



**OHIO VALLEY ELECTRIC CORPORATION**

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

WRITER'S DIRECT DIAL NO:  
740-289-7267

January 12, 2017

Mr. Craig Butler  
Director  
Ohio Environmental Protection Agency  
50 West Town Street, Suite 700  
P.O. Box 1049  
Columbus, OH 43216-1049

Dear Mr. Butler:

**Re: Ohio Valley Electric Corporation  
Kyger Creek Station's 2016 Annual Landfill Inspection**

As required by 40 CFR 257.106(g)(7), the Ohio Valley Electric Corporation (OVEC) is providing notification to the State Director of the Ohio Environmental Protection Agency that a qualified professional engineer has completed the initial 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 publically 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) 289-7267.

Sincerely,

A handwritten signature in black ink that reads "Gabriel S. Coriell". The signature is written in a cursive style with a large initial "G".

Gabriel S. Coriell  
Environmental Services Manager

GSC:klr



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

January 11, 2017

File: 175534017, 200.209

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

**Reference: 2016 CCR Rule Inspection  
Annual Landfill Inspection  
Kyger Creek Generating Station  
Cheshire, Ohio**

Dear Mr. Coriell,

Attached is the 2016 annual landfill inspection for the Kyger Creek Generating Station's Class III Residual Solid Waste Landfill. The site visit was performed on December 1, 2016. Approximately 1.24 inches of rainfall were received by the site in the 72 hours prior to the visit. As a summary:

- In general, the exterior slopes of the active coal combustion residual (CCR) landfill were uniform and well vegetated. Active waste slopes were uniform without signs of visual slope instability on the day of the site visit.
- The erosion and sediment control measures such as rock check dams and sediment traps were clear of excess sediment and active. Continue maintenance as needed for the best management practices. Address erosion features as part of the maintenance activities.
- A scarp on the northwestern exterior slope of the West Sedimentation Pond should be characterized and addressed as needed.
- Maintain the vegetation near the Interim Leachate Collection Pond and the termination of the Phase 1 underdrain system to allow visual observation of this area. Characterize and address the seepage as part of operations. This area is contained within the waste footprint with surface water controls in place downstream.
- Development of an operations and maintenance manual is recommended if not in place to maintain consistency of landfill operations during its life cycle.



January 11, 2017  
Mr. Gabriel Coriell  
Page 2 of 2

**Reference: 2016 CCR Rule Inspection  
Annual Landfill Inspection  
Kyger Creek Generating Station  
Cheshire, Ohio**

Observations and recommendations are detailed in the associated annual landfill inspection report. A figure is included with GPS location points to assist in addressing the observations. A photographic log is also provided.

Please contact us with any questions or concerns. We appreciate the opportunity to continue to work with the Kyger Creek Generating Station and the Ohio Valley Electric Corporation.

Regards,

**Stantec Consulting Services Inc.**

A handwritten signature in blue ink that reads "Jacqueline S. Harmon".

---

Jacqueline S. Harmon, P.E.  
Senior Associate  
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Fax: (513) 842-8250  
Jacqueline.Harmon@stantec.com

A handwritten signature in black ink that reads "Stan A. Harris".

---

Stan A. Harris, P.E.  
Senior Principal  
Phone: (513) 842-8200 ext 8211  
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Stan.Harris@stantec.com

Attachment: 2016 Annual Landfill Inspection Report

c. Jim Swindler Jr.

jsh v:\1755\active\175534017\geotechnical\report\2016 annual landfill inspection\final submittal 20170111\175534017 let 20170111.docx

**2016 CCR Rule Inspection  
Kyger Creek Landfill**



Kyger Creek Generating Station  
Cheshire, Ohio  
Gallia County



Prepared for:  
Ohio Valley Electric Corporation  
Indiana-Kentucky Electric  
Corporation  
Pikeville, Ohio

Prepared by:  
Stantec Consulting Services Inc.  
Cincinnati, Ohio

January 11, 2017

# Sign-off Sheet

This document entitled 2016 CCR Rule Inspection Kyger Creek Landfill was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Ohio Valley Electric Corporation (OVEC) (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 *Jacqueline S. Harmon*  
(signature)

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

Reviewed by *J.R.S.*  
(signature)

**James R. Swindler Jr., P.E.**

Reviewed by *Stan A. Harris*  
(Signature)

**Stan A. Harris, P.E.**



## Table of Contents

<b>1.0</b>	<b>OVERVIEW .....</b>	<b>3</b>
<b>2.0</b>	<b>DESCRIPTION OF KYGER CREEK LANDFILL .....</b>	<b>4</b>
2.1	KYGER CREEK LANDFILL – PHASE 1 .....	5
2.2	KYGER CREEK LANDFILL – PHASES 2 THROUGH 5 .....	5
<b>3.0</b>	<b>OBSERVATIONS .....</b>	<b>6</b>
3.1	KYGER CREEK LANDFILL – PHASE 1 .....	6
3.2	WEST SEDIMENTATION POND .....	7
3.3	EAST SEDIMENTATION POND .....	8
3.4	LEACHATE COLLECTION POND .....	8
3.5	PERIMETER OF KYGER CREEK LANDFILL .....	8
<b>4.0</b>	<b>RECOMMENDATIONS.....</b>	<b>9</b>
<b>5.0</b>	<b>REFERENCES.....</b>	<b>10</b>

## LIST OF APPENDICES

[APPENDIX A FIGURE 1 - PLAN VIEW](#)

[APPENDIX B PHOTOGRAPHIC LOG](#)

[APPENDIX C REFERENCE DRAWINGS](#)

## 2016 CCR RULE INSPECTION KYGER CREEK LANDFILL

Overview  
January 11, 2017

### 1.0 OVERVIEW

Stantec Consulting Services Inc. (Stantec) performed the annual landfill inspection of the existing coal combustion residuals (CCRs) landfill at the Kyger Creek Generating Station in Cheshire, Ohio on December 1, 2016.

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 residual solid waste facility (270834, RSWL018814) under the regulations of the Gallia County General Health District – RW3L and the Ohio Environmental Protection Agency (OEPA), Division of Materials and Waste Management. Below is a summary of conditions for the day of the inspection:

Date performed:	December 1, 2016
Weather:	Overcast, breezy, 38°F - 47°F
Rainfall over last 72 hours:	November 28, 2016 – trace inches November 29, 2016 – 0.31 inches November 30, 2016 – 0.93 inches December 1, 2016 – 0.0 inches

Precipitation data was collected from the weather station at the Tri-State/Ferguson Airport in Huntington, West Virginia (KHTS), approximately 43.9 miles from the landfill.

Stantec's team that performed the fieldwork included:

- Jacqueline S. Harmon, P.E., Senior Associate/Geotechnical Engineer  
19 years of experience in geotechnical engineering, including dams, levees, and CCR storage facility closure.
- James Swindler, Jr., P.E., Senior Project Engineer/Geotechnical Engineer  
9 years of geotechnical engineering experience for a variety of infrastructure projects including dams, levees, and coal combustion byproduct storage facilities.

The estimated volume of CCRs contained in the landfill is 2,516,000 cubic yards. Inspections are being performed by plant personnel according to the CCR Rule at least once every seven days. Weekly reports performed between December 10, 2015 and November 24, 2016 were provided for review.



## **2016 CCR RULE INSPECTION KYGER CREEK LANDFILL**

Description of Kyger Creek Landfill  
January 11, 2017

The Gallia County General Health District performs quarterly inspections in accordance with OEPA guidelines. OVEC provided quarterly reports for the first, third, and fourth quarters of 2016. Per conversations with site personnel, an inspection was performed by Gallia County during the second quarter and was deemed accepted. However, an inspection report was not available.

Fieldwork was coordinated with Mr. Paul Hutchins, Kyger Creek Station's Landfill Engineer. Observations were briefly discussed with onsite personnel during and after completion of the field activities.

### **2.0 DESCRIPTION OF KYGER CREEK LANDFILL**

The Kyger Creek Generating Station, located in Cheshire, Gallia County, Ohio, is a coal combustion power plant owned and operated by Ohio Valley Electric Corporation (OVEC). The Kyger Creek Station's five units were commissioned in 1954 and 1955 and have a total generating capacity of 1,086 megawatts (OVEC, 2016).

CCRs produced by the Kyger Creek Generating Station are placed in the Kyger Creek restricted waste landfill. OVEC received its restricted waste permit and approval from the OEPA to begin construction on the landfill in April 2009. The landfill is a 98-acre Class III residual solid waste landfill with a capacity of 20.4 million cubic yards (Applied Geology and Environmental Science, 2015) that includes:

- A composite liner system consisting of an 18-inch recompacted soil liner, 30-mil polyvinyl chloride (PVC) geomembrane in Phases 1, 3, 4, and 5 with a 40-mil linear low density polyethylene (LLDPE) geomembrane in Phase 2;
- Leachate collection system, including two lined leachate collection ponds;
- Contact and non-contact surface water management systems, including four sedimentation ponds, multiple sediment traps, drainage channels, and chimney drains;
- Groundwater monitoring system; and
- A final closure cap design.

Operation of the landfill began in 2010 with placement of Class III residual waste, including flue-gas-desulfurization (FGD) sludge, chloride purge steam filter cake, fly ash, and boiler slag. The landfill's anticipated lifespan is 20 years.

CCRs are transported by conveyor to a stacking pad southeast of the landfill and/or trucked to the Kyger Creek Landfill. Based on conversations with site personnel, the ash is placed in the landfill at approximately 30 percent moisture. The ash is placed in roughly one-foot lifts and then





## **2016 CCR RULE INSPECTION KYGER CREEK LANDFILL**

Description of Kyger Creek Landfill  
January 11, 2017

compacted. At times, the fly ash is mixed with other material, such as gypsum, with no segregation of the material during placement.

The landfill is divided into five phases with Phase 1 currently receiving CCRs. As previously noted, there are multiple ponds, both temporary and permanent, associated with the landfill. See the 2015 As-Built Map provided in Appendix C, Reference Drawings. The ponds include:

- East Sedimentation Pond – a permanent pond located east of the landfill.
- West Sedimentation Pond – a permanent pond located at the toe of the west slope of Phase 1.
- Leachate Collection Pond – a permanent pond located east of the landfill and adjacent to the East Sedimentation Pond.
- Interim Leachate Collection Pond – temporary pond located at the east end of Phase 1.
- Sediment Pond #1 – a temporary pond located to the east of Phase 1. This pond has been capped.
- Sediment Pond #2 – a temporary pond located within the Proposed Clay Borrow area to the south of Phase 1.
- Temporary Contact Pond – a temporary pond located on the southwest end of Phase 2.

The stormwater sedimentation traps were also observed during the site visit.

An operations and maintenance manual discussing the landfill or the ponds was not available for review.

### **2.1 KYGER CREEK LANDFILL – PHASE 1**

The active waste cell is Phase 1, located in the southwestern portion of the landfill footprint. Phase 1 is subdivided into three areas, each partially filled with temporary slopes soil covered and vegetated. A series of chimney drains lie in the center portion of the phase and outlet on the east end of Phase 1 into the Interim Leachate Collection Pond. Temporary soil cover has been placed and vegetated on the exterior slopes of Phase 1, Parts 1 and 2 where it is nearing final CCR grades (2015 As-Built Map, Appendix C).

### **2.2 KYGER CREEK LANDFILL – PHASES 2 THROUGH 5**

Phases 2, 3, 4, and 5 have yet to be constructed. Phase 2 has been used as a borrow area and is vegetated and inactive. The general phasing plan is included in Appendix C.



**2016 CCR RULE INSPECTION  
KYGER CREEK LANDFILL**

Observations  
January 11, 2017

## **3.0 OBSERVATIONS**

### **3.1 KYGER CREEK LANDFILL – PHASE 1**

The following observations were made while walking within and around the Phase 1 footprint. The photographic log is provided in Appendix B.

- Temporary CCR slopes within the landfill are being placed at a slope between 2.5H:1V (horizontal to vertical) and 2.7H:1V on the interior slope of western active cell of Part 1, Phase 1. (Photo 1). The eastern temporary slope of Part 3, Phase 1 was estimated as 2.1H:1V to 2.7H:1V. (Photo 2) Signs of instability such as sloughs or slides were not noted on the temporary internal slopes.
- A series of chimney drains was observed on the interior of the phase. (Photo 3)
- The temporary exterior slopes along the anchor trench on the south side and the west side are mowed with vegetation less than 6 inches. The trees noted in the 2015 inspection report have been cut flush with the ground. (Photos 4 and 5; Point 5, Appendix A)
- The exterior temporary north slope of Phase 1, Parts 1 and 2, is mowed with vegetation less than 6 inches. The trees noted in the 2015 inspection report have been cut flush with the ground. (Photo 5; Point 8, Appendix A)
- Small diameter trees and taller vegetation (12 to 48 inches) were observed on the temporary slope on the west side of the landfill, between Phase 1 and the West Sedimentation Pond. (Photo 6; Points 4 and 6, Appendix A)
- The temporary exterior slope on the east side of Phase 1, near Phase 2, appears unchanged from the 2015 annual inspection.
- Two areas with minimal vegetative cover were noted during the December site visit. Both are located on the exterior temporary slopes, one on the western slope and one on the northern slope. (Photos 8 and 9; Points 6 and 9, Appendix A)
- Rock check dams were noted in the storm water channel along the western slope of Phase 1, Part 1.
- Five 24-inch high-density polyethylene (HDPE) pipes were observed on the west side of Phase 1, underlying the access road on the exterior slope. The pipes outlet into a riprap-lined channel that leads to the West Sedimentation Pond. The pipe inlets are partially blocked due to erosion of the road and temporary Phase 1 slope. The roadway above the pipe outlets has eroded. (Photos 10 and 11; Point 7, Appendix A)



## 2016 CCR RULE INSPECTION KYGER CREEK LANDFILL

Observations  
January 11, 2017

- The exterior temporary slope of Phase 1, Part 3, located on the east side of the active cell shows erosion rills near the toe. This is a maintenance issue for observation. (Photo 12; Point 12, Appendix A)
- The area beyond the eastern edge of the active Phase 1, Part 3 cell has been regraded and vegetated to address sloughing and erosion around the outlet of the underdrain pipe noted in the 2015 inspection report. The area remains spongy with visible clear flow eastward. (Photos 13 and 14; Point 11, Appendix A)
- A steepened exterior slope, with sloughing, was observed at the perimeter road on the south side of the Interim Leachate Collection Pond. (Photo 15; Point 10, Appendix A) The slough was noted as part of the 2015 inspection report and appears unchanged, though visual observation is obscured by vegetation. The grade of the exterior slope appeared unchanged from the 2015 inspection report.
- Sloughing and deep erosion gullies were noted on the interior slopes of the Interim Leachate Collection Pond. Typical depth was 30 inches (Photo 16; Points 13, 15, 16, 17, Appendix A)
- Ponded water was present in the equipment ruts on the crest of the Interim Leachate Collection Pond. (Photo 17; Point 15, Appendix A)

### 3.2 WEST SEDIMENTATION POND

The following observations were made during the site visit at the West Sedimentation Pond. The photographic log is provided in Appendix B.

- Small trees (diameter <2 inches) were noted in the pond spillway (Stormwater Outfall 034). (Photo 1; Point 1, Appendix A)
- A scarp has developed on the outside slope of the pond adjacent to the Stormwater Outfall 034 channel. It is a progressive failure estimated as 25 feet wide at the top, spreading out to about 200 feet wide at the toe. The head scarp begins at the edge of the outside crest, and the estimated change in height is 8 feet. It begins west of the spillway and curves around the pond to north of Sediment Trap No. 13. (Photos 19 and 20; Point 2, Appendix A)
- Vegetation growth to a height of 12 to 48 inches was observed on the western exterior slope of the West Sedimentation Pond, obscuring visual observation.
- An animal burrow (estimated at 4 inches in diameter) was noted at the southwestern toe of the pond embankment. (Point 3, Appendix A)

## **2016 CCR RULE INSPECTION KYGER CREEK LANDFILL**

Observations  
January 11, 2017

### **3.3 EAST SEDIMENTATION POND**

The following observations were made during the site visit at the East Sedimentation Pond. The photographic log is provided in Appendix B.

- Several erosion gullies are located along the northwest slope of the pond connecting the East Sedimentation Pond to the paved haul road. (Photo 21, Point 18, Appendix A)
- The inlet of the 36-inch CPP west of the East Sedimentation Pond is unobstructed and riprap lined. The vegetation and small tree growth observed during the 2015 inspection report has been removed.

### **3.4 LEACHATE COLLECTION POND**

The following observations were made during the site visit at the Leachate Collection Pond. The photographic log is provided in Appendix B.

- The outlet of a 12-inch outside diameter corrugated plastic pipe (CPP) was observed on the southeast side of the pond. The pipe empties into a riprap-lined channel that passes beneath the perimeter road via an 84-inch diameter concrete culvert. The pipes were unobstructed and flowing.
- Pounded water was present in the equipment ruts around the crest of the pond. (Photo 22; Point 19, Appendix A)
- Sloughing was observed on the northwest interior slope above the concrete slope. This appears unchanged from the 2015 inspection report. (Point 23, Appendix A)
- Erosion gullies were observed on western interior grass-covered slopes of the pond. (Photo 23; Points 20 and 21, Appendix A)
- Seepage through the caulked joints of the concrete-lined pond was noted on the western interior slope. (Photo 24, Point 22, Appendix A)
- The grades of the vegetated interior slopes of the pond appear unchanged from the 2015 inspection report.

### **3.5 PERIMETER OF KYGER CREEK LANDFILL**

The perimeter of the landfill was visited to observe surface water controls for the facility. The photographic log is provided in Appendix B. The following observations were made:

- The sedimentation traps along the perimeter haul road were observed during the December site visit. When accessible, pipe inlets and outlets were observed. The



## 2016 CCR RULE INSPECTION KYGER CREEK LANDFILL

Recommendations  
January 11, 2017

sedimentation traps appeared to be working as intended with minimal sedimentation buildup and freely flowing pipes.

- A riprap diversion has been placed along surface water channel on the east side of the perimeter road near Sediment Trap No. 26. It appears to capture storm water runoff along the paved haul road, diverting it to the sedimentation trap. (Photo 25)

### 4.0 RECOMMENDATIONS

The following recommendations are offered for the Kyger Creek Landfill. The recommendations are not listed in order of priority.

#### Stability Issues:

- A scarp on the northwestern exterior slope of the West Sedimentation Pond should be characterized and addressed as needed.
- Maintain the vegetation along the exterior slope of the Interim Leachate Collection Pond. Characterize the slough identified during the field visit, and address stability concerns of the existing slopes, if needed.
- Characterize and address the seepage occurring near the underdrain pipe at the east side of Phase 1. Take measures to control the flow, minimize sediment transport, and review the design to verify that it is performing as designed. Continue to monitor the toe of the active waste slope.

#### Operational Issues:

- An Operations and Maintenance Manual should be developed that includes provisions for the placement of materials within the landfill, the maintenance of the landfill, and the procedure to follow if issues arise during the operation of the landfill.
- Continue to conduct field surveys to measure current topography and compare to design geometry. Regrade surface to conform to design if needed. Areas near to final completion grade are recommended to be capped, closed, and vegetated. Further engineering evaluation of slope stability may be warranted, if deformations, steepened slopes, or sloughing indicate potential for significant instabilities.

#### Maintenance Issues:

- Continue to maintain the vegetation along the exterior slopes and within the surface drainage channels to facilitate inspections by removing taller weeds and woody vegetation or reestablishing vegetation as needed.



## 2016 CCR RULE INSPECTION KYGER CREEK LANDFILL

### References

January 11, 2017

- Continue to repair erosion gullies, reestablish grass vegetation, and continue to monitor in future inspections.
- Remove the vegetation and sediment restricting flow through the five HDPE pipes flowing from the Phase 1, Part 1 western temporary slope to the West Sedimentation Pond. Repair the erosion at the pipe outlets to protect from traffic.

## 5.0 REFERENCES

American Electric Power Service Corporation (AEPSC) (2015). "2015 Dam and Dike Inspection Report, GERS-15-020, Kyger Creek Station, Gallipolis, Ohio." Prepared by Geotechnical Engineering, Columbus, Ohio. November.

Applied Geology and Environmental Science, Inc. (2015). "Semi-Annual Groundwater Monitoring Report (April 2015 Sampling)." Ohio Valley Electric Corporation. Kyger Creek Plant Landfill. Gallia County, Cheshire, Ohio. June. Clinton, Pennsylvania.

Applied Geology and Environmental Science, Inc. (2014). "Semi-Annual Groundwater Monitoring Report (October 2014 Sampling)." Ohio Valley Electric Corporation. Kyger Creek Plant Landfill. Gallia County, Cheshire, Ohio. December. Clinton, Pennsylvania.

Gallia County General Health District (GCGHD) (2016a). Re: Kyger Creek Residual Waste Landfill. 1<sup>st</sup> Quarter 2016 Inspection. March 15.

Gallia County General Health District (GCGHD) (2016b). Re: Kyger Creek Residual Waste Landfill. 3<sup>rd</sup> Quarter 2016 Inspection. July 26.

Gallia County General Health District (GCGHD) (2016c). Re: Kyger Creek Residual Waste Landfill. 4<sup>th</sup> Quarter 2016 Inspection. November 8.

Hull & Associates, Inc. (2009). "Ohio Valley Electric Corporation. Kyger Creek Plant Landfill, Phase 1 Construction Plans. Class III Residual Waste Facility. Cheshire, Ohio." Prepared for American Electric Power, Columbus, Ohio. March 19. Toledo, Ohio.

Hull & Associates, Inc. (2008a). "Section B – Hydrogeologic and Subsurface Investigation Report." Ohio Valley Electric Corporation. Kyger Creek Plant Landfill. Revised December. Dublin, Ohio.

Hull & Associates, Inc. (2008b). "Ohio Valley Electric Corporation. Kyger Creek Plant Landfill, Permit to Install Plans. Class III Residual Waste Facility. Cheshire, Ohio." Prepared for American Electric Power, Columbus, Ohio. November 20. Toledo, Ohio.

Ohio Environmental Protection Agency (OEPA) (2011). Letter from OEPA to OVEC. Gallia County Fac – Kyger Creek Plant Landfill Eng. Acknowledging substantial compliance with Ohio Administrative Code Rule 3745-30-07. Area 1, Phase 1. January 11.



## **2016 CCR RULE INSPECTION KYGER CREEK LANDFILL**

### References

January 11, 2017

Ohio Environmental Protection Agency (OEPA) (2009). "Ohio Environmental Protection Agency, Permit to Install." FINAL. Application Number 06-08283. Received March 15, 2007. Ohio Valley Electric Corporation Kyger Creek Plant Landfill. New Residual Solid Waste Landfill. Effective Date: *not listed*.

Ohio Valley Electric Corporation (2016). [www.ovec.com](http://www.ovec.com), accessed December 2016.

Ohio Valley Electric Corporation (2016). "7-Day Inspection Checklist. Kyger Creek Plant. Landfill. " Weekly reports for December 10, 2015 to November 24, 2016.

Ohio Valley Electric Corporation (2015). "Kyger Creek Landfill 2015 As-Built Map." Drawing No. KYG-270834-1-R5, Revision date December 31. NAD83/NAVD88 Ohio South. Kcandfill2015-Model.pdf.

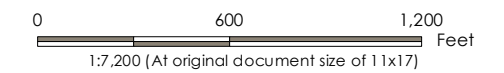
Professional Service Industries, Inc. (PSI) (2010). "Construction Certification Report. Area 1 Part 1, Kyger Creek Plant Landfill, 212 Shaver Road, Cheshire, Ohio 45620." PSI Report 114-80062-1531. November 30. Columbus, Ohio.

**APPENDIX A**  
**FIGURE 1 – PLAN VIEW**



Legend

- Inspection Location
- ▲ Estimated Slope Measurement
- Estimated Scarp Zone
- Phases



Notes

1. Coordinate System: GCS North American 1983
2. Base features - ESRI
3. Ortho-imagery does not represent current conditions.



Project Location: 175534017  
Kyger Fossil Plant Prepared by ANP on 2016-12-08  
Gallia County, OH Technical Review by JS on 2016-12-08  
Independent Review by JH on 2016-12-08

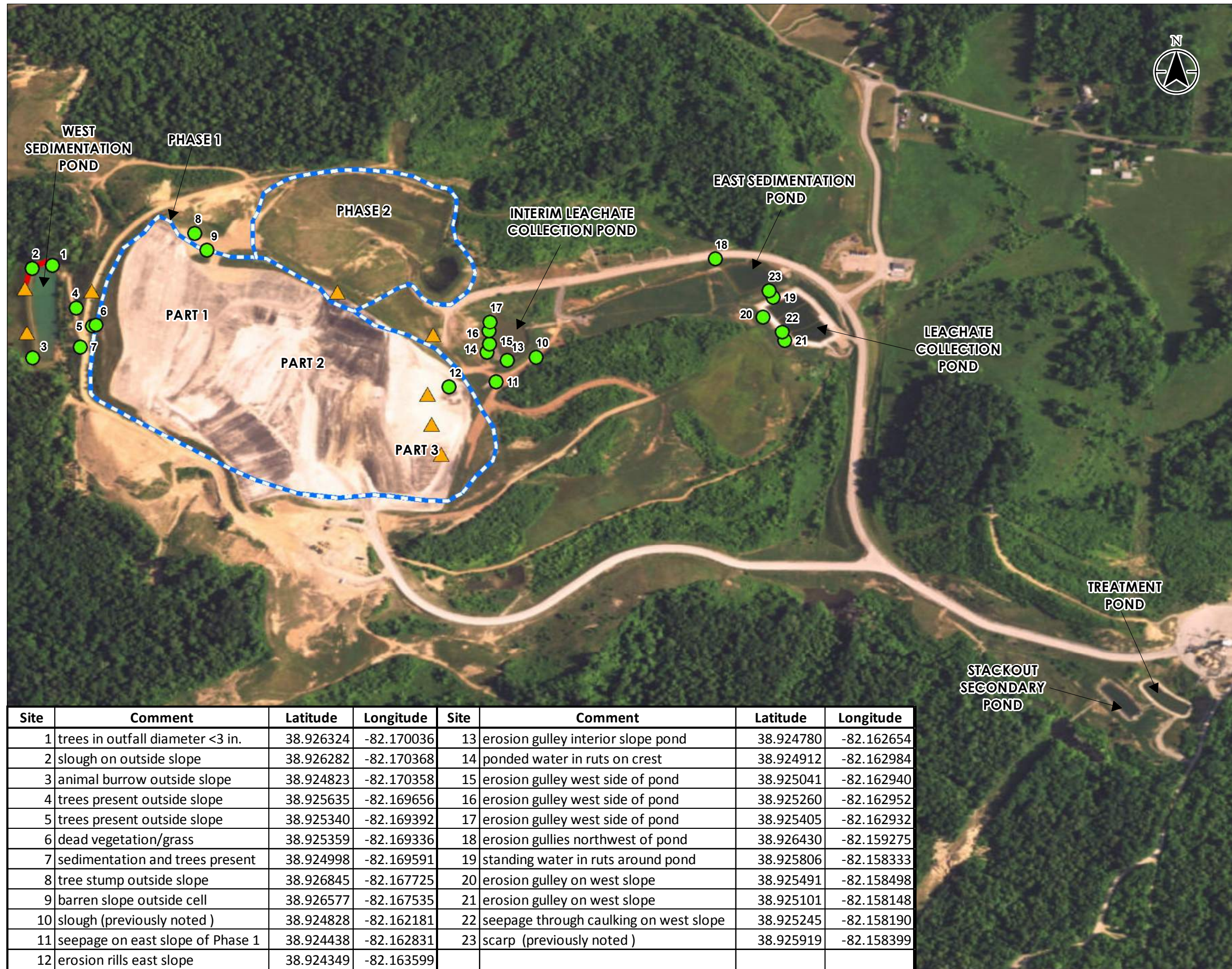
Client/Project  
Ohio Valley Electric Corporation  
Kyger Creek Landfill

Figure No.

**1**

Title

**2016 Annual CCR Landfill Inspection**



Site	Comment	Latitude	Longitude	Site	Comment	Latitude	Longitude
1	trees in outfall diameter <3 in.	38.926324	-82.170036	13	erosion gully interior slope pond	38.924780	-82.162654
2	slough on outside slope	38.926282	-82.170368	14	ponded water in ruts on crest	38.924912	-82.162984
3	animal burrow outside slope	38.924823	-82.170358	15	erosion gully west side of pond	38.925041	-82.162940
4	trees present outside slope	38.925635	-82.169656	16	erosion gully west side of pond	38.925260	-82.162952
5	trees present outside slope	38.925340	-82.169392	17	erosion gully west side of pond	38.925405	-82.162932
6	dead vegetation/grass	38.925359	-82.169336	18	erosion gullies northwest of pond	38.926430	-82.159275
7	sedimentation and trees present	38.924998	-82.169591	19	standing water in ruts around pond	38.925806	-82.158333
8	tree stump outside slope	38.926845	-82.167725	20	erosion gully on west slope	38.925491	-82.158498
9	barren slope outside cell	38.926577	-82.167535	21	erosion gully on west slope	38.925101	-82.158148
10	slough (previously noted )	38.924828	-82.162181	22	seepage through caulking on west slope	38.925245	-82.158190
11	seepage on east slope of Phase 1	38.924438	-82.162831	23	scarp (previously noted )	38.925919	-82.158399
12	erosion rills east slope	38.924349	-82.163599				

**APPENDIX B**  
**PHOTOGRAPHIC LOG**

**Photo 1**

CCRs (2.5H:1V to 2.7H:1V slopes) on interior of the landfill on eastern active face of Area 1, Part 1.

**Photo 2**

CCRs (3H:1V slopes) on interior of the landfill on eastern active face of Area 1, Part 3.

**Photo 3**

Series of chimney drains within the active area of Phase 1.



**Photo 4**

The exterior temporary slopes along the anchor trench on the south side of Phase 1, Parts 1 and 2.



**Photo 5**

The exterior temporary slope on the west side of Phase 1, Part 1.



**Photo 6**

The exterior temporary north slope of Phase 1, Parts 1 and 2.



**Photo 7**

Small diameter trees and taller vegetation on the temporary slope on east side of the landfill.



**Photo 8**

Minimal vegetation on the western exterior slope of Phase 1, Part 1.



**Photo 9**

Minimal vegetation on the northern exterior slope of Phase 1, Parts 1 and 2.



**Photo 10**

HDPE pipe inlets between the western slope of Phase 1, Part 1, and the West Sedimentation Pond.



**Photo 11**

Erosion of the roadway above the HDPE pipe outlets between the western slope of Phase 1, Part 1, and the West Sedimentation Pond.



**Photo 12**

Erosion rills at toe of the exterior temporary slope on the eastern side of Phase 1, Part 3.

**Photo 13**

The regraded area east of Phase 1, Part 3, near the outlet of the underdrain piping.

**Photo 14**

Spongy earth and visible clear flow east of the Phase 1, Part 3, near the outlet of the underdrain piping.

**Photo 15**

The slough noted along the southern exterior slope of the Interim Leachate Collection Pond.

**Photo 16**

Erosion gully on the interior slope of the Interim Leachate Collection Pond.



**Photo 17**

Ponded water in equipment ruts on the crest of the Interim Leachate Collection Pond.

**Photo 18**

Small trees in the spillway of the West Sedimentation Pond.

**Photo 19**

Head scarp west of the spillway of the West Sedimentation Pond.

**Photo 20**

Toe of scarp on the northwestern exterior slope of the West Sedimentation Pond.

**Photo 21**

Erosion gullies at northwest corner of the East Sedimentation Pond, starting near the haul road.



**Photo 22**

Pondered water in equipment ruts around the crest of the Leachate Collection Pond.



**Photo 23**

Erosion rills were observed on the west interior slope of the Leachate Collection Pond.

**Photo 24**

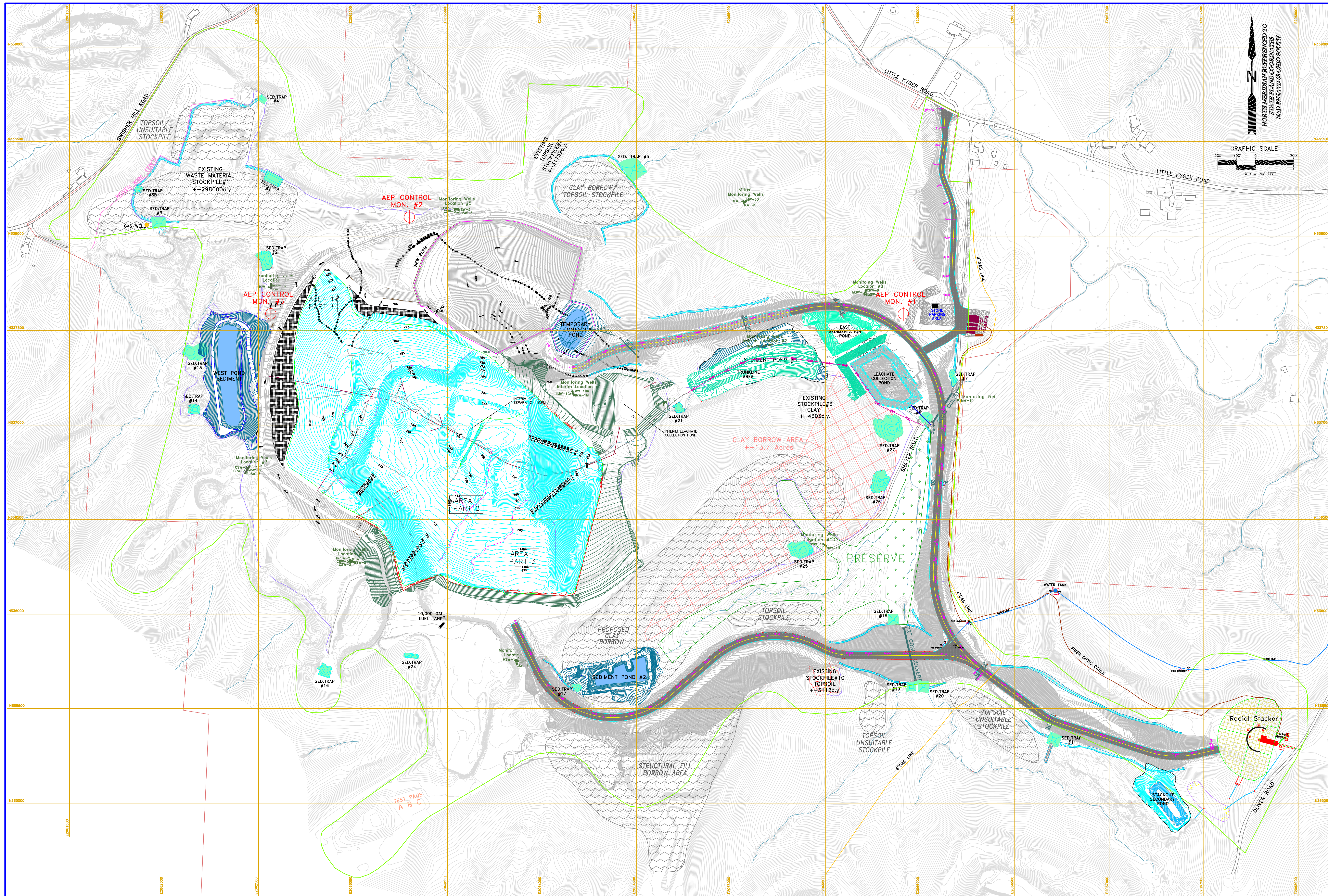
Seepage through the caulked joints of the concrete-lined Leachate Collection Pond.

**Photo 25**

Riprap diversion to capture storm water runoff from the haul road near Sediment Trap No. 26.

# **APPENDIX C**

## **REFERENCE DRAWINGS**



**LEGEND**

- Denotes O.V.E.C. Boundary Line
- Denotes Permit Limits
- Denotes Super Silt Fence
- Denotes Diversion Ditch
- Denotes Gas Line
- Denotes Water Line
- Denotes Fiberoptic Line
- Denotes G.W.I. w/ 4" HDPE SDR7
- Denotes G.W.I. w/ No Pipe
- Denotes Toe Drain w/ 4" Schedule 7
- Denotes Collection Trunk Piping 12" HDPE SDR7
- Denotes Culverts
- Denotes Creeks/Drains
- Denotes Woven Wire Fence
- Denotes Guardrail 2008
- Denotes Guardrail 2009
- Denotes Waste Limits
- Denotes Sediment Traps
- Denotes Sediment Pond
- Denotes Preserve Area
- Denotes Actual Clay Borrow Area
- Denotes Rip Rap
- Denotes Pavement
- Denotes Gravel
- Denotes Completed Earth Work
- Denotes 2011 Work
- Denotes Temporary Cover
- Denotes Waste
- Denotes Protective Cover
- Denotes Dumpster Areas

NOTE: One area has final or transitional cover.  
 NOTE: Projected fill for 2013 will be above 2012 fill, and in phase one areas two and three.  
 NOTE: +- 3936' @ +- 4' depth of  
 NOTE: +- 9486' of installed guardrail  
 NOTE: Gas Line is at +- 2.5' depth

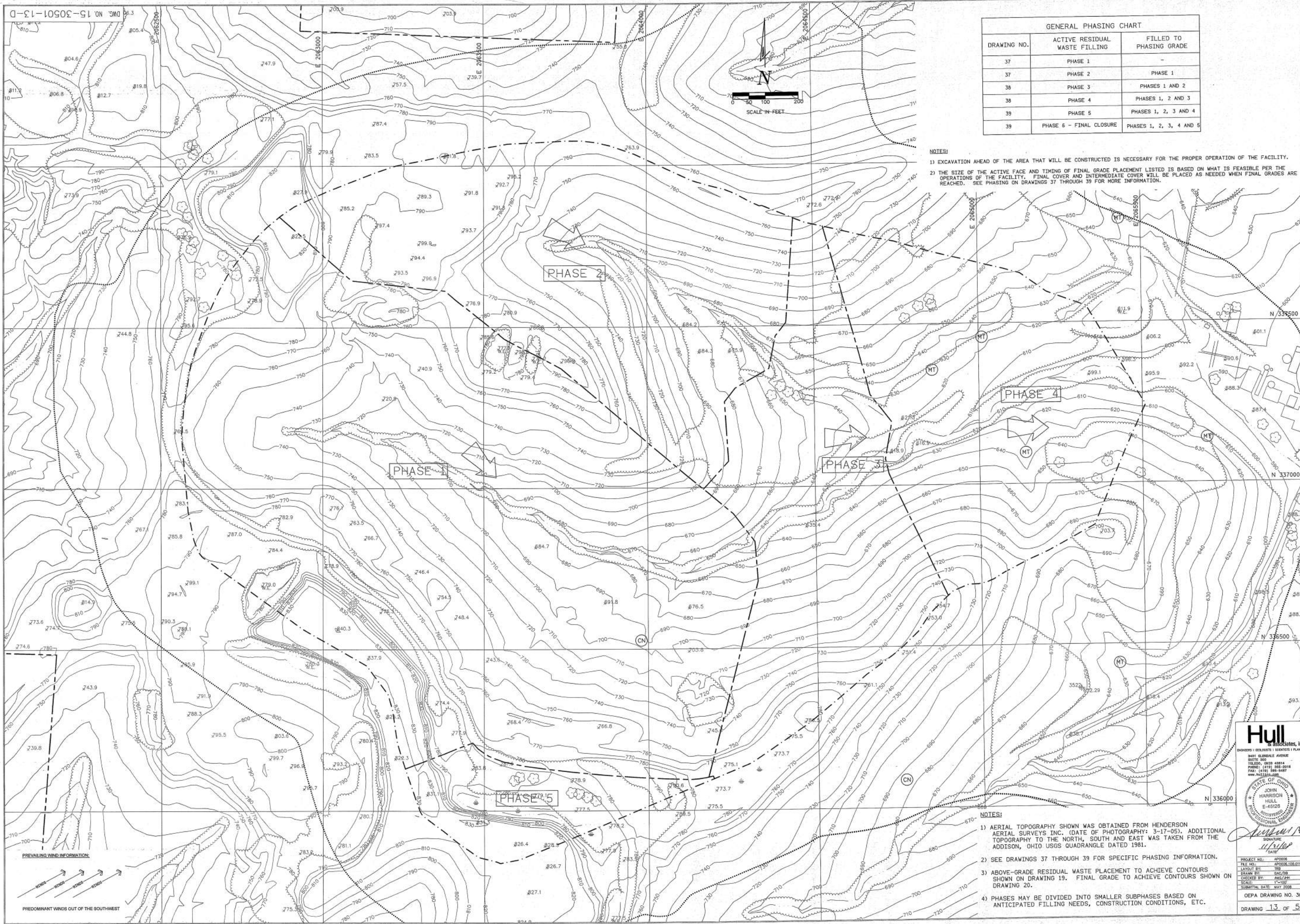
**OHIO VALLEY ELECTRIC COMPANY**  
**KYGER CREEK LANDFILL**  
 CLEVELAND OHIO

**KYGER CREEK LANDFILL**  
 2015 ASBUILT MAP

**NAD 83 NAVD 88 OHIO SOUTH**  
**CONTOUR INTERVAL = 1' FOOT**

Drawing Name: **KYGER CREEK LANDFILL ASBUILT MAP**  
 Drawing Number: **KYG-270834-1-R5**  
 SCALE: 1" = 20'  
 Revision Date: 31 DECEMBER 2015  
 Drawn By: R. A. Shoultis and Paul R. Hutchins

**OVEC IKEC**



GENERAL PHASING CHART		
DRAWING NO.	ACTIVE RESIDUAL WASTE FILLING	FILLED TO PHASING GRADE
37	PHASE 1	-
37	PHASE 2	PHASE 1
38	PHASE 3	PHASES 1 AND 2
38	PHASE 4	PHASES 1, 2 AND 3
39	PHASE 5	PHASES 1, 2, 3 AND 4
39	PHASE 6 - FINAL CLOSURE	PHASES 1, 2, 3, 4 AND 5

NOTES:  
 1) EXCAVATION AHEAD OF THE AREA THAT WILL BE CONSTRUCTED IS NECESSARY FOR THE PROPER OPERATION OF THE FACILITY.  
 2) THE SIZE OF THE ACTIVE FACE AND TIMING OF FINAL GRADE PLACEMENT LISTED IS BASED ON WHAT IS FEASIBLE PER THE OPERATIONS OF THE FACILITY. FINAL COVER AND INTERMEDIATE COVER WILL BE PLACED AS NEEDED WHEN FINAL GRADES ARE REACHED. SEE PHASING ON DRAWINGS 37 THROUGH 39 FOR MORE INFORMATION.

LEGEND - EXISTING

---	PROPERTY LINE
---	10-FOOT CONTOUR INTERVAL
245.6	SPOT ELEVATION
---	TREE LINE
□	BUILDING
○	MORGANTOWN SANDSTONE SPRING
○	CONNELLSVILLE SANDSTONE SPRING

LEGEND - PROPOSED

---	WASTE LIMIT
→	FILL PROGRESSION
→	PREVAILING WIND DIRECTION
---	PHASE DIVISION LINE
---	FACILITY BOUNDARY / AREA OF DISTURBANCE

REFERENCE DRAWINGS

DATE	NO.	DESCRIPTION	APP'D.
11/27/08	D	NOD 3 RESPONSE	JHH
11/27/08	C	NOD 2 RESPONSE	JHH
11/27/08	B	NOD 1 RESPONSE	JHH
11/27/08	A	ISSUED FOR PERMIT	JHH

REVISIONS

DATE	NO.	DESCRIPTION	APP'D.
11/27/08	D	NOD 3 RESPONSE	JHH
11/27/08	C	NOD 2 RESPONSE	JHH
11/27/08	B	NOD 1 RESPONSE	JHH
11/27/08	A	ISSUED FOR PERMIT	JHH

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PROJECT NO. AEP008  
 FILE NO. AEP008.002.014  
 DRAWN BY: JAC/208  
 CHECKED BY: JAC/208  
 SCALE: 1"=100'  
 SUBMITTAL DATE: MAY 2008  
 OSPA DRAWING NO. 3G  
 DRAWING 13 OF 56

OHIO VALLEY ELECTRIC CORP.  
 KYGER CREEK PLANT  
 CHESHIRE OHIO  
 KYGER CREEK PLANT LANDFILL  
 GENERAL PHASING PLAN

DWG. NO. 15-30501-13-D  
 SCALE: 1"=100'  
 CIVIL ENGINEERING DIVISION  
 DATE: 11/27/08  
 1 RIVERSIDE PLAZA  
 COLUMBUS, OH 43215

- NOTES:
- 1) AERIAL TOPOGRAPHY SHOWN WAS OBTAINED FROM HENDERSON AERIAL SURVEYS INC. (DATE OF PHOTOGRAPHY: 3-17-05). ADDITIONAL TOPOGRAPHY TO THE NORTH, SOUTH AND EAST WAS TAKEN FROM THE ADDISON, OHIO USGS QUADRANGLE DATED 1981.
  - 2) SEE DRAWINGS 37 THROUGH 39 FOR SPECIFIC PHASING INFORMATION.
  - 3) ABOVE-GRADE RESIDUAL WASTE PLACEMENT TO ACHIEVE CONTOURS SHOWN ON DRAWING 19. FINAL GRADE TO ACHIEVE CONTOURS SHOWN ON DRAWING 20.
  - 4) PHASES MAY BE DIVIDED INTO SMALLER SUBPHASES BASED ON ANTICIPATED FILLING NEEDS, CONSTRUCTION CONDITIONS, ETC.

