACTURER'S RECOMMENDED STAPLE PATTERN.

DETAIL - EROSION CONTROL BLANKET
SCALE: NTS

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Consultant

Notes

NOTE:
1. INSTALL ROCK CHECK DAMS ALONG THE PROPOSED DITCH ALIGNMENT AS NEEDED DURING CONSTRUCTION TO CONTROL SEDIMENT-LADEN RUNOFF FROM DISTURBED AREAS.
2. INSTALL EROSION CONTROL BLANKETS TO PROTECT SEEDED AREAS ON SLOPES 4H:1V AND STEEPER. SEE DETAIL ON THIS SHEET.

Revision		By	Appd	YYYY.MM.DD
B	ISSUED FOR BID	PSS	MCV	2021.04.23
A	ISSUED FOR BID	PSS	MCV	2021.03.26

Issued		By	Appd	YYYY.MM.DD
B	ISSUED FOR BID	PSS	MCV	2021.04.23
A	ISSUED FOR BID	PSS	MCV	2021.03.26

File Name: 06_ND-202-EPSC	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
	MSJ	PSS	JSH	2021.04.16

Permit/Seal

Client/Project Logo

OVEC IKEC
Ohio Valley Electric Corporation / Indiana-Kentucky Electric Corporation

Client/Project
OHIO VALLEY ELECTRIC CORPORATION
INDIANA-KENTUCKY ELECTRIC CORPORATION

NORTHERN DITCH RE-ROUTE
CLIFTY CREEK STATION

MADISON TOWNSHIP, JEFFERSON COUNTY, INDIANA

Title
PROPOSED DITCH EXTENSION
AND FINAL GRADE PLAN

Project No. 175539026
Scale 1"=50'
Revision B
Sheet 6 of 10
Drawing No. ND-202-EPSC