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

October 13, 2021
File: 175531034
Revision 0

Ohio Valley Electric Corporation
3932 U.S. Route 23
P.O. Box 468
Piketon, Ohio 45661

RE: Run-on and Run-off Control System Plan
CCR Landfill
EPA Coal Combustion Residuals (CCR) Rule
Kyger Creek Station
Cheshire, Gallia County, Ohio

1.0 PURPOSE

This letter documents Stantec's certification of the run-on and run-off control system plan for the Ohio Valley Electric Corporation (OVEC) Kyger Creek Station's CCR landfill. The EPA CCR Rule requires a new certification to be performed on a five-year periodic interval under 40 CFR 257.81(c)(4). The initial certification of the run-on and run-off control system plan was placed in the operating record in October 2016.

2.0 INITIAL RUN-OFF AND RUN-ON CONTROL SYSTEM PLAN

The initial run-on and run-off control system plan is attached. The result of the initial assessment was that the CCR Landfill complied with 40 CFR 257.81(a) and (b).

3.0 CURRENT RUN-OFF AND RUN-ON CONTROL SYSTEM PLAN

Stantec reviewed the result of the initial run-on and run-off plan and the changes in site conditions that have occurred in the past five years. Based on our review, there are no conditions that have changed in the past five years that would cause the result of the initial run-on and run-off assessment to have changed.

4.0 SUMMARY OF FINDINGS

Based on a review of the initial run-on and run-off control system plan and the current site conditions, the result of this periodic run-on and run-off control system plan is that the CCR Landfill at Kyger Creek Station meets the requirements of §257.81(a) and (b) of the EPA CCR Rule.

5.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, Jacqueline S. Harmon, being a Professional Engineer in good standing in the State of Ohio, do hereby certify, to the best of my knowledge, information, and belief:

Re: **Run-on and Run-off Control System Plan**
CCR Landfill
EPA Coal Combustion Residuals (CCR) Rule
Kyger Creek Station
Cheshire, Gallia County, Ohio

1. that the information contained in this certification is prepared in accordance with the accepted practice of engineering,

2. that the information contained herein is accurate as of the date of my signature below, and

3. that the run-on and run-off control system plan for OVEC Kyger Creek Station's CCR Landfill meets the requirements of the run-on and run-off control system plan specified in 40 CFR 257.81(a), (b), and (c)(1).

SIGNATURE Jacqueline S. Harmon DATE 10/13/2021

ADDRESS: Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati, Ohio 45241

TELEPHONE: (513) 842-8200

ATTACHMENTS: Kyger Creek Station CCR Landfill Initial Run-On and Run-off Control System Plan

Jacqueline S. Harmon 10/13/2021

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

October 10, 2016
File: 175534017
Revision 0

Ohio Valley Electric Corporation
3932 U.S. Route 23
P.O. Box 468
Piketon, Ohio 45661

RE: Run-on and Run-off Control System Plan
CCR Landfill
EPA Final Coal Combustion Residuals (CCR) Rule
Kyger Creek Station
Cheshire, Gallia County, Ohio

1.0 PURPOSE

This letter documents Stantec's certification of the run-on and run-off control system plan for the Ohio Valley Electric Corporation (OVEC) Kyger Creek Station's CCR Landfill. Based on this assessment, the Kyger Creek CCR Landfill is in compliance with the run-on and run-off control system plan requirements specified in the Final CCR Rule at 40 CFR 257.81(a).

2.0 RUN-OFF AND RUN-ON CONTROL SYSTEM PLAN

As described in 40 CFR 257.81(c), a run-on and run-off control system plan must be prepared to document how the run-on and run-off control system has been designed and constructed to manage the 25-year, 24-hour storm.

3.0 SUMMARY OF FINDINGS

The attached plan documents the analysis of the run-on and run-off control system of the Kyger Creek CCR Landfill. The results show that the landfill meets the requirements set forth in 40 CFR 257.81(a).

4.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, Stan A. Harris, being a Professional Engineer in good standing in the State of Ohio, do hereby certify, to the best of my knowledge, information, and belief:

1. that the information contained in this certification is prepared in accordance with the accepted practice of engineering;

2. that the information contained herein is accurate as of the date of my signature below; and

Re: **Run-on and Run-off Control System Plan**
CCR Landfill
EPA Final Coal Combustion Residuals (CCR) Rule
Kyger Creek Station
Cheshire, Gallia County, Ohio

3. that the run-on and run-off control system plan for the OVEC Kyger Creek Station's CCR Landfill meets the requirements of the run-on and run-off control system plan specified in 40 CFR 257.81(a) and (c)(1).

SIGNATURE _____ DATE 10/10/16

ADDRESS: Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati, Ohio 45241

TELEPHONE: (513) 842-8200

ATTACHMENTS: Kyger Creek Station CCR Landfill Initial Run-On and Run-off Control System Plan

Kyger Creek CCR Landfill Run-on and Run-off Control System Plan

EPA Final CCR Rule
Kyger Creek Station
Cheshire, Gallia County, Ohio

Prepared for:
Ohio Valley Electric Corporation
Piketon, Ohio

Prepared by:
Stantec Consulting Services Inc.
Cincinnati, Ohio

October 10, 2016

Table of Contents

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 OBJECTIVE

On April 17, 2015 the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities rule (Environmental Protection Agency, 2015) was published in the Federal Register. Stantec Consulting Services Inc. (Stantec) was contracted by the Ohio Valley Electric Corporation (OVEC) to document the existing run-on and run-off plan for the Kyger Creek Station's CCR Landfill and to evaluate compliance with §257.81 of the EPA Final CCR Rule.

1.2 OUTLINE OF RULE REQUIREMENTS

The objective of the review described herein is to evaluate compliance related to §257.81, specifically the following:

(1) Run-on: The run-on control system must prevent flow onto the active portion of the Kyger Creek Station's CCR Landfill during the peak discharge from a 25-year, 24-hour storm event.

(2) Run-off: The Kyger Creek Station's CCR Landfill run-off control system must collect and control at least the water volume resulting from a 25-year, 24-hour storm event.

(3) Run-off (permitted discharge): Run-off point sources that discharge into waters of the United States must discharge through a permitted outfall, in this case the National Pollutant Discharge Elimination System (NPDES).

2.0 RUN-ON AND RUN-OFF CONTROL SYSTEM PLAN

Stantec personnel reviewed three design documents as a basis for the Kyger Creek CCR Landfill's run-on and run-off control system plan:

- *Class III Residual Waste Permit To Install Application.* Ohio Valley Electric Corporation. Kyger Creek Plant Landfill. Gallia County, Cheshire, Ohio. Volume I of IV. (Hull & Associates, Inc., 2008a)
- *Permit To Install Plans - Class III Residual Waste Facility.* Ohio Valley Electric Corporation. Kyger Creek Plant Landfill. Cheshire, Ohio. (Hull & Associates, Inc., 2008b)
- *Phase 1 Construction Plans - Class III Residual Waste Facility,* Ohio Valley Electric Corporation. Kyger Creek Plant Landfill. Cheshire, Ohio. (Hull & Associates, Inc., 2009)

3.0 SUMMARY OF FINDINGS

3.1 RUN-ON AND RUN-OFF ANALYSIS

The following text presents the review of the Kyger Creek Station Landfill run-on and run-off analysis as described in Hull & Associates, Inc. (2008a).

Section (C)(6)(k) of the Permit to Install, Volume I, describes the surface drainage designed for the site's landfill as following:

> "Surface water will be controlled by erosion control terraces, rock lined and geotextile reinforced letdowns, perimeter ditches (with permanent erosion control matting where necessary), and culverts, all of which ultimately flow to one of the four sedimentation ponds."

Appendix G-I of the Permit to Install, Volume I, summarizes the surface water management design and effectively outlines the run-on and run-off control system plan. It also describes the design criteria associated with the surface drainage:

> "The design methodologies and calculations contained in this section were developed to meet the requirements of the regulations for surface water control at a residual waste disposal facility contained within Ohio Administrative Code (OAC) 3745-30-07."

The drainage design includes determination of:

- Drainage channel and culvert sizes,
- Sedimentation pond volumes, and
- Principal and emergency spillways sizes.

A system of storm water run-on berms and run-off ditches control surface water. Run-on berms divert off-site run-on away from the landfill working area. Run-off ditches convey run-off from the disposal area. Run-on and run-off quantities are addressed by providing drainage control structures and channels capable of conveying discharge from a minimum of the 25-year, 24-hour storm event with an adequate freeboard. According to the Hull & Associates, Inc. (2008b):

- Clean water shall be diverted around the disposal area as much as feasible as shown on this drawing. If it is unable to be routed around the disposal area, then it shall be managed as leachate.
- Clean water shall be diverted around the sediment ponds when possible. When it is not feasible to divert the water around the sediment ponds, the water shall be managed through the ponds.

Four sedimentation ponds, located to the north, south, east, and west of the landfill, are designed to provide a minimum storage of 0.125 acre-feet per acre of the interim and/or final

cover in the respective watersheds. Hull & Associates, Inc. (2008a) states that the actual storage volumes exceed 0.125 acre-feet per acre. Each sedimentation pond receives the non-contact surface water run-off from portions of the CCR landfill that are capped or have intermediate cover. Hull & Associates, Inc. (2008a) describes the ponds' principal/emergency spillways as having capacity to safely discharge the flow from the 100-year, 24-hour storm event. The ponds are intended to only manage non-contact surface water.

Appendix G-I of Hull & Associates, Inc. (2008a) details the hydraulic and hydrologic portion of the engineering analysis for the Kyger Creek Station's Landfill.

3.1.1 Computation Methods

Appendix G-I describes the computational methodology used for the drainage design. XP Software's Stormwater Management Model (XP-SWMM) was used to determine peak flow rates for all drainage areas, drainage channels and to establish the required sedimentation pond storage volumes.

> "XP-SWMM is capable of simulating complex hydrology and hydraulic computations including infiltration, evaporation, runoff volume, storage volume, peak flows, hydrographs, backwater, surcharging, headloss, and performing other required analyses necessary for drainage design."

The storage capacity of each of the four sedimentation ponds was determined using the output information from the Bentley PondPack software (PondPack). The maximum design water level elevation for each pond was established, and the designs of the principal/emergency spillways were determined to maintain a minimum of one foot of freeboard during the 100-year, 24-hour event.

The culvert calculations were performed using the Haestad Methods' CulvertMaster Software (CulvertMaster) to demonstrate that the culvert design are capable of managing the flow rate from a 25-year, 24-hour storm event.

3.1.2 Model Hydrology and Hydraulics

For the run-on and run-off analysis, appropriate hydrologic modeling methodologies are briefly described in Appendix G-I and G-II (Hull & Associates, Inc. 2008a). A rainfall amount for the 25-year storm event (4.32 inches) was obtained from the "Precipitation Frequency Atlas of the United States, NOAA Atlas 14" using a precipitation event duration of 24 hours. Modeling software developed by XP-SWMM was used for the design. XP-SWMM and the SCS hydrologic methodology were used to determine the 10-year, 25-year, and 100-year runoff volumes and peak flows. Appendix G-II of the Permit to Install application provides the Stormwater Management Model (SWMM) results.

As part of the design, 67 hydrologic sub-watersheds were delineated so peak discharge values could be determined for channel and culvert designs. Run-off from the facility will be controlled by internal management practices and be diverted to four local sedimentation ponds. A map of the watershed drainage areas is included in Figure G-1 of Appendix G. According to Appendix G-I:

> "The subcatchment areas are defined by the drainage divides, such as topography, terraces, ditches, and other site features. To model the subcatchment areas, the acreage, slope, surface roughness, infiltration rate, and other parameters were entered into the XP-SWMM model. The physical parameters of the subcatchments and drainage components were then input into the XP-SWMM model to calculate all of the stormwater runoff, volume, and peak flow rates for the drainage areas and collection system components."

The hydraulic components of the model are described below:

> "The components of the drainage systems include four main catchments (north, south, east, and west basins), erosion control terraces, letdowns, ditches/swales, culverts and sedimentation pond inlets. The physical parameters of the components describe the type, size, slope, length, height, width, elevation, roughness, and other physical properties for each of the drainage components."

The drainage channels convey surface water runoff from the subcatchments into the sedimentation ponds. Each channel is designed to convey the 25-year, 24-hour storm event with a minimum freeboard of 0.5 feet at normal depth. The stormwater drainage culverts are designed to convey surface water runoff from the catchment areas and upstream drainage components to the sedimentation ponds. These surface control structures are designed to carry the peak flows calculated from the 25-year, 24-hour storm event in accordance with OAC 3745-30-07.

Appendix G-II provides a summary of structures used to handle the discharges for the site. The design of the run-on control system involves berms around the perimeter of the landfill. The run-off control system from the Landfill are handled by a network of perimeter ditches that direct run-off towards one of four sedimentation ponds. Peak flows were calculated for the sizing of drainage features at the outfalls of the primary drainage ditches and critical sub-watersheds for sizing of the secondary ditches and diversion berms.

Based on the XP-SWMM model results (Hull & Associates, Inc., 2008a), the drainage structures can safely convey both the 25-year and 100-year, 24-hour peak flows. Details on the drainage channels and rock letdown structures are provided on Sheet 47-D in the Permits to Install Plans, and modeling results are shown in Appendix G-II of the Permit to Install, Volume I. Details on the culverts are provided on Sheet 48-C in the Permit to Install Plans, and modeling results are shown in Appendix G-III of the Permit to Install, Volume I (Hull & Associates, Inc., 2008a, 2008b).

As part of the run-on and run-off control system plan, Stantec personnel also reviewed the results of the reservoir routing analyses. PondPack models were used to simulate the reservoir routing analyses. PondPack output files show the results of the storage, spillway, and embankment characteristics of the four ponds. The analyses indicate that the ponds are adequately sized and are capable of passing flows generated from the 100-year, 24-hour storm event maintaining freeboard without overtopping. Therefore, the ponds will be capable of routing the 25-year, 24-hour storm event required by 40 CFR 257.81(a). Details on the ponds are provided on Sheets 46-D and Sheets 49-52 in the Permit to Install Plans, and modeling results are shown in Appendix G-IV through G-VII of the Permit to Install, Volume I (Hull & Associates, Inc., 2008a, 2008b).

3.2 RUN-ON AND RUN-OFF ANALYSIS - DISCHARGES

Within Permit to Install application, Volume I, there is a section titled: OAC 3745-30-05(C)(2) Variance and Exemption Requests. This sections states:

> "A variance is being requested from the requirement in OAC 3745-30-07(C)(4)(d)(iv) to install a liner under the four proposed sedimentation ponds at the Facility. The variance request is justified since the sedimentation ponds will manage only non-contact surface water run-off from areas of the Facility where final or intermediate cover has been installed. In addition, the sedimentation ponds will be constructed in low permeability shales and soils. Discharge from the ponds will be covered by the NPDES permit. The variance requested is further justified since Ohio EPA's municipal solid waste regulations do not require a liner system for sedimentation ponds with the same intended use of managing and controlling non-contact surface water run-off. Residual and exempt wastes are appropriately regulated less stringently that municipal solid waste since they pose much less of a potential threat to human health and the environment."

Within the paragraph above, the variance request states the discharge from the ponds will be covered by the NPDES permit and addresses the discharge of storm water from the proposed facility boundary and, as a result, complies with 40 CFR 257.81(2)(b). OVEC's Kyger Creek Station maintains NPDES permit 0IB00005*PD. It's current expiration date is April 30, 2019 (OEPA, 2016).

3.3 CONSTRUCTION, OPERATION, AND MAINTENANCE

Construction certification reports (PSI, 2010 and S&ME, 2013) document that the constructed CCR Landfill has been built in general accordance with the permit requirements. Hull & Associates, Inc. (2008b, 2009) plans for Phase 1 were compared to 2016 aerial imagery. The topography appears to reflect the design stormwater elements. Reference plans and figures are provided in Appendix A.

Station personnel perform weekly and monthly inspections of the landfill to note maintenance and operational concerns. Annual landfill and CCR surface impoundment dam and dike inspections are performed and documented in the Operating Record (Stantec, 2016; AEPSC, 2015). Concerns noted in the inspections and any necessary operational or maintenance adjustments to address the concerns are part of the Operating Record.

3.4 MODIFICATIONS TO THE EXISTING CONTROL SYSTEM

The existing run-on and run-off controls for Kyger Creek's CCR Landfill were designed and permitted in 2008. The design permitted is for the complete buildout of the landfill and its stormwater management system. As of this submittal, only Area 1 (Parts 1, 2, and 3) is constructed and accepting CCRs. No portion of the landfill is considered capped and closed by the state of Ohio.

The watershed running onto the landfill area has not been subject to significant construction or land use modification.

The state of practice relies on Bonnin et al (2016) (NOAA Atlas 14) for point precipitation frequency estimates. The precipitation estimate for the 24-hour, 25-year storm event is 4.30 inches with 90% confidence intervals. Hull & Associates, Inc. (2008a) modeled the 24-hour, 25-year storm event as 4.32 inches in the XP-SWMM model (Appendix G-II). The 25-year, 24-hour rainfall depth used in the design calculations was obtained from NOAA Atlas 14, which is consistent with current practice.

The existing run-on and run-off control design meets current standards.

4.0 REFERENCES

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

Environmental Protection Agency (2015). "Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities." Federal Register, Vol. 80, No. 74, April 17.

Hull & Associates, Inc. (2008a). *Class III Residual Waste Permit To Install Application for the: Ohio Valley Electric Corporation Kyger Creek Plant Landfill Gallia County, Cheshire, Ohio*. Volume I of IV. March 2007 (Revised May 2008)

Hull & Associates, Inc. (2008b). *Ohio Valley Electric Corporation Kyger Creek Plant Landfill Permit To Install Plans - Class III Residual Waste Facility, Cheshire, Ohio*. Issued For Permit - February 2007 (Revised November 2008).

Hull & Associates, Inc. (2009). *Ohio Valley Electric Corporation Kyger Creek Plant Landfill Phase 1 Construction Plans - Class III Residual Waste Facility, Cheshire, Ohio.* Issued For Construction, March.

Bonnin, G.M., D. Martin, B. Lin, T. Parzybok, M. Yekta, and D. Riley (2016). *NOAA Atlas 14.* "Point Precipitation Frequency Estimates." Volume 2, Version 3. Location name: Cheshire, Ohio, USA. Latitude: 38.9248˚, Longitude: -82.1666˚, Elevation: 708.33 ft.

Ohio Environmental Protection Agency (OEPA) (2016). "List Individual NPDES Permit by County." Division of Surface Water. Gallia. http://wwwapp.epa.ohio.gov/dsw/permits/permit_list.php Accessed October 6.

Professional Service Industries, Inc. (PSI) (2010). *Construction Certification Report. Area 1 Part 1. Kyger Creek Plant Landfill*. November 30. PSI Report 114-80062-1531.

S&ME, Inc. (2013). *Construction Certification Report. Area 1, Parts 2 and 3. Kyger Creek Plant. Residual Waste Landfill*. January.

Stantec Consulting Services Inc. (2016). *2015 CCR Rule Inspection, Kyger Creek Landfill.* Kyger Creek Generating Station. Cheshire, Ohio. Gallia County. January.

APPENDIX A
REFERENCE PLANS AND FIGURES

DWG. NO. 15-30501-21-D

E 2061000 E 2062000 E 2063000 E 2064000 E 2065000 E 2066000 E 2067000 E 2068000

N 339000 N 338000 N 337000 N 336000 N 335000

N

0 100 200 400
SCALE IN FEET

PERIMETER ACCESS ROAD (SEE DETAIL 4/40)

NORTH PERIMETER DITCH

NORTH SEDIMENTATION POND

PERIMETER ACCESS ROAD (SEE DETAIL 5/41)

NORTH PERIMETER DITCH

EAST PERIMETER DITCH

EAST SEDIMENTATION POND

CONSTRUCTION ACCESS/NORTH HAUL ROAD

LEACHATE COLLECTION POND

WEST PERIMETER DITCH

LEACHATE TREATMENT AREA

EAST PERIMETER DITCH

WEST SEDIMENTATION POND

WEST PERIMETER DITCH

SOUTH SEDIMENTATION POND

CONSTRUCTION ACCESS/SOUTH HAUL ROAD

UPPER SOUTH PERIMETER DITCH

WEST PERIMETER DITCH

PERIMETER ACCESS ROAD (SEE DETAIL 6/41)

NOTE: THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

HENDERSON AERIAL SURVEYS INC.
5889 GROVE CITY RD. GROVE CITY, OHIO 43123

JOB NO.: 41903 NAME: Kyger Creek

SCALE: 1"=100' AERIAL PHOTOGRAPHY EXPOSED: 03.17.05

CONTOUR INTERVAL: two(2)foot SHEET: 1 OF 1

NAD83/NAVD88 OHIO SOUTH

NOTE:

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.

LEGEND – EXISTING

- PROPERTY LINE
- APPROXIMATE LOCATION OF CEMETERY
- 730 — 10-FOOT CONTOUR INTERVAL
- 745.6 SPOT ELEVATION
- TREE LINE
- BUILDING

LEGEND – PROPOSED

- WASTE LIMIT
- 794.5 — FINAL COVER GRADES
- DRAINAGE DITCH/SWALE
- 5+00 — DITCH/ROAD STATION (SEE DETAIL 4 DRAWING 46, SEE PROFILE DRAWINGS 46 AND 47
- EROSION CONTROL TERRACE
- 1097.10 SPOT ELEVATION
- RIP-RAP EROSION PROTECTION
- CULVERT
- STONED ROAD SURFACE/ACCESS AREA

REFERENCE DRAWINGS

DATE	NO.	DESCRIPTION	APPD.
11/20/08	D	NOD 3 RESPONSE	JHH
9/28/08	C	NOD 2 RESPONSE	JHH
6/26/07	B	NOD 1 RESPONSE	JHH
2/28/07	A	ISSUED FOR PERMIT	JHH

REVISIONS

e:/mt/15/geo_hydro_site/vendor/hull/15-30501-15

Hull & associates, inc.
ENGINEERS | GEOLOGISTS | SCIENTISTS | PLANNERS
6397 GLENDALE AVENUE
SUITE 300
TOLEDO, OHIO 43614
PHONE: (419) 385-2018
FAX: (419) 385-5487
www.hullinc.com

STATE OF OHIO — JOHN HARMON HULL — E-45126 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

DATE 11/7/08

PROJECT NO.:	AP0006
FILE NO.:	AP0006.100.0139
LAYOUT BY:	TRB
DRAWN BY:	GAC/DB
CHECKED BY:	AMG/JHH
SCALE:	1"=200'
SUBMITTAL DATE:	MAY 2008

OEPA DRAWING NO. 4G

DRAWING 21 OF 56

OHIO VALLEY ELECTRIC CORP.

KYGER CREEK PLANT

CHESHIRE OHIO

KYGER CREEK PLANT LANDFILL

GENERAL SITE DEVELOPMENT PLAN

DWG. NO. 15-30501-21-D

SCALE: 1"=200' CIVIL ENGINEERING DIVISION

DR: CH: ENGR: PROJ. ENGR: APPROVED BY:

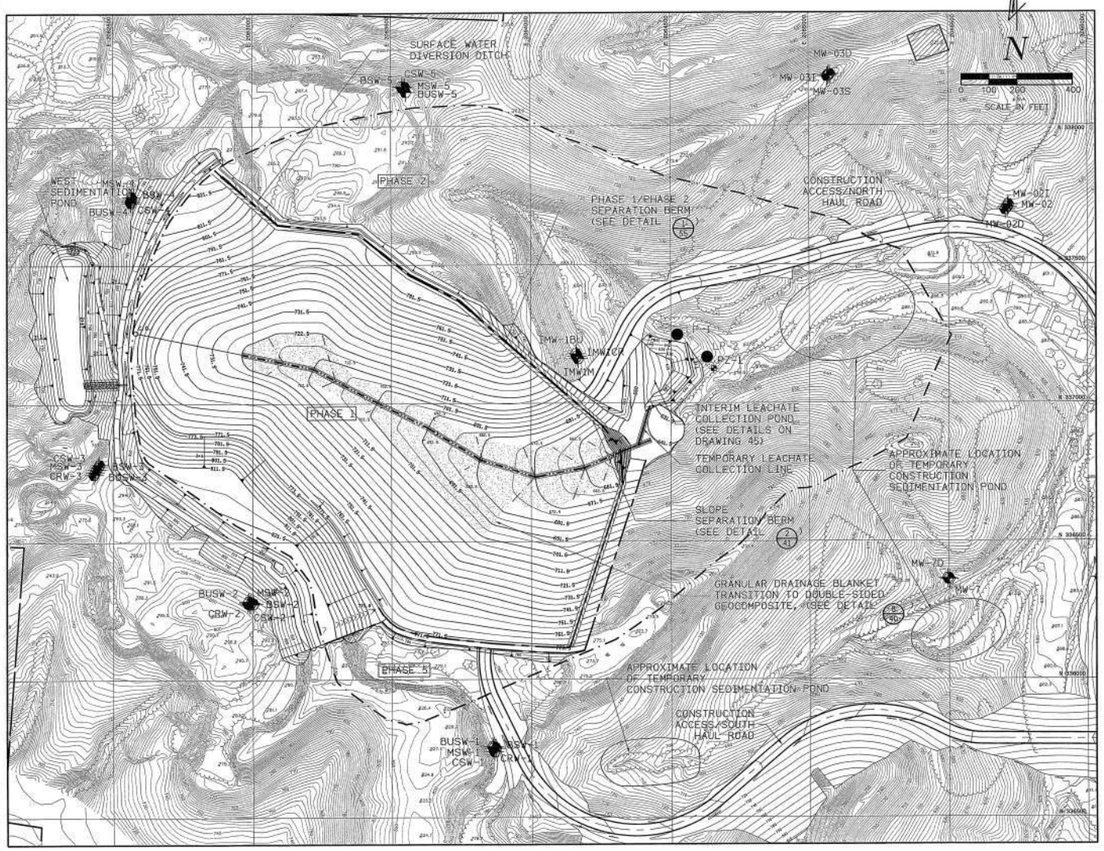
DATE: 11/7/08

AEP AMERICAN ELECTRIC POWER

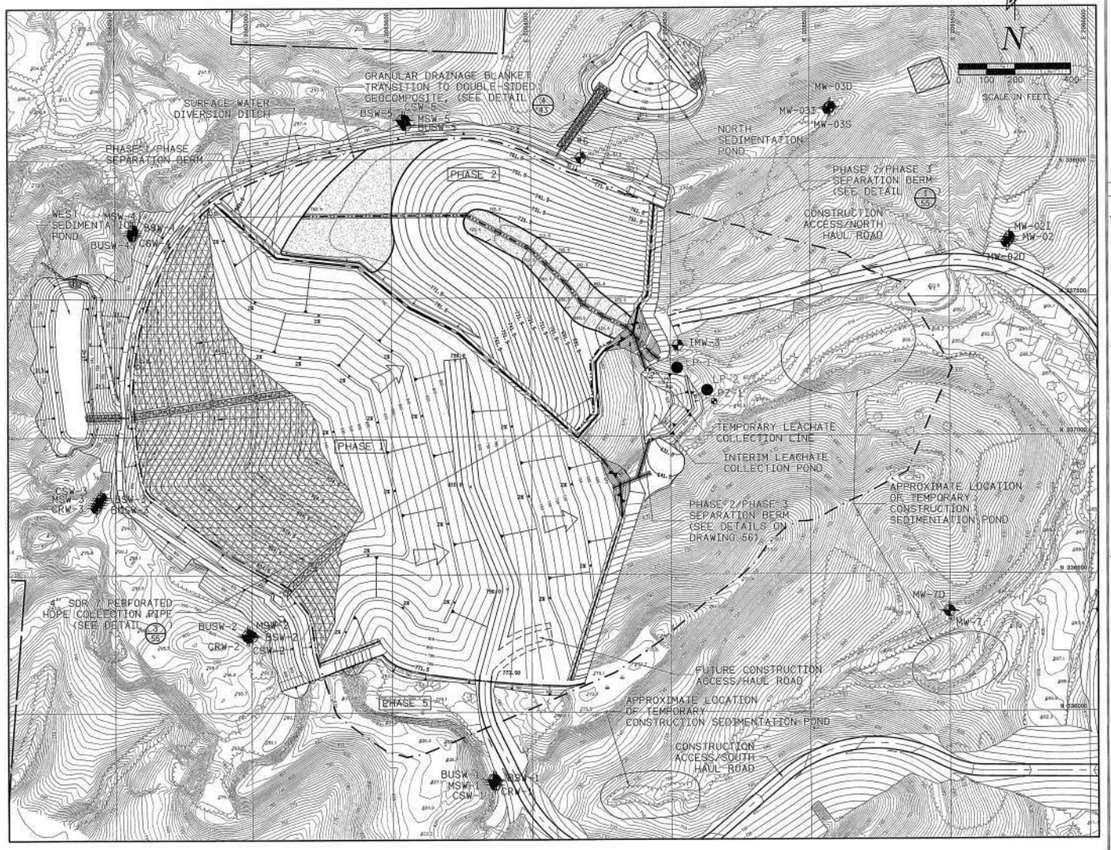
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

DWG. NO. 15-30501-37-D

PHASE 1 - ACTIVE



PHASE 2 - ACTIVE (PHASE 1 FILLED)



PHASE 1

1) INSTALL APPROPRIATE EROSION AND SEDIMENTATION CONTROL MEASURES. CONSTRUCT TEMPORARY CONSTRUCTION SEDIMENTATION POND AND TEMPORARY CULVERTS, IF NECESSARY.
2) CLEAR AND GRUB WORK AREAS.
3) CONSTRUCT CONSTRUCTION ACCESS/HAUL ROADS.
4) INSTALL AND IMPLEMENT PHASE 1 GROUNDWATER MONITORING WELLS. THE PHASE 1 GROUNDWATER MONITORING NETWORK INCLUDES MONITORING WELL NESTS #1 THROUGH #4, LEACHATE POND WELLS LP-1 AND LP-2, AND INTERIM MONITORING WELL NEST #1.
5) EXCAVATE PHASE 1. INSTALL GROUNDWATER INTERCEPTOR DRAIN IN PHASE 1. PLACE STRUCTURAL FILL AS NEEDED. CONSTRUCT INTERIM LEACHATE COLLECTION POND. INSTALL INITIAL LEACHATE STORAGE/MANAGEMENT SYSTEM. CONSTRUCT PERIMETER BERM. INSTALL COMPOSITE LINER AND LEACHATE COLLECTION SYSTEMS IN PHASE 1. CERTIFY CONSTRUCTION OF PHASE 1 WITH REPORT SUBMITTALS TO OHIO EPA.
6) RECEIVE CERTIFICATION APPROVAL FROM OHIO EPA AND BEGIN WASTE PLACEMENT IN PHASE 1.
7) BEGIN EXCAVATION OF PHASE 2.
8) CONSTRUCT WEST SEDIMENTATION POND.
9) OIL/GAS WELL(S) WITHIN THE PHASE 1 CONSTRUCTION LIMITS SHALL BE ABANDONED IN ACCORDANCE WITH ORC 1509 PRIOR TO CONSTRUCTION.

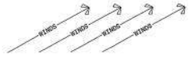
PHASE 2

1) CONTINUE WASTE PLACEMENT IN PHASE 1.
2) INSTALL APPROPRIATE EROSION AND SEDIMENTATION CONTROL MEASURES. CONSTRUCT NEW TEMPORARY CONSTRUCTION SEDIMENTATION POND AND TEMPORARY CULVERTS, IF NECESSARY.
3) INSTALL AND IMPLEMENT PHASE 2 GROUNDWATER MONITORING WELLS. THE PHASE 2 GROUNDWATER MONITORING NETWORK INCLUDES THE PHASE 1 GROUNDWATER MONITORING NETWORK, MONITORING WELL NESTS #5 AND #6 AND INTERIM MONITORING WELL NEST IMW-3. ABANDON INTERIM WELL LOCATION #1.
4) BEGIN EXCAVATION OF PHASE 3. COMPLETE EXCAVATION OF PHASE 2. INSTALL GROUNDWATER INTERCEPTOR DRAIN IN PHASE 2. PLACE STRUCTURAL FILL, AS NEEDED. CONSTRUCT PERIMETER BERM. INSTALL COMPOSITE LINER AND LEACHATE COLLECTION SYSTEM IN PHASE 2. CERTIFY CONSTRUCTION OF PHASE 2 WITH REPORT SUBMITTALS TO OHIO EPA.
5) RECEIVE CERTIFICATION APPROVAL FROM OHIO EPA AND BEGIN WASTE PLACEMENT IN PHASE 2.
6) COMPLETE FINAL COVER SYSTEM AS SHOWN AS SEASONAL CONSTRUCTION ALLOWS. INSTALL PERMANENT PERIMETER ACCESS ROAD, DRAINAGE TERRACES, ROCK LETDOWNS AND DITCHES, AS NEEDED.
7) CONSTRUCT NORTH SEDIMENTATION POND.

GENERAL NOTES:

1) THE DRAWING REPRESENTS THE COMPLETED CONSTRUCTION AND/OR FILLING PHASE.
2) PROVIDE AREAS NEAR THE HAUL ROAD WITHIN THE CERTIFIED WASTE LIMITS FOR FILLING DURING INCLEMENT WEATHER PERIODS. THE CONTOURS DEPICTED ON THE PHASE WILL BE MODIFIED IN THE FIELD TO ACCOMMODATE INCLEMENT WEATHER DISPOSAL SITES.
3) TEMPORARY HAUL ROADS SHALL BE CONSTRUCTED TO THE ACTIVE FACE AND WILL BE REGULARLY MAINTAINED FOR ALL WEATHER ACCESS, DUST AND MUD CONTROL. THE CONTOURS DEPICTED ON THE PHASE WILL BE MODIFIED IN THE FIELD TO ACCOMMODATE THESE ROADS.
4) CLEAN PONDED WATER ACCUMULATING IN EXCAVATION SHALL BE PUMPED INTO TEMPORARY SEDIMENTATION BASINS AND/OR PERIMETER DITCHES/SWALES.
5) HAUL AND CONSTRUCTION ACCESS ROADS DEPICTED ON PHASES ARE APPROXIMATE AND MAY BE RELOCATED UPON APPROVAL BY THE OHIO EPA, TO ACCOMMODATE TRAFFIC FLOW/VOLUME THE CONTOURS DEPICTED ON THE PHASE MAY BE MODIFIED IN THE FIELD TO ACCOMMODATE THESE ROADS.
6) INTERMEDIATE COVER OR FINAL COVER WILL BE INSTALLED OVER AREAS OF A PHASE THAT HAVE REACHED RESIDUAL WASTE APPROVED FINAL ELEVATION PLACEMENT.
7) APPROVED SOIL FROM EXCAVATED AREAS OR STOCKPILES WILL BE USED AS VEGETATIVE SOIL, RECOMPACTED SOIL LINER/BARRIER LAYER, STRUCTURAL FILL, OR INTERMEDIATE COVER.
8) INTERMEDIATE COVER MAY BE REMOVED FROM AREAS PRIOR TO ADDITIONAL WASTE PLACEMENT.
9) DRAINAGE TERRACES SHALL BE PLACED ALONG THE ACTIVE FILLING AREA, AS NEEDED. THE LOCATION OF TEMPORARY DRAINAGE TERRACES SHALL BE BASED ON OPERATIONAL NEEDS.
10) TEMPORARY SEDIMENTATION PONDS SHALL BE CONSTRUCTED TO MANAGE SEDIMENT DURING CONSTRUCTION IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES. THE LOCATIONS OF TEMPORARY PONDS SHALL BE LOCATED BASED ON CONSTRUCTION AND OPERATIONAL NEEDS.
11) FILLING IN A NEW PHASE SHALL NOT BEGIN WITHOUT COMPLETING THE PREVIOUS PHASE, EXCEPT TO THE EXTENT NECESSARY FOR THE PROPER OPERATION OF THE FACILITY AND WEATHER CONDITIONS RELATED TO FINAL COVER APPLICATION.
12) EXCAVATION OF FUTURE PHASES MAY OCCUR AT ANY TIME, AS DEEMED NECESSARY BY THE OPERATOR AND THE OHIO EPA, AND IS NOT PHASE DEPENDENT.
13) THE CURRENTLY SHOWN PHASING IS THE KYGER CREEK PLANT LANDFILL'S BEST PREDICTION OF WHAT WILL HAPPEN IN THE FUTURE. IF CHANGES TO THE PHASING ARE NEEDED, AN ALTERATION WILL BE SUBMITTED TO THE OHIO EPA.
14) THE WORK ITEMS UNDER EACH PHASE ARE NOT NECESSARILY LISTED IN THE ORDER, AND MAY BE COMPLETED IN A DIFFERENT ORDER DEPENDING ON OPERATIONAL NEEDS, WEATHER CONDITIONS, ETC.

PREVAILING WIND INFORMATION:



PREDOMINANT WINDS OUT OF THE SOUTHWEST

LEGEND - EXISTING

- PROPERTY LINE
- APPROXIMATE LOCATION OF CEMETERY
- 730 — 10-FOOT CONTOUR INTERVAL
- 2-FOOT CONTOUR INTERVAL
- 745.6 — SPOT ELEVATION
- TREE LINE
- BUILDING

LEGEND - PROPOSED

- WASTE LIMIT
- TERRACE FLOWLINE
- DRAINAGE FLOWLINE
- ROCK LETDOWN
- CULVERT
- WIND — PREVAILING WIND DIRECTION
- CERTIFIED LIMITS OF FINAL COVER AREA THIS PHASE
- APPROXIMATE LIMITS OF AREA TO RECEIVE FINAL COVER THIS PHASE
- FILL PROGRESSION
- RESIDUAL WASTE TRAFFIC PATTERNS
- DRAINAGE FLOW
- PHASE DIVISION LINE
- #6 — MONITORING WELL NEST
- #1 — INTERIM MONITORING WELL NEST
- LP-1 — LEACHATE POND WELL
- BSW-1 — BELLAIRE SANDSTONE WELL
- CSW-1 — CONNELLSVILLE SANDSTONE WELL
- MSW-1 — MORGANTOWN SANDSTONE WELL
- CRW-1 — COW RUN SANDSTONE WELL
- BUSW-1 — BUFFALO SANDSTONE WELL

REFERENCE DRAWINGS

DATE	NO.	DESCRIPTION	APPD.
11/20/08	D	NOD 3 RESPONSE	
8/28/08	C	NOD 2 RESPONSE	JHH
8/26/07	B	NOD 1 RESPONSE	JHH
2/28/07	A	ISSUED FOR PERMIT	JHH

REVISIONS

s:/mt/15/geo_hydro_site/vendor/hull/15-30501-31

Hull & Associates, Inc.
ENGINEERS | GEOLOGISTS | SCIENTISTS | PLANNERS
6397 GLENDALE AVENUE
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FAX: (419) 385-5487
www.hullinc.com

STATE OF OHIO
JOHN HARRISON HULL
E-45126
REGISTERED PROFESSIONAL ENGINEER

SIGNATURE
11/20/08
DATE

PROJECT NO.:	AP0006
FILE NO.:	AP0006.100.0123
LAYOUT BY:	TRB
DRAWN BY:	GAC
CHECKED BY:	AWG/JHH
SCALE:	1"=200'
SUBMITTAL DATE:	MAY 2008

OEPA DRAWING NO. 6A

DRAWING 37 OF 56

OHIO VALLEY ELECTRIC CORP.

KYGER CREEK PLANT

CHESHIRE OHIO

KYGER CREEK PLANT LANDFILL

PHASING PLANS 1 AND 2

DWG. NO. 15-30501-37-D

SCALE: 1"=200'

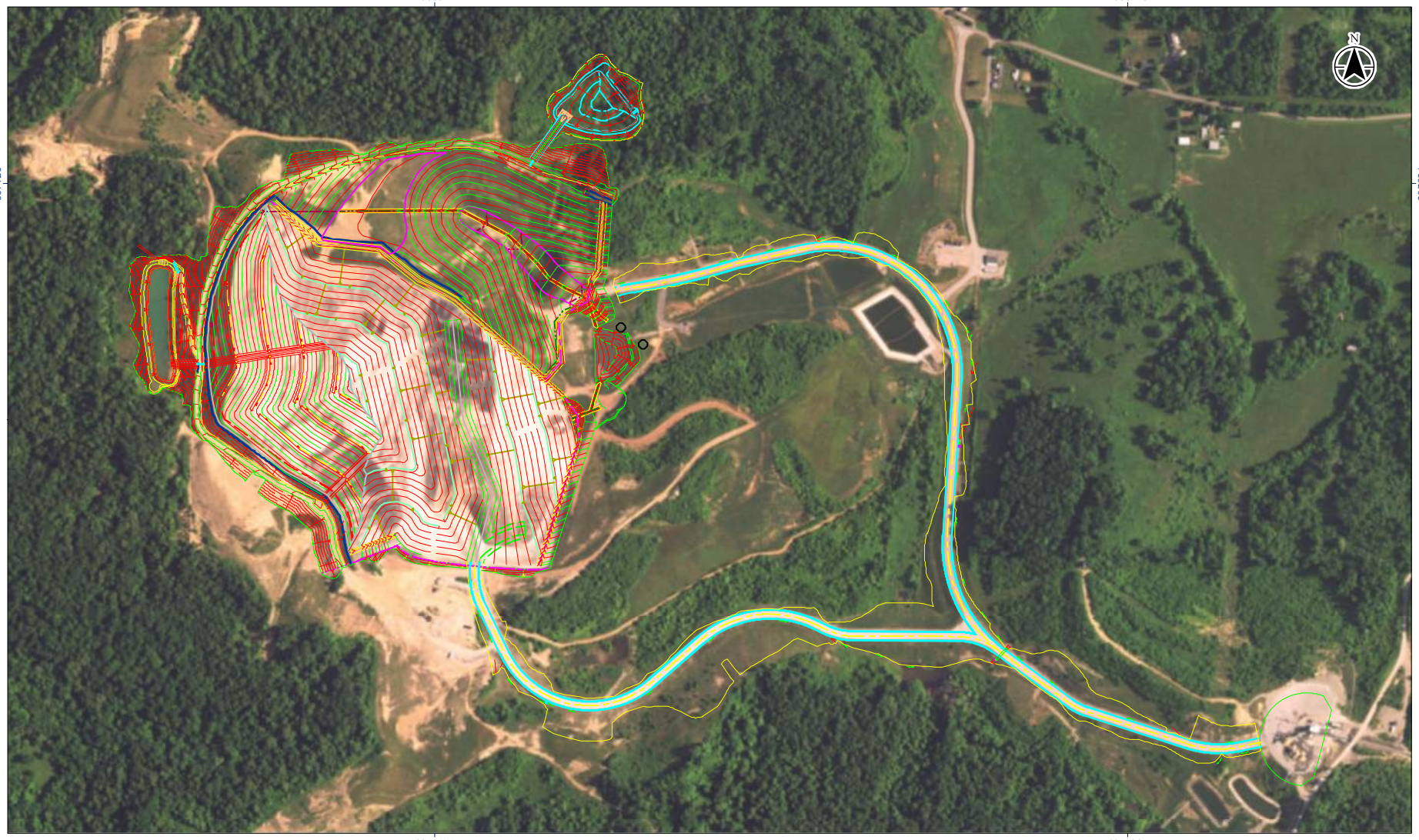
CIVIL ENGINEERING DIVISION

DR:	
CH:	
ENGR:	
PROJ. ENGR.	
DATE: 5/28/08	

APPROVED BY:

AEP AMERICAN ELECTRIC POWER

1 RIVERSIDE PLAZA
COLUMBUS, OH 43215



Notes

1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
2. ESRI - NAIP 2015 Ortho-Imagery
3. Hull & Associates, Inc. (2008b). Ohio Valley Electric Corporation Kyger Creek Plant Landfill Permit To Install Plans - Class III Residual Waste Facility, Cheshire, Ohio. Issued For Permit - February 2007 (Revised November 2008). 15-30501-37-D PHASE2b(filled).dwg

0 700 Feet

1:8,400 (At original document size of 8.5x11)

Stantec

OVEC/IKEC

Project Location	175534017
Cheshire Gallia County, OH	Prepared by AP on 2016-10-07 Technical Review by JH on 2016-10-07 Independent Review by SH on 2016-10-07

Client/Project
Kyger Creek Plant
CCR Landfill
Run-on and Run-off Control Plan

Figure No.
A-1

Title
Plan View of CCR Landfill

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Notes

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0 700 Feet

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Stantec

OVEC/IKEC

Project Location
Cheshire
Gallia County, OH

175534017
Prepared by AP on 2016-10-07
Technical Review by JH on 2016-10-07
Independent Review by SH on 2016-10-07

Client/Project
Kyger Creek Plant
CCR Landfill
Run-on and Run-off Control Plan

Figure No.
A-2

Title
Plan View of CCR Landfill

V:\175\active\175340\7gis\image\kyger.mxd Revised: 2016-10-11 By: cpeckler