RCRA Corrective Measures Study Work Plan

Danskammer Generating Station
RCRA Site No. 336086

Danskammer Road

Town of Newburgh
Orange County, New York

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ABBREVIATIONS

BNA .....base neutral extractable

Chazen.....The Chazen Companies

CHG&E.....Central Hudson Gas & Electric Corporation

CMSWP.....Corrective Measures Study Work Plan

ENU .....Elementary Neutralization Unit

HCAB .....Historic Coal Ash Basin

HAC.....Historic Ash Cell

MCL .....Maximum Contaminant Level

MOSF.....Major Oil Storage Facility

NYSDEC.....New York State Department of Environmental Conservation

RCRA.....Resource Conservation and Recovery Act

RFA .....RCRA Facility Assessment

SMU.....Solid Waste Management Unit

SVOC.....semi-volatile organic compounds

TCL.....Target Compound List

TAL.....Target Analyte List

USEPA.....United States Environmental Protection Agency

1.0 INTRODUCTION

The Chazen Companies (Chazen) prepared this Corrective Measures Study Work Plan (CMS-WP) to advance the RCRA Interim Closure status of the Danskammer Generating Station, RCRA Site No. 336086 (the "Site"). The Site is located on Danskammer Road in the Town of Newburgh, Orange County, New York. A Site Location Map is included as **Figure 1**.

The purpose of this CMS-WP is to develop and evaluate corrective action alternatives and recommend corrective measures, if necessary, to mitigate, contain, or control potential impacts to the environment from the identified Solid Waste Management Units (SMUs) at the Site. The project was completed pursuant to the requirements of Resource Conservation and Recovery Act (RCRA) and the Hazardous Waste Management program of the New York State Department of Environmental Conservation (NYSDEC). The locations of all identified on-site SMUs are included on the Facility Layout Map in **Figure 2**. The boundaries of the RCRA permitted hazardous waste treatment/storage areas (from the 1980 facility application) are included on **Figure 3**

This CMS-WP is based on our review of the readily available documentation of site conditions and corrective actions completed to date for the facility that were provided by New York State Department of Environmental Conservation (NYSDEC), United States Environmental Protection Agency (USEPA), and Danskammer Energy, LLC., supplemental site investigation work completed by Chazen between 2014 and 2015 under the technical oversight of NYSDEC, and a detailed evaluation of the historical record for each identified on-site solid waste management unit completed by Chazen in 2017. A summary of the historical Site operations and relationships to the solid and hazardous waste management units and regulated material storage units on the Site was included in a July 2017 summary report prepared by Chazen and submitted to NSYDEC.

Most of the former RCRA SMUs identified for the Site have been previously investigated and closed. Documentation of the closure of those units was presented in the draft historical summary report submitted in July 2017 and finalized in January 2018. Closed SMUs that meet

the New York State Standards, Criteria, and Guidance for environmental media are removed from further consideration. No Corrective measures or additional studies are required for these units.

Corrective measures for the two active management units permitted by New York State, if needed, would be administered by NYSDECs Solid Waste Management and Petroleum Bulk Storage and should be removed from further consideration.

2.0 SUMMARY OF EXISTING CONDITIONS NOT MEETING STATE STANDARDS

A summary of the results of the historical data evaluation for the site included in the final report is presented in the following table.

Solid Waste Management Units (SMUs)	Status	Meets State Standards	
		Soil	Groundwater
RCRA Units			
Acid Basin	Closed/NFA	Yes	Yes
Equalization Basin	Closed/NFA	Yes	Yes
Waste Solvent Drum Storage Area	Closed/NFA	Yes	Yes
Non-RCRA Units			
Treatment Basin	Closed/NFA	Yes	Yes
Final Basin	Closed/NFA	Yes	Yes
Elementary Neutralization Unit (ENU)	Closed/NFA	Yes	Yes
Historic Coal Ash Landfill (Historic Ash Cell(HAC))	NFA Pending	Yes	No(1)
Temporary Wastewater Lagoons	Open/NFA pending	No(2)	Yes
Sludge Drying Bed	Open/NFA pending	No	No
Historic Coal Ash Basin (HCAB)	Open/NFA pending	Yes(3)	Yes(4)
NYSDEC Program Regulated Facilities			
Part 360 Landfill	Open	Yes(5)	No(5)
Part 613- Major Oil Storage Facility (MOSF)	Open	No(6)	Yes

Table Notes:

1. Groundwater sampling of HAC monitoring wells report exceedences in two of the four monitoring wells of the TDS standards. However, high turbidity is also reported in these wells and no exceedences of monitored chemical parameters have been reported.
2. No samples of the soils immediately beneath the former locations of the historical lagoons have been collected.
3. Soil samples collected from within the footprint of the former basin have reported impacts. However, the impacts are associated with the former RCRA permitted hazardous waste treatment facility constructed on top of the fill in the basin and not from the basin fill material.
4. Groundwater samples collected from within the footprint of the former basin have reported impacts. However, the impacts are associated with the former RCRA permitted hazardous waste treatment facility constructed on top of the fill in the basin and not from the basin fill material.
5. Soil samples have not been collected since the landfill was originally constructed nor are any required for an engineered facility. Periodic monitoring of the leachate collection system and perimeter groundwater monitoring well network is performed and reported to NYSDEC. Minor exceedences of the standards for Total Dissolved Solids and Turbidity have been reported in one or more of the wells. No indication of a significant leak to the groundwater associated with the landfill from the engineered control systems has been identified.
6. Spill 1701741 was reported for the Site due to elevated PID measurements reported during the installation of one of the borings installed during the investigation of the temporary waste water lagoons. No soil sample was collected for VOC analysis for comparison to state standards. However, no exceedences of the applicable standards for SVOCs were reported in the soils, and no exceedences of VOCs or SVOCs was reported in the groundwater. Since the MOSF is used to store back-up fuel oil, the lack of SVOCs in

the soil and groundwater water indicates the elevated PID measurements were not related to the MOSF.

Based on the current status of the SMUs, there are only two remaining issues need to complete the closure of the individual units, an evaluation potential corrective measures for the historical temporary lagoons and the sludge drying beds.

Additionally, a site-wide evaluation of the potential for groundwater impacts from all of the on-site units to adversely affect the water and sediment quality of the Hudson River is needed to complete the Environmental Indicators Assessment form CA750. A preliminary evaluation will be performed to determine if:

- Site/waste related compounds of concern or geochemical parameters are being discharged at concentrations exceeding 10 times their applicable groundwater standard, and;
- If compounds/parameters exceeding the 10x threshold are being discharged; are they less than, equal to, or greater than the water quality of the receiving body.

If the preliminary evaluation indicates that there are compounds/parameters being discharged to the river that are more than 10x the groundwater standards AND greater than the water quality of the receiving body (the Hudson); additional investigation and evaluation may be needed in the future.

The methods to be used to complete the evaluation of these three remaining items are included in the following sections.

3.0 REMEDIAL MEASURES ALTERNATIVES EVALUATION

Chazen will complete an evaluation of potential remedial measures alternatives for the two remaining SMUs with respect to:

A. Long-term Effectiveness

B. Reduction in the Toxicity, Mobility or Volume of Wastes

C. Short-term Effectiveness

D. Implementability

E. Community Acceptance

F. State Acceptance

G. Cost

The two remaining SMUs have similar current conditions suggesting that the remedial measures alternatives evaluation is limited to a comparison of no-action (leave it like it is), a presumed removal action (excavate soils and remove for disposal) sufficient to achieve an unrestricted use clean-up objective, and a third alternative that combines removal, in-situ treatment, and a composite cover to reduce mass, toxicity, and or mobility but may not achieve necessarily unrestricted use. No groundwater removal or mitigation effort appears to be warranted in either area and it is groundwater in both areas would be left to attenuate naturally. The potential need for groundwater remediation will be further evaluated in the analysis of potential impacts to the Hudson River (see Section 3.3).

3.1 Sludge Drying Beds

Residual impacts to the on-site soils beneath the former sludge drying bed are currently capped with layer of clean fill and an impermeable asphalt cap. Under the no action alternative; since there is currently no direct exposure pathway or environmental degradation potential and groundwater impacts appear to be under control (static or improving with time), An environmental easement restricting the use of groundwater, and a site management plan would be sufficiently protective.

Alternately, an excavation and removal action could be implemented. Soils would be excavated and removed for disposal to a permitted landfill facility (including the existing on-site facility with permission from NYSDEC) and the removal confirmed by post-excavation sampling and analysis. The removal would permanently mitigate the impacts in the area and obviate the need for the SMP.

3.2 Temporary Lagoons

No evidence of residual impacts associated with the temporary waste water lagoons was identified in the groundwater. The soils could not be assessed due to the coal storage piles. Available construction documents for the site indicate that the coal storage area was engineered with a confining base layer of compacted clay, a sand underdrain layer of sand, and a perimeter drainage net to prevent accumulation of precipitation within the cell or infiltration through the bottom. An environmental easement and site management plan would be sufficiently protective.

Currently, the no action alternative appears to be is the only practical remedial measure for this area. Given the lack of groundwater impacts, and the fact that the former lagoons are the oldest on-site waste management units, the potential for significant impacts from the lagoons are considered highly improbable. The easement for this area of the site and the SMP should include conditions for soil sampling beneath the cover layer sampling and a possible removal actions if warranted in the future.

3.3 Groundwater Discharge Impacts Assessment

Chazen will conduct a preliminary hydraulic analysis of the site and a potential discharge impact assessment to the Hudson River for site related contaminants of concern. The assessment will determine if detailed hydrologic and/or ecological risk assessments are warranted.

A preliminary impact assessment will be conducted by analyzing the current (most recent) groundwater data and, when applicable, comparing that to water quality data for the Hudson River to determine if possible impacts from the site could affect the water quality of the River. The preliminary assessment will be used to determine if groundwater remediation technologies are included in the alternatives analyses and/or if a fish and wildlife impact assessment is warranted for the site.

4.0 SCHEDULE

The CMS will be completed and the draft report submitted to NSYDEC within 30 days of approval of this work plan. Delivery of the draft report is assumed to be on or about April 30, 2018.

The schedule assumes that sampling water quality of the Hudson River will not be necessary and that the initial hydrologic study if necessary will not identify a need for a detailed evaluation. Chazen respectfully requests that NYSDEC secures and provides water quality data for the Hudson River from the state databases.

FIGURES

Appendix A
REFERENCE DOCUMENT LIST