Prepared for:

Gavin Power, LLC

Fly Ash Reservoir

Location Restriction Report

James M. Gavin Power Plant

17 October 2018

Project No.: 0469558

The business of sustainability

ERM

Signature Page

October 2018

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ERM Project No. 0469558

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Acronyms and Abbreviations

AEP	American Electric Power
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
ERM	Environmental Resources Management
FAR	Fly Ash Reservoir
Gavin	Gavin Power, LLC
NPDES	National Pollutant Discharge Elimination System
OEPA	Ohio Environmental Protection Agency
RWL	Residual Waste Landfill
Site	Fly Ash Reservoir, located northwest of the Gavin Power Plant at 7397 State Road 7 in the Village of Cheshire, Gallia County, Ohio.
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

Certification

I hereby certify that I or an agent under my review has prepared this Location Restriction Report for the Fly Ash Reservoir in accordance with 40 CFR 257.60 through 257.64. To the best of my knowledge, the information contained in this Report is true, complete, and accurate.

_____

James Hemme, P.E.

State of Ohio License No: 72851

Principal Consultant, ERM

1. INTRODUCTION

The General James M. Gavin Power Plant (the "Plant") is a coal-fired generating station located in Gallia County in Cheshire, Ohio, along the Ohio River. The Plant includes the Fly Ash Reservoir (FAR), which is used to manage coal combustion residuals (CCR) previously generated by the Plant. As such, the FAR is subject to regulation under Title 40, Code of Federal Regulations, Part 257 (40 CFR Part 257) (also known as the CCR Rule). The location of the FAR is shown in Figure 1-1.

CCR generated by the Plant is currently placed in the Residual Waste Landfill (RWL) located west of the main Plant area. Prior to construction of the RWL in 1994, fly ash was sluiced to the FAR just west of the RWL. The FAR was used primarily for wastewater treatment and disposal of fly ash, and was designed to occupy approximately 300 acres of the previously dammed, former Stingy Run stream valley. The FAR received coal combustion materials from the Gavin Plant from the mid-1970s until January 1995. A Closure Plan for the FAR was approved by the Ohio Environmental Protection Agency (OEPA) in 2016. Closure of the FAR is currently in progress, and is anticipated to be completed by 2020. Under the CCR Rule, the FAR qualifies as an "inactive CCR surface impoundment," because it did not receive CCR after 19 October 2015 but still contained both CCR and liquids on or after 19 October 2015 (40 CFR 257.53). However, it is subject to the same requirements and timeframes applicable to existing CCR surface impoundments, as provided in 40 CFR 257.100(a), because the previous owner of the FAR did not seek its early closure pursuant to 40 CFR 257.100(e)(1)(i)-(iii) (see 81 FR 51807).

This report was produced by Environmental Resource Management, Inc. (ERM) to evaluate the following location restrictions for the FAR:

- Placement above the uppermost aquifer (40 CFR 257.60);
- Wetlands (40 CFR 257.61);
- Fault areas (40 CFR 257.62);
- Seismic areas (40 CFR 257.63); and
- Unstable areas (40 CFR 257.64).

2. LOCATION RESTRICTIONS

2.1 Documentation Reviewed

ERM has relied primarily on reports and information prepared by others to evaluate compliance with the CCR Rule location restrictions, and in particular has relied upon the following sources:

- National Pollution Discharge Elimination System (NPDES) Fact Sheet for Permit 0IB00006*ND (OEPA 2013);
- NPDES Permit 0IB00006*ND, modification issued 17 April 2018 (OEPA 2018);
- Initial Safety Factor Assessment (S&ME, Inc. 2016);
- Initial Hazard Assessment (American Electric Power (AEP) 2016a);
- Initial Design Flood Control Plan (AEP 2016b);
- Structural Stability Assessment (AEP 2016c);
- Initial Closure Plan (AEP 2016d);
- History of Construction CFR 257.73(c)(1) Stingy Run Fly Ash Pond (AEP 2016e);
- 2017 Annual Inspection Report Bottom Ash Complex and Stingy Run Fly Ash Reservoir (ERM 2018a);
- 2017 Annual Groundwater Monitoring and Corrective Action Report (ERM 2018b);
- U.S. Quaternary Faults and Folds Database (USGS);
- Stingy Run Fly Ash Reservoir Closure, Closure Plan Volume 1 (AEP and Geosyntec 2016a);
- Dam Modification Report, Stingy Run Fly Ash Reservoir, (AEP and Geosyntec 2016b); and
- GeoFacts No. 8 (Ohio Department of Natural Resources 1995).

2.2 Placement Above the Uppermost Aquifer (40 CFR 257.60)

An assessment of placement above the uppermost aquifer as required by 40 CFR 257.60(a) was not performed, because the FAR is currently undergoing closure in accordance with 40 CFR 257.101(b)(1) and CCR and non-CCR waste streams are no longer being placed at the FAR. As mentioned, the FAR is scheduled to be closed by 2020. The closure requirements of 40 CFR 257.102 of the CCR Rule are discussed in the Closure Plan for the Stingy Run Fly Ash Pond (AEP 2016). Table 2-1 summarizes where each of the closure requirements under the CCR Rule are addressed in the 2016 Closure Plan.

Table 2-1: Summary of Closure Requirements

40 CFR Section	Requirement	Location in 2016 Closure Plan
257.102(b)(1)(i)	Description of Closure Plan	Section 3.0
257.102(b)(1)(iii)	Closure in Place	Section 4.0
257.102(b)(1)(iv)	Estimate of Maximum Volume of CCR	Section 5.0
257.102(b)(1)(v)	Estimate of Largest Area of CCR Requiring Cover	Section 6.0
257.102(b)(1)(vi)	Closure Schedule	Section 7.0
257.102(d)(1)	Closure Performance Standards	Section 4.1
257.102(d)(2)	Draining and Stabilizing of the Surface Impoundment	Section 4.2
257.102(d)(3)	Final Cover System	Section 4.3

2.3 Wetlands (40 CFR 257.61)

The CCR Rule requires that surface impoundments such as the FAR not be located in wetlands, as defined by 40 CFR 232.2, unless the owner or operator demonstrates that the CCR unit meets the requirements in 40 CFR 257.61(a)(1)-(5).

An ERM Senior Wetlands Scientist conducted a field investigation of the Site on 20 August 2018 to observe existing conditions and to identify any wetlands within or near the FAR. Several wetlands were noted around the perimeter of the FAR. These wetlands were observed to drain inward into the FAR.

The Plant is located in the Kyger Creek Watershed. Therefore, ERM reviewed the National Wetland Inventory map provided by the U.S. Fish and Wildlife Service for the Kyger Creek Watershed (HUC12 050302020901) to identify potential wetland areas adjacent to the FAR (Figure 2-1). The Fly Ash Reservoir is classified as a lacustrine limnetic, unconsolidated bottom, permanently flooded, and diked/impounded wetland (L1UBHh); however it is not considered a federal jurisdictional wetland, per rules published by the USACE and United States Environmental Protection Agency (33 CFR 328.3(b)(1), and 40 CFR 230.3(2)(i), respectively. There are several wetlands mapped to the east and west of the FAR that are classified as palustrine unconsolidated bottom (PUB).

ERM reviewed the soil map near the FAR from the Natural Resources Conservation Service Web Soil Survey (Figure 2-2). The Natural Resources Conservation Service has mapped the Site as predominantly Water (W), Bethesda channery silt loam (Bhk4f), and Guernsey-Gilpin association, steep (GwE). Other soil series found surrounding the Site include Guernsey-Gilpin silt loams, 8–15 percent slopes (GsC), Pinegrove sand, 25–70 percent slopes (PnF), Udorthents (Ud), and Upshur-Gilpin complex, 8–15 percent slopes, eroded (UgC2).

Based on the available information, the FAR originally contained wetlands, therefore, the remainder of this analysis focuses on the requirements of 40 CFR 257.61(a)(1)-(5).

Regarding the requirement in 40 CFR 257.61(a)(1) to consider a rebuttal of the presumption that an alternative to the CCR unit exists that does not involve wetlands, Gavin discontinued disposal of CCR in the FAR in 1994. Since that time, CCR materials have been placed in the Residual Waste Landfill, and the FAR closure process is anticipated to be completed by 2020. Location restriction information for the Residual Waste Landfill is provided in a separate report.

With respect to the requirements of 40 CFR 257.61(a)(2)(i) and (ii) regarding compliance with water quality standards, discharge of water from the FAR via Outfall 001 is conducted in accordance with the current NPDES permit 0IB00006*ND. The permit requires routine effluent sampling and testing, comparison of test results to discharge limitations, and reporting. OEPA removed the requirement for

effluent toxicity testing at Outfall 001 in the 2013 renewal because there was “no reasonable potential for these outfalls to contribute to exceedances of toxicity water quality standards” (OEPA 2013). Based on these considerations, operation of the FAR is not expected to cause or contribute to a violation of applicable water quality standards. Based on these considerations, the FAR is compliant with 40 CFR 257.61(a)(2)(i) and (ii).

With respect to the requirements of 40 CFR 257.61(a)(2)(iii) and (iv) regarding compliance with the Endangered Species Act and protections of marine sanctuaries, ERM reviewed the United States Fish and Wildlife Service Information for Planning and Consultation to confirm the current list of known species and or habitat protected under the Endangered Species Act of 1973. The Information for Planning and Consultation results indicated that no critical habitats are located within or near the Site. No destruction or adverse modification of a critical habitat is anticipated. Although the Northern Long-Eared Bat is an endangered species potentially occurring in the area, the closure and post-closure monitoring of the FAR is not expected to jeopardize this species. Surface water from the Site is not hydrologically connected to the Ohio River, and there is not sufficient water between the FAR and wetlands located north and west of the FAR to allow passage of fish species, therefore marine species do not exist within the Site. Based on these considerations, the FAR is compliant with 40 CFR 257.61(a)(2)(iii) and (iv).

With respect to the requirements of 40 CFR 257.61(a)(3)(i) through (vi), the FAR is not expected to cause or contribute to significant degradation of wetlands, for the following reasons:

- The FAR foundation soils consist of layers of sand and clay underlain with shale and competent rock, and the abutments are formed of the natural hillside sandstone (AEP 2016e) and thus is not constructed of wetland soils, muds, and deposits or dredged materials.
- Based on a review of the Initial Closure Plan (AEP 2016), inspections by a qualified person, and results of previous annual inspections, there have been no past indications of potential structural weakness, slope instability, drainage or seepage issues, or other adverse conditions that would impact the stability of the materials used to construct the FAR (ERM 2018a).
- Regular ongoing inspections are performed to promptly identify and resolve potential erosion or soil migration issues.
- FAR effluent continues to be monitored in compliance with the Clean Water Act and Water Quality Standards, which includes comparison of results to discharge limitations intended to be protective for fish, wildlife, and other aquatic resources. No adverse impacts to fish, wildlife or other aquatic resources and their habitats were observed during ERM’s 20 August 2018 visit.
- The Initial Safety Factor Assessment concluded the FAR met or exceeded the minimum safety factors for long-term maximum storage, maximum surcharge pool, seismic loading, and embankment liquefaction (S&ME 2015). These findings, and the regular inspections performed to detect potential structural weakness, slope instability, drainage or seepage issues, or other adverse conditions, reduce the risk of catastrophic release of CCR materials to nearby wetlands. Based on the preceding considerations, ERM does not believe a catastrophic release from the FAR is a likely scenario.

With respect to the requirements of 40 CFR 257.61(a)(4), steps were taken as part of the FAR closure process to avoid impacts to wetlands. In accordance with the OEPA-approved Closure Plan (AEP and Geosyntec 2016a), the acid mine drainage treatment systems were designed to avoid disturbance of surveyed wetlands and streams. No other requirements related to wetlands were included in the Closure Plan, and OEPA did not require compensatory measures to be implemented as part of the FAR closure process.

Finally, in accordance with the requirement of 40 CFR 257.61(a)(5), ERM believes sufficient information was available to make a reasoned determination with respect to the demonstrations required by 40 CFR 257.61(a)(1) through (4). Based on the foregoing discussion, the FAR is in compliance with the requirements of 40 CFR 257.61.

2.4 Fault Areas (40 CFR 257.62)

The CCR Rule requires that CCR units not be located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time (11,700 years ago) unless the owner or operator demonstrates that an alternative setback distance of less than 60 meters (200 feet) will prevent damage to the structural integrity of the CCR unit (40 CFR 257.62(a)). Based on the United States Geological Survey (USGS) Quaternary Faults and Folds Database, there are no known faults within 60 meters (200 feet) of the Gavin Plant. Therefore, the FAR is in compliance with the requirements of 40 CFR 257.62.

2.5 Seismic Impact Zones (40 CFR 257.63)

The CCR Rule requires that CCR units not be located in seismic impact zones unless the owner or operator demonstrates that all structural components including liners, leachate collection and removal systems, and surface water control systems are designed to resist the maximum horizontal acceleration in lithified earth material for the site (40 CFR 257.63(a)). The CCR Rule defines a “seismic impact zone” as “an area having a 2% or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth’s gravitation pull (g), will exceed 0.10 g in 50 years” (40 CFR 257.53). Based on information from the USGS Earthquake Hazards Program, the Plant is located in an area where the peak acceleration, based on 2 percent probability in 50 years, is less than 0.1 g (Figure 2-3). Therefore the FAR is not located in a “seismic impact zone,” and is in compliance with the requirements of 40 CFR 257.63.

2.6 Unstable Areas (40 CFR 257.64)

The CCR Rule provides the following definition for an "unstable area” (40 CFR 257.53):

> *Unstable area means a location that is susceptible to natural or human induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.*

The CCR Rule requires that CCR units not be located in an unstable area unless the owner or operator demonstrates that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted (40 CFR 257.64(a)). This evaluation of unstable areas addresses the definitional requirements noted above and specifically includes the following factors from 40 CFR 257.64(b):

1. On-site or local soil conditions that may result in significant differential settling;
2. On-site or local geologic or geomorphologic features; and
3. On-site or local human-made features or events (both surface and subsurface).

The evaluation of Unstable Areas for the FAR is provided in the following sections.

2.6.1 Evaluation of On-Site or Local Soil Conditions that May Result in Significant Differential Settling

To evaluate on-site or local soil conditions that may result in significant differential settling at the FAR, ERM reviewed the geotechnical stability evaluations in the Stingy Run Fly Ash Reservoir Closure Plan (AEP and Geosyntec 2016a) and the Dam Modification Report (AEP and Geosyntec 2016b). Geotechnical evaluations related to differential settling presented in the Closure Plan included the following:

- Static and seismic slope stability of final cover system slopes;
- Total and differential settlement of the final cover system resulting from compression of fly ash and original valley soils; and
- Static and seismic liquefaction potential of fly ash in the FAR.

The primary conclusions of the FAR Closure Plan related to differential settling include the following:

- **Static and Seismic Slope Stability**—Analyses were performed to evaluate the static and seismic slope stability factors of safety (FS) for shallow and deep potential slip surfaces affecting the FAR closure. The computed FS values for rotational and translational slope stability analyses exceeded the target lower-end FS of 1.5 for static and 1.0 for seismic conditions as summarized in the following table:

Table 2-2: Summary of Static and Seismic Factors of Safety

Analysis	Minimum Required FS	Calculated FS Range
Static	1.5	2.94-3.84
Seismic	1.0	1.49-2.01

- ***Total and Differential Settling***—Settlement analyses were conducted to evaluate total settlements occurring in compressible soil layers (i.e., CCR and natural clay) in the FAR under the combined loading of materials to be added during closure, which include contouring fill, a subsurface drainage layer, a protective layer, and vegetative layer soils. The results of the analysis indicate total settlement of less than 0.1 feet to approximately 0.6 feet within the fly ash, and differential settlement of up to 1.44 feet over a 300 feet length of the FAR within the native clay materials underlying the CCR materials. Differential settlement and bearing capacity risk of the FAR materials will be mitigated by allowing the majority of settlements to occur, prior to placement of additional lifts or installation of cover system installation. The analysis concluded that the placement of the relatively thin and uniform cover system mitigates the potential for unacceptable differential settlement, and post-settlement grades will remain positive within the FAR.
- ***Liquefaction***—The assessment indicated that seismically induced liquefaction is unlikely given calculated FS values greater than 1.0. Static liquefaction could occur if the rate of loading exceeded the rate of pore pressure dissipation during closure. The Closure Plan calls for pore pressure monitoring, and reduction of the filling rate if needed, during closure construction activities.

Geotechnical evaluations related to differential settling presented in the Dam Modification Report included the following:

- Slope stability; and
- Settlement analysis.

The primary conclusions of the Dam Modification Report related to differential settling include the following:

- ***Slope Stability***—A slope stability evaluation was performed to address the interim, end-of-construction, long-term and seismic loading at the FAR. Findings from each of these evaluations are summarized below:
  - **Interim**—The effect of lowering the surface water level within the FAR from 696 feet above sea level to 657 feet above sea level over a 3-year period on the stability of the upstream side of the dam was evaluated. The minimum computed FS for this scenario was 1.55, which is greater than the target value of 1.3.
  - **End of Construction**—A short-term analysis was conducted using undrained shear strengths for clayey soil units within the fly ash dam considering final grades. The minimum computed factor of safety for this scenario was 1.98, which is greater than the target value of 1.3.
  - **Long-term**—A long-term slope stability analysis was conducted using drained shear strength parameters and estimated steady state seepage water surface elevations within the lowered dam. The minimum computed factor of safety for this scenario was 1.51, which is greater than the target value of 1.5.
  - **Seismic loading**—A slope stability analysis was conducted using lower bound shear strength envelopes and estimated steady state seepage water elevations within the lowered dam. The minimum computed factor of safety for this scenario was 1.15, which is greater than the target value of 1.0.
- ***Settlement Analysis***—The FAR dam will be lowered from an approximate crest elevation of 735 feet with an average downstream slope of 3H:1V, down to a crest elevation of 661 feet with 1.5 percent to 13 percent downstream slopes. This represents a significant unloading of the dam and the foundation materials below the dam. Total settlements and differential settlements along the dam are anticipated to be minimal (i.e., less than 1 inch).

Thus, an evaluation of on-site and local soil conditions at the FAR does not indicate a potential for significant differential settling.

2.6.2 On-Site or Local Geologic or Geomorphologic Features

The following is an assessment of geologic or geomorphological features with the potential to contribute to unstable conditions:

- **Presence of Karst Terrain**—According to the Ohio Department of Natural Resources, Gallia County, Ohio is not an area known to contain karst features. There are no observed or reported karst features evident in the vicinity of the FAR.
- **Areas Susceptible to Mass Movement**— The Site is located in an area identified by Ohio Department of Natural Resources as having a potential for slope failures due to the presence of “red beds” (consolidated mudstones) of the Conemaugh and Monongahela rock groups (GeoFacts No. 8 1995). However, evaluations presented in the 2016 Closure Plan (AEP and Geosyntec 2016a) explicitly incorporated presumptive geotechnical properties (e.g., shear strength) for the red bed formations under the FAR. With this consideration, the factors of safety for slope stability are adequate. In addition, no major instabilities have been observed at the FAR during the closure process.
- **Areas susceptible to Coastal and River Erosion**—The FAR is located above the 100-year flood plain and is not located in an area that is subject to coastal or river erosion.

Thus, an evaluation of on-site or local geographic or geomorphological features at the FAR does not indicate that the FAR is located in an unstable area.

2.6.3 On-Site or Local Human-Made Features or Events (Both Surface and Subsurface).

Geotechnical site investigations were performed to identify conditions at the FAR which could potentially cause a significant amount of post-construction differential settlement, or downslope movement of soil, rock, and/or debris under the influence of gravity, unless improved. These evaluations, which were presented in the Stingy Run Fly Ash Reservoir Closure Plan (AEP and Geosyntec 2016a) and the Dam Modification Report (AEP and Geosyntec 2016b were certified by a qualified professional engineer and are summarized in Section 2.6.1 of this report.

According to the Ohio Department of Natural Resources, historical coal mines exist in areas surrounding the FAR; however, there are no records of mines located within the FAR. Regarding groundwater, the draining and capping of the FAR will cause a reduction in infiltration, which is anticipated to result in gradual, long-term reductions in groundwater elevations. The reduction in groundwater elevation was explicitly considered in the stability analyses presented in the Dam Modification Report and described above in Section 2.6.1, and thus the capping of the FAR is not expected to cause or result in excessive settlement. Based on these considerations, local human-made features or events are not expected to cause excessive settlement or reduce the bearing capacity of FAR foundation soils.

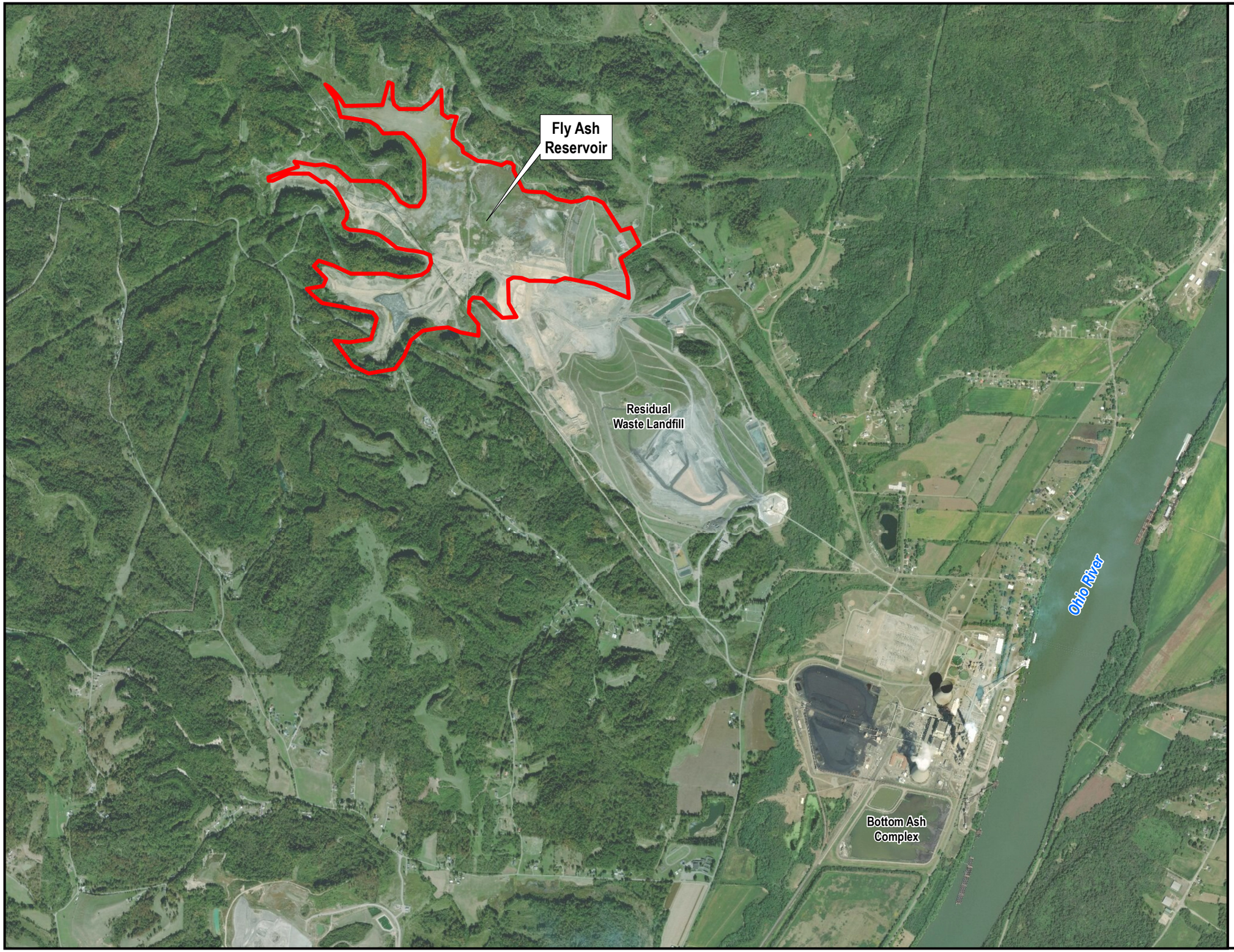
Thus, an evaluation of on-site or local human-made features or events (both surface and subsurface) at the FAR does not indicate that the FAR is located in an unstable area.

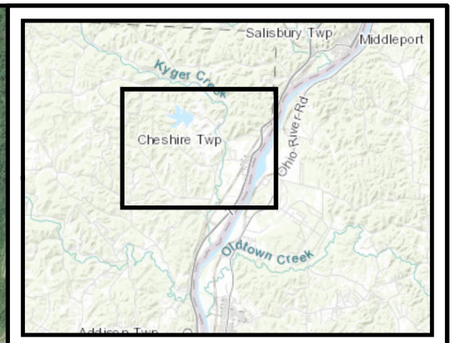
3. CONCLUSIONS

The conclusions for each of the five location restrictions for the FAR are as follows:

- An assessment of placement above the uppermost aquifer required by 40 CFR 257.60 was not performed as the FAR no longer receives CCR and non-CCR waste streams and is currently undergoing closure in accordance with 40 CFR 257.101(b)(1).
- Regarding wetlands, ERM believes sufficient information is available that demonstrates compliance with 40 CFR 257.61.
- Based on information from the USGS, the FAR is not located within 200 feet of the outermost damage zone of a fault that has had displacement in Holocene time and thus meets the requirements of 40 CFR 257.62.
- Based on information from the USGS, the FAR is not located in a seismic impact zone and thus meets the requirements of 40 CFR 257.63.
- Based on information from geotechnical studies performed by AEP and Geosyntec, the FAR is not located in an unstable area and thus meets the requirements of 40 CFR 257.64.

FIGURES





Legend

CCR Unit

N

0 550 1,100 2,200 3,300

Feet

Figure 1-1: Site Layout and CCR Unit Location

Fly Ash Reservoir
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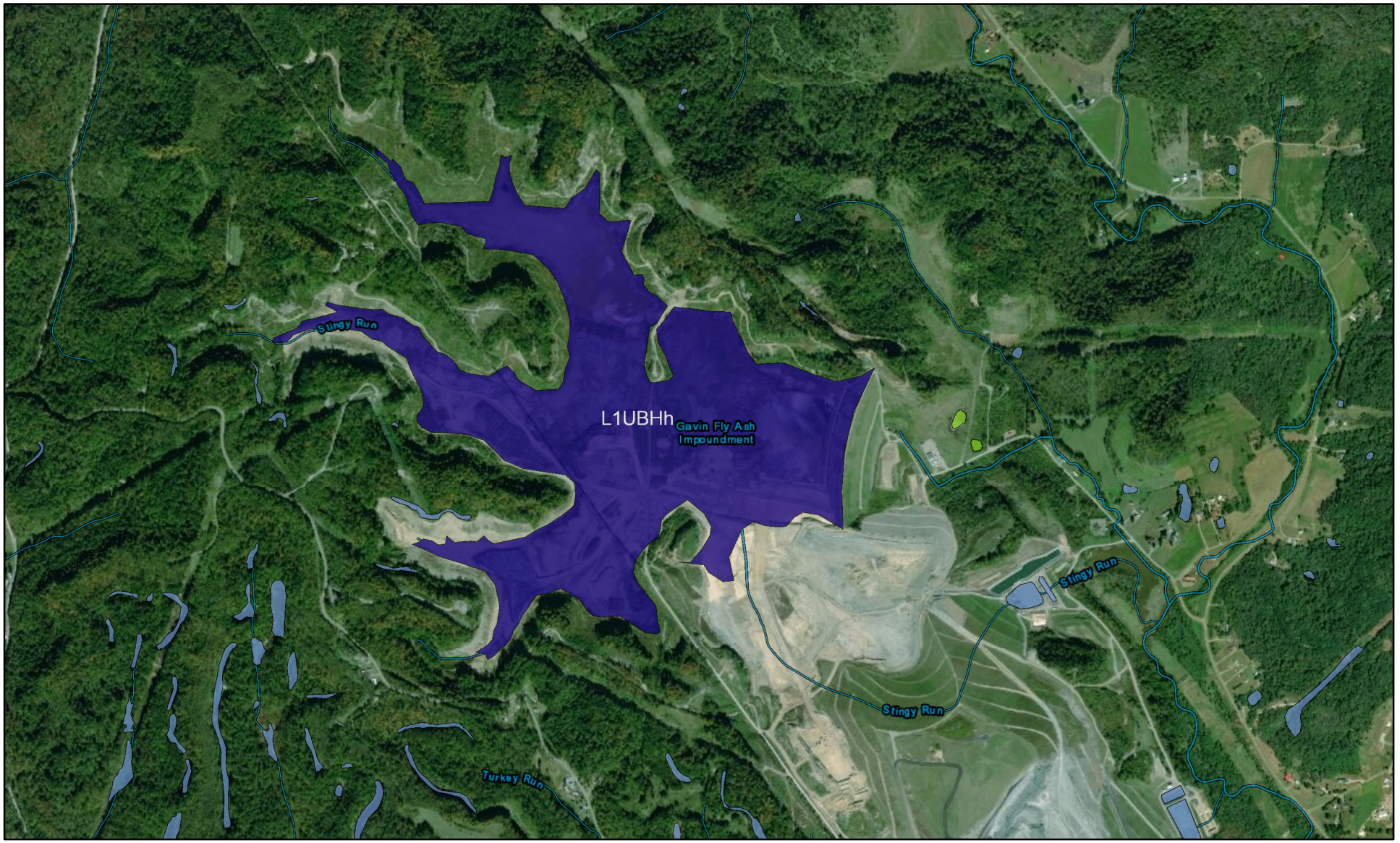

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond (PUB)
- Lake
- Other
- Riverine

1:23,943

0 0.2 0.4 0.8 mi

0 0.325 0.65 1.3 km

NOTE:
Data from National Wetlands Inventory (NWI) and is for general reference only.

Figure 2-1: National Wetlands Inventory Map
Fly Ash Reservoir
Location Restriction Report
Gavin Generating Station
Cheshire, Ohio

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Soil Type Symbol	Soil Type Name	Acres in AOI	Percent of AOI
Bhk4D	Bethesda channery silt loam, 8 to 25 percent slopes, unreclaimed, highwall	6.6	0.7%
Bhk4F	Bethesda channery silt loam, 25 to 70 percent slopes, unreclaimed, highwall	214.5	21.5%
Chg1AF	Chagrin silt loam, 0 to 3 percent slopes, frequently flooded	15.6	1.6%
GbB	Gallipolis silt loam, 1 to 6 percent slopes	3.1	0.3%
GsC	Guernsey-Gilpin silt loams, 8 to 15 percent slopes	20.3	2.0%
GwE	Guernsey-Gilpin association, steep	111.9	11.2%
Kg	Kyger loamy sand, frequently flooded	0.5	0.0%
PgB	Pinegrove sandy loam, 1 to 8 percent slopes	19.0	1.9%
PnD	Pinegrove sand, 8 to 25 percent slopes	10.9	1.1%
PnF	Pinegrove sand, 25 to 70 percent slopes	103.4	10.3%
SrF	Steinsburg-Rock outcrop association, very steep	41.8	4.2%
Ud	Udorthents	17.1	1.7%
UgC2	Upshur-Gilpin complex, 8 to 15 percent slopes, eroded	92.7	9.3%
UgD2	Upshur-Gilpin complex, 15 to 25 percent slopes, eroded	70.4	7.0%
VaD3	Vandalia silty clay loam, 15 to 25 percent slopes, severely eroded	39.5	4.0%
W	Water	226.3	22.6%
WeB	Wellston silt loam, 1 to 6 percent slopes	5.8	0.6%
	TOTAL	999.6	100.0%

0 500 1000 2000 3000 Feet

Figure 2-2: Soils Map
Fly Ash Reservoir
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Gavin Generating Station
Cheshire, Ohio

NOTE: Data from the National Cooperative Soil Survey (USDA, NRCS)

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Seismic Hazard: PGA %g, 2%/50 yrs (Peak ground acceleration, on firm rock in percent g, expected to be exceeded in a 50-year period with a probability of 2 percent)

- >80
- 60 – 80
- 50 – 60
- 40 – 50
- 30 – 40
- 20 – 30
- 18 – 20
- 16 – 18
- 14 – 16
- 12 – 14
- 10 – 12
- 8 – 10
- 6 – 8
- 4 – 6
- 2 – 4
- 0 – 2

Gavin Generating Station

N

0 10 20 40 60 80 100
Miles

Figure 2-3: Regional Seismic Hazard Map
Fly Ash Reservoir
Location Restriction Report
Gavin Generating Station
Cheshire, Ohio

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Q:\Team\AMW\Clients_F_K\Gavin\GavinPowerPlant\MXD\Groundwater\LocationRestriction\Figure2_1_FAR_SeismicHazard_20181010.mxd - Dana.Hasselwield - 10/11/2018

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