

# **COAL COMBUSTION RESIDUALS**

# **FUGITIVE DUST CONTROL PLAN**

Prepared for:



Keystone-Conemaugh Projects, LLC  
Keystone Generating Station  
Shelocta, Pennsylvania

Prepared by:



Aptim Environmental & Infrastructure, LLC  
Pittsburgh, Pennsylvania

October 2015  
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Figure 1 – Site Layout and Potential CCR Fugitive Dust Sources

Attachment A – Recordkeeping Log

## Plan Review/Assessment Log

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## **1.0 Introduction**

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On December 19, 2014, the administrator of the United States Environmental Protection Agency signed the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities final rule (the Rule). The Rule was published in the Federal Register on April 17, 2015 and became effective on October 19, 2015. The Rule establishes a comprehensive set of requirements for the disposal of CCR in landfills and surface impoundments at coal-fired power plants under Subtitle D of the Resource Conservation and Recovery Act. These requirements include compliance with location restrictions, design criteria, operating criteria, groundwater monitoring and corrective action, and closure and post-closure care aspects. The operating criteria include air criteria specified in Title 40 of the Code of Federal Regulations (CFR), §257.80 to address the potential pollution caused by windblown dust from CCR units. According to the Rule, owners or operators of CCR units must adopt measures that will effectively minimize CCR from becoming airborne at the facility by developing and operating in accordance with a fugitive dust control plan (Plan) with adequate dust control measures.

The Keystone Generating Station (Keystone), is a coal-fired power plant located in Shelocta, Pennsylvania. The Rule applies to this facility due to the disposal of CCR that is generated from the combustion of coal. CCR units associated with station operations include the Ash/Refuse Disposal Site (comprised of individual CCR units denoted as East Valley and West Valley disposal areas and maintained/operated under Solid Waste Permit No. 300837) and three Ash Filter Ponds (Ponds “A”, “B”, and “C” maintained/operated under Water Quality Management Permit No. 0386201) used for the management of bottom ash.

This Plan has been prepared to comply with the requirements as specified in §257.80(b)(1-7) of the Rule, including certification by a professional engineer as documented in Section 7.0 of this Plan. Additionally, this Plan will be placed in the Keystone facility’s operating record per §257.105(g)(1), noticed to the State Director per §257.106(g)(1), and posted to the publicly accessible internet site per §257.107(g)(1).

## **2.0 Facility Description**

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### **2.1 Process Overview**

The Keystone station is an electric generating facility located on Keystone Drive in Shelocta, Pennsylvania. The facility utilizes two main boilers (exhausting to a dual-flue stack) which fire coal as the primary fuel and No. 2 fuel oil as an auxiliary fuel during startup. Pollution control equipment for the main boilers includes low nitrogen oxide (NO<sub>x</sub>) burners and selective catalytic reduction (SCR) systems for NO<sub>x</sub> control, electrostatic precipitators (ESP) for particulate matter control, a sorbent injection system to reduce sulfur trioxide (SO<sub>3</sub>) emissions, and a flue gas desulfurization (FGD) system to reduce sulfur dioxide (SO<sub>2</sub>) emissions. The FGD system is a wet limestone scrubber with forced oxidation that produces commercial-grade gypsum available for use in wallboard manufacturing. The station also has two oil-fired auxiliary boilers which exhaust to a common stack that is separate from the main boiler dual-flue stack; four peaking diesel generators that each exhaust to a separate stack; and three emergency diesel generators that exhaust to their own individual stacks.

### **2.2 CCR Fugitive Dust Sources**

The Rule applies to fugitive dust originating from CCR units, roads, and other CCR management and material handling activities. CCR generated at the Keystone station includes fly ash, bottom ash, and gypsum. The following sub-sections provide a description of fugitive dust sources from handling each type of CCR. Each of these elements is highlighted on Figure 1 included with this Plan.

#### **2.2.1 Keystone Ash Disposal Site**

The Keystone Ash Disposal Site is a captive residual waste management area operated by the Station, located completely within the limits of the station property. Within the ash disposal site, the East Valley and West Valley areas have been individually identified as existing CCR landfills according to the Rule. Capacity at East Valley is almost fully utilized, with West Valley presently serving as the principal disposal area, including the increased footprint associated with the Stage IV contiguous expansion. CCR materials including fly ash, bottom ash, and gypsum are transported by trucks from the main station operations area to the ash disposal site where they are dumped and then spread and compacted with a bulldozer. The furthest internal haul distance to the ash disposal site is less than two miles, and no public road access is required.

#### **2.2.2 Fly Ash Handling**

Fly ash is generated from coal combustion in the boilers and is removed from the gas stream electrostatically in the ESP and then pneumatically conveyed to silos for storage (two silos per boiler). Within the silos, the ash is wetted to 8 to 9 percent moisture, mixed, and loaded into trucks

for transport to the Keystone Ash Disposal Site. Enclosed trucks carrying fly ash offsite for beneficial use applications (i.e., concrete production) are loaded directly via a retractable-chute mechanism, and then can pass through a truck tire wash if needed prior to exiting the Station proper. Fly ash taken offsite is not conditioned with water; however, the method of direct and enclosed transfer to the trucks greatly minimizes the potential generation of fugitive dust during loading operations.

### **2.2.3 Bottom Ash Handling**

Compared to fly ash, bottom ash is a heavier, coarser material that falls to the bottom of the boilers and has a typical moisture content of approximately 20 percent. From the ash hoppers underneath the boilers, bottom ash is sluiced to one of four hydrobins where the heavy ash particles settle. The water with suspended ash particles overflows by gravity from the hydrobins to a distribution box, which controls its routing to the individual ash filter ponds. Residual water is periodically drained (decanted) from the hydrobins to dewater the ash prior to load-out into trucks, which transport the materials to the Keystone Ash Disposal Site; this decant water also flows by gravity to the ponds.

As necessary, the ponds are periodically cleaned out to remove accumulated bottom ash materials and to restore capacity for settling solids. To support this activity, incoming sluice water is isolated from the pond to be cleaned (by re-routing the hydrobin discharge via the distribution box) and then the affected pond is taken out of service. The pond to be cleaned is drained to expose the underlying ash materials, which are then scraped from the bottom and placed along the pond sideslopes to promote further dewatering. Once the bottom ash materials have sufficiently dewatered (but not to the point of becoming dry), they are removed from the pond and loaded into trucks, which then travel to the Keystone Ash Disposal Site. After the cleaning is completed, normal operations across all three ponds are restored.

Although the ponds are considered CCR units, they are not represented as viable contributing sources of CCR fugitive dust emissions since entering streams (from the hydrobins) are managed in an enclosed conveyance system. Once in the ponds, the materials are maintained in a submerged condition.

### **2.2.4 Gypsum Handling**

Within the FGD system, gypsum is a damp by-product formed through the reaction of SO<sub>2</sub> with the injected limestone slurry. Gypsum is transported on covered conveyors and temporarily stored in an on-site dome to control emissions. Gypsum is used as a raw material in the manufacture of wallboard, and when commercial market conditions allow, this material is beneficially sold to outside companies. When gypsum cannot be sold due to market conditions or the gypsum does not meet specifications, this material is transported and disposed at the ash disposal site. Gypsum can also be temporarily stored at the ash disposal site. Under these circumstances, gypsum is

loaded from the dome into trucks using a front-end loader, and then the materials are transported to the Keystone Ash Disposal Site. Gypsum sold to commercial markets is loaded with a front-end loader from the dome or ash disposal site to trucks, or from the dome to train. Trucks carrying gypsum to off-site markets are tarped and their tires are washed prior to leaving the station property.

### **2.2.5 *Transport Roadways***

Internal to the station, trucks transport conditioned fly ash, bottom ash, and gypsum to the Keystone Ash Disposal Site. Station roadways used for transport are paved with the exception of the approaching ramp to the ash disposal site. The internal haul routes to the ash disposal site are shown on Figure 1 of this Plan, along with the route which provides egress from the station for trucks taking gypsum to market. Outside the station (beginning at State Route 210), paved public roadways are utilized by the gypsum transport trucks.

## **3.0 Fugitive Dust Control Regulatory Requirements**

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### **3.1 CCR Rule Air Criteria**

Under the Rule, the owner or operator of a CCR unit must adopt measures that will effectively minimize CCR from becoming airborne at the facility, including fugitive dust originating from CCR units, roads, and other CCR management and material handling activities.

In order to document these measures, the owner or operator of the CCR unit must prepare and operate in accordance with a CCR fugitive dust control plan. According to §257.80(b), the Plan must include the following elements:

- Identification and description of the CCR fugitive dust control measures that will be used to minimize CCR from becoming airborne at the facility, along with an explanation of how the measures selected are applicable and appropriate for site conditions.
- Description of procedures used to emplace CCR as conditioned CCR at CCR landfills. (Conditioned CCR means wetting CCR with water to a moisture content that will prevent wind dispersal but will not result in free liquids.)
- Description of procedures used to log citizen complaints received by the facility involving CCR fugitive dust events.
- Description of procedures to periodically assess the effectiveness of the Plan.

The Plan should be updated anytime there is a change in conditions that would substantially affect the written Plan.

In addition to the fugitive dust control plan, §257.80(c) requires the owner or operator of a CCR unit to file an annual fugitive dust control report.

### **3.2 Other Fugitive Dust Regulatory Requirements**

Prior to the promulgation of the Rule, the Keystone station has been required by other regulations and permits to minimize and monitor fugitive dust from the site.

#### **3.2.1 Title V Operating Permit**

The facility is operated according to Title V Operating Permit No. 03-00027 issued by the Pennsylvania Department of Environmental Protection (PADEP). The permit incorporates fugitive dust emission requirements as codified in Title 25 Article III of the Pennsylvania Code (Pa. Code). The following citations are relevant to fugitive emission restrictions:



- According to 25 Pa. Code §123.1, the person responsible for a source of fugitive emissions shall take all reasonable actions to prevent fugitive air contaminants from becoming airborne.
- According to 25 Pa. Code §123.2, a person may not permit fugitive particulate matter to be emitted into the outdoor atmosphere from a source specified in §123.19(a)(1-9) (relating to prohibition of certain fugitive emissions) if such emissions are visible at the point the emissions pass outside the person's property.
- According to 25 Pa. Code §123.41, a person may not permit the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is either of the following: (1) Equal to or greater than 20% for a period or periods aggregating more than three minutes in any one hour or (2) Equal to or greater than 60% at any time.

The permit includes site level requirements and emission source specific conditions that address fugitive dust. Site level requirements include reporting malfunctions to PADEP that may result in citizen complaints and conducting and recording daily inspections for the presence of fugitive emissions. Emission source specific conditions include watering and enclosed transfer requirements.

### **3.2.2 Solid Waste Permit**

The Keystone Ash Disposal Site is operated under Solid Waste Permit No. 300837 issued by PADEP. The ash disposal site is operated according to the terms in this permit and the associated PADEP Form G(A), "Air Resources Protection Dust Emissions Estimate and Control Plan," submitted with the solid waste permit application. The permit and Form G(A) include the following requirements related to fugitive emissions at the ash disposal site:

- Five dust fall monitors are installed at the ash disposal site in locations approved by PADEP. Dust fall reports are submitted to PADEP quarterly.
- Vehicle traffic is limited to 10 miles per hour (mph) on unpaved roadways and 15 mph on paved roadways.
- A water tank truck will be used as necessary to suppress dust on active disposal areas, roadways (at least daily on paved roadways and twice daily on unpaved roadways, unless rain has occurred), and parking areas.

## **4.0 Fugitive Dust Control Practices and Procedures**

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Potential CCR fugitive dust sources have been identified and described in Section 2.0 of this Plan. This section will detail control measures employed at the facility to minimize airborne dust from these sources in accordance with §257.80(b)(1-2) of the Rule.

### **4.1 Fly Ash Handling**

Fly ash is recovered from the hoppers at the base of the ESP and is pneumatically conveyed to silos controlled with a bin vent filter for storage. In the silos, the fly ash is conditioned with water (wetted to approximately 8 to 9 percent moisture) and mixed, and then the wet fly ash is gravity loaded into a truck. After loading is complete, the trucks travel to the Keystone Ash Disposal Site via internal roadways that are subject to watering for fugitive dust control. Enclosed trucks carrying fly ash offsite for beneficial use applications (i.e., concrete production) are loaded directly via a retractable-chute mechanism, and then can pass through a truck tire wash if needed prior to exiting the Station proper. Fly ash taken offsite is not conditioned with water; however, the method of direct and enclosed transfer to the trucks greatly minimizes the potential generation of fugitive dust during loading operations.

#### **4.1.1 Monitoring**

Observations of visible emissions from the fly ash handling activities are performed daily during normal daylight operations. A trained employee records whether any emissions are observed and whether these emissions extend beyond the facility property line.

#### **4.1.2 Recordkeeping**

Records of daily facility inspections are maintained and include the name of the person conducting the inspection, the date and time of the inspection and the results of each inspection. If instances of unpermitted visible fugitive emissions are observed, records are kept of the corrective actions taken. The records are forwarded to the station's Environmental Specialist and retained for at least five years.

### **4.2 Gypsum Handling**

Fugitive dust from the handling and transport of gypsum is controlled using enclosed conveyors and transfer points. Damp gypsum materials awaiting transport are temporarily stored in an enclosed dome, loaded into trucks using a front-end loader, and then transported to the Keystone Ash Disposal Site. Trucks carrying gypsum offsite to commercial markets are tarped and pass through a truck tire wash, if needed and weather permitting, prior to leaving the dome area. The roads and area surrounding the gypsum dome are watered on a limited basis. In addition, the paved area immediately surrounding the dome is swept as needed. When gypsum is loaded onto train

cars for off-site shipment, the localized paved area encompassing the rail lines is also subjected to sweeping.

#### **4.2.1 Monitoring**

Observations of visible emissions from the gypsum handling activities are performed daily during normal daylight operations.

#### **4.2.2 Recordkeeping**

If instances of excessive visible fugitive emissions are observed, they are reported to the station's Environmental Specialist and appropriate corrective actions are taken. There are no permit-required records which must be maintained for monitoring of visible fugitive emissions associated with the gypsum handling activities.

### **4.3 Transport Roadways**

Paved and unpaved road surfaces to the Keystone Ash Disposal Site are watered to reduce fugitive dust emissions. If it is not raining, paved roadways and parking areas are watered at least once daily, and unpaved roadways are watered at least twice daily. Roads and parking lots are also periodically swept to reduce potential entrainment of dust. Fugitive dust emissions are further controlled by posting and maintaining a maximum vehicle speed limit of 10 mph on unpaved roadways and 15 mph on paved roadways within the boundaries of the station property.

#### **4.3.1 Monitoring**

Monitoring of fugitive dust from roadways is accomplished by maintaining a log of the time, location, type, and amount of roadway surface treatment.

#### **4.3.2 Recordkeeping**

Roadway maintenance records regarding watering/dust control are documented in daily logs completed by station personnel or contractor. A blank copy of this log is included in Attachment A. The completed logs are forwarded to the station's Environmental Specialist and retained for at least five years.

### **4.4 Keystone Ash Disposal Site**

Fly ash, bottom ash, and gypsum are disposed at the Keystone Ash Disposal Site. Fugitive dust is minimized at the ash disposal site by spreading and compacting the materials with a bulldozer as soon as practical after being delivered (i.e., the freshly dumped materials are not left on the landfill surface for extended periods of time). Additionally, a water truck regularly circulates to spread water on the internal roadways and the open operating areas of the disposal site. Vehicle traffic operating within the disposal site is restricted to a 10 mph speed limit on unpaved roads and a 15 mph speed limit on paved roads.

#### **4.4.1 Monitoring**

Observations of visible emissions from the disposal site activities are performed daily during normal daylight operations. A trained employee records whether any emissions are observed and whether these emissions extend beyond the facility property line.

In addition, five dust fall monitors are installed at the ash disposal site in locations approved by PADEP. Dust fall reports are submitted to PADEP quarterly as a condition of the Solid Waste Permit.

#### **4.4.2 Recordkeeping**

Records of daily facility inspections are maintained and include the name of the person conducting the inspection, the date and time of the inspection and the results of each inspection. If instances of unpermitted visible fugitive emissions are observed, records are kept of the corrective actions taken. The records are forwarded to the station's Environmental Specialist and retained for at least five years. Also as noted above, dust fall reports are submitted to PADEP on a quarterly basis.

#### **4.5 Annual Reporting**

In accordance with §257.80(c) of the Rule, the station must prepare an annual fugitive dust control report that includes the following information:

- A description of actions taken to control CCR fugitive dust
- A record of all citizen complaints
- A summary of any corrective actions taken

The first annual report must be completed no later than 14 months after placing the initial CCR fugitive dust control plan in the Keystone facility's operating record. Subsequent annual reports will be completed one year after the date of the initial annual report. Additionally, as required, the annual reports will be placed in the Keystone facility's operating record per §257.105(g)(2), noticed to the State Director per §257.106(g)(2), and posted to the newly established publicly accessible internet site per §257.107(g)(2).

## **5.0 Procedures for Citizen Complaints**

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In accordance with §257.80(b)(3) of the Rule, this section outlines the procedure that Keystone station follows to log citizen complaints involving fugitive dust events at the station and the ash disposal site. Within 24 hours of receiving a citizen complaint, the station's Environmental Specialist will log the complaint in the station files and thereafter inform the Station's General Manager and other Station Management personnel. Keystone station will then conduct a thorough investigation. The results of the investigation will be recorded, entered into the station files and communicated to the appropriate parties. If the investigation confirms a fugitive dust emission event, Keystone station will undertake a root cause analysis to address the source of the excess fugitive dust and will develop a plan to mitigate future occurrences and remediate impacts, as necessary.

Citizens can contact the Keystone Generating Station directly at 724-354-5533.

## **6.0 Procedures for Plan Assessments and Amendments**

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Fugitive dust control practices for each source of CCR fugitive dust are described in Section 4.0 of this Plan. Based on current monitoring requirements and observations, these control measures have been determined to be effective. This Plan will be periodically reviewed by the station's Environmental Specialist to ensure full compliance with all fugitive dust control, monitoring, and recordkeeping procedures as outlined herein. During this review, the Plan's effectiveness will be assessed as required per §257.80(b)(4) of the Rule. This review will serve to either confirm the continuing effectiveness of the Plan or will identify sections which require revision/upgrade to reflect any relevant changes in station operations, CCR unit aspects, or necessary improvements in fugitive dust control protocols.

Accordingly, when new processes or modifications of existing processes are planned, the station's Environmental Specialist will evaluate the project for potential changes to this Plan. In accordance with §257.80(b)(6) of the Rule, the Plan will be amended to add any new CCR units or to update any modifications in the operation of existing fugitive dust sources. The amended Plan will be reviewed and recertified by a registered professional engineer and will be placed in the Keystone facility's operating record as required per §257.105(g)(1). The amended Plan will supersede and replace any prior versions. Availability of the amended Plan will be noticed to the State Director per §257.106(g)(1) and posted to the publicly accessible internet site per §257.107(g)(1).

A record of Plan reviews/assessments is provided on the first page of this document, immediately following the Table of Contents.

## 7.0 Professional Engineer Certification

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The undersigned registered professional engineer is familiar with the requirements of §257.80 and has either personally or through the efforts of qualified personnel, confirmed that Keystone station has maintained its CCR Rule obligations in accordance with the activities/protocols discussed herein. The undersigned registered professional engineer attests that this CCR Fugitive Dust Control Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and meets the requirements of §257.80, and that this Plan is adequate for the Keystone station. This certification was prepared as required by §257.80(b)(7).

Name of Professional Engineer: Sirous Haji Djafari

Company: Aptim Environmental & Infrastructure, LLC

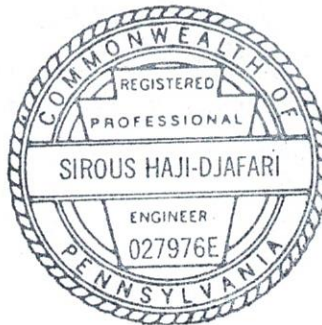
Signature: Sirous H. Djafari

Date: November 29, 2021

PE Registration State: Pennsylvania

PE Registration Number: PE027976E

Professional Engineer Seal:

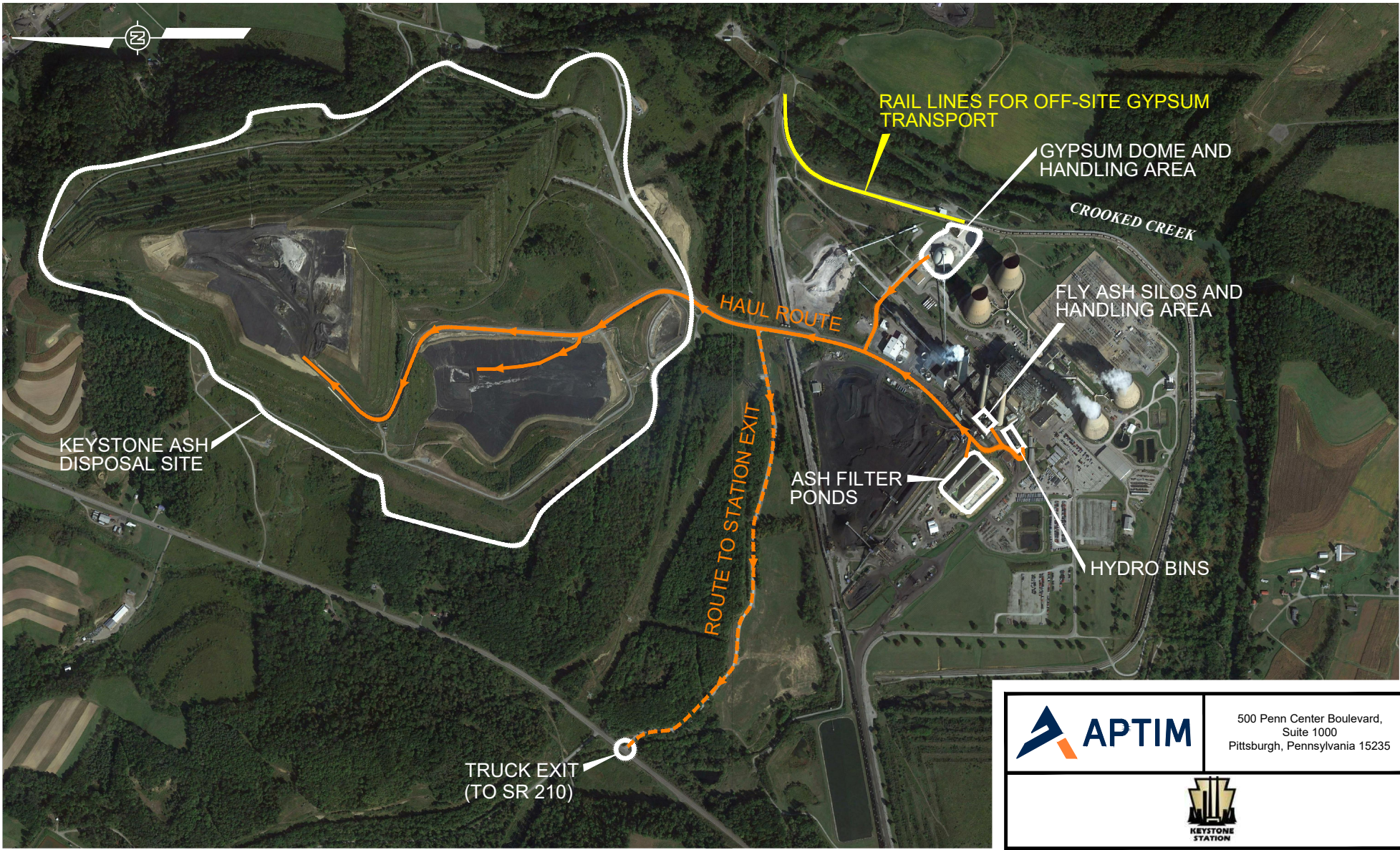


***Figure***

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OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	11/5/21	MDK	GSJ	DJS	DJS	6312013654-A1



REFERENCE:  
GOOGLE EARTH AERIAL PHOTOGRAPHY,  
DATED SEPTEMBER 26, 2019.



500 Penn Center Boulevard,  
Suite 1000  
Pittsburgh, Pennsylvania 15235



FIGURE 1  
SITE LAYOUT AND POTENTIAL CCR  
FUGITIVE DUST SOURCES  
KEYSTONE GENERATING STATION  
ARMSTRONG COUNTY, PENNSYLVANIA



***Attachment A***

***Recordkeeping Log***

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## PAVED ROADS, SHOULDERS, AND PARKING AREAS MAINTENANCE RECORD

DAY: \_\_\_\_\_

TIME: \_\_\_\_\_

LOCATION: WATER SPRAYING

VACUUM SWEEPING

- ☐ ASH HAUL ROAD  
☐ PARKING AREA  
☐ OTHER Plant Roads

- ☐ ASH HAUL ROAD  
☐ PARKING AREA  
☐ OTHER Plant Roads

LOCATION AND TYPE OF MAINTENANCE, REPAIRS, PATCHING, AND REPAVING:

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REASON WHY VACUUM SWEEPING OR WATER SPRAYING WAS NOT CONDUCTED  
(ACCESS ROADS SHOULD BE CLEANED DAILY AND PARKING AREA WEEKLY):

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## UNPAVED ROADS, SHOULDERS, AND PARKING AREAS MAINTENANCE RECORD

TYPE OF SUPPRESSANT:

☐ CHEMICAL

☐ WATER

LOCATION OF TREATED AREAS:

- ☐ DISPOSAL SITE HAUL ROAD  
☐ ASH HAUL ROAD SHOULDERS  
☐ OTHER plant roads

GALLONS OF DUST SUPPRESSANT, DILUENT (IF USED), AND DILUTION RATIOS:

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PURCHASE RECORD OF CHEMICAL SUPPRESSANTS (ATTACH IF USED)