Fort Martin Landfills
Periodic Run-on and Run-off Control System Plan

Monongahela Power Company
A FirstEnergy Company
Fort Martin Power Station
Maidsville, Monongalia County, West Virginia

GAI Project Number: C150917.17, Task 003

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Figure 1 Fort Martin Original Landfill
Figure 2 Fort Martin Expansion Area Landfill

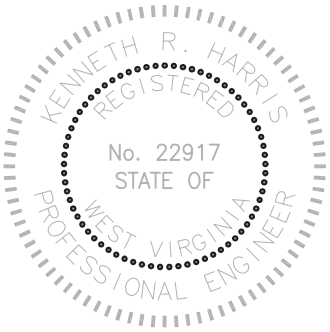
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Certification/Statement of Professional Opinion

The Periodic Run-on and Run-off Control System Plan (Plan) for the Fort Martin Landfill Facility was prepared by GAI Consultants, Inc. (GAI). The Plan was based on certain information that, other than for information GAI originally prepared, GAI has relied on but not independently verified. Therefore, this Certification/Statement of Professional Opinion is limited to the infromation available to GAI at the time the Plan was written. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the State of West Virginia, that the Plan has been prepared in accordance with good and accepted engineering practices as exercized by other engineers practicing in the same discipline(s), under similar circumstances, and at the time and in the same locale. It is my professional opinion that the Plan was prepared consistent with the requirements of the United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015.

The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion, and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

Ron Harris, P.E.
Senior Engineering Manager 2



1.0 Introduction

The Fort Martin Landfill Facility, consisting of two captive coal combustion residuals (CCR) landfills, is located approximately one-half mile northwest of the Fort Martin Power Station (Station) in Maidsville, West Virginia (WV).

The facility consists of two separate landfills. The original landfill, the Fort Martin Landfill (Original Landfill), lies south of the haul road. The Original Landfill is unlined and contains fly ash, bottom ash, and minor amounts of miscellaneous permitted waste. The second landfill, the Fort Martin Expansion Area Landfill (Expansion Area Landfill), lies north of the haul road. The Expansion Area Landfill is lined and contains flue gas desulfurization (FGD) material (synthetic gypsum), fly ash, bottom ash, and minor amounts of miscellaneous permitted waste. Both landfills are permitted for operations under WV Department of Environmental Protection (WVDEP) Permit No. WV0075752.

The Initial Run-on and Run-off Control System (Initial) Plan was prepared in October 2016. This Periodic Run-on and Run-off Control Plan was prepared to fulfill the requirements of 40 CFR Section 257.81 (c)(4) that *the owner of operator of the CCR unit must prepare periodic run-on and run-off control system plans every five years*.

Since the Initial Plan, most of the CCR produced by the Station has been beneficially used and as such, expansion of the facility has not occurred.

1.1 Original Landfill

The Original Landfill utilizes four existing Sedimentation Ponds (SP-3, SP-4, SP-5, and SP-6) to receive leachate and/or surface run-off from the Landfill and its associated haul road. A series of perimeter collection channels conveys contact water and a small area of offsite drainage to the sedimentation ponds.

1.2 Expansion Area Landfill

The Expansion Area Landfill is currently in its first phase of development. Currently, the site utilizes one Sedimentation Pond (SP-2) to receive leachate and/or surface run-off from the landfill. A perimeter collection channel conveys contact water and a small area of offsite drainage to the sedimentation pond.

Future permitted development of the Expansion Area requires the construction of an additional Sedimentation Pond (SP-1) and a series of diversion and collection channels to manage stormwater run-on and run-off for the site.

2.0 Plan Overview

This Run-on and Run-off Control System Plan, prepared in accordance with the requirements set forth in 40 CFR Section 257.81 (including supporting engineering calculations), describes the following control systems for the facility, including a description of:

- Stormwater Run-on Control System;
  - Diversion Channel Design;
- Stormwater Run-off Control System;
  - Collection Channel Design; and
  - Sedimentation Pond Design.

2.1 Original Landfill

The Original Landfill has a series of perimeter channels that collect contact run-off. The run-off from the collection channels drains to the Sedimentation Ponds.

All channels have been sized for the 25-year, 24-hour design storm. The collection channels and the Sedimentation Ponds meet the requirements set forth in 40 CFR §257.81. Refer to Sections 3.1, 4.1.1, and 4.2.1 of this report, and Figure 1 for details of the Run-on and Run-off Control System.

2.2 Expansion Area Landfill

The Expansion Area Landfill is constructed on top of a ridge that mostly slopes away from the Expansion Area Landfill; therefore, non-contact upslope stormwater run-on diversion channels were not designed for the current development. However, diversion channels will be installed for future development of the Expansion Area Landfill to divert non-contact run-on. The run-off channels were designed to collect minor areas of off-site drainage.

All channels have been sized for the 25-year, 24-hour design storm. The proposed diversion channels, collection channels, and the Sedimentation Ponds SP-1 and SP-2 meet the requirements set forth in 40 CFR §257.81. Refer to Sections 3.2, 4.1.2, and 4.2.2 of this report, and Figure 2 for details of the Run-on and Run-off Control System.

3.0 Stormwater Run-on Control System

Stormwater run-on to the Landfill Facility is controlled by diversion features. The existing and proposed features are designed to divert up to the peak discharge from a 25-year, 24-hour storm. Control features will consist of diversion channels and culverts. Design calculations for the diversion channels can be found in the Permit Applications referenced in Section 5.0.

3.1 Original Landfill Diversion Channel Design

The Original Landfill does not require diversion channels due to the topography of the site. The collection channels were designed to collect minor drainage areas that would otherwise run-on to the Original Landfill and drain offsite.

3.2 Expansion Area Landfill Diversion Channel Design

The design of the diversion channels meets the applicable requirements in 40 CFR §257.81.

Diversion channels are not required for the current stage of the Expansion Area Landfill due to the topography of the site. However, diversion channels will be installed for future development of the Expansion Area Landfill. The proposed diversion channels are designed to direct flow of stormwater from the 25-year, 24-hour storm event that would otherwise run-on to the Expansion Area Landfill and drain off-site.

4.0 Stormwater Run-off Control System

Stormwater run-off collection systems are sized to accommodate the volume of water from a 25-year, 24-hour storm event through a series of channels, culverts, and Sedimentation Ponds for ultimate discharge through a permitted outfall.

4.1 Collection Channel Design

The design of the collection channels meets the applicable requirements of 40 CFR §257.81. Design calculations for the collection channels can be found in the Permit Applications referenced in Section 5.0.

4.1.1 Original Landfill

Collection channels gather run-off contacting the Original Landfill in channels that are located along the perimeter of the Original Landfill. A portion of the haul road, north of the Original Landfill, is managed by collection channels that drain to SP-3 and SP-4. Run-off water is directed to the Sedimentation Ponds where it undergoes primary settling before being directed to the Station's cooling towers for re-use.

4.1.2 Expansion Area Landfill

Run-off contacting the Expansion Area Landfill is collected in channels that surround the perimeter of the Expansion Area Landfill. Run-off water is directed to SP-2 where it undergoes primary settling before being directed to the Station's cooling towers for re-use. As with the current active development of the Expansion Area Landfill, the proposed expansion will be constructed with collection channels to route run-off stormwater from up to a 25-year, 24-hour storm event to SP-2 and SP-1.

4.2 Sedimentation Pond Design

The design of the on-site sedimentation ponds meets the applicable requirements of 40 CFR §257.81. Design calculations for the sedimentation ponds can be found in the Permit Applications referenced in Section 5.0.

4.2.1 Original Landfill

The Sedimentation Ponds were designed and constructed to manage stormwater run-off and/or leachate. Four Sedimentation Ponds surround the Original Landfill to collect contact water from collection channels. Force mains from SP-3, SP-4, and SP-6 connect to a main pipe located southeast of the Original Landfill and drain to the Station's cooling towers for re-use. SP-5 is gravity fed to the main pipe that drains to the Station's cooling towers for re-use.

4.2.2 Expansion Area Landfill

One sedimentation pond (SP-2) was constructed to manage stormwater run-off and/or leachate from the Expansion Area Landfill. Force mains from SP-2 connect to a main pipe located southeast of the Original Landfill and drain to the Station's cooling towers for re-use.

Permitted future development of the Expansion Area Landfill requires an additional Sedimentation Pond (SP-1) be constructed to manage run-off and/or leachate from the Expansion Area Landfill. SP-1 will be constructed in accordance with the approved Permit for the Expansion Area Landfill to manage the 25-year, 24-hour storm event. A force main system will be constructed to convey the water to the Station's cooling towers for re-use.

5.0 References

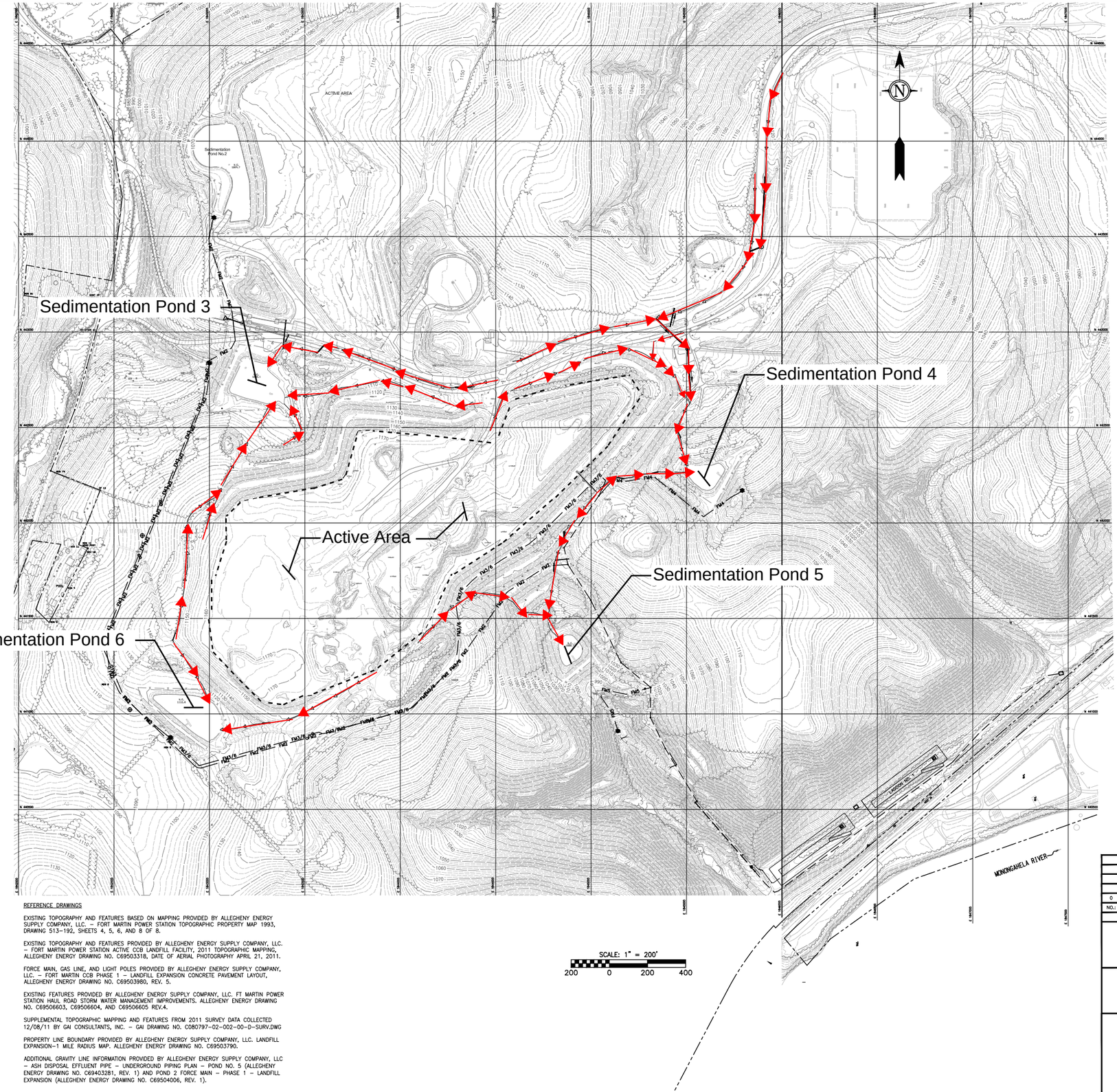
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40 CFR 257, *Criteria for Classification of Solid Waste Disposal Facilities and Practices*.

FIGURES



Legend

Run off Controls

Landfill Active Area

REFERENCE DRAWINGS

EXISTING TOPOGRAPHY AND FEATURES BASED ON MAPPING PROVIDED BY ALLEGHENY ENERGY SUPPLY COMPANY, LLC. – FORT MARTIN POWER STATION TOPOGRAPHIC PROPERTY MAP 1993, DRAWING 513-192, SHEETS 4, 5, 6, AND 8 OF 8.

EXISTING TOPOGRAPHY AND FEATURES PROVIDED BY ALLEGHENY ENERGY SUPPLY COMPANY, LLC. – FORT MARTIN POWER STATION ACTIVE CCB LANDFILL FACILITY, 2011 TOPOGRAPHIC MAPPING, ALLEGHENY ENERGY DRAWING NO. C69503318, DATE OF AERIAL PHOTOGRAPHY APRIL 21, 2011.

FORCE MAIN, GAS LINE, AND LIGHT POLES PROVIDED BY ALLEGHENY ENERGY SUPPLY COMPANY, LLC. – FORT MARTIN CCB PHASE 1 – LANDFILL EXPANSION CONCRETE PAVEMENT LAYOUT, ALLEGHENY ENERGY DRAWING NO. C69503980, REV. 5.

EXISTING FEATURES PROVIDED BY ALLEGHENY ENERGY SUPPLY COMPANY, LLC. FT MARTIN POWER STATION HAUL ROAD STORM WATER MANAGEMENT IMPROVEMENTS. ALLEGHENY ENERGY DRAWING NO. C69506603, C69506604, AND C69506605 REV.4.

SUPPLEMENTAL TOPOGRAPHIC MAPPING AND FEATURES FROM 2011 SURVEY DATA COLLECTED 12/08/11 BY GAI CONSULTANTS, INC. – GAI DRAWING NO. C080797-02-002-00-D-SURV.DWG

PROPERTY LINE BOUNDARY PROVIDED BY ALLEGHENY ENERGY SUPPLY COMPANY, LLC. LANDFILL EXPANSION-1 MILE RADIUS MAP. ALLEGHENY ENERGY DRAWING NO. C69503790.

ADDITIONAL GRAVITY LINE INFORMATION PROVIDED BY ALLEGHENY ENERGY SUPPLY COMPANY, LLC – ASH DISPOSAL EFFLUENT PIPE – UNDERGROUND PIPING PLAN – POND NO. 5 (ALLEGHENY ENERGY DRAWING NO. C69403281, REV. 1) AND POND 2 FORCE MAIN – PHASE 1 – LANDFILL EXPANSION (ALLEGHENY ENERGY DRAWING NO. C69504006, REV. 1).

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Fort. Martin Landfill
Run-on and Run-off Control Plan

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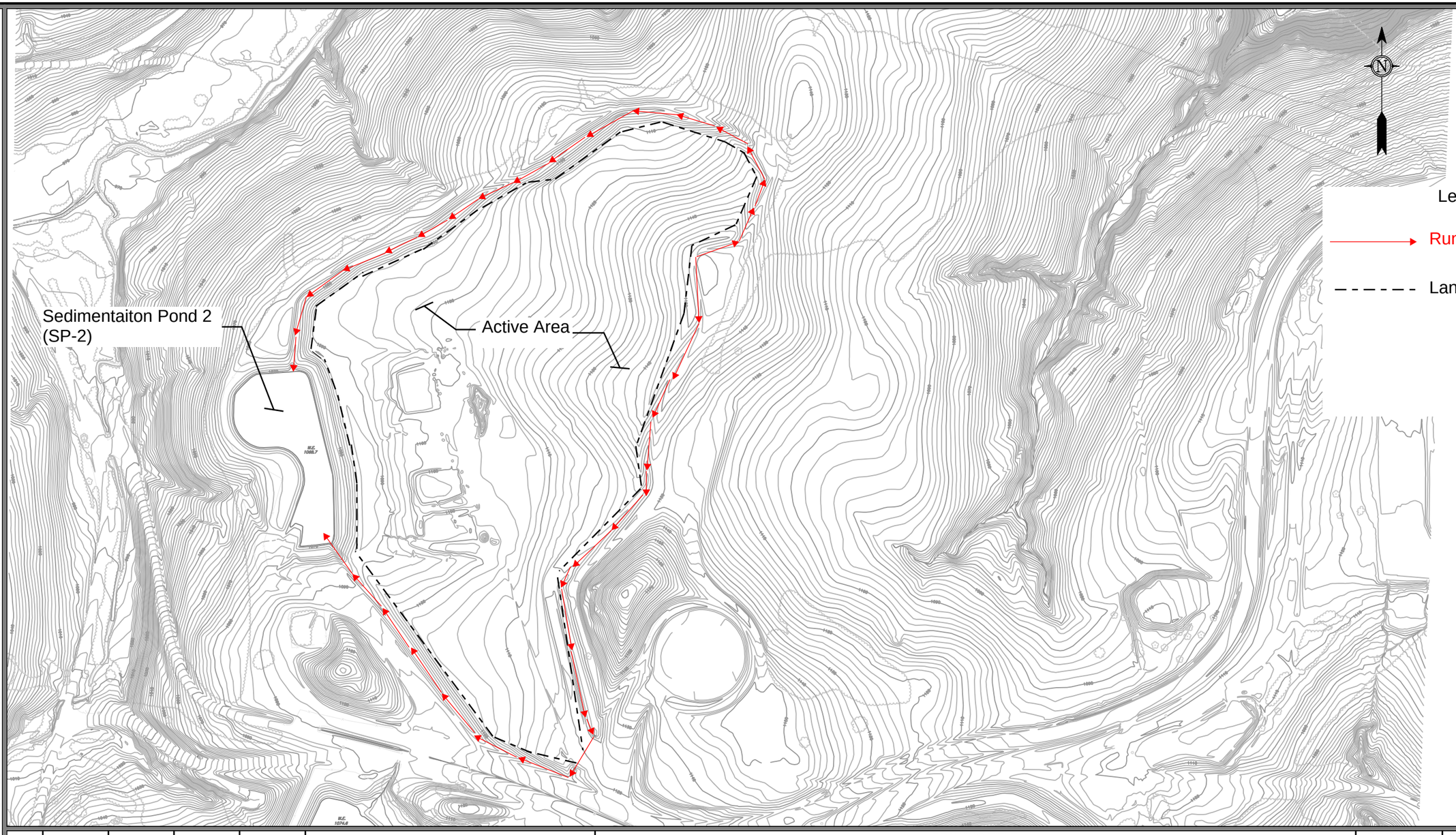
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REVISION RECORD

DRAWING TITLE

RUN-ON AND RUN-OFF CONTROL PLAN

PROJECT

FORT MARTIN FGD LANDFILL
FORT MARTIN POWER STATION
MONONGALIA COUNTY
WEST VIRGINIA

gai consultants

CLIENT

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Fairmont, West Virginia

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