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Subject:
Final Interim Remedial Measure Design Report
Court Street Former MGP Site
Operable Unit 2, Susquehanna River
Site No. 7-04-031

ENVIRONMENT

Date:
May 9, 2017

Contact:
Jason Golubski, PE

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Our ref:
B0013103.0005 #5

Dear Ms. Saucier:

On behalf of NYSEG, please find enclosed the final *Interim Remedial Measure Design Report* (IRM Design Report) for Operable Unit No. 2 (OU-2) of the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031).

The IRM Design Report has been updated as requested in NYSDEC's May 3, 2017 comment letter to NYSEG and as indicated in Arcadis' May 5, 2017 comment response letter to NYSDEC. Per the comment letter, the IRM Design Report has been finalized and includes the stamp and signature of a NYS registered professional engineer.

Please contact NYSEG's Project Manager, Mr. Tracy Blazicek, at 607.762.8839 with any questions.

Sincerely,

Arcadis of New York, Inc.

Jason Golubski, PE
Senior Environmental Engineer

EC:
Tracy Blazicek, CHMM, NYSEG
Mark Gravelding, PE, Arcadis

ARCADIS Design & Consultancy for natural and built assets

NYSEG

INTERIM REMEDIAL MEASURE DESIGN REPORT

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017

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Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Prepared for:

NYSEG

Prepared by:

Arcadis of New York, Inc.

Date:

May 2017

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I, Mark O. Gravelding, P.E., certify that I am currently a NYS registered professional engineer and that this *Interim Remedial Measure Design Report* was prepared in accordance with all applicable statutes and regulations an in substantial conformance with the *DER Technical Guidance for Site Investigation and Remediation* (DER-10).

_____

Mark O. Gravelding, P.E.
Engineer of Record

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ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis of New York, Inc.
BOL	bill of lading
bss	below sediment surface
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
CFR	Code of Federal Regulations
cfs	cubic feet per second
cy	cubic yard
DER	Division of Environmental Remediation
FEMA	Federal Emergency Management Agency
gpm	gallons per minute
HASP	Health and Safety Plan
HEC-RAS	Hydrologic Engineering Center's River Analysis System
IRM	Interim Remedial Measure
JAP	Joint Application Permit
LTTD	low-temperature thermal desorption
mg/kg	milligram per kilogram
MGP	manufactured gas plant
NAPL	non-aqueous phase liquid
NAVD88	North American Vertical Datum of 1988
NTU	nephelometric turbidity unit
NWP #38	Nationwide Permit #38
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PDI	Pre-Design Investigation
POP	Project Operation Plan
PrPAH	priority pollutant polycyclic aromatic hydrocarbon

RI Report	Remedial Investigation Report
ROD	Record of Decision
RTK GPS	real-time kinematic global positioning system
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WMP	Waste Management Plan
WQC	Water Quality Certification
WSE	water surface elevation
WTS	water treatment system

1 INTRODUCTION

Arcadis of New York, Inc. (Arcadis), on behalf of NYSEG, has prepared this *Interim Remedial Measure Design Report* (IRM Design Report) to support the implementation of the an interim remedial measure (IRM) for the Operable Unit 2 (OU-2) portion of the Binghamton Court Street Former Manufactured Gas Plant (MGP) site (the Site). The 2013 Record of Decision (ROD) in 2013 for the OU-1 portion of the Site stated that a ROD for OU-2 would be issued in the future (NYSDEC 2013). This IRM Design Report has been prepared in accordance with the Order on Consent (D7-001-96-03) between the New York State Department of Environmental Conservation (NYSDEC) and NYSEG (NYSDEC 1996), as well as the following documents:

- NYSDEC Division of Environmental Remediation (DER) *Technical Guidance for Site Investigation and Remediation* (DER-10) (NYSDEC 2010a)
- NYSDEC-approved Pre-Design Investigation (PDI) Letter Report (Arcadis 2015)
- NYSDEC-approved Annotated Outline for the IRM Design Report (Arcadis 2016a)

Activities identified in this IRM Design Report will be performed under the approval and oversight of the NYSDEC.

1.1 Purpose

The purpose of this IRM Design Report is to present the design for completing the IRM for the OU-2 portion of the Site.

1.2 Report Organization and Structure

The organization of this IRM Design Report is presented in the following table.

Table 1-1 IRM Design Report Organization

Section	Description
1 – Introduction	Presents the purpose of the IRM Design Report, summarizes the report organization, provides background information, presents a description of the site characterization and nature and extent of environmental impacts, and outlines the IRM objectives and the remedial activities.
2 – Basis of Design	Presents the process and tools used to identify design components.
3 – Organization Structure and Responsibilities	Presents the responsibilities of NYSEG, the Design Engineer, the Remediation Engineer, and the Remediation Contractor during implementation of the remedial activities.
4 – Pre-Remediation Activities	Describes the activities to be completed prior to implementation of the remedial activities.
5 – Remediation Activities	Summarizes the remedial activities to be conducted as part of the remedial construction.
6 – Post-Construction Activities	Describes the reporting, monitoring, and administrative activities to be completed following remedial construction.
7 – Schedule	Presents the anticipated schedule for the remedial design and implementation of the remedial activities.
8 – References	Lists sources used to prepare the IRM Design Report.

This IRM Design Report includes the associated Design Drawings (Appendix A), Technical Specifications (Appendix B), and other supporting plans listed in the Appendices section of the table of contents.

1.3 Background Information

This subsection summarizes background information relevant to the development of the IRM, including location, physical setting, and history of the former MGP, as well as previously completed investigations.

1.3.1 Location and Physical Setting

The OU-1 portion of the Site is owned by NYSEG and is located in an industrial section of the City of Binghamton, in Broome County, New York. OU-1 occupies lots identified as 271-291 and 293 Court Street. The 293 Court Street property was formerly used as a natural gas service center by Columbia Gas Transmission Corporation.

OU-1 is bordered to the north by a major Norfolk Southern rail line and yard, an asphalt works plant, and a scrap yard; to the south by Court Street, which runs parallel to the Susquehanna River (separated by a flood wall); to the east by the 295 Court Street property, which contains a warehouse owned by 295 Court Street Associates, LLC; and to the west by Brandywine Avenue. Two buildings are present on OU-1: a small gas regulator station and a building used for storage. The remainder of OU-1 consists of a gravel lot used by NYSEG for equipment/material storage and parking.

OU-2 includes river sediments within the Susquehanna River and is located immediately south from and downgradient of OU-1. OU-2 is bordered to the north by Court Street (separated by a flood wall) and to the west by the Tompkins Street Bridge.

The Susquehanna River in the area adjacent to the Site is a Class A water body (NYSDEC 2016a). The best usages of Class A waters are as a source of water supply for drinking and culinary or food processing purposes, for primary and secondary contact recreation, and for fishing. Class A waters are suitable for fish, shellfish and wildlife propagation and survival. Immediately downstream of OU-2, the river is crossed by the Tompkins Street Bridge (which is a continuation of Brandywine Avenue). The Chenango River joins the Susquehanna River approximately 1.5 miles downstream of OU-2, and the Rock Bottom Dam is approximately 0.8 mile downstream of OU-2.

1.3.2 Site History

OU-1 formerly housed an MGP that manufactured gas from approximately 1888 to 1939, during which time operations gradually expanded westward from the eastern portion of OU-1 and eventually covered the entire OU-1 area. Various structures were located within OU-1, including four gas holders, seven oil tanks, a tar-separating well, a machine shop, and a governor house. By about 1969, all aboveground structures associated with the MGP had been dismantled. The findings of previous investigations (BBL 2002) indicated that non-aqueous phase liquid (NAPL), primarily coal tar dense NAPL, was observed in subsurface soils on OU-1. NAPL is present in both unsaturated and saturated soils of the OU-1 portion of the Site. To address the potentially mobile NAPL, a NAPL barrier wall was constructed along the western and southern OU-1 property boundaries (Arcadis 2008).

A former storm sewer that collected runoff from a large portion of the City of Binghamton traversed the Site from north to south and emptied into the Susquehanna River. Historical drawings indicate that the on-site portion of the storm sewer was constructed between 1885 and 1924 within the former bed of Brandywine Creek. The storm sewer consisted of a buried 66-inch-diameter reinforced concrete pipe that conveyed stormwater north to south across the western portion of the OU-1 portion of the Site.

Site investigations previously identified that potentially impacted groundwater and/or NAPL was infiltrating into the storm sewer and entering the Susquehanna River at the outfall immediately adjacent to the OU-1 portion of the Site (BBL 2002). In 2012, NYSEG abandoned in place the existing 66-inch storm sewer and replaced it with a water- and NAPL-tight storm sewer system across the OU-1 portion of the Site to prevent infiltration of potentially impacted groundwater and NAPL (Arcadis 2012).

The new 63-inch storm sewer is owned and maintained by the City of Binghamton, and discharges into a pump house also owned and maintained by the City of Binghamton. City of Binghamton historic drawings illustrating the location and construction of the pump house are provided in Attachment 1.According to the Binghamton water/wastewater supervisor, the pump house is monitored and operated by the City's wastewater department and operates in either a gravity drainage or pumping mode. In the gravity drainage mode, stormwater drains from the wet well to the river via two 20-inch-diameter pipes that discharge below the river surface. The combined discharge rate for these two pipes is approximately 20,000 gallons per minute (gpm) when the water surface elevation in the storm sewer is approximately 832.2 feet, which creates approximately 5.5 feet of head on the two 20-inch-diameter discharge pipes.

When the water level in the wet well of the pump house reaches approximately 832.2 feet, the pumping mode is manually initiated by the City's wastewater personnel. This process consists of closing two gate valves to stop flow through the two 20-inch-diameter outfall pipes, energizing the pump station's stormwater pumps and activating the automated pump control system. The pump station is equipped with two 125-horsepower stormwater pumps capable of discharging up to 15,000 gpm each. Each pump discharges through an independent horizontal section of 36-inch-diameter pipe, which passes through the wall of the pump station through a flap gate and into a concrete-lined spillway to the Susquehanna River. Under the two pump station operation modes (i.e., gravity drainage and pumping), the maximum discharge capacity of the pump station is approximately 30,000 gpm.

In addition to this storm sewer discharge, a 24-inch outfall pipe and two other outfalls located east of OU-1 also discharge to the Susquehanna River through the Court Street flood wall.

1.4 Site Characterization

This subsection summarizes the site characterization based on the results presented in the *Final Remedial Investigation Report* (RI Report) (BBL 2002), the PDI Letter Report (Arcadis 2015), and publicly available information. The site characterization consists of a summary of the site geology, hydrogeology, and hydrology, and the nature and extent of site impacts.

1.4.1 Geology, Hydrogeology, and Hydrology

This subsection summarizes the geology, hydrogeology, and hydrology relevant to the development of the IRM.

Geology

Investigation activities completed to date have identified five principal geologic units within OU-1 and/or OU-2 (in descending order):

- Fill – Silt, sand, gravel, ash, cinders, and slag with demolition debris, foundation remnants, and buried utilities (approximately 5 to 10 feet thick). Present in OU-1.
- Alluvial silt and clay – Massive silt and clay, with a blocky texture and little or no organic matter. This unit forms a discontinuous lens approximately 5 to 15 feet below grade and 5 to 10 feet thick on average (up to 13 feet thick in some places). This layer pinches out to the east, west, and south. Present in OU-1.
- Outwash sand and gravel – Fine to coarse sand and fine to coarse gravel, with occasional lenses of fine sand and silt (averaging 30 feet thick). The OU-2 subsurface consists primarily of outwash sands and gravels from the sediment surface to the top of till that ranges from loose to very dense. Present in OU-1 and OU-2.
- Till – Dense silt and clay matrix containing embedded sand and gravel, rounded to angular, multiple rock types. The till is approximately 45 to 50 feet below grade and approximately 50 feet thick in OU-1. The till is approximately 30 to 35 feet below the sediment surface in OU-2. Present in OU-1 and OU-2.

- Bedrock – Dark gray shale, slightly weathered, horizontal bedding. The bedrock layer is approximately 100 feet below grade in OU-1 and approximately 70 to 80 feet below the sediment surface in OU-2. Present in OU-1 and OU-2.

Geologic cross-sections were previously presented as Figures 6, 7, and 8 in the Final RI Report (BBL 2002). The Susquehanna River (where it passes the Site and through the City of Binghamton) forms a drainage basin, extending to the north and east. The outwash sand and gravel unit fills much of the Susquehanna River valley (as it runs east to west across central New York) and forms the Clinton Street Ballpark Sole Source Aquifer (NYSDEC 2016b).

Hydrogeology

The water table is generally located 8 to 10 feet below grade in OU-1. A water table contour map was provided as Figure 11 in the RI Report (BBL 2002). The majority of shallow groundwater in OU-1 moves radially away from the center of the groundwater mound located near the center of OU-1 where the silt unit is present.

Where the silt unit is absent, shallow groundwater can preferentially drain down into the sand and gravel unit. Within the sand and gravel, and from the bedrock through the till, the gradient is generally upward, suggesting that groundwater in OU-1 discharges to the Susquehanna River.

Hydrology

Water depths within the Susquehanna River have ranged from approximately 1 foot to 11 feet, based on soundings or borings completed during previous investigation activities. The United States Geological Survey (USGS) River Gauge 015030000 at Conklin, New York is the closest upstream river gauge, approximately 8.4 miles from OU-2. Discharge, stage, temperature, and specific discharge data are available for this gauge station. The maximum discharge measured at this station was 76,800 cubic feet per second (cfs) and the maximum gauge height was 25.02 feet on June 28, 2006 during a 100+-year flood.[1] The minimum discharge measured at this station was 85 cfs, on October 14, 1964, and the minimum gauge height was 1.30 feet.

The following table lists major flooding events and annual high flow events that have occurred near the Site in the past decade.

[1] The Susquehanna River at Binghamton flood crest stage on June 28, 2006 was 25.0 feet. A second 100+-year flood crest stage at Binghamton on September 8, 2011 was recorded to be 25.7 feet. Flood stage is 14.0 feet. The Binghamton USGS station does not record flow.

Table 1-2 Susquehanna River at Conklin Annual High Flow Events

Date	Gauge Height (feet)	Flow (cfs)
June 28, 2006	25.02	76,800
March 28, 2007	12.64	25,100
March 9, 2008	14.26	30,700
March 11, 2009	12.33	24,100
January 25, 2010	13.39	27,600
September 8, 2011	23.94	72,100[a]
January 28, 2012	9.08	15,000
June 29, 2013	11.15	20,300
May 17, 2014	12.36	24,300
April 10, 2015	12.97	26,300

Note:
[a] Discharge influenced by hurricane.

Additional information on water flow, surface elevation, and velocity in the Susquehanna River near OU-2 is provided in Section 2.

1.4.2 Nature and Extent of Environmental Impacts

This subsection describes the nature and extent of the environmental impacts identified at OU-2 and focuses on the environmental impacts to be addressed by the IRM. Further details, including analytical summary tables, are presented in the RI Report (BBL 2002), Sediment Assessment Report (Arcadis 2013), and PDI Letter Report (Arcadis 2015).

As discussed in the RI Report, potential pathways for NAPL migration previously included subsurface migration in the fill and sand and gravel units and potential preferential pathways for NAPL migration (beyond the limits of OU-1) in the former 66-inch storm sewer (in the southwest corner of OU-1) and the 24-inch pipe and the two other outfall pipes in the Court Street flood wall (in the southeast corner of OU-1) (BBL 2002). However, further potential migration of NAPL to the Susquehanna River has been addressed through 1) construction of the passive NAPL barrier wall between the former MGP area (OU-1) and the river in 2006 and 2) the 66-inch storm sewer replacement in 2012. Further, the RI Report (BBL 2002) concluded that the 24-inch and the other two outfall pipes were not significant pathways because these pipes were plugged with sediment and/or discharge was not observed.

After the mitigation of these potential NAPL sources to the river, sediment probing and reconnaissance and sediment sampling for polycyclic aromatic hydrocarbons (PAHs) were conducted in the Susquehanna River in 2013 (Arcadis 2013). During the 2013 assessment, probing was conducted from

100 feet upstream of the 24-inch outfall pipe to 150 feet downstream of the Tomkins Street Bridge. The findings of the 2013 assessment indicated that the distribution of impacts observed in surficial sediments adjacent to and downstream of OU-2 varied from the distribution of impacts documented in the RI Report (BBL 2002). Of the six general areas assessed in 2013, the observations and analytical sampling indicated that four of the areas did not warrant further evaluation, resulting in two general areas that required remedial consideration and further evaluation.

As such, a PDI was performed in 2014 in the OU-2 area to further evaluate the distribution of visible impacts in deeper sediments, assess the concentrations and extent of MGP-related PAHs in sediments, and obtain geotechnical data to support a remedial design. A total of 24 sediment borings were advanced during the PDI. Recovered sediment samples were visually characterized for color, composition, and presence/absence of potential MGP-related impacts (i.e., NAPL, blebs, coating, sheens, and staining). A total of 73 sediment samples were submitted for laboratory analysis for PAHs.

Based on previous investigation results, the 2013 assessment results, and the PDI results, the areas for remedial consideration were established as Area 1 and Area 2 (Figure 1-1). The horizontal and vertical extents of Area 1 and Area 2 are based primarily on the field observations of no NAPL blebs, coating, staining, and sheens, and total priority pollutant PAH (PrPAH) concentrations greater than 4 milligrams per kilogram (mg/kg) (i.e., Class B and C sediments per Table 5 of the NYSDEC *Screening and Assessment of Contaminated Sediment* guidance document [NYSDEC 2014]) (Arcadis 2015).

As summarized in the PDI Letter Report (Arcadis 2015), field observations of potential impacts were noted at 8 of the 12 boring locations within or near Area 1. Field observations of potential impacts included NAPL blebs to trace blebs, light NAPL coating, staining, and sheens. In addition, trace sheens and MGP-like odors were observed. No saturated NAPL conditions were encountered. PrPAH concentrations measured from sediment in this area ranged from 0.14 mg/kg to 850 mg/kg. Field observations of potential impacts (including NAPL, staining, or sheens) were not observed in Area 2. Three of the nine borings in Area 2 contained MGP-like odors. PrPAH concentrations measured from sediment in Area 2 ranged from 0.01 mg/kg to 2.38 mg/kg.

In addition to the shallow impacts (less than 5 feet below sediment surface [bss]) observed during the 2014 PDI, two borings advanced also encountered odors and one boring encountered impacts in the sands and gravel at greater depths well below the river bed. Locations PDI-SED-A (Area 2) and PDI-SED-H (Area 1) encountered faint MGP-like odors from 20 to 22 feet bss and from 24 to 27.4 feet bss, respectively (Arcadis 2015). Additionally, NAPL-coated sand and gravel was observed from 28.4 to 29.5 feet bss at boring location PDI-SED-F (Area 2) in the interval immediately above the till. The interval with NAPL coating lies more than 25 feet below the base of the river, and the faint MGP-like odors were encountered approximately 15 feet below the base of the river. Based on the depths of these impacts, they are not contiguous to the shallow sediment impacts observed and therefore are not included in the areas for remedial consideration.

1.5 Interim Remedial Measure Objectives

Pursuant to the Order on Consent between the NYSDEC and NYSEG, NYSEG is responsible for remediating actual and potential significant adverse impacts on the bed and banks of the Susquehanna River located across from, and downgradient of, the OU-1 portion of the Site associated with hazardous

substances and petroleum that originated from the OU-1 portion of the Site (NYSDEC 1996). In acordance with DER-10, general remedial objectives to address the impacts in shallow sediment include:

- Prevent direct contact with sediment containing MGP-related impacts.
- Prevent surface water contamination from MGP-related impacts that may result in fish advisories.
- Prevent the release of MGP-related impacts from sediment that would result in surface water levels in excess of ambient water quality criteria.
- Prevent impacts to biota from ingestion/direct contact with sediment containing MGP-related impacts causing toxicity or impacts from bioaccumulation through the aquatic food chain.
- Restore sediments to pre-release/background conditions, to the extent practicable.

1.6 Summary of Selected Interim Remedial Measure

The NYSDEC-approved selected IRM for the OU-2 portion of the Site consists of the following remedial components:

- Sediment removal from and backfilling of Area 1, which is located in the Susquehanna River across Court Street from the southwest corner of OU-1, adjacent to the Court Street flood wall and the City of Binghamton land, bounded by Court Street and Tompkins Street. The vertical extent of removal in Area 1 ranges from 1 to 5 feet.
- Sediment removal from and backfilling of Area 2, which is located in the Susquehanna River across Court Street, from the southeast corner of OU-1, adjacent to the Court Street flood wall. The vertical extent of removal in Area 2 is 1 foot.

2 BASIS OF DESIGN

This section presents a basis for the key design components, including the following:

- Sediment Removal – How the limits for removal were established.
- Temporary Containment System – Temporary containment system for controlling turbidity (i.e., suspended sediment particles) and sheen (i.e., iridescent film) generated as a result of remedial activities.
- Waste Handling and Management – Sediment processing, transportation, and disposal and/or treatment, and disposal and/or discharge of construction-generated water.

2.1 Sediment Removal

As noted in Section 1, the results of the 2014 sediment PDI activities, the 2013 sediment assessment, and other previous investigations were used to refine the sediment removal limits (Arcadis 2015). In addition, other considerations for the final removal areas include the protection of existing structures and a determination of the land-side removal extent. The rationale for the removal extent for each area is summarized below followed by a discussion of other considerations to refine the removal extents.

2.1.1 Area 1

The horizontal extent of removal for Area 1 is based on field observations indicating no NAPL blebs, coating, staining, or sheens, and PrPAH concentrations at or less than 4 mg/kg at the following locations: SS-4, SS-3-8, SR-104, SD-04, H, I-1, SS-3-7, SS-3-4, L-3, SS-3-9, M, N-1, SS-3-10, O, P, P-1, BG-02, SR-101, and SS-3-14 (Figure 1-1). The vertical extent of removal for Area 1 is based on the following criteria:

- Absence of potential MGP-related impacts such as NAPL blebs, coating, sheens, and staining.
- Presence of potential MGP-related impacts and PrPAH concentrations at or less than 4 mg/kg below such field observations of potential impacts.
- Presence of PrPAH concentrations greater than 4 mg/kg and PrPAH concentrations at or less than than 4 mg/kg below such concentrations.

The vertical extent of removal for Area 1 as defined by the above criteria is indicated in Table 2-1.

Table 2-1 Locations Defining Vertical Extent of Remediation for Area 1

Boring Location	Vertical Extent of Remediation
I	1 foot
J	2 feet
SS-3-3	2 feet
K	3 feet
SS-3-1	3 feet
L	3 feet
L-1	5 feet
N	5 feet

The removal polygons of varying depths within Area 1 were developed based on a Thiessen polygon approach using the boring locations listed above. The polygons were created using AutoCAD and using the midpoint between adjacent boring locations to define the polygon area, which gives them an angular appearance.

2.1.2 Area 2

The horizontal extent of removal for Area 2 is based on the field observations indicating no NAPL blebs, coating, staining, or sheens, and PrPAH concentrations at or less than 4 mg/kg at the following locations: SS-12-5, A, B, B-1, SS-12-6, SR-103, SS-12-4, D, C, SS-12-2, E, E-1, SS-12-7, SS-9, G, and F (Figure 1-1). The vertical extent of Area 2 is assumed to be 1 foot based on the field observations of sheens during the 2013 assessment and PrPAH concentrations from the previous investigations as none of the borings advanced in 2014 encountered potential impacts or contained PrPAH concentrations greater than 4 mg/kg.

2.1.3 Other Considerations

During the geotechnical evaluation of the removal areas, a 3-foot offset from all existing structures was established based on constructability, health and safety considerations, and/or protection of the existing infrastructure. Existing structures include but are not limited to the Court Street flood wall adjacent to Area 1 and Area 2, the abutment of the former bridge for Tompkins Street, the pump house and the adjacent concrete spillway, and riprap supporting the slope adjacent to the Tompkins Street Bridge. The 3-foot offset was used to refine the final horizontal extents of Areas 1 and 2.

The removal extent for Area 1 in the land-side boundary not offset from existing structures (i.e., in the corner between the City of Binghamton pump house and the flood wall) is defined at an elevation of 833 feet North American Vertical Datum of 1988 (NAVD88). This elevation was delineated from changes in vegetation along the river bank.

2.1.4 Dredge Prism Development

To account for sloping and actual sediment removal operations, a dredge prism was developed for each removal area. The dredge prism includes, at a minimum, the removal depths defined by previous investigations as described above. In addition, the dredge prism accounts for the general assumptions/boundary conditions listed below:

- Between polygons defined by the previous investigations, a 3(horizontal):1(vertical) slope tapers from the deepest depth up to the bottom of the adjacent polygon.
- Along the riprap on the downstream end of Area 1, a vertical cut will be made at the removal boundary of Area 1, and a 1(horizontal):1(vertical) slope is assumed to taper due to sloughing up from the deepest depth at the boundary of the removal limit until the riprap is encountered, at which point a vertical face is assumed.
- Along the other existing structures adjacent to Area 1 and Area 2, a vertical cut will be made at the removal boundary, and a 3(horizontal):1(vertical) slope is assumed to taper due to sloughing up from the deepest depth at the boundary of the removal limit until the structure is encountered or until the dredge surface intersects with the pre-removal surface.
- Along the water side of Area 1 and Area 2, a vertical cut will be made at the removal boundary and a 3(horizontal):1(vertical) slope is assumed to taper up from the deepest depth at the boundary of the removal limit until the dredge surface intersects with the pre-removal surface or temporary containment system.

Although the dredge prism assumes tapered slopes outside of the required removal limits, sediment will not actively be removed from areas outside of the limits of the sediment removal area illustrated on Design Drawing 5 (Appendix A).

2.2 Temporary Containment System

River hydraulics have been evaluated to establish appropriate design parameters for the temporary containment system using the following primary data sources:

- Historical stream flow data from USGS Gauging Station 01503000 Susquehanna River at Conklin NY (USGS 2016)
- Federal Emergency Management Agency (FEMA) Base-Flood Hydrologic Engineering Center's River Analysis System (HEC-RAS) hydraulic model of the Susquehanna River through Binghamton, NY (FEMA 2016)

To support the design of the temporary containment system for Area 1 and Area 2, mean daily flow data from USGS Gauging Station 01503000 (years 2000 through 2015) were evaluated to determine design flows that are expected to be equaled or exceeded approximately 10%, 5%, 2%, and 1% of the days during the months of May through September (i.e., the anticipated in-water construction season) during an average year. These river flows were then incorporated into a HEC-RAS hydraulic model of the Susquehanna River to estimate associated water surface elevations (WSEs) and average channel velocities. The early summer seasonal base flow elevation has been estimated to be 831 feet NAVD88, based on HEC-RAS modeling of the Susquehanna River near the OU-2 portion of the Site. Based on

similar modeling, the WSEs in relation to mean annual flow and mean flow during the anticipated construction season are estimated to be 833 feet NAVD88 and 832 feet NAVD88, respectively. Results are summarized in Table 2-2, with the associated modeled flow for each scenario provided in cfs.

Table 2-2 Modeled Estimated Water Surface Elevations for May through September

Percentage of Construction Season Exceeded during Normal Water Year (May – September)	Approximate Modeled Maximum WSE (feet NAVD88)[1]	Approximate Water Velocity Along Outside of Bend (feet per second)[2]
Average Mean Daily Flow (2,820 cfs)	832.0	1.3
10% Exceedance (5,730 cfs)	833.5	2.3
5% Exceedance (8,440 cfs)	834.3	3.0
2% Exceedance (14,370 cfs)	836.4	4.3
1% Exceedance (18,900 cfs)	837.6	5.1

Notes:

[1] The HEC-RAS model appears to over-estimate WSEs by approximately 1 foot because actual surveyed WSEs on numerous “average flow” days were closer to 831.0 feet.

[2] Areas 1 and 2 occur along the outside of a channel bend having a centerline radius of approximately 1,140 feet and an average top width of approximately 430 feet.

The temporary containment system, consisting of steel sheet piles, will surround Area 1 and Area 2 separately. NYSEG will provide AZ-48 sheet piles to be used for the temporary containment system. The containment systems have been designed, in consideration of the above information, for a maximum WSE of 836 feet NAVD88, which is approximately 4 feet higher than the estimated average WSE predicted during May through September. The temporary containment system will act as a turbidity control barrier around the removal areas. Based on the design WSE, properties of AZ-48 steel sheet piles, and proposed removal depths, the sheet pile wall was designed for a minimum embedment around both Area 1 and Area 2. Table 2-3 indicates the minimum requirements for a sheet pile wall installation.

Table 2-3 Sheet Pile Minimum Design Requirements

Area	Steel Sheet Piling	Minimum Embedment Depth (feet)	Minimum Sheet Pile Length (feet)
1	AZ-48	14	36
2	AZ-48	11	26

The temporary containment system design presented in this IRM Design Report consists of both sheet pile around each of the sediment removal areas (Area 1 and Area 2) as well as turbidity curtains and oil absorbent booms downstream of each of the sediment removal areas (see Section 5.4 for details). Based on previous investigation data, it may be difficult to install the steel sheet piles to the minimum embedment depths due to the presence of dense to very dense sands and gravels. If refusal is met during steel sheet pile installation, and additional measures taken for installation (i.e., moving the alignment of the sheet piles, using driving shoes, or including bracing) also result in refusal, turbidity curatins will be used ot fully emcompass the sediment removal areas.

If sheet pile is used, the top of steel sheet pile will be at a minimum elevation of 836 feet NAVD88. It is anticipated that the top of the sheet pile wall will be higher than elevation 836 feet NAVD88 due to the known length of the steel sheet piles as provided by NYSEG. Along the alignment of the sheet pile wall downstream, a minimum length of 36 feet will be required to have top of sheet piles at elevation 836 feet NAVD88. This will allow for a downstream spillway in cases of storm events.

2.3 Waste Handling and Management

Because of the high-traffic roadway adjacent to the Site, a material transloading area was identified upstream of OU-2 (see Design Drawing 4 in Appendix A). General handling and management operations include the following: removal of sediment from the remedial areas; decanting of free water within the temporary containment area for transport via barge to the material transloading area; collection of free water within the barge for treatment; sediment solidification, if necessary; and direct loading for off-site transport to a NYSEG-approved waste management facility or loading for transport to the temporary staging area established at OU-1 for further solidification for off-site transport to a NYSEG-approved waste management facility.

The results of a composite sample of waste generated during PDI work in 2014 were reviewed to characterize the targeted sediment to be dredged from OU-2. The sample results for sample IDW-SO, collected November 10, 2014, are presented in Table 2-4, and indicate the OU-2 sediment material can be classified as a non-hazardous solid waste that is not regulated under the Resource Conservation and Recovery Act. Removed sediment with visible coal tar impacts, if any is observed during implementation of the IRM, will be classified as a conditionally exempt MGP remediation waste (under the DER-4 exemption, TAGM-4061) and sent off-site for treatment using low-temperature thermal desorption (LTTD) at a facility such as EMSI of New York. Removed sediment with no visible impacts of coal tar will be classified as a non-hazardous solid waste and disposed of at an off-site landfill permitted to receive non-hazardous waste, such as Broom County Landfill. The observations recorded during PDI activities indicate approximately 45% of the material may contain visbile coal-tar impacts. Additional

Waste characterization sampling and analysis will be conducted during IRM mobilization activites if requested by the selected treatment and/or disposal facilities (see Section 5 for details).

Best practices will be implemented during construction to facilitate transportation to sediment offloading and management areas, material processing (i.e., drying agent dosage rates), transportation to and disposal at a NYSEG-approved waste management facility, and treatment and discharge of construction-generated water.

3 ORGANIZATION STRUCTURE AND RESPONSIBILITIES

NYSEG and the NYSDEC will participate jointly in implementation of the IRM activities described in this IRM Design Report. NYSEG has the ultimate responsibility for implementing the IRM. NYSDEC personnel are anticipated to be on-site periodically to observe work activities. The remedial activities will be observed by NYSEG's Remediation Engineer for general compliance with the IRM Design Report. Communication with regulatory agencies and with members of the surrounding community will be managed by NYSEG. Key project personnel are identified below.

Table 3-1 Key Project Personnel

Name/Affiliation	Address	Contact Information
NYSEG		
Mr. Tracy L. Blazicek Project Manager	18 Link Drive P.O. Box 5224 Binghamton, NY 13094	T: 607.762.8839 F: 607.762.8451 tlblazicek@nyseg.com
NYSDEC		
Ms. Sarah Saucier	625 Broadway Albany, NY 12233	T: 518.402.9662 F: 518.402.8050 sarah.saucier@dec.ny.gov
Design Engineer: Arcadis		
Mr. Jason Golubski, P.E. Project Manager Mr. Mark Gravelding, P.E. Engineer of Record	110 West Fayette St., Suite 300 Syracuse, NY 13202	T: 315.671.9437 jason.golubski@arcadis.com T: 315.671.9235 mark.gravelding@arcadis.com
Remediation Engineer: To Be Determined (TBD)		
Remediation Engineer	TBD	TBD
Remediation Contractor: TBD		
Remediation Contractor	TBD	TBD

A summary of the key project responsibilities with regard to monitoring and sampling is provided in Table 3-2.

Table 3-2 Summary of Key Project Responsibilities for Procurement, Monitoring, and Sampling

Task	NYSEG	Remediation Engineer	Remediation Contractor
Procurement of Remediation Engineer and Remediation Contractor	X		
Procurement of Analytical Testing Laboratory		X	
Procurement of Conditionally Exempt Disposal Facility	X		
Procurement of Waste Transporter(s) and Non-Hazardous Disposal Facility(ies)			X
Survey Control			X
Community Air Monitoring		X[1]	
Turbidity Monitoring			X[2]
Sampling for Import Material Characterization		X[3]	
Sampling for Solid/Liquid Waste Characterization		X[3]	

Notes:

[1] Monitoring to be performed in accordance with the Community Air Monitoring Plan (CAMP) (Appendix C).

[2] Remediation Contractor to provide, install, and maintain equipment, and provide access to the real-time data for the Remediation Engineer.

[3] Remediation Contractor to provide access to material for sampling.

In addition to the requirements summarized in Table 3-2, the minimum responsibilities of NYSEG, the Design Engineer, the Remediation Engineer, and the Remediation Contractor for work to be conducted prior to, during, and following implementation of the remedial activities at the Site are presented in the following subsections.

3.1 NYSEG Responsibilities

NYSEG will be responsible for the following:

- Coordinating with the Remediation Contractor, Design Engineer, and Remediation Engineer (as necessary) to implement the required work activities in conformance with the IRM Design Report.
- Securing access agreements to facilitate the remedial activities on properties not owned by NYSEG. It is currently anticipated that NYSEG will seek access agreements with the owners of two to three properties adjacent to and/or upstream of the Site.
- Prepare a State Pollutant Discharge Elimination System (SPDES) Permit Equivalent, Nationwide Permit #38 (NWP #38), and request for Section 401 Water Quality Certification (WQC), and coordination and communication with the appropriate agency representatives to faciliate obtaining the associated permits and approvals.

- Providing notification of the remedial activities to nearby property owners/entities.
- Conducting all electrical utility relocation activities, as necessary.
- Assisting the NYSDEC in preparing and sending a Notice and Fact Sheet consistent with NYSDEC Program Policy DER-23, Citizen Participation Handbook for Remedial Programs (NYSDEC 2010b) before field work begins.
- Acting as the “Generator” for the off-site treatment and disposal of waste material resulting from the remedial activities.
- Providing bills of lading (BOLs)/manifests for the off-site shipment of conditionally exempt waste materials generated as a result of implementing the remedial activities. These shipping documents may be provided to the Remediation Engineer to sign as Agent for NYSEG, under separate agreement with NYSEG.
- Coordinating with the NYSDEC regarding IRM activities.

3.2 Design Engineer Responsibilities

The Design Engineer will provide the following services prior to the implementation of the remedial activities:

- Assist NYSEG with preparation of this IRM Design Report.
- Assist NYSEG with preparation of an SPDES Permit Equivalent, NWP #38, and request for Section 401 WQC, and coordination and communication with the appropriate agency representatives to faciliate obtaining the associated permits and approvals.
- Assist NYSEG with community relations and stakeholder communications.

3.3 Remediation Engineer Responsibilities

The Remediation Engineer will provide the following services during implementation of the remedial activities:

- Review Remediation Contractor submittals, requests for interpretation and clarification, and change orders and provide comments, if any, to the Remediation Contractor and NYSEG.
- Initiate field orders, work change directives, and proposal requests.
- Provide experienced and qualified project management and full-time on-site oversight to observe and monitor remedial activities. The Remediation Engineer will have stop-work authority to facilitate inspection of completed work and address health and safety concerns, as needed.
- Maintain records of the work efforts associated with implementation of the remedial activities, including daily field reports and digital photographs of the work in progress and documentation of observations, problems, and deficiencies.
- Maintain records of labor, materials, and equipment utilized for the remedial activities and any unusual circumstances, if any are encountered.

- Document that the remedial activities are conducted in general conformance with the IRM Design Report and notify NYSEG of any deviations.
- Prepare waste profiles for off-site treatment/disposal of solid and liquid wastes to be generated as part of the remedial activities.
- Coordinate with potential disposal facilities to verify waste characterization analytical requirements prior to the collection of waste characterization samples.
- Review the Remediation Contractor's turbidity data and monitoring reports.
- Monitor the Remediation Contractor's survey control for evaluating performance of the remedial action in compliance with this IRM Design Report and payment quantities, as applicable.
- Review and sign (as an authorized agent for NYSEG) waste manifests/BOLs for shipments of waste materials generated by the remedial activities.
- Maintain an on-site project log containing waste manifests/BOLs for wastes generated by the remedial activities.
- Assist NYSEG in the review of Remediation Contractor invoices/requests for payment.
- Coordinate and document pre-construction project meeting, project construction/coordination meetings (as required), and a project closeout meeting for the IRM activities.
- Issue formal design modifications (if necessary). Note that design modifications will be signed and sealed by a New York State Licensed Professional Engineer.
- Prepare (and certify) a Construction Completion Report (CCR) to document completion of the construction activities.
- Prepare a revision to the Site Management Plan (SMP), if necessary, to detail the post-construction activities to be conducted at the Site.
- Provide NYSEG with support to resolve any issues that may arise when the IRM is implemented.

3.4 Remediation Contractor Responsibilities

In general, the Remediation Contractor is responsible for providing all supervision, labor, equipment, and materials needed (unless otherwise noted) to implement the activities described in the IRM Design Report. Remediation Contractor responsibilities are detailed on the Design Drawings (Appendix A) and in the Technical Specifications (Appendix B) and the other supporting plans. The Remediation Contractor's responsibilities also include:

- Verifying all existing site conditions.
- Thoroughly reviewing the IRM Design Report.
- Reviewing NYSEG's Contractor Safety Requirements (latest edition).
- Notifying the Remediation Engineer and NYSEG immediately upon discovery of a conflict between the IRM Design Report and actual site conditions, or within the IRM Design Report.

4 PRE-REMEDIATION ACTIVITIES

The following pre-remediation activities will be completed by NYSEG and/or its representatives prior to or at the start of the initiation of remedial construction:

- Assisting NYSDEC in preparation of a citizen participation Notice and Fact Sheet.
- Obtaining regulatory and local permits, access agreements, and other approvals.
- Preparing pre-mobilization submittals.

The overall purpose of the pre-remediation activities is to coordinate with the local community and officials to facilitate initiation of the remedial activities. Additional information regarding these pre-remediation activities is provided in the following subsections.

4.1 Citizen Participation Plan

A Citizen Participation Plan describing the citizen participation activities that have been and will be completed for the Site has been developed in concert with this IRM Design Report. Consistent with NYSDEC Program Policy DER-23, *Citizen Participation Handbook for Remedial Programs* (NYSDEC 2010b), before field work begins, a Notice and Fact Sheet will be developed and sent to parties on the site contact list (i.e., residents and business owners within a specified radius of the Site, as well as additional community and political personnel). NYSEG will work with the NYSDEC (as appropriate) to develop the Notice to be sent to all parties on the site contact list and to the document repository. The Notice will include a Fact Sheet that describes the upcoming remediation work. The NYSDEC is ultimately responsible for preparing and distributing the Notice and Fact Sheet.

4.2 Permitting and Access Agreements

Based on the IRM to be conducted at the Site and information currently available, the following agreements/authorizations, permits, and/or notifications have been identified, at a minimum, as potentially applicable for the IRM activities:

- Access Agreements – Access agreements and notifications are anticipated to be required to facilitate conducting sediment removal activities in proximity to the Court Street flood wall and the pump house (coordination with the City of Binghamton) and performing other remedial operations in a manner that minimizes impacts to the public. Additionally, access agreements are required to facilitate use of the area identified as the transloading area upstream of OU-2.
- Joint Application Permit (JAP)
  - WQC – A WQC must be applied for and granted by the NYSDEC, indicating that the proposed remedial activities will not violate water quality standards.
  - NWP #38 – A permit must be applied for and granted by the United States Army Corps of Engineers (USACE) prior to conducting sediment removal activities in the Susquehanna River.
- Note that the NWP #38 and the WQC applications will be submitted to the USACE and NYSDEC under the JAP. In support of the JAP, the United States Fish and Wildlife Service will be contacted

to confirm that the remedial activities will not affect protected fish and wildlife species or their habitats. In addition, the State Historic Preservation Office will be contacted to identify cultural resources that may be present in the area of the Site.

- SPDES Permit Equivalent – An SPDES permit equivalent will be required to discharge treated water to an on-site manhole or directly to the Susquehanna River, as appropriate.
- Local agencies – Local agencies will be contacted for a floodplain development permit (as appropriate).

NYSEG, with assistance from the Design Engineer, will be responsible for obtaining access agreements and the above-listed permits and certifications. Prior to implementing the remedial activities, NYSEG will satisfy notification requirements and obtain applicable review required by the NYSDEC. The Remediation Contractor shall obtain any additional permits and agreements specific to their work (i.e., coordinate with local agencies for any temporary traffic control within the adjacent roadway, permit for operation of a crane, etc.).

4.3 Remediation Contractor Pre-Mobilization Submittals

Following contract award, the selected Remediation Contractor will be required to prepare pre-mobilization submittals for review by NYSEG and/or the Remediation Engineer. Some pre-mobilization submittals will be provided to the NYSDEC for reference. The Remediation Contractor will not be allowed to mobilize to the Site prior to review and approval of all required pre-mobilization submittals. These submittals will include, but not necessarily be limited to, the following:

- Project Operation Plan (POP) – The POP is required to present the Remediation Contractor's detailed approach for implementing the pertinent work activities (incorporating, as necessary, plans, specifications, site maps, details, flow diagrams, charts, site geologic/geotechnical information, and schedules).
- Health and Safety Plan (HASP) – The Remediation Contractor will be required to prepare and submit a site-specific HASP (for use by on-site personnel during the remedial activities) to provide a mechanism for establishing safe working conditions at the Site. The HASP will be prepared in accordance with all applicable rules and regulations, including 29 Code of Federal Regulations (CFR) 1910 and 29 CFR 1926, and will be prepared by a Certified Industrial Hygienist. The Remediation Contractor is required to take all necessary precautions for the health and safety of on-site personnel in compliance with all applicable provisions of federal, state, and local health/safety laws and the provisions associated with the HASP. The Remediation Contractor will assume sole responsibility for the accuracy and content of its HASP.
- Preliminary Progress Schedule – The Remediation Contractor will be required to prepare a preliminary schedule that identifies major work items and work sequences.

Additional requirements regarding the content of the Remediation Contractor pre-mobilization submittals and the overall submittal process are presented in the Technical Specifications (Appendix B).

5 REMEDIATION ACTIVITIES

This section provides detailed descriptions of the IRM activities from mobilization and site preparation through restoration and demobilization. In addition to the requirements indicated in the following subsections, the Design Drawings included as Appendix A, and the Technical Specifications included as Appendix B, IRM activities will also be conducted in accordance with the following supporting plans:

- Community and Environmental Response Plan (Appendix D) – Summarizes the site monitoring and work practices that will be completed to address potential short-term impacts to the surrounding community and/or environmental resources.
- Construction Quality Assurance Plan (Appendix E) – Describes the materials, procedures, and testing related to construction, evaluation, and documentation to be performed during implementation of the IRM activities.
- Contingency Plan (Appendix F) – Describes response procedures to potential emergencies at the Site.
- Storm Water Pollution Prevention Plan (Appendix G) – Describes the erosion, sediment, and turbidity control measures, as well as general site practices, to be implemented during the IRM activities.
- Waste Management Plan (WMP, Appendix H) – Identifies requirements for the transportation of solid and/or liquid non-hazardous and hazardous waste during implementation of the IRM activities.

Additionally, the Remediation Contractor will complete each IRM task in accordance with the Remediation Contractor's HASP (discussed in Section 4). The Remediation Contractor will be responsible for conducting worker health and safety and work space monitoring. The Remediation Engineer will conduct community air monitoring for the duration of the project.

5.1 Mobilization and Site Preparation

Site mobilization will be initiated by the Remediation Contractor after notification from NYSEG to proceed. In general, mobilization activities include bringing personnel, equipment, and materials to the Site to support the remedial construction activities. Mobilization activities to be conducted by the Remediation Contractor include, but are not limited to, the following:

- Prior to construction activities, mark on-site underground utilities, including subaquatic utilities, by contacting Dig Safely New York and by using a private utility locator. Additionally, to support the utility mark-out for areas proposed for intrusive areas, the Remediation Contracor will use "as-built" or "record" drawings of site utility plans, interview knowledgable site or client personnel, and perform a detailed visual inspection of areas around planned subsurface/subaquatic intrusive work locations.
- Mobilizing and establishing two field office trailers: one to be utilized by the Remediation Contractor, and one to be utilized by the Remediation Engineer and the NYSDEC during implementation of the remedial activities. The trailers (and supporting telephone and internet services) will conform to the requirements presented in Section 01 52 13, Field Offices and Sheds (Appendix B).

- Coordinating with NYSEG Customer Service to obtain electrical service. The Remediation Contractor will be responsible for coordinating electrical service and all necessary utilities for use during the remedial construction.
- Providing and maintaining portable sanitary services for use by on-site personnel engaged in the remedial activities. Portable sanitary services will conform to the requirements presented in Section 01 52 19, Sanitary Facilities (Appendix B).
- Obtaining any additional permits not identified in Section 4.2. The Remediation Contractor will be responsible for obtaining local permits (e.g., city building and/or construction permits) necessary to facilitate the IRM activities.

During mobilization activities, the Remediation Contractor will also perform site preparation activities. The approximate locations of certain support facilities are shown on Design Drawings 3 and 4 (Appendix A). The Remediation Contractor will inspect and confirm the condition of installed facilities prior to the start of construction. Traffic control options will need to be evaluated and included in the Remediation Contractor's POP.

Site preparation activities will generally consist of the following:

- Verifying site conditions and identifying, marking, and verifying the locations of aboveground and underground utilities, equipment, and structures, as necessary, to implement the IRM activities. Current site conditions (i.e., a site plan and approximate locations of known existing utilities) are shown on the Design Drawings (Appendix A). The Remediation Contractor will also be responsible for maintaining appropriate clearances from utilities (e.g., active overhead electrical lines). If the Remediation Contractor damages existing utilities, equipment, or structures, the Remediation Contractor will be responsible for notifying the utility company/municipality and fully repairing all damages. Repairs (if necessary) will be completed in accordance with all requirements of the utility company/municipality.
- Establishing survey control and work limits as noted in Section 5.2.
- Completing pre-construction surveys as noted in Sections 5.2 and 5.3.
- Protecting existing site features (e.g., manholes, outfalls, and Court Street flood wall, as necessary).
- Installing temporary erosion, sediment, and turbidity controls in accordance with the Design Drawings (Appendix A) and Section 01 57 05, Temporary Controls (Appendix B). Temporary erosion, sediment, and turbidity controls include, but are not limited to, silt fencing, straw bales (with and without liners), and the temporary containment system.
- Tree removal and grubbing activities in accordance with Section 31 11 00, Clearing and Grubbing (Appendix B). Tree removal and grubbing beyond that required to support site preparation for sediment removal activities are prohibited. Trees and shrubs will be removed only as necessary to complete the remedial construction activities and will be performed in accordance with permit requirements. A tree survey will be performed by the Remediation Engineer prior to removal of any vegetation to identify any trees greater than 6 inches diameter breast height and/or trees that may be considered a preferred habitat for threatened and/or endangered species.

- Installing work zone air monitoring equipment (to be relocated, as appropriate, based on wind direction) as required by the Remediation Contractor's HASP.
- Identifying, with the Remediation Engineer and NYSEG, safe and relevant locations to support installation of air monitoring equipment (to be relocated, as appropriate, based on wind direction) as specified by the CAMP (Appendix C).
- Improving site access via the improvement of an access road and transloading area as shown on Design Drawings 4 (Appendix A).
- Installing site control and safety measures, including temporary site security fencing and gates and project/warning signs. Temporary fencing will be 6-foot-high chain link fence equipped with warning signs. Additional information regarding site controls and safety measures is presented on the Design Drawings (Appendix A). Requirements for the project signs are presented in Section 01 58 13, Temporary Project Signage (Appendix B).
- Performing general site preparation to support staging of office trailers and a temporary water treatment system (WTS), if necessary, and constructing foundation pads (e.g., for the WTS). Site preparation may include moving or removing existing equipment, materials, and debris currently staged by NYSEG in the upland OU-1 area.
- Constructing a material staging area and equipment and personnel decontamination areas. Proposed locations of the material staging and decontamination areas are shown on Design Drawings 3 and 4 (Appendix A) and in the following specification sections (Appendix B):
  - Section 31 05 19.13, Geotextiles for Earthwork
  - Section 31 05 19.16, Geomembranes for Earthwork
  - Section 31 05 05, Aggregates for Earthwork
- Constructing and testing the temporary WTS as shown on Design Drawing 10 (Appendix A) and in accordance with Section 01 01 53, Temporary Water Treatment and Management (Appendix B). Note that if the Remediation Contractors utlizes off-site transportation and disposal for water generated onsite (i.e., on-site Frac tanks for storage and off-site transportation and treatment/disposal), constructing and testing of the temporary WTS will not be required.

Refer to Design Drawings (Appendix A) and Technical Specifications (Appendix B) for additional information regarding site preparation.

5.2 Survey Control

The Remediation Contractor will retain a New York State licensed surveyor to conduct survey control during the remedial activities. The Remediation Contractor will supply the survey information (including an as-built survey, signed and sealed by the Remediation Contractor's New York State licensed surveyor) to the Remediation Engineer for inclusion in the CCR. Survey work associated with the remedial activities will be performed in accordance with Sections 01 78 39, Project Record Documents and 01 71 23, Field Engineering (Appendix B) and includes, but is not limited to, the following:

- Pre-construction survey of the upland support areas (e.g., OU-1 support area, Transloading Area, etc.) and in-water work areasto be conducted prior to initiation of the remedial action.
- Interim survey(s) of the components such as, but not limited to, installation of support components (i.e., temporary containment system [see Sections 5.3 and 5.4]) and the post-removal bottom of Area 1 and Area 2, to confirm, prior to backfill, the horizontal and vertical limits of removal have been met.
- Post-construction survey of the restored areas, including the in-river areas (post-backfill) and upland support areas surveyed during the pre-construction survey. The post-construction survey of the in-river areas (and adjacent bank) will be completed prior to removal of the temporary containment system to confirm the areas have been restored to pre-removal grades. Finally, the post-construction survey of the upland restored areas will be conducted after completion of all site restoration activities to verify compliance with the IRM Design Report prior to final demobilization.

Additionally, throughout performance of the work, geotechnical monitoring and survey (i.e., with tiltmeters and optical survey points) will be performed to assess and document movement of structures during construction, in accordance with Section 31 09 13, Geotechnical Instrumentation and Monitoring (Appendix B).

5.3 Structural Surveys

The Remediation Contractor will conduct structural surveys prior to and after intrusive work in accordance with Section 02 21 19, Structural Surveys (Appendix B). Specifically, the Remediation Contractor will perform a pre-construction structural survey of the Court Street flood wall, the abutment of the former bridge for Tompkins Street, and the existing pump house and adjacent concrete spillway prior to initiation of the remedial action. A post-construction structural survey will be conducted in the same manner and of the same features as the pre-construction structural survey, and will be compared to the pre-construction survey to confirm pre-construction conditions were maintained

5.4 Temporary Containment System

The Remediation Contractor will install a temporary containment system consisting of sheet piles around each of the sediment removal areas (Area 1 and Area 2) to divert the river flow around the active work area and to control turbidity generated as a result of performing the IRM activities. The approximate location of the temporary containment system is illustrated on Design Drawing 5 (Appendix A). The temporary containment system will be lined with absorbent booms to control sheens, if any, generated during performance of the IRM activities.

Prior to installing the sheet pile, turbidity curtains and oil absorbent booms will be installed within the Susquehanna River downstream of the area in which sheet piles are being installed. The Remediation Contractor will maintain the turbidity curtains and oil absorbent booms downstream of each of the sediment removal areas throughout removal operations. Once survey results confirm that remediation and restoration have been completed in accordance with the IRM Design Report, and as long as surface water within each temporary containment system is free of visible impacts (i.e., sheens) and the turbidity within each temporary containment system is within 50 nephelometric turbidity units (NTUs) of

the upstream monitoring station (see Section 5.5), the temporary containment system can be removed. The Remediation Contractor will have additional absorbent booms and pads available prior to initiating removal of the sheeting, and will maintain the turbidity curtains downstream of the temporary containment system until removal is complete.

5.5 During-Construction Monitoring

The Remediation Contractor and Remediation Enginer will conduct during-construction monitoring, including air monitoring, turbidity monitoring, and structural and geotechnical monitoring.

5.5.1 Air Monitoring

As noted previously, the Remediation Contractor will be responsible for all personnel air monitoring requirements within the work zone in accordance with its site-specific HASP, while the Remediation Engineer will conduct community air monitoring in accordance with the CAMP (Appendix C).

5.5.2 Turbidity Monitoring

In accordance with Section 01 57 05, Temporary Controls (Appendix B), the Remediation Contractor will perform both qualitative and quantitative turbidity monitoring at a minimum of two locations in the Susquehanna River, including one location upstream of the active work area and one location downstream of the active work area.

Preliminary turbidity monitoring locations are illustrated on Design Drawing 4 (Appendix A). Final locations will be determined based on field conditions/accessibility and the need to maintain a safe distance from the active work area. During work hours, turbidity monitoring will consist of real-time turbidity monitoring stations at the locations upstream and downstream of the active work area. The Remediation Contractor will provide the Remediation Engineer and NYSEG with access to the real-time turbidity data.

The upstream location will represent the background turbidity level for comparison to the downstream location. Turbidity levels will be logged a minimum of every 15 minutes and transmitted a minimum of every 30 minutes. In accordance with Section 01 57 05, Temporary Controls (Appendix B), “early warning”, “action level”, and “stop work level” exceedance criteria have been established.

If the results of turbidity monitoring at the downstream location indicate turbidity levels in excess of an “early warning” level, the ongoing operations and the condition of the turbidity control system will be visually inspected to assess the need to make any minor operational changes.

If the results of turbidity monitoring at the downstream location indicate turbidity levels in excess of the “action level”, or if significant visible contrast between the upstream and downstream location is visually observed, a number of site assessment activities will be initiated as specified in Section 01 57 05, Temporary Controls (Appendix B), including the following:

- Remedial activities will be ceased temporarily to visually inspect the condition or performance of the existing erosion, sediment, and turbidity control measures, including the temporary containment system and associated turbidity curtain/absorbent boom system.

- Monitoring at the downstream and upstream locations will continue to determine if the prior result differential of more than 50 NTUs was an anomaly or if the elevated reading was possibly a short-duration event.
- If these assessment activities indicate that the elevated downstream turbidity reading reflects a water quality impact that could persist or recur and that it is related to specific IRM activities or site controls, the Remediation Contractor will make recommendations to modify the pertinent activities to the extent feasible, or additional controls will be implemented. The recommendations will be evaluated by NYSEG and the Remediation Engineer in consultation with the NYSDEC.

If turbidity monitoring at the downstream location indicates turbidity levels in excess the “stop work level”, the Remediation Contractor will:

- Cease sediment removal activities until the turbidity level is less than the “stop work level”.
- Perform response actions specified for the “action level” exceedance.
- Notify and receive approval from NYSEG or the Remediation Engineer prior to recommencing sediment removal activities.

5.5.3 Structure and Sheet Pile Monitoring

Additionally, throughout performance of the work, geotechnical monitoring and survey (i.e., with tiltmeters and optical survey points) will be performed to assess and document movement of structures during construction, in accordance with Section 31 09 13, Geotechnical Instrumentation and Monitoring (Appendix B).

5.6 Sediment Removal and Backfilling

Sediment removal and backfilling for Area 1 and Area 2 encompass approximately 0.14 acres and 0.03 acres, respectively. The dredge prism removal volume is estimated to be approximately 885 cubic yards (cy) for Area 1 and approximately 65 cy for Area 2.

The Remediation Contractor will remove sediment from the limits shown on Design Drawing 5 (Appendix A). Sediment removal activities will be conducted “in the wet” within the temporary containment system in accordance with Section 35 20 23, Dredging and Subaqueous Backfill (Appendix B). It is estimated that approximately 950 in-situ cy of sediment material will be removed, including impacted and non-impacted material in Area 1 and Area 2, as well as any material that may be removed to support the constructibility of the remediation (i.e., material assumed to slough into the dredge area from outside the removal boundary and within the containment system).

Prior to conducting sediment removal activities in each respective removal area, the Remediation Contractor will divert the outfalls that currently discharge into Area 1 and Area 2 to flow outside of the temporary containment system, as indicated on Design Drawing 1 (Appendix A). Diversion options will need to be evaluated and included in the Remediation Contractor’s POP.

It is anticipated that targeted sediment will be removed using conventional equipment (e.g., barge-mounted crane and/or excavator fitted with an environmental bucket). It is anticipated that equipment will be fitted with a real-time kinematic global positioning system (RTK GPS) with submersible hard-

wired positioning sensors and associated software that will record the position of the bucket/crane in the X, Y, and Z axis. The positioning system will allow for accurate control of the elevation of the bucket/crane from the bottom of the dredge prism to minimize over-dredge and ensure accurate coverage.

Removed sediment will be loaded into a barge and transported upstream to the material transloading area constructed on the adjacent property, as illustrated on Design Drawing 4 (Appendix A). Free water inside the containment barge, as long as a visible sheen is not present, may be pumped inside the temporary containment system prior to the barge traveling upstream to the material transloading area. Sediment will be allowed to gravity drain within the barge during transport, and decant water will be collected at the transloading area. At the material transloading area, free water and removed sediment will be handled as discussed in Section 5.7 below.

The Remediation Contractor will provide interim monitoring throughout construction activities via the RTK GPS attached to the sediment removal equipment. Achievement of removal limits will be confirmed daily by the Remediation Engineer using the interim monitoring data provided by the Remediation Contractor, and a post-removal interim survey will be performed by the Remediation Contractor to confirm the target removal depths have been achieved prior to initiating backfill activities. Removal areas will be backfilled to achieve pre-removal elevations with native (see Section 5.7 for reuse criteria) and/or imported fill materials in accordance with Section 38 20 23, Dredging and Subaqueous Backfill (Appendix B) and as shown on Design Drawing 9 (Appendix A). The gradation of the fill material has been selected to match the existing sediment gradation (to the extent practicable) while also meeting design criteria for minimum particle size based on the stream characteristics.

If the small riverbank area adjacent to the City of Binghamton pump house is disturbed during remediation of Area 1, stone armoring will be installed in accordance with Design Drawing 9 (Appendix A) to provide protection from anticipated erosional forces associated with the Susquehanna River currents and ice. Additionally, if the bank is disturbed at the transloading area upstream of OU-2, armoring will be installed to restore the bank in that area; final restoration decisions for this area will be made in consultation with the property owner.

Following the completion of sediment backfilling activities, the Remediation Contractor will remove the temporary containment system as indicated in Section 5.4.

5.7 Solid and Liquid Waste Handling and Management

Sediment, debris, and miscellaneous wastes generated during the remedial activities will be handled and disposed of/treated off Site in accordance with applicable federal, state, and local regulations, as well as Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris (Appendix B).

Removed sediment will be segregated during removal for possible reuse (i.e., large rock or riprap) or off-site transport, as appropriate. If practical, large rock or riprap that may be washed for reuse will be placed together in the barge for removal at the material transloading area and transport to the decontamination area constructed at the NYSEG-owned property (OU-1). Material not suitable for reuse may be directly loaded from the barge for off-site transport to the NYSEG-approved waste management facility if the material is suitable for over-the-road transport (i.e., achievement of United States Environmental Protection Agency's (EPA's) "Paint Filter Test" and also meets the requirements of the

facility). The material would be transported off Site under a non-hazardous manifest. Free water within the containment barge will be removed via pumping for collection and treatment.

If the removed sediment does not meet the Paint Filter Test and is not suitable for over-the-road transport to the waste management facility after gravity dewatering, it will be blended with a drying agent (e.g., cement kiln dust), as necessary until the material can meet the Paint Filter Test and the requirements of the off-site treatment/disposal facility. The blending operations may be performed at the transloading area within the containment barge, or the Remediation Contractor may transport the material to the temporary staging area constructed on the NYSEG-owned property (OU-1) for further dewatering pior to off-site transport. To be transported from the point of origin to the OU-1 area across public streets, the removed sediment will be loaded into a lined truck with a sealed gate, which must not show signs of leaking, and would be transported using a BOL. The transporter would be a New York permitted waste hauler, consistent with New York Codes, Rules, and Regulations (NYCRR) Part 364 (NYSDEC 2016c).

Attempts will be made to reduce the need for drying agents, such as blending drier material with other material that is more saturated. It is anticipated that solidification agents, if any, will be mixed at less than 10% by volume with the removed sediment to make it suitable for transport for off-site disposal. The Remediation Contractor may elect to perform a treatability test to support selection of the optimal drying agent and dosage rate prior to construction and/or modifying the drying agent and dosage rate during construction based on Paint Filter Tests.

If additional characterization is required by the selected disposal facility(ies), an in-situ sample will be collected during mobilization activities and prior to initiating sediment removal activities, and the material will be characterized (by the Remediation Engineer).[2] The treatmend and/or disposal facilities will be selected and/or approved by NYSEG. Removed sediment will be visually characterized on-site to determine final off-site treatment/disposal requirements. Specifically, as discussed in Section 2.3, based on waste characterization sampling the removed sediment is currently classified as non-hazardous solid waste; however, sediment impacted with visible NAPL, if any, will be considered conditionally exempt and will be treated by LTTD. Removed debris free of visible impacts (e.g., brick and concrete) will be disposed of at an appropriate facility selected by NYSEG and handled in accordance with the WMP (Appendix H).

With NYSDEC approval, visibly clean cobbles/boulders segregated during initial on-site handling of the removed material may be reused as backfill material. If cobbles and boulders contain visible impacts, the Remediation Contractor will powerwash the material in the decontamination area (see Design Drawings 3 and 4 in Appendix A) to the satisfaction of the Remediation Engineer, NYSEG, and/or NYSDEC.

The Remediation Contractor will be required to remove, treat, and discharge water generated from sediment dewatering and equipment and personnel decontamination activities. Water will be transported to and treated at an on-site temporary WTS. Similar to the NYSDEC's SPDES Permit Equivalent for the work performed in OU-1, approval will be sought to discharge water treated at the

[2] If the review of analytical results from additional samples, if any are collected, indicates total PAHs at concentrations greater than or equal to 1,000 mg/kg, or that the material is characteristically hazardous for benzene, the material will be treated by LTTD.

WTS back to the Susquehanna River. The Remediation Contractor may elect to propose an alternate method(s) for water treatment, such as collecting water for transport via tanker truck for treatment and disposal at an off-site facility.

The Remediation Contractor will be responsible for the setup and operation of the temporary WTS and achieving the discharge criteria specified in the permit. The Remediation Engineer will be responsible for conducting sampling required under the SPDES Permit Equivalent, as well as any system performance sampling. Requirements for temporary WTS components are provided on Design Drawing 10 (Appendix A) and in Section 01 53 53, Temporary Water Treatment and Management (Appendix B).

5.8 Site Restoration

The Remediation Contractor will conduct restoration of upland support areas following the completion of sediment removal/backfilling and after removal of the temporary containment system. As discussed in Section 5.6, dredged areas will be backfilled to the pre-removal grade with clean native and/or imported fill material. The Remediation Contractor will restore in-kind the upland support and ancillary areas disturbed as a result of remedial activities.

The Remediation Contractor will restore all upland and riverbank features disturbed, damaged, or destroyed during the IRM activities to pre-construction condition, or as agreed upon in the property access agreement(s). As appropriate, damaged sidewalks, parking lots, roadways, and curbs will be replaced in-kind, in accordance with the requirements set forth in Section 32 12 00, Flexible Paving and Section 32 90 00, Plantings and General Site Restoration (Appendix B). At a minimum, the asphalt driveway / parking lot of the JMT Logistics property will be removed and replaced, as indicated on Design Drawing 9 (Appendix A) and in accordance with Section 32 12 00, Flexible Paving (Appendix B).

In addition, disturbed vegetated surfaces will be restored with in-kind replacement speices (or equivalent native species) of grasses, shrubs, and trees, as necessary based on site disturbance, or as agreed upon in the property access agreement(s). Restoration will be implemented in accordance with the requirements set forth in Section 32 90 00, Plantings and General Site Restoration and Section 32 92 00, Turfs and Grasses (Appendix B) and, as appropriate, in consultation with the City of Binghamton and other affected property owners adjacent to the Site and/or the transloading area.

5.9 Cleaning and Decontamination

The Remediation Contractor will decontaminate, as necessary, all personnel and equipment that come in contact with removed materials. All construction vehicles leaving the Site (including vehicles that had been transporting clean fill) will be cleaned and/or decontaminated, as necessary, by the Remediation Contractor to prevent the tracking of sediment and/or soil off Site. For the purposes of cleaning and decontamination, “leaving the Site” includes vehicles traveling between the transloading area and the OU-1 area, if any. The Remediation Contractor will conduct decontamination activities within the decontamination area shown on Design Drawings 3 and 4 (Appendix A).

At a minimum, the Remediation Contractor will decontaminate the Remediation Contractor’s project equipment that comes in contact with removed sediment materials (including, but not limited to, sediment removal and transport equipment, trucks, pumps, and hand tools) prior to demobilizing and prior to handling clean material in accordance with Section 02 51 00, Decontamination (Appendix B). The

Remediation Contractor will perform decontamination activities until no visible soil, sediment, debris, or stains are present on the equipment surfaces (to the satisfaction of NYSEG and/or the Remediation Engineer). Equipment, such as pumps, will be flushed using clean water and appropriate cleaning agents (as necessary) to the satisfaction of NYSEG and/or the Remediation Engineer.

Unless otherwise directed by NYSEG and/or the Remediation Engineer, any equipment to be removed from the Site by the Remediation Contractor will be subject to a final visual review following cleaning. Water generated during decontamination activities will be handled as specified in the WMP (Appendix H).

5.10 Demobilization

Following completion of all IRM activities, the Remediation Contractor will conduct the following demobilization activities:

- Complete “punchlist” items, to be identified by the Remediation Engineer and NYSEG.
- Dismantle the work area(s), support/staging area(s), and decontamination area(s).
- Appropriately remove/dispose of all material, equipment, and support structures from the Site.

6 POST-CONSTRUCTION ACTIVITIES

Activities to be conducted following completion of the IRM construction activities at the Site include the following:

- Preparing a CCR
- Revising the SMP
- Completing post-construction monitoring

The content of the CCR and SMP are described below, along with an outline of the proposed long-term monitoring program.

6.1 Construction Completion Report

The Remediation Engineer will prepare and submit a CCR to the NYSDEC following completion of the IRM activities at the Site. In conformance with DER-10 (NYSDEC 2010a), the CCR will present, at a minimum, the following information:

- Description of the IRM activities, including variations, if any, from the NYSDEC-approved IRM Design Report.
- Record ("as-built") drawings, tables, and figures detailing the IRM activities completed and indicating that acceptance criteria were met.
- Information and documentation regarding the final quantities and disposition of materials disposed of/treated off Site during implementation of the remedial activities, including executed manifests and BOLs.
- Summaries of field observations, test performed, laboratory samples collected, and monitoring results obtained during construction (e.g., turbidity and CAMP monitoring).
- Summaries of problems and deficiencies encountered during construction, including recurring problems and/or deficicies discovered.
- Representative photographs taken during implementation of the remedial activities.
- Copies of regulatory permits and other key regulatory agency correspondence related to the permits and permit compliance.
- Certification statement.

The CCR will document the remedial activities performed for OU-2. The CCR will be prepared in a format based on available templates on the NYSDEC website. A professional engineer licensed in New York State will sign and seal the CCR, including the record drawings and certification statement.

6.2 Site Management Plan

A draft SMP has been developed for the OU-1 portion of the Site (Arcadis 2016b) to describe the post-construction activities to be completed at the Site, consistent with DER-10 (NYSDEC 2010a). The draft document was submitted to NYSDEC in January 2016 and is currently under review by the NYSDEC.

Following completion of the IRM activities and consistent with the requirements of DER-10 (NYSDEC 2010a), the Remediation Engineer will revise the existing SMP to include details of the post-OU-2 IRM activities to be conducted at the Site. In general, the revised SMP will present the methods and protocols to be followed when conducting post- construction monitoring (described in Section 6.3).

The revised SMP will include the following information:

- Description of the Site and identification of areas covered by the SMP
- Descriptions of site inspection, maintenance, and notification and reporting requirements
- Implementation schedule

6.3 Proposed Monitoring Plan

Following completion of the OU-2 IRM activities, monitoring will be conducted for one year to evaluate/monitor the stability of the restored near-shore river bottom and adjacent riverbank, and the health of the restored vegetation. Specifically, NYSEG proposes to perform visual inspections of the restored riverbank areas to assess the effects, if any, of erosive forces on the backfilled and restored areas. The monitoring results will be reported to the NYSDEC in a Periodic Review Report to be submitted to NYSDEC at the end of the monitoring year. Additionally, with approval from affected property owners, NYSEG will perform visual inspections of the restored vegetation following the first growing season to assess the survivability in accordance with Section 32 90 00, Plantings and General Site Restoration (Appendix B).

Recommended scope, frequency, and duration requirements for post-construction monitoring will be discussed with the affected property owner(s) and the NYSDEC during IRM construction activities and documented in the SMP.

7 SCHEDULE

A preliminary schedule for the IRM activities is presented in Table 7-1. Schedule considerations include, but are not limited to, the following:

- Weather
- River flow
- Fish protection, as applicable
- Proximity to high-traffic area – traffic safety and control must be properly planned and implemented

Table 7-1 Preliminary Schedule

Schedule Component	Date
Submit Draft IRM Design Report to the NYSDEC	September 2016
Receive Comments from the NYSDEC	May 2017
Submit revised Draft IRM Design Report to the NYSDEC	May 2017
Receive Approval Letter from the NYSDEC	June 2017
Submit Final IRM Design Report to the NYSDEC	June 2017
Regulatory Notifications and Permitting	Fall/Winter 2017
Remedial Contractor Procurement	2017/2018
Access Agreement(s)	2017/20182019
Initiate IRM Construction Activities	2018

Initiation of construction is contingent on meeting the initial schedule components defined above and receipt of all required permits, access agreements, and approvals. Further details regarding the schedule for the IRM construction and sequencing of the work will be presented in a construction schedule to be submitted to the NYSDEC once the permits for the project have been received and the Remediation Contractor has been selected. The work will be sequenced based on the selected Remediation Contractor's approach, and in consideration of weather/climatic conditions and any permit requirements (e.g., construction window) or other regulatory conditions.

8 REFERENCES

Arcadis. 2008. NAPL Barrier Wall Interim Remedial Measure Engineering Completion Report. June (Revised).

Arcadis. 2012. 66-Inch Storm Sewer Replacement Construction Completion Report, Court Street Former Manufactured Gas Plant Site. September.

Arcadis. 2013. Sediment Assessment Report. August 19.

Arcadis. 2015. Pre-Design Investigation Letter Report, Binghamton Court Street Former Manufacturer Gas Plant Site. May 14.

Arcadis. 2016a. Interim Remedial Measure Design Report – Annotated Outline, Binghamton Court Street Former Manufacturer Gas Plant Site. January 26.

Arcadis. 2016b. Draft Site Management Plan for Court Street Former Manufactured Gas Plant Site Operable Unit No. 1. January 29.

BBL. 2002. Final Remedial Investigation Report, Binghamton Court Street Former Manufacturer Gas Plant Site. December.

FEMA. 2016. Preliminary Model of Lower Susquehanna. Developed by URS/Dewberry. Obtained from Woidt Engineering & Consulting, P.C. January.

NYSDEC. 1996. Order on Consent, Index #D7-001-96-03. November 8.

NYSDEC. 2010a. Division of Environmental Remediation-10. Technical Guidance for Site Investigation and Remediation. May 3.

NYSDEC. 2010b. Division of Environmental Remediation-23. Citizen Participation Handbook for Remedial Programs. January.

NYSDEC. 2013. Record of Decision for NYSEG – Binghamton Court St. MGP, Operable Unit 01: Former MGP Area, Binghamton, Broome County, Site No. 704031. March.

NYSDEC. 2014. Screening and Assessment of Contaminated Sediment. Division of Fish, Wildlife and Marine Resources. Bureau of Habitat. June 24.

NYSDEC. 2016a. Water Quality Standards and Classifications. 6 NYCRR Chapter X. Part 930. Website accessed March 30, 2016. http://www.dec.ny.gov/regs/2485.html.

NYSDEC. 2016b. Sole Source Aquifers. Federal Register 50 FR 2025 on January 14, 1985. Website accessed March 30, 2016. http://www.dec.ny.gov/docs/water_pdf/ssa.pdf.

NYSDEC. 2016c. Waste Transporter Permits. 6 NYCRR Chapter IV. Part 364. Website accessed June 10, 2016. http://www.dec.ny.gov/chemical/8785.html.

USGS. 2008. New York Geologic Map. Website accessed April 11, 2016. http://mrdata.usgs.gov/geology/state/state.php?state=NY.

USGS. 2016. USGS 01503000 Susquehanna River at Conklin NY. Website accessed June. http://waterdata.usgs.gov/ny/nwis/uv?site_no=01503000.

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TABLE

ARCADIS Design & Consultancy for natural and built assets

Table 2-4
Results of 2014 Waste Characterization of OU-2 Material

Interim Remedial Measures Design Report
Court Street Former Manufactured Gas Plant Site, Operable Unit 2

Compound	Units	Result
Total Petroleum Hydrocarbon		
Diesel Range Organics	mg/kg	69.9
GRO (C6-C10)	mg/kg	3.22 J
Polychlorinated Biphenyls (PCBs)		
PCB-1016	ug/kg	72 U
PCB-1221	ug/kg	72 U
PCB-1232	ug/kg	72 U
PCB-1242	ug/kg	72 U
PCB-1248	ug/kg	72 U
PCB-1254	ug/kg	72 U
PCB-1260	ug/kg	72 U
Volatile Organic Compounds		
1,1-Dichloroethene	mg/L	0.2 U
1,2-Dichloroethane	mg/L	0.2 U
1,4-Dichlorobenzene	mg/L	0.2 U
2-Butanone	mg/L	1 U
Benzene	mg/L	0.1 U
Carbon Tetrachloride	mg/L	0.2 U
Chlorobenzene	mg/L	0.2 U
Chloroform	mg/L	0.2 U
Tetrachloroethene	mg/L	0.2 U
Trichloroethene	mg/L	0.2 U
Vinyl chloride	mg/L	0.2 U
Semivolatile Organic Compounds		
1,4-Dichlorobenzene	mg/L	0.05 U
2,4,5-Trichlorophenol	mg/L	0.1 U
2,4,6-Trichlorophenol	mg/L	0.1 U
2,4-Dinitrotoluene	mg/L	0.1 U
2-Methylphenol	mg/L	0.1 U
3&4-Methylphenol	mg/L	0.1 U
Hexachlorobenzene	mg/L	0.05 U
Hexachlorobutadiene	mg/L	0.05 U
Hexachloroethane	mg/L	0.05 U
Nitrobenzene	mg/L	0.05 U
Pentachlorophenol	mg/L	0.1 U
Pyridine	mg/L	0.1 U
Inorganics		
Arsenic	mg/L	0.01 U
Barium	mg/L	0.38 B
Cadmium	mg/L	0.0008 B
Chromium	mg/L	0.0008 B
Cyanide, Total	mg/kg	0.26 U
Lead	mg/L	0.01 U
Mercury	mg/L	0.0002 U
Selenium	mg/L	0.025 U
Silver	mg/L	0.005 U
Miscelaneous		
Heat Content, BTU	BTU/lb	572
Percent Sulfur	%	0.16 U
Percent Moisture		
Percent Solids	%	45.2

Notes:

1. Results presented are for sample identification number IDW-SO, collected 11/10/14.
2. Units: mg/L – milligram per liter; µg/kg – microgram per kilogram; BTU/lb – British thermal units per pound.
3. Qualifiers: J – estimated value; U – compound not detected; B – compound also found in associated blank sample.

FIGURE

OU-1

COURT STREET

AREA 1

AREA 2

SUSQUEHANNA RIVER FLOW

TOMPKINS STREET

LEGEND:

- OU-2 AREA IDENTIFIED FOR REMEDIAL CONSIDERATION
- 2014 SEDIMENT BORING LOCATION
- HISTORICAL RIVER SEDIMENT PROBE SAMPLING LOCATION
- HISTORICAL SEDIMENT BORING AND/OR SAMPLING LOCATION
- 2013 SEDIMENT SAMPLING LOCATION
- NO VISUAL IMPACTS OR NO ANALYTICAL ≥4 PPM PAHs
- NAPL COATING
- SHEEN OR NAPL BLEBS OBSERVED
- STAINING OR TRACE SHEEN AND ANALYTICAL >4 PPM PAHs

NOTES:

1. IMAGERY OBTAINED FROM GOOGLE EARTH, IMAGERY DATED MAY 13, 2015.
2. 2014 SEDIMENT SAMPLE LOCATIONS SURVEYED 11/10/2014 BY ARCADIS USING REAL-TIME KINEMATIC GLOBAL POSITIONING SYSTEM (GPS) METHODS. SEDIMENT SAMPLE LOCATIONS L-1 AND L-2 WERE NOT LOCATED; BOUYS WERE MISSING.
3. 2013 SEDIMENT SAMPLE LOCATIONS SURVEYED 4/2/13 BY ARCADIS USING REAL-TIME NETWORK (RTN) GPS METHODS.
4. ALTHOUGH LOCATION F IS IDENTIFIED AS GREEN, IT SHOULD BE NOTED THAT NAPL COATING WAS OBSERVED FROM 28.4 TO 29.5 FEET BELOW GROUND SURFACE.
5. PPM = PARTS PER MILLION;
   PAH = POLYCYCLIC ARMOMATIC HYDROCARBONS;
   NAPL = NON-AQUEOUS PHASE LIQUID.

0 20' 40'
GRAPHIC SCALE

NYSEG
BINGHAMTON, NEW YORK
COURT STREET FORMER MGP SITE
SUSQUEHANNA RIVER SEDIMENT (OU-2)
INTERIM REMEDIAL MEASURE DESIGN REPORT

PREVIOUS INVESTIGATIONS AND SEDIMENT REMOVAL AREAS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1-1

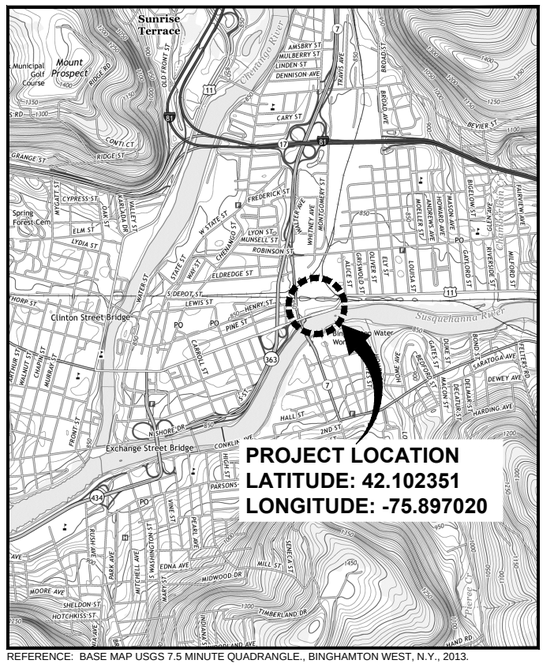
APPENDIX A

Design Drawings

DESIGN DRAWINGS

COURT STREET
FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2

INTERIM REMEDIAL MEASURE DESIGN REPORT



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., BINGHAMTON WEST, N.Y., 2013.

LOCATION MAP

0 2000' 4000'

GRAPHIC SCALE

AREA LOCATION

NEW YORK

DATE ISSUED
MAY 2017

NYSEG
BINGHAMTON, NEW YORK

NYSDEC SITE NUMBER 7-04-031

ARCADIS Design & Consultancy for natural and built assets

ARCADIS OF NEW YORK, INC.

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INDEX TO DRAWINGS

GENERAL NOTES AND SPECIFICATIONS

GENERAL NOTES:

1. BASE MAP PROVIDED BY NYSEG, JUNE 12, 1997, UPDATED BASED ON ARCADIS SITE ACTIVITIES AND GOOGLE EARTH AERIAL IMAGERY, JUNE 2016.
2. HORIZONTAL DATUM (US SURVEY FEET): NORTH AMERICAN DATUM OF 1983 (NAD 83), NEW YORK STATE PLANE COORDINATE SYSTEM, NEW YORK CENTRAL ZONE, FIPSZONE 3102.
3. ALL ELEVATIONS ARE IN FEET AND ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, TITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES, PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOTE PROVIDED.
5. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
6. RIVERBED, RIVERBANK, AND EDGE OF WATER (APPROXIMATE) INDICATES THE SURVEYED LOCATION OF THESE FEATURES AT A RIVER FLOW OF 1,940 CUBIC FEET PER SECOND AS REPORTED BY THE USGS RIVER GAUGE 01503000 LOCATED AT CONKLIN, NY ON DECEMBER 10, 2015.
7. ALL LOCATIONS ARE APPROXIMATE. SITE PLAN DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES.
8. THE LOCATIONS OF ALL ABOVE- AND UNDERGROUND UTILITIES IS APPROXIMATE.
9. ALL LOCATIONS, INCLUDING PROPERTY LINES, ARE APPROXIMATE, REFLECT AVAILABLE INFORMATION, ARE PROVIDED FOR REFERENCE ONLY, AND ARE SUBJECT TO FIELD VERIFICATION, EASEMENTS AND RIGHTS-OF-WAY ARE NOT SHOWN.
10. THE REMEDIATION CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER AND THE REMEDIATION ENGINEER, UPON DISCOVERY, AND BEFORE CONDITIONS ARE FURTHER DISTURBED, OF PHYSICAL CONDITIONS AT THE SITE WHICH DIFFER MATERIALLY FROM THOSE INDICATED ON THE CONSTRUCTION DOCUMENTS AND REFERENCE DOCUMENTS.
11. THE REMEDIATION CONTRACTOR SHALL PROMPTLY, AFTER DISCOVERING, GIVE WRITTEN AND ORAL NOTICE TO THE REMEDIATION ENGINEER OF DELAYS IN PROJECT SCHEDULE DUE TO EQUIPMENT MALFUNCTION, WEATHER, OR GENERAL FAILURE TO MEET PRODUCTION STANDARDS.
12. THE REMEDIATION CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF ANY ISSUED PERMITS AND ANY APPLICABLE STATE AND FEDERAL LAWS AND REGULATIONS. WORK HOURS ARE ANTICIPATED TO BE BETWEEN 7 A.M. AND 6 P.M. MONDAY THROUGH FRIDAY. FINAL WORK HOURS AND/OR TIME OF YEAR RESTRICTIONS WILL BE DICTATED BY ANY APPLICABLE PERMITS .

SURVEY REQUIREMENTS:

1. ALL SURVEY INFORMATION SHALL BE PROVIDED TO THE REMEDIATION ENGINEER IN ELECTRONIC FORMAT, UNLESS OTHERWISE NOTED. ELECTRONIC FORMAT SHALL BE AUTOCAD RELEASE 2009, OR NEWER, DWG FILE, WITH 3D POINTS, POINT LABELS (INCLUDING POINT DESCRIPTIONS AND ELEVATIONS, AT A MINIMUM), TOPOGRAPHIC BREAKLINES, AND TRIANGULATED IRREGULAR NETWORK (TIN) (I.E., 3D FACES REPRESENTING GROUND SURFACE), AS APPLICABLE. FINAL RECORD SURVEY SHALL ALSO BE PROVIDED TO THE DESIGN ENGINEER IN ELECTRONIC PDF FORMAT.

SITE PREPARATION:

1. PRIMARY SITE ACCESS SHALL BE FROM THE SUSQUEHANNA RIVER. PRIMARY RIVER ACCESS LOCATION VIA 336 COURT ST, BINGHAMTON, NEW YORK AND ADJACENT RAILROAD PROPERTY LOCATED UPSTREAM OF THE SEDIMENT REMOVAL AREAS AS SHOWN ON THE DESIGN DRAWINGS.
2. THE REMEDIATION CONTRACTOR SHALL ESTABLISH, MAINTAIN, AND PROTECT THE PROJECT LIMITS, INCLUDING SUPPORT ZONES, EXCLUSION ZONES, AND CONTAMINATION REDUCTION ZONES.
3. THE REMEDIATION CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ABOVE- AND UNDERGROUND UTILITIES DURING CONSTRUCTION, INCLUDING SUBAQUATIC UTILITIES. THE LOCATION OF ALL ABOVE- AND UNDERGROUND UTILITIES MUST BE VERIFIED IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. THE REMEDIATION CONTRACTOR SHALL CONTACT "DIG SAFELY NEW YORK" (1-800-962-7962) AND ALL APPLICABLE UTILITY COMPANIES FOR LOCATION OF UNDERGROUND UTILITIES. THE REMEDIATION CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY REMOVAL, RELOCATION, AND REPLACEMENT OF ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES, AND/OR OVERHEAD WIRES THAT FALL WITHIN THE LIMITS OF CONSTRUCTION, OR THAT MAY INTERFERE WITH THE WORK.
4. CONSTRUCTION FENCING SHALL BE PLACED AROUND ACCESSIBLE PORTIONS OF THE LIMITS OF WORK.
5. CONSTRUCTION SUPPORT FACILITIES (E.G., WATER TREATMENT FACILITY, ETC.) SHALL BE CONSTRUCTED ON NYSEG PROPERTY WITHIN OU-1 ADJACENT TO THE SEDIMENT REMOVAL AREA. PRIMARY ACCESS TO OU-1 VIA COURT STREET. KNOWN OVERHEAD AND UNDERGROUND UTILITIES ARE PRESENT ADJACENT TO SEDIMENT REMOVAL AREAS. REMEDIATION CONTRACTOR SHALL MAINTAIN STANDARD SAFEGUARDS IN ACCORDANCE WITH UTILITY GUIDELINES.

TEMPORARY EROSION, SEDIMENTATION, AND TURBIDITY CONTROL:

1. THE REMEDIATION CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL NECESSARY UPLAND AND IN-RIVER TEMPORARY EROSION (WHETHER SHOWN ON DRAWINGS OR NOT), SEDIMENTATION, AND TURBIDITY CONTROLS THROUGHOUT CONSTRUCTION AND THE INSTALLATION AND ESTABLISHMENT OF ALL NECESSARY RESTORATION MEASURES UPON COMPLETION OF CONSTRUCTION ACTIVITIES.
2. THE REMEDIATION CONTRACTOR SHALL IMPLEMENT APPROPRIATE DUST CONTROL MEASURES AT ALL TIMES TO MINIMIZE FUGITIVE DUST.
3. THE REMEDIATION CONTRACTOR SHALL UTILIZE GOOD HOUSEKEEPING PRACTICES TO MAINTAIN A NEAT AND ORDERLY SITE AT ALL TIMES DURING CONSTRUCTION.
4. THE REMEDIATION CONTRACTOR SHALL PREVENT TRACKING OF SOIL MATERIALS ONTO OFF-SITE AREAS. ANY SOIL MATERIALS ACCIDENTALLY TRACKED OR OTHERWISE SPILLED OR DROPPED ONTO OFF-SITE AREAS SHALL BE IMMEDIATELY CLEANED UP BY THE REMEDIATION CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. ANY IMPORTED SOIL MATERIALS AND/OR EXCAVATED SOILS/SEDIMENTS REQUIRING TEMPORARY STOCKPILING ON-SITE SHALL BE SURROUNDED WITH APPROPRIATE TEMPORARY EROSION AND SEDIMENTATION CONTROLS (E.G., SILT FENCE, STRAW/HAY/STRAW BALES) TO CONTAIN ANY SEDIMENT-LADEN RUNOFF THAT COULD BE GENERATED FROM SUCH STOCKPILES.

SEDIMENT REMOVAL:

1. THE EXTENT OF NEAR SHORE SOIL AND SEDIMENTS CONTAINING MGP RELATED IMPACTS ARE BASED ON PREVIOUS INVESTIGATIONS PERFORMED AT THE SITE INCLUDING, THE SEDIMENT ASSESSMENT REPORT (2013) AND PDI LETTER REPORT (2015).
2. THE REMEDIATION CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, ACCESSORIES, AND APPURTENANCES NECESSARY TO COMPLETE REMOVAL OF SEDIMENTS AND RELATED WORK SHOWN ON THE DESIGN DRAWINGS.
3. THE REMEDIATION CONTRACTOR SHALL TAKE APPROPRIATE STEPS TO PROTECT THE STABILITY OF STRUCTURES WITHIN AND AROUND THE RIVER. THE REMEDIATION CONTRACTOR SHALL REPAIR ANY FEATURE DAMAGED AS A RESULT OF SEDIMENT REMOVAL OPERATIONS, TRANSPORT OF EXCAVATED MATERIAL, OR OTHER CONSTRUCTION ACTIVITIES TO ITS ORIGINAL CONDITION (I.E., CONDITIONS THAT EXISTED PRIOR TO THE DAMAGE).
4. TO REDUCE THE POTENTIAL FOR MIGRATION OF IMPACTS BEYOND THE LIMITS OF SEDIMENT REMOVAL AND POTENTIAL RECONTAMINATION OF RIVER SEDIMENTS DURING AN OVERTOPPING EVENT, ALL IMPACTED SEDIMENT REMOVAL SURFACES SHALL BE COVERED WITH CLEAN MATERIAL. CONSIDERATION SHALL BE GIVEN TO THE TYPE OF COVER MATERIAL USED AND THE POTENTIAL FOR EROSION AND/OR LOSS OF THE COVER MATERIAL DURING AN OVERTOPPING EVENT.
5. THE REMEDIATION CONTRACTOR SHALL EXCAVATE MATERIALS TO THE DEPTHS SHOWN ON THE DESIGN DRAWINGS. SEDIMENT REMOVAL SHALL CONTINUE UP TO SHEET PILES, AS NECESSARY.
6. A MINIMUM OFFSET DISTANCE OF 3 FEET FROM ANY STRUCTURE SHALL BE MAINTAINED TO MINIMIZE THE POTENTIAL FOR DAMAGE OR UNDERCUTTING STRUCTURE.
7. REMEDIATION CONTRACTOR SHALL IMPLEMENT APPROPRIATE MEASURES TO REDUCE THE POTENTIAL FOR GENERATION OF OIL SHEENS AND TO CATCH ANY SUCH OIL SHEENS THAT MAY OCCUR (E.G., VIA THE USE OF OIL ABSORBENT BOOMS AND/OR SIMILAR MEASURES).
8. REFER TO THE INTERIM REMEDIAL MEASURE DESIGN REPORT FOR ADDITIONAL INFORMATION REGARDING IMPACTED MATERIALS HANDLING, DEWATERING, AND TRANSPORTATION.
9. REMEDIATION CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROTECTION OF WORK IN PROGRESS. NO ADDITIONAL PAYMENTS WILL BE MADE FOR REPAIR OR REPLACEMENT OF PARTIALLY COMPLETED WORK DUE TO REMEDIATION CONTRACTOR'S FAILURE TO ADEQUATELY PROTECT THE WORK.

WATER MANAGEMENT:

1. KNOWN OUTFALL STRUCTURES ARE PRESENT ADJACENT TO SEDIMENT REMOVAL AREAS. REMEDIATION CONTRACTOR SHALL BE RESPONSIBLE FOR REROUTING/DIVERTING FLOWS FROM EXISTING SURFACE WATER DISCHARGE POINTS ALONG THE RIVERBANK AROUND ACTIVE SEDIMENT REMOVAL AREAS, AND INTO THE RIVER OUTSIDE OF THE TURBIDITY CONTROL STRUCTURE. REMEDIATION CONTRACTOR SHALL COORDINATE WITH RESPECTIVE SURFACE WATER DISCHARGE POINT OWNERS TO DETERMINE ANTICIPATED DISCHARGE RATES AND SHALL NOTIFY SUCH OWNERS OF ANY POTENTIAL REDUCTIONS TO OUTFALL CAPACITIES RESULTING FROM REROUTING/DIVERSION ACTIVITIES.
2. WATER COMING INTO CONTACT WITH IMPACTED SEDIMENTS DURING REMOVAL ACTIVITIES, INCLUDING BUT NOT NECESSARILY LIMITED TO, DEWATERING OF SEDIMENTS AND DECONTAMINATION FLUIDS, SHALL BE COLLECTED AND TREATED AT THE ON-SITE TEMPORARY WASTEWATER TREATMENT SYSTEM PRIOR TO DISCHARGE.

RESTORATION AND DEMOBILIZATION:

1. THE REMEDIATION CONTRACTOR SHALL RESTORE TO PRE-CONSTRUCTION CONDITIONS ALL SUPPORT AREAS THAT ARE IMPACTED BY CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO, EQUIPMENT AND MATERIALS STORAGE AREAS, MATERIAL LOADING AND STAGING AREAS, RIVER ACCESS AREAS, PARKING AREAS, AND LOCATIONS OF OFFICE TRAILERS, EXCEPT AS NOTED OTHERWISE.
2. UPON COMPLETION OF CONSTRUCTION, THE PROJECT AREA SHALL BE LEFT IN A CLEAN, NEAT, AND ORDERLY CONDITION.
3. DEMOBILIZATION OF ALL MATERIALS, EQUIPMENT, AND PERSONNEL UTILIZED AND BROUGHT TO THE SITE DURING MOBILIZATION AND CONSTRUCTION ACTIVITIES SHALL OCCUR ONCE THE PROJECT IS COMPLETED AND ACCEPTED BY THE REMEDIATION ENGINEER. DECONTAMINATION OF ALL MATERIALS, EQUIPMENT, AND PERSONNEL SHALL BE CONDUCTED AS SPECIFIED WITHIN THE REMEDIATION CONTRACTOR'S HASP. ALL TEMPORARY FACILITIES SHALL BE REMOVED.
4. REMEDIATION CONTRACTOR SHALL BEAR ALL COSTS AND RESPONSIBILITY FOR REPAIRS TO ANY ON-SITE AND/OR OFF-SITE FEATURES (UTILITIES, SIDEWALKS, ROADS, ETC.) AND/OR SURFACES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
5. THE RIVERBANK ACCESS/STAGING AREA SHALL BE RESTORED IN KIND BY PLACING TOPSOIL AND SEEDED WITH A RESTORATION SEED MIX.

SAFETY NOTES:

1. THE REMEDIATION CONTRACTOR SHALL PROVIDE EVIDENCE OF ALL ONSITE PERSONNEL THE REMEDIATION CONTRACTOR SHALL PROVIDE EVIDENCE OF ALL ONSITE PERSONNEL COMPLETING OSHA 40-HOUR TRAINING AND 8-HOUR REFRESHER TRAINING PRIOR TO INITIATING REMEDIAL CONSTRUCTION ACTIVITIES.
2. THE REMEDIATION CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR IMPLEMENTING, MAINTAINING, AND SUPERVISING ALL SAFETY MEASURES AND PROGRAMS FOR THEIR EMPLOYEES, SUBCONTRACTORS, AND ANY OTHER PERSONS WHO MAY BE AFFECTED THEREBY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTIONS TO PROTECT, SITE WORKERS, REMEDIATION ENGINEER PERSONNEL, AND SITE VISITORS. THE REMEDIATION CONTRACTOR SHALL PREPARE A SITE-SPECIFIC HASP IN ACCORDANCE WITH SPECIFICATION SECTION 01 35 28 - CONTRACTOR'S HASP, THAT SHALL BE REVIEWED BY THE REMEDIATION ENGINEER AND THE OWNER PRIOR TO THE START OF ANY WORK.
3. THE REMEDIATION CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS FOR PUBLIC BODIES HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY OR TO PROTECT THEM FROM DAMAGE, INJURY, OR LOSS, INCLUDING, WITHOUT LIMITATION, THE DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION PROMULGATED UNDER OSHA OF 1970 (PL 91-596) AND UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (PL 91-54) AND AMENDMENTS THERETO. THE REMEDIATION CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS SET FORTH UNDER 29 CFR 1910 AND 29 CFR 1926. THE REMEDIATION CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR THE SAFETY AND PROTECTION OF PERSONS AND PROPERTY AND SHALL COMPLY WITH ALL APPLICABLE RECOMMENDATIONS OF THE MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA.
4. THE REMEDIATION CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, AND PROVIDE ALL DUST/VAPOR/ODOR PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, PROPER WORKING EQUIPMENT WITH FUNCTIONING SAFETY MECHANISMS (E.G., LIFT GATE WARNING SIGNALS), ALL SITE SAFETY SIGNAGE, OR OTHER SAFETY FEATURES REQUIRED. AS NEEDED, THE REMEDIATION CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT LIGHT DURING NIGHT HOURS, IF NEEDED, TO SECURE SUCH PROTECTION.
5. THE MATERIALS SUBJECT TO HANDLING AS PART OF THE PROJECT MAY CONTAIN HAZARDOUS CONSTITUENTS OR CHEMICALS AND SHOULD BE HANDLED IN ACCORDANCE WITH APPLICABLE REGULATIONS. THE REMEDIATION CONTRACTOR SHALL DEVELOP AND IMPLEMENT APPROPRIATE HEALTH AND SAFETY MEASURES FOR ITS EMPLOYEES, SUBCONTRACTORS, AND SITE VISITORS, AND FOR THE PROTECTION OF THE ENVIRONMENT AND SURROUNDING COMMUNITY. THE REMEDIATION CONTRACTOR'S HASP SHALL BE DEVELOPED IN ACCORDANCE WITH APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS.
6. THE REMEDIATION CONTRACTOR'S HASP SHALL RECOGNIZE THE TYPES OF ACTIVITIES TO BE PERFORMED, THE UNIQUE HAZARDS SPECIFIC TO THESE ACTIVITIES, AND SPECIAL PRECAUTIONS AND CONTROLS THAT ARE TO BE IMPLEMENTED. THE REMEDIATION CONTRACTOR SHALL CLEARLY IDENTIFY AND EVALUATE SPECIFIC INGRESS/EGRESS ROUTES AND PROVISIONS, PERSONNEL AND WORK AREA MONITORING, PERSONAL PROTECTIVE EQUIPMENT, COMMUNICATIONS, ETC.
7. SEVERAL REMEDIATION ACTIVITIES WILL BE PERFORMED ADJACENT TO, OR IN THE VICINITY OF, UTILITY POLES, OVERHEAD, UNDERGROUND ELECTRICAL LINES, AND TRANSFORMERS. THE REMEDIATION CONTRACTOR'S HASP SHALL RECOGNIZE THESE HAZARDS AND INCORPORATE SPECIAL PRECAUTIONS AND CONTROLS SPECIFIC TO WORKING NEAR SUCH HAZARDS.
8. THE REMEDIATION CONTRACTOR SHALL PROVIDE A LIST OF ALL CHEMICAL PRODUCTS AND AN SDS FOR ALL CHEMICAL PRODUCTS TO BE USED ON-SITE. THE LIST MUST BE APPROVED BY THE OWNER PRIOR TO BEING BROUGHT ON-SITE.
9. SEVERAL REMEDIATION ACTIVITIES WILL BE PERFORMED ADJACENT TO OR ON THE WATER. THE REMEDIATION CONTRACTOR'S HASP SHALL RECOGNIZE THESE HAZARDS AND INCORPORATE SPECIAL PRECAUTIONS AND CONTROLS SPECIFIC TO WORKING NEAR OR ON THE WATER. PERSONNEL SHALL WEAR U.S. COST GUARD-APPROVED (TYPE I OR II) PFD (E.G., LIFE JACKET) WHEN WORKING IN CLOSE PROXIMITY TO FAST-FLOWING WATER DEEPER THAN 4 FEET. ADDITIONALLY, USE OF LIFELINES MAY BE REQUIRED.

GENERAL LEGEND

- NYSEG PROPERTY LINE (APPROXIMATE)
- OU1 BOUNDARY
- PROPERTY BOUNDARY
- EDGE OF WATER (APPROXIMATE)
- 120 — UPLAND CONTOURS
- 820 — RIVERBED/RIVERBANK CONTOURS
- 850 — DREDGE CONTOURS
- LIMITS OF DREDGE PRISM
- FLOOD WALL
- TREES
- x — x — CHAIN LINK FENCE
- RAILROAD TRACK
- ABANDONED RAILROAD TRACKS
- BURIED CONCRETE WALL
- RIPRAP ARMOR
- NAPL BARRIER WALL
- JET GROUT PANEL
- OHE — OVERHEAD ELECTRIC
- S — SANITARY SEWER
- D — STORM SEWER
- FORMER 66-INCH STORM SEWER
- UTILITY POLE
- WATER VALVE
- HYDRANT
- MANHOLE
- SANITARY MANHOLE
- OU-1 MONITORING WELL (SHALLOW)
- OU-1 MONITORING WELL (DEEP)
- OU-1 RECOVERY WELL
- OU-1 PIEZOMETER
- OU-1 NAPL WELL
- EXISTING STRUCTURE
- EXISTING CURB
- CONCRETE SPILLWAY

ABBREVIATIONS

BGS	BELOW GROUND SURFACE	NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CFS	CUBIC FOOT PER SECOND	NYSDOTSS	NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (LATEST EDITION)
CMP	CORRUGATED METAL PIPE	OH	OVERHEAD
CONC.	CONCRETE	OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT
DIA.	DIAMETER	℄	PROPERTY LINE
EL.	ELEVATION	RCP	REINFORCED CONCRETE PIPE
EXIST.	EXISTING	RECM	ROLLED EROSION CONTROL MATERIAL
EOW	EDGE OF WATER	R.O.W	RIGHT-OF-WAY
FPS	FOOT PER SECOND	SAN	SANITARY
GAC	GRANULAR ACTIVATED CARBON	SPDES	STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
GAL	GALLON	SPT	STANDARD PENETRATION TEST
HASP	HEALTH AND SAFELY PLAN	SSB	STABILIZED SOIL BARRIER
HDPE	HIGH DENSITY POLYETHYLENE	TYP.	TYPICAL
HMA	HOT MIX ASPHALT	µm	MICROMETER
INV.	INVERT	WWTS	WASTE WATER TREATMENT SYSTEM
IRM	INTERIM REMEDIAL MEASURE		
LBS	POUNDS		
MAX	MAXIMUM		
MGP	MANUFACTURED GAS PLANT		
MH	MANHOLE		
MIN	MINIMUM		
NO.	NUMBER		
NW	NORTHWEST		
NYSEG	NEW YORK STATE ELECTRIC AND GAS CORPORATION		

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING		
Professional Engineer's No.: 069985		
State: NY	Date Signed: .	Project Mgr.: JRG
Designed by: JJB	Drawn by: EAK	Checked by: JRG

STATE OF NEW YORK · MARK OWEN GRAVELDING · No. 069985-1 · LICENSED PROFESSIONAL ENGINEER

ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NYSEG ● BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

GENERAL NOTES, REFERENCES, AND ABBREVIATIONS

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

ARCADIS OF NEW YORK, INC
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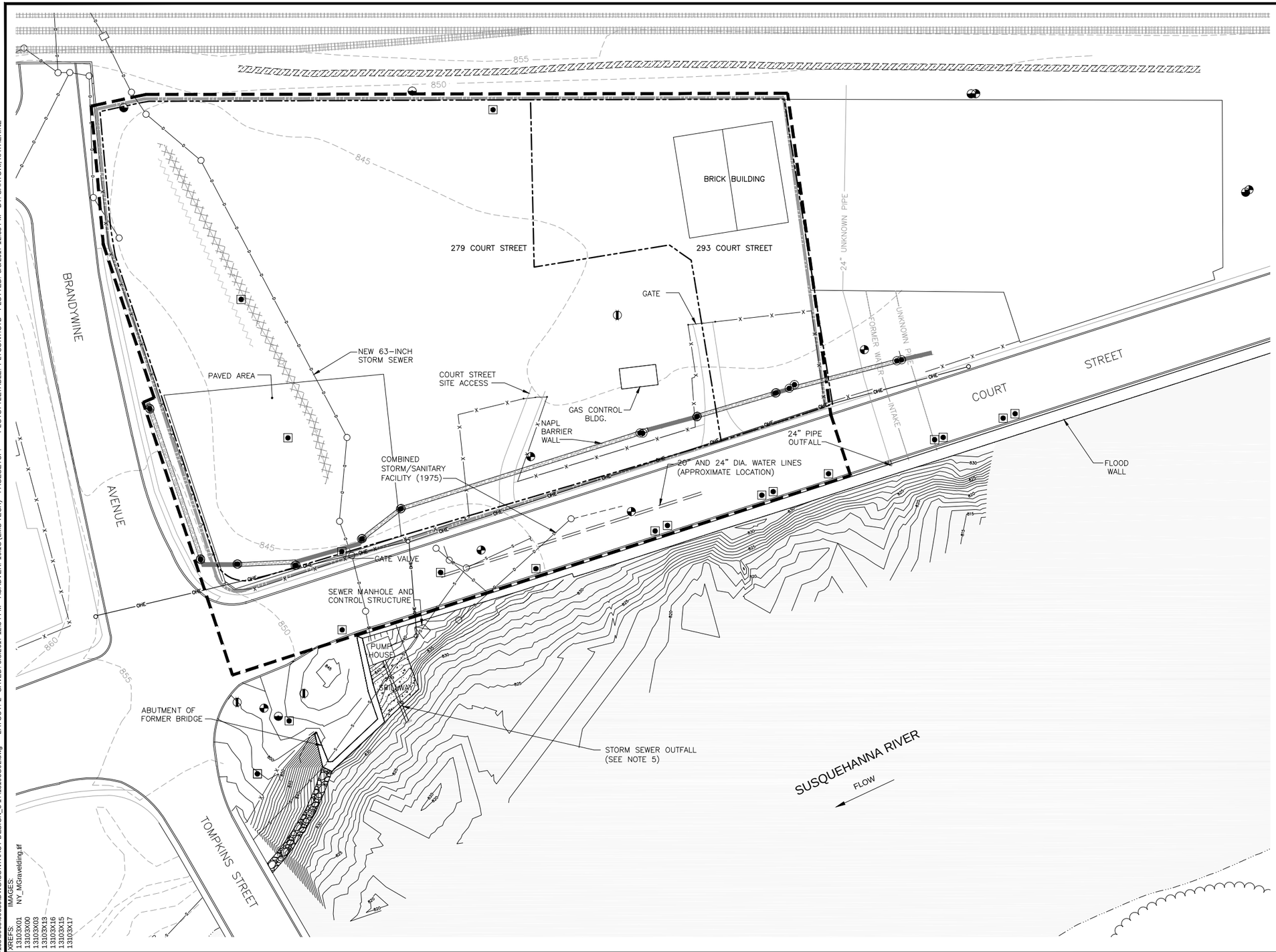

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NOTES:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. RIVERBED AND RIVERBANK SURVEY PERFORMED BY ARCADIS, DECEMBER 2015.
3. ALL LOCATIONS ARE APPROXIMATE. SITE PLAN DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES.
4. OPERABLE UNIT 2 IS LOCATED IN THE SUSQUEHANNA RIVER ACROSS FROM AND IMMEDIATELY DOWNGRADIENT OF OU-1.
5. STORM SEWER OUTFALL CONSISTS OF TWO 20-INCH DIAMETER CAST IRON PIPES TERMINATED AT A SUBSURFACE HEADWALL WITHIN THE SEDIMENT REMOVAL AREA.

1"=40' 40' 0 40' 80'

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Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	-	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

STATE OF NEW YORK · MARK ORREN GRAVELDING · 069985 · LICENSED PROFESSIONAL ENGINEER

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OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

EXISTING SITE PLAN

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

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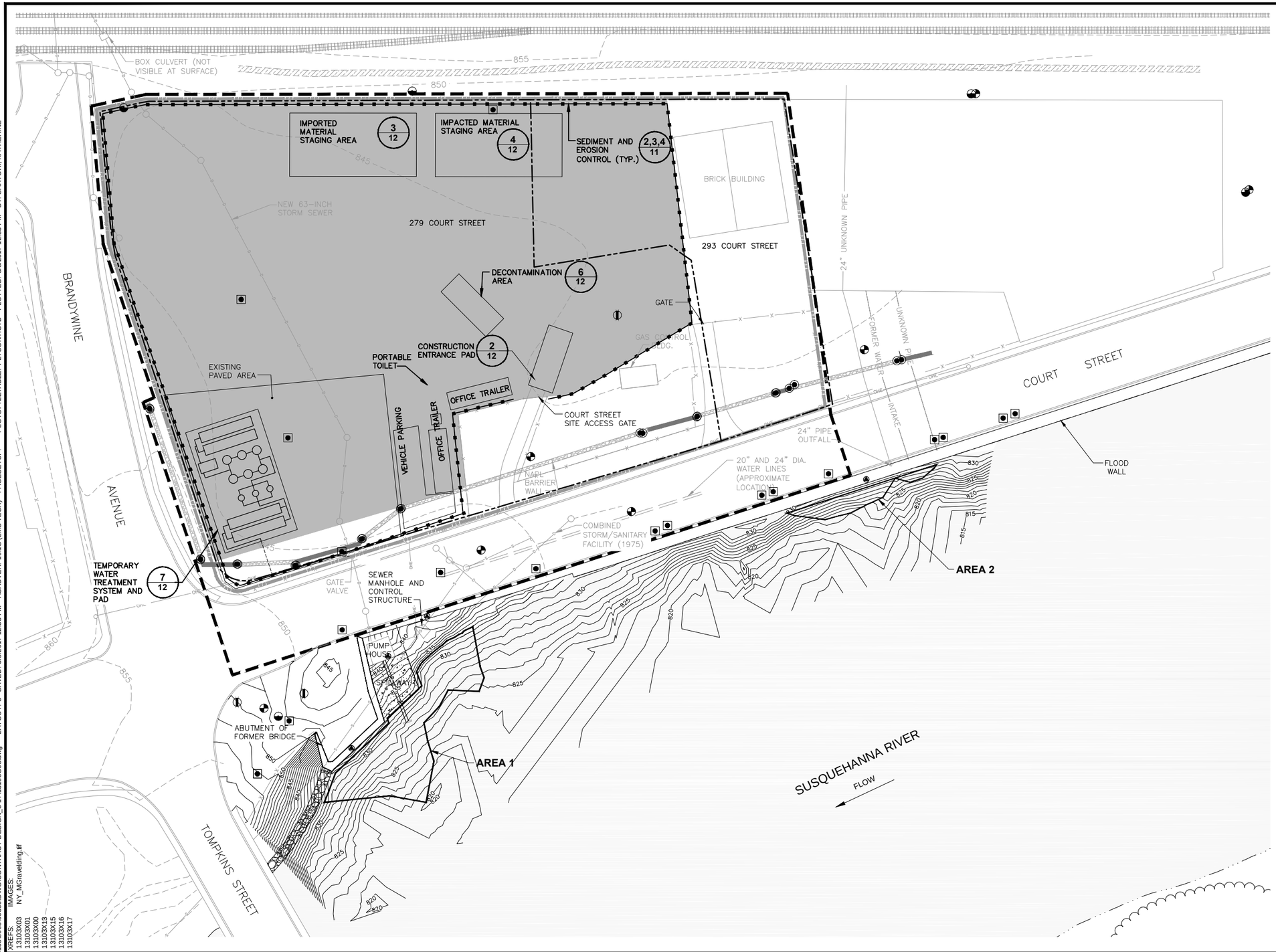
2



LEGEND:

- PROPOSED TILTMETER LOCATION
- OU-1 SUPPORT AREA (5/12)

NOTE:

1. TEMPORARY FACILITIES LAYOUT IS APPROXIMATE. LAYOUT WILL BE FINALIZED IN THE FIELD.
2. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
3. ALL LOCATIONS ARE APPROXIMATE. SITE PLAN DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES.
4. NO EQUIPMENT OR MATERIALS SHALL BE STAGED OVER WELL VAULTS OR MANHOLES.
5. SUPPORT AREA COVER TO BE INSTALLED AS NEEDED, AS AGREED BY THE OWNER AND/OR REMEDIATION ENGINEER AND REMEDIATION CONTRACTOR.

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER LD:(Opt) PIC: K. WHITE PM: J. BRIEN TM: J. BRIEN TR: J GOLUBSKI LYR:(On)ON=*;OFF=*REF*
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40' 0 40' 80'
1"=40'

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No.	Date	Revisions	By	Ckd

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Designed by	Drawn by	Checked by
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OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

UPLAND SITE PREPARATION PLAN

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

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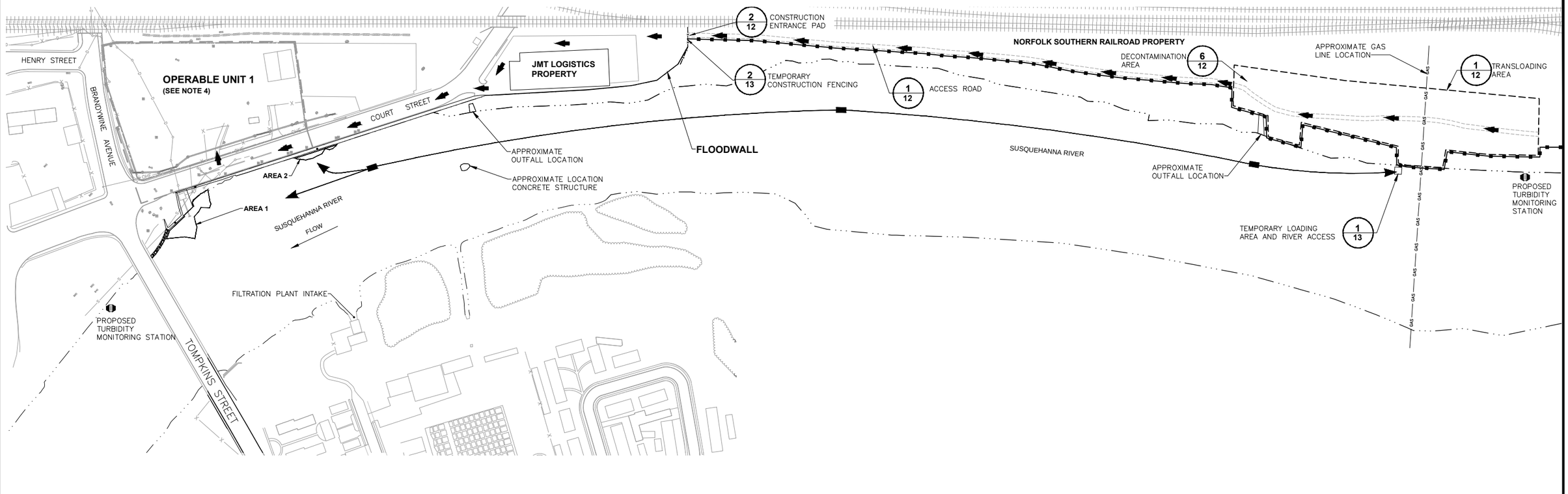

LEGEND:

- SEDIMENT REMOVAL AREA
- JMT LOGISTICS PROPERTY LINE APPROXIMATE
- TRUCK ROUTE TO OPERABLE UNIT 1
- SHUTTLE SCOWS/WORK PLATFORM BARGE (NOTE: LOCATIONS SHOWN ARE FOR ILLUSTRATION PURPOSES; SCOW AND BARGE LOCATIONS/TRANSIT ROUTES WILL ADJUST AS PROJECT PROCEEDS)
- SHUTTLE SCOW/BARGE ROUTE (CONCEPTUAL)
- PROPOSED TURBIDITY MONITORING STATION

NOTE:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL LOCATIONS ARE APPROXIMATE.
3. SITE FEATURES LOCATED OUTSIDE OF OU-2 INCLUDING BUT NOT LIMITED TO; EDGE OF RIVER, RAILROAD TRACKS, ACCESS ROADS WERE DIGITIZED FROM GOOGLE EARTH IMAGE DATED MAY 2015.
4. OU-1 SITE PREPARATION DETAILS SHOWN ON DRAWING 3.

140' 0 140' 280'
1"=140'

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **MARK O. GRAVELDING**
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	.	JRG
Designed by	Drawn by	Checked by
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OPERABLE UNIT 2
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MATERIAL TRANSPORTATION PLAN

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

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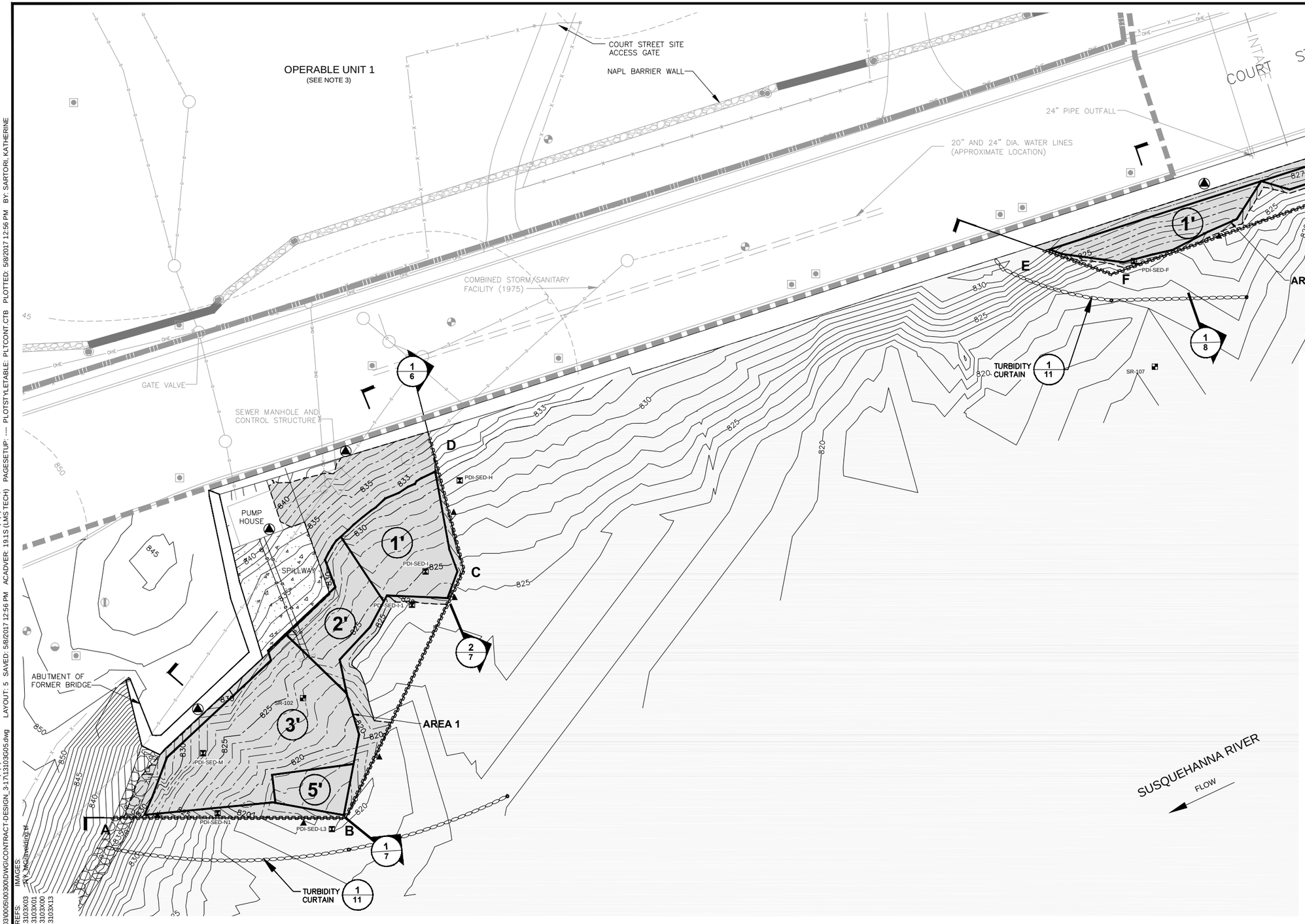

LEGEND:

- BORING LOCATIONS (SR-107, PDI-SED-A)
- SEDIMENT REMOVAL AREA
- 2' SEDIMENT REMOVAL DEPTH
- TEMPORARY SHEET PILE CONTAINMENT
- TURBIDITY CURTAIN (SEE NOTE 5)
- DREDGE PRISM
- TILTMETER LOCATION (SEE NOTE 4)
- OPTICAL SURVEY LOCATION (SEE NOTE 4)

NOTE:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL LOCATIONS ARE APPROXIMATE.
3. OU-1 SITE PREPARATION DETAILS SHOWN ON DRAWING 3.
4. OPTICAL SURVEY LOCATION TO BE INSTALLED ON UPLAND SIDE OF STEEL SHEET PILING AND VERTICALLY LOCATED SUCH THAT IT IS EASILY VISIBLE FROM LAND. TILTMETER LOCATION TO BE INSTALLED SUCH THAT IT IS EASILY ACCESSIBLE FROM LAND.
5. IF SHEET PILE CANNOT BE INSTALLED AS SHOWN, REMEDIATION CONTRACTOR SHALL INSTALL TURBIDITY CURTAIN TO FULLY ENCOMPASS SEDIMENT REMOVAL AREAS.

20' 0 20' 40'
1"=20'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY		JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

STATE OF NEW YORK · MARK OWEN GRAVELDING · LICENSED PROFESSIONAL ENGINEER · NO. 069985

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OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

SEDIMENT REMOVAL PLAN

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

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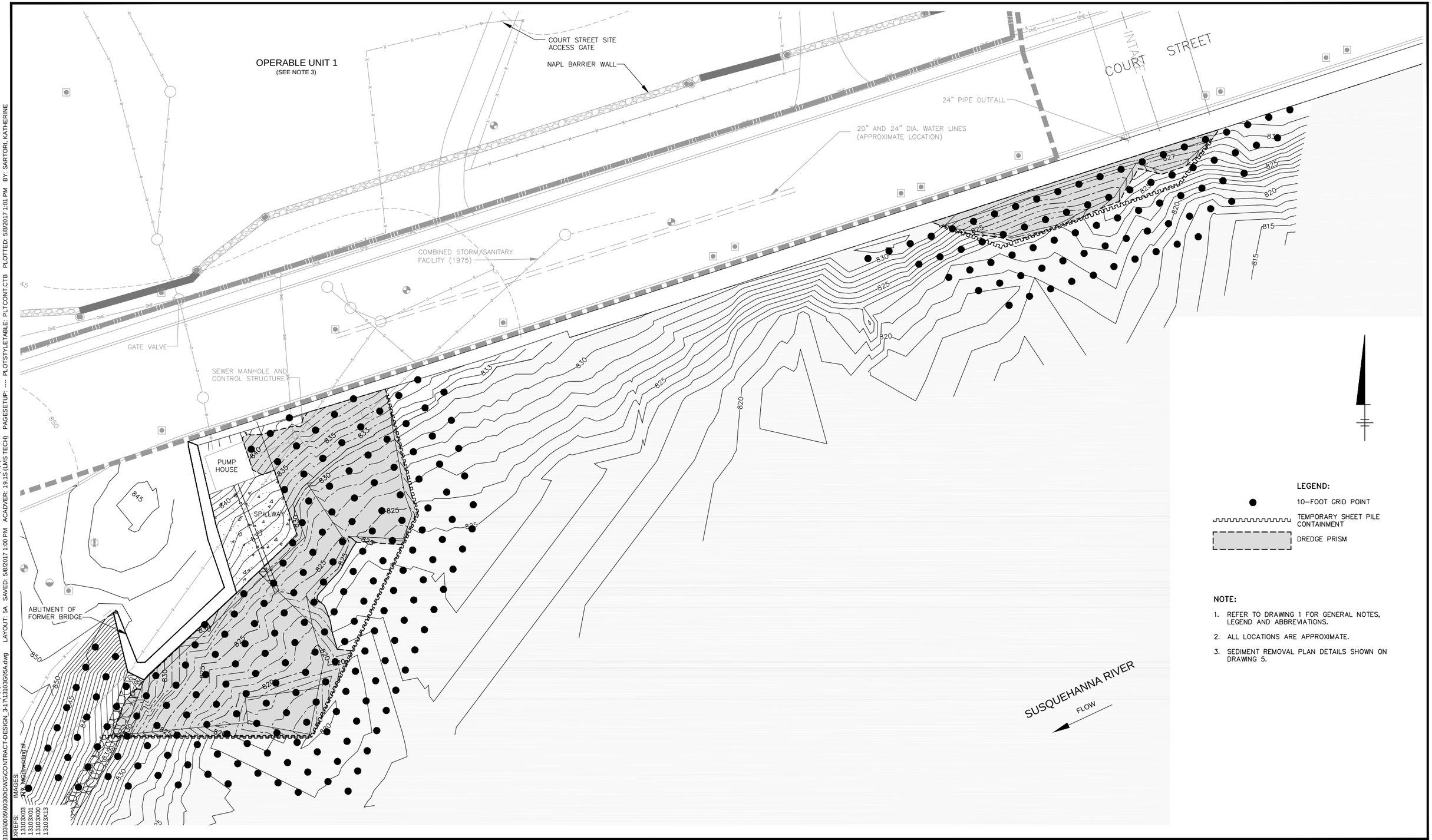
TEL. 315.446.9120

5



NOTE:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL LOCATIONS ARE APPROXIMATE.
3. SEDIMENT REMOVAL PLAN DETAILS SHOWN ON DRAWING 5.

XREFS:
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13103X01
13103X00
13103X13

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1"=20' (20' 0 20' 40')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING		
Professional Engineer's No.: 069985		
State: NY	Date Signed:	Project Mgr.: JRG
Designed by: JJB	Drawn by: EAK	Checked by: JRG

STATE OF NEW YORK · MARK OWEN GRAVELDING · NO. 069985 · LICENSED PROFESSIONAL ENGINEER

ARCADIS Design & Consultancy for natural and built assets

ARCADIS OF NEW YORK, INC.

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

SEDIMENT REMOVAL PLAN SURVEY POINTS

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL. 315.446.9120

5A

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER LD:(Opt) PIC: K. WHITE PM: J. BRIEN TM: J. BRIEN TR: J. GOLUBSKI LYR:(Opt)ON=*;OFF=*REF*
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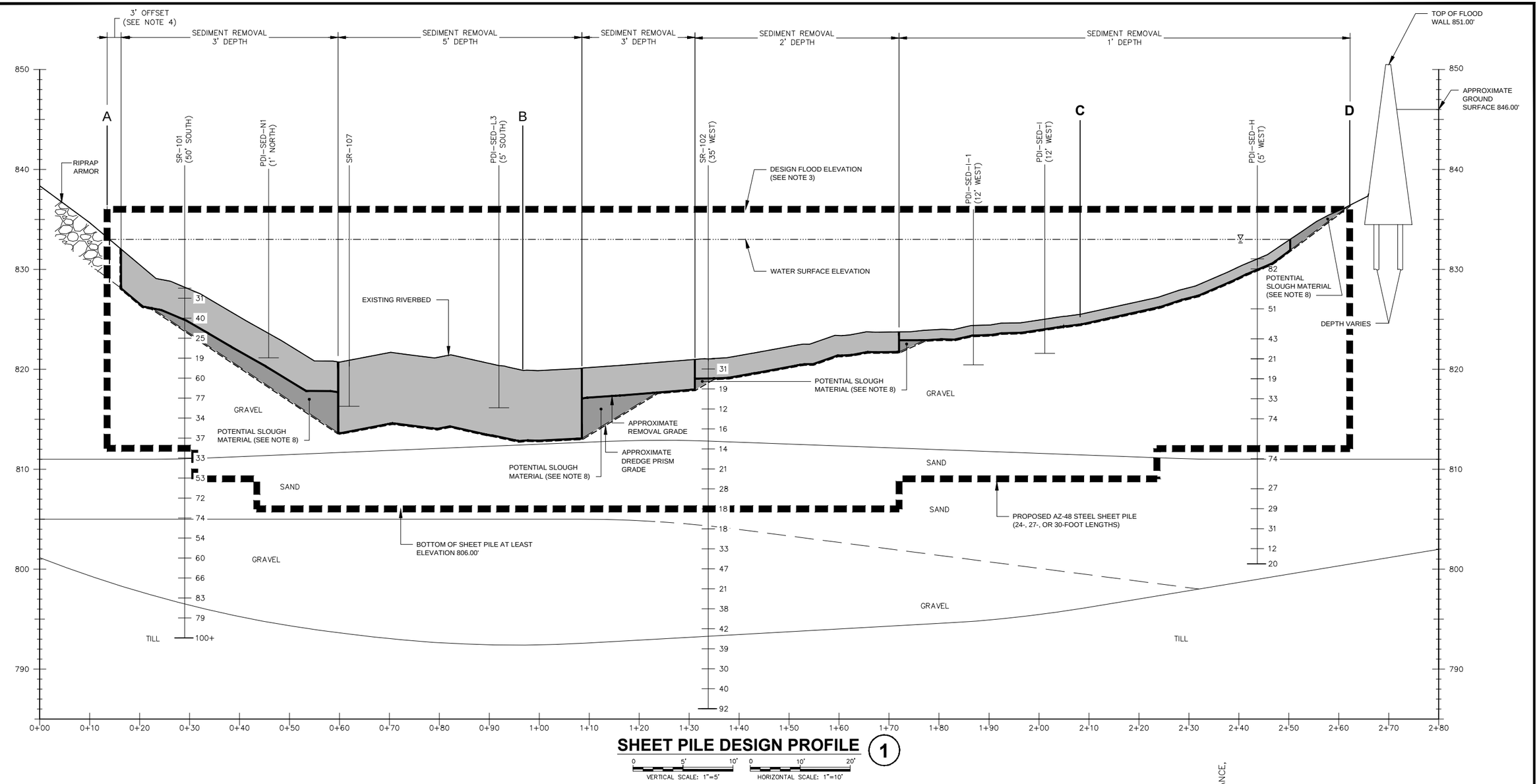

SHEET PILE DESIGN PROFILE (1)

VERTICAL SCALE: 1"=5'

HORIZONTAL SCALE: 1"=10'

BORING ID (OFFSET DISTANCE, DIRECTION)

SPT N-VALUE

BOTTOM OF BORING

NOTES:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL LOCATIONS ARE APPROXIMATE. PROFILE DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES. FORMER BRIDGE ABUTMENT AND FLOOD WALL GEOMETRY BASED ON "SOUTHERN NEW YORK FLOOD CONTROL PROJECT" AS BUILT DRAWINGS DATED AUGUST 1941.
3. DESIGN FLOOD ELEVATION (i.e., TOP ELEVATION OF SHEET PILE) OF 836 FEET (NAVD88) IS BASED ON A 2% PROBABILITY OF EXCEEDANCE DURING THE CONSTRUCTION SEASON (MAY–SEPTEMBER).
4. REMEDIATION CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3 FEET OFFSET FROM FLOODWALL AND/OR EXISTING STRUCTURES.
5. SEDIMENT REMOVAL AREAS HAVE BEEN PROJECTED UP TO 30 FEET TO THE PROPOSED SHEET PILE ALIGNMENT.
6. SHEET PILE TO BE INSTALLED AT MINIMUM OF 14 FEET FROM TOP OF SEDIMENT. THE TOP OF SHEET PILES WILL BE AT ELEVATION 836 FEET OR HIGHER. BETWEEN POINTS A AND B ON THE DOWNSTREAM SIDE OF THE ENCLOSURE. A MINIMUM OF 40 LINEAR FEET SHALL BE INSTALLED TO AN ELEVATION OF 836 FEET (NAVD88) TO CREATE A SPILLWAY IN CASE OF STORM EVENTS.
7. SOIL LAYERS WERE IDENTIFIED USING SOIL BORINGS INSTALLED PREVIOUSLY AND DURING THE PRE–DESIGN INVESTIGATION. SOIL LAYERS AND GEOLOGICAL CONTACT LOCATIONS ARE APPROXIMATE AND INFERRED BETWEEN BORING LOCATIONS.
8. SEDIMENT REMOVAL REQUIRED TO SPECIFIED APPROXIMATE REMOVAL GRADE DEPTHS, AS SHOWN, AT A MINIMUM. DREDGE PRISM ACCOUNTS FOR POTENTIAL SLOUGHING OF MATERIAL.
9. REMEDIATION CONTRACTOR REQUIRED TO MAINTAIN A MAXIMUM 3 FOOT WATER DIFFERENTIAL AT ALL TIMES.
10. MINIMUM REQUIRED STEEL SHEET PILE SECTION MODULUS IS 16.0 CU.IN/FT FOR AREA 1. IT IS ASSUMED THAT EXISTING AZ–48 NYSEG–OWNED STEEL SHEET PILES ARE TO BE USED.

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IMAGES: NY_MGravelding.tif

CITY:SYR-NY DIV/GROUP: ENV-CAD DB:K.SARTORI LD: PIC:L.KETCHUM PM: J.BISTROVICH TM: A.MILLER LYR:ON=*;OFF=*REF*
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SCALE AS INDICATED

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **MARK O. GRAVELDING**
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	-	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

STATE OF NEW YORK · MARK OREN GRAVELDING · 069985 · LICENSED PROFESSIONAL ENGINEER

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ARCADIS OF NEW YORK, INC.

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

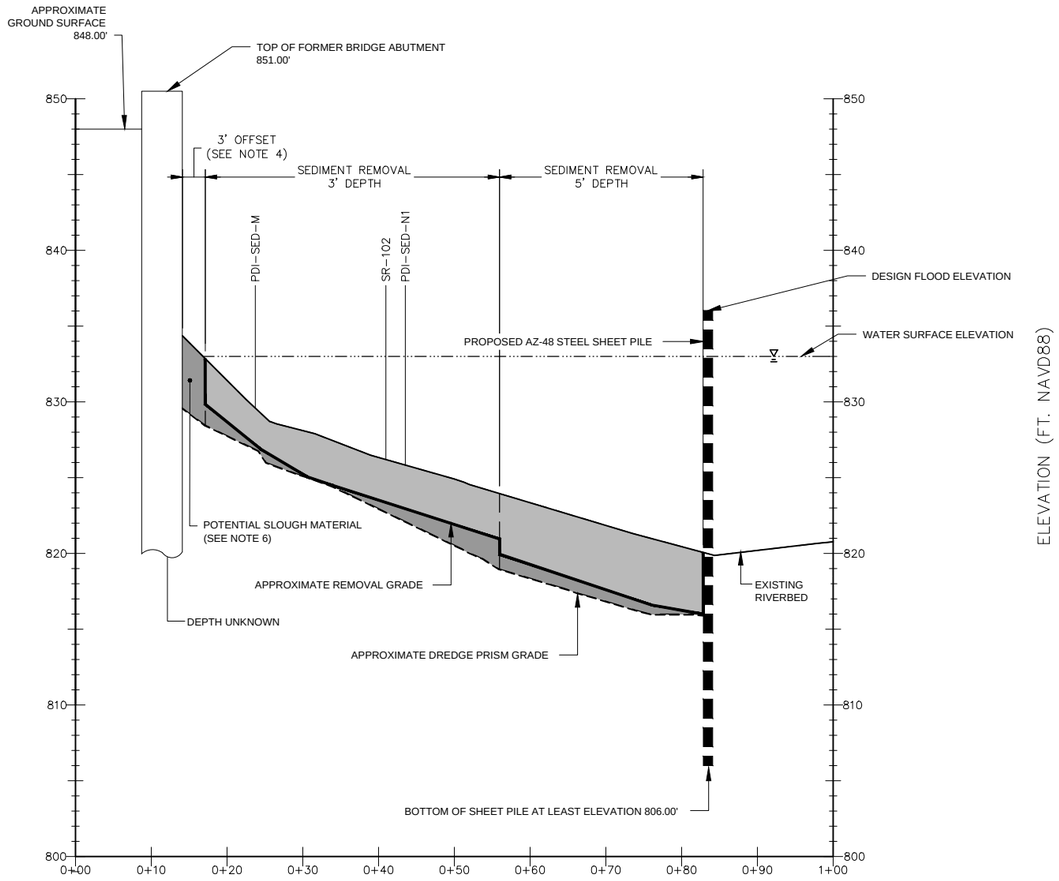
SEDIMENT REMOVAL AREA 1 SHEET PILE DESIGN PROFILE

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

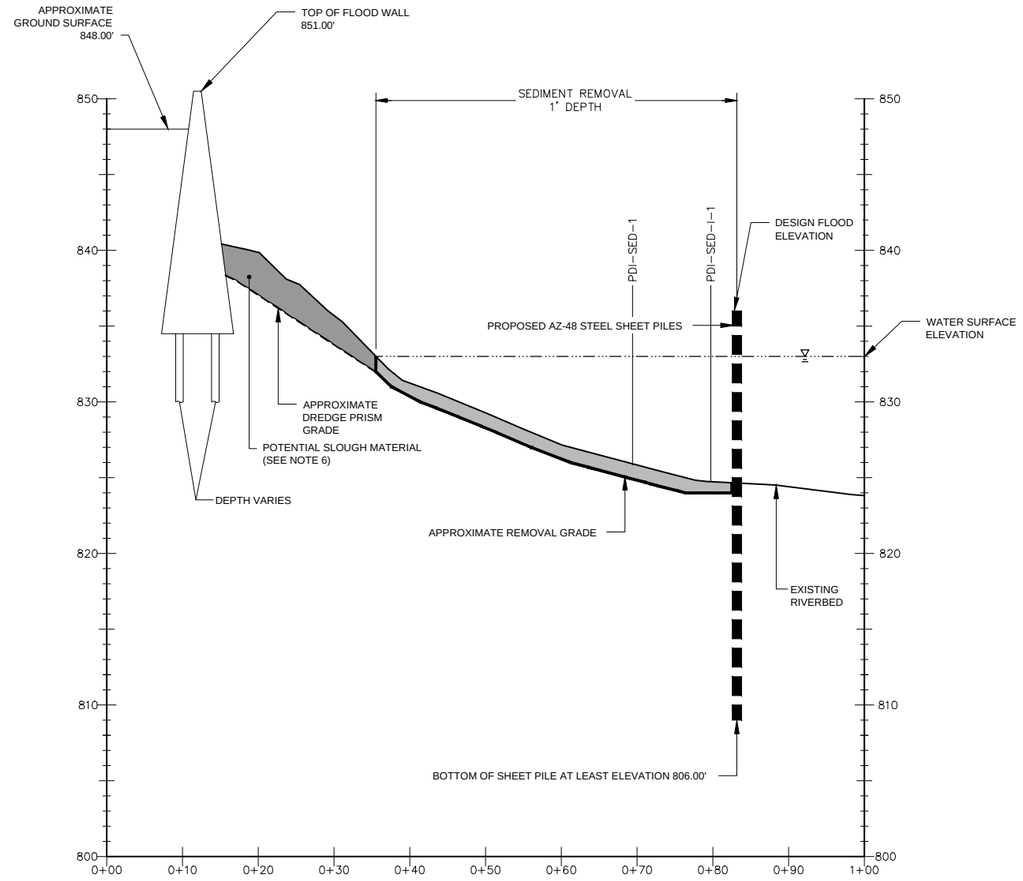
ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL. 315.446.9120

6



SEDIMENT REMOVAL CROSS SECTION 1

0 10' 20'
HORIZONTAL SCALE: 1"=10'
0 10' 20'
VERTICAL SCALE: 1"=10'



SEDIMENT REMOVAL CROSS SECTION 2

0 10' 20'
HORIZONTAL SCALE: 1"=10'
0 10' 20'
VERTICAL SCALE: 1"=10'

BORING ID
(OFFSET DISTANCE, DIRECTION)

SPT N-VALUE

BOTTOM OF BORING

NOTES:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL LOCATIONS ARE APPROXIMATE. PROFILE DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES. FORMER BRIDGE ABUTMENT AND FLOOD WALL GEOMETRY BASED ON "SOUTHERN NEW YORK FLOOD CONTROL PROJECT" AS BUILT DRAWINGS DATED AUGUST 1941.
3. DESIGN FLOOD ELEVATION OF 836 FEET (NAVD88) IS BASED ON A 2% PROBABILITY OF EXCEEDANCE DURING THE CONSTRUCTION SEASON (MAY-SEPTEMBER).
4. REMEDIATION CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3 FEET OFFSET FROM FLOODWALL OR EXISTING STRUCTURES.
5. NO OFFSET IS REQUIRED BETWEEN TEMPORARY CONTAINMENT SHEET PILE AND SEDIMENT REMOVAL.
6. SEDIMENT REMOVAL REQUIRED TO SPECIFIED APPROXIMATE REMOVAL GRADE DEPTHS, AS SHOWN, AT A MINIMUM. DREDGE PRISM ACCOUNTS FOR POTENTIAL SLOUGHING OF MATERIAL.
7. REMEDIATION CONTRACTOR REQUIRED TO MAINTAIN A MAXIMUM 3 FOOT WATER DIFFERENTIAL AT ALL TIMES.
8. SHEET PILE TO BE INSTALLED AT MINIMUM OF 14 FEET FROM TOP OF SEDIMENT. THE TOP OF SHEET PILES WILL BE AT ELEVATION 836 FEET OR HIGHER.

CITY:SYR-NY DIVGROUP: ENV-CAD DB:K.SARTORI LD: PIC:L.KETCHUM PM: J.BISTROVICH TM: A.MILLER LYR:ON=*;OFF=*REF*
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THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name
MARK O. GRAVELDING
Professional Engineer's No.
069985
State NY | Date Signed . | Project Mgr. JRG
Designed by JJB | Drawn by EAK | Checked by JRG

STATE OF NEW YORK MARK O. GRAVELDING NO. 069985 LICENSED PROFESSIONAL ENGINEER

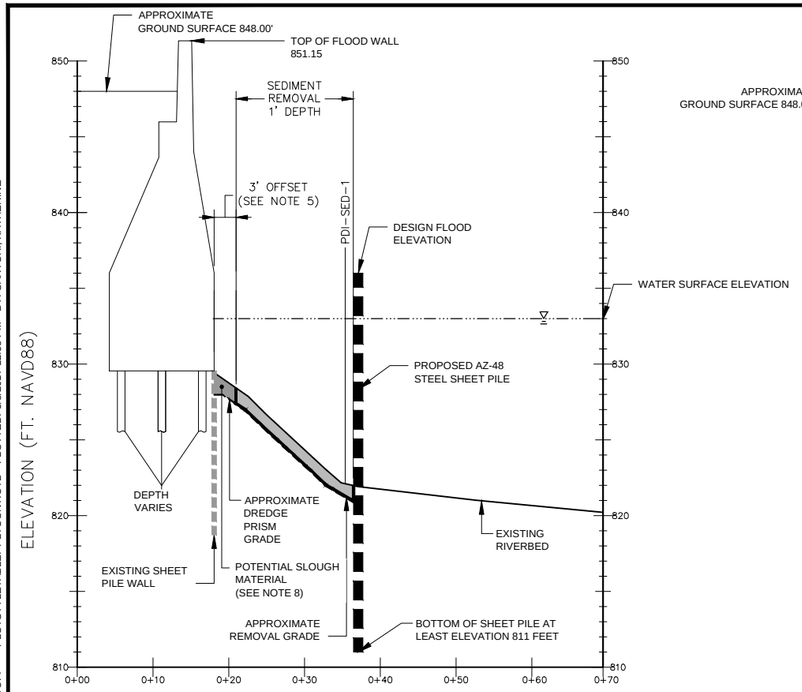
ARCADIS Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

SEDIMENT REMOVAL AREA 1 CROSS SECTIONS

ARCADIS Project No.
B0013103.0005.00300
Date
MAY 2017

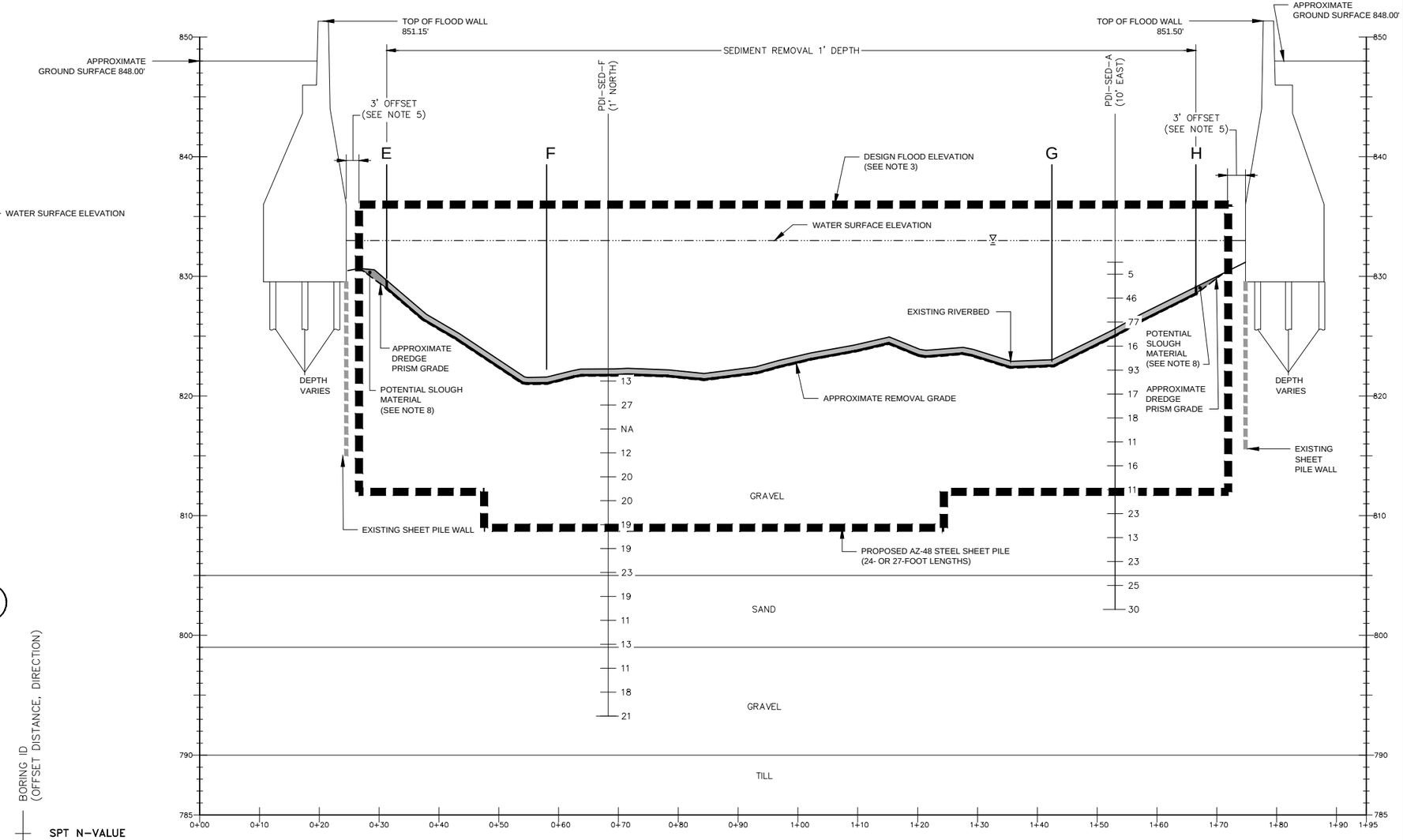
ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL. 315.446.9120



SEDIMENT REMOVAL CROSS SECTION (1)

HORIZONTAL SCALE: 1"=10'

VERTICAL SCALE: 1"=10'



BORING ID
(OFFSET DISTANCE, DIRECTION)

SPT N-VALUE

BOTTOM OF BORING

SHEET PILE DESIGN PROFILE (2)

HORIZONTAL SCALE: 1"=10'

VERTICAL SCALE: 1"=10'

NOTES:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL LOCATIONS ARE APPROXIMATE. PROFILE DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES. FLOOD WALL GEOMETRY BASED ON "SOUTHERN NEW YORK FLOOD CONTROL PROJECT" AS BUILT DRAWINGS DATED AUGUST 1941.
3. DESIGN FLOOD ELEVATION OF 836 FEET (NAVD88) IS BASED ON A 2% PROBABILITY OF EXCEEDANCE DURING THE CONSTRUCTION SEASON (MAY-SEPTEMBER).
4. NO OFFSET IS REQUIRED BETWEEN TEMPORARY CONTAINMENT SHEET PILE AND SEDIMENT REMOVAL.
5. REMEDIATION CONTRACTOR SHALL MAINTAIN A MINIMUM OF 3 FEET OFFSET FROM FLOODWALL OR EXISTING STRUCTURES.
6. SEDIMENT REMOVAL AREAS HAVE BEEN PROJECTED UP TO 30 FEET TO THE PROPOSED SHEET PILE ALIGNMENT.
8. SEDIMENT REMOVAL REQUIRED TO SPECIFIED APPROXIMATE REMOVAL GRADE DEPTHS, AS SHOWN, AT A MINIMUM. DREDGE PRISM ACCOUNTS FOR POTENTIAL SLOUGHING OF MATERIAL.
9. REMEDIATION CONTRACTOR REQUIRED TO MAINTAIN A MAXIMUM 3 FT WATER DIFFERENTIAL AT ALL TIMES.
10. SHEET PILE TO BE INSTALLED AT MINIMUM OF 11 FEET FROM TOP OF SEDIMENT. TOP OF SHEET PILES WILL BE AT ELEVATION 836 FEET OR HIGHER.
11. MINIMUM REQUIRED STEEL SHEET PILE SECTION MODULUS IS 9.4 CU.IN/FT FOR AREA 2. IT IS ASSUMED THAT EXISTING AZ-48 NYSEG-OWNED STEEL SHEET PILES ARE TO BE USED.

SCALE AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	.	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

SEDIMENT REMOVAL AREA 2 SHEET PILE DESIGN PROFILE AND CROSS SECTION

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

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ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
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TEL. 315.446.9120

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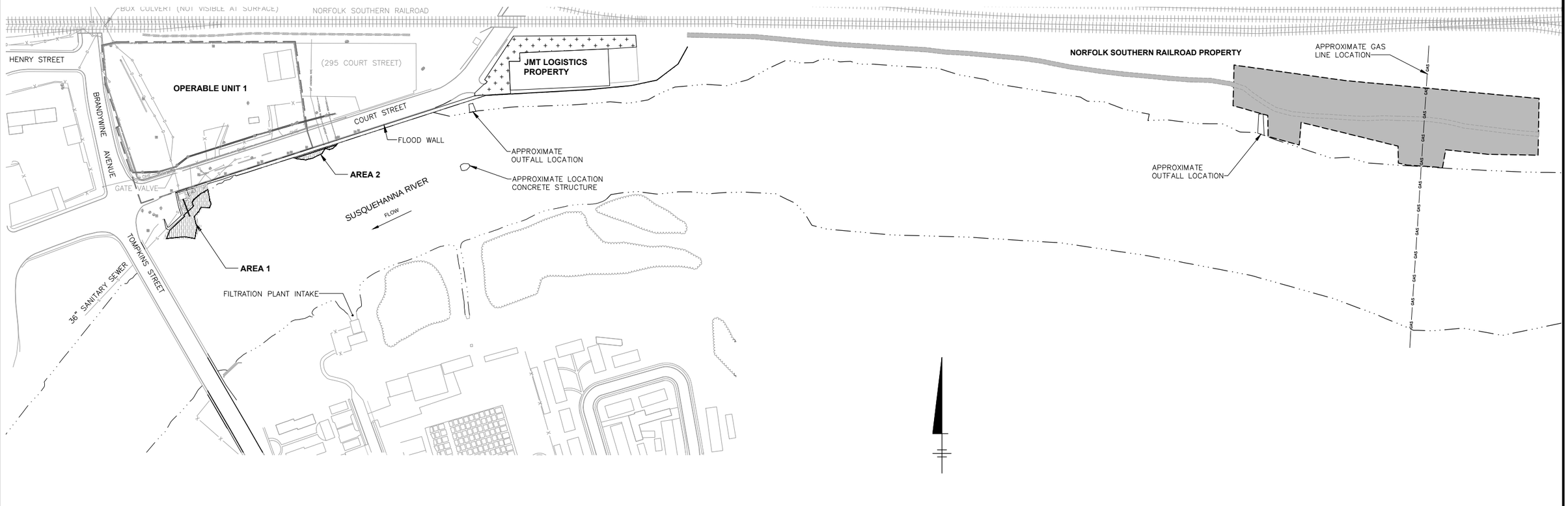
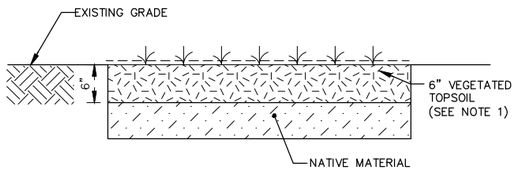


LEGEND:

- RESTORATION AREA
- ABANDONED SEWER LINE
- POTENTIAL UPLAND RESTORATION AREA (1/9)
- SEDIMENT/SHORELINE RESTORATION AREA (2/9)
- ASPHALT RESTORATION (3/13)
- JMT LOGISTICS PROPERTY LINE APPROXIMATE

NOTES:

1. REFER TO DRAWING 1 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. UPLAND AND RIVERBANK AREAS AND FEATURES DISTURBED, DAMAGED, OR DESTROYED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS, OR AS AGREED UPON IN THE PROPERTY AGREEMENTS(S).

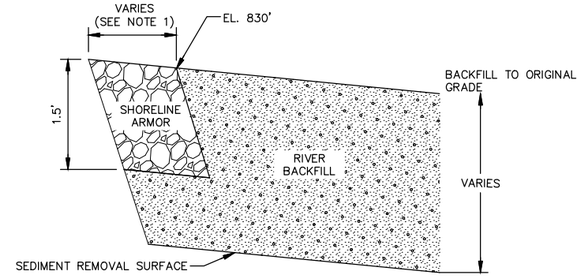


NOTES:

1. VEGETATE TOPSOIL IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS.

VEGETATIVE SURFACE RESTORATION (1)

NOT TO SCALE



NOTES:

1. SHORELINE ARMOR SHALL EXTEND FROM THE UPPER LIMIT OF EXCAVATION (INCLUDING ANY SLOUGHED AREAS) TO AN ELEVATION OF 830 FEET (I.E., WATER DEPTH OF 3 FEET).

TYPICAL SEDIMENT/SHORELINE PROTECTION RESTORATION DETAIL (2)

NOT TO SCALE

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER, K.SARTORI LD:(Opt) PIC: K.WHITE PM: J. BRIEN TM: J. BRIEN TR: J. GOLUBSKI LY
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140' 0 140' 280'
1"=140'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **MARK O. GRAVELDING**
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	.	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

STATE OF NEW YORK MARK ORVERT GRAVELDING NO. 069985 LICENSED PROFESSIONAL ENGINEER

ARCADIS Design & Consultancy for natural and built assets

ARCADIS OF NEW YORK, INC.

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

SITE RESTORATION PLAN

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL. 315.446.9120

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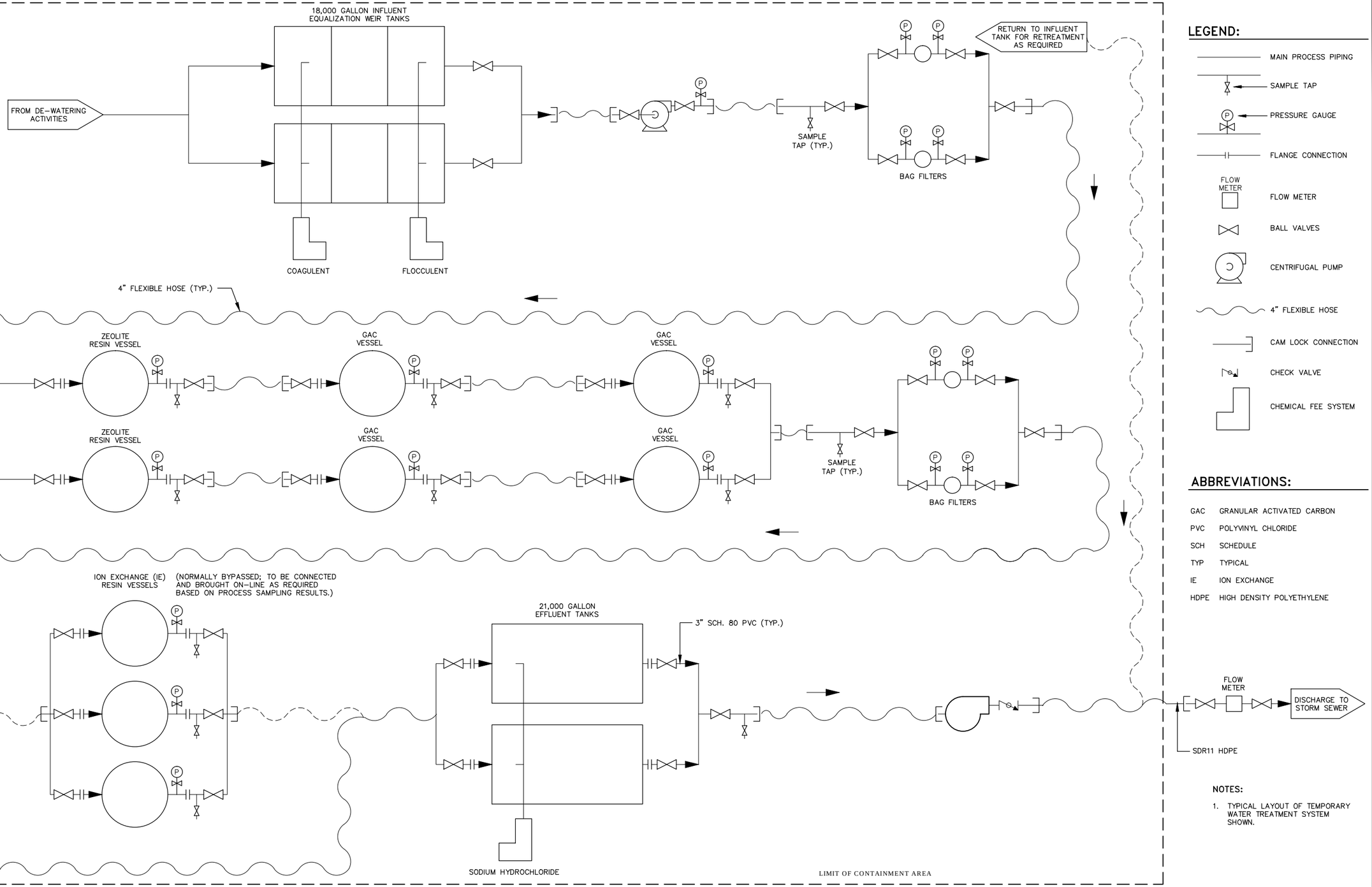

LEGEND:

- MAIN PROCESS PIPING
- SAMPLE TAP
- PRESSURE GAUGE
- FLANGE CONNECTION
- FLOW METER
- BALL VALVES
- CENTRIFUGAL PUMP
- 4" FLEXIBLE HOSE
- CAM LOCK CONNECTION
- CHECK VALVE
- CHEMICAL FEE SYSTEM

ABBREVIATIONS:

GAC	GRANULAR ACTIVATED CARBON
PVC	POLYVINYL CHLORIDE
SCH	SCHEDULE
TYP	TYPICAL
IE	ION EXCHANGE
HDPE	HIGH DENSITY POLYETHYLENE

NOTES:

1. TYPICAL LAYOUT OF TEMPORARY WATER TREATMENT SYSTEM SHOWN.

NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **MARK O. GRAVELDING**
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	.	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

STATE OF NEW YORK · MARK OWEN GRAVELDING · 069985-1 · LICENSED PROFESSIONAL ENGINEER

ARCADIS | Design & Consultancy for natural and built assets

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NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

TEMPORARY WATER TREATMENT SYSTEM PIPING AND INSTRUMENTATION DIAGRAM

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL: 315.446.9120

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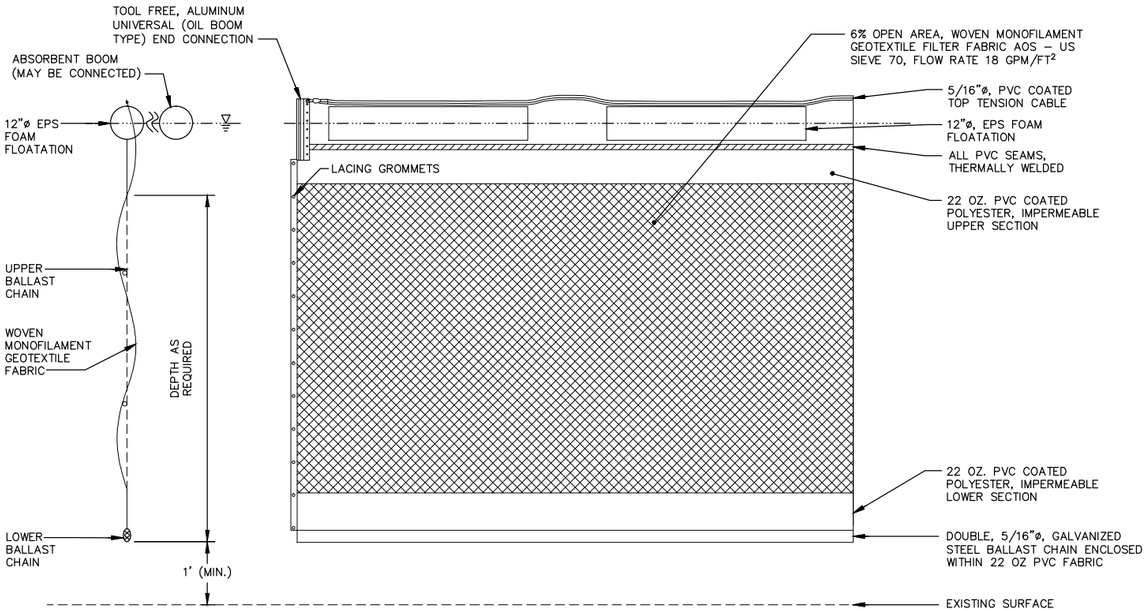
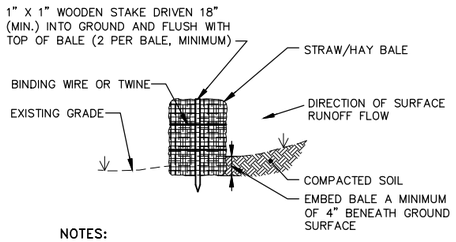


NOTES:

1. THE TURBIDITY CURTAIN DETAIL PROVIDED HEREON IS CONCEPTUAL. THE REMEDIATION CONTRACTOR MAY PROPOSE AN ALTERNATE TURBIDITY CURTAIN OR OTHER APPROPRIATE TURBIDITY CONTROL SYSTEM AT THE REVIEW AND APPROVAL OF THE DESIGN ENGINEER. THE REMEDIATION CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR MEETING THE PERFORMANCE CRITERIA FOR A TURBIDITY CONTROL SYSTEM AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
2. TURBIDITY CURTAIN SHALL BE INSTALLED PRIOR TO INITIATION OF IN–WATER CONSTRUCTION ACTIVITIES.
3. ABSORBENT BOOMS SHALL BE INSTALLED ALONG THE INTERIOR PERIMETER OF THE TURBIDITY CURTAIN IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS.
4. THE TURBIDITY CURTAIN SHOWN ASSUMES ANCHOR PILE ANCHORS. ATTACH CURTAIN TO THE ANCHOR PILES AT THE LACING GROMMETS USING METHODS SUGGESTED BY THE MANUFACTURER. POTENTIAL ATTACHMENT METHODS COULD INCLUDE CABLE CLAMPS, ATTACHED RINGS AND CABLE ETHERS OR FLOATING CABLE RING CONNECTORS.

TURBIDITY CURTAIN 1

NOT TO SCALE

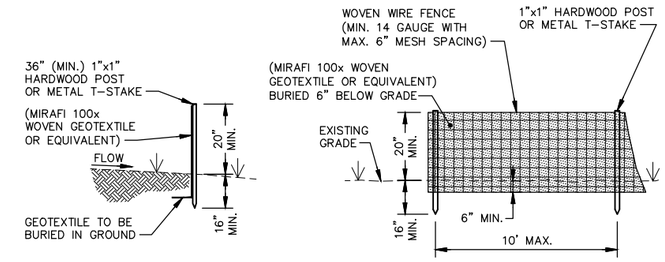


NOTES:

1. USE OF STRAW/HAY BALES SHALL BE MINIMIZED.
2. BALES SHALL BE PLACED TIGHTLY TOGETHER, END TO END, TO FORM A CONTINUOUS BARRIER IN SELECTED AREAS.
3. THE INTEGRITY OF THE STRAW/HAY BALES SHALL BE MAINTAINED FOR THE PROJECT DURATION AND UNTIL ADEQUATE VEGETATIVE GROWTH IS ESTABLISHED.
4. STOCKPILE ANY EXCAVATED MATERIAL ONSITE FOR USE AS BACKFILL UPON COMPLETION.

STRAW/HAY BALE 2

NOT TO SCALE

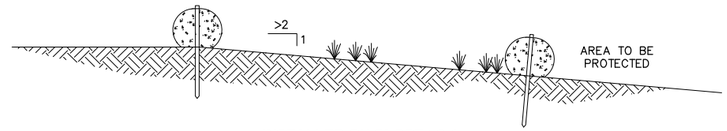


NOTES:

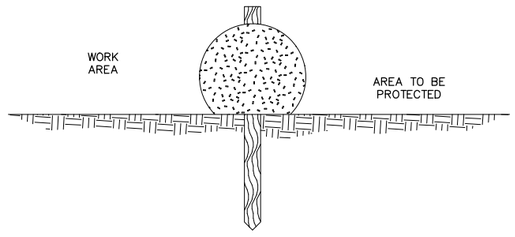
1. ACCUMULATIONS OF SEDIMENT ADJACENT TO SILT FENCES SHALL BE PERIODICALLY REMOVED THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.
2. SILT ACCUMULATIONS SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF OF THE HEIGHT OF SILT FENCE.
3. THE INTEGRITY OF SILT FENCING SHALL BE MAINTAINED FOR THE PROJECT DURATION AND UNTIL ADEQUATE VEGETATIVE GROWTH IS ESTABLISHED.

SILT FENCE 3

NOT TO SCALE



INSTALLED ON SLOPE >2:1



INSTALLED ON SOIL

NOTES:

1. RECM SHALL ONLY BE USED AS REQUIRED.
2. RECM SHALL BE PLACED TIGHTLY TOGETHER, END TO END, TO FORM A CONTINUOUS BARRIER IN SELECTED AREAS.
3. RECM SHALL BE SECURED WITH 2–INCH X 2–INCH HARDWOOD STAKES INSTALLED THROUGH THE MIDDLE OF THE RECM ON 10 FOOT CENTERS. IN THE EVENT STAKING IS NOT POSSIBLE, (i.e., WHEN RECM IS USED ON PAVEMENT), CONCRETE BLOCKS OR SAND BAGS SHALL BE USED BEHIND THE RECM TO STABILIZE.
4. IF SLOPE IS GREATER THAN 2:1 INSTALL SECOND RECM BARRIER AT TOP OF SLOPE.

ROLLED EROSION CONTROL MATERIAL 4

NOT TO SCALE

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: K.SARTORI LD: K.SARTORI PIC: K.WHITE PM: M.BIONDOLILLO TM: J.MELWIKI LYR: ON=*; OFF=*REF*
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NOT TO SCALE

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	.	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

ARCADIS Design & Consultancy for natural and built assets

ARCADIS OF NEW YORK, INC.

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

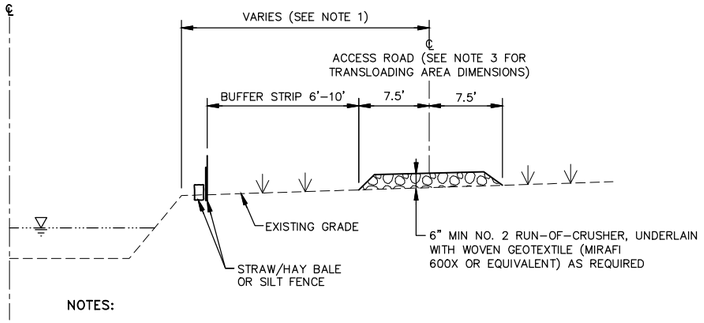
EROSION, SEDIMENT, AND TURBIDITY CONTROL DETAILS

ARCADIS Project No.
B0013103.0005.00300

Date
MAY 2017

ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL. 315.446.9120

11

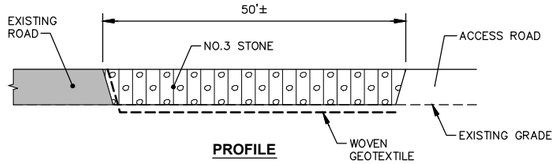


NOTES:

1. DIMENSION VARIES TO ACCOMMODATE EXISTING FEATURES AND TOPOGRAPHY.
2. PLACEMENT OF FILL FOR ACCESS ROADS SHALL BE AS REQUIRED TO SUPPORT CONSTRUCTION EQUIPMENT.
3. TRANSLOADING AREA SHALL BE CONSTRUCTED IN A SIMILAR MANNER AS SHOWN FOR THE ACCESS ROAD, HOWEVER DIMENSIONS WILL VARY TO ACCOMMODATE REMEDIATION CONTRACTOR REMEDIATION NEEDS AND EXISTING FEATURES AND TOPOGRAPHY. TRANSLOADING AREA SHALL BE NO MORE THAN 3.5 ACRES IN SIZE AND SHALL BE WITHIN THE LIMITS ILLUSTRATED ON DRAWING 4.

ACCESS ROAD AND TRANSLOADING AREA (1)

NOT TO SCALE



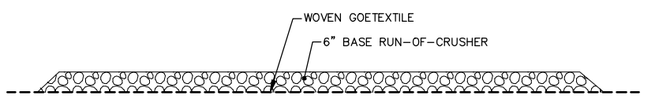
PROFILE

NOTES:

1. CONSTRUCTION ENTRANCE/EXIT PAD WILL BE APPROXIMATELY 50' LONG, 15' WIDE, AND 6" THICK.
2. INSTALL CONSTRUCTION ENTRANCE/EXIT PAD AT ALL ACCESS POINTS TO PAVED ROADS.

CONSTRUCTION ENTRANCE PAD (2)

NOT TO SCALE

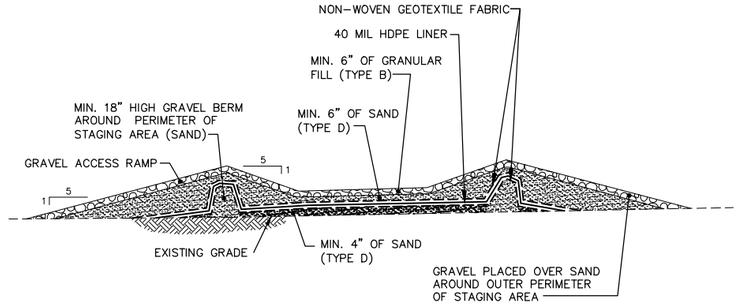


NOTES:

1. THE EXISTING GRADE SURFACE SHALL BE UNIFORM AND FREE OF DELETERIOUS MATERIALS (E.G. WOOD/METAL DEBRIS, ETC.) THAT COULD AFFECT THE STABILITY OF THE PAD.
2. COMPACTION OF RUN–OF–CRUSHER SHALL BE SUFFICIENT DENSITY TO PROVIDE A FIRM AND UNIFORM SURFACE USING APPROPRIATE EQUIPMENT.
3. MATERIAL STAGING AREA SHALL BE UNDERLAIN WITH A WOVEN GEOTEXTILE. WOVEN GEOTEXTILE SHALL BE MIRAFI 600X OR EQUIVALENT.

IMPORTED MATERIAL STAGING AREA (3)

NOT TO SCALE

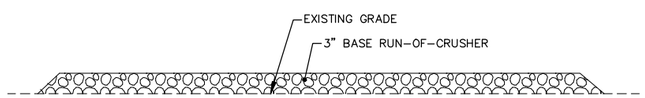


NOTES:

1. STAGING AREA SHALL HAVE A GENERAL SLOPE TOWARD A COLLECTION SUMP TO FACILITATE THE COLLECTION OF FLUIDS FOR TREATMENT.
2. MATERIAL WITHIN THE STAGING AREA SHALL BE COVERED WITH 10 MIL PLASTIC SHEETING AT ALL TIMES EXCEPT WHILE MATERIAL IS BEING ACTIVELY MANAGED.
3. CONCRETE BIN BLOCKS MAY BE USED TO SEPARATE STOCKPILES.

IMPACTED MATERIAL STAGING AREA (4)

NOT TO SCALE

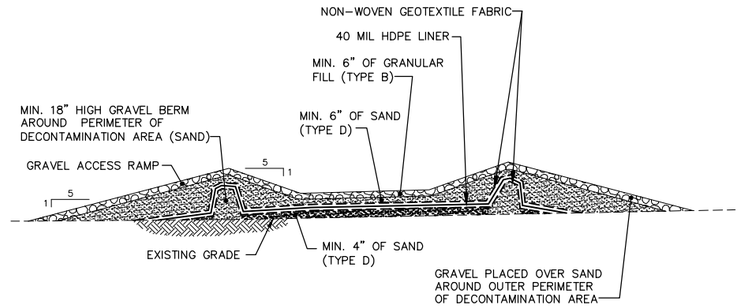


NOTES:

1. THE EXISTING GRADE SURFACE SHALL BE UNIFORM AND FREE OF DELETERIOUS MATERIALS (E.G. WOOD/METAL DEBRIS, ETC.) THAT COULD AFFECT THE STABILITY OF THE PAD.
2. COMPACTION OF RUN–OF–CRUSHER SHALL BE SUFFICIENT DENSITY TO PROVIDE A FIRM AND UNIFORM SURFACE USING APPROPRIATE EQUIPMENT.

OU-1 SUPPORT AREA COVER (5)

NOT TO SCALE

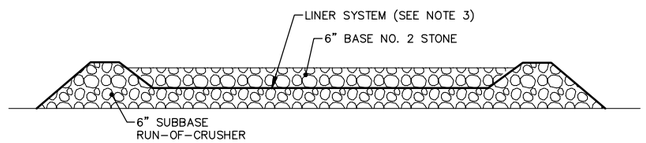


NOTES:

1. DECONTAMINATION AREA SHALL HAVE A GENERAL SLOPE TOWARD A COLLECTION SUMP TO FACILITATE THE COLLECTION OF WASH FLUIDS. FLUIDS SHALL BE PUMPED FROM COLLECTION SUMP INTO 55 GALLON DRUMS OR A TEMPORARY STORAGE TANK (IF NECESSARY).
2. UPON COMPLETION OF CONSTRUCTION ACTIVITIES, THE DECONTAMINATION AREA, INCLUDING HDPE LINER, IS TO BE REMOVED BY THE REMEDIATION CONTRACTOR FOR DISPOSAL.
3. PRE–FABRICATED METAL DECONTAMINATION AREAS MAY BE USED IN PLACE OF THIS DETAIL.

DECONTAMINATION AREA (6)

NOT TO SCALE



NOTES:

1. THE EXISTING GRADE SURFACE SHALL BE UNIFORM AND FREE OF DELETERIOUS MATERIALS (E.G. WOOD/METAL DEBRIS, ETC.) THAT COULD AFFECT THE STABILITY OF THE PAD.
2. COMPACTION OF NO. 2 STONE SHALL BE SUFFICIENT DENSITY TO PROVIDE A FIRM AND UNIFORM SURFACE USING APPROPRIATE EQUIPMENT.
3. A LINER SYSTEM CONSISTING OF NON–WOVEN GEOTEXTILE FABRIC, 40 MIL HDPE LINER, AND NON–WOVEN GEOTEXTILE FABRIC SHALL BE PLACED OVER THE SUBBASE SURFACE. THE NON–WOVEN GEOTEXTILE FABRIC CONSISTS OF MIRAFI 180N OR EQUIVALENT COMPACTION ABOVE GEOSYTHETICS SHALL BE PERFORMED IN A MANNER AND USING APPROPRIATE EQUIPMENT THAT AVOIDS DAMAGING THE GEOSYTHETICS.
4. CONTAINMENT PAD SURFACE SHALL BE OF SUFFICIENT SIZE TO ACCOMMODATE THE TEMPORARY WATER TREATMENT SYSTEM.

TEMPORARY WATER TREATMENT SYSTEM CONTAINMENT PAD (7)

NOT TO SCALE

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: K.SARTORI LD: K.SARTORI PIC: K.WHITE PM: M.BIONDOLILLO TM: J.MELWIKI LYR: ON=*; OFF=*REF*
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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: MARK O. GRAVELDING
Professional Engineer's No.: 069985
State: NY | Date Signed: . | Project Mgr.: JRG
Designed by: JJB | Drawn by: EAK | Checked by: JRG

ARCADIS | Design & Consultancy for natural and built assets
ARCADIS OF NEW YORK, INC.

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

MISCELLANEOUS DETAILS

ARCADIS Project No.: B0013103.0005.00300
Date: MAY 2017

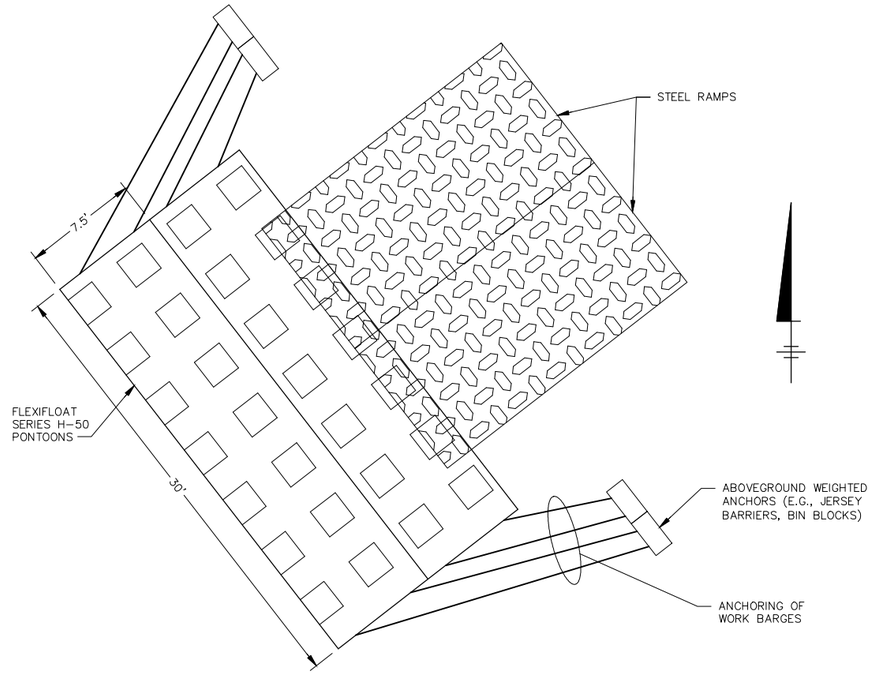
ARCADIS OF NEW YORK, INC
ONE LINCOLN CENTER
110 W. FAYETTE ST, SUITE 300
SYRACUSE, NY, 13202
TEL. 315.446.9120

NOTES:

1. TEMPORARY LOADING AREA AND RIVER ACCESS DETAIL PROVIDED HEREON IS CONCEPTUAL. THE REMEDIATION CONTRACTOR MAY PROPOSE AN ALTERNATE TEMPORARY LOADING AREA AND RIVER ACCESS AT THE REVIEW AND APPROVAL OF THE REMEDIATION ENGINEER.

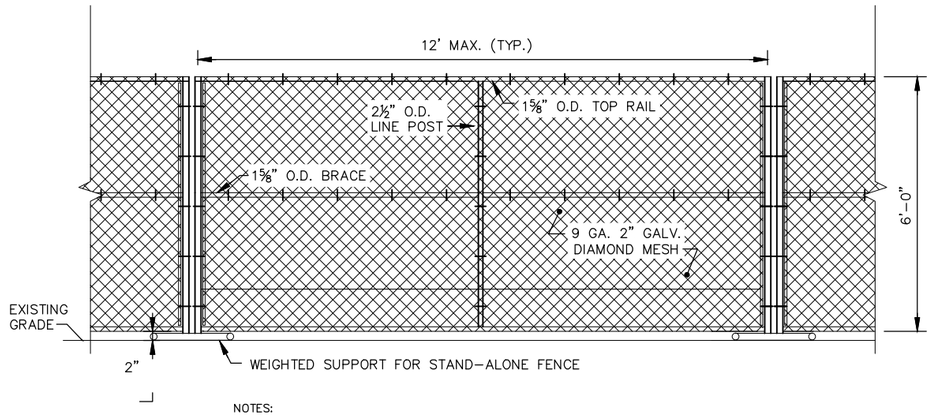
2. AS NECESSARY, THE REMEDIATION CONTRACTOR SHALL INSTALL STEEL PILES OR SPUDS TO ADD STABILITY AND ANCHORING TO THE LOADING PLATFORM. ANY SUCH PILES SHALL BE INSTALLED IN A MANNER THAT DOES NOT IMPEDE THE PERFORMANCE OF THE WORK NOR NAVIGATION IN THE RIVER. IF INSTALLED, ANY CONNECTION TO THE LOADING PLATFORM SHALL BE SUCH THAT THE BARGE SECTIONS ARE NOT INHIBITED FROM VERTICAL MOVEMENT IN RESPONSE TO CHANGING WATER CONDITIONS. ANY ADDITIONAL INSTALLATIONS SHALL BE REMOVED FROM THE RIVER BOTTOM FOLLOWING COMPLETION OF CONSTRUCTION AND CLEANED PRIOR TO DEMOBILIZATION FROM THE SITE.

3. LOADING PLATFORM SHALL BE MARKED USING BRIGHTLY COLORED BUOYS AND NAVIGATIONAL LIGHTING IN ACCORDANCE WITH U.S. COAST GUARD REQUIREMENTS.



TEMPORARY LOADING AREA AND RIVER ACCESS PLAN (1)

NOT TO SCALE



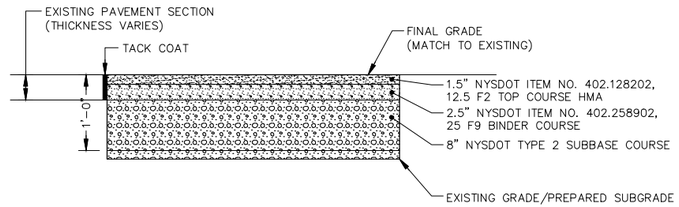
NOTES:

1. FENCE PANELS SHALL HAVE HORIZONTAL AND VERTICAL CROSS BARS FOR ADDED SUPPORT.

2. THE REMEDIATION CONTRACTOR SHALL PROVIDE SAND BAGS FOR ADDITIONAL SUPPORT FOR STAND-ALONE FENCE PANELS.

TYPICAL TEMPORARY FENCING DETAIL (2)

NOT TO SCALE



ASPHALT PAVEMENT (3)

NOT TO SCALE

No.	Date	Revisions	By	Ckd			

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

Professional Engineer's Name: **MARK O. GRAVELDING**
Professional Engineer's No.: 069985

State	Date Signed	Project Mgr.
NY	.	JRG
Designed by	Drawn by	Checked by
JJB	EAK	JRG

STATE OF NEW YORK · MARK ORENT GRAVELDING · 069985 · LICENSED PROFESSIONAL ENGINEER

ARCADIS Design & Consultancy for natural and built assets

ARCADIS OF NEW YORK, INC.

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

NYSEG • BINGHAMTON, NEW YORK
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
OPERABLE UNIT 2
INTERIM REMEDIAL MEASURE DESIGN REPORT

MISCELLANEOUS DETAILS

ARCADIS Project No.
B0013103.0005.00300

Date
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110 W. FAYETTE ST, SUITE 300
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TEL. 315.446.9120

APPENDIX B

Technical Specifications

SECTION 00 01 10

TABLE OF CONTENTS

Notes:

1. Specification included in Contractor Bid Package only.

END OF TABLE OF CONTENTS

SECTION 01 11 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 LOCATION AND DESCRIPTION OF WORK

A. The Work is located at the site of a former manufactured gas plant (MGP) on Court Street in the City of Binghamton, Broome County, New York.

B. The Work to be performed under this Contract includes, but is not limited to, the following:
   1. Pre-remediation activities
   2. Mobilization and site preparation
   3. Temporary containment system
   4. Sediment removal and backfilling in the Susquehanna River
   5. Waste and water handling and management
   6. Site restoration and demobilization

C. Contracting Method: Work shall be performed under one prime contract.

D. Contaminants: Work related to MGP Waste and other site-related Contaminants, is included.

1.02 REMEDIATION CONTRACTOR'S USE OF SITE

A. Use of Premises:
   1. Confine construction operations to the work areas shown or indicated on the Design Drawings. Do not disturb portions of the Site beyond areas of the Work.
   2. Confine storage of materials and equipment, and locations of temporary facilities to the areas shown. Move stored products that interfere with operations of Owner, other contractors, and others performing work for Owner.
   3. Authorities having jurisdiction at the Site and others performing work for Owner shall, for all purposes that may be required by their contracts, have access to the Site and the premises used by Remediation Contractor, and Remediation Contractor shall provide safe and proper access.

B. Promptly repair damage to premises caused by construction operations. Upon completion of the Work, restore premises to specified condition. If condition is not specified, restore to pre-construction condition.

C. Work hours are anticipated to be between 7 a.m. and 6 p.m. Monday through Friday. Final work hours and/or time of year restrictions will be dictated by any applicable permits.

1.03 EASEMENTS AND RIGHTS-OF-WAY

A. Confine construction operations within Owner's property, easements obtained by Owner, and the limits shown. Use care in placing construction tools, equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic. Do not enter private property outside the construction limits without permission from the owner of the property.

B. On Private Property: Limits of Remediation Contractor's operations on private property are shown on the Design Drawings.

1.04 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO THE WORK

A. Notify Owner when execution of the Work may affect adjacent properties or use of adjacent properties. Owner will notify adjacent property owners; do not contact adjacent property owners directly unless authorized by Owner to do so.

B. When it is necessary to temporarily obstruct access to property, or when utility service connection will be interrupted, provide notices sufficiently in advance to enable affected persons to provide for their needs. Conform notices to Laws and Regulations and, whether delivered orally or in writing, include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.

C. Notify utility owners and other concerned entities at least two working days, but not more than 10 working days, prior to cutting or closing streets or other traffic areas or excavating near Underground Facilities or exposed utilities.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 15 00

REMEDIATION CONTRACTOR'S PROJECT OPERATIONS PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall prepare and submit to Remediation Engineer a Project Operations Plan (POP) in accordance with this Section.
   2. POP shall clearly describe Remediation Contractor's proposed means, methods, and sequence of construction operations, and shall demonstrate compliance with the Contract Documents.

1.02 SUBMITTALS

A. Informational Submittals:
   1. Remediation Contractor's POP: Submit in accordance with Article 1.03 of this Section.

1.03 POP SUBMITTAL

A. Remediation Contractor's POP shall address and include the following:
   1. Remediation Contractor's Organizational Structure: Specific chain of command and overall responsibilities of Remediation Contractor personnel. Include the following:
      a. Name and general functions and responsibilities of the following:
         1) Project manager
         2) Field superintendent
         3) Site Health and Safety Officer
         4) Project Emergency Coordinator
         5) Field engineer
         6) Foreman
         7) Equipment operators and laborers
         8) Others as appropriate
      b. Designation of Remediation Contractor personnel that will reside at the Site for the duration of the Project.
   2. Work Schedule: Proposed work days and work hours. Include copy of Remediation Contractor's initial Progress Schedule, prepared in accordance with Section 01 32 16, Construction Progress Schedule.
   3. List of major construction equipment
   4. List of major Subcontractors and Suppliers. Include name, role, and contact information for the following:
      a. Surveyor
      b. Structural Engineer
      c. Suppliers and sources of off-site fill, aggregates, and asphalt
      d. Treatment, disposal, and recycling facilities
      e. Others as appropriate
   5. Access and Site Preparation Plan: Prepare plan describing means and methods for accessing the Work Area and supporting the Work. At a minimum, include the following:
      a. Proposed access strategy, including daily launch and mooring locations.
      b. Proposed support area strategy, including office and sanitary facilities.

6. Sediment Removal and Backfilling Plan: Prepare plan describing means and methods for sediment removal, backfilling, and related Work in accordance with Section 35 20 23, Dredging and Subaqueous Backfill.
7. Waste Management Plan: In accordance with Section 02 61 15, Handling and Disposal of impacted Sediment and Debris.
8. Special Instrumentation Installation Plan: In accordance with Section 31 09 13, Geotechnical Instrumentation and Monitoring.
9. Sheet Piling Installation Plan; In accordance with Section 31 52 13, Sheet Pile Enclosure.
10. Site Utilization Plan: Site plan showing the proposed location and layout of the following:
    a. Temporary facilities (i.e., sanitary, first-aid, parking/storage, frac tanks, water treatment, containment systems, etc.).
    b. Temporary access roads and parking areas.
    c. River access/staging area.
    d. Equipment storage and fueling area(s).
    e. Temporary decontamination area(s). Clearly identify location and size of each.
    f. Temporary containment area(s). Clearly identify location and size of each.
11. Comprehensive Work Plan: Written description of the general sequence and scope of the following:
    a. Mobilization and site preparation
    b. Site access controls and security
    c. Surveying
    d. Utility clearance, mark-out, and verification
    e. Erosion and sediment control
    f. Temporary outfall bypass
    g. Odor, vapor, and dust control
    h. Clearing and grubbing
    i. Turbidity and sheen control
    j. Temporary containment system
    k. Sediment removal, including material handling, transportation and staging approach
    l. Backfilling and grading
    m. Material dewatering
    n. Water treatment
    o. Waste management
    p. Site restoration
    q. Demobilization

B. Submit POP to Remediation Engineer the sooner of: seven days prior to pre-construction conference, or 30 days prior to Remediation Contractor's scheduled mobilization to the Site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section expands upon the provisions of the General Conditions and Supplementary Conditions, and includes administrative and procedural requirements for the following:
      a. Requests for interpretation
      b. Clarification notices
      c. Minor changes in the Work and Field Orders
      d. Work Change Directives
      e. Proposal requests
      f. Change Order requests
      g. Change Orders

B. Submit Contract modification documents to Remediation Engineer.

C. Retain at Remediation Contractor's office and at the Site a complete copy of each Contract modification document and related documents, and Remediation Engineer's response.

1.02 REQUESTS FOR INTERPRETATION

A. General:
   1. Submit requests for interpretation to obtain clarification or interpretation of the Contract Documents. Report conflicts, errors, ambiguities, and discrepancies in the Contract Documents using requests for interpretation.
   2. Do not submit request for interpretation when other form of communication is appropriate, such as submittals, requests for substitutions or "or equals", notices, ordinary correspondence, or other form of communication. Improperly prepared or inappropriate requests for interpretation will be returned without response or action.
   3. Submit written requests for interpretation to Remediation Engineer. Remediation Contractor and Owner may submit requests for interpretation.

B. Procedure:
   1. Submit one original and one copy of each request for interpretation. Submit each request for interpretation with separate letter of transmittal.
   2. Remediation Engineer will provide timely review of requests for interpretation. Allow sufficient time for review and response.
   3. Remediation Engineer will maintain a log of all requests for interpretation. A copy of the log will be provided upon request.
   4. Remediation Engineer will provide written response to each request for interpretation. One copy of Remediation Engineer's response will be distributed to:
      a. Remediation Contractor
      b. Owner
      c. Remediation Engineer
   5. If Remediation Engineer requests additional information to make an interpretation, provide information requested within ten days, unless Remediation Engineer allows additional time, via correspondence referring to request for interpretation number.

6. If Remediation Contractor or Owner believes that a change in the Contract Price or Contract Times or other change to the Contract is required, notify Remediation Engineer in writing before proceeding with the Work associated with the request for interpretation.

C. Submit each request for interpretation on the request for interpretation form included with this Section, or other form acceptable to Remediation Engineer.
   1. Number each request for interpretation using a two-digit sequential number. First request for interpretation will be "01".
   2. In space provided on form, describe the interpretation requested. Provide additional sheets as necessary. Include text and sketches as required in sufficient detail for Remediation Engineer's response.
   3. When applicable, request for interpretation shall include Remediation Contractor's recommended resolution.

1.03 CLARIFICATION NOTICES

A. General:
   1. Clarification notices provide clarification or interpretation of conflicts, errors, ambiguities, and discrepancies in the Contract Documents that are identified by the Remediation Engineer.
   2. Clarification notices do not change the Contract Price or Contract Times, and do not alter the Contract Documents.
   3. Clarification notices, when required, will be initiated and issued by the Remediation Engineer as correspondence with additional information as required.

B. Procedure:
   1. One copy of each written clarification notice will be distributed to:
      a. Remediation Contractor
      b. Owner
      c. Remediation Engineer
      d. New York State Department of Environmental Conservation (NYSDEC)
   2. If Remediation Contractor or Owner believes that a change in the Contract Price or the Contract Times or other change to the Contract is required, notify Remediation Engineer in writing before proceeding with the Work associated with clarification notice.
   3. If clarification notice is unclear, submit request for interpretation.

1.04 MINOR CHANGES IN THE WORK AND FIELD ORDERS

A. General:
   1. Field Orders authorize minor variations in the Work, but do not change the Contract Price or Contract Times.
   2. Field Orders, when required, will be initiated and issued by Remediation Engineer on the Field Order form included with this Section, or other form acceptable to Remediation Engineer.
   3. Remediation Engineer will maintain a log of all Field Orders issued.

B. Procedure:
   1. One copy of each Field Order will be distributed to:
      a. Remediation Contractor
      b. Owner
      c. Remediation Engineer
      d. NSYDEC

2. If Remediation Contractor or Owner believes that a change in the Contract Price or the Contract Times or other change to the Contract is required, immediately notify Remediation Engineer in writing before proceeding with the Work associated with the Field Order.
3. If Field Order is unclear, submit request for interpretation.

1.05 WORK CHANGE DIRECTIVES

A. General:
1. Work Change Directives, when required, order additions, deletions, or revisions to the Work.
2. Work Change Directives do not change the Contract Price or Contract Times, but is evidence that the parties to the Contract expect that the change ordered or documented by the Work Change Directive will be included in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.
3. Work Change Directives, when required, will be initiated and issued by the Remediation Engineer on the Work Change Directive form included with this Section, or other form acceptable to the Owner and Remediation Engineer.

B. Procedure:
1. Four originals of Work Change Directive signed by the Owner and Remediation Engineer will be furnished to the Remediation Contractor, who shall promptly sign each original Work Change Directive and, within five days of receipt, return all originals to the Remediation Engineer.
2. Signed Work Change Directives will be distributed as follows:
   a. Remediation Contractor: One original.
   b. Owner: Two originals.
   c. Remediation Engineer: One original.
3. When required by the Remediation Engineer, document the Work performed under each separate Work Change Directive. For each day, document the following in a format acceptable to Remediation Engineer:
   a. Number and type of workers employed and hours worked.
   b. Equipment used, including manufacturer, model, and year of equipment, and number of hours for each.
   c. Materials used.
   d. Receipts for and descriptions of materials and equipment incorporated into the Work.
   e. Invoices and labor and equipment breakdowns for Subcontractors and Suppliers.
   f. Other information required by Owner or Remediation Engineer.
4. Submit documentation to Remediation Engineer as a Change Order request.

1.06 PROPOSAL REQUESTS

A. General:
1. Proposal requests are for requesting the effect on the Contract Price and the Contract Times and other information relative to contemplated changes in the Work.
2. Proposal requests do not authorize changes or variations in the Work, and do not change the Contract Price or Contract Times, or terms of the Contract.
3. Proposal requests may be initiated by Remediation Engineer or Owner.
4. Proposal requests will be issued on the proposal request form included with this Section, or other form acceptable to Owner and Remediation Engineer.

B. Procedure:
1. One copy of each signed proposal request will be furnished to Remediation Contractor, with one copy each distributed to:

a. Owner
b. Remediation Engineer

2. Submit request for interpretation to clarify conflicts, errors, ambiguities, and discrepancies in proposal request.
3. Upon receipt of proposal request, Remediation Contractor shall prepare and submit a Change Order request, in accordance with this Section, for the proposed Work described in the proposal request.

1.07 CHANGE ORDER REQUESTS

A. General:
1. Submit written Change Order request to Remediation Engineer in response to each proposal request, and when Remediation Contractor believes a change in the Contract Price or Contract Times, or other change to the terms of the Contract is required.

B. Procedure:
1. Submit to Remediation Engineer one original and one copy of each Change Order request with accompanying documentation. Submit each Change Order request with separate letter of transmittal.
2. Remediation Engineer will review Change Order request and either request additional information from Remediation Contractor or provide to Owner a recommendation regarding approval of the Change Order request.
3. When Remediation Engineer requests additional information to render a decision, submit required information within five days of receipt of Remediation Engineer's request, unless Remediation Engineer allows more time. Submit the required information via correspondence that identifies the Change Order request number.
4. Upon completing review, one copy of Remediation Engineer's written response, if any, will be distributed to:
a. Remediation Contractor
b. Owner
c. Remediation Engineer
5. If Change Order request is recommended for approval by Remediation Engineer and approved by Owner, a Change Order will be issued.

C. Each Change Order request shall be submitted on the Change Order request form included with this Section, or other form acceptable to Owner and Remediation Engineer.
1. Number each Change Order request using a two-digit sequential number. First Change Order request will be "01".
2. In space provided on the form:
a. Describe the scope of each proposed change. Include text and sketches on additional sheets as required to provide detail sufficient for Remediation Engineer's review and response. If the proposed change is submitted in response to a proposal request, write in as scope, "In accordance with Proposal Request No." followed by the proposal request number. Provide written clarifications, if any, to scope of change.
b. Provide justification for each proposed change. If the proposed change is submitted in response to a proposal request, write in as justification, "In accordance with Proposal Request No." followed by the proposal request number.
c. List the total change in the Contract Price and Contract Times for each proposed change.
3. Unless otherwise directed by Remediation Engineer, attach to the Change Order request detailed breakdowns of pricing (Cost of the Work and Remediation Contractor's fee), including:
a. List of Work tasks to accomplish the change.

b. For each task, labor cost breakdown including labor classification, total hours per labor classification, and hourly cost rate for each labor classification.
c. Construction equipment and machinery to be used, including manufacturer, model, and year of manufacture, and number of hours for each.
d. Detailed breakdown of materials and equipment to be incorporated into the Work, including quantities, unit costs, and total cost, with Supplier's written quotations.
e. Breakdowns of the Cost of the Work and fee for Subcontractors, including labor, construction equipment and machinery, and materials and equipment incorporated into the Work, other costs, and Subcontractor fees.
f. Breakdown of other costs eligible, in accordance with the General Conditions.
g. Other information required by Remediation Engineer.
h. Remediation Contractor's fees applied to eligible Remediation Contractor costs and eligible Subcontractor costs.

1.08 CHANGE ORDERS

A. General:
1. Change Orders will be recommended by Remediation Engineer, and signed by Owner and Remediation Contractor, to authorize additions, deletions, or revisions to the Work, or changes to the Contract Price or Contract Times.
2. Change Orders will be issued on the Change Order form included with this Section or other form acceptable to Owner and Remediation Engineer.

B. Procedure:
1. Four originals of each Change Order will be furnished to Remediation Contractor, who shall promptly sign each original Change Order and, within five days of receipt, return all originals to Remediation Engineer.
2. Remediation Engineer will sign each original Change Order and forward them to Owner.
3. After approval and signature by Owner, signed Change Orders will be distributed as follows:
a. Remediation Contractor: One original.
b. Owner: Two originals.
c. Remediation Engineer: One original.

PART 2– PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 ATTACHMENTS

A. The attachments listed below, which follow after the "End of Section" designation, are part of this Section:
1. Attachment A: Request for interpretation form (one page).
2. Attachment B: Field Order form (one page).
3. Attachment C: Work Change Directive form (one page).
4. Attachment D: Proposal request form (one page).
5. Attachment E: Change Order request form (two pages).
6. Attachment F: Change Order form (two pages).

END OF SECTION

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NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

REQUEST FOR INTERPRETATION NO. ___

Contractor: _____ Purchase Order No.: _____

Date Transmitted: _____ Date Received: _____

Date Response Requested: _____ Date Response Transmitted: _____

Subject: _____

Reference(s): _____ _____
Specification Section(s) Drawing(s) / Note(s) / Detail(s)

Interpretation Requested:

Signature: _____ Date: _____

Remediation Engineer's Response:

Signature: _____ Date: _____

END OF REQUEST FOR INTERPRETATION

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NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

FIELD ORDER NO. ____

Contractor: _____ Purchase Order No.: _____

Date Issued: _____ Effective Date: _____

Subject: _____

Reference(s): _____ _____
Specification Section(s) Drawing(s) / Note(s) / Detail(s)

Attention:

Remediation Contractor is hereby directed to promptly execute this Field Order for minor changes in the Work without changes in Contract Price or Contract Times. If Remediation Contractor considers that a change in Contract Price or Contract Times is required, please notify Remediation Engineer immediately and before proceeding with this Work.

Description:

Attachments:

Issued by Remediation Engineer:

Signature: _____ Date: _____

Receipt Acknowledged by Remediation Contractor:

Signature: _____ Date: _____

END OF FIELD ORDER

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NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

WORK CHANGE DIRECTIVE NO. ____

Remediation Contractor: _____ Purchase Order No.: _____

Date Issued: _____ Effective Date: _____

Remediation Contractor is directed to proceed promptly with the following change(s):

Item No.	Description

Scope of Work:

Attachments:

Purpose for Work Change Directive:

Authorization for the Work described herein to proceed on the basis of Cost of the Work due to:

☐ Non-agreement on pricing of proposed change.

☐ Necessity to expedite Work described herein prior to agreeing to changes in Contract Price and Contract Times.

Estimated Change in Contract Price and Contract Times:

Contract Price:

$_____ ☐ Increase ☐ Decrease ☐ No Change

Contract Times:

_____ Days ☐ Increase ☐ Decrease ☐ No Change

Recommended for Approval by Remediation Engineer:

Signature: _____ Date: _____

Authorized by Owner:

Signature: _____ Date: _____

Receipt Acknowledged by Remediation Contractor:

Signature: _____ Date: _____

END OF WORK CHANGE DIRECTIVE

NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

PROPOSAL REQUEST NO. ____

Remediation Contractor: _____ Purchase Order No.: _____

Date: _____

Subject: _____

Please submit a complete Change Order request for the proposed modifications described below. If the associated Change Order request is approved, a Change Order will be issued to authorize adjustment to the scope of the Work. This proposal request is not a Change Order, Work Change Directive, or an authorization to proceed with the proposed Work described below.

Scope of Proposed Work:

Requested by Remediation Engineer:

Signature: _____ Date: _____

END OF proposal request

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NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

CHANGE ORDER REQUEST NO. ____

Remediation Contractor: _____ Purchase Order No.: _____

Date: _____ Submitted in Response to Proposal Request No.: _____

Subject: _____

Scope of Work:

Attach and list supporting information as required.

Justification:

Changes in Contract Price and Contract Times:

For Contract Price, when requested by Remediation Engineer, attach detailed cost breakdowns for Remediation Contractor and Subcontractors, Supplier quotations, and other information required. For the Contract Times, state increase, decrease, or no change to Contract Times for Substantial Completion, readiness for final payment, and Milestones, if any. If increase or decrease, state specific number of days for changes to the Contract Times.

The following changes are proposed to the Contract Price and Contract Times:

Description	Contract Price (dollars)	Contract Times (days)	
		Substantial	Final
1.	$		
2.	$		
Total This Change Order Proposal:	**$**		

Changes to Milestones (if any): _____

The adjustment proposed is the entire adjustment to the Remediation Contract to which Remediation Contractor believes it is entitled as a result of the proposed change.

Requested by Remediation Contractor:

Signature: _____ Date: _____

END OF CHANGE ORDER REQUEST

NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

CHANGE ORDER NO. _____

Remediation Contractor: _____ Purchase Order No.: _____

Date Issued: _____ Effective Date: _____

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments:

Change in Contract Price:

A. Original Contract Price: $_____

B. ☐ Increase ☐ Decrease ☐ No Change
from previously approved Change Order Nos. ___ to ___: $_____

C. Contract Price prior to this Change Order (Lines A+B): $_____

D. ☐ Increase ☐ Decrease ☐ No Change
of this Change Order: $_____

E. Contract Price incorporating this Change Order (Lines C+D): $_____

Change in Contract Times:

A. Original Contract Times ☐ Working days ☐ Calendar days:

Substantial Completion (days or date): _____
Ready for Final Payment (days or date): _____

B. ☐ Increase ☐ Decrease ☐ No Change
from previously approved Change Order Nos. ___ to ___:

Substantial Completion (days or date): _____
Ready for Final Payment (days or date): _____

C. Contract Times prior to this Change Order (Lines A+B):

Substantial Completion (days or date): _____
Ready for Final Payment (days or date): _____

D. ☐ Increase ☐ Decrease ☐ No Change
of this Change Order:

Substantial Completion (days or date): _____
Ready for Final Payment (days or date): _____

E. Contract Times incorporating this Change Order (Lines C+D):

Substantial Completion (days or date): _____
Ready for Final Payment (days or date): _____

Recommended for Approval by Remediation Engineer:

Signature: _____ Date: _____

Accepted by Owner:

Signature: _____ Date: _____

Accepted by Remediation Contractor:

Signature: _____ Date: _____

END OF CHANGE ORDER

SECTION 01 29 76

PROGRESS PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section includes administrative and procedural requirements for the Remediation Contractor's requests for progress payments.

1.02 PROGRESS PAYMENTS

A. General:
   1. Applications for Payment shall be submitted on a form acceptable to Owner and Remediation Engineer.

B. Procedure:
   1. Review with Remediation Engineer the proposed quantities and Work to be included in each progress payment. Application for Payment shall cover only the quantities and Work recommended by the Remediation Engineer.
   2. Submit to the Owner and the Remediation Engineer complete Application for Payment and other documents to accompany the Application for Payment.

C. Each request for progress payment shall include:
   1. Completed Application for Payment form, including summary/signature page, progress estimate sheets, and stored materials summary. Progress estimate sheets shall have the same level of detail as the Bid Form.
   2. Remediation Engineer-approved quantity survey sheets, sketches, receipts, or other appropriate supporting documentation to substantiate proposed quantities and Work.
   3. For payment requests that include payment for Work under an allowance, submit documentation acceptable to Owner and Remediation Engineer of the authorization of allowance Work.
   4. For payment requests (other than request for final payment) that include reduction or payment of retainage in an amount greater than that required in the Contract Documents, submit on form acceptable to Owner and Remediation Engineer consent of surety to partial release or reduction of retainage.

D. Requirements for request for final payment are specified in the Section 01 77 19, Closeout Procedures.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 13

PROJECT COORDINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section includes general requirements for coordinating construction operations on the Project.

1.02 COORDINATION

A. Remediation Contractor shall coordinate the Work, including testing agencies, whether hired by Remediation Contractor, Owner, or others, Subcontractors, Suppliers, and others with whom coordination is necessary, in accordance with this Section, to complete the Work in accordance with the Contract Documents.

B. Remediation Contractor shall cooperate with and coordinate the Work with other contractors, utility service companies, Owner's employees working at the Site, and other entities working at the Site, in accordance with Section 01 11 00, Summary of Work.

C. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

D. Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Remediation Contractor's Progress Schedule.
   2. Installation and removal of temporary utilities, facilities, and controls.
   3. Delivery and processing of submittals.
   4. Progress meetings.
   5. Startup and adjustment of systems.
   6. Project closeout activities.

E. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

F. Maintain sufficient competent personnel, drafting and CADD equipment (as necessary), and supplies at the Site for preparing layout drawings, coordination drawings, and record documents. With the Contract Documents and Shop Drawings, use such coordination drawings as tools for coordinating the Work of various trades. Where such coordination drawings are to be prepared by Subcontractors, ensure that each Subcontractor maintains required personnel and facilities at the Site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 19.13

PRE-CONSTRUCTION CONFERENCE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. A pre-construction conference will be held for the Project. Remediation Contractor shall attend the conference and be prepared to discuss all items on the agenda.
   2. Remediation Engineer will distribute an agenda, preside at conference, and prepare and distribute minutes to all conference participants and others as requested.

B. Purpose of conference is to designate responsible personnel, establish working relationships, discuss preliminary schedules submitted by Remediation Contractor, and review administrative and procedural requirements for the Project. Matters requiring coordination will be discussed and procedures for handling such matters will be established.

C. Date, Time, and Location: Conference will be held within 20 days after the Contract Times start to run and before Work starts at the Site, unless otherwise specified by the Owner and agreed to by the Remediation Contractor. Owner will establish the date, time, and location of conference and will notify the interested and involved parties.

D. Prior to the conference, the Remediation Contractor shall submit the following preliminary schedules:
   1. Preliminary Progress Schedule
   2. Preliminary Schedule of Submittals

E. Remediation Contractor shall provide information required and contribute appropriate items for discussion. Remediation Contractor shall bring to the conference the following, with sufficient number of copies for each attendee:
   1. Preliminary Progress Schedule.
   2. Preliminary Schedule of Submittals.
   3. List of emergency contact information for Remediation Contractor's project manager, field superintendent, site health and safety officer, field engineer, and foreman.

1.02 ATTENDANCE

A. Representatives present for each entity shall be qualified and authorized to act on that entity's behalf.

B. Attendance:
   1. Remediation Contractor:
      a. Project manager.
      b. Field superintendent.
      c. Site health and Safety officer.
      d. Field engineer.
      e. Forman.
   2. Owner.
   3. Remediation Engineer.

4. New York State Department of Environmental Conservation and New York State Department of Health, if available.
5. City of Binghamton.
6. Others as requested by Owner, Remediation Contractor, or Remediation Engineer.

1.03 PRELIMINARY AGENDA

A. Safety Moment

B. Procedural and Administrative:
   1. Personnel and Teams:
      a. Designation of roles and responsible personnel.
      b. Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
      c. List of proposed Subcontractors and Suppliers.
      d. Authorities having jurisdiction.
   2. Procedures for communication and correspondence.
   3. Copies of Contract Documents and availability.
   4. The Work and Scheduling:
      a. Scope of Work.
      b. Contract Times, including Milestones (if any).
      c. Phasing and sequencing.
      d. Preliminary Progress Schedule.
      e. Critical path activities.
      f. Working hours.
   5. Safety:
      a. Responsibility for safety.
      b. Designation of Remediation Contractor's safety representative.
      c. Identify Project Emergency Coordinator (PEC).
      d. Emergency procedures and accident reporting.
      e. Emergency contact information.
      f. Impact of Project on public safety.
   6. Permits.
   7. Coordination:
      a. Project coordination.
      b. Progress meetings.
   8. Products and Submittals:
      a. Preliminary Schedule of Submittals.
      b. Shop Drawings, Samples, and other submittals.
      c. Product options, "or equals", and substitutions.
   9. Contract Modification Procedures:
      a. Requests for interpretation.
      b. Clarification notices.
      c. Field Orders.
      d. Proposal requests.
      e. Change Order proposals.
      f. Work Change Directives.
      g. Change Orders.
   10. Payment:
      a. Progress payment procedures.
      b. Taxes.
      c. Retainage.
   11. Testing and inspections.

12. Record documents.
13. Preliminary Discussion of Contract Closeout:
    a. Procedures for Substantial Completion.
    b. Contract closeout requirements.
    c. Correction period.
    d. Duration of bonds and insurance.

C. Site Mobilization:
1. Field offices and staging areas.
2. Temporary facilities and utilities.
3. Access to Site, access roads, and parking.
4. Access to Transloading site, access roads, and parking.
5. Maintenance and protection of traffic.
6. Use of premises.
7. Protection of existing property.
8. Security.
9. Temporary Controls:
    a. Erosion and sediment control.
    b. Storm water control.
    c. Odor, vapor, and dust control.
    d. Noise control.
    e. Temporary containment system.
    f. Turbidity controls.
    g. Pollution control.
10. Temporary fencing.
11. Storage of materials and equipment.
12. Reference points and benchmarks; surveys and layouts.
13. Site maintenance and housekeeping during the Project, including cleaning and removal of trash and debris.
14. Sediment removal and handling.
15. Restoration.

D. General discussion and questions.

E. Next meeting.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 19.23

PROGRESS MEETINGS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Progress meetings will be held on a regular basis throughout the Project. Remediation Contractor shall attend each progress meeting and be prepared to discuss in detail all items on the agenda.
   2. Remediation Engineer will preside at progress meetings and will prepare and distribute minutes of progress meetings to all meeting participants and others as requested.

B. Date and Time:
   1. Regular Meetings: Every week on a day and time agreeable to Owner, Remediation Engineer, and Remediation Contractor.
   2. Other Meetings: As required.

C. Location: Remediation Contractor's field office at the Site or other location mutually agreed upon by Owner, Remediation Engineer, and Remediation Contractor.

D. Handouts: Remediation Contractor shall bring to each progress meeting a minimum of 5 copies of each of the following:
   1. List of Work accomplished since the previous progress meeting.
   2. Up-to-date Progress Schedule.
   3. Up-to-date Schedule of Submittals.
   4. Detailed "look-ahead" schedule of Work planned for the next two weeks, with specific starting and ending dates for each activity, including shutdowns, deliveries of important materials and equipment, Milestones (if any), and important activities affecting Owner, the Project, and the Site.

1.02 ATTENDANCE

A. Representatives present for each entity shall be qualified and authorized to act on that entity's behalf.

B. Attendance:
   1. Remediation Contractor:
      a. Project manager.
      b. Site superintendent.
      c. Site health and safety officer.
      d. Field engineer.
      e. Forman.
      f. Representatives of other Subcontractors and Suppliers when needed for the discussion of a particular agenda item.
   2. Owner.
   3. Remediation Engineer.
      a. Project Manager
      b. Construction Manager
      c. Air Monitoring Technician

4. New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and City of Binghamton, if available.
5. Others as appropriate.

1.03 PRELIMINARY AGENDA

A. Review, comment, and amendment (if required) of minutes of previous progress meeting.

B. Safety and safe work practices.

C. Results of community air monitoring performed since previous progress meeting.

D. Review of progress since previous progress meeting.

E. Planned progress through next progress meeting.

F. Review of Progress Schedule:
1. Contract Times, including Milestones (if any).
2. Critical path.
3. Schedules for fabrication and delivery of materials and equipment.
4. Issues potentially affecting the Contract Times, including Milestones (if any).
5. Corrective measures, if required, to achieve Contract Times, including Milestones (if any).

G. Submittals:
1. Status of critical submittals.
2. Review of Schedule of Submittals and Remediation Engineer's submittal log.

H. Field observations, problems, and conflicts.

I. Quality standards, testing, and inspections.

J. Coordination between parties.

K. Site management issues, including access, security, temporary controls, maintenance and protection of traffic, and housekeeping.

L. Permits.

M. Punch list status, as applicable.

N. Other business.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. The Remediation Contractor shall prepare, submit, maintain, and update Progress Schedules in accordance with this Section, unless otherwise accepted by the Owner.
   2. The Owner's acceptance of the Progress Schedule, and comments or opinions concerning the activities in the Progress Schedule shall not control the Remediation Contractor's independent judgment relative to the means, methods, techniques, sequences, and procedures of construction. The Remediation Contractor is solely responsible for complying with the Contract Times.
   3. If the Progress Schedule reflects completion date(s) different than the Contract Times, the Contract Times are not thereby voided, nullified, or affected. The Contract Times govern. Where the Progress Schedule reflects completion date(s) that are earlier than the Contract Times, Owner may accept such Progress Schedule with Remediation Contractor to specifically understand that no Claim for additional Contract Times or additions to the Contract Price shall be brought against Owner resulting from Remediation Contractor's failure to complete the work by the earlier date(s) indicated on the accepted Progress Schedule.

B. Factors Affecting the Progress Schedule:
   1. In preparing the Progress Schedule, take into consideration submittal requirements and submittal review times, time for fabricating and delivering materials and equipment, work by subcontractors, availability and abilities of workers, availability of construction equipment, weather conditions, restrictions in operations at the Site and coordination with the Owner's operations, if any, and other factors that have the potential to affect completion of the work within the Contract Times.
   2. Comply with sequencing requirements, if any, indicated in the Contract Documents.

1.02 SUBMITTALS

A. Informational Submittals:
   1. Preliminary Progress Schedule: Submit preliminary Progress Schedule in accordance with this Section.
   2. Initial Progress Schedule: After making revisions in accordance with Owner's and/or Remediation Engineer's comments on the preliminary Progress Schedule, submit Initial Progress Schedule in accordance this Section.
   3. Progress Schedule Updates:
      a. Submit updated Progress Schedule at each progress meeting. Bring to meeting the minimum number of copies specified in Section 01 31 19.23, Progress Meetings.
      b. Submit each updated Progress Schedule with letter of transmittal complying with requirements of Section 01 33 00, Submittal Procedures and specifically indicating the following:
         1) Listing of activities and dates that have changed since the previous Progress Schedule submittal.
         2) Discussion of problems causing delays, anticipated duration of delays, and proposed countermeasures.
         3) Completed activities, if any, and the anticipated and actual durations of each.

c. If the Progress Schedule remains unchanged from one progress meeting to the next, submit a written statement to that effect.

4. Look-Ahead Schedules: Submit two-week look-ahead schedule at each progress meeting.
5. Recovery Schedules: Submit in accordance with this Section.

1.03 PROGRESS SCHEDULES

A. Format:
1. Type: Gantt chart prepared using Microsoft Project 2007 or later edition, Primavera P6, or similar scheduling software.
2. Sheet Size: 22 inches by 34 inches, unless otherwise accepted by Owner.
3. Time Scale: Indicate first date of each work week.
4. Organization:
a. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
b. Group construction into a separate sub-schedule (that is part of the Progress Schedule) by activity.
c. Group Work by Subcontractors into a separate sub-schedule (that is part of the Progress Schedule) by activity.
d. Group critical activities that dictate the rate of progress (the “critical path”) into a separate sub-schedule that is part of the Progress Schedule. Clearly indicate the critical path on the Progress Schedule.
e. Organize each sub-schedule by Specification Section or payment item number.
5. Activity Designations: Indicate title and related Specification Section or payment item number.

B. Content:
1. At a minimum, the following major work items should be included, with appropriate subtasks included as necessary, in the general sequence listed below:
a. Mobilization.
b. Site Preparation.
c. Temporary Containment System Installation
d. Sediment Removal and Backfilling.
e. Temporary Containment System Removal.
f. Site Restoration.
g. Demobilization.
2. Progress Schedules shall also indicate the following:
a. Dates for shop-testing.
b. Delivery dates for materials and equipment to be incorporated into the Work.
c. Dates for beginning and completing each phase of the Work by activity and by trade.
d. Dates for start-up, check-out, and field-testing.
e. Dates corresponding to the Contract Times, and planned completion date associated with each Milestone (if any), Substantial Completion, and readiness for final payment.

C. Progress Schedule Updates: Update Progress Schedule on a bi-weekly basis (i.e., every two weeks) and to reflect changes to the Contract Times, if any.

1.04 RECOVERY SCHEDULES

A. General:
1. When updated Progress Schedule indicates that the ability to comply with the Contract Times falls two or more weeks behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Times,

Remediation Contractor shall prepare and submit a Progress Schedule demonstrating Contractor's plan to accelerate the work to achieve compliance with the Contract Times ("recovery schedule") for Owner's acceptance.

2. Submit recovery schedule within three days after submittal of updated Progress Schedule where need for recovery schedule is indicated.

B. Implementation of Recovery Schedule:
   1. At no additional cost to Owner, do one or more of the following: furnish additional labor, provide additional construction equipment, provide suitable materials, employ additional work shifts, expedite procurement of materials and equipment to be incorporated into the Work, and other measures necessary to complete the Work within the Contract Times.
   2. Upon acceptance of recovery schedule by Owner, incorporate recovery schedule into the next Progress Schedule update.

C. Lack of Action: Remediation Contractor's refusal, failure, or neglect to take appropriate recovery action, or to submit a recovery schedule, shall constitute reasonable evidence that Remediation Contractor is not prosecuting the work or separable part thereof with the diligence that will ensure completion within the Contract Times.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

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SECTION 01 32 26

CONSTRUCTION PROGRESS REPORTING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall prepare and submit construction progress reports in accordance with this Section.
   2. Construction progress reports include:
      a. Daily construction reports
      b. Field condition reports

1.02 SUBMITTALS

A. Informational Submittals:
   1. Daily Construction Reports: Submit in accordance with Article 1.03 of this Section.
   2. Field Condition Reports: Submit in accordance with Article 1.04 of this Section.

1.03 DAILY CONSTRUCTION REPORTS

A. Prepare daily construction reports throughout the Project. Include in each report, at a minimum, the following:
   1. Remediation Contractor's name.
   2. Owner's name.
   3. Project name.
   4. Site name and location.
   5. Date and day of the week.
   6. High and low temperatures and general weather conditions.
   7. River conditions/elevation.
   8. Volume of material removed/placed that day.
   9. Total volume removed/placed to date.
   10. Daily production rate (sediment removed and backfill placed).
   11. Overall production rate to date (sediment removed and backfill placed).
   12. Debris encountered during sediment removal.
   13. Unusual conditions encountered during sediment removal.
   14. Visual output from positioning software (such as RTK DGPS positioning software) showing sediment removal areas completed to date.
   15. Results of progress bathymetry surveys.
   16. Summary of debris offloading activities for that day, including quantity
   17. Results of RTK-DGPS system verification.
   18. Major equipment and materials installed as part of the Work.
   19. Waste shipments.
   20. Meter readings and similar recordings.
   21. Work performed, including field quality control measures and testing.
   22. Number of Remediation Contractor employees at the Site.
   23. Number of employees at the Site for each Subcontractor.
   24. Breakdown of employees by trades.
   25. Major construction equipment used.
   26. Material and equipment deliveries.
   27. Services connected and disconnected.

28. Equipment or system tests and startups.
29. Stoppages, delays, shortages, and losses.
30. Accidents. Comply with accident reporting requirements of Section 01 35 29, Contractor's Health and Safety Plan.
31. Emergency procedures.
32. Meetings and significant decisions.
33. Orders and requests of authorities having jurisdiction.
34. Change Orders received and implemented.
35. Work Change Directives received and implemented.
36. Field Orders received and implemented.
37. RFI and clarifications submitted.
38. Other instructions received from Owner or Remediation Engineer.

B. Submit daily construction reports to Remediation Engineer by 9:00 a.m. the next working day after the day covered in the associated report. Daily report shall be signed by responsible member of Remediation Contractor's staff, such as Remediation Contractor's project manager, field superintendent, field engineer, or foreman designated by Remediation Contractor as having authority to sign daily reports.

1.04 FIELD CONDITION REPORTS

A. Immediately upon discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

B. Submit field condition reports to Remediation Engineer with request for interpretation, prepared in accordance with Section 01 26 00, Contract Modification Procedures.

PART 2– PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section specifies the general methods and requirements of submissions applicable to Remediation Contractor submittals, including plans, shop drawings, product data, samples, mock-ups, and schedules. Detailed and specific submittal requirements are provided elsewhere in the Specifications and are summarized in the submittal log form included with this Section.
   2. Provide submittals well in advance (as indicated in this Section) of the need for the material, equipment, or procedure (as applicable) in the Work and with ample time required for delivery of material or equipment and to implement procedures following Remediation Engineer's review or acceptance of the associated submittal. Work covered by a submittal will not be included in progress payments until review or acceptance of related submittals has been obtained in accordance with the Contract Documents.
   3. Remediation Contractor is responsible for dimensions to be confirmed and corrected at the Site, for information pertaining solely to the fabrication processes and to techniques of construction, and for coordinating the work of all trades. Remediation Contractor's signature of submittal's stamp and letter of transmittal shall be Remediation Contractor's representation that Remediation Contractor has met its obligations under the Contract Documents relative to that submittal.

B. Samples:
   1. Conform submittal of Samples to the Specification Section in which the Sample is specified.
   2. Furnish at the same time Samples and submittals that are related to the same unit of Work or Specification Section. Remediation Engineer will not review submittals without associated Samples, and will not review Samples without associated submittals.
   3. Samples shall clearly illustrate functional characteristics of product, all related parts and attachments, and full range of color, texture, pattern, and material.

C. Each submittal shall be prepared and transmitted to the Remediation Engineer a minimum of 10 working days in advance of the Remediation Contractor's intended performance of the related Work or other applicable activities, or within the time specified in the individual Work of other related Sections, so that Work will not be delayed by processing times (including rejections and resubmittals, if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. The Owner and/or Remediation Engineer will not be liable for any expense and/or delay resulting from the Remediation Contractor's failure to provide submittals in a timely manner.

D. The Remediation Engineer shall forward select submittals to New York State Department of Environmental Conservation (NYSDEC) for review, as requested by NYSDEC.

1.02 TYPES OF SUBMITTALS

A. Submittals are classified as Action Submittals, Informational Submittals, Closeout Submittals, and Maintenance Material Submittals. The type of each required submittal is designated in

the respective Specification Sections. When type of submittal is not specified in the associated Specification Section, submittal will be classified as follows:

1. Action Submittals include:
   a. Shop Drawings.
   b. Product data.
   c. Delegated design submittals, which include documents prepared, sealed, and signed by a design professional retained by Remediation Contractor, Subcontractor, or Supplier for materials and equipment to be incorporated into the completed Work. Delegated design submittals do not include submittals related to temporary construction unless specified otherwise in the related Specification Section. Delegated design submittals include design drawings, design data including calculations, specifications, certifications, and other submittals prepared by such design professional.
   d. Samples.
   e. Testing plans, procedures, and testing limitations.
2. Informational Submittals include:
   a. Certificates.
   b. Design data not sealed and signed by a design professional retained by Remediation Contractor, Subcontractor, or Supplier.
   c. Pre-construction test and evaluation reports, such as reports on pilot testing, subsurface investigations and similar reports.
   d. Supplier instructions, including installation data, and instructions for handling, starting-up, and troubleshooting.
   e. Source quality control submittals (other than testing plans, procedures, and testing limitations), including results of shop testing.
   f. Field quality control submittals (other than testing plans, procedures, and testing limitations), including results of operating and acceptability tests at the Site.
   g. Supplier reports.
   h. Sustainable design submittals (other than sustainable design closeout documentation).
   i. Special procedure submittals, including health and safety plans and other procedural submittals.
   j. Qualifications statements.
3. Closeout Submittals include:
   a. Maintenance contracts.
   b. Operations and maintenance data.
   c. Bonds, such as maintenance bonds and bonds for a specific product or system.
   d. Warranty documentation.
   e. Record documentation.
   f. Sustainable design closeout documentation.
   g. Software.
4. Maintenance Material Submittals include:
   a. Spare parts.
   b. Extra stock materials.
   c. Tools.
5. When type of submittal is not specified and is not included in the list above, Remediation Engineer will determine the type of submittal.

B. Not Included in this Section: Administrative and procedural requirements for the following are covered elsewhere in the Contract Documents:
   1. Requests for interpretations and clarifications of the Contract Documents.
   2. Field Orders, Work Change Directives, and Change Orders.
   3. Applications for Payment.
   4. Progress Schedules.

5. Progress reports.
6. Photographic documentation.
7. Reports and documentation required in accordance with applicable permits.
8. Site survey data.

1.03 SUBMITTALS REQUIRED IN THIS SECTION

A. Informational Submittals:
   1. Schedule of Submittals:
      a. Timing:
         1) Provide submittal within time frames specified in Attachment A – Submittal Log.
         2) Provide updated Schedule of Submittals with each submittal of the updated Progress Schedule.
      b. Content: Requirements for content of preliminary Schedule of Submittals and subsequent submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Indicate submittals that are on the Project's critical path. Indicate the following for each submittal:
         1) Date by which submittal will be provided to Remediation Engineer.
         2) Whether submittal will be for a substitution or "equal".
         3) Date by which Remediation Engineer's response is required. At least 10 working days shall be allowed from Remediation Engineer's receipt of each submittal. Allow increased time, up to 20 working days, for large or complex submittals.
         4) For submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of other contractors.
      c. Prepare Schedule of Submittals using same software, and in same format, specified in Section 01 32 16, Construction Progress Schedule.
      d. Coordinate Schedule of Submittals, as specified in Section 01 32 16, Construction Progress Schedule.
      e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate submittals on the Project's critical path, or that that places extraordinary demands on Remediation Engineer for time and resources, is unacceptable. Do not include submittals not required by the Contract Documents.
      f. In preparing Schedule of Submittals:
         1) Considering the nature and complexity of each submittal, allow sufficient time for review and revision.
         2) Reasonable time shall be allowed for Remediation Engineer's review and processing of submittals, for submittals to be revised and resubmitted, and for returning submittals to Remediation Contractor.
         3) Identify and accordingly schedule submittals that are expected to have long anticipated review times and submittals that may be subject to review by NYSDEC or other authorities having jurisdiction.

1.04 PROCEDURE FOR SUBMITTALS

A. Submittal Identification System: Use the following submittal identification system, consisting of submittal number and review cycle number.
   1. Submittal number shall be separate and unique number correlating to each individual submittal required. Remediation Contractor shall assign submittal number as follows:
      a. First part of submittal number shall be the applicable Specification Section number, followed by a hyphen.

b. Second part of submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate and unique submittal provided under the associated Specification Section.
c. Typical submittal number for the third submittal provided for Section 31 05 05, Aggregates for Earthwork would be "31 23 00-003".

2. Review cycle number shall be a letter designation indicating the initial submittal or re-submittal associated with each submittal number:
   a. "A" = Initial (first) submittal.
   b. "B" = Second submittal (i.e., first re-submittal).
   c. "C" = Third submittal (i.e., second re-submittal).
3. Typical submittal identification for the second submission (first re-submission) of the third submittal provided for Section 31 05 05, Aggregates for Earthwork would be "31 23 00-003-B".

B. Letter of Transmittal for Submittals:
   1. Provide separate letter of transmittal with each submittal. Each submittal shall be for one Specification Section.
   2. Each letter of transmittal shall contain the following:
      a. Remediation Contractor's name.
      b. Owner's name.
      c. Project name.
      d. Contract or Purchase Order number.
      e. Transmittal number.
      f. Submittal number and review cycle.
      g. Submittal date and dates of any previous submissions.
      h. Reference to appropriate Specification Section number, page, and paragraph(s).
      i. Reference to appropriate Drawing sheet(s) and detail(s).
      j. Clear space at least three inches by three inches in size for affixing Remediation Engineer's review stamp.
      k. Clear space suitably sized for affixing Remediation Contractor's stamp.
   3. For submittals with proposed deviations from requirements of the Contract Documents, letter of transmittal shall specifically describe each proposed variation.

C. Remediation Contractor's Review and Stamp:
   1. Remediation Contractor's Review: Before transmitting submittals to Remediation Engineer, review submittals to:
      a. Ensure proper coordination of the Work.
      b. Determine that each submittal is in accordance with Remediation Contractor's desires.
      c. Verify that submittal contains sufficient information for Remediation Engineer to determine compliance with the Contract Documents.
   2. Incomplete or inadequate submittals will be returned without review.
   3. Remediation Contractor's Stamp and Signature:
      a. Each submittal provided shall bear Remediation Contractor's stamp of approval and signature, as evidence that submittal has been reviewed by Remediation Contractor and verified as complete and in accordance with the Contract Documents.
      b. Submittals without Remediation Contractor's stamp and signature will be returned without review.
      c. Remediation Contractor's stamp shall contain the following certification statement:

         "By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data, and I have checked and coordinated each item with other applicable Shop Drawings and all Project requirements."

D. Submittal Marking and Organization:
   1. Mark each page of submittal, and each individual component submitted, with submittal number and applicable Specification paragraph.
   2. Arrange submittal information in same order as requirements are written in the associated Specification Section.
   3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Remediation Engineer.
   4. Package together submittals for the same Specification Section. Do not provide required information piecemeal.

E. Format of Submittal and Recipients:
   1. Action Submittals and Informational Submittals: Provide Action Submittals and Informational Submittals as electronic files in PDF format, except that submittals of Samples shall be as specified in Paragraph 1.04.E.2 of this Section.
   2. Samples:
      a. Securely label or tag Samples with submittal identification number. Label or tag shall include clear space at least three inches by three inches in size for affixing Remediation Engineer's review stamp. Label or tag shall not cover, conceal, or alter appearance or features of Sample. Label or tag shall not be separated from the Sample.
      b. Submit number of Samples required in Specifications. If number of Samples is not specified in the associated Specification Section, provide at least three identical Samples of each item required for Remediation Engineer's review. Samples will not be returned to Remediation Contractor. If Remediation Contractor requires Sample(s) for Remediation Contractor's use, notify Remediation Engineer in writing and provide additional Sample(s). Remediation Contractor is responsible for furnishing, shipping, and transporting additional Samples.
      c. Deliver one Sample to Remediation Engineer's field office at the Site. Deliver balance of Samples to Remediation Engineer's office, unless otherwise directed by Remediation Engineer.
   3. Closeout Submittals:
      a. Provide the following Closeout Submittals as electronic files in PDF format:
         1) Maintenance contracts.
         2) Operations and maintenance data.
         3) Bonds for specific products or systems.
         4) Warranty documentation.
         5) Sustainable design closeout documentation.
      b. Record Documentation: Submit in accordance with Section 01 78 39, Project Record Documents.
      c. Software: Submit number of copies required in Specification Section where the software is specified. If number of copies is not specified, provide two copies on compact disc in addition to software loaded on to Owner's computer(s) or microprocessor(s).
   4. Maintenance Material Submittals: For spare parts, extra stock materials, and tools, submit quantity of items specified in associated Specification Section.

F. Distribution:
   1. Remediation Engineer will distribute each reviewed submittal requiring Remediation Engineer's written response as electronic file in PDF format.
   2. Remediation Contractor shall distribute hardcopy reproductions of reviewed submittals, where required, to the job site file and elsewhere, as directed by Remediation Engineer. Number of hardcopies shall be as directed by Remediation Engineer, but will not exceed six.

G. Resubmittals: Resubmittal requirements are provided in Article 1.05 of this Section.

H. Remediation Engineer's Submittal Log:
   1. Remediation Engineer will maintain a log of required submittals using the form included with this Section. Updated submittal log will be provided to Remediation Contractor upon request.
   2. Review submittal log and status of each submittal with Remediation Engineer on a weekly or more frequent basis.
   3. Coordinate updates to Schedule of Submittals with Remediation Engineer's updates to submittal log.

1.05 REMEDIATION ENGINEER'S REVIEW

A. Timing: Remediation Engineer's review will conform to timing accepted by Remediation Contractor in the accepted Schedule of Submittals.

B. Submittals not required in the Contract Documents will not be reviewed by Remediation Engineer and will not be recorded in Remediation Engineer's submittal log. Hardcopies, if any, of such submittals will be returned to Remediation Contractor.

C. Results of Remediation Engineer's Review:
   1. Action Submittals: Each submittal will be given one of the following dispositions:
      a. Reviewed: Upon return of submittal marked "Reviewed", order, ship, or fabricate materials and equipment included in the submittal (pending Remediation Engineer's review or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents.
      b. Reviewed and Noted: Upon return of submittal marked "Reviewed and Noted", order, ship, or fabricate materials and equipment included in the submittal (pending Remediation Engineer's review or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents, provided it is in accordance with corrections indicated.
      c. Revise and Resubmit: Upon return of submittal marked "Revise and Resubmit", make the corrections indicated and re-submit to Remediation Engineer for review.
      d. Rejected: This disposition indicates material or equipment that cannot be reviewed. Upon return of submittal marked "Rejected", repeat initial submittal procedure utilizing reviewable material or equipment.
   2. Informational Submittals:
      a. Each submittal will be given one of the following dispositions:
         1) Accepted: Information included in submittal conforms to the applicable requirements of the Contract Documents, and is acceptable. No further action by Remediation Contractor is required relative to this submittal, and the Work covered by the submittal may proceed, and products with submittals with this disposition may be shipped or operated, as applicable.
         2) Not Accepted: Submittal does not conform to applicable requirements of the Contract Documents and is not acceptable. Revise submittal and re-submit to indicate acceptability and conformance with the Contract Documents.
      b. The following types of Informational Submittals, when acceptable to Remediation Engineer, will not receive a written response from Engineer. Disposition as "Accepted" will be recorded in Remediation Engineer's submittal log. When submittals of the following are not acceptable, Remediation Engineer will provide written response to Contractor:
         1) Safety data sheets.
         2) Manifests and other shipping documents.

3) Delivery tickets.
4) Compaction testing reports.
5) Concrete testing reports.
6) Manufacturer's instructions.

3. Closeout Submittals: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Closeout Submittals will not receive a written response from Remediation Engineer. Disposition as "Accepted" will be recorded in Remediation Engineer's submittal log. When Closeout Submittal is not acceptable, Remediation Engineer will provide written response to Remediation Contractor.
4. Maintenance Material Submittals: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Maintenance Material Submittals will not receive a written response from Remediation Engineer. Disposition as "Accepted" will be recorded in Remediation Engineer's submittal log. When Maintenance Material Submittal is not acceptable, Remediation Engineer will provide written response to Remediation Contractor, and Remediation Contractor is responsible for costs associated with transporting and handling of maintenance materials until compliance with the Contract Documents is achieved.

PART 2– PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 ATTACHMENTS

A. The form listed below, which follows after the "End of Section" designation, is part of this Specification Section:
   1. Attachment A: Remediation Engineer's submittal log form (2 pages).

END OF SECTION

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Attachment A
Contractor Submittal Log

NYSEG
Binghamton Court Street Former MGP Site
Binghamton, New York

Submittal Reference No.	Specification / Document Reference	Submittal Description	Date Received	Interim Status/Date (see Note 1)	Final Status/Date (see Note 1)	Notes
	Section 01 15 00	Remediation Contractor's Project Operation Plan (POP) (see specification for requirements)				
	Section 01 26 00	Contractor Modifications (as necessary)				
	Section 01 31 19.13	Preliminary Progress Schedule				
		Preliminary Schedule of Submittals				
	Section 01 32 16	Preliminary Progress Schedule (same as for Section 01 31 19.13)				
		Initial Progress Schedule				
		Progress Schedule Updates (as necessary)				
		Look-Ahead Schedules				
		Recovery Schedules (as necessary)				
	Section 01 32 26	Daily Construction Reports				
		Field Condition Reports (as necessary)				
	Section 01 35 29	Remediation Contractor's Health and Safety Plan (HASP) (see specification for requirements)				
		Qualification Statements - HASP preparer and Site Health and Safety Officer				
		Accident Reports (as necessary)				
		Daily Health and Safety Field Report				
	Section 01 35 43.13	Information for Hazardous materials proposed for use at the site (see specification requirements)				
		Information for Hazardous Materials generated on-site (see specification requirements)				
		Hazardous Materials Management Plan Components (as necessary)				
		Copies of permits for storing, handling, using, transporting, and disposing of hazardous materials				
	Section 01 41 26	Storm Water Permit Certification Statement				
		Qualifications Statement - Inspector				
		Storm Water Inspection Reports				
	Section 01 52 13	Field Office submittal: site plan, utility providers, and product data				
	Section 01 53 53	Shop Drawings - Temporary Water Treatment and Management System (see specification for requirements)				
		Operation and Maintenance Manual				
	Section 01 57 05	Erosion And Sediment Control Plan (may be within POP - Section 01 15 00)				
		Turbidity and Sheen Control Plan (may be within POP - Section 01 15 00)				
		Noise Control Plan (may be within POP - Section 01 15 00)				
		Odor, Dust, and Vapor Control Plan (may be within POP - Section 01 15 00)				
		Pollution Control Plan (may be within POP - Section 01 15 00)				
		Product data - Rolled Erosion Control Materials (silt fencing)				
		Product data - Erosion Control mat/netting, staples, and anchors (if used)				
		Product data - oil absorbent boom materials				
		Product data - vapor mitigation agent (for each product)				
	Section 01 58 13	Shop drawing - project identification sign, including proposed locations				
		Shop drawing - project contact sign, including proposed locations				
	Section 01 71 23	Survey Plan (may be within POP - Section 01 15 00)				
		Survey Data and Drawing (see specification for requirements)				
		Qualifications Statement				
	Section 01 74 19	Waste Management Plan (see specification for requirements)				
		Waste Profile - Preliminary				
		Waste Profile - Final				
		Disposal Records - Recycling and Processing				
		Disposal Records - Landfill and LTTD				
	Section 01 77 19	Information for application for Final Certification Inspection (see specification for requirements)				
		Truck Volume Counts and Measurement Summary				
	Section 01 78 39	Record Documents (see specification for requirements)				
	Section 02 21 19	Qualifications Statement - Professional Engineer				
		Notification of intended survey start				
		Survey data (see specification for requirements)				
	Section 02 51 00	Safety data sheets for cleaning/decontamination solutions (to be included in HASP)				
	Section 02 61 15	Product data - sediment drying agent				
		Waste Management Plan (see specification for requirements, same as for Section 01 74 19)				
		Transport Permits, Licenses and Approvals				
		Waste transporter permits				
		Inspection Reports for vessels				

Attachment A
Contractor Submittal Log

NYSEG
Binghamton Court Street Former MGP Site
Binghamton, New York

Submittal Reference No.	Specification / Document Reference	Submittal Description	Date Received	Interim Status/Date (see Note 1)	Final Status/Date (see Note 1)	Notes
	Section 31 05 05	Supplier name, source address, copy of NYSDEC mining permit, proof of NYSDOT approval				
		Grain size profile of each material, as necessary				
		Analytical testing data, as necessary				
		Delivery tickets (see specification for requirements)				
	Section 31 05 19.13	Product data - geotextile				
		Certificates of compliance				
		Lot and roll numbers				
	Section 31 05 19.16	Written certification of minimum test values				
		Manufacturer's standard warranty				
		QC test results				
		Remediation Contractor's written certification of field-delivered material				
		Lot and roll numbers				
	Section 31 09 13	Qualifications Statement - instrumentation personnel				
		Special Instrumentation Installation Plan (may be within POP - Section 01 15 00)				
		Manufacturers technical specifications				
		Monitoring Reports				
	Section 31 11 00	Remediation Contractor's warranty				
	Section 31 52 13	Certifications - welder, licensed installer				
		Resumes for sheet pile enclosure installment crew				
		Sheet Piling Installation Plan (see specification for requirements)				
		Sheeting Installation Contingency Measures (see specification for requirements)				
		Alternative Installation Approaches				
		Sheet pile installation records				
	Section 32 12 00	Shop drawings (see specification for requirements)				
		Qualifications Statement - asphalt concrete production facility				
		Qualifications Statement - Testing Laboratory				
		Quality assurance test data - field test results (see specification for requirements)				
		Field Quality Control Test Results				
		Material delivery tickets				
	Section 32 90 00	Restoration Schedule				
		Manufacturer's Product Data (see specification for details)				
	Section 32 92 00	Manufacturer's Product Data				
		Product Data - fertilizers				
		Product Data - Hydroseed mixture (see specification for requirements)				
		Suppliers Certifications - each erosion control seed mixture				
		Manufacturer's Data - Erosion Control materials				
	Section 35 20 23	Sediment Removal and Backfill Plan (see specification for requirements)				
		Material delivery tickets				

Notes:

R - Reviewed
N - Reviewed and Noted
S - Resubmit
J - Rejected
I - For your information

SECTION 01 35 29

CONTRACTOR'S HEALTH AND SAFETY PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall prepare and maintain a written, Site-specific Health and Safety Plan (HASP), and conduct all construction activities in a safe manner that avoids:
      a. Injuries to employees, Subcontractors, and other persons with an interest at or near the Site.
      b. Employee exposures to health hazards above occupational limits established respectively by the Occupational Safety and Health Administration (OSHA), American Conference of Governmental Industrial Hygienists (ACGIH), and Nuclear Regulatory Commission (NRC), as applicable.
      c. Exposure of the public and Owner's employees to air contaminants above levels established for public exposure by United States Environmental Protection Agency (USEPA), NRC, New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and other authorities having jurisdiction at the Site.
      d. Significant increases in concentrations of contaminants in soil, water, or sediment near the Site.
      e. Violations of the Occupational Safety and Health Act, or other Laws or Regulations.

1.02 QUALITY ASSURANCE

A. Qualifications:
   1. HASP Preparer:
      a. Engage a certified industrial hygienist, accredited by the American Board of Industrial Hygiene, or safety professional certified by the Board of Certified Safety Professionals, to prepare or supervise preparation of Remediation Contractor's HASP.
   2. Site Health and Safety Officer (SHSO):
      a. Engage a certified industrial hygienist, accredited by the American Board of Industrial Hygiene, or safety professional certified by the Board of Certified Safety Professionals, to manage, oversee, and enforce Remediation Contractor's health and safety program at the Site, and ensure compliance with Remediation Contractor's HASP and applicable Laws and Regulations during the Project. Remediation Contractor's safety representative shall have a minimum of five years direct construction safety experience and appropriate training to supervise Hazardous Waste operations and emergency response (HAZWOPER) activities.
      b. Remediation Contractor's safety representative shall be present at the Site at all times when Work is being performed, and shall be dedicated solely to the supervision of Remediation Contractor's health and safety program.
      c. Responsibilities include, but are not necessarily limited to, the following:
         1) Supervising the implementation of Remediation Contractor's HASP.
         2) Providing health and safety orientation training to Remediation Contractor's employees, Subcontractors, and Site visitors.
         3) Attending pre-construction conference, progress meetings, and other Project meetings, as required.

4) Preparing and maintaining health and safety records and statistics.
5) Leading and documenting daily job safety briefings.
6) Preparing and submitting accident reports in accordance with Article 1.05 of this Section.
7) Leading accident investigations on Remediation Contractor's behalf.
8) Preparing and submitting daily health and safety field reports in accordance with Article 1.06 of this Section.

B. Regulatory Requirements:
1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
a. 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses.
b. 29 CFR 1910, Occupational Safety and Health Standards.
c. 29 CFR 1926, Safety and Health Regulations for Construction.
d. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
e. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
f. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
g. 6 NYCRR 375, Environmental Remediation Programs.
h. 12 NYCRR 23, Protection in Construction, Demolition, and Excavation Operations.
i. 12 NYCRR 57, High Voltage Proximity.
j. 12 NYCRR 59, Workplace Safety and Loss Prevention Program.
k. 12 NYCRR 61, Occupational Licensing and Certification.
l. 16 NYCRR 753, Protection of Underground Facilities.
m. 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.

1.03 SUBMITTALS

A. Informational Submittals:
1. Remediation Contractor's HASP: Submit in accordance with Article 1.04 of this Section.
2. Qualifications Statements:
a. HASP Preparer: Submit name and qualifications of certified industrial hygienist or safety professional, including summary of experience and copy of valid certifications.
b. SHSO: Submit name and qualifications of safety representative, including summary of experience, training received, and copy of valid certifications applicable to the Project.
3. Reports:
a. Accident Reports: Submit in accordance with Article 1.05 of this Section.
b. Daily Health and Safety Field Reports: Submit in accordance with Article 1.06 of this Section.
4. Submit in accordance with Article 1.07 of this Section, the following valid training certificates:
a. Initial 40-hour HAZWOPER training.
b. Initial 24-hour HAZWOPER training.
c. Eight-hour HAZWOPER supervisor training.
d. Annual eight-hour HAZWOPER refresher training.

1.04 HASP SUBMITTAL

A. General:
1. Each employer working at the Site shall develop and implement a written HASP for its employees involved in Hazardous Waste operations. HASP shall include procedures that

will be used to ensure the safe handling of Hazardous Waste during excavating, loading, and transporting activities.

2. Comply with 29 CFR 1904, 29 CFR 1910, 29 CFR 1926, 12 NYCRR 23, 12 NYCRR 56, 12 NYCRR 57, 12 NYCRR 59, 12 NYCRR 61, 17 NYCRR 32, and other Laws and Regulations.
3. Include in HASP requirements for complying with Owner's health and safety requirements and Site-specific hazard/emergency response plans, if any.
4. HASP shall be kept at the Site, shall address safety and health hazards of each phase of operations at the Site, and shall include requirements and procedures for employee protection.

B. HASP Contents: HASP shall address and include the following:
   1. Organizational Structure:
      a. Specific chain of command and overall responsibilities of supervisors and employees. Include the following:
         1) Designation of general supervisor who has responsibility and authority to direct all Hazardous Waste operations.
         2) Name of Remediation Contractor's SHSO who has responsibility and authority to implement and modify the HASP and verify compliance.
         3) Other personnel required for Hazardous Waste operations at the Site and emergency response, and general functions and responsibilities of each.
         4) Lines of authority, responsibility, and communication.
      b. Review and update organizational structure as necessary to reflect current status of Site operations and personnel.
   2. Site description, background, and scope of Work.
   3. Safety and health risk or hazard analysis, and planned hazard controls, for each task and operation required to complete the Project.
   4. Site control measures, including:
      a. Preventing trespassing.
      b. Preventing unqualified or unprotected workers from entering restricted areas.
      c. Preventing the "tracking" of contaminants out of the Site.
      d. Maintaining a log of employees at the Site and visitors to the Site.
      e. Delineating exclusion, contamination reduction, and support zones.
      f. Locating personnel and equipment decontamination zones.
      g. Communicating routes of escape and gathering points.
   5. Training Program:
      a. Initial training requirements for Site workers and supervisors.
      b. Exceptions to initial training requirements.
      c. Site briefings for visitors and workers.
      d. Refresher training requirements.
      e. Certification of training for all Remediation Contractor and Subcontractor employees assigned to the Project.
   6. Medical Surveillance Program:
      a. Provisions of the Site medical surveillance program.
      b. Communication protocols between the Site, physicians, and workers.
      c. Medical recordkeeping procedures.
      d. Certification of medical clearance for all Contractor and Subcontractor employees assigned to the Project.
   7. Personal Protective Equipment (PPE):
      a. PPE selection criteria.
      b. Site- and task-specific PPE ensembles.
      c. Training in the use of PPE.
      d. Respiratory protection.

e. Hearing conservation.
f. PPE maintenance and storage.

8. Exposure Monitoring Program:
   a. Monitoring procedures to detect the presence of hazardous substances.
   b. Monitoring procedures to determine worker exposures to hazardous substances and physical hazards.
   c. Action levels and required responses for known and expected hazardous substances and physical hazards.
   d. Calibration and maintenance procedures for monitoring equipment.
9. Heat stress prevention program.
10. Spill containment program. Comply with Section 01 35 43.13, Environmental Procedures for Hazardous Materials.
11. Decontamination Program:
    a. Location and type of temporary decontamination facilities.
    b. General and specific decontamination procedures for personnel and PPE.
    c. General and specific decontamination procedures for equipment and vehicles.
    d. Disposal of residual waste from decontamination.
    e. Decontamination equipment and materials.
    f. Monitoring procedures used to evaluate the effectiveness of decontamination.
12. Emergency Response Plan:
    a. Potential emergencies that may occur at the Site.
    b. Pre-emergency planning.
    c. On-site emergency response equipment, materials, and PPE.
    d. Emergency Maps: Evacuation routes, gathering points, and route to nearest hospital.
    e. Emergency roles and responsibilities.
    f. Emergency alerting and evacuation procedures for Site personnel.
    g. Procedures for notifying, and list of emergency contact information for:
       1) Emergency responders, including fire officials, ambulance service, poison control, police, and local hospitals.
       2) Authorities having jurisdiction.
       3) Owner and Remediation Engineer.
       4) Remediation Contractor's project manager, Site superintendent, SHSO, and foreman.
       5) Other entities, as required.
    h. Emergency response procedures.
    i. Emergency decontamination, medical treatment, and first-aid.
    j. Emergency response training.
13. Other standard operating procedures applicable to the Work.

C. Submittal Procedure:
   1. Submit HASP to Remediation Engineer the sooner of: seven days prior to pre-construction conference, or 30 days prior to Remediation Contractor's scheduled mobilization to the Site.
   2. Remediation Engineer's review and acceptance of HASP will be only to determine if the topics covered in HASP comply with the Contract Documents. Remediation Engineer's review and acceptance will not extend to safety measures, means, methods, techniques, procedures of construction, or whether representations made in the HASP comply with Laws and Regulations, or standards of good practice.
   3. Do not perform Work at the Site until written HASP has been accepted by Remediation Engineer.
   4. Notwithstanding other provisions of the Contract Documents, changes in the Contract Price or Contract Times will not be authorized due to delay by Remediation Contractor in developing, submitting, or revising the HASP.

1.05 ACCIDENT REPORTING AND INVESTIGATION

A. Immediately notify Owner and Remediation Engineer of all accidents that:
   1. Result in bodily injury, illness, or property damage.
   2. Affect the environment.
   3. Involve the public.

B. Submit accident report to Owner and Remediation Engineer within 24 hours after accident occurs. Include in each report the following:
   1. Date, time, and location of accident.
   2. Names of all Site personnel involved in or affected by accident.
   3. Description of accident and activities being performed when accident occurred.
   4. Medical treatment administered, if any.
   5. Nature and seriousness of injury or damage.

C. Comply with 29 CFR 1904.29, including using OSHA 300, 300-A, and 301 forms (or equivalent) to document all accidents that result in bodily injury.

D. Based upon results of accident investigation, modify HASP as required by changing tasks or procedures to prevent reoccurrence of accident.

E. Post current copy of Remediation Contractor's OSHA 300-A report at conspicuous place at the Site from February 1 through April 30 of each year.

1.06 DAILY HEALTH AND SAFETY FIELD REPORTS

A. Prepare daily health and safety field reports throughout the Project. Include in each report, at a minimum, the following:
   1. Remediation Contractor's name.
   2. Owner's name.
   3. Project name.
   4. Site name and location.
   5. Date and day of the week.
   6. Weather conditions.
   7. Delays encountered in construction.
   8. Acknowledgment of deficiencies noted along with corrective actions taken on current and previous deficiencies.
   9. Daily health and safety exposure monitoring results, documentation of instrument calibration, new hazards encountered, and PPE utilized.
   10. Problems, real or anticipated, encountered during the Work that should be brought to the attention of Owner, Remediation Contractor's SHSO, and Remediation Engineer.
   11. Deviations from planned Work described in previously-submitted daily health and safety field report(s).

B. Submit daily health and safety field reports to Remediation Engineer by 9:00 a.m. the next working day after the day covered in the associated report. Daily reports shall be signed by the Remediation Contractor's safety representative.

1.07 RECORDS

A. Retain at the Site complete and accurate health and safety records for all Remediation Contractor and Subcontractor employees assigned to the Project. Records shall include, at a minimum, the following:

1. Valid Training Certificates:
    a. Initial 40-hour HAZWOPER training.
    b. Initial 24-hour HAZWOPER training.
    c. Eight-hour HAZWOPER supervisor training.
    d. Annual eight-hour HAZWOPER refresher training.
    e. 10-hour construction safety training.
    f. First-aid/cardiopulmonary resuscitation training.
    g. Other training required by Remediation Contractor's HASP.
2. Valid medical clearance certificates.
3. Valid respirator fit test certificates.
4. Accident reports, prepared in accordance with Article 1.05 of this Section.
5. Daily health and safety field reports, prepared in accordance with Article 1.06 of this Section.
6. Other records required by Laws and Regulations.

B. Keep records up-to-date throughout the Project.

C. Remediation Contractor's SHSO shall meet at least monthly with Owner and Remediation Engineer to review Remediation Contractor's health and safety records and verify compliance with this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 43.13

ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall develop, implement, and maintain a Hazardous Materials Management Program (HMMP) throughout the Project, in accordance with Laws and Regulations.
      a. Hazardous Materials Brought to Site by Remediation Contractor: Transport, handle, store, label, use, and dispose of in accordance with this Section, and Laws and Regulations.
      b. Hazardous Material Generated by Remediation Contractor:
         1) Hazardous Material shall be properly handled, stored, labeled, transported, and disposed of by Remediation Contractor in accordance with Laws and Regulations, and this Section.
         2) If Remediation Contractor will generate or has generated Hazardous Material at the Site, obtain Owner's United States Environmental Protection Agency (USEPA) identification number listing Owner's name and address of the Site as generator of the Hazardous Material.
         3) Remediation Contractor shall be responsible for identifying, characterizing, profiling, transporting, and disposing of Hazardous Material generated by Remediation Contractor.
      c. Fines or civil penalties levied against Owner for violations committed at the Site by Remediation Contractor, and costs to Owner (if any) associated with cleanup of Hazardous Materials shall be paid by Remediation Contractor.

B. Enforcement of Laws and Regulations:
   1. Interests of Owner are that accidental spills and emissions, Site contamination, and injury of personnel at the Site are avoided.
   2. When Owner is aware of suspected violations, Owner will notify Remediation Contractor, and authorities having jurisdiction if Owner reasonably concludes that doing so is required by Laws or Regulations.

1.02 DEFINITIONS

A. The following terms are defined for this Section and supplement the terms defined in the General Conditions:
   1. Hazardous Material: Material, whether solid, semi-solid, liquid, or gas, that, if not stored or used properly, may cause harm or injury to persons through inhalation, ingestion, absorption or injection, or that may negatively impact the environment through use or discharge of the material on the ground, in water (including groundwater), or to the air. Hazardous Material includes, but is not limited to, chemicals, Asbestos, Hazardous Waste, polychlorinated biphenyls (PCBs), Petroleum, Radioactive Material, and which is or becomes listed, regulated, or addressed pursuant to the following:
      a. Comprehensive Environmental Response, Compensation, and Liability Act, 42 United States Code (USC) §§9601 et seq. ("CERCLA").
      b. Hazardous Materials Transportation Act, 49 USC §§1801 et seq.
      c. Resource Conservation and Recovery Act, 42 USC §§6901 et seq. ("RCRA").

d. Toxic Substances Control Act, 15 USC §§2601 et seq.
e. Clean Water Act, 33 USC §§1251 et seq.
f. Clean Air Act, 42 USC §§7401 et seq.
g. Any other Law or Regulation regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:
1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
a. 29 CFR 1910, Occupational Safety and Health Standards.
b. 29 CFR 1926, Safety and Health Regulations for Construction.
c. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
d. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
e. 6 NYCRR 364, Waste Transporter Permits.
f. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
g. 6 NYCRR 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities.
h. 6 NYCRR 375, Environmental Remediation Programs.
i. 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.

1.04 SUBMITTALS

A. Informational Submittals:
1. Hazardous Materials (including Chemicals) Proposed for Use at the Site: Submit current (dated within the past two years) safety data sheets (SDSs) in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard), manufacturer, Supplier (if different than manufacturer), container size(s) and number of containers proposed to be at the Site, minimum and maximum volume of material intended to be stored at the Site, and description of process or procedures in which Hazardous Material will be used. Furnish information in sufficient time to obtain Remediation Engineer's acceptance no later than at least three days before bringing Hazardous Material to the Site.
2. Hazardous Material Generated at the Site: Submit for each Hazardous Material generated at the Site identification number, analysis results, and number and size of storage containers at the Site. Furnish information not less than three days after Remediation Contractor's receipt of analytical results.
3. Permits: Submit copies of permits for storing, handling, using, transporting, and disposing of Hazardous Materials, obtained from authorities having jurisdiction.
4. Other Documents required for the HMMP: Submit requested documents within three days of Remediation Contractor's receipt of request. HMMP documents may include communication plan, emergency/spill response plan, and other documents.

1.05 HAZARDOUS MATERIALS MANAGEMENT

A. Obtain Owner's acceptance before bringing each Hazardous Material to the Site.

B. Communication Plan: Remediation Contractor shall develop a Hazardous Materials communication plan. At a minimum, maintain at the Site two notebooks containing the following:
1. Inventory of Hazardous Materials, including all chemicals.

2. Current (dated within the past two years) SDSs for all materials being used to accomplish the Work, whether or not defined as Hazardous Material in this Section. Keep one notebook in Remediation Contractor's field office at the Site; keep second notebook at location acceptable to Owner and Remediation Engineer. Keep notebooks up-to-date as materials are brought to and removed from the Site.

C. Emergency/Spill Response Plan: Develop, implement, and maintain an emergency/spill response plan, for each Hazardous Material or each class/group of Hazardous Materials as applicable. Response plan shall include, at a minimum, the following:
   1. Description of equipment and materials available at the Site to contain a spill of, or respond to an emergency related to, the material.
   2. Procedures for notifying, and list of emergency contact information for:
      a. Authorities having jurisdiction.
      b. Emergency responders.
      c. Remediation Contractor's project manager, Site superintendent, site health and safety officer (SHSO), and foreman.
      d. Owner and Remediation Engineer.
      e. Other entities as required.
   3. Response coordination procedures between Remediation Contractor, Owner, Remediation Engineer, and others as appropriate.
   4. Site plan showing proposed location of Hazardous Materials storage area, location of spill containment/response equipment and materials, and location of storm water drainage inlets and drainage routes.
   5. Description of Hazardous Material handling and spill response training provided to Remediation Contractor's and Subcontractors' employees, in accordance with 29 CFR 1926.21(b) and other Laws and Regulations.

D. Storage of Hazardous Materials and Non-Hazardous Materials:
   1. Hazardous Materials containers shall bear applicable hazard diamond(s).
   2. Container Labeling:
      a. Properly label each container of consumable materials, whether or not classified as Hazardous Materials under this Section.
      b. Stencil Remediation Contractor's name and, as applicable, Subcontractor's name, on each vessel containing Hazardous Material and, for non-Hazardous Materials, on each container over five-gallon capacity. Containers shall bear securely-attached label clearly identifying contents. Label containers that are filled from larger containers.
      c. If Owner or Remediation Engineer becomes aware of unlabeled containers at the Site, Owner will notify Remediation Contractor. Properly label container(s) within one hour of receipt of notification or remove container from the Site.
   3. To greatest extent possible, store Hazardous Materials off-site until required for use in the Work.

E. Hazardous Materials Storage Area:
   1. Maintain designated storage area for Hazardous Materials that includes secondary containment. Storage area shall include barriers to prevent vehicles from colliding with storage containers, and shall include protection from environmental factors such as weather.
   2. Provide signage in accordance with Laws and Regulations, clearly identifying the Hazardous Materials storage area.

F. Remediation Contractor's SHSO shall meet at least monthly with Owner, Remediation Contractor's project manager, and Remediation Engineer to review Remediation Contractor's HMMP documents and procedures, and inspect storage areas and the Site in general, to verify compliance with this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 49

COMMUNITY AIR MONITORING PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor and Remediation Engineer shall provide all labor, materials, equipment, services, and incidentals as specified and required to comply with the Project's Community Air Monitoring Plan (CAMP), respectively. The CAMP is part of the Contract Documents.
   2. Remediation Engineer shall perform community air monitoring on a continuous basis during all ground-intrusive Work or dust-generating Work. Community air monitoring includes:
      a. Real-time air monitoring for total volatile organic compounds (TVOCs) and particulate matter less than 10 micrometers in diameter (PM_{10}).
      b. Periodic monitoring for manufactured gas plant (MGP)-related odors.

B. Coordination:
   1. Coordinate requirements of this Section with requirements for odor, vapor, and dust control in the Contract Documents.

C. Related Sections:
   1. Section 01 57 05, Temporary Controls.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:
   1. "Dust-generating Work" means any Work with the potential to generate dust. Examples of dust-generating Work include, but are not limited to, the following:
      a. Handling removed sediment and fill material.
      b. Intrusive Work.
   2. "Intrusive Work" means any Work performed below the existing level of the ground or sediment surface, or that involves the disturbance of existing earth, regardless of quantity. Examples of ground-intrusive Work include, but are not limited to, the following:
      a. Grubbing.
      b. Sediment removal and handling.
      c. Backfilling and grading.
   3. "Perimeter of work area" means the limits of exclusion zone.
   4. "Work area" means any area where ground-intrusive Work or dust-generating Work is being performed.

1.03 QUALITY ASSURANCE

A. Qualifications:
   1. Air Monitoring Technician:
      a. Remediation Engineer's air monitoring technician shall have a minimum of three years direct construction safety or environmental monitoring experience, and appropriate health and safety training in accordance with Laws and Regulations.
      b. Remediation Engineer's air monitoring technician shall be present at the Site at all times when dust-generating or intrusive Work is being performed, and shall be dedicated solely to the implementation of the CAMP.
      c. Responsibilities include, but are not necessarily limited to, the following:
         1) Installing the meteorological monitoring system.
         2) Selecting upwind and downwind monitoring locations and setting up air monitoring stations on a daily basis.
         3) Calibrating air monitoring equipment on a daily basis, or other frequency recommended by the manufacturer.
         4) Coordinating equipment maintenance and repairs.
         5) Monitoring meteorological conditions throughout the work day and relocating air monitoring stations as necessary and appropriate.
         6) Performing routine inspections of air monitoring stations to verify proper function.
         7) Performing periodic perimeter checks of the work area to monitor for MGP-related odors.
         8) Removing air monitoring stations and downloading TVOC and PM_{10} data from monitoring equipment at the end of each work day.
         9) Managing a database of TVOC, PM_{10}, and meteorological data at the Site.
         10) Attending progress meetings and other Project meetings, as required.
         11) Preparing and submitting weekly air monitoring reports in accordance with Article 1.05 of this Section.
         12) Preparing and submitting exceedance reports in accordance with Article 1.06 of this Section.
         13) Preparing and submitting daily odor monitoring logs in accordance with Article 1.07 of this Section.
         14) Notifying the Owner and Remediation Contractor personnel when alert or action levels are exceeded at downwind monitoring locations, and when MGP-related odors are noted at the perimeter of the work area.

B. Regulatory Requirements:
   1. Comply with applicable provisions and recommendations of the New York State Department of Environmental Conservation (NYSDEC)Technical Guidance for Site Investigation and Remediation (DER-10).

1.04 SUBMITTALS

A. Informational Submittals:
   1. Reports:
      a. Weekly Air Monitoring Reports: Submit in accordance with Article 1.05 of this Section.
      b. Exceedance Reports: Submit in accordance with Article 1.06 of this Section.
   2. Submit community air monitoring and weather data in accordance with Article 1.08 of this Section.

1.05 WEEKLY AIR MONITORING REPORTS

A. Prepare weekly air monitoring reports throughout the Project. Include in each report, at a minimum, the following:
   1. Remediation Contractor's name.
   2. Owner's name.
   3. Remediation Engineer's name.
   4. Project name.
   5. Site name and location.
   6. The following for each day that community air monitoring is performed:
      a. Date and day of the week.
      b. General location and brief description of work performed at the Site.
      c. Daily average concentration of TVOCs and PM_{10} for each air monitoring station.
      d. Daily maximum 15-minute time-weighted average (TWA) concentration of TVOCs and PM_{10} for each air monitoring station.
      e. Exceedances (if any) of the action levels specified in Paragraph 3.01.C of this Section. Provide the following:
         1) Time, location, and 15-minute TWA concentration (above background) of exceedance.
         2) Copy of exceedance report, prepared in accordance with Article 1.06 of this Section.
      f. Site plan showing approximate locations of upwind and downwind air monitoring stations at the Site and predominant wind direction for the day. Note if air monitoring stations were relocated during the day.
      g. Copy of daily odor monitoring log, prepared in accordance with Article 1.07 of this Section.

B. Submit weekly air monitoring reports. Remediation Engineer will distribute weekly air monitoring reports within three business days after the week covered in the associated report to:
   1. Owner.
   2. Remediation Contractor.
   3. NYSDEC.
   4. New York State Department of Health (NYSDOH).
   5. Others as appropriate.

1.06 EXCEEDANCE REPORTS

A. Prepare an exceedance report whenever the action levels specified in Paragraph 3.01.C of this Section are exceeded. Include in each report the following:
   1. Remediation Contractor's name.
   2. Owner's name.
   3. Remediation Engineer's name.
   4. Project name.
   5. Site name and location.
   6. Date, day of the week, and time of exceedance.
   7. General location and brief description of work being performed at time of exceedance.
   8. Weather conditions at time of exceedance.
   9. For each air monitoring station, 15-minute TWA concentration of TVOCs and PM_{10} at time of exceedance.
   10. Source or cause of exceedance.
   11. Corrective actions taken or to be taken in response to exceedance.
   12. Date and time verbal or written notification was provided to NYSDEC.

B. Submit exceedance reports. Remediation Engineer will distribute exceedance reports within 24 hours after exceedance to:
   1. Owner.
   2. Remediation Contractor.
   3. NYSDEC.
   4. NYSDOH.
   5. Others as appropriate.

1.07 DAILY ODOR MONITORING LOG

A. Prepare daily odor monitoring logs throughout the Project. Include in each daily log, at a minimum, the following:
   1. Remediation Contractor's name.
   2. Owner's name.
   3. Project name.
   4. Site name and location.
   5. Date and day of the week.
   6. Weather conditions.
   7. Time and outcome of each perimeter check.
      a. Note the presence or absence of MGP-related odors at the perimeter of the work area.
      b. Identify the general location(s) along the work area perimeter where MGP-related odors are noticed.
   8. Time and outcome of any odor complaints from the public.

B. Submit daily odor monitoring logs in weekly air monitoring report submittal in accordance with Article 1.05 of this Section.

1.08 DATA MANAGEMENT

A. Maintain a database of TVOC, PM_{10}, and meteorological data files at the Site.
   1. Index TVOC and PM_{10} data files by date, station number, station location (upwind or downwind), and data type (TVOC or PM_{10}).
   2. Index meteorological data files by date.

B. Back up data files to disc or portable hard drive on a weekly or more frequent basis.

C. Submit TVOC, PM_{10}, and meteorological data files on a monthly basis throughout the Project. Label each disc with the following information:
   a. Dates covered.
   b. Owner's name.
   c. Project name.
   d. Site name and location.

PART 2 – PRODUCTS

2.01 PERIMETER AIR MONITORING SYSTEM

A. System Description:
   1. Provide complete, integrated perimeter air monitoring system consisting of the following:
      a. Three portable air monitoring stations, each capable of measuring real-time ambient air concentrations of TVOCs and PM_{10}, logging air monitoring data, and alerting Site personnel if alert levels or action levels are exceeded.

b. One portable meteorological monitoring system capable of measuring wind speed, wind direction, relative humidity, dry bulb temperature, and barometric pressure, and displaying and logging weather data.

B. Air Monitoring Stations:
   1. Photoionization Detectors: Direct-reading, data-logging photoionization detector with 10.6 eV lamp. Provide one of the following for each air monitoring station:
      a. MiniRAE 3000 by RAE Systems.
      b. Or equal.
   2. Aerosol Photometers: Direct-reading, data-logging aerosol monitor. Provide one of the following for each air monitoring station:
      a. DustTrak II Aerosol Monitor Model 8530 by TSI, Inc.
      b. Or equal.
   3. Spare Equipment: Provide and retain at the Site the following:
      a. Spare photoionization detectors and aerosol photometers to allow for uninterrupted monitoring in the event of equipment damage or malfunction.
      b. Spare batteries for each photoionization detector and aerosol photometer to allow for continuous real-time monitoring and data-logging for a period of not less than 12 hours.
   4. Environmental Enclosures and Mounting Tripods: Provide portable, weather-tight enclosure and compatible mounting (survey) tripod for each air monitoring station. Environmental enclosures shall provide proper operating conditions for photoionization detectors and aerosol photometers.
   5. Alarms and Wireless Alert System: Provide for each air monitoring station audible and visible alarms and wireless alert system capable of alerting air monitoring technician in real-time (via handheld radio, cell phone, etc.) if alert or action levels are exceeded.
   6. Accessories: Provide equipment calibration kits, sampling inlets, data management software, and other accessories recommended by the equipment manufacturers for the intended application.

C. Meteorological Monitoring System:
   1. Product and Manufacturer: Provide one of the following:
      a. Wireless Vantage Pro2 by Davis Instruments.
      b. Or equal.
   2. Accessories: Provide the following:
      a. WeatherLink data logger and software suite by Davis Instruments.
      b. Mounting Pole Kit by Davis Instruments.
      c. Other accessories recommended by equipment manufacturer for the intended application.

PART 3 – EXECUTION

3.01 REAL-TIME AIR MONITORING FOR TVOCS AND PM10

A. Air Monitoring Stations:
   1. Installation:
      a. Deploy air monitoring stations at the start of each work day before any ground-intrusive Work or dust-generating Work is initiated.
         1) Position one air monitoring station at the upwind perimeter of the work area and two air monitoring stations at the downwind perimeter of the work area. Determine and designate upwind and downwind air monitoring stations based on predominant wind direction, and nature and location of Work to be performed.

2) Set alarm levels on real-time TVOC and PM_{10} monitoring equipment to respond to 15-minute TWA concentrations at or below the action levels specified in Paragraph 3.01.C of this Section.
3) Ensure that community air monitoring is being performed before initiating ground-intrusive Work or dust-generating Work.

b. Monitor wind direction throughout the day and adjust locations of air monitoring stations if wind direction shifts more than 60 degrees from original upwind direction. Document original upwind and downwind air monitoring stations, and any changes made to monitoring locations during the day.

2. Protection:
   a. Protect air monitoring stations from damage due to construction operations, weather, and vandalism.
   b. Immediately remove from service, and replace at Remediation Engineer's expense, damaged equipment.
3. Removal:
   a. Remove air monitoring stations at the end of each work day, and only after all ground-intrusive Work or dust-generating Work has been completed for the day.
   b. Download TVOC and PM_{10} data from air monitoring stations at the end of each day.

B. Alert Levels and Response:
1. Alert Levels:
   a. TVOCs: 15-minute TWA concentration at downwind air monitoring station of 2.5 parts per million (ppm) above background (upwind) 15-minute TWA concentration.
   b. PM_{10}: 15-minute TWA concentration at any one (or more) downwind air monitoring station of 100 micrograms per cubic meter ($\mu g/m^3$) above average background (upwind) 15-minute TWA concentration, or visible dust observed leaving the work area.
2. Response: Implement the following if alert levels are exceeded:
   a. Notify Remediation Contractor.
   b. Remediation Contractor shall continue Work and employ additional odor, vapor, and/or dust controls (depending on the reason for the alert) to abate emissions in accordance with Section 01 57 05, Temporary Controls.
   c. Evaluate and, if necessary and appropriate, modify construction techniques.

C. Action Levels and Response:
1. Action Levels:
   a. TVOCs: 15-minute TWA concentration at downwind air monitoring station of 5 ppm above background (upwind) 15-minute TWA concentration.
   b. PM_{10}: 15-minute TWA concentration at downwind air monitoring station of 150 $\mu g/m^3$ above background (upwind) 15-minute TWA concentration.
2. Response: Implement the following if action levels are exceeded:
   a. Remediation Contractor shall stop all Work and Remediation Engineer shall immediately notify Owner. Owner or Remediation Engineer will notify the NYSDEC project manager by telephone or e-mail within two hours after the exceedance.
   b. Remediation Engineer shall continue monitoring and Remediation Contractor shall employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05, Temporary Controls.
   c. Identify the source or cause of the exceedance.
   d. Remediation Contractor shall evaluate and, if necessary and appropriate, modify construction techniques.
   e. Remediation Engineer shall prepare exceedance report in accordance with Article 1.06 of this Section.

f. Work shall not resume until 15-minute TWA concentrations are below the action levels. If the 15-minute TWA concentration of TVOCs exceeds 25 ppm above the background (upwind) 15-minute TWA concentration, work shall not resume until authorized by Owner.

3.02 PERIODIC MONITORING FOR MGP-RELATED ODORS

A. Perimeter Checks:
   1. During work hours, perform periodic walks around the entire perimeter of the work area to monitor for MGP-related odors.
   2. Document the time and outcome of each perimeter check in daily odor monitoring log in accordance with Article 1.07 of this Section.
   3. Implement the following if MGP-related odors are noticed at the perimeter of the work area:
      a. Notify Remediation Contractor personnel.
      b. Remediation Contractor shall continue Work and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05, Temporary Controls.
      c. Remediation Contractor shall evaluate and, if necessary and appropriate, modify construction techniques.
      d. Remediation Engineer shall perform more frequent perimeter checks.
      e. If MGP-related odors persist at the perimeter of the work area, Remediation Contractor shall stop work and Remediation Engineer shall notify the Owner.
      f. Identify the source or cause of MGP-related odors.
      g. Remediation Contractor shall evaluate and, if necessary and appropriate, further modify construction techniques and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05, Temporary Controls.
      h. Work shall not resume until authorized by Owner.

B. Odor Complaints:
   1. Immediately notify Owner of any odor complaints from the public. Owner or Remediation Engineer will immediately direct such complaints to NYSDEC's on-site representative.
   2. Implement the following in response to an odor complaint:
      a. As appropriate, Remediation Engineer shall verify the legitimacy of the complaint based on the Work being performed at the Site, the predominant wind direction, and other climatological factors.
      b. Remediation Engineer shall continue monitoring and Remediation Contractor shall employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05, Temporary Controls.
      c. Remediation Contractor shall evaluate and, if necessary and appropriate, modify construction techniques.
   3. Remediation Engineer shall document the time and outcome of any odor complaints in daily odor monitoring log in accordance with Article 1.07 of this Section.

3.03 FIELD QUALITY CONTROL

A. Remediation Engineer shall calibrate air monitoring equipment on a daily basis, or other frequency recommended by the manufacturer, in accordance with manufacturer's calibration and quality assurance requirements. Document all instrument readings, field reference checks, and calibrations in a dedicated log.

B. During the work day, Remediation Engineer shall perform periodic field checks of monitoring equipment to verify proper function. Document the date, day, time, and outcome of each field check in a dedicated log.

C. Remediation Engineer shall immediately remove from service, and replace, in coordination with Owner, damaged or malfunctioning equipment.

D. Preventative maintenance and repair of monitoring equipment, if required, shall only be performed by qualified personnel, or authorized representatives of the manufacturer.

E. Remediation Engineer shall prepare and retain at the Site electronic or written records of all equipment calibrations, field checks, maintenance, and repairs.

END OF SECTION

SECTION 01 41 26

STORM WATER POLLUTION PREVENTION PLAN AND PERMIT

PART 1 – GENERAL

1.01 DESCRIPTION

A. Remediation Contractor shall comply with the Project's Storm Water Pollution Prevention Plan (SWPPP) and the substantive requirements of the most current version of New York State Department of Environmental Conservation (NYSDECs) State Pollutant Discharge Elimination System General Permit for Storm Water Discharges from Construction Activity (hereinafter, the "SPDES General Permit"). Remediation Contractor is responsible for providing necessary materials and taking appropriate measures to comply with requirements of the SPDES General Permit and minimize pollutants in storm water run-off from the Site.

B. Documents: The following are part of the Work included under this Section:
   1. SWPPP: Prepared by Design Engineer, on behalf of Owner, and filed with NYSDEC. The SWPPP is included with this Section, and as Appendix H to the IRM Design Report, as part of the Contract Documents.
   2. SWPPP Revisions: Prepared by Remediation Engineer, on behalf of Owner, in accordance with Article 1.04 of this Section. Copy of each SWPPP Revision will be furnished to Remediation Contractor. SWPPP Revisions, if any, will become part of the Contract Documents.
   3. Storm Water Permit Certification Statement: To be submitted by Remediation Contractor to Remediation Engineer on the form included with this Section. Do not perform Work at the Site until the storm water permit certification statement has been submitted to Remediation Engineer.
   4. Storm Water Inspection Reports: Prepared by Remediation Contractor's qualified inspector and submitted to Remediation Engineer in accordance with Article 1.05 of this Section. A storm water inspection report shall be prepared for each Site inspection and assessment required by the SPDES General Permit and this Section.

C. Prevent discharge of sediment to and erosion from the Site to surface waters, drainage routes, public streets and rights-of-way, and private property, including dewatering operations. Prevent trash and construction and demolition debris from leaving the Site via storm water run-off. Provide berms, dikes, and other acceptable methods of directing storm water around work areas to drainage routes.

D. Do not cause or contribute to a violation of water quality standards, Laws, or Regulations. Provide and implement measures to control pollutants in storm water run-off from the Site to prevent:
   1. Turbidity increases that will cause a substantial visible contrast to natural conditions.
   2. Increase in suspended, colloidal, and settle-able solids that would cause sediment deposition, or impair receiving water quality and use.
   3. Presence of residue from oil and floating substances, visible oil, and globules of grease.

E. Remediation Contractor shall pay civil penalties and other costs incurred by Owner, including additional engineering, construction management, and inspection services, associated with non-compliance with the SPDES General Permit and erosion, sediment, and turbidity controls associated with the Work.

F. Contract Price includes all material, labor, and other permits and incidental costs related to:
   1. Installing and maintaining structural and non-structural items used in complying with the SWPPP and its revisions, if any.
   2. Clean-up, disposal, and repairs following wet weather events or spills caused by Remediation Contractor.
   3. Implementing and maintaining “best management practices”, as defined in applicable permits and Laws or Regulations, to comply with requirements that govern storm water discharges at the Site.
   4. Inspecting erosion, sediment, turbidity, and storm water controls as specified.

G. Coordinate requirements of this Section with requirements for earthwork, erosion control, and landscaping in the Contract Documents, applicable permit requirements, and Laws and Regulations.

H. Implement SWPPP controls and practices prior to starting other Work at the Site.

1.02 QUALITY ASSURANCE

A. Qualifications:
   1. Qualified Inspector:
      a. Remediation Contractor’s qualified inspector shall be knowledgeable in the principles and practices of erosion, sediment, and turbidity control, and shall be responsible for performing Site inspections and assessments, and preparing and certifying storm water inspection reports, in accordance with this Section.
      b. Remediation Contractor’s qualified inspector shall be one of the following:
         1) Professional engineer licensed and registered in the State of New York.
         2) Landscape architect licensed and registered in the State of New York.
         3) Certified Professional in Erosion and Sediment Control.
         4) NYSDEC-endorsed individual.
         5) An individual working under the direct supervision of, and employed by the same company as, a professional engineer or landscape architect licensed and registered in New York State, provided that said individual has received four hours of NYSDEC-endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC-endorsed entity. Following the initial training, the individual shall have completed four hours of training every three years.

B. Regulatory Requirements:
   1. Comply with Laws and Regulations related to environmental protection and restoration, including:
      a. SPDES General Permit.
      b. New York State Standards and Specifications for Erosion and Sediment Control.

1.03 SUBMITTALS

A. Informational Submittals:
   1. Storm Water Permit Certification Statement: Submit in accordance with Paragraph 1.01.B.3 of this Section.
   2. Qualifications Statements: Submit name and qualifications of qualified inspector, including summary of experience, training received, and copy of valid certifications applicable to the Project.
   3. Storm Water Inspection Reports: Submit in accordance with Article 1.05 of this Section.

1.04 SWPPP REVISIONS

A. Remediation Engineer will prepare a SWPPP Revision in accordance with the SPDES General Permit:
   1. When the provisions of the SWPPP prove to be ineffective in minimizing pollutants in storm water discharges from the Site.
   2. When there is a significant change in design, construction, operation, or maintenance of the Project that has or could have an effect on the discharge of pollutants from the Site.
   3. To address issues or deficiencies identified during an inspection by Remediation Contractor's qualified inspector, NYSDEC, or other regulatory authority having jurisdiction.

1.05 STORM WATER INSPECTION REPORTS

A. Prepare a storm water inspection report for each Site inspection and assessment required by the SPDES General Permit and this Section. Each report shall be prepared using the form included with this Section.

B. Include in each storm water inspection report, at a minimum, the following:
   1. Date and time of inspection.
   2. Name, title, and affiliation of Remediation Contractor's qualified inspector.
   3. Weather and soil conditions (e.g., dry, wet, saturated, etc.) at the time of the inspection.
   4. Description of and site plan showing areas that are disturbed at the time of the inspection and any areas that have been stabilized (either temporary or final) since the previous inspection.
   5. Repairs, maintenance, or corrective actions implemented since the previous inspection. Include digital photographs, with date stamp, that clearly show the areas or items installed, repaired, or replaced.
   6. Condition of storm water run-off at all points of discharge from the Site.
   7. Identification of any erosion, sediment, turbidity, and storm water controls that require repair or maintenance.
   8. Identification of any erosion, sediment, turbidity, and storm water controls that were not installed properly or are not functioning as designed.
   9. Repairs, maintenance, or corrective actions required to correct any deficiencies observed during the inspection. Include digital photographs, with date stamp, that clearly show the deficient areas or items.

C. Submit storm water inspection reports to Remediation Engineer within three days after each inspection. Inspection reports shall be signed by Remediation Contractor's qualified inspector.

D. Retain copies of storm water inspection reports at the Site. Keep with the SWPPP and any SWPPP revisions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 INSPECTIONS AND REPAIRS

A. Perform Site inspections and assessments as required by the SPDES General Permit and this Section to ensure the continued effectiveness and integrity of all SWPPP controls and practices, including erosion, sediment, and turbidity controls. Inspections and assessments shall be done by Remediation Contractor's qualified inspector.

B. Inspections:
   1. Site inspections shall be performed:
      a. After installation of SWPPP controls, including erosion, sediment, and turbidity controls, and temporary field offices and other temporary facilities, prior to starting other Work at the Site.
      b. Every seven days during the Work, and within 24 hours after wet weather events, until all disturbed areas have achieved final stabilization in accordance with the SPDES General Permit and the SWPPP. For temporary Work stoppages and seasonal shut-downs greater than two weeks in duration, inspection frequency may be reduced to once every 30 days if temporary stabilization measures have been applied to all disturbed surfaces, and if approved by Remediation Engineer, NYSEG, and NYSDEC.
   2. During each inspection, verify sediment control practices and record approximate degree of sediment accumulation as percentage of acceptable sediment storage volume. Inspect erosion, sediment, and turbidity, control practices and record repairs and maintenance performed, if any. Observe and record deficiencies relative to implementation of the SWPPP.
   3. Prepare storm water inspection report for each inspection in accordance with Article 1.05 of this Section.

C. Notify Remediation Engineer within one day after each inspection of any deficiencies observed, and any repairs, maintenance, or corrective actions required to correct such deficiencies.

D. Complete repairs or maintenance to SWPPP controls in accordance with applicable requirements and to satisfaction of Remediation Engineer within two days after each inspection. If site conditions prevent repairs or maintenance from being completed, document such conditions in the subsequent storm water inspection report and complete repairs or maintenance as soon as site conditions permit.

E. Cooperate with representatives of authorities having jurisdiction during periodic visits to Site, and promptly provide information requested by authorities having jurisdiction.

3.02 ATTACHMENTS

A. The attachments listed below, which follow after the "End of Section" designation, are part of this Section:
   1. Attachment A: Storm water permit certification statement form (one page).
   2. Attachment B: Storm water inspection report form (four pages).

END OF SECTION

NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

STORM WATER PERMIT CERTIFICATION STATEMENT

Each Contractor and Subcontractor identified in the Storm Water Pollution Prevention Plan (SWPPP) shall certify that they understand the permit conditions and their responsibilities. Every Contractor and Subcontractor performing an activity that involves soil disturbance shall sign and submit this certification statement to Engineer prior to performing the Work. This certification statement shall be signed by an owner, principal, president, secretary, or treasurer of the firm.

I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that Owner must comply with the terms and conditions of the most current version of NYSDEC's SPDES General Permit for Storm Water Discharges from Construction Activity (SPDES General Permit), and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect, or inaccurate information is a violation of the referenced permit and the laws of the State of New York, and could subject me to criminal, civil, and/or administrative proceedings.

Firm: _____

Address: _____

_____

Name (Print): _____ Title: _____

Signature: _____ Date: _____

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NYSEG
COURT STREET FORMER MANUFACTURED GAS PLANT SITE
CITY OF BINGHAMTON, BROOME COUNTY, NEW YORK

STORM WATER INSPECTION REPORT

Date and Time of Inspection: _____

Qualified Inspector (Name, Title, and Affiliation): _____

Weather Conditions: _____

Soil Conditions: _____

Describe disturbed areas at time of inspection: _____

Describe areas stabilized (temporary or final) since previous inspection: _____

ATTACH SITE PLAN SHOWING APPROXIMATE LIMITS OF DISTURBED AND NEWLY-STABILIZED AREAS

Describe repairs, maintenance, or corrective actions implemented since previous inspection: _____

ATTACH PHOTOGRAPHS OF AREAS OR ITEMS INSTALLED, REPAIRED, OR REPLACED

Maintaining Water Quality (Turbidity Control)

Yes	No	NA	
☐	☐	☐	Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
☐	☐	☐	Is there residue from oil and floating substances, visible oil film, or globules or grease?
☐	☐	☐	All disturbance is within the limits of the approved plans?
☐	☐	☐	Have receiving lake/bay and/or wetland been impacted by silt from project?

Housekeeping

Yes	No	NA	
1. General Site Conditions:			
☐	☐	☐	Is construction site litter and debris appropriately managed?
☐	☐	☐	Are facilities and equipment necessary for implementation of erosion, sediment, and turbidity control in working order and/or properly maintained?
☐	☐	☐	Is construction impacting the adjacent property?
☐	☐	☐	Is dust adequately controlled?

Run-Off Control Practices (if necessary)

Yes	No	NA	
1. Interceptor Dikes and Swales (if applicable):			
☐	☐	☐	Installed per plan with minimum side slopes of 2H:1V or flatter?
☐	☐	☐	Stabilized by geotextile fabric, seed, or mulch with no erosion occurring?
☐	☐	☐	Sediment-laden run-off directed to sediment trapping structure?
2. Stone Check Dam (if applicable):			
☐	☐	☐	Is channel stable (flow is not eroding soil underneath or around the structure)?
☐	☐	☐	Check dam is in good condition (rocks in place and no permanent pools behind the structure)?
☐	☐	☐	Has accumulated sediment been removed?

Soil Stabilization

Yes	No	NA	
1. Topsoil and Spoil Stockpiles:			
☐	☐	☐	Stockpiles are stabilized with vegetation and/or mulch?
☐	☐	☐	Sediment control is installed at the toe of the slope?
2. Revegetation:			
☐	☐	☐	Temporary seed and mulch have been applied to idle areas?
☐	☐	☐	Six inches minimum of topsoil has been applied under permanent seeding?

Sediment Control Practices

Yes	No	NA	
1. Stabilized Construction Entrance:			
☐	☐	☐	Stone is clean enough to effectively remove mud from vehicles?
☐	☐	☐	Installed per standards and specifications?
☐	☐	☐	Does all traffic use the stabilized entrance to enter and leave construction site?
☐	☐	☐	Is adequate drainage provided to prevent ponding at entrance?
2. Silt Fence:			
Sediment accumulation is ___% of design capacity.			
☐	☐	☐	Installed per plan?
☐	☐	☐	Joints constructed by wrapping the two ends together for continuous support?
☐	☐	☐	Fabric buried six inches minimum below grade?
☐	☐	☐	Posts are stable, fabric is tight and without rips or frayed areas?

Sediment Control Practices (continued)

Yes No NA

3. Storm Drain Inlet Protection (Use for Stone and Block; Filter Fabric; Curb; or Excavated Practices)
Sediment accumulation ___% of design capacity.

☐ ☐ ☐ Installed concrete blocks lengthwise so open ends face outward, not upward?
☐ ☐ ☐ Placed wire screen between No. 3 crushed stone and concrete blocks?
☐ ☐ ☐ Drainage area is one acre or less?
☐ ☐ ☐ Excavated area is 900 cubic feet?
☐ ☐ ☐ Excavated side slopes are 2H:1V?
☐ ☐ ☐ 2"x4" frame is constructed and structurally sound?
☐ ☐ ☐ Three-foot maximum spacing between posts?
☐ ☐ ☐ Fabric is embedded one to 1.5 feet below ground and secured to frame/posts with staples at maximum eight-inch spacing?
☐ ☐ ☐ Posts are stable, fabric is tight and without rips or frayed areas?

4. Temporary Sediment Trap:
Sediment accumulation is ___% of design capacity.

☐ ☐ ☐ Outlet structure is constructed per the approved plan or drawing?
☐ ☐ ☐ Geotextile fabric has been placed beneath rock fill?

5. Temporary Sediment Basin:
Sediment accumulation is ___% of design capacity.

☐ ☐ ☐ Basin and outlet structure constructed per the approved plan?
☐ ☐ ☐ Basin side slopes are stabilized with seed and mulch?
☐ ☐ ☐ Drainage structure flushed and basin surface restored upon removal of sediment basin facility?

Describe any repairs, maintenance, or corrective actions required to correct observed deficiencies: _____

ATTACH PHOTOGRAPHS OF DEFICIENT AREAS OR ITEMS OBSERVED DURING THE INSPECTION

Qualified Inspector's Certification:

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system to ensure that qualified personnel property gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein may be punishable by Law.

Signature: _____ Date: _____

SECTION 01 51 00

TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all temporary utilities required for the Project.
      a. Make all arrangements with utility service companies for temporary services and obtain required permits and approvals for temporary utilities.
      b. Pay all utility service costs, including cost of electricity, water, fuel, and other utility services required for the Work.
      c. Continuously maintain adequate utilities for all purposes during the Project, until removal of temporary utilities and temporary facilities. At a minimum, provide and maintain temporary utilities through Substantial Completion and removal of temporary field offices and sheds.
      d. Should Owner occupy part of the Project prior to Substantial Completion of the entire Work, cost of utilities consumed via temporary utilities serving the portion occupied by Owner will be shared proportionately between Owner and Remediation Contractor as mutually agreed to by the parties.
      e. Maintain, including cleaning, temporary utilities and continuously provide consumables as required.
      f. Temporary utilities shall be adequate for personnel using the Site and requirements of the Project.
      g. Provide temporary utilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

B. Provide the following temporary utilities:
   1. Electricity. May be provided by generator(s).
   2. Lighting.
   3. Telephone and Internet.
   4. Heating, ventilating, and temporary enclosures.
   5. Water.
   6. Fire protection.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. NFPA 10, Standard for Portable Fire Extinguishers.
   2. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.03 REQUIREMENTS FOR TEMPORARY UTILITIES

A. Electrical:
   1. Provide temporary electrical service required for the Work, including continuous power for temporary field offices and sheds. Provide temporary outlets with circuit breaker protection and ground fault protection.

2. If a generator is used to provide the temporary electrical service, provide sound enclosures, as necessary to mitigate noise produced by generators. Follow local noise ordinances to determine requirements and necessity for sound enclosures.

B. Lighting:
   1. Minimum lighting shall be five foot-candles for open areas and 10 foot-candles for stairs and shops. Provide minimum of one, 300-watt lamp every 15 feet in indoor Work areas.

C. Telephone and Communications:
   1. Provide temporary telephone and internet required for Remediation Contractor's operations at the Site and for summoning emergency medical assistance.

D. Heating, Ventilating, and Enclosures:
   1. Provide sufficient temporary heating, ventilating, and enclosures to ensure safe working conditions and prevent damage to existing facilities and the Work.
   2. Except where otherwise specified, temporary heating shall maintain temperature of the area served between 50 degrees Fahrenheit and maximum design temperature of building or facility and its contents.
   3. Maintain temperature of areas occupied by Owner's personnel or electronic equipment, including offices, lunch rooms, locker rooms, toilet rooms, and rooms containing computers, microprocessors, and control equipment, between 65 degrees F and 80 degrees F with relative humidity less than 75 percent.
   4. Required temperature range for storage areas and certain elements of the Work, including preparation of materials and surfaces, installation or application, and curing as applicable, shall be in accordance with the Contract Documents for the associated Work and the Supplier's recommended temperature range for storage, application, or installation, as appropriate.
   5. Provide temporary ventilation sufficient to prevent accumulation in construction areas and areas occupied by Owner of hazardous and nuisance levels or concentrations of dust and particulates, mist, fumes or vapors, odors, and gases associated with construction.
   6. Provide temporary enclosures and partitions required to maintain required temperature and humidity.

E. Water:
   1. Provide temporary water facilities including piping, valves, meters if not provided by owner of existing waterline, backflow preventers, pressure regulators, and other appurtenances. Provide freeze-protection as required.
   2. Provide water for temporary sanitary facilities, field offices, Site maintenance and cleaning and, when applicable, disinfecting and testing of systems.
   3. Continuously maintain adequate water flow and pressure for all purposes during the Project, until removal of temporary water system.

F. Fire Protection:
   1. Provide temporary fire protection, including portable fire extinguishers rated not less than 2A or 5B in accordance with NFPA 10 for each temporary building and for every 3,000 square feet of floor area under construction.
   2. Comply with NFPA 241 and requirements of fire marshals and authorities having jurisdiction at the Site.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for temporary systems may be new or used, but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations.

B. Provide required materials, equipment, and facilities, including piping, wiring, and controls.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install temporary utilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.

B. Location of Temporary Utilities:
   1. Locate temporary systems for proper function and service.
   2. Temporary systems shall not interfere with or provide hazards or nuisances to the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility companies.
   3. Do not install temporary utilities on the ground, with the exception of temporary extension cords, hoses, and similar systems in place for short durations.

C. Modify and extend temporary systems as required by progress of the Work.

3.02 USE

A. Maintain temporary systems to provide safe, continuous service as required.

B. Properly supervise operation of temporary systems:
   1. Enforce compliance with Laws and Regulations.
   2. Enforce safe practices.
   3. Prevent abuse of services.
   4. Prevent nuisances and hazards caused by temporary systems and their use.
   5. Prevent damage to finishes.
   6. Ensure that temporary systems and equipment do not interrupt continuous progress of construction.

C. At end of each work day, check temporary systems and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

A. Completely remove temporary utilities, facilities, equipment, and materials when no longer required. Repair damage caused by temporary systems and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

B. Where temporary utilities are disconnected from existing utility, provide suitable, water-tight or gas-tight (as applicable) cap or blind flange, as applicable, on service line, in accordance with requirements of utility owner.

END OF SECTION

SECTION 01 52 13

FIELD OFFICES AND SHEDS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Field Offices shall be located at the Owner's property identified as 279 Court Street (i.e., Operable Unit 1).
   2. Remediation Contractor shall maintain field offices at the Site for Owner, Remediation Engineer, New York State Department of Environmental Conservation (NYSDEC), and Remediation Contractor.
   3. Provide required storage and work sheds.
   4. Field offices shall be complete, fully functional, and ready for occupancy within 14 days after Remediation Engineer's approval of the submittal required by this Section.

B. Related Sections:
   1. Section 01 51 00, Temporary Utilities.
   2. Section 01 52 16, First-Aid Facilities.

1.02 SUBMITTALS

A. Action Submittals:
   1. Field Office Submittal: Submit, as a single submittal, the following:
      a. Site plan indicating proposed location of field offices, parking for field offices, and facilities related to the field offices.
      b. Listing of utility providers (if applicable).
      c. Product data and technical information for multifunction printer and telephone system.

PART 2 – PRODUCTS

2.01 FIELD OFFICES (TWO TRAILERS)

A. Two field office trailers shall consist of a Mobile Office manufactured by ModSpace (or equivalent) and provide a minimum of 400 square feet of floor space (with a 10-foot minimum width) and shall be partitioned to provide three separate office spaces (one of which will serve as a shared common area). A minimum of two outside doors will be required. A sign reading "All Site Visitors Must Sign-In Here" shall be affixed to the trailer exterior of the Remediation Contractor's trailer.
   1. Trailers shall be completely weather-tight and insulated.
   2. Windows shall each have insect screen and operable sash. Provide each window with lock and exterior security bars approved by the Remediation Engineer.
   3. Each trailer shall have two doors for ingress and egress, each with landing, stairs, and railing conforming to building codes in effect at the Site.
      a. Landing and stairs shall be metal, pressure-treated wood, fiberglass, or concrete, and have slip-resistant walking surfaces.
      b. Railing shall be metal, wood, or fiberglass.
      c. Doors shall be secure and lockable, and each furnished with suitable, lockable security bar by MasterLock or equal.

4. Furnish to Remediation Engineer and NYSDEC two identical sets each of keys suitable for operating all keyed locks, including ingress/egress door locks, security bars for doors, window locks, closets, and office furnishings

B. The Remediation Contractor shall provide and maintain, in accordance with all applicable codes and regulations, the fire protection system (e.g., fire extinguishers, sprinklers, etc.) and electric, heating, and cooling services for the office trailers.

2.02 FIELD OFFICE UTILITIES

A. Comply with Section 01 51 00, Temporary Utilities.

B. Provide the following for each field office:
   1. Electrical System and Lighting:
      a. Electric service as required, including paying all costs.
      b. Interior lighting of 50 foot-candles at desktop height.
      c. Minimum of eight 120-volt, wall-mounted, duplex convenience electrical receptacles.
      d. Exterior, wall-mounted, 250-watt lighting at each entrance.
   2. Heating, Ventilating, and Air Conditioning:
      a. Automatic heating to maintain indoor temperature of at least 65 degrees Fahrenheit (F) in cold weather.
      b. Automatic cooling to maintain indoor temperature no warmer than 75 degrees F in warm weather.
      c. Furnish all fuel and pay all utility costs.
   3. Telephone Service:
      a. Private telephone service, including payment of installation, monthly, and service costs.
      b. Provide four telephone lines, two for voice and two for fax service (four lines total), each with separate telephone number assigned by the telephone company.
      c. Pay for unlimited local and long-distance service for duration of the Project.
   4. Internet Service:
      a. Obtain and pay for Internet service, with unlimited (untimed) Internet access, until removal of field office trailers.
      b. Provide fiber-optic or cable connection with appropriate modem and appurtenances, and dual-band Wireless-N router.
      c. Minimum Speed: Up to 15 megabits per second download, up to 1 megabit per second upload.
      d. Provide Wireless-G router capable of supporting a minimum of four users simultaneously for field office trailer occupied by Remediation Contractor, Owner, and Remediation Engineer.
      e. Set up system and appurtenances required and verify functionality in each field office space.

C. Should actions of utility companies delay the complete set up of field offices, Remediation Contractor shall provide temporary electricity, heat, telephone, and internet service as required at no additional cost to Owner.

2.03 FIELD OFFICE FURNISHINGS AND EQUIPMENT

A. Provide the following furnishings and equipment each field office trailer:
   1. Desks: Four five-drawer desks, each five feet long by 2.5 feet wide with at least one file drawer per desk suitable for storing 8.5-inch by 11-inch documents.
   2. Desk Chairs: Four new or used (in good condition) five-point, high backed, cushioned swivel chairs.

3. Other Chairs: Ten metal folding chairs without arm rests.
4. Tables:
   a. Two new or used (in good condition) portable folding tables, each eight feet long by 2.5 feet wide.
   b. Two new or used (in good condition) portable folding tables, each six feet long by 2.5 feet wide.
5. Plan rack(s) to hold a minimum of eight sets of the Drawings.
6. Two four-drawer, legal size, fire-proof file cabinets with locks.
7. Four polyethylene waste baskets, each with minimum capacity of seven gallons.
8. Suitable doormat at each exterior ingress/egress door.
9. One tack board, approximately three feet long by 2.5 feet wide, with thumbtacks.
10. One white board for use with dry markers, approximately six feet long by four feet wide, with marker holding tray, installed by Remediation Contractor at location selected by Remediation Engineer in the field. Furnish supply of colored markers and eraser for the white board.
11. Fire extinguisher with associated signage, and smoke detector, in accordance with Laws and Regulations. At a minimum, provide two wall-mounted fire extinguishers and one battery-operated, ceiling-mounted smoke detector. Comply with fire protection requirements of Section 01 51 00, Temporary Utilities.
12. One first-aid station. Comply with Section 01 52 16, First Aid Facilities.
13. Two electric clocks.
14. One electric coffee maker with ten-cup capacity or larger.
15. One microwave oven with minimum capacity of 0.9 cubic foot.
16. Two refrigerators, each with minimum capacity of 2.5 cubic feet.
17. Bottled water with electric cooler dispenser for five-gallon bottles, with cup dispenser.
18. Multifunction Printer:
    a. Two new or used (in good condition) machines with the following functions:
       1) Photocopying.
       2) Network printing.
       3) Scanning to produce PDF and JPG files.
       4) E-mail.
       5) Fax via telephone line.
    b. Products and Manufacturers: Provide one of the following:
       1) Brother MFC-j430w printer.
       2) Approved equal.
    c. Provide necessary cables and appurtenances to enable all functions specified in this Section, including scan-and-email and printing from field office computers.
19. Telephone System:
    a. Telephone System Features:
       1) Provide two cordless telephones, each with hands-free speaker, speed dialing with minimum of 16 programmable numbers, volume control, LCD display, and buttons for hold and mute.
       2) Set up and verify operation of each telephone set.
    b. Provide two digital telephone answering machines.

B. Provide two-way portable radios and charging units for Remediation Engineer, and key Remediation Contractor personnel (e.g., superintendent, foreman, etc.).

2.04 STORAGE AND WORK SHEDS

A. Provide storage and work sheds sized, furnished, and equipped to accommodate personnel, materials, and equipment involved in the Work, including temporary utility services and facilities required for environmental controls sufficient for personnel, materials, and equipment.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install field offices and related facilities in accordance with Laws and Regulations.

B. Install materials and equipment, including pre-fabricated structures, in accordance with manufacturer's instructions.

3.02 CLEANING, MAINTENANCE, AND SUPPLIES

A. Provide the following maintenance services:
   1. Immediately repair malfunctioning, damaged, leaking, or defective field offices, sheds, site improvements, systems, and equipment.
   2. Promptly provide snow removal for field offices, including parking areas, walkways, and stairs and landings.
   3. Provide continuous maintenance and janitorial service of field offices and sanitary facilities. Clean field offices at least once per week.
   4. Properly dispose of trash as needed, at least twice per week. Dispose of other waste, if any, as required, to avoid creation of nuisances.

B. Provide the following consumables as needed:
   1. Light bulbs for interior and exterior lights.
   2. Toner or ink cartridges for multifunction printers, as required.
   3. Paper supplies for multifunction printers.
   4. Dry markers in six colors and white board eraser set.
   5. Bottled water suitable for water dispensers and disposable cups.
   6. Coffee supplies, including disposable cups, filters, coffee, sugar, creamer, and stir-sticks.
   7. Soap, paper towels, cleansers, sanitary supplies, and janitorial implements, including broom.
   8. Batteries for smoke detector and other battery-powered items furnished by Remediation Contractor.
   9. Replace fire extinguishers upon expiration.
   10. Replenish contents of first-aid kits as required.

3.03 REMOVAL

A. Do not remove field offices and sheds until after Substantial Completion. Restore areas upon removal and prior to final inspection.

B. Following completion of the remedial construction activities, the Remediation Contractor shall restore the field offices and interior of the service center building to pre-construction conditions (at a minimum) to the satisfaction of the Owner. Restoration activities may include, but not limited to, interior painting, cleaning/replacing existing flooring, etc.

END OF SECTION

SECTION 01 52 16

FIRST-AID FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide first-aid facilities during the Project.
      a. Pay all costs for first-aid facilities, including installation, maintenance, and removal.
      b. Maintain, including cleaning, first-aid facilities. Keep first-aid facilities continuously supplied with consumables.
      c. Facilities shall be adequate for personnel using the Site and requirements of the Project.
      d. Provide facilities in compliance with Laws and Regulations.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. ANSI Z308.1, Minimum Requirements for Workplace First Aid Kits and Supplies.
   2. ANSI Z358.1, Emergency Eye Wash and Shower Equipment.

1.03 REQUIREMENTS FOR FIRST-AID FACILITIES

A. Provide temporary first-aid stations at or immediately adjacent to the Site's major work areas, and inside the temporary field office. Locations of first-aid stations shall be determined by Remediation Contractor's safety representative. At a minimum, first-aid stations provided shall include:
   1. One first-aid kit complying with ANSI Z308.1.
   2. One eyewash station complying with ANSI Z358.1.

B. Provide list of emergency telephone numbers at each hardwired telephone at the Site. List shall be in accordance with the list of emergency contact information required in Section 01 35 29, Contractor's Health and Safety Plan.

C. When Work is in progress, provide at the Site at least one person trained in first-aid and cardiopulmonary resuscitation (CPR). First-aid- and CPR-trained personnel shall possess valid certificate indicating that they have successfully completed a first-aid and CPR training course by the American Red Cross or similar entity.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 INSTALLATION

A. Location of temporary first-aid facilities shall be as specified in Article 1.03 of this Section.

3.02 USE

A. Properly supervise temporary first-aid facilities.

B. Properly dispose of wastes.

C. Check temporary first-aid stations not less than weekly and verify that sufficient consumables are available. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

A. Completely remove temporary first-aid facilities and materials when no longer required. Repair damage caused by temporary first-aid facilities and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 52 19

SANITARY FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Remediation Contractor shall provide all temporary sanitary facilities required for the Project.
   1. Make all arrangements with temporary sanitary facility companies for temporary sanitary services and obtain required permits and approvals for temporary sanitary services.
   2. Pay all temporary sanitary facility service costs, including cost of electricity, water, fuel, and other utility services required for the Work.
   3. Continuously maintain, including cleaning, adequate temporary sanitary facilities for all purposes during the Project, until removal of temporary sanitary facilities. At minimum, provide and maintain temporary sanitary facilities through Substantial Completion and removal of temporary field offices and sheds. Provide consumables as required.
   4. Provide temporary sanitary facilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

1.02 REQUIREMENTS FOR TEMPORARY SANITARY FACILITIES

A. Sanitary Facilities.
   1. Provide and maintain a minimum of two suitably-enclosed chemical or self-contained toilets and suitable temporary washing facilities for employees and visitors to the Site. Location of temporary toilets shall be acceptable to Owner.

   2. Provide supply of potable drinking water and related facilities and consumables for all personnel using the Site.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for temporary sanitary facilities may be new or used, but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations including 29 CFR Parts 1910 and 1926.

B. Provide required materials, equipment, and facilities, including piping, wiring, and controls.

PART 3– EXECUTION

3.01 INSTALLATION

A. Install temporary sanitary facilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.

B. Location of Temporary Sanitary Facilities:
   1. Locate temporary sanitary facilities for proper function and service at main staging area and any remote access/staging sites, as necessary.

2. Temporary sanitary facilities shall not interfere with or provide hazards or nuisances to: the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility companies.

C. Modify and extend temporary sanitary facilities as required by progress of the Work.

3.02 USE

A. Maintain sanitary facilities to provide safe, continuous service as required.

B. Properly supervise operation of sanitary facilities:
   1. Enforce compliance with Laws and Regulations.
   2. Enforce safe practices.
   3. Prevent abuse of services.
   4. Prevent nuisances and hazards caused by temporary sanitary facilities and their use.
   5. Prevent damage to finishes.
   6. Ensure that temporary sanitary facilities do not interrupt continuous progress of construction.

C. At the end of each work day, check sanitary facilities and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

A. Following completion of the remedial construction activities, the Remediation Contractor shall restore the sanitary facilities of the service center building to pre-construction conditions (at a minimum) to the satisfaction of the Owner. Restoration activities may include, but not limited to, interior painting, cleaning/replacing existing flooring, etc.

END OF SECTION

SECTION 01 53 53

TEMPORARY WATER TREATMENT AND MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals required to furnish, install, test, and place into satisfactory operation, a temporary water treatment system at the location shown and as specified herein. The temporary water treatment system shall include the material, equipment and incidentals required to: collect, store, convey, treat, and discharge all liquids generated during performance of the Work. Liquids that shall be handled, treated, and discharged include, but may not be limited to, the following:
   a. Rainfall runoff which accumulates in excavation or containment areas.
   b. Direct precipitation in excavation or containment areas.
   c. Water generated from dewatering activities.
   d. Water generated from decontamination activities.
   e. Groundwater/surface water encountered during remedial activities.
   f. Other water generated as a result of remedial activities.

2. Remediation Contractor shall provide all labor, materials, equipment, and incidentals required to provide power, and to operate and maintain the temporary water treatment system. The temporary water treatment system specified herein is a typical temporary water treatment system that was designed based on sound, industry-accepted design principles and consists of proven treatment technologies and configurations. Remediation Contractor shall have the opportunity to propose an alternate temporary water treatment system design, that at a minimum, shall meet the performance standards, design, construction, and operational intent established herein. The temporary water treatment system shall include the following major components:
   a. Berms, containment, and collection sump
   b. Influent storage/weir tanks
   c. Centrifugal pumps
   d. Bag filters
   e. Zeolite resin vessels
   f. Liquid-phase granular activated carbon (GAC) vessels
   g. Ion exchange resin vessels
   h. Effluent storage tanks
   i. Conveyance pipe, hose, valves, and appurtenances
   j. Flow meter and totalizer
   k. Spare parts

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with, or before the temporary water treatment system.

C. Related Sections: Not Used

1.02 REFERENCES

A. Standards referenced in this Section are listed below:
   1. American Society of Mechanical Engineers, (ASME).
   2. American Society for Testing and Materials, (ASTM).
   3. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA).
      a. Safety and Health Standards 29 CFR 1910/1926.

1.03 1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
   1. Equipment manufacturers shall have a minimum of five years' experience producing substantially similar equipment and shall be able to show evidence of at least five installations in satisfactory operation for at least five years.

B. Component Compatibility:
   1. All components shall be specifically constructed for the specified service conditions and shall be integrated into the overall assembly by the Remediation Contractor.

1.04 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings:
      a. Complete layout and installation drawings for the equipment showing mounting details, dimensions, fitting locations, materials of construction, containment details, and updated system piping and instrumentation diagram (P&ID). Submit manufacturer's literature, catalog cuts, and specifications for major equipment, and for all appurtenances (piping, valves, instrumentation, etc.) showing performance data, electrical wiring and control diagrams, installation and operation instructions, and applicable certifications.

   2. Operation and Maintenance Manual:
      a. Complete Operation and Maintenance Manual, including, but not limited to the following (as applicable): description of operation, start-up and testing procedures; normal (daily) operational procedures; normal and emergency shut down procedures; alarm responses; maintenance data and schedules; daily log sheet; equipment manufacturer's manuals; sampling plan and schedule; manufacturer's recommended spare parts inventory; and calibration and alignment information.

1.05 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading:
   1. Deliver materials to the Site to ensure uninterrupted progress of the Work. Deliver anchor bolts and anchorage devices which are to be embedded in cast-in-place concrete in ample time to prevent delay of that Work.

B. Storage and Protection:
   1. Store materials to permit easy access for inspection and identification. Keep all material off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

C. Acceptance at Site:
   1. All boxes, crates and packages shall be inspected by the Remediation Contractor upon delivery to the Site. Remediation Contractor shall notify the Remediation Engineer, in writing, if any loss or damage exists to equipment or components. Replace loss and repair damage to new condition in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 EQUIPMENT PERFORMANCE

A. General:
   1. The temporary water treatment system has been designed to treat collected liquids at a maximum instantaneous flow rate of 150 gallons per minute (gpm).
   2. The temporary water treatment system has been designed to operate in “batch mode”.
   3. The temporary water treatment system does not have any instrumentation, controls, alarms, or telemetry necessary to operate the system unattended.
   4. The temporary water treatment system has not been designed to operate in freezing temperatures. The Remediation Contractor shall winterize the system as needed to protect equipment, pipes, and other components from damage during periods of freezing weather.

2.02 EQUIPMENT

A. Berms, Containment, and Collection Sump
   1. Remediation Contractor shall construct a containment area for the temporary water treatment system. The containment area shall be constructed in accordance with the Contract Drawings and the Remediation Contractor submittals.
   2. The area to be used to stage the temporary water treatment system shall be graded and sloped to a low point to form a collection sump.
   3. A minimum 8-inch high berm shall be constructed of gravel, or approved equal, around the perimeter of the temporary water treatment system containment area to provide secondary containment equal to a minimum of 110% of one effluent storage tank (approximately 21,000 gallons), and a one-year, 24-hour storm event of approximately 2 inches.
   4. Non-woven geotextile fabric layers shall be installed above and below the high-density polyethylene (HDPE) liner and the ground surface. Specification for Non-woven geotextile fabric, or approved equal are found in Section 31 05 19.13 Geotextiles for Earthwork. Non-woven geotextile shall be placed in accordance with Section 31 05 19.13, Geotextiles for Earthwork, Contract Drawings, and Remediation Contractor submittals.
   5. The containment area shall be lined with a layer of 40-mil HDPE liner that shall be textured on both sides. Specifications for HDPE liner, or approved equal are found in Section 31 05 19.16, Geomembranes for Earthwork. The liner shall be installed continuously along the bottom of the containment area and sloped to an HDPE-lined sump to allow for collection of liquids. If more than one HDPE panel is required in the containment area, the panels shall be seamed by fusion welding in accordance with manufacturer’s recommendations. The liner shall be extended over the top and outside face of the berm. The outside face of the liner shall be adequately secured to prevent displacement or wind uplift.
   6. Crushed stone with a minimum thickness of 6 inches shall be installed on top of the HDPE liner to protect the liner from damage and serve as a non-slip working surface.

Crushed stone shall be placed in accordance with Section 31 05 05, Aggregates for Earthwork, Contract Drawings, and Remediation Contractor submittals.

B. Influent Storage/Weir Tanks
   1. Influent storage/weir tanks shall be 18,100-gallon flip top weir tanks, by Rain for Rent, or approved equal. Minimum total influent storage capacity shall be 36,200 gallons.
   2. Influent storage/weir tanks shall be of steel construction and shall be equipped with inlet and outlet pipe connections, over and under weirs to induce settling of solids and capture of floatables, operable tops which can be opened by personnel for visual inspection and water level measurements, access stairs and guardrails meeting OSHA requirements, and liquid level gauge.

C. Centrifugal Pumps
   1. Centrifugal pumps shall be rated for 150 gpm and 138' of pumping head, and shall be model DV-80 by Rain for Rent, or approved equal.
   2. Each centrifugal pump shall have an installed spare, except for backwash pump. Backwash pump will also serve as the effluent discharge pump, if needed, based on the final location of the effluent storage tanks and the actual discharge location at the Site.

D. Bag Filters
   1. Bag filters shall be model BF-180 by TIGG LLC, or approved equal, and shall be sized for a 150 gpm flow rate.
   2. Each bag filter system shall be equipped with bag filter housings, bag support baskets, legs, interconnecting piping, shutoff valves, sample taps (at inlet and outlet of each housing) and pressure gauges (at inlet and outlet of each housing).
   3. Piping and valves shall be configured to allow each bag filter system to operate in parallel or vessel flow isolation mode. Valves shall isolate individual housing from the filter process, allowing continuous service of the remaining housings during filter bag removal and replacement.
   4. Bag filter housings shall be carbon steel construction built to ASME pressure vessel standards and shall be rated for a maximum working pressure of 150 psi.
   5. Effluent bag filter housings shall be capable of utilizing 0.5-micron high efficiency bag filters.

E. Zeolite Resin Vessels
   1. Zeolite resin vessels shall be CP-1000 by TIGG Corp., or approved equal. Each unit shall be filled with 1,000 pounds of TIGG OMC-P Zeolite media, or approved equal, for the removal of residual oils and metals.
   2. Zeolite resin vessels shall be skid-mounted and each vessel shall have a minimum loaded hydraulic capacity of 75 gpm. Flow shall be split evenly between two treatment trains with a total system flow of 150 gpm.

F. Liquid Phase GAC Vessels
   1. GAC units shall be CP-2000 by TIGG Corp., or approved equal. Each unit shall be filled with 2,000 lbs. of TIGG virgin coal based liquid phase carbon, or approved equal.
   2. GAC vessels shall be skid-mounted and each vessel shall have a minimum loaded hydraulic capacity of 75 gpm. Flow shall be split evenly between two treatment trains and each treatment train shall have two units in series.
   3. GAC vessels shall be designed for a down flow application and a carbon dry fill opening in the top. All vessel fittings shall be installed by the GAC vessel manufacturer at the time and place of manufacture.
   4. Water to be treated shall have a minimum empty bed contact time of 15 minutes per vessel at 75 gpm.

5. Water shall be routed through the GAC vessels in series during normal treatment system operations. When the primary GAC vessel becomes spent (i.e., breakthrough of constituents above permitted limits or other proposed action levels), the Remediation Contractor will perform a carbon change-out of the primary vessel. The secondary vessel shall be moved to the primary position and a new GAC vessel shall be placed in the secondary position.

G. Ion Exchange Vessels
   1. Ion exchange resin vessels shall be Siemens IX-48, or approved equal, and shall be sized for 150 gpm flow rate.
   2. Ion exchange vessels will be utilized for secondary cyanide removal, if needed, and shall be piped so that the entire ion exchange unit may be normally by-passed.

H. Effluent Storage Tanks
   1. Effluent storage tanks shall be 21,000 gallon bi-level tanks, by Rain for Rent, or approved equal. Minimum total effluent storage capacity shall be 42,000 gallons.
   2. Effluent storage tanks shall be of steel construction and shall be equipped with inlet and outlet pipe connections and removable top which can be opened by personnel for visual inspection and water level measurements, access stairs and guardrails meeting OSHA requirements, and liquid level gauge.

I. Conveyance Pipe, Hose, Valves, and Appurtenances
   1. Remediation Contractor shall provide all necessary piping, hose, valves, and appurtenances required for installation and operation of the temporary water treatment system.
   2. Piping located inside the temporary water treatment system containment area shall be PVC Schedule 80 by JM Eagle, or approved equal. Hoses shall be Versiflo 150 by Goodyear Tire and Rubber Co., Inc., or approved equal. Piping located outside the temporary water treatment system containment area shall be single wall, HDPE SDR 11 with butt fused connections. HDPE Pipe shall be Driscoplex® by Performance Pipe, CP Chemical Co.
   3. Pressure gauges shall be XSEL Type 232.34 by Wika Instrument, LP. Pressure gauge range shall be 0 psi to 60 psi.
   4. Piping, hose, valves, and appurtenances shall conform to applicable ASTM standards.
   5. Piping shall be secured to prevent displacement, supported in accordance with manufacturer's instructions, and protected from vehicular traffic when placed on ground surface.

J. Flow Meter/Totalizer
   1. Flow meter shall be 3-inch Recordall® Turbo 450 by BadgerMeter, Inc., or approved equal.
   2. Flow meter shall be capable of displaying instantaneous and totalized flow locally. Flow meter shall be equipped with totalizer model ER-10 by BadgerMeter, Inc., or approved equal.

K. Spare Parts
   1. Remediation Contractor shall furnish spare parts and accessories necessary to operate and maintain the temporary water treatment system for the duration of the Work.
   2. Stock equipment manufacturer's recommended spare parts at the Site. Spare parts shall be identical and interchangeable with original equipment parts.
   3. Stock spare schedule 80 PVC pipe, fittings, valves, transfer hose, and pressure gauges, necessary to make timely repairs to the temporary water treatment system conveyance piping.

4. Store spare parts in secure location in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.01 GENERAL

A. Install, operate, and maintain temporary water treatment system in accordance with the Contract Documents, approved submittals, and manufacturer's instructions and requirements; and so as to not exceed the substantive requirements for water discharge limitations identified a State Pollutant Discharge Elimination System (SPDES) Equivalency Permit to be obtained prior to remedial construction.

3.02 TESTING AND STARTUP ACTIVITIES

A. Perform temporary water treatment system startup, testing, and troubleshooting activities prior to initiating full scale (normal) operations. Startup and testing activities shall be in accordance with equipment manufacturer's recommendations and as indicated in the Remediation Contractor prepared O&M Manual which has been reviewed by the Remediation Engineer.

B. General startup and testing of the temporary water treatment system shall consist of treating a minimum of 10,000 gallons of water collected from the first proposed excavation area (i.e., water that has been in contact with soil to be disturbed). During the startup test, the temporary water treatment system shall be operated at the 150 gpm peak flow rate until the entire 10,000-gallon batch is treated. The Remediation Contractor shall continuously monitor and record readings (every 15 minutes, minimum) from all pressure gauges, flow meters, and other installed instrumentation necessary to demonstrate that the system is operating as designed, including backwash, by-pass, and recycle functions, to the satisfaction of the Remediation Engineer.

C. Remediation Engineer shall collect start-up testing water samples following treatment of approximately 3,000 gallons, 6,000 gallons and 10,000 gallons of water. The entire 5,000 gallons of treated water shall be retained in the effluent storage tanks until analytical results indicate that water may be discharge. Samples collected during start-up shall be submitted for laboratory testing in accordance with the SPDES Equivalency Permit and the parameter list presented in the following table:

TABLE 01 53 53-A
LABORATORY TESTING PARAMETERS

Parameter – USEPA Method No.	Influent/Effluent	Mid-Process
Polychlorinated Biphenyls (PCBs) - 608	Yes	Yes
Volatile Organic Compounds (VOCs) - 624	Yes	Yes
Semi-Volatile Organic Compounds (SVOCs) - 625	Yes	Yes
Metals – 200.7	Yes	Yes
Total Suspended Solids (TSS) - 160.2	Yes	Yes

Notes:
Mid-process samples shall be collected downstream of the zeolite resin vessels, liquid-phase GAC vessels, and bag filters. Where the treatment train is divided into parallel streams, samples from each parallel stream shall be collected. Samples shall be collected during general startup testing of the system and during normal operations. Some or all of these mid-process locations may be eliminated as operating experience is gained.

3.03 COLLECTION OF LIQUIDS

A. Liquid that requires handling, treatment, and disposal shall be collected and transferred to the temporary water treatment system. The method(s) by which water is collected shall be area-specific, and shall be conducted in a manner that prohibits the spillage, leakage, or other release of liquid as collected.

B. Maintain timely and accurate records concerning the volumes and areas from which accumulated liquids are removed and transported to the temporary water treatment system.

C. Equipment utilized to collect/handle accumulated liquids, including pumps, tanks, and tanker trucks, as appropriate, shall be decontaminated prior to removal from the Site.

3.04 HANDLING AND STORAGE OF LIQUIDS

A. Store liquids in containers acceptable to the Remediation Engineer and Owner. Storage containers may be reused by the Remediation Contractor, unless otherwise directed by the Remediation Engineer.

B. Storage containers shall be clearly marked to indicate the known or suspected contents, source area(s), and date(s) of generation.

3.05 SYSTEM MONITORING

3.06 WATER QUALITY TESTING

A. Temporary water treatment system water quality testing shall be conducted during normal operations. During the first month of operation, testing shall be conducted once per week. During and after the second month of operation, extending until system shutdown, testing shall be conducted once per month. Note, water quality testing may have to be conducted more frequently, dependent on the SPDES Equivalency Permit requirements. Operational sampling shall be collected in accordance with the table in Section 3.02.

B. Notify Remediation Engineer and Owner regarding any operational, sampling, or effluent discharge issues that may could permit limitations.

3.07 ROUTINE MONITORING

A. The temporary water treatment system shall initially be manually operated and controlled through a series of valves, visual reading gauges, and pump controls as necessary to accommodate system operation. Remediation Contractor shall provide an experienced operator to be on site during temporary water treatment system operation. While the system is operating, the operator shall have no other duties that interfere with the manual operation

of the temporary water treatment system. As operating experience is gained, the Remediation Contractor may add additional controls and alarms approved by Remediation Engineer to eliminate the need for a dedicated on-site system operator.

B. The Remediation Contractor prepared O&M manual shall describe the routine activities to be conducted at least once per shift by the temporary water treatment system operator. Activities should be in accordance with equipment manufacturer's requirements and recommendations. Those activities shall include, but not be limited, to the following:
   1. Verify that valves are positioned properly, to fill and drain the tanks as applicable.
   2. Visual inspection of piping, hoses, and valves noting damage, leakage, or other defects.
   3. Visual inspection of storage tanks noting water levels, damage, leakage, corrosion, or other defects. When tanks are emptied, the sediment thickness in the bottom of the tank shall be gauged and recorded. If sediment is observed to be 4 inches deep, or if directed by the Remediation Engineer, the tank shall be cleaned. Liquids resulting from cleaning activities shall be treated using the temporary water treatment system, and solids shall be collected for subsequent disposal.
   4. Visual inspection of pumps and equipment noting excessive noise or vibration, damage, leakage, corrosion, or other defects.
   5. Obtain readings from temporary water treatment system pressure gauges associated with the different treatment processes within the treatment train(s). Pressure gauge readings shall be utilized to determine when a backwash event or filter replacement is required, or a particular treatment unit is not functioning properly.
   6. Obtain readings from the system flow meter totalizer to monitor system flow rate, totalized flow to date, and daily flow total.
   7. Visual inspection of containment liner noting damage, standing water, or other
   8. Remediation Contractor shall collect, at a minimum once per day, water quality field data consisting of turbidity and pH measurements to provide indications of system performance. As operating experience is gained and following approval of the Remediation Engineer, the Remediation Contractor may reduce the frequency of the monitoring. Samples shall be collected in the individual treatment trains at the following locations:
      a. Influent storage/weir tanks
      b. Upstream of bag filter units
      c. Downstream of zeolite resin vessels
      d. Downstream of liquid-phase GAC units
      e. Downstream of ion exchange vessels (if operational)

3.08 CORRECTIVE ACTIONS

A. At the direction of Owner or Remediation Engineer, the Remediation Contractor shall take corrective actions necessary to maintain specified treatment system performance in the event of an upset condition and/or operating conditions that result in non-compliant effluent water quality. During corrective actions, the Remediation Contractor may be required by Owner or Remediation Engineer to mobilize additional effluent storage tanks, improved equipment, and/or repeat start-up and testing procedures as specified herein. If the Remediation Contractor fails to make these corrections, or if the improved equipment fails to meet specified requirements, Owner, notwithstanding having made partial payment for work and materials which have entered into the manufacture of said equipment, may reject said equipment and order the Remediation Contractor to remove it from the premises at the Remediation Contractor's expense.

3.09 DOCUMENTATION

A. Remediation Contractor shall maintain a daily operations log (i.e., tabulated results) in which the process variables described above shall be recorded. In addition, all activities related to O&M of the temporary water treatment system shall be documented in the daily log. The daily log shall be kept onsite and shall be made available to the Remediation Engineer on demand.

3.10 ATTACHMENTS

A. The attachments listed below, which follow after the “End of Section” designation, are part of this Section:

END OF SECTION

SECTION 01 55 13

TEMPORARY ACCESS ROADS AND PARKING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide temporary construction roads, walks, parking areas, and appurtenances required during the Project for use by Remediation Contractor, other contractors employed on the Project, Owner's, and emergency vehicles.
   2. Temporary roads and parking areas shall be designed and maintained by Remediation Contractor and shall be fully passable to vehicles in all weather conditions.

B. Use of Existing Access Roads:
   1. Remediation Contractor is allowed to use existing roads upon the Effective Date of the Agreement.
   2. Prevent interference with traffic on existing roads and parking areas. At all times, keep access roads and entrances serving the Site clear and available to Owner, Owner's employees, emergency vehicles, and other contractors. Do not use access roads or Site entrances for parking or storage of materials or equipment.
   3. Remediation Contractor shall indemnify and hold harmless Owner and Remediation Engineer from expenses caused by Remediation Contractor's operations over existing roads and parking areas.
   4. Schedule deliveries to minimize use of driveways and Site entrances.

1.02 SITE ACCESS

A. Site Access:
   1. Remediation Contractor access to the Site shall be via the Site entrance located at 279 Court St., Binghamton, New York.
   2. Remediation Contractor access to the Susquehanna River shall be via 336 Court St, Binghamton, New York unless otherwise indicated in the Contract Documents.
   3. Remediation Contractor shall comply with public roadway requirements for weight and height.

1.03 REMEDIATION CONTRACTOR PARKING

A. Remediation Contractor employee vehicles shall park in area(s) designated on the Construction Drawings.

B. Park construction vehicles and equipment in work areas off permanent roads and parking areas, in areas of the Site designated for Remediation Contractor staging.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Materials for temporary roads and parking areas shall comply with the Contract Documents.

B. Traffic controls shall comply with requirements of authorities having jurisdiction.

PART 3 – EXECUTION

3.01 TEMPORARY ROADS AND PARKING AREAS

A. Temporary Roads and Parking in Areas Different from Permanent Pavement:
   1. Provide temporary roads and parking areas adequate to support and withstand traffic loads during the Project. Locate temporary roads and parking areas as shown. As appropriate provide appropriately sized culvert pipes as necessary and strip and stockpile surficial topsoil as requested by individual property owners.
   2. Provide reasonably level, graded, well-drained subgrade of satisfactory soil material, compacted to at least 95 percent of maximum dry density in the upper six inches.
   3. Where required to support loads and provide separation between subgrade and subbase materials, provide geotextile, as required.
   4. Provide crushed stone or gravel subbase material a minimum of six inches thick, roller-compacted to level, smooth, dense surface. Subbase for temporary roads and areas traveled by construction vehicles shall be adequate for loads and traffic served.

3.02 TRAFFIC CONTROLS

A. Traffic Controls:
   1. Provide temporary traffic controls at intersections of temporary roads, including intersections with other temporary roads, intersections with public roads, and intersections with permanent access roads at the Site.
   2. Provide warning signs on permanent roads and drives, and provide “STOP” signs for traffic on temporary roads where required and at entrances to permanent pavement.
   3. Comply with requirements of authorities having jurisdiction.

3.03 MAINTENANCE OF ROADS

A. General:
   1. Maintain temporary roads and parking to continuously provide at the Site access for construction vehicles and trucks, Owner vehicles, deliveries for Owner, emergency vehicles, and parking areas for Owner’s personnel.
   2. Public roads shall be passable at all times unless a road closure is allowed in writing by authority having jurisdiction.
   3. When granular material of temporary roads and parking without hard surfacing become intermixed with soil or when temporary roads otherwise create a nuisance, remove intermixed granular-and-soil material and replace with clean aggregate as required.

B. Cleaning and Dust Control:
   1. Cleaning: Clean paved surfaces over which construction vehicles travel. Perform cleaning a minimum of once per day when construction vehicles are traveling over roads (or more frequently as directed by Remediation Engineer), by mechanical sweeping. Clean the following surfaces:
      a. Roads within limits of the Project.
      b. Permanent roads at the Site, between the Site entrance and the work areas, between the Site entrance and construction parking and staging areas.
      c. Public roads that require sweeping and cleaning due to construction operations.

2. Dust Control:
    a. Control dust resulting from construction activities to prevent nuisances at the Site and in nearby areas.
    b. Apply water or use other methods subject to Remediation Engineer's acceptance that will minimize airborne dust. Do not use water when water will cause hazardous or objectionable conditions such as mud, ponds, and pollution.
    c. Provide dust control that is non-polluting and does not contribute to tracking-out of dirt and dust onto pavement. Re-apply dust control treatment as required.
    d. Comply with Section 01 57 05, Temporary Controls.

C. Protection of Underground Facilities: Provide temporary, heavy-duty steel roadway plates to protect existing, manholes, handholes, valve boxes, vaults, and other Underground Facilities near to or visible at the ground surface.

3.04 REMOVALS AND RESTORATION

A. Removals:
1. Remove temporary roads, walks, and parking areas unless otherwise indicated in the Contract Documents or requested by the Owner. Return areas of temporary roads, walks, and parking to pre-construction condition unless otherwise indicated in the Contract Documents or requested by the Owner. Remove temporary gates, fencing, and traffic controls associated with temporary roads and parking areas unless otherwise indicated in the Contract Documents or requested by the Owner.

B. Restoration:
1. Repair or replace paving, curbs, gutters, and sidewalks affected by temporary roads and parking, and restore to required conditions in accordance with authorities having jurisdiction.
2. Restore to pre-construction conditions existing roads, walks, and parking areas damaged by Remediation Contractor, subject to approval of the owner of affected roads, walks, and parking areas.

END OF SECTION

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SECTION 01 57 05

TEMPORARY CONTROLS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide and maintain methods, equipment, materials, and temporary construction as required to control environmental conditions at the Site and adjacent areas.
   2. Maintain temporary controls until no longer required.
   3. Temporary controls include, but are not limited to, the following:
      a. Erosion, sediment, and turbidity controls. Includes control of surface water, including storm water run-off.
      b. Sheen control.
      c. Odor, vapor, and dust controls.
      d. Pollution controls.
      e. Noise controls.

B. Related Sections:
   1. Section 01 34 43.13, Environmental Procedures for Hazardous Materials.
   2. Section 01 35 49, Community Air Monitoring Plan.
   3. Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
   4. Section 01 74 05, Cleaning.
   5. Section 31 11 00, Clearing and Grubbing.
   6. Section 31 05 05, Aggregates for Earthwork.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. AASHTO M 288, Standard Specification for Geotextile Specification for Highway Applications.
   2. ASTM D4751, Standard Test Method for Determining Apparent Opening Size (AOS) of a Geotextile.
   3. City of Binghamton Noise Control Ordinance.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Comply with applicable provisions and recommendations of the following:
      a. NYSDEC New York State Standards and Specifications for Erosion and Sediment Control.
      b. NYSDOT Standard Specifications and Standard Sheets.

1.04 SUBMITTALS

A. Action Submittals:
   1. The Remediation Contractor shall submit the following plans (separate or as part of the Remediation Contractor's Project Operation Plan):

a. Erosion and Sediment Control Plan
b. Turbidity and Sheen Control Plan.
c. Noise Control Plan.
d. Odor, Dust, and Vapor Control Plan.
e. Pollution Control Plan.

2. Product Data: Submit manufacturer's product data, specifications, and installation instructions for the following:
   a. Rolled Erosion Control Materials, Silt fencing.
   b. Turbidity curtain system materials.
   c. Oil absorbent boom materials.
   d. Vapor mitigation agents and proposed application and storage equipment for each.

PART 2– PRODUCTS

2.01 EROSION, SEDIMENT, AND TURBIDITY CONTROLS

A. General:
   1. Materials used for erosion, sediment, and turbidity controls shall be in accordance with the applicable regulatory requirements indicated in Article 1.03 of this Section, unless otherwise shown or indicated in the Contract Documents.

B. Silt Fencing:
   1. Filter Fabric:
      a. Material: Geotextile shall comply with AASHTO M 288 specifications for temporary silt fence.
      b. Height: Three feet, minimum.
   2. Fence Support Posts:
      a. Material: Hardwood or steel posts may be used.
         1) Hardwood posts shall be at least 1.25 inches by 1.25 inches in cross section.
         2) Steel posts shall be "T" or "U" shape in cross section with a minimum weight of 1.0 pound per linear foot.
      b. Length: Four feet, minimum.
   3. Fabric fasteners shall be heavy-duty staples, wire ties, or other fastener compatible with support post material.

C. Straw Bale Dike:
   1. Bales shall be firmly-packed, unrotted straw bound firmly with intact bailing wire. Cross-sectional area on the small end of each bale shall be approximately 12 inches by 12 inches or larger.
   2. Posts shall comply with requirements for silt fencing support posts, or may be suitable reinforcing steel.

D. Rolled Erosion Control Product (RECP):
   1. RECP shall be a minimum of 8 inches in diameter and follow selected manufacturer material recommendations.
   2. RECP Support:
      a. Hardwood posts shall be at least 2.0 inches by 2.0 inches in cross section and installed in the middle of the RECP.
      b. In the event staking is not possible, concrete blocks or sand bags shall be used to stabilize the RECP.

E. Temporary Construction Entrance:
   1. Crushed stone shall be clean, durable, sharp-angled fragments of rock of uniform quality conforming to Material Designation 703-0102, Size Designation No. 3, in accordance with Section 703 of the NYSDOT Standard Specifications.

F. Turbidity Curtain System:
   1. Turbidity curtain system shall isolate the active Work Area as indicated on the Contract Drawings or as directed by the Remediation Engineer, from the Susquehanna River to prevent migration of suspended sediments outside the Work Area.
   2. Turbidity curtains system shall include a "gate" to allow passage of project vessels into and out of the Work Area, as appropriate.
   3. Turbidity curtains shall be a pre-assembled system, as specified on the Design Drawings.

2.02 SHEEN CONTROLS

A. Oil Absorbent Boom:
   1. Oil absorbent booms shall be anchored/secured in place inside of the Work Area and installed such that there are no gaps to allow the potential migration of oils/sheens beyond the boom. Absorbent booms shall also be used around work vessels transferring sediment and/or debris.
   2. Oil absorbent booms shall be five to eight inches in diameter.
   3. Remediation Contractor shall maintain and replace oil absorbent booms as necessary to prevent migration of oils/sheens beyond the boom.

2.03 ODOR, VAPOR, AND DUST CONTROLS

A. Vapor Mitigation Agents:
   1. BioSolve® Pinkwater®, by The BioSolve Company.
   2. AC-645 Long-Duration Foam, by Rusmar, Inc.

B. Water: Clean, potable.

C. Provide pressure washers, pneumatic foam unit, portable tanks, hoses, and other equipment required for the storage and application of vapor mitigation agents and water.

D. Provide a water truck, as necessary to control dust on site and on river access roads. Provide a sweeper truck to clean any materials tracked off site onto public roadways, as necessary.

PART 3 – EXECUTION

3.01 EROSION, SEDIMENT, AND TURBIDITY (INCLUDING SHEEN) CONTROL

A. Installation and Maintenance – General:
   1. General:
      a. Provide erosion and sediment controls as shown and indicated on the Design Drawings and elsewhere in the Contract Documents. Provide erosion and sediment controls as the Work progresses into previously undisturbed areas.
      b. Installation of erosion and sediment controls shall be in accordance with the applicable regulatory requirements indicated in Article 1.03 of this Section, unless otherwise shown or indicated in the Contract Documents.

c. Use necessary methods to successfully control erosion and sedimentation, including ecology-oriented construction practices, vegetative measures, and mechanical controls. Use best management practices in accordance with Laws and Regulations, and regulatory requirements indicated in Article 1.03 of this Section, to control erosion and sedimentation during the Project.
d. Plan and execute construction, disturbances of soils and soil cover, and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation. Provide temporary measures for controlling erosion and sedimentation, as indicated in the Contract Documents and as required for the Project.
e. Where areas must be cleared for storage of materials or equipment, or for temporary facilities, provisions shall be made for regulating drainage and controlling erosion and sedimentation, subject to Remediation Engineer's approval.
f. Provide erosion and sediment controls, including stabilization of soils, at the end of each work day.

2. Coordination:
   a. Coordinate erosion and sediment controls with this Section's requirements on water control and with Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
   b. Coordinate temporary erosion and sediment controls with construction of permanent drainage facilities and other Work to the extent necessary for economical, effective, and continuous erosion and sediment control.
3. Before commencing activities that will disturb soil or soil cover at the Site, provide all erosion and sediment control measures required by the Contract Documents for the areas where soil or soil cover will be disturbed.
4. In general, implement construction procedures associated with, or that may affect, erosion and sediment control to ensure minimum damage to the environment during construction. Remediation Contractor shall implement any and all additional measures required to comply with Laws and Regulations, and Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
5. Vegetation Removal:
   a. Perform clearing, grubbing, and related operations in accordance with Section 31 11 00, Clearing and Grubbing.
   b. Remove only those shrubs, grasses, and other vegetation that must be removed for construction. Protect remaining vegetation.
6. Access Roads and Parking Areas: When possible, access roads and temporary roads shall be located and constructed to avoid adverse effects on the environment. Provisions shall be made to regulate drainage, avoid erosion and sedimentation, and minimize damage to vegetation.
7. Sediment Removal and Temporary Controls:
   a. Perform Sediment Removal, fill, and related operations in accordance with Section 31 05 05, Aggregates for Earthwork and Section 35 20 23, Dredging and Subaqueous Backfill.
   b. Control erosion to minimize transport of soil from staging areas into existing waterways and surface waters. Such measures shall include, but are not limited to, using berms, silt fencing, straw bale dikes, gravel or crushed stone, slope drains, and other methods. Apply such temporary measures to erodible materials exposed by activities associated with the construction of the Project.
   c. Implement procedures that minimize suspension of sediments, sloughing, and spillage during dredging and debris removal in accordance with Section 35 20 23, Dredging and Subaqueous Backfill.
   d. Remediation Contractor shall provide special care in areas with steep slopes, where disturbance of vegetation shall be minimized to maintain soil stability.

8. Inspection and Maintenance:
   a. Periodically inspect areas of earthwork and areas where soil or soil cover are disturbed to detect evidence of the start of erosion and sedimentation; apply corrective measures as required to control erosion and sedimentation. Continue inspections and corrective measures until soils are permanently stabilized and permanent vegetation has been established.
   b. Inspect and report not less often than the frequency specified in Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
   c. Repair or replace damaged erosion and sediment controls within one day of Remediation Contractor becoming aware of such damage.
   d. Periodically remove silt and sediment that has accumulated in or behind sediment and erosion controls. Properly dispose of silt and sediment.
9. Duration of Erosion and Sediment Controls:
   a. Maintain erosion and sediment controls in effective working condition until the associated drainage area has been permanently stabilized.
   b. Maintain erosion and sediment controls until the Site is restored and site improvements including landscaping, if any, are complete with underlying soils permanently stabilized.
10. Work Stoppage: If the Work is temporarily stopped or suspended for any reason, Remediation Contractor shall provide additional temporary controls necessary to prevent environmental damage to the Site and adjacent areas while the Work is stopped or suspended.
11. Failure to Provide Adequate Controls: In the event Remediation Contractor repeatedly fails to satisfactorily control erosion and siltation, Owner reserves the right to employ outside assistance or to use Owner's own forces for erosion and sediment control. Cost of such work, plus engineering and inspection costs, will be deducted from monies due to Remediation Contractor.

B. Silt Fencing:
   1. Install and maintain silt fencing in a vertical plane, at the location(s) shown or indicated on the Design Drawings.
   2. Locations of Silt Fencing:
      a. Where possible, install silt fencing along contour lines so that each given run of fencing is at the same elevation.
      b. On slopes, install silt fencing at intervals that do not exceed the maximum lengths indicated in Table 01 57 05-A.

TABLE 01 57 05-A
MAXIMUM LENGTH OF SLOPE BETWEEN RUNS

Slope	Slope Length (feet)
1:2 (50%)	25
1:3 (33%)	50
1:4 (25%)	75
1:5 (20%) and Less	100

      c. Provide silt fencing around the perimeter of each stockpile of topsoil, general fill material, and excavated material. Install silt fencing before expected precipitation and maintain until stockpile is removed.
      d. Do not install silt fencing at the following types of locations:
         1) Area of concentrated storm water flows such as ditches, swales, or channels.
         2) Where rock or rocky soils prevent full and uniform anchoring of silt fencing.
         3) Across upstream or discharge ends of storm water piping or culverts.

3. Installation:
    a. Securely fasten filter fabric to each support post in no less than four locations. Spacing between support posts shall not exceed 10 feet (center to center).
    b. When two sections of filter fabric abut each other, fold over edges and overlap by minimum of 6 inches and securely fasten to wire mesh.
    c. Embed posts in the ground to the depth necessary for proper controls, but not less than 16 inches below ground surface.
    d. Filter fabric shall extend a minimum of 6 inches below ground and a minimum of 16 inches above ground.
    e. Filter fabric at bottom of silt fence shall be buried in a trench, in a "J" configuration, to a depth of six inches.
    f. Remove sediment accumulated at silt fencing as required. Repair and reinstall silt fencing as required.
4. Maintenance:
    a. Do not allow formation of concentrated storm water flows on slopes above silt fencing unless so shown or indicated in the Contract Documents. If unauthorized concentrated storm water flows occur, stabilize the slope via earthmoving and other stabilization measures as required to prevent flow of concentrated storm water flows toward silt fencing.

C. Rolled Erosion Control Material:
1. Install and maintain RECP at the location(s) downgradient of Work Area and/or as shown on the Construction Drawings or modified by the Remediation Engineer in the field, or as otherwise deemed necessary by the Remediation Contractor. RECP will be installed in accordance with the manufacturer's recommendations.
    a. Where possible, install RECP along contour lines so that each given run is at the same elevation.
    b. On slopes greater than 2:1 (H:V) install a second run of RECP at the top of slope. Install RECP at intervals that do not exceed the maximum intervals indicated in Table 01 57 05-B of this Section.

TABLE 01 57 05-B
MAXIMUM LENGTH OF SLOPE ABOVE EACH RECP RUN

Slope (percent)	Slope Length (feet)
2 and less	750
2.1 to 5	500
5.1 to 10	250
10.1 to 15	170
15.1 to 20	125
20.1 to 25	100
25.1 to 30	75

    c. Provide erosion and sediment control measures around the perimeter of each stockpile of topsoil, general fill material, and excavated material. Install erosion and sediment control before expected precipitation and maintain until stockpile is removed.
2. Installation:
    a. Securely stake RECP using 2 inches x 2 inches x 3 feet hard wood stakes through the middle of the RECP on 10 feet centers or other methods in accordance with manufacturer's instructions and approved by the Remediation Engineer.
    b. When two sections of RECP abut each other, overlap sections 18 inches and securely stake.

c. Embed posts in the ground to the depth necessary for proper controls in accordance with manufacturer's specifications.

3. Maintenance:
   a. Remediation Contractor shall conduct a routine inspection at least once every seven days until final restoration.
   b. Remove accumulated sediment when depth reaches one-half the effective height of the sediment control.
   c. Repair and reinstall RECP as required.

D. Do not allow formation of concentrated storm water flows on slopes above RECP unless so shown or indicated in the Contract Documents. If unauthorized concentrated storm water flows occur, stabilize the slope via earthmoving and other stabilization measures as required to prevent flow of concentrated storm water flows toward RECP.

E. Straw Bale Dike:
   1. Install straw bale dikes where shown or indicated, including in swales, along contours, and along toe of slopes. On slopes, install straw bale dikes at intervals that do not exceed the maximum lengths indicated in Table 01 57 05-A of this Section.
   2. Install bales in shallow excavation as wide as the bale and approximately four to six inches below surrounding grade.
   3. Ends of bale shall tightly abut ends of adjacent bales.
   4. Securely install straw bales using two support posts per bale, driven into the ground a minimum of 1.5 to two feet below bottom of bale. Top of post shall be flush with top of bale. Angle first post for each bale toward the previously-installed bale.
   5. Frequently inspect bales and repair or replace as required. Remove accumulated silt and debris from behind straw bales.

F. Protection of Storm Water Drainage Inlets and Catch Basins:
   1. Protect each drainage inlet and catch basin that has the potential to receive storm water run-off from exposed soils.
   2. Install inlet filter bags inside of drainage inlet or catch basin in accordance with manufacturer's instructions. Secure inlet filter bag with the structure's grate or by other acceptable means. Alternate protection methods may be used with Remediation Engineer's approval.
   3. Inlet filter bags shall not pose any obstruction above the elevation of the drainage inlet or catch basin grate requiring barricades or flashers.
   4. When removing silt and sediment from inlet filter bag, do not dump filter bag's contents into the drainage inlet or catch basin.
   5. Remove silt and sediment from inlet filter bag, or replace inlet filter bag, when inlet filter bag is not more than half full.

G. Temporary Construction Entrance:
   1. Where shown on the Drawings, and where construction vehicles will regularly transit to paved surfaces from unstabilized surfaces, provide a temporary construction entrance. Remediation Contractor vehicles shall use temporary construction entrances.
   2. Provide temporary construction entrances of the width, length, and thickness shown or indicated on the Drawings. When not shown or indicated on the Drawings, temporary construction entrance shall be not less than 50 feet long, by 15 feet wide, by six inches thick. Slope of entrance shall not exceed 12 percent.
   3. Installation:
      a. Ensure that subgrade under temporary construction entrance is suitably dense for the intended purpose. Suitably prepare subgrade as required for temporary construction entrance.

b. Provide on subgrade a layer of geotextile fabric, installed in accordance with geotextile manufacturer's recommendations for separation.
c. Provide crushed stone on installed geotextile. Grade crushed stone for passage of vehicles.

4. Maintenance:
   a. Maintain temporary construction entrance at not less than the minimum required thickness. Add crushed stone as required to maintain thickness.
   b. When upper layer of temporary construction entrance becomes contaminated with soil, remove the contaminated material and replace with clean crushed stone.
   c. Using water to wash down temporary construction entrance or paved areas onto which soil material has been tracked is prohibited.

H. Turbidity Curtain System and Oil Absorbent Booms

1. General:
   a. Provide turbidity and sheen controls as shown and indicated on the Drawings and elsewhere in the Contract Documents.
   b. Install turbidity curtain system downstream of the Work Area.
   c. Use best management practices (BMP) to control turbidity and sheen, including mechanical controls.
2. Before commencing activities that will disturb sediment at the Work Area, provide all turbidity and sheen control measures required by the Contract Documents for the areas where material will be disturbed.
3. Implement construction procedures associated with, or that may affect, turbidity and sheen control to ensure minimum damage to the environment during construction. Remediation Contractor shall implement any and all additional measures required to comply with Laws and Regulations.
4. Control turbidity and sheen to minimize transport of material to or from the Site and adjacent surface waters. Such measures shall include, but are not limited to, use of turbidity curtains. Apply such temporary measures to areas disturbed by activities associated with the construction of the Project.
5. Inspection and Maintenance
   a. Periodically inspect areas where sediment is disturbed to detect evidence of the start of turbidity and sheen; apply corrective measures as required to control turbidity and sheen.
   b. Repair or replace damaged turbidity and sheen controls within 1 hour of Remediation Contractor becoming aware of such damage.
6. Maintain turbidity and sheen controls in effective working condition until the associated Work Area has been returned to pre-construction conditions.

3.02 TURBIDITY MONITORING

A. Turbidity monitoring will be performed by the Remediation Contractor to monitor the effectiveness of the turbidity barriers. Monitoring will be conducted by the Remediation Contractor prior to the start of dredging activities to establish a baseline and subsequently during the dredging operations to assess the effectiveness of the turbidity barriers.

B. During the intrusive operations, turbidity monitoring will consist of real-time turbidity monitoring stations at a minimum of two locations in the Susquehanna River:
   1. One location approximately 200 feet upstream of the active work area (upstream location).
   2. One location approximately 200 feet downstream of the active work area (downstream location).

C. At each monitoring location, turbidity will be monitored in real time using a turbidity monitoring system, consisting of the following main components: data station, turbidity sensor, submersible data-logging system with cellular modem telemetry, and computer software. Turbidity levels will be measured using International Organization for Standardization 7027 method and reported in nephelometric turbidity units (NTUs).

D. Turbidity levels will be logged and transmitted a minimum of every 15 minutes. The Remediation Contractor will provide the Remediation Engineer with access to the real-time turbidity data.

E. Turbidity exceedance levels are as follows:

1. More than 25, but less than 50 NTUs greater than background (i.e., upstream) or if minor contrast between the upstream and downstream location is visually observed. Early Warning Level: requires visual inspection of current work activities, turbidity control system, and engineering controls to assess the need to make any minor operational changes.
2. More than 50, but less than 100 NTUs greater than background, or if significant visible contrast between the upstream and downstream location is visually observed. Action Level: A number of site assessment activities will be initiated, including, but not limited to, the following:
    a. Temporarily cease remedial activities to perform a visual inspection of the existing erosion and sedimentation controls, temporary containment system, and turbidity curtain/absorbent boom system. Remediation Contractor shall perform maintenance/repairs, implement BMPs and/or operational changes, as appropriate.
    b. Continued monitoring to determine if prior results greater than 50 NTUs was anomaly or short duration event.
    c. If these assessment activities indicate that the elevated downstream turbidity reading reflects a water quality impact that could persist or recur and that it is related to specific IRM activities or site controls, the Remediation Contractor will make recommendations to modify the pertinent activities to the extent feasible, or additional controls will be implemented.
3. More than 100 NTUs greater than background. Stop Work Level: temporarily cease sediment removal activities until the turbidity level is less than 100 NTU. Perform response for greater than 50 but less than100 NTU. Work shall not commence until approval is received from NYSEG or the Remediation Engineer.
4. If the Work is temporarily stopped or suspended for any reason, Remediation Contractor shall provide additional temporary controls necessary to prevent environmental damage to the Work Area and adjacent areas while the Work is stopped or suspended.
5. In the event Remediation Contractor repeatedly fails to satisfactorily control turbidity and sheen, Responsible Party reserves the right to employ outside assistance or to use Responsible Party's own forces for turbidity and sheen control. Cost of such work, plus engineering and inspection costs, will be deducted from monies due Remediation Contractor.

3.03 SURFACE WATER CONTROL

A. General:

1. Provide methods to control surface water to prevent damage to the Work, the Site, and adjoining properties.
2. Control fill, grading, and ditching to direct surface water away from disturbed areas, excavations, pits, tunnels, and other construction areas, and to direct drainage to proper run-off courses to prevent erosion, damage, or nuisance.

B. Equipment and Facilities for Surface Water Control:
   1. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.

C. Discharge and Disposal:
   1. Dispose of surface water in a manner to prevent flooding, erosion, and other damage to any and all parts of the Site and adjoining areas, and that complies with Laws and Regulations.

3.04 ODOR, VAPOR, AND DUST CONTROL

A. General:
   1. Provide means, methods, and facilities required to control MGP-related odors, vapors, and dust generated during the Work.
   2. Proactively employ odor, vapor, and dust controls during the Work, and evaluate and modify construction techniques and site management practices, as necessary and appropriate, to:
      a. Mitigate MGP-related odor emissions to the extent practicable, and to the satisfaction of Owner, Remediation Engineer, and NYSDEC.
      b. Prevent exceedances of the community air monitoring action levels specified in Section 01 35 49, Community Air Monitoring Plan.
   3. If Remediation Contractor's means, methods, and facilities are unsuccessful in controlling MGP-related odors, vapors, and dust as specified in this Section, based on visual observations or the results of community air monitoring, Work shall be suspended until appropriate corrective actions are taken by Remediation Contractor to remedy the situation to Remediation Engineer's satisfaction. Owner will not be liable for any expense or delay resulting from Remediation Contractor's failure to control MGP-related odors, vapors, and dust in accordance with this Section.

B. Vapor Mitigation Agents:
   1. Mobilize vapor mitigation agents and means of storage and dispersion at the Site before initiating any ground-intrusive Work or dust-generating Work.
   2. Application of vapor mitigation agents shall be as follows:
      a. BioSolve Pinkwater:
         1) Prepare a solution of BioSolve® Pinkwater® concentrate and water in accordance with manufacturer's recommendations.
         2) Apply when actively handling excavated materials and as required by Owner or Remediation Engineer.
      b. AC-645 Long-Duration Foam:
         1) Prepare a solution of AC-645 Long-Duration Foam concentrate and water in accordance with manufacturer's recommendations. Apply to uniformly cover excavated materials with minimum three inches of foam.
         2) Apply before each work break, at the end of each work day, and as required by Owner or Remediation Engineer.

C. Construction Techniques and Site Management Practices:
   1. Excavate and backfill, and load, handle, and unload excavated materials and clean fill materials, in manner that minimizes the generation of airborne dust.
   2. Haul excavated materials and clean fill materials in properly covered vehicles.
   3. Restrict vehicle speeds on temporary access roads and active haul routes.
   4. Cover shallow excavations and stockpiles of clean fill materials with polyethylene liners before extended work breaks and at the end of each work day. Anchor liners to resist wind forces; slope to prevent accumulation of water.

5. Hold to a minimum the areas of bare soil exposed at one time.
6. Comply with progress cleaning requirements of Section 01 74 05, Cleaning.

3.05 POLLUTION CONTROL

A. General:
   1. Provide means, methods, and facilities required to prevent contamination of soil, water, and atmosphere caused by discharge of noxious substances from construction operations.
   2. Equipment used during construction shall comply with Laws and Regulations.
   3. Comply with Section 01 35 43.13, Environmental Procedures for Hazardous Materials.

B. Spills and Contamination:
   1. Provide equipment, materials, and personnel to perform emergency measures required to contain and clean up spills, and to remove soils and liquids contaminated by spills.
   2. Provide spill kits, including oil-absorbent pads, socks, and booms, at or immediately adjacent to the Site's major work areas and equipment storage and fueling areas.
   3. Immediately notify Owner or Remediation Engineer of all spills, regardless of material, volume, or circumstances involved.
   4. Excavate contaminated material and properly dispose of off-site, and replace with suitable compacted fill and topsoil.

C. Protection of Surface Waters:
   1. Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, and other such substances in or adjacent to surface waters and open drainage routes, in sanitary sewers, or in storm sewers.

D. Atmospheric Pollutants:
   1. Provide systems for controlling atmospheric pollutants related to the Work.
   2. Prevent toxic concentrations of chemicals and vapors.
   3. Prevent harmful dispersal of pollutants into atmosphere.

E. Solid Waste:
   1. Provide systems for controlling and managing solid waste related to the Work.
   2. Prevent solid waste from becoming airborne, and from discharging to surface waters and drainage routes.
   3. Properly handle and dispose of solid waste.

3.06 NOISE CONTROL

A. Remediation Contractor's vehicles, equipment, and operations shall minimize noise emissions to the greatest degree practicable. Provide mufflers, silencers, and sound barriers when necessary, or as directed by Owner or Remediation Engineer.

B. Noise levels shall comply with all applicable Laws and Regulations, including OSHA requirements and local ordinances.

C. Noise emissions shall not interfere with the Work of Owner or others.

3.07 PROHIBITED CONSTRUCTION PROCEDURES

A. Prohibited construction procedures include, but are not limited to, the following:
   1. Dumping or disposing of spoil material, cleared vegetation, debris, or other waste material in any surface waters, drainage ways, or other unauthorized locations.
   2. Indiscriminate, arbitrary, or capricious operation of equipment in any surface waters, drainage ways, or other unauthorized locations.
   3. Pumping of silt-laden water from trenches or other excavations to any surface waters, drainage ways, sewers, or other unauthorized locations.
   4. Damaging vegetation beyond the extent necessary for construction.

3.08 REMOVAL OF TEMPORARY CONTROLS

A. Remove temporary controls only when directed by Owner or Remediation Engineer.

END OF SECTION

SECTION 01 58 13

TEMPORARY PROJECT SIGNAGE

PART 1 – GENERAL

1.01 SUMMARY

A. Scope:
   1. Remediation Contractor shall furnish and install temporary signage as specified in this Section for construction site information.
   2. Temporary signs include:
      a. Danger signs.
      b. Security signs.
   3. Do not display any other temporary signs, other than those specified, without prior approval of Owner.
   4. Maintain temporary signs until Substantial Completion, or as otherwise directed by Owner.

1.02 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings: Submit Shop Drawings showing layout, text, font, character size, colors, graphics or logos (if any), materials of construction, and dimensions of each temporary sign, and the proposed locations and orientations of temporary signs at the Site.

PART 2 – PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

A. Danger Signs:
   1. Location: Mounted on fencing at intervals of 100 linear feet and on either side of temporary Site security gate at 279 Court St. and at river access site entrance at 336 Court St. (two signs per gate).
   2. Text: “DANGER” in upper panel and “CONSTRUCTION AREA AUTHORIZED PERSONNEL ONLY” in lower panel.
   3. Background Color: Red upper panel, black outline along border, and white lower panel.
   4. Text Color: White in upper panel and black in lower panel.
   5. Printing: Digital or screen printing with ultraviolet-resistant inks.
   6. Sign Board:
      a. Material: Treated polyethylene, thickness of 0.055 inch.
      b. Minimum Dimensions: 14 inches wide by 10 inches high.
   7. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.

B. Warning Buoy:
   1. Location: Anchored within the river around the temporary enclosures and turbidity controls.
   2. Text: “KEEP OUT” with high visibility markings on all sides.
   3. Background color: White.
   4. Text Color: Black.
   5. Markings: Exclusion area markings in high visibility colors.

6. Buoy:
    a. Material: UV protected polyethylene
    b. Minimum Dimensions: 49 inches tall by 10 inches wide.
7. Supports and Bracing: Provide anchoring and bracing as required to maintain location of buoys for the duration of the project.

C. Security Signs:
1. Location: Mounted on fencing on each side of temporary Site security gate entrance at 279 Court St., at river access site entrance at 336 Court St. (two signs per Site entrance), and at entrances of each field office trailer (one sign per trailer entrance).
2. Text: “SECURITY NOTICE” in upper panel and “ALL VISITORS MUST SIGN-IN AT THE FIELD OFFICE” in lower panel.
3. Background Color: Yellow upper panel, black outline along border, and white lower panel.
4. Text Color: Black for upper and lower panels.
5. Printing: Digital or screen printing with ultraviolet-resistant inks.
6. Sign Board:
    a. Material: Treated polyethylene, thickness of 0.055 inch.
    b. Minimum Dimensions: 20 inches wide by 14 inches high.
7. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.

PART 3 – EXECUTION

3.01 INSTALLATION, MAINTENANCE, AND REMOVAL

A. Installation:
1. Install temporary signs within 14 days of Remediation Engineer’s approval of the submittal required by this Section.
2. Obtain Owner and Remediation Engineer approval of installation locations before installing temporary signs.

B. Maintenance:
1. Maintain temporary signage so that signs are clean, legible, and upright. Cut grass, weeds, and other plants so that temporary signs are not covered or obscured. Maintain warning buoys at the water’s surface during fluctuations of water levels.
2. Repair or replace damaged temporary signs. Relocate signs as required by progress of the Project.

C. Remove temporary signs upon Substantial Completion, or as otherwise directed by the Remediation Engineer.

END OF SECTION

SECTION 01 62 00

PRODUCT OPTIONS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section includes:
      a. Remediation Contractor's options for selecting products.
      b. Requirements for consideration of "or-equal" products.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:
   1. "Products" includes materials, equipment, machinery, components, fixtures, systems, and other goods incorporated in the Work. Products do not include machinery and equipment used for preparing, fabricating, conveying, erecting, or installing the Work. Products include Owner-furnished goods incorporated in the Work where use of such goods is specifically required in the Contract Documents.

1.03 PRODUCT OPTIONS

A. For products specified only by reference standard or description, without reference to Supplier, provide products meeting that standard, by a Supplier or from a source that complies with the Contract Documents.

B. For products specified by naming one or more products or Suppliers, provide the named products that comply with the Contract Documents, unless an "or-equal" or substitute product is approved by Remediation Engineer.

C. For products specified by naming one or more products or Suppliers and the term, "or equal", when Remediation Contractor proposes a product or Supplier as an "or equal", submit to Remediation Engineer a request for approval of an "or-equal" product or Supplier.

D. For products specified by naming only one product or manufacturer and followed by words indicating that no substitution is allowed, there is no option and no substitution will be allowed.

1.04 "OR-EQUAL" PRODUCTS

A. For proposed products not named in the Contract Documents and considered as an "or equal", Remediation Contractor shall request in writing Remediation Engineer's approval of the "or equal". Request for approval of an "or-equal" product shall accompany the Shop Drawing or product data submittal for the proposed product and shall include:
   1. Remediation Contractor's request that the proposed product be considered as an "or equal", accompanied by Remediation Contractor's certifications.

2. Documentation adequate to show that proposed product:
   a. Does not require extensive revisions to the Contract Documents.
   b. Is consistent with the Contract Documents.
   c. Will produce results and performance required in the Contract Documents.
   d. Is compatible with other portions of the Work.
3. Detailed comparison of significant qualities of proposed product with the products and manufacturers named in the Contract Documents. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements shown or indicated.
4. Evidence that proposed product manufacturer will furnish warranty equal to or better than specified, if any.
5. List of similar installations for completed projects with project names and addresses, and names and address of design professionals and owners, if requested.
6. Samples, if requested.
7. Other information requested by Remediation Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section includes general requirements for preparing for shipping, delivering, and handling materials and equipment.
   2. Remediation Contractor shall make all arrangements for transporting, delivering, and handling of materials and equipment required for prosecution and completion of the Work.
   3. When required, move stored materials and equipment without additional compensation and without changes to the Contract Times.

1.02 SUBMITTALS

A. Refer to individual Specification Sections for submittal requirements relative to delivering and handling materials and equipment.

1.03 PREPARING FOR SHIPMENT

A. When practical, factory-assemble materials and equipment. Match mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable, protective coating.

B. Package materials and equipment to facilitate handling, and protect materials and equipment from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate the associated purchase order number, bill of lading number, contents by name, Owner's contract name and number, Remediation Contractor name, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.

C. Protect materials and equipment from exposure to the elements and keep thoroughly dry and dust-free at all times. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Lubricate bearings and other items requiring lubrication in accordance with manufacturer's instructions.

D. Keep Remediation Engineer informed of delivery of all materials and equipment to be incorporated in the Work.

E. Do not ship materials and equipment until:
   1. Related Shop Drawings, Samples, and other submittals have been reviewed or accepted (as applicable) by Remediation Engineer, including, but not necessarily limited to, all Action Submittals associated with the materials and equipment being delivered.
   2. Manufacturer's instructions for handling, storing, and installing the associated materials and equipment have been submitted to and accepted by Remediation Engineer in accordance with the Specifications.

3. Results of source quality control testing (factory testing), when required by the Contract Documents for the associated materials or equipment, have been reviewed and accepted by Remediation Engineer.
4. Facilities required for handling materials and equipment in accordance with manufacturer's instructions are in place and available.
5. Required storage facilities have been provided.

1.04 DELIVERY

A. Scheduling and Timing of Deliveries:
   1. Arrange deliveries of materials and equipment in accordance with the accepted Progress Schedule and in ample time to facilitate inspection prior to installation.
   2. Schedule deliveries to minimize space required for and duration of storage of materials and equipment at the Site or delivery location, as applicable.
   3. Coordinate deliveries to avoid conflicting with the Work and conditions at the Site, and to accommodate the following:
      a. Work of other contractors and Owner.
      b. Storage space limitations.
      c. Availability of equipment and personnel for handling materials and equipment.
      d. Owner's use of premises.
   4. Deliver materials and equipment to the Site during regular working hours.
   5. Deliver materials and equipment to avoid delaying the Work and the Project, including work of other contractors, as applicable. Deliver anchor system materials, including anchor bolts to be embedded in concrete or masonry, in ample time to avoid delaying the Work.

B. Deliveries:
   1. Shipments shall be delivered with Remediation Contractor's name, Subcontractor's name (if applicable), Site name, Project name, and contract designation clearly marked.
   2. Site may be listed as the "ship to" or "delivery" address; but Owner shall not be listed as recipient of shipment unless otherwise directed in writing by Remediation Engineer.
   3. Provide Remediation Contractor's telephone number to shipper; do not provide Owner's telephone number.
   4. Arrange for deliveries while Remediation Contractor's personnel are at the Site. Remediation Contractor shall receive and coordinate shipments upon delivery. Shipments delivered to the Site when Remediation Contractor is not present will be refused by Owner, and Remediation Contractor shall be responsible for the associated delays and additional costs, if incurred.
   5. Comply with Section 01 35 43.13, Environmental Procedures for Hazardous Materials.

C. Containers and Marking:
   1. Have materials and equipment delivered in manufacturer's original, unopened, labeled containers.
   2. Clearly mark partial deliveries of component parts of materials and equipment to identify materials and equipment, to allow easy accumulation of parts, and to facilitate assembly.

D. Inspection of Deliveries:
   1. Immediately upon delivery, inspect shipment to verify that:
      a. Materials and equipment comply with the Contract Documents and reviewed or accepted (as applicable) submittals.
      b. Quantities are correct.
      c. Materials and equipment are undamaged.

d. Containers and packages are intact and labels are legible.
e. Materials and equipment are properly protected.

2. Promptly remove damaged materials and equipment from the Site and expedite delivery of new, undamaged materials and equipment, and remedy incomplete or lost materials and equipment to furnish materials and equipment in accordance with the Contract Documents, to avoid delaying progress of the Work.
3. Advise Remediation Engineer in writing when damaged, incomplete, or defective materials and equipment are delivered, and advise the Remediation Engineer of the associated impact on the Progress Schedule.

1.05 HANDLING OF MATERIALS AND EQUIPMENT

A. Provide equipment and personnel necessary to handle materials and equipment, including those furnished by Owner, by methods that prevent soiling or damaging materials, equipment, and packaging.

B. Provide additional protection during handling as necessary to prevent scraping, marring, and otherwise damaging materials, equipment, and surrounding surfaces.

C. Handle materials and equipment by methods that prevent bending and overstressing.

D. Lift heavy components only at designated lifting points.

E. Handle materials and equipment in safe manner and as recommended by the manufacturer to prevent damage. Do not drop, roll, or skid materials and equipment off delivery vehicles or at other times during handling. Hand-carry or use suitable handling equipment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

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SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section includes general requirements for storing and protecting materials and equipment.

1.02 STORAGE

A. Store and protect materials and equipment in accordance with manufacturer's recommendations and the Contract Documents.

B. Remediation Contractor shall make all arrangements and provisions necessary for, and pay all costs for, storing materials and equipment. Excavated materials, construction equipment, and materials and equipment to be incorporated into the Work shall be placed to avoid injuring the Work and existing facilities and property, and so that free access is maintained at all times to all parts of the Work and to public utility installations in vicinity of the Work. Store materials and equipment neatly and compactly in locations that cause minimum inconvenience to Owner, other contractors, public travel, and owners, tenants, and occupants of adjoining property. Arrange storage in manner to allow easy access for inspection.

C. Areas available at the Site for storing materials and equipment are shown or indicated in the Contract Documents, or as approved by Owner or Remediation Engineer.

D. Store materials and equipment to become Owner's property to facilitate their inspection and ensure preservation of quality and fitness of the Work, including proper protection against damage by freezing, moisture, and high temperatures with ambient temperatures as high as 90 degrees F. Store in indoor, climate-controlled storage areas all materials and equipment subject to damage by moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner. When placing orders to Suppliers for equipment and controls containing computer chips, electronics, and solid-state devices, Remediation Contractor shall obtain, coordinate, and comply with specific temperature and humidity limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.

E. Remediation Contractor shall be fully responsible for loss or damage (including theft) to stored materials and equipment.

F. Do not open manufacturer's containers until time of installation, unless recommended by the manufacturer or otherwise specified in the Contract Documents.

G. Do not store materials or equipment in structures being constructed unless approved by Remediation Engineer in writing.

H. Do not use lawns or other private property for storage without written permission of the owner or other person in possession or control of such premises.

1.03 PROTECTION

A. Equipment to be incorporated into the Work shall be boxed, crated, or otherwise completely enclosed and protected during shipping, handling, and storage, in accordance with Section 01 65 00 (Product Delivery Requirements).

B. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.

C. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Painted equipment surfaces that are damaged or marred shall be repainted in their entirety in accordance with equipment manufacturer and paint manufacturer requirements, to the satisfaction of Remediation Engineer.

D. Protect electrical equipment, controls, and instrumentation against moisture, water damage, heat, cold, and dust. Space heaters provided in equipment shall be connected and operating at all times until equipment is placed in operation and permanently connected.

1.04 UNCOVERED STORAGE

A. The following types of materials may be stored outdoors without cover on supports so there is no contact with the ground:
   1. Reinforcing steel.
   2. Pre-cast concrete materials.
   3. Structural steel.
   4. Metal stairs.
   5. Handrails and railings.
   6. Grating.
   7. Checker plate.
   8. Metal access hatches.
   9. Castings.
   10. Fiberglass products.
   11. Rigid electrical conduit.
   12. Piping, except polyvinyl chloride (PVC) or chlorinated PVC (CPVC) pipe.

1.05 COVERED STORAGE

A. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
   1. Grout and mortar materials.
   2. Masonry units.
   3. Rough lumber.
   4. Soil materials and granular materials such as aggregate.
   5. PVC and CPVC pipe.
   6. Filter media.

B. Tie down covers with rope or anchor with sandbags, and slope covering to prevent accumulation of water.

C. Store loose soil materials and granular materials, with covering impervious to water, in well-drained area or on solid surfaces to prevent mixing with foreign matter. Place, grade, and shape stockpiles for proper drainage.

1.06 FULLY-PROTECTED STORAGE

A. Store all material and equipment not named in Articles 1.04 and 1.05 of this Section on supports in buildings or trailers that have concrete or wooden flooring, roof, and fully-closed walls on all sides. Covering with visquine plastic sheeting or similar material in space without floor, roof, and walls is not acceptable. Comply with the following:
   1. Provide heated storage for materials and equipment that could be damaged by low temperatures or freezing.
   2. Provide air-conditioned storage for materials and equipment that could be damaged by high temperatures.
   3. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
   4. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.

1.07 HAZARDOUS PRODUCTS

A. Prevent contamination of personnel, storage area, and the Site. Comply with Laws and Regulations, manufacturer's instructions, and Section 01 35 43.13, Environmental Procedures for Hazardous Materials.

1.08 MAINTENANCE OF STORAGE

A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:
   1. Condition and status of storage facilities is adequate to provide required storage conditions.
   2. Required environmental conditions are maintained on a continuing basis.
   3. Materials and equipment exposed to elements are not adversely affected.

1.09 RECORDS

A. Keep up-to-date account of materials and equipment in storage to facilitate preparation of Applications for Payment, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 71 23

FIELD ENGINEERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide field engineering services and professional services of the types indicated for the Project, including:
      a. Furnishing civil, structural, and other professional engineering services specified or required to execute Remediation Contractor's construction methods.
      b. Being solely responsible for all locations, dimensions, and levels. No data other than Change Order, Work Change Directive, or Field Order shall justify departure from dimensions and levels required by the Contract Documents.
      c. Rectifying all Work improperly installed because of not maintaining, not protecting, or removing without authorization established reference points, stakes, marks, and monuments.
      d. Providing such facilities and assistance necessary for the Remediation Engineer to check lines and grade points placed by Remediation Contractor. Do not perform excavation or backfilling Work until all cross-sectioning necessary for determining payment quantities for Unit Price Work have been completed and accepted by Remediation Engineer.
   2. Survey control for construction and documentation purposes will be the responsibility of the Remediation Contractor. The Remediation Contractor will safeguard all survey points and bench marks.
   3. Remediation Contractor shall furnish and/or provide all supervision, labor, tools, materials, equipment, services and appurtenances necessary for, or incidental to, completing all work necessary for performing the surveying activities described herein and preparing required as-built survey drawings of pre-construction, interim (i.e., post-removal), and post-backfill grades.
      a. The Remediation Contractor will perform in-river and upland surveys to determine riverbed topography and shore elevations. In-river surveys will be performed as a way of accurately monitoring the completed dredging project. Upland topographic surveys will be performed to tie in the in-river survey to the top of the slope.
      b. The Remediation Contractor will perform in-river and upland topographic surveys to verify the grades of the final dredged surface for use as acceptance of completed work for progress payments. The Remediation Contractor will prepare survey drawings and confirm that work is performed according to specifications including, but not limited to, the confirmation that dredging and backfill elevations are met.
      c. The Remediation Contractor will perform topographic surveys to verify the upland areas have been restored to pre-remediation conditions or to the satisfaction of the Remediation Engineer and property owner.
      d. Additional surveys, contingent on the results of the post-construction survey will be conducted by the Remediation Contractor if the required removal or fill extents and thickness have not been met. If these requirements have not been met, additional in-water construction activities must be conducted and surveyed in order to verify the final design requirements specified in the IRM have been achieved. All contingency surveying will be conducted at the Remediation Contractor's sole expense with no additional cost to the Owner.

1.02 QUALITY ASSURANCE

A. Qualifications:
   1. Remediation Contractor Field Engineer:
      a. Employ and retain at the Site a field engineer with experience and capability of performing all field engineering tasks required of Remediation Contractor.
      b. Responsibilities include, but are not necessarily limited to, the following:
         1) Checking all formwork, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials, and equipment for compliance with the Contract Documents.
         2) Maintaining field office files, drawings, and record documents, and coordinating field engineering services with Subcontractors and Suppliers as appropriate. Preparing layout and coordination drawings for construction operations.
         3) Checking and coordinating the Work for conflicts and interferences, and immediately advising the Remediation Engineer of all discrepancies of which Remediation Contractor is aware.
         4) Cooperating as required with the Remediation Engineer in observing the Work and performing field inspections.
         5) Reviewing and coordinating the Work with Shop Drawings and Remediation Contractor's other submittals.
   2. Surveyor:
      a. Remediation Contractor shall employ or retain the services, as needed, at the Site a surveyor with experience and capability of performing surveying and layout tasks required in the Contract Documents and as required for the Work. Surveyor shall be a professional land surveyor licensed and registered in the State of New York.
      b. Responsibilities include, but are not necessarily limited to, the following:
         1) Providing required surveying equipment, including transit or theodolite, level, stakes, and surveying accessories.
         2) Establishing required lines and grades for performing all excavating, filling, compacting, and grading, and for constructing all facilities, structures, pipelines, and site improvements.
         3) Preparing and maintaining professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the Work.
         4) Performing such surveys and computations necessary to determine quantities of Work performed, placed, or installed.
         5) Performing such surveys necessary to record actual construction, including demolition, excavation, backfilling, and restoration operations.
         6) Prior to backfilling operations, surveying, locating, and recording on a copy of the Contract Documents accurate representation of buried Work and Underground Facilities encountered.
         7) Preparing certified survey drawings in accordance with Section 01 78 39, Project Record Documents.
         8) Complying with requirements of the Contract Documents relative to surveying and related Work.

1.03 SUBMITTALS

A. Procedure Submittals: The Remediation Contractor shall submit a Survey Plan for review and approval by the Owner and Remediation Engineer 3 weeks prior to the start of any survey work. The Plan will include the following:
   1. Survey Schedules and Drawings depicting survey lines
      a. The Survey Plan will include a schedule for all survey work and Drawings that show the survey lines for each survey.

2. Survey Instrument Calibration Certificates and Specifications
    a. The Remediation Contractor will submit survey instrument calibration certificates for review and approval by the Owner.
    b. The Remediation Contractor will submit specifications for all proposed survey equipment for review by the Owner.

B. Informational Submittals:
1. Qualifications Statements:
    a. Remediation Contractor Field Engineer: Submit name and address of field engineer. When requested by Remediation Engineer, submit qualifications.
    b. Surveyor: Submit name and address of firm, and resumes of each surveyor, crew chief, and all other personnel who are proposed to perform the survey, or survey related Work. Submit at least 10 days prior to beginning survey Work. During the Project, submit resume for each new surveyor, crew chief, and all other personnel employed or retained by Remediation Contractor to perform survey or survey related work at least 10 days prior to starting on the survey Work.
2. Certificates:
    a. Field Engineering: When requested by the Remediation Engineer, submit documentation verifying accuracy of field engineering.
    b. Surveying: When requested by Remediation Engineer, submit certificate signed by professional surveyor certifying that elevations and locations of the Work comply with the Contract Documents. Explain all deviations, if any.
3. Records:
    a. Remediation Contractor shall maintain a complete and accurate log of control and survey Work as it progresses.
    b. Survey data shall be in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standards of practice in the locality where the Site is located. Original field notes, computations, and other surveying data shall be recorded by Remediation Contractor's surveyor in Contractor-furnished hard-bound field books, and shall be signed and sealed by Remediation Contractor's surveyor. Completeness and accuracy of survey Work, and completeness and accuracy of survey records, including field books, shall be responsibility of Remediation Contractor. Failure to organize and maintain survey records in an appropriate manner that allows reasonable and independent verification of calculations, and to allow identification of elevations, dimensions, and grades of the Work, shall be cause for rejecting the survey records, including field books.
    c. Survey data shall be provided in x, y, z (easting, northing, elevation) format. Each data file must include a descriptive header including, but not limited to: software and equipment information, project name and client, horizontal and vertical datum, units, survey type, alignment, and stations surveyed.
    d. The accuracy of the Remediation Contractor's survey and other furnishing of data to the Remediation Engineer do not constitute a transfer of responsibility for verifying accuracy.
    e. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Remediation Engineer.
4. As-Built Drawings. Upon completion of major phases of Work, Remediation Contractor shall submit a copy of the associated survey drawing with contour data in a format compatible with AutoCAD Civil 3D 2014 and in PDF.
    a. Drawings shall include the sediment elevation contours (1-foot resolution) and upland elevation contours (1-foot resolution).

b. Drawings showing survey data shall be shown at scale not to exceed 1 inch equals 20 feet.
c. Volume tables shall be included on pre-excavation, post-excavation, and post-backfill survey drawings documenting the actual removal and backfill volumes, respectively.

1.04 PERFORMANCE CRITERIA/QUALITY ASSURANCE

A. The Remediation Contractor must have a minimum of 5 years' experience completing the type of work specified herein.

B. All survey, layout, and related work shall be performed and signed by a New York State-licensed Surveyor.

C. The Remediation Contractor shall conduct and document the quality control procedures recommended by the equipment manufacturer.

D. The survey shall be conducted to meet the requirements specified herein; including, but not limited to confirming removal and backfill operations have met the required vertical and horizontal extent.

E. When applicable, the Remediation Contractor shall regularly resurvey benchmarks for comparison with original elevations and positions. Where the Remediation Contractor uses the laser for control, periodically check the grade and alignment during each day's operation. The Remediation Contractor shall promptly notify the Remediation Engineer if changes in elevations or positions occur to be reviewed for consistency with Design Drawings.

PART 2– PRODUCTS

2.01 QUALITY OF MATERIALS AND EQUIPMENT

A. Survey instruments will be calibrated as specified by the manufacturer.

PART 3 – EXECUTION

3.01 GENERAL

A. The Remediation Contractor shall exercise care during the execution of the work activities specified herein to minimize any disturbance to existing property and to the landscape and waters in the areas surrounding the work areas. Survey crews shall not traverse into controlled areas or private property without first obtaining approval by the Owner or Remediation Engineer.

B. The Remediation Contractor shall reference survey points to the provided survey control points and record all survey locations, with horizontal and vertical data, on project record documents.

C. To the extent practicable, the Remediation Contractor shall perform each survey activity at the same locations and along the same lines as used in previous surveys.

D. Perform contingency survey of the removal areas will be at the sole expense of the Remediation Contractor if post-dredge and/or post-construction surveys indicates that final removal elevation/extent and/or backfill elevation/extent, as specified within the IRM, has not been met.

E. Survey shall be collected on grid with spacing no more than 10 feet by 10 feet. Survey shall document location of grade breaks and edges of construction areas as appropriate.

F. Geotechnical Instrumentation Survey: Conduct surveys of optical survey points and the use of tiltmeters in accordance with Specification Section 31 09 13, Geotechnical Instrumentation and Monitoring.

3.02 PRE-CONSTRUCTION SURVEY

A. Remediation Contractor shall perform pre-construction survey of intended upland support and staging areas (e.g., OU-1 support area, Transloading Area, etc.) to document existing area conditions. Support areas shall include any areas to be used by the Remediation Contractor for staging and access to support the Work, including a minimum of 20 linear-feet into the Susquehanna River across the entire face of the Transloading Area.

B. Remediation Contractor shall perform pre-construction survey of the sediment removal areas (Area 1 and Area 2), the remainder of the in-water area bound within the temporary containment system, the adjacent riverbank extending 25 linear feet on to land from the land-side edge of the Area 1 and Area 2 boundaries or to an adjacent vertical structure (e.g., flood wall, former bridge abutment), whichever is encountered first, and approximately 25 linear feet into the Susquehanna River outside of the temporary containment system.

C. If the Remediation Contractor elects to, they may perform an additional pre-construction debris survey at no additional cost to the Owner. If the Remediation Contractor elects to perform an additional pre-construction debris survey of sediment removal limits and surrounding area, the Remediation Contractor must submit the results of the survey to the Remediation Engineer for review and to document conditions at the time of mobilization to the site. Additional pre-construction debris survey shall indicate location of significant debris, structures, or other features within and/or adjacent to the dredge area.

D. Pre-construction survey drawings shall be submitted to the Owner and Remediation Engineer at least one week prior to the start of dredging.

3.03 INTERIM DREDGE SURFACE MONITORING

A. Interim dredge surface data shall be collected by the Remediation Contractor during dredging. A Global Positioning System (GPS) attached to dredging equipment (as required by Section 35 20 23, Dredging and Subaqueous Backfill) will document that all dredging depths are being obtained as specified along the completed areas.

B. Interim monitoring results shall be included in the Remediation Contractor's daily progress reports and will be made available to the Owner and/or Remediation Engineer upon request.

3.04 INTERIM SURVEY

A. The Remediation Contractor will perform interim survey of the installation of support components (i.e., the temporary containment system) and provide to the Owner and Remediation Engineer for review prior to initiation of sediment removal.

B. The Remediation Contractor will perform a post-dredge survey to confirm that the required design dredge elevations have been met and required terms of Contract completed. The post-dredge survey will be completed at the same locations and along the same lines as used in the pre-construction survey.

C. Post-dredging survey drawings shall be submitted to the Owner and Remediation Engineer for approval prior to the start of backfilling operations and not more than 2 days after completion of the survey.

3.05 INTERIM BACKFILL SURFACE MONITORING

A. Interim backfill surface data will be collected by the Remediation Contractor during backfill and will differentiate between types of backfill material being placed, where applicable. Interim backfill monitoring will be performed similar to the interim dredge surface monitoring described in Part 3.03 of this Section.

B. Interim monitoring results will be included in the Remediation Contractor's daily progress reports and will be made available to the Owner and/or Remediation Engineer upon request.

3.06 POST-CONSTRUCTION SURVEY

A. The Remediation Contractor shall perform post-construction survey of upland support and staging areas to confirm restoration to pre-construction conditions.

B. The Remediation Contractor shall perform a post-construction in-river survey to confirm that the required restoration elevations have been met for the upper fill material placement and required terms of Contract completed. The post-construction survey will be completed at the same locations and along the same lines as used in the pre-construction survey.

C. Post-construction survey drawings shall be submitted to the Owner and Remediation Engineer not more than 2 weeks after completion of the survey.

3.07 CONDUCT OF WORK

A. Reference Points:
   1. Established reference points damaged or destroyed by Remediation Contractor will be re-established by Remediation Contractor at no cost to Owner.
   2. From established reference points, establish lines, grades, and elevations necessary to control the Work. Obtain measurements required for executing the Work to tolerances specified.
   3. Establish, place, and replace as required, such additional stakes, markers, and other reference points necessary for control, intermediate checks, and guidance of construction operations.
   4. For all surveys, use and report data in using the following:
      a. Horizontal datum: North American Datum of 1983 (NAD 83), New York State Plane Coordinate System, New York Central Zone (Fipzone 3102).
      b. Vertical Datum: National America Vertical Datum of 1988 (NAVD88).

B. Accuracy:
   1. For upland topographic surveys:
      a. Horizontal accuracy shall be plus or minus 0.1 feet.

b. Vertical accuracy shall be plus or minus 0.05 feet for general site grading and 0.02 feet for structural features (e.g. pipes, manholes) unless otherwise specified or approved by Owner and Remediation Engineer.

2. In-river surveys:
   a. Horizontal accuracy shall be a plus or minus 0.2 feet.
   b. Vertical accuracy shall be plus or minus 0.2 feet.
3. Survey calculations shall include an error analysis sufficient to demonstrate required accuracy.

C. Prohibited Construction Procedures
1. Prohibited construction procedures include, but are not limited to:
   a. Indiscriminate, arbitrary or capricious operation of equipment.

END OF SECTION

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SECTION 01 71 33

PROTECTION OF WORK AND PROPERTY

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall be responsible for taking all precautions, providing all programs, and taking all actions necessary to protect the Work and all public and private property and facilities from damage as specified in this Section.
   2. To prevent damage, injury, or loss, Remediation Contractor's actions shall include the following:
      a. Storing materials, supplies, and equipment in an orderly, safe manner that does not unduly interfere with the progress of the Work or work of other contractors or utility companies.
      b. Providing suitable storage facilities for materials and equipment subject to damage or degradation by exposure to weather, theft, breakage, or other cause.
      c. Placing upon the Work or any part thereof only loads consistent with the safety and integrity of that portion of the Work and existing construction.
      d. Frequently removing and disposing of refuse, rubbish, scrap materials, and debris caused by Remediation Contractor's operations so that, at all times, the Site is safe, orderly, and workmanlike in appearance.
      e. Providing temporary barricades and guard rails around openings, scaffolding, temporary stairs and ramps, excavations, elevated walkways, and other hazardous areas.
   3. Do not, except after written consent from proper parties, enter or occupy privately-owned land with personnel, tools, materials, or equipment, except on lands and easements provided by Owner. Remediation Contractor shall not seek out such written consent unless specifically authorized by Owner to do so.
   4. Remediation Contractor has full responsibility for preserving public and private property and facilities on and adjacent to the Site. Direct or indirect damage done by, or on account of, any act, omission, neglect, or misconduct by Remediation Contractor in executing the Work, shall be restored by Remediation Contractor, at its expense to condition equal to that existing before damage was done.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 BARRICADES AND WARNING SIGNALS

A. General:
   1. Where the Work is performed on or adjacent to roadway, access road, right-of-way, or public place:
      a. Provide barricades, fences, lights, warning signs, danger signals, watchmen, and take other precautionary measures for protecting persons, property, and the Work.
      b. Paint barricades to be visible at night.
      c. From sunset to sunrise, furnish and maintain at least one light at each barricade.

d. Erect sufficient barricades to keep vehicles from being driven on or into Work under construction.
e. Furnish watchmen in sufficient numbers to protect the Work.

2. Provide temporary barricades to protect personnel and property for Work not in or adjacent to vehicular travel areas, including indoor work, in accordance with Laws and Regulations.
3. Remediation Contractor's responsibility for maintaining temporary barricades, signs, lights, and for providing watchmen shall continue until the Work is accepted in accordance with the Contract Documents.

3.02 TREE AND PLANT PROTECTION

A. General:
1. Protect existing trees, shrubs, and plants on or adjacent to the Site, shown or designated to remain in place, against unnecessary cutting, breaking, or skinning of trunk, branches, bark, and roots.
2. Do not store materials or equipment, or park construction equipment and vehicles, within the foliage drip line.
3. In areas subject to traffic, provide temporary fencing or barricades to protect trees and plants.
4. Cover exposed roots with burlap, which shall be kept continuously wet. Cover exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run-off, and noxious materials in solution.
5. If branches or trunks are damaged, prune branches immediately and protect cut or damaged areas with emulsified asphalt compounded specifically for horticultural use, in manner acceptable to Remediation Engineer.
6. When directed by Remediation Engineer, remove and dispose of damaged trees and plants that die or suffer permanent injury, and replace at Remediation Contractor's expense damaged trees or plants with specimens of equal or better quality.

B. Coordinate Work in this Article 3.02 with Section 31 11 00, Clearing and Grubbing.

3.03 PROTECTION OF EXISTING STRUCTURES

A. Underground/Subaquatic Facilities:
1. Underground/Subaquatic Facilities known to Owner and Design Engineer, except water, gas, sewer, electric, and communications services to individual buildings and properties, are shown on the Design Drawings. Information shown for Underground/Subsurface Facilities is the best available to Owner and Design Engineer but is not guaranteed to be correct or complete.
2. Utility Mark-Out and Utility Clearance.
a. Clearly delineate areas of subsurface intrusive work and subaquatic work at the Site.
b. Provide required notification to local one-call notification system (Dig Safely New York) at least two working days, but not more than 10 working days, before planned start of intrusive work.
c. Perform and document a desktop review of available drawings, site plans, or other reference material.
d. Walk the Site and review utility markings before proceeding with intrusive work. Document any visible evidence of utilities.
e. Contact potential utility or industrial companies identified in previous steps, located near worksite.
f. Perform a marine survey for subsurface utilities.

g. Protect and preserve staking, markings, or other designations until no longer required for proper and safe Work at or near Underground/Subaquatic Facilities.

3. Remediation Contractor shall explore ahead of intrusive work, and shall uncover obstructing Underground/Subaquatic Facilities sufficiently to determine their location, to prevent damage to Underground/Subaquatic Facilities, and to prevent service interruption to building or parcels served by Underground/Subaquatic Facilities. If Remediation Contractor damages an Underground/Subaquatic Facility, or the material surrounding or supporting the same, Remediation Contractor shall immediately notify Owner, Remediation Engineer, and the owner of the damaged facility and restore it to original condition, in accordance with requirements of the owner of the damaged facility. Such repair or restoration Work shall be performed at no additional cost to Owner.
   a. Undertake such emergency response actions as may be required.
   b. Collect, containerize, characterize, and properly dispose of any oils or pollutants released from the damaged facility.
   c. Provide provisions for alternate or temporary service until damaged facility is repaired.
   d. Provide assistance to the owner of the damaged facility during repairs unless authorized by the facility's owner to undertake such repairs directly.
4. Necessary changes in the location of the Work may be directed by Remediation Engineer to avoid Underground Facilities not shown or indicated on the Contract Documents.
5. If permanent relocation of an existing Underground Facilities is required and is not otherwise shown or indicated in the Contract Documents, Remediation Contractor will be directed in writing to perform the Work. When the relocation Work results in a change in the Contract Price, Contract Times, contract modification procedures and payment for such Work shall be in accordance with the Contract Documents.

B. Surface Structures:
1. Surface structures are existing buildings, retaining walls, other structures, and other facilities at or above ground surface, including their foundations or any extension below ground surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, piers, roads, dams, spillways, channels, open drainage, exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.
2. Existing surface facilities, including but not limited to guard rails, posts, guard cables, signs, poles, markers, curbs, and fencing, that are damaged or temporarily removed to facilitate the Work shall be replaced and restored to their original condition at Remediation Contractor's expense.

C. Protection of Underground Facilities and Surface Structures:
1. Remediation Contractor shall sustain in their places and protect from direct or indirect injury all Underground Facilities and surface structures located within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such facility or structure. Before proceeding with the Work of sustaining and supporting such facility or structure, Remediation Contractor shall satisfy Remediation Engineer that methods and procedures to be used have been approved by party owning same.
2. Remediation Contractor shall bear all risks attending the presence or proximity of all Underground Facilities and surface structures within or adjacent to the limits of the Work, in accordance with the Contract Documents. Remediation Contractor shall be responsible for damage and expense for direct or indirect injury caused by its Work to facilities and structures. Remediation Contractor shall repair immediately and completely damage caused by its Work, to the satisfaction of the owner of damaged facility or structure.

3. Comply with 16 NYCRR 753 (Protection of Underground Facilities) and other Laws and Regulations regarding the protection of Underground Facilities.

D. Coordinate Work in this Article 3.03 with 31 05 05 Aggregates for Earthwork.

3.04 PROTECTION OF EXISTING MONITORING WELLS

A. Remediation Contractor shall clearly mark, maintain, and protect existing monitoring wells shown or indicated to remain.

B. Repair or decommission and replace at Remediation Contractor's expense existing monitoring wells damaged during the Work.
   1. Decommissioning shall be in accordance with the NYSDEC Groundwater Monitoring Well Decommissioning Policy (CP-43).
   2. Replace decommissioned monitoring well with new well of equal construction. Install at location selected by Remediation Engineer.

3.05 PROTECTION OF INSTALLED MATERIALS, EQUIPMENT, AND LANDSCAPING

A. Protect installed materials and equipment to prevent damage from subsequent operations. Remove protection facilities when no longer needed prior to completion of the Work.

B. Control traffic to prevent damage to equipment, materials, and surfaces.

C. Provide coverings to protect materials and equipment from damage.

END OF SECTION

SECTION 01 74 05

CLEANING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall execute cleaning during the Project, at completion of the Work, and as required by this Section.
   2. Maintain in a clean manner the Site, the Work, and areas adjacent to or affected by the Work.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. NFPA 241, Safeguarding Construction, Alteration, and Demolition Operations.

1.03 PROGRESS CLEANING

A. General: Clean the Site, work areas, and other areas occupied by Remediation Contractor at least weekly. Dispose of materials in accordance with the following:
   1. Comply with NFPA 241 for removing combustible waste materials and debris.
   2. Do not hold non-combustible materials at the Site more than three days if the temperature is expected to rise above 80 degrees F. When temperature is less than 80 degrees F, dispose of non-combustible materials within seven days of their generation.
   3. Provide suitable containers for storage of waste materials and debris.
   4. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately.

B. Site:
   1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions in accordance with Section 01 57 05, Temporary Controls.
   2. At least weekly, brush-sweep roadways and paved areas at the Site that are used by construction vehicles or otherwise affected by construction activities.

C. Work Areas:
   1. Clean areas where the Work is in progress to level of cleanliness necessary for proper execution of the Work.
   2. Remove liquid spills promptly and immediately report spills to Owner and Remediation Engineer, and authorities having jurisdiction.
   3. Where dust would impair proper execution of the Work, broom-clean or vacuum entire work area, as appropriate.
   4. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

D. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of material or equipment installed, using only cleaning agents and methods specifically recommended by material or equipment manufacturer. If manufacturer does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health and property and that will not damage exposed surfaces.

E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.

F. Waste Disposal:
   1. Properly dispose of waste materials, surplus materials, debris, and rubbish off the Site.
   2. Do not burn or bury rubbish and waste materials at the Site.
   3. Do not discharge volatile or hazardous substances, such as mineral spirits, oil, or paint thinner, into storm sewers or sanitary sewers.
   4. Do not discharge wastes into surface waters or drainage routes.
   5. Remediation Contractor shall be solely responsible for complying with Laws and Regulations regarding storing, transporting, and disposing of waste.

G. During handling and installation of materials and equipment, clean and protect construction in progress and adjoining materials and equipment already in place. Apply protective covering where required for protection from damage or deterioration, until Substantial Completion.

H. Clean completed construction as frequently as necessary throughout the construction period.

1.04 CLOSEOUT CLEANING

A. Complete the following prior to requesting inspection for Substantial Completion:
   1. Clean and remove from the Site rubbish, waste material, debris, and other foreign substances.
   2. Sweep paved areas broom-clean. Remove petrochemical spills, stains, and other foreign deposits.
   3. Hose-clean sidewalks and loading areas.
   4. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   5. Leave surface waterways, drainage routes, storm sewers, and gutters open and clean.
   6. Repair pavement, roads, sod, and other areas affected by construction operations and restore to specified condition. If condition is not specified, restore to pre-construction condition.
   7. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of spatter, grease, stains, fingerprints, films, and similar foreign substances.
   8. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
   9. Remove non-permanent tags and labels.
   10. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Remediation Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. This Section includes administrative and procedural requirements for:
      a. Recycling non-hazardous, uncontaminated construction waste.
      b. Disposing of non-hazardous, uncontaminated construction waste.

B. Coordination:
   1. The Remediation Contractor shall coordinate the transportation and off-site treatment/disposal of materials (e.g., soil, water, debris) generated during construction activities.

C. Related Sections:
   1. Section 01 31 13, Project Coordination.
   2. Section 02 61 05, Handling and Disposal of Impacted Sediments and Debris.
   3. Section 31 11 00, Clearing and Grubbing.
   4. Section 31 05 05, Aggregates for Earthwork.

D. Performance Requirements:
   1. Practice efficient waste management in using materials in the Work.
   2. Employ reasonable means to divert construction waste from landfills and incinerators. Facilitate recycling of materials, including the following:
      a. Construction Waste:
         1) Site-clearing waste.
         2) Packaging:
            a) Paper.
            b) Cardboard and boxes.
            c) Pallets and wood crates.
   3. Dispose of construction waste only at Owner-approved facilities.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:
   1. “Construction waste” is building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
   2. “Disposal” is removal to an off-site location of construction waste and subsequent sale, recycling, reuse, or placement in an Owner-approved landfill or incinerator facility conforming to Laws and Regulations and acceptable to authorities having jurisdiction.
   3. “Recycle” is recovery of construction waste for subsequent processing in preparation for reuse.
   4. “Recycle and reuse” is recovery of construction waste and subsequent processing and reuse in the Work.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Comply with hauling and disposal Laws and Regulations of authorities having jurisdiction.

1.04 SUBMITTALS

A. Informational Submittals:
   1. Waste Management Plan: Submit acceptable plan for managing construction waste within 14 days of the date the Contract Times commence running, and before removing any waste from the Site. Include the following:
      a. For materials that will be recycled and reused in the Work, procedures and equipment for preparing recycled materials before incorporating them into the Work.
      b. Procedures for separating each type of recyclable waste, including sizes of containers, container labeling, and designated location at the Site where materials will be separated and stored.
      c. List of local, Owner-approved disposal facilities that will be used for construction waste. Include name, address, and telephone number of each recycling or processing facility, landfill, and incinerator facility. Identify type of waste to be disposed of at each facility.
   2. Waste Profiles:
      a. Preliminary Waste Profiles: The Remediation Contractor is responsible for obtaining a waste profile from the proposed disposal facility. The Remediation Engineer shall prepare and submit waste profile, listing Owner's name and address of the Site as generator of waste, for each landfill and incinerator facility. Owner will sign and return each acceptable waste profile to Remediation Contractor.
      b. Final Waste Profiles: Submit counter-signed waste profile and proof of acceptance of waste for each landfill and incinerator facility.
   3. Disposal Records:
      a. Recycling and Processing Facility Records: Submit counter-signed manifests, weight tickets, receipts, and invoices on a monthly basis throughout the Project, and concurrent with each Application for Payment.
      b. Landfill and Incinerator Facility Records: Submit counter-manifests, weight tickets, receipts, and invoices on a monthly basis throughout the Project, and concurrent with each Application for Payment.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Recyclable Waste: On a daily basis, remove all recyclable materials from the work area in acceptable containers.

B. Provide separate collection containers as required by recycling haulers and to prevent contamination of materials, including protection from the elements as applicable.

C. Replace loaded containers with empty containers as demand requires, at least weekly.

D. Handling: Deposit recyclable materials in containers in clean (no mud, adhesives, solvents, or petroleum or coal tar contamination), debris-free condition.

E. If contamination chemically combines with materials so that materials cannot be cleaned, do not deposit into recycle containers.

F. Environmental Requirements: Transport recyclable waste materials from the work area to recycling containers, and carefully deposit in containers in manner to minimize noise and dust. Close the covers of container immediately after materials are deposited. Do not place recyclable waste materials on the ground adjacent to container.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 WASTE MANAGEMENT

A. Provide handling, containers, storage, signage, transportation, and other items required to manage wastes during the Project.

B. Site Access and Temporary Controls:
   1. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent facilities.
      a. Designate and label specific areas of the Site necessary for separating materials to be recycled or reused.
      b. Provide temporary controls in accordance with the Contract Documents.

C. Shipping Documents: The Remediation Engineer shall prepare a non-hazardous waste manifest for each shipment of construction waste. Owner or an authorized agent will review and sign each manifest as generator of waste.

3.02 RECYCLING WASTE

A. General:
   1. Recycle paper and beverage containers used by Remediation Contractor's personnel, Subcontractors, and Suppliers.
   2. Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at the Site to the maximum extent practical.
      a. Provide appropriately marked containers or bins for controlling recyclable waste until recyclable materials are removed from the Site. Post list of acceptable and unacceptable materials at each container and bin. Inspect containers and bins for contamination and remove contaminated materials if found.
      b. Before removing from the Site, prepare and process recyclable waste as required by recycling or processing facility.
      c. Stockpile processed materials at the Site without intermixing with other materials. Place, grade, and shape stockpiles to drain water. Cover to prevent dust and blowing debris.
      d. Stockpile materials away from the construction area. Do not store within drip line of trees.
      e. Remove recyclable waste from the Site and from Owner's property and transport to Owner-approved recycling or processing facility.

B. Recycling Construction Waste:
   1. Site-Clearing Wastes:
      a. Cut trees, branches, shrubs, brush, and logs into manageable lengths.
      b. If required by recycling or processing facility, chip trees, branches, shrubs, brush, and logs before removing from the Site.

2. Packaging:
    a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store at dry location.
    b. Pallets: Require that goods delivered on pallets have the pallets removed from Site, to the extent possible. For pallets that remain at the Site, break down pallets into component wood pieces. Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and treated wood materials.
    c. Crates: Break down crates into component wood pieces. Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and treated wood materials.

3.03 DISPOSAL OF WASTE

A. General: Except for items or materials to be recycled or recycled and reused, remove from the Site and properly dispose of waste at Owner-approved facility such as permitted landfill or thermal treatment facility, or other method acceptable to Owner and authorities having jurisdiction.
    1. Except as otherwise specified, remove from the Site all waste and debris from the Work as it accumulates. Upon completion of the Work, remove materials, equipment, waste, and debris and leave the Site clean, neat, and orderly. Comply with the Contract Documents regarding cleaning and removal of trash, debris, and waste.
    2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials at the Site.

END OF SECTION

SECTION 01 77 19

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Provisions of this section apply to the procedural requirements for closeout of Work executed by the Remediation Contractor.

B. Related Sections:
   1. Section 01 11 00, Summary of Work.
   2. Section 01 29 76, Progress Payment Procedures.
   3. Section 01 78 39, Project Related Documents.

1.02 SUBMITTALS

A. The Remediation Contractor shall provide all documentation pertaining to all components of Work executed by the Remediation Contractor and requiring inspection prior to submitting an application for Final Certification Inspection including, but not limited to, tables showing actual excavated and backfilled volumes, Construction Drawings, certified survey data, executed warranties, bills of lading and/or waste manifests from the waste hauler, certified weigh slips from the disposal facility, maintenance agreements, inspection certificates and similar required documentation for specific units of Work.

B. Truck volume counts and measurement summary. Following completion of construction and as a pre-requisite for Final Certification Inspection, the Remediation Contractor shall provide the Remediation Engineer with final truck volume counts and measurement summary tables. Provide supporting data that was used to develop the measurement summary tables.

C. The Remediation Contractor shall prepare and submit Closeout Documents in accordance with Section 01 78 39, Project Record Documents.

1.03 INSPECTION PROCEDURES

A. Substantial Completion:
   1. Preliminary Procedures: Prior to requesting an inspection for Substantial Completion, the Remediation Contractor shall complete the following:
      a. Prepare a list of items to be completed and corrected, including the value of the items on the list, and the reasons why the items are not completed. Submit the list to the Remediation Engineer.
      b. Advise the Remediation Engineer, in writing, of pending insurance changeover requirements, if applicable.
      c. Terminate and remove temporary facilities, including mockups, construction tools, and similar elements from the Site, as necessary.
      d. Complete grading, restoration, and final cleaning.

2. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of the request, the Remediation Engineer will proceed with the inspection or notify the Remediation Contractor of unfulfilled requirements. The Remediation Engineer will prepare the Certificate of Substantial Completion after inspection or will notify the Remediation Contractor of items, either on Remediation Contractor's list or additional items identified by the Remediation Engineer, that must be completed or corrected before the Certificate of Substantial Completion will be issued. Any outstanding items required for Substantial Completion at this time will be documented as the formal punch-list for Substantial Completion:
    a. Re-inspection: Request re-inspection when the punch-list is completed or corrected.
    b. Results of completed inspection will form the basis of requirements for Final Completion.

B. Final Acceptance:
    1. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
        a. Submit a Request for Payment accordance with the procedures specified in Section 01 29 76, Progress Payment Procedures.
        b. Submit a Certification for the Remediation Engineer stating that all items, actions, and requirements of the punch-list have been completed, corrected, satisfied, or otherwise resolved.
    2. Inspection: Submit a written request for final inspection for acceptance. The Remediation Engineer will prepare a Recommendation of Final Payment after inspection or will notify the Remediation Contractor of work that must be completed or corrected before the Certificate will be issued.

PART 2– PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 FINAL CLEANING

A. At the time of project closeout, clean and restore the Work area to its pre- construction condition. Complete the following operations before requesting the Remediation Engineer's inspection for certification of substantial completion:
    1. Remove non-permanent protection and labels.
    2. Remove debris.
    3. Inspect Project Work Limits.

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall maintain and submit to Remediation Engineer record documents in accordance with this Section.

1.02 SUBMITTALS

A. Closeout Submittals:
   1. Record Documents: Submit in accordance with Article 1.04 of this Section.

1.03 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain in Remediation Contractor's field office, in clean, dry, legible condition, complete sets of the following record documents:
   1. Drawings, Specifications, and Addenda.
   2. Shop Drawings, Samples, and other Remediation Contractor submittals, including records of test results, reviewed or accepted, as applicable, by Remediation Engineer.
   3. Change Orders, Work Change Directives, Field Orders, photographic documentation, survey data, permits, and all other documents pertinent to the Work.

B. Provide files and racks for proper storage and easy access to record documents. File record documents in accordance with the edition of the Construction Specification Institute's "MasterFormat" used for organizing the Project Manual, unless otherwise accepted by Remediation Engineer.

C. Make record documents available for inspection upon request of Owner or Remediation Engineer.

D. Do not use record documents for purpose other than serving as Project record. Do not remove record documents from Remediation Contractor's field office without Remediation Engineer's approval.

1.04 SUBMITTAL OF RECORD DOCUMENTS

A. Prior to readiness for final payment, submit to Remediation Engineer one copy of the following record documents:
   1. Drawings.
   2. Specifications and Addenda.

B. Submit record documents with transmittal letter on Remediation Contractor letterhead complying with letter of transmittal requirements in Section 01 33 00, Submittal Procedures.

C. Record documents submittal shall include certification, with original signature of an official authorized to execute legal agreements on behalf of Remediation Contractor, reading as follows:

"[*Insert Remediation Contractor's corporate name*] has maintained and submitted record documentation in accordance with Specification Section 01 78 39, Project Record Documents and other elements of Contract Documents, for the NYSEG, Court Street Former MGP Site, City of Binghamton, Broome County, New York. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

[*Provide signature, print name, print signing party's corporate title, and date*]"

1.05 RECORDING CHANGES

A. General:
   1. At the start of the Project, label each record document to be submitted as "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
   2. Keep record documents current. Make entries on record documents within two working days of receipt of information required to record the change.
   3. Do not permanently conceal the Work until required information has been recorded.
   4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Remediation Engineer-accepted record documents.
   5. Marking of Entries:
      a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to record documents.
      b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files.
      c. Date all entries on record documents.
      d. Call attention to changes by drawing a "cloud" around the change(s) indicated.
      e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:
   1. Record changes on a copy of the Drawings. Submittal of Remediation Contractor-originated or -produced drawings as a substitute for recording changes on the Drawings is unacceptable.
   2. Record changes on plans, sections, schematics, and details as required for clarity, making reference dimensions and elevations (to Project datum) for complete record documentation.
   3. Record actual construction, including:
      a. Horizontal and vertical location of existing Underground Facilities and surface structures demolished, realigned, or abandoned in-place, referenced to permanent surface improvements. For each Underground Facility or surface structure, provide dimensions to at least two permanent, visible surface improvements.
      b. Horizontal and vertical limits of excavation.
      c. Depths of various elements of foundation relative to Project datum.
      d. Horizontal and vertical location of new Underground Facilities referenced to permanent surface improvements. For each Underground Facility, including pipe fittings, provide dimensions to at least two permanent, visible surface improvements.
      e. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

f. Changes in structural and architectural elements of the Work, including changes in reinforcing.
g. Field changes of dimensions, arrangements, and details.
h. Changes made in accordance with Change Orders, Work Change Directives, and Field Orders.
i. Changes in details on the Contract Drawings. Submit additional details prepared by Remediation Contractor when required to document changes.

4. Supplemental Drawings:
   a. In some cases, drawings produced during construction by Remediation Engineer or Remediation Contractor supplement the Design Drawings and shall be included with record documents submitted by Remediation Contractor. Supplemental record drawings shall include the following:
      1) Drawings provided with Change Orders, Work Change Directives, and Field Orders.
      2) Drawings that cannot be incorporated into the Drawings due to space limitations.
      3) Certified survey drawings, in accordance with Article 1.06 of this Section.
   b. Supplemental drawings provided with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.
   c. When supplemental drawings developed by Remediation Contractor using computer-aided drafting/design (CADD) software are to be included in record drawings, submit electronic files for such drawings in AutoCAD 2009 format as part of record drawing submittal. Submit electronic files on compact disc labeled, "Supplemental Record Drawings", together with Remediation Contractor name, Project name, and Contract name and number.

C. Specifications and Addenda:
1. Mark each Section to record:
   a. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually provided.
   b. Changes made by Addendum, Change Orders, Work Change Directives, and Field Orders.

1.06 CERTIFIED SURVEY DRAWINGS

A. Prepare the following survey drawings:
1. Pre-Construction survey, depicting the pre-construction horizontal and vertical limits of sediment removal for each sediment removal area in accordance with Section 01 71 23, Field Engineering, including subgrade spot elevations and topographic contours.
2. Interim (Post-Excavation) survey, depicting the horizontal and vertical limits of sediment removal for each sediment removal area in accordance with Section 01 71 23, Field Engineering, including subgrade spot elevations and topographic contours.
3. Post-Construction survey, depicting the final horizontal and vertical limits of sediment removal and backfill for each sediment removal area in accordance with Section 01 71 23, Field Engineering, including subgrade spot elevations and topographic contours.
4. Soil cover subgrade plan, depicting the horizontal limits of grading and subgrade topographic contours.
5. Final Site plan, depicting final (post-construction) Site conditions.

B. Drawing Requirements:
1. General Content:
   a. Property lines, easements, and rights-of-way.
   b. Topographic contours at minimum one-foot intervals.
   c. Horizontal and vertical location of buildings, foundations, bridges, and walls.

d. Horizontal location of exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, fencing, gates, guard rails, guard cables, and other facilities visible at or above ground surface.
e. Horizontal limits of lawns, pavements, roads, walks, drives, and other surface improvements.
f. Horizontal and vertical location of monitoring wells, including ground surface elevation, outer casing elevation, and inner casing elevation.
g. Horizontal location, size (diameter), and species of trees and other plantings.

2. Scale: One inch equals 20 feet.
3. Sheet Size: 34 inches wide by 22 inches high.

C. Certification:
1. Each survey drawing shall be signed and sealed by a professional land surveyor licensed and registered in the State of New York.

1.07 ELECTRONIC FILES FURNISHED BY REMEDIATION ENGINEER

A. CADD files will be furnished by Remediation Engineer upon the following conditions:
1. Remediation Contractor shall submit to Remediation Engineer a letter on Remediation Contractor letterhead requesting CADD files and providing specific definition(s) or description(s) of how files will be used, and specific description of benefits to Owner if the request is granted.
2. Remediation Contractor shall execute Remediation Engineer's standard agreement for release of electronic files and shall abide by all provisions of the agreement for release of electronic files.
3. Layering system incorporated in CADD files shall be maintained as transmitted by Remediation Engineer. CADD files transmitted by Remediation Engineer containing cross-referenced files shall not be bound by Remediation Contractor. Drawing cross-references and paths shall be maintained. If Remediation Contractor alters layers or cross-reference files, Remediation Contractor shall restore all layers and cross-references prior to submitting record documents to Remediation Engineer.
4. Remediation Contractor shall submit record drawings to Remediation Engineer in same CADD format that files were furnished to Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 02 21 19

STRUCTURAL SURVEYS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, equipment, professional services, and incidentals as specified and required to perform structural surveys.
   2. The Work includes, but is not limited to, performing pre-construction and post-construction structural surveys of the following:
      a. Flood wall.
         1) For the purposes of this specification/survey requirements, the floodwall shall include, at a minimum, from the western corner of the flood wall where it intersects the former bridge abutment to 50 feet east of Removal Area 2.
      b. Former Bridge Abutment.
      c. Tompkins Street Pump House and spillway.

1.02 QUALITY ASSURANCE

A. Qualifications:
   1. Professional Engineer:
      a. Remediation Contractor shall retain the services of a professional engineer licensed and registered in the State of New York and experienced in providing engineering services of the kind indicated.
      b. Responsibilities include, but are not necessarily limited to, performing structural surveys, and preparing and certifying structural survey reports.

1.03 SUBMITTALS

A. Informational Submittals:
   1. Qualifications Statements: Submit name, address of firm, and qualifications of professional engineer.
   2. Notification of Intended Survey Start: Submit in accordance with Paragraph 3.01.A of this Section.
   3. Survey Reports: Submit in accordance with Article 1.04 of this Section.

1.04 SURVEY REPORTS

A. Remediation Contractor's professional engineer shall prepare separate reports for each property and survey. In each report, document the results of the survey and the conditions of visible surface structures located at the property. Include field notes, measurements, and photographs taken during the survey. Number each photograph and label with description and orientation.

B. Submit reports within 14 days after each survey. Reports shall be certified by the professional engineer.

1.05 SCHEDULING AND SEQUENCING

A. Pre-Construction Surveys: Perform pre-construction surveys before initiating removal activities. Deflection or vibration causing construction operations may not begin until the pre-construction reports for each of the identified structures are reviewed by the Owner and Engineer.

B. Post-Construction Surveys: Perform post-construction surveys after completion of all removal and backfilling operations and before Substantial Completion.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

A. Notification: Notify Owner and Remediation Engineer in writing not less than 14 days before performing each survey. Do not enter properties without permission of property owners.

3.02 STRUCTURAL SURVEYS

A. Structural surveys shall be performed in accordance with this specification and 31 09 13, Geotechnical Instrumentation and Monitoring.

B. The professional engineer shall review any available drawings to gain understanding of the structure framework and support system.

C. Perform structural surveys to assess and document the pre-construction and post-construction structural and cosmetic conditions of visible surface structures located at each property. Surveys shall be performed by the Remediation Contractor's retained professional engineer. The Remediation Engineer will accompany Remediation Contractor's professional engineer for each survey.

D. For each survey, take comprehensive notes, measurements, and photographs of each structure as a whole and of potential areas of damage or deterioration including, but not limited to, the following:
   1. Photographic documentation should provide an overview of the entire structure or property, in addition to close-up pictures to record problematic areas (e.g. cracks, corrosion, etc.). Each photograph will be labeled with a picture number, description, and orientation.
   2. Notes and measurements should be taken on potential items of concern, including, but not limited to, the following:
      a. Spalling concrete.
      b. Cracks.
      c. Active leaking.
      d. Construction joints. Note if joint is opening (cracking) or tight.
      e. Cracking associated with transitions in geometry. Note changes in plan or section dimensions and any settlement or shrinkage cracking.
      f. Foundation settlement.
      g. Bearing seats of beam/column connections. Carefully examine for potential separation, spalling, and cracking that may be associated with thermodynamic changes or joint rotation.

h. Bolts and connections.
i. Areas of corrosion in structural members associated with cracking.
j. Areas of delaminating concrete or voids in concrete in walls and slabs. Note method of observation (e.g., hammer sounding, chain drag, ultrasonic testing, etc.).

E. Prepare separate survey report for each feature in accordance with Article 1.04 of this Section.

END OF SECTION

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SECTION 02 51 00

DECONTAMINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. SCOPE
   1. The decontamination of all vehicles, equipment, and personnel that come into contact with excavated or impacted materials at the site.
   2. The construction and maintenance of decontamination areas.
   3. Furnishing all materials, equipment, and labor necessary to construct and maintain decontamination areas and decontaminate vehicles, equipment, and personnel.

B. Related Sections:
   1. 02 61 15, Handling and Disposal of Impacted Sediment and Debris.
   2. 31 05 05, Aggregates for Earthwork.
   3. Waste Management Plan (WMP).

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (October 1985), as prepared by the National Institute of Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), United States Coast Guard (USCG), and United States Environmental Protection Agency (USEPA).

1.03 SUBMITTALS

A. Safety Data Sheets (SDS) for all cleaning/decontamination solutions shall be included in the Remediation Contractor's Health and Safety Plan (HASP). SDS forms must be provided for review by the Owner and the Remediation Engineer prior to being brought on site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. All construction vehicles leaving the work area shall be decontaminated by the Remediation Contractor (as necessary) to prevent the tracking of soil off-site (including vehicles transporting clean fill to the site). For the purposes of cleaning and decontamination, "off-site" includes vehicles traveling between the transloading area and the OU-1 area, if any. Vehicles and equipment that come into contact with excavated or impacted materials at the site shall be visually inspected and decontaminated by the Remediation Contractor (to the satisfaction of the Owner, Remediation Engineer, and/or New York State Department of Environmental Conservation) within the equipment decontamination area prior to handling backfill material or leaving the site. Any visible soils or other debris shall be promptly removed and disposed of in a manner consistent with the materials excavated.

B. Precautions shall be taken to limit contact between the vehicle/equipment, personnel performing the decontamination activities, and any decontamination liquids that may accumulate in the decontamination area. Personnel engaged in decontamination activities shall use personal protective equipment, including disposable clothing, as required by the Remediation Contractor's HASP.

C. Wash water, solids, and other materials generated during decontamination activities shall be collected by the Remediation Contractor and handled/managed in accordance with the WMP and Sections 02 61 15, Handling and Disposal of Impacted Sediment and Debris. Accumulated liquids shall be removed by the Remediation Contractor on a periodic basis so as to not exceed the capacity of the decontamination area.

3.02 DECONTAMINATION AREAS

A. The Remediation Contractor is responsible for constructing and maintaining decontamination area(s) to accommodate all loads, vehicles, equipment, and migration scenarios.

B. The Remediation Contractor is responsible for constructing the decontamination area at the locations shown on the Design Drawings. Alternative locations within the Project Work Limits shall be approved by the Owner and/or Remediation Engineer prior to construction.

C. Vehicle/equipment decontamination areas shall be constructed as specified on the Design Drawings. Alternate decontamination area configuration/construction shall be approved by the Remediation Engineer prior to construction.

D. The Remediation Contractor shall construct and maintain appropriately-sized decontamination areas for its personnel. Personnel decontamination areas shall be located within the contamination reduction zone and include those facilities necessary to decontaminate personnel upon exiting the work area (exclusion zone), in accordance with the Remediation Contractor's HASP, and in accordance with local, state, and federal laws and regulations. At a minimum, personnel decontamination areas shall include run-on/run-off controls.

END OF SECTION

SECTION 02 61 15

HANDLING AND DISPOSAL OF IMPACTED SEDIMENTS AND DEBRIS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified and required for removal and handling of impacted sediments and debris in the Work Area.
   2. The Work includes handling, segregating, dewatering, temporary storage as necessary, and loading of contaminated material for transport to appropriate Owner-selected or Owner-approved facilities in accordance with Laws and Regulations.
   3. Remediation Contractor shall be responsible for obtaining the appropriate permits and equipment necessary for the removal, transportation, and disposal of such materials and pay all fees (unless otherwise paid by the Owner) associated with transporting and disposing of contaminated material.

B. Coordination:
   1. Coordinate disposing of waste as specified under this and other Sections.

C. Related Sections:
   1. Section 01 15 00, Remediation Contractor's Project Operations Plan.
   2. Section 01 53 53, Temporary Water Treatment and Management.
   3. Section 01 57 05, Temporary Controls.
   4. Section 01 71 23, Field Engineering.
   5. Section 01 71 33, Protection of Work and Property.
   6. Section 02 21 19, Structural Surveys.
   7. Section 31 09 13, Geotechnical Instrumentation and Monitoring.
   8. Section 31 05 05, Aggregates for Earthwork.
   9. Section 35 20 23, Dredging and Subaqueous Backfill.
   10. Waste Management Plan (WMP).
   11. Community and Environmental Response Plan (CERP).

1.02 REFERENCES

A. Terminology:
   1. The following words or terms are not defined but, when used in this Section, have the following meaning:
      a. "Construction wastewater" is water used for working or processing, or resulting from dewatering or decontamination operations.
      b. "Contaminated material" is material containing coal tar or Site-related contaminants of concern. Examples of potential contaminated material include, but are not limited to, the following:
         1) Construction wastewater.
         2) Removed sediment waste and mixing spoils.
         3) Free-phase non-aqueous phase liquid (NAPL).

c. “Disposal” is removal to an off-site location of contaminated material and subsequent recycling, reuse, or disposal in an Owner-approved or Owner-selected landfill or incinerator conforming to Laws and Regulations and acceptable to authorities having jurisdiction.

B. Reference Standards:
   1. The following standards are referenced in this Section:
      a. ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
      b. OSHA Directive Number CPL 02-01-047, OSHA Authority Over Vessels and Facilities on or Adjacent to U.S. Navigable Waters and the Outer Continental Shelf (OCS)
      c. Code of Federal Regulations, Title 29 (Labor), 33 (Navigation and Navigable Waters), and 46 (Shipping)

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
      a. 29 CFR 1910, Occupational Safety and Health Standards.
      b. 29 CFR 1926, Safety and Health Regulations for Construction.
      c. 33 CFR, Navigation and Navigable Waters
      d. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
      e. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
      f. 46 CFR, Shipping
      g. 6 NYCRR 364, Waste Transporter Permits.
      h. 6 NYCRR 370, Hazardous Waste Management System – General.
      i. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
      j. 6 NYCRR 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities.
      k. 6 NYCRR 373, Hazardous Waste Management Facilities.
      l. 6 NYCRR 375, Environmental Remediation Programs.
      m. NYSDEC Technical Guidance for Site Investigation and Evaluation (DER-10).
      n. United States Coast Guard (USCG) Regulations.
      o. United States Department of Transportation (USDOT) Regulations.
      p. New York State Department of Transportation (NYSDOT) Regulations.
   2. Comply with applicable provisions and recommendations of the following:
      a. New York State Department of Environmental Conservation (NYSDEC) Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants (MGPs) (DER-4).
      b. NYSDOT Standard Specifications and Standard Sheets.
   3. Obtain required permits and approvals for removal of sediment, including work permits from right-of-way owners.
   4. Comply with requirements of authorities having jurisdiction.

1.04 SUBMITTALS

A. Action Submittals: Submit the following:
   1. Product Data: Submit manufacturer’s product data for proposed sediment drying agent.

2. Waste Management Plan: Prepare plan describing means and methods for managing material after removal and arranging for transportation of all generated waste as a result of remediation activities to the off-site processing and disposal facility(ies). At a minimum, include the following:
    a. Description, number and type of barges or other vessels used for material transport, including debris, from point of removal to the transloading area.
    b. Description, number, and type of trucks used for material transport, including debris, from the transloading area to the temporary staging area at Operable Unit 1 and/or to the off-site processing and disposal facility(ies) approved by the Owner.
    c. Procedures and equipment for performing decanting from the barges and process for determining the amount of water to be decanted.
    d. Description, number, and type of trucks used for water transport from the transloading area to the temporary staging area at Operable Unit 1 and/or to the off-site processing and disposal facility(ies) approved by the Owner.
    e. Description of how any unbalanced loads will be addressed as part of or after decanting.

B. Information Submittals: Submit the following:
    1. Copies of all local, state, and federal transport permits, licenses, and approvals, including marine operator licenses
    2. Waste Transporter Permits: Submit copy of valid NYSDEC waste transporter permit for each transporter hauling contaminated material.
    3. Disposal Records: Remediation Engineer to obtain counter-signed manifests, bills of lading, weight tickets, receipts, and invoices for each disposal facility on a monthly basis throughout the Project, and concurrent with each Application for Payment.
    4. Remediation Engineer to provide copies of waste characterization results, as necessary.
    5. Inspection Reports:
        a. Prior to mobilization of vessels, provide third-party inspection reports certifying that each vessel used in performing Work is seaworthy, watertight, and includes all required safety gear, equipment, lighting and markings in accordance with applicable United States Coast Guard Regulations.

C. Samples: Provide adequate quantities of the following materials to the Remediation Engineer for analytical sampling:
    1. Waste Characterization: Provide samples of removed sediment and debris at the quantity and frequency specified by the selected disposal facility. Provide samples the same day that the material is removed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store sediment drying agent in closed water-proof super sacks not exceeding 1 ton in weight. Bulk deliveries and uncontained on-site storage of sediment drying agent are prohibited.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Sediment Drying Agent: Provide cement kiln dust, lime kiln dust, or approved non-biodegradable sorbent containing no more than 50 percent reactive (free) calcium oxide (CaO) and magnesium oxide (MgO) by weight.

PART 3 – EXECUTION

3.01 MATERIAL SEGREGATION AND REUSE

A. Sediment will be removed in accordance with Section 35 20 23, Dredging and Subaqueous Backfill.

B. Removed sediment will be segregated during removal for possible reuse (i.e., large rock or riprap) or off-site transport, as appropriate.

C. Large items that may be washed for reuse will be placed together in the barge for removal at the material transloading area and transport to the decontamination area constructed at the NYSEG-owned property (OU-1).

D. If cobbles and boulders segregated for reuse contain visible impacts, the Remediation Contractor will powerwash the material in the decontamination area to the satisfaction of the Remediation Engineer, NYSEG, and/or NYSDEC.

3.02 WASTE CHARACTERIZATION

A. General:
   1. Sediment impacted with visible NAPL and/or containing total polyaromatic hydrocarbons (PAHs) at concentrations greater than or equal to 1,000 milligrams per kilogram (mg/kg), or that is characteristically hazardous for benzene, will be treated by low-temperature thermal desorption (LTTD).
   2. Non-visually impacted materials will be transported and disposed at a solid waste landfill.
   3. Segregate waste streams as required by waste transporters and disposal facilities. Crush rock and debris, as necessary, to render material suitable for disposal.

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent facilities.
   1. Designate and label specific areas of the Site necessary for separating and storing wastes.
   2. Provide temporary controls in accordance with the Contract Documents.

C. Waste Characterization:
   1. Remediation Engineer shall determine disposal facility characterization requirements for each waste stream.
   2. Remediation Engineer shall collect waste characterization samples, and coordinate and pay for laboratory testing.

3.03 DEWATERING OF DREDGED SEDIMENTS

A. Dewater removed sediments as necessary to pass Paint Filter testing procedures (USEPA SW-846 Method 9095) before leaving the Site, as well as comply with additional moisture requirements from treatment and disposal facilities.

B. Dewatering may include one or more of the following:
   1. On-water barge decanting.
      a. Water that accumulates within barges on-site due to gravity dewatering of the sediment may be decanted if no visible impacts.

b. Free water inside the barge, as long as a visible sheen is not present, may be pumped inside the temporary containment system prior to the barge traveling upstream to the material transloading area.
c. If the decant water return results in turbidity above the acceptable levels outside of the work area/turbidity curtain in accordance with Section 01 57 05, Temporary Controls, decanting shall be stopped until turbidity returns to acceptable levels.
d. If during or following decanting the barge load becomes unbalanced, Remediation Contractor shall adjust the barge load to maintain stability of the barge.
e. Once at the transloading area, free water within the containment barge will be removed via pumping for collection and treatment.

2. Use of approved sediment drying agent to amend sediments. Unless otherwise directed by Owner, removed sediments shall be amended with no more than ten percent sediment drying agent by weight.

C. If used, approved drying agents shall only be mobilized to and stored at the site in 1-ton totes. Bulk shipments are prohibited.

3.04 TEMPORARY STORAGE OF CONTAMINATED MATERIAL

A. General:
1. Provide temporary containment areas adequate to support and withstand traffic loads during the Project. Locate temporary containment areas on Owner's property.
2. Waste materials shall be stored in locations approved by the Owner so as not to endanger the Work, and so that easy access may be had at all times to all parts of the Work area.
3. If on-site staging is necessary, waste materials shall be stored in locations approved by the Owner so as not to endanger the work, and so that easy access may be had at all times to all parts of the work area.
4. The Remediation Contractor is responsible for providing safe and adequate vehicle/ equipment access to and egress from the removal area and the transloading area.
5. Special precautions shall be taken to permit access at all times to fire hydrants, fire alarm boxes, driveways, and other points where access may involve the safety and welfare of the general public. Site access for utility personnel shall be maintained at all times.

B. Removed Sediments and Debris:
1. It may be necessary to store removed sediments on-site on a temporary basis to accommodate one or more of the following:
a. Construction sequencing.
b. Disposal facility scheduling issues.
c. Sediment dewatering requirements.
2. Removed sediments shall only be stockpiled within a properly constructed material staging area.
a. Construct material staging area as shown. Provide reasonably level, graded, well-drained subgrade of satisfactory soil material.
b. Provide sand subbase a minimum of 4 inches thick, 40 mil HDPE liner sandwiched between non-woven geotextile fabric, and above the liner sand a minimum of 6 inches thick and then granular fill a minimum of 6 inches thick.
c. Provide a compacted berm of sand no less than 18 inches in height around the perimeter of the temporary material staging area.
d. Stockpiles shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public travelers or adjoining property holders.
e. Stockpiles shall be securely covered at all times (during both working and non-working hours) with minimum 10-mil polyethylene liners when not in use. Liners shall

be properly anchored to prevent uplift due to wind conditions and shall be installed to minimize the ponding of precipitation.

f. Based on Site conditions, the Owner may elect to limit the maximum allowable stockpile size. Limitations to stockpile size shall not result in any additional cost to the Owner.

g. Stockpiles shall be inspected daily (at a minimum) and any noted deficiencies shall be immediately corrected by the Remediation Contractor to the satisfaction of the Owner and/or Remediation Engineer.

3. Temporary stockpiles shall be transported off-site for disposal within 24 hours of placement unless a longer duration is approved by the Owner and/or Remediation Engineer.

C. Construction Wastewater:

1. All water generated during the Project shall be collected, extracted, and conveyed to the on-site temporary Water Treatment System (WTS).
2. Project-related water shall be treated at the on-site WTS and discharged in accordance with Section 01 53 53, Temporary Water Treatment and Management.

D. Free-phase Coal Tar:

1. Free-phase NAPL, if encountered, may represent a hazardous waste (subject to characterization by Remediation Engineer) and shall be managed in accordance with all applicable Laws and Regulations, including 6 NYCRR Parts 370-374 and 376, unless and until determined to be non-hazardous.
2. NAPL-containing drums or containers shall be stored in a secure storage area equipped with secondary containment (generally consisting of an impermeable liner and run-on/run-off control). The storage area shall include appropriate signage to identify it as a hazardous waste storage area.
3. A hazardous waste label, with generator information, accumulation start date, and other required information, shall be completed by the Remediation Contractor and affixed to each container.
4. Containers shall be transported off-site for disposal at an appropriate Owner-approved facility within 90 days of the accumulation date.
5. The total volume of NAPL in the satellite accumulation area shall not exceed 50 gallons at any time without prior notification to and approval by the Owner.
6. Once full, containers will be marked with an accumulation end date by the Owner or Remediation Engineer and shall be re-located by the Remediation Contractor to a separate, demarcated storage area equipped with secondary containment. The storage area shall include appropriate signage to identify it as a hazardous waste storage area.
7. The Remediation Contractor shall coordinate and be responsible for the costs associated with the transportation of containers offsite for treatment/disposal at an Owner-selected facility within 90 days of the end accumulation date.

3.05 LOADING, TRANSPORTATION, AND DISPOSAL

A. Contaminated material shall be transported in vehicles with current New York State Waste Transporter Permits pursuant to 6 NYCRR Part 364. Waste Transporter Permits shall be submitted to the Remediation Engineer before Remediation Contractor mobilization, and current copies of those permits shall be maintained on-site by the Remediation Contractor for the duration of the Project.

B. All vehicles transporting contaminated material shall be fully-lined with minimum 6-mil polyethylene sheeting, an equivalent material, or otherwise water-tight, and shall be equipped with functioning tailgate locks and non-mesh (solid), waterproof tarpaulins.

C. Load contaminated material in a manner as to avoid contamination of their exteriors, including tires (e.g., loaded with 10-mil polyethylene sheeting draped over the side of the truck).

D. A manifest (hazardous or non-hazardous as appropriate) shall be prepared by the Remediation Engineer for each load of waste material to be transported off-site for treatment/disposal. Each manifest will be signed by the Owner (as the Generator) or an authorized agent. Counter-signed waste manifests and facility disposal receipts (indicating the actual quantity of waste received at the treatment/disposal facility) shall be maintained by the Remediation Engineer on-site in the project file.

E. The Remediation Engineer shall be responsible for the preparation of a log for each disposal facility that indicates, at a minimum, the following information regarding each truck load:
   1. Load number (sequential).
   2. Uniform Hazardous Waste Manifest Number or Bill of Lading Number.
   3. Transporters name
   4. Truck ID number (tractor or trailer number).
   5. Estimated tare weight.
   6. Material type (nonhazardous, hazardous, debris).
   7. Destination.

F. Inspect vehicles before leaving the Site. Clean vehicles of visible soil or debris within temporary decontamination area in accordance with Section 02 51 00, Decontamination.

G. Keep all streets, sidewalks, and pavements clean and free from dirt, mud, stone, and other hauled materials. Comply with Section 01 74 05, Cleaning.

H. Vehicles transporting contaminated material shall follow approved haul routes as specified in CERP.

END OF SECTION

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SECTION 31 05 05

AGGREGATES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified
   1. Aggregates for earthwork materials shall be used as shown on the Design Drawings, as specified herein, or as directed by the Owner.

B. Related Work Specified Elsewhere
   1. Section 02 61 15, Handling and Disposal of Impacted Sediment and Debris.
   2. Section 32 12 00, Flexible Paving.
   3. Section 32 90 00, Plantings and General Site Restoration.
   4. Section 32 92 00, Turfs and Grasses.
   5. Section 35 20 23, Dredging and Subaqueous Backfill.

1.02 APPLICABLE CODES, STANDARDS, AND SPECS

A. The following standards are referenced in this section:
   1. ASTM D6913, Standard Test Method for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
   2. ASTM D5519-07, Standard Test Method for Particle Size Analysis of Natural and Man-Made Riprap Materials
   3. TAL Metals in accordance with USEPA SW-846 Method 6010B.
   4. Total VOCs in accordance with USEPA SW-846 Method 8260B.
   5. Total SVOCs in accordance with USEPA SW-846 Method 8270C.
   6. Total PCBs in accordance with USEPA SW-846 Method 8082.
   7. Total Cyanide in accordance with USEPA SW-846 Method 9010C.
   8. Reactive Sulfide in accordance with USEPA SW-846 Method 9030B.

1.03 QUALITY ASSURANCE

A. Remediation Engineer's Testing Laboratory:
   1. The laboratory used to analyze offsite fill materials shall be certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) for the parameters being analyzed.
   2. The laboratory shall be capable of providing detection limits at or below New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Screening Contaminated Sediments (River Fill Materials) or 6 NYCRR Part 375 unrestricted use soil cleanup objectives (other fill and stone) to allow for comparison of the analytical results to those objectives.

B. Required Quality Assurance Material Testing:
   1. Gradation in accordance with ASTM D6913 and D5519-07 (as appropriate). Perform one test for each type and source of material. Test one sample per 2,000 cubic yards of imported material.
   2. Analytical testing for volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides/herbicides, and

inorganics demonstrating that offsite materials meet the residential soil cleanup objectives outlined in 6 NYCRR Part 375 (Environmental Remediation Programs), unless otherwise noted below. Test one sample per 2,000 cubic yards of imported material.

a. Gravel, rock or stone backfill, consisting of virgin material from a permitted mine or quarry, will be exempt from pre-characterization analytical sampling requirements provided that it contains less than 10% (by weight) material that would pass through a size 80 sieve.

C. Regulatory Requirements: Laws and Regulations applying to the Work under this Section include:
   1. NYSDEC, DER-10 Technical Guidance for Site Investigations and Remediation.
   2. NYSDEC, Title 6 of the Official Compilation of Codes, Rules, and Regulations (6 NYCRR) Part 375 (Environmental Remediation Programs).
   3. New York State Department of Transportation (NYSDOT), Standard Specifications.

1.04 SUBMITTALS

A. At least three weeks prior to bringing fill materials onsite the Remediation Contractor shall submit the following:
   1. Supplier name, source address, copy of NYSDEC mining permit, and proof of NYSDOT approval, as required, for each proposed source of off-site fill material.
   2. A representative sample of each off-site fill material to the Remediation Engineer to perform the grain size profile and analytical testing, as appropriate, and as required by Part 1.03 of this section.
   3.

B. Delivery Tickets: Submit copy of delivery ticket for each load of off-site material delivered to the Site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, NYSDOT item number when applicable, and quantity delivered.

PART 2 – PRODUCTS

2.01 GENERAL

A. Any offsite materials brought onsite for use as fill must be from a NYSDOT-certified source and meet the requirements of this Section.

B. If quality assurance testing shows that the material does not meet the requirements of this Section, the Remediation Contractor must identify a new source for the material and provide the required data report for the new source of material prior to the use of such material onsite.

2.02 MATERIALS

A. Run-of-Crusher:
   1. Run-of-crusher hard durable limestone, or approved equal, having the following gradation by weight as specified in Table 31 05 05-A:

TABLE 31 05 05-A
GRADATION REQUIREMENTS FOR RUN-OF-CRUSHER

U.S. Sieve Size	Percentage by Weight Passing Sieve
4 -inch (100 mm)	100
¼ -inch (6.3 mm)	30-75
No. 40 (0.425 mm)	5-40
No. 200 (0.075 mm)	0-10

B. No. 2 Stone:
   1. Material shall be natural or prepared mixtures consisting predominately of hard, durable particles of stone or gravel and free of organic material. Material shall meet the NYSDOT Standard Specification Section 703-02 or similar.
   2. Gradation shall be as specified in Table 31 05 05-B.

TABLE 31 05 05-B
GRADATION REQUIREMENTS FOR NO. 2 STONE FILL

U.S. Sieve Size	Percentage by Weight Passing Sieve
1 ½ -inch (37.5 mm)	100
1-inch (25 mm)	90-100
½-inch (12.7 mm)	0-15

C. No. 3 Stone:
   1. Material shall be natural or prepared mixtures consisting predominately of hard, durable particles of stone or gravel and free of organic material. Material shall meet the NYSDOT Standard Specification Section 703-02 or similar.
   2. Gradation shall be as specified in Table 31 05 05-C.

TABLE 31 05 05-C
GRADATION REQUIREMENTS FOR NO. 3 STONE FILL

U.S. Sieve Size	Percentage by Weight Passing Sieve
2.5-inch (63.5 mm)	100
2-inch (50 mm)	90-100
1.5-inch (37.5 mm)	35-70
1-inch (25 mm)	0-15

D. Subbase Course Type 2:
   1. Material shall meet the NYSDOT Standard Specification Section 304-2.02 or similar.
   2. Gradation shall be as specified in Table 31 05 05-D.

TABLE 31 05 05-D
GRADATION REQUIREMENTS FOR SUBBASE COURSE TYPE 2

U.S. Sieve Size	Percentage by Weight Passing Sieve
2-inch (50 mm)	100
¼-inch (6.3 mm)	25-60
No. 40 (0.425 mm)	35-70
No. 200 (0.075 mm)	0-15

E. River Backfill:
   1. Material shall be free of rock and gravel larger than 1.5 inches in any dimension, debris, waste, frozen materials, organic material, and other deleterious matter.
   2. Gradation shall be as specified in Table 31 05 05-E.

TABLE 31 05 05-E
GRADATION REQUIREMENTS FOR RIVER BACKFILL

U.S. Sieve Size	Percentage by Weight Passing Sieve
1 ½ -inch (37.5 mm)	100
No. 4 (0.425 mm)	0-50
No. 200 (0.075 mm)	0-15

3. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted residential use criteria per DER-10, Technical Guidance for Site Investigation and Remediation (NYSDEC, 2010).

F. Type "B" Granular Fill:
   1. Material shall be thoroughly washed clean, sound, tough, hard crushed limestone or approved equal free from coatings.
   2. Gradation shall be as specified in Table 31 05 05-F.

TABLE 31 05 05-F
GRADATION REQUIREMENTS FOR TYPE "B" GRANULAR FILL

U.S. Sieve Size	Percentage by Weight Passing Sieve
1 ½ -inch (37.5 mm)	100
¾ -inch (19 mm)	0-25
½ -inch (12.7 mm)	0-5

G. Type "D" Sand:
   1. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted residential use, as set forth in 6 NYCRR 375-6.8(b).
   2. Gradation shall be as specified in Table 31 05 05-G.

TABLE 31 05 05-G
GRADATION REQUIREMENTS FOR TYPE "D" SAND

U.S. Sieve Size	Percentage by Weight Passing Sieve
3/8 -inch (9.5 mm)	100
No. 4 (4.8 mm)	95-100
No. 8 (2.4 mm)	80-100
No. 16 (1.2 mm)	50-85
No. 30 (0.6 mm)	25-60
No. 50 (0.3 mm)	10-30
No. 100 (0.15 mm)	2-10

H. Topsoil:
   1. Material shall be fertile loam material free of roots, clay clumps, woody or weedy vegetation, or other deleterious debris of a size and quantity that prevents proper placement of the topsoil material.
   2. Material shall have a pH of between 5.5 and 7.6.
   3. Topsoil material shall meet the following additional requirements, in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (NYSDEC 2005):
      a. Topsoil shall have at least 6% by weight of fine textured stable organic material, and no greater that 20%. Muck soil shall not be considered topsoil.
      b. Shall not have less than 20% fines (passing no. 200 sieve) and not more than 15% clay.
      c. Shall be relatively free of stones greater than 1-1/2 inches in diameter, trash, noxious weeds such as nut sedge and quack grass, and shall have less than 10% gravel.
      d. Shall contain less than 500 parts per million soluble salts.

4. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for unrestricted use criteria per DER-10, Technical Guidance for Site Investigation and Remediation.

I. Shoreline Armor:
   1. Material shall be free of debris, waste, frozen materials, organic material, and other deleterious matter.
      Material shall have a:
      a. D_{10} of 4-inches.
      b. D_{50} of 8-inches.
      c. D_{100} of 12-inches.

PART 3 – EXECUTION

3.01 GENERAL

A. Fill materials will be placed in accordance with the Design Drawings and Specifications or Contract Documents.

B. Materials displaced through the use of the above materials will be disposed of by the Remediation Contractor in accordance with Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris.

C. Any settlements in the finished work will be restored to design grade by the Remediation Contractor at no additional cost to the Owner.

3.02 EROSION AND SEDIMENT CONTROLS

A. Provide temporary erosion and sediment controls in accordance with Specification Section 01 57 05, Temporary Controls. When applicable, also comply with requirements of the erosion and sediment control plan approved by authorities having jurisdiction.

3.03 SHORELINE ARMOR AND OTHER ARMOR PROTECTION MATERIALS

A. Shoreline armor and other armor protection materials shall be carefully placed to avoid damage and/or displacement of the underlying materials, particularly River Backfill. Placement of shoreline armor by dumping into chutes shall not be permitted.

B. Shoreline armor and other armor protection materials shall be placed in a single lift, to the full required thickness, to avoid segregation of stone sizes during placement.

C. Shoreline armor and other armor protection materials shall be placed such that the completed top surface of the shoreline armor meets the lines and grades shown on the Design Drawings, unless otherwise directed by the Owner and/or Remediation Engineer.

D. Some hand placement or rearrangement of stones by mechanical equipment may be required to the extent necessary to achieve the results specified.

E. Shoreline armor and other armor protection materials do not require compaction.

END OF SECTION

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SECTION 31 05 19.13

GEOTEXTILES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, tools, equipment, and services as shown, specified, and required to furnish and install geotextiles.

B. Related Sections:
   1. Section 31 05 05, Aggregates for Earthwork.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. AASHTO M 288, Standard Specification for Geotextile Specification for Highway Applications.

1.03 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Geotextile manufacturer shall be a specialist in the manufacture of geotextile separation and stabilization fabrics, and shall have produced and successfully installed a minimum of five million square feet.

1.04 SUBMITTALS

A. Action Submittals:
   1. Product Data: Submit geotextile manufacturer's data, specifications, installation instructions, dimensions, and lot and roll numbers of the field-delivered materials.

B. Informational Submittals:
   1. Certificates: Submit affidavit certifying that the geotextile furnished complies with the requirements of this Section. Do not ship geotextile to the Site until affidavit is submitted to Remediation Engineer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Each roll of geotextile delivered to the Site shall be labeled by the manufacturer identifying the manufacturer's name, product identification, lot number, roll number, and roll dimensions.

B. All rolls and packages shall be inspected by Remediation Contractor upon delivery to the Site. Remediation Contractor shall notify Remediation Engineer if any loss or damage exists to geotextile. Replace loss and repair damage to new condition, in accordance with manufacturer’s instructions.

C. Geotextile shall be protected from ultraviolet light exposure, precipitation or other inundation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions. Geotextile rolls shall be shipped and stored in relatively opaque and watertight wrappings.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. SKAPS Industries.

B. TenCate Mirafi.

C. U.S. Fabrics.

D. Hanes Geo Components

E. Approved equal.

2.02 MATERIALS

A. Non-Woven Geotextile
   1. Non-woven geotextile shall be of needle-punched construction and consist of long-chain polymeric fibers or filaments composed of polypropylene. The non-woven geotextile shall be chemically inert to naturally encountered chemicals, acids, and bases and resist biological degradation.
   2. Non-woven geotextile shall be used as a cushioning layer above and below the high-density polyethylene (HDPE) geomembrane liner in material staging areas, containment areas, and decontamination areas.
   3. The non-woven geotextile shall meet GRI GT12 specifications and have the following MARVs:

TABLE 31 05 19.13-A
REQUIREMENTS FOR NON-WOVEN GEOTEXTILE

Property	ASTM Test Method	Units	MARV
Unit Weight	D5261	oz/yd^2	8
Grab Tensile Strength	D4632	lb	205
Grab Tensile Elongation	D4632	%	50
Trapezoidal Tear Strength	D4533	lb	80
CBR Puncture Strength	D6241	lb	500
Apparent Opening Size	D4751	U.S. Sieve	80
Permittivity	D4491	sec^{-1}	1.4
Flow Rate	D4491	$gal/min/ft^2$	95
UV Resistance (at 500 hours)	D4355	%strength retained	70

B. Woven Geotextile
   1. Woven geotextile shall be composed of high-tenacity polypropylene yarns woven into a stable network such that the yarns retain their relative position. The woven geotextile shall be chemically inert to naturally encountered chemicals, acids, and bases and resist biological degradation.
   2. Woven geotextile shall be used as a stabilization layer between the soil fill and sub-base course.
   3. The woven geotextile shall meet AASHTO M 288-05 requirements for a Class 1 stabilization geotextile and have the following MARVs:

TABLE 31 05 19.13-B
REQUIREMENTS FOR WOVEN GEOTEXTILE

Property	ASTM Test Method	Units	MARV
Unit Weight	D5261	oz/yd^2	6
Grab Tensile Strength	D4632	lb	315
Grab Tensile Elongation	D4632	%	15
Trapezoidal Tear Strength	D4533	lb	113
CBR Puncture Strength	D6241	lb	900
Permittivity	D4491	sec^{-1}	0.05
Flow Rate	D4491	$gal/min/ft^2$	4
AOS	D4751	U.S. Sieve	40
UV Resistance (at 500 hours)	D4355	%strength retained	70

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which the Work will be performed and notify Remediation Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Remediation Engineer.

3.02 PREPARATION

A. Excavate or fill subgrade, as required, to bring subgrade to elevations shown or indicated. Maintain all angles of repose. Confirm that subgrade is at proper elevations and that no further earthwork is required to bring the subgrade to proper elevations. Provide subgrade elevations that slope parallel to finished grade and in the direction shown on the Design Drawings.

B. Remove all stones greater than two inches in any dimension, construction debris, trash, rubble, and all other extraneous materials from the subgrade.

C. Notify Remediation Engineer that subgrade has been prepared, and obtain Remediation Engineer's approval before installing geotextile.

3.03 INSTALLATION

A. Geotextiles shall be placed (rolled out) in the direction of most frequent vehicular travel.

B. Adjoining edges of geotextiles shall be overlapped 12 inches.

C. Geotextiles shall be weighted with sandbags or equivalent when required. Such sandbags shall be installed during placement and shall remain until replaced with cover materials.

D. During placement of geotextiles, care shall be taken not to entrap in the geotextile stone, excessive dust, mud, or moisture that could damage or cause clogging of the geotextile, or hamper subsequent seaming.

E. Use proper tools to cut and size geotextiles; exercise care while cutting geotextiles.

F. Geotextiles shall not be exposed to precipitation prior to being installed, and shall not be exposed to direct sunlight for more than 15 days.

3.04 GEOTEXTILE REPAIR

A. Any holes or tears in the fabric shall be repaired as follows:
   1. On Slopes: A fabric patch shall be sewn into place using a double sewn lock stitch (1/4 inch to 3/4 inch apart and no closer than one inch from any edge). Should any tear exceed 10 percent of the width of the roll, that roll shall be removed from the slope and replaced.
   2. Non-Slopes: A fabric patch shall be spot-seamed in place with a minimum of 24 inches of overlap in all directions.

3.05 PLACEMENT OF COVER MATERIALS

A. Place cover materials in such a manner as to ensure that geotextiles are not damaged or dislodged.

END OF SECTION

SECTION 31 05 19.16

GEOMEMBRANES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Furnishing and installing 40 mil textured high-density polyethylene (HDPE) geomembrane liner for material staging areas, and decontamination areas as specified in this section and in accordance with the manufacturer's recommendations/specifications.

B. Quality assurance (QA)/quality control (QC) testing of HDPE geomembrane liner as specified in this section and in accordance with the manufacturer's recommendations/ specifications.

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. ASTM International (ASTM). The following ASTM specifications are referenced in this section and are to be considered part of this section:
   1. D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
   2. D1238 - Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
   3. D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique
   4. D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics
   5. D3895 - Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry
   6. D4218 - Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
   7. D4833 - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
   8. D5199 - Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
   9. D5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
   10. D5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
   11. D5994 - Standard Test Method for Measuring Core Thickness of Textured Geomembranes
   12. D6392 - Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
   13. D6693 - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
   14. D7240 - Standard Practice for Leak Location using Geomembranes with an Insulating Layer in Intimate Contact with a Conductive Layer via Electrical Capacitance Technique (Conductive Geomembrane Spark Test)
   15. D7466 - Standard Test Method for Measuring the Asperity Height of Textured Geomembrane

B. Geosynthetics Research Institute (GRI). The following GRI test methods are referenced in this section and are to be considered part of this section:

1. GM13 - Test Methods, Test Properties, and Testing Frequencies for High-Density Polyethylene (HDPE) Smooth and Textured Geomembranes

C. Where reference is made to one of the above codes, standards, specifications, or publications, the revisions in effect at the time of bid shall apply.

1.03 SUBMITTALS

A. Written certification that the minimum test values provided in Part 2.02 of this section are guaranteed by the manufacturer.

B. Manufacturer's standard warranty for the geomembrane.

C. Results of QC tests conducted by the manufacturer. QC test results shall include lot and roll identification numbers representative of the field-delivered material. At a minimum, results shall be submitted for:
   1. Thickness (ASTM D5994).
   2. Asperity Height (ASTM D7466).
   3. Density (ASTM D1505).
   4. Tensile Properties (ASTM D6693).
   5. Tear Resistance (ASTM D1004).
   6. Puncture Resistance (ASTM D4833).
   7. Stress Crack Resistance (ASTM D5397).
   8. Carbon Black Content (ASTM D1603).
   9. Carbon Black Dispersion (ASTM D5596).
   10. Oxidative Induction Time (OIT) (ASTM D3895 or D5885).

D. Remediation Contractor's written certification (provided prior to the installation of the geomembrane) that the field-delivered material has not been damaged due to improper transportation, handling, or storage.

E. HDPE lot and roll number of field-delivered material.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Solmax Geosynthetics.

B. GSE Lining Technology, Inc.

C. Poly-Flex, Inc.

D. Approved equal.

2.02 MATERIALS

A. HDPE Geomembrane
   1. HDPE geomembrane liner shall meet the following minimum test values:

TABLE 31 05 19.16-A
REQUIREMENTS FOR HDPE

Property	Test Method	Test Value
Thickness, mil • Lowest individual for any of the 10 values	ASTM D5994	40 mil 36 mil
Density	ASTM D1505	0.940 g/cm^3
Tensile Properties (see Note 1) • Break Strength • Yield Strength • Break Elongation • Yield Elongation	ASTM D6693 (Type IV)	 60 lb/in-width 84 lb/in-width 100% 12%
Tear Resistance	ASTM D1004	28 lb
Puncture Resistance	ASTM D4833	60 lb
Carbon Black Content (range)	ASTM D1603/4218	2.0 – 3.0%
Carbon Black Dispersion	ASTM D5596	See Note 2
Asperity Height, mil	ASTM D7466	18 mil
Notched Constant Tensile Load (See Note 3)	ASTM D5397	300 hrs
Oxidative Induction Time	ASTM D3895	>100 min.

Notes:
1. Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
   - Yield elongation is calculated using a gage length of 1.3 inches
   - Break elongation is calculated using a gage length of 2.0 inches
2. Dispersion only applies to near spherical agglomerates. 9 of 10 views shall Category 1 or 2. No more than 1 view from Category 3.
3. The notched constant tensile load (NCTL) test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials. The yield stress used to calculate the applied load for the NCTL test should be the manufacturer's mean value via manufacturer quality control testing.

2. The geomembrane shall be free of defects, such as holes or blisters, or any contamination by foreign matter.
3. QC testing shall be performed by an independent laboratory at the Remediation Contractor's expense. QC test results shall be submitted to the Remediation Engineer for review a minimum of two weeks prior to mobilizing the material to the site.

B. Welding Material
   1. The resin used in the welding material must be identical to the liner material.
   2. All welding materials shall be of a type recommended and supplied by the manufacturer and shall be delivered in the original sealed containers, each with an indelible label bearing the brand name, Manufacturer's mark number, and complete directions as to proper storage.

2.03 DELIVERY, HANDLING, AND STORAGE

A. The Remediation Contractor shall be responsible for any damage incurred by the liner material prior to and during transportation to the site.

B. The handling, storage, and care of the liner material prior to and following installation at the site are the responsibility of the Remediation Contractor.

C. Any damage caused to the liner material during delivery, handling, and storage shall be repaired at the Remediation Contractor's expense.

2.04 WARRANTY

A. The Remediation Contractor shall provide a written warranty stating that the materials and workmanship provided are free from defects for the duration of the project.

B. The written warranty shall provide for the complete repair or replacement of the liner material, including all incidental costs associated with the defect, at no cost to the Owner.

C. All repairs or replacements shall be performed within a reasonable period of time, as determined by the Owner and/or Remediation Engineer.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General Requirements
1. The liner shall be placed, seamed, and tested in accordance with the manufacturer's recommendations/specifications.
2. The installation of geomembrane liner shall be performed on geotextile-covered surfaces free from stones or other protruding objects.
3. No liner shall be placed onto an area that has become softened by precipitation. Appropriate methods of moisture control are the responsibility of the Remediation Contractor.
4. The liner shall not be installed on frozen soil material. Such material shall be removed and replaced with acceptable material.

All surfaces on which the liner is to be installed shall be acceptable to the Remediation Engineer at the time of installation.

B. Placement
1. The placement of geomembrane panels shall follow all instructions on the boxes or wrapping containing the material that describe the proper methods of unrolling the panels.
2. Liner deployment shall not be undertaken if weather conditions will preclude material seaming following deployment.
3. During placement, geomembrane shall be visually inspected for uniformity, tears, punctures, blisters, or other damage or imperfections. Any such damage or imperfections shall be immediately repaired and re-inspected at the Remediation Contractor's expense.
4. No equipment used shall damage the liner by handling, trafficking, leakage of hydrocarbons, or other means.
5. No personnel working on the liner shall smoke, wear damaging shoes, or engage in other activities that could damage the liner.
6. The prepared surface underlying the liner shall not be allowed to deteriorate after acceptance, and shall remain acceptable up to the time of liner installation and until completion of the project.
7. Adequate temporary loading and/or anchoring (e.g., sand bags), not likely to damage the liner, shall be placed to prevent uplift by wind (in case of high winds, continuous loading is recommended along edges of panels to minimize risk of wind flow under the panels).

8. Direct contact with the liner shall be minimized. In high-traffic areas, the liner shall be protected by geotextiles, extra geomembrane, or other suitable materials.
9. The method used to unroll or adjust the panels shall not cause excessive scratches or crimps in the liner and shall not damage the supporting soil or underlying geotextile (where applicable).
10. The method used to place the panels shall minimize the potential for wrinkles (especially differential wrinkles between adjacent panels).
11. Any damage to the geomembrane panels or portions of the panels as a result of placement shall be replaced or repaired at the Remediation Contractor's expense. The decision to replace or repair any panel or portions of panels shall be made by the Remediation Engineer.

3.02 SEAMING

A. All personnel performing seaming operations shall be qualified by experience or by successfully passing seaming tests.

B. Generally, all seams whether field or factory, shall be oriented parallel to the line of slope, not across slope. At liner penetrations and corners, the number of seams shall be minimized.

C. The area of the liner to be seamed shall be cleaned and prepared in accordance with the manufacturer's specified procedures. Any abrading of the liner shall not extend more than 0.5 inch on either side of the weld. Care shall be taken to eliminate or minimize the number of wrinkles and "fish-mouths" resulting from seam orientation.

D. Field seaming is prohibited when either the air or sheet temperature is below 32ºF, when the sheet temperature exceeds 122ºF, or when the air temperature is above 104ºF. At air or sheet temperatures between 32ºF and 40ºF, seaming shall be conducted directly behind a preheating device. In addition, seaming shall not be conducted when the liner material is wet from precipitation, dew, fog, etc., or when winds are in excess of 20 miles per hour.

E. Seaming shall not be performed on frozen or excessively wet underlying surfaces.

F. Seams shall have an overlap beyond the weld large enough to perform destructive peel tests, but shall not exceed 5 inches.

G. The Remediation Contractor shall perform trial seams on excess liner material. A 1-foot by 3-foot seamed liner sample shall be fabricated with the seam running down the 3-foot length in the center of the sample. Such trial seaming shall be conducted prior to the start of each seaming succession for each seaming crew, every 4 hours, after any significant change in weather conditions or liner temperature, or after any change in seaming equipment. From each trial seam, four field test specimens shall be taken. The test specimens shall be 1-inch by 12-inch strips cut perpendicular to the trial seam. Two of these specimens shall be shear tested and two shall be peel tested using a field tensiometer, and recorded as pass (failure of liner material) or fail (failure of seam). Upon initial failure, a second trial seam shall be made; if both trial seams fail, then the seaming device and its operator shall not perform any seaming operations until the deficiencies are corrected and two successive passing trial seams are produced. Completed trial seam samples cannot be used as portions of a second sample and must be discarded.

H. Where "fish-mouths" occur, the material shall be cut, overlapped, and an overlap weld shall be applied. Where necessary, patching using the same liner material shall be welded to the geomembrane.

I. Acceptable seaming methods include:
   1. Extrusion welding using extrudate with identical physical, chemical, and environmental properties.
   2. Hot-wedge welding using a proven fusion welder and master seamer.

J. The seaming device shall not have any sharp edges that might damage the liner. Where self-propelled seaming devices are used, it shall be necessary to prevent "bulldozing" of the device into the underlying soil.

K. The Remediation Contractor shall perform non-destructive seam testing on all field seams.
   1. Non-destructive seam testing shall be conducted under the direct observation of the Remediation Engineer.
   2. Air pressure testing may be used if double-track hot-wedge welding has been used to seam the liner. Using approved pressure testing equipment, the following procedures shall be followed:
      a. Seal both ends of the air channel separating the double-track hot-wedge welds.
      b. Insert pressure needle into air channel and pressurize the air channel to 27 psi.
      c. Monitor pressure gauge for 3 minutes and determine whether pressure is maintained without a loss of more than 2 psi.
      d. If the pressure test fails, then localize the leak and mark the area for repair.
   3. Vacuum testing shall be used on all seams not tested using air pressure testing. Using an approved vacuum box, the following procedures shall be followed:
      a. Apply a soapy water mixture over the seam.
      b. Place vacuum box over soapy seam and form a tight seal.
      c. Create a vacuum by reducing the vacuum box pressure to 5 psi for 10 seconds.
      d. Observe through the vacuum box window any bubbles.
      e. Where bubbles are observed, mark seam for repair.
      f. Move vacuum box further down seam, overlapping tested seam by 3 inches.
      g. Where hot-wedge seaming has been performed, the overlap shall be cut back to the weld.

3.03 LINER REPAIR

A. All imperfections, flaws, construction damage, and seam failures shall be repaired by the Remediation Contractor at no additional cost to the Owner.

B. Acceptable repair methods include:
   1. Patching, used to repair holes, tears, undispersed raw materials, and contamination by foreign matter.
   2. Grinding and re-welding, used to repair small sections of extruded seams.
   3. Spot Welding or Seaming, used to repair pinholes or other minor, localized flaws.
   4. Capping, used to repair large lengths of failed seams.
   5. Topping, used to repair areas of inadequate seams which have an exposed edge.
   6. Removing bad seams and replacing with a strip of new material welded into place.

END OF SECTION

SECTION 31 09 13

GEOTECHNICAL INSTRUMENTATION AND MONITORING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified:
   1. Furnishing and installation of geotechnical instrumentation in accordance with this Section and as shown on the Design Drawings, including:
      a. Deflection monitoring of flood wall during removal and backfill activities.
      b. Deflection monitoring of steel sheet pile wall deflections using land surveying technology and wall integrity inspections.

B. Related Sections
   1. 01 15 00, Remediation Contractor's Project Operations Plan.
   2. 01 71 23, Field Engineering.
   3. 01 71 33, Protection of the Work and Property.
   4. 02 21 19, Structural Surveys.
   5. 31 52 13, Sheet Pile Enclosure.

1.02 QUALITY ASSURANCE

A. Qualifications
   1. Instrumentation personnel to be hired by the Remediation Contractor must have at least 4 years of direct field experience in installation and monitoring of the types of instruments specified herein and interpreting instrumentation data. The instrumentation installer must be able to demonstrate that they have successfully completed a minimum of 5 projects where tiltmeters and optical survey points have been installed and operated.

1.03 SUBMITTALS

A. Qualifications: Submit qualifications of proposed instrumentation personnel.

B. Prior to the start of work, submit a Special Instrumentation Installation Plan as part of the Remediation Contractor's Project Operations Plan. This plan will include the following:
   1. Shop Drawings that detail the proposed means, methods, and locations (plan and elevation) for installing the instruments on the installed steel sheet piles, Tomkins Street Pump House and spillway, Tompkins Street Bridge, and floodwall. Details shall include manufacturer's specifications and installation/operating procedures. Shop Drawings shall include proposed alignment of associated cables and proposed data logging location.
   2. Manufacturer's technical specifications indicating that the tiltmeters and optical survey points meet the minimum requirements outlined in this Section.
   3. Instrumentation Installation Methods: Submit the following:
      a. Relevant health and safety measures applicable to geotechnical installation and removal.
      b. Detailed descriptions of the proposed installation procedures for the geotechnical instrumentation (i.e., tiltmeters, optical survey)
      c. Manufacturer's installation recommendations and requirements.
      d. Methods for demarcating the location of geotechnical instruments.

e. Proposed methods for reinstalling the instruments if they are damaged, fail to operate properly, or otherwise require temporary removal and reinstallation.
f. Proposed means of protecting geotechnical instrumentation during completion of the work.

C. Data Reports: Submit data as specified in Part 3.

1.04 DELIVERY, STORAGE AND HANDLING

A. Prior to installation, store all special sensors and accessory hardware in a dry location protected from direct sunlight, moisture, theft, extreme temperatures (>90 and <20 degrees Fahrenheit [ºF]), physical, and chemical hazards.

B. All instruments will be calibrated and in working order at the time of installation and will be verified on site by the Remediation Engineer, immediately prior to installation.

C. All appropriate precautions for working with electricity, as indicated in the Remediation Contractor's Health and Safety Plan, will be followed at time of installation.

1.05 INSTRUMENTATION

A. All instruments shall be installed in the presence of the Remediation Engineer. The Remediation Contractor shall allow access to the work area at all times for the purpose of observing instrumentation and obtaining data. The Remediation Contractor shall determine the elevation and location of all instrumentation a minimum of one prior to excavation or sheet pile installation.

B. The Remediation Contractor shall be responsible for any and all damage incurred to utilities and structures during geotechnical instrumentation installation.

C. The Remediation Contractor shall protect and maintain instrumentation until the end of the Project. Any instrumentation damaged or otherwise rendered non-functional shall be repaired or replaced with a new installation within five working days at no additional cost to the Owner. Repair or replacement work shall conform to the requirements specified herein for the respective type of geotechnical instrumentation.

D. The Remediation Contractor shall provide installation plans for monitoring devices.

PART 2 – PRODUCTS

2.01 TILTMETER

A. Vibrating wire tiltmeter shall be Geokon Model 6350 or approved equivalent. Associated cable shall be from the same commercial source as the tiltmeters.

B. Data logger shall be Geokon Model 8600, Micro-1000, or approved equivalent. Logger must be capable of simultaneously reading and recording data from five vibrating wire tiltmeters. Data logger and/or associated software or other internet based user interface shall provide real-time alarms when notification/action levels are reached.

2.02 OPTICAL SURVEY POINTS

A. Optical survey equipment shall meet a 0.05-inch tolerance in order to know that any variances in movements are not due to the equipment tolerance, but rather they are due to the actual movements due to dredging and backfilling activities.

B. Optical Survey Points shall be fixed prisms or an approved equivalent that will allow the points to be optically surveyed.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Vibrating Wire Tiltmeters:
   1. Supply and install vibrating wire tiltmeters, as per the manufacturer's recommendations, on the face of the former bridge abutment in Area 1 and the face of the existing floodwall in Area 1 and Area 2 facing the Susquehanna River as shown on the Design Drawings. . Alternate tiltmeter locations shall be reviewed and approved by the Owner and Remediation Engineer prior to installation.
   2. The Owner and Remediation Engineer shall be notified at least 24 hours prior to installing each instrument.
   3. Tiltmeters shall be firmly mounted to the existing former bridge abutment and floodwall using methods consistent with the manufacturer's recommendations with consideration of the specific substrate of this site.
   4. Connect all vibrating wire tiltmeters by cable to a designated data logging location.

B. Optical Survey Points
   1. Remediation Contractor shall have a qualified surveyor establish a benchmark and optical survey points, as shown on the Design Drawings.
   2. The Remediation Engineer shall be notified at least 24 hours prior to installing each instrument.
   3. Install optical survey points in approved locations (horizontal and vertical) and in accordance with the manufacturer's specifications. Optical survey points shall be mounted at locations visible from the shoreline.

3.02 MONITORING

A. Vibrating Wire Tiltmeters:
   1. The Remediation Contractor's instrumentation/monitoring subcontractor shall program the data logger to collect data from the tiltmeters continuously (e.g. every one minute) and report to data logging software.
      a. All data must be provided to the Remediation Engineer no later than 5:00 p.m. on the same day on which data are collected. Data that exceeds the notification or action levels in this section shall be reported to the Remediation Engineer immediately upon receipt of data. Both raw and reduced data shall be provided on summary tables and plots.
      b. Data plots for the tiltmeters shall show absolute horizontal deformation versus time.
      c. Data logger programming shall include an audible alarm and SMS message to Remediation Contractor and Remediation Engineer when notification and action levels are reached.
   2. Notification Level: 0.25 deflection in any direction (x, y or z). Implement one or more of the following, as determined by the Remediation Engineer:

a. Continue daily monitoring of vibrating wire tiltmeters in accordance with this Section.
b. Install one or more additional vibrating wire tiltmeters in locations to be selected by the Remediation Engineer.
c. Evaluate and, if necessary and appropriate, modify construction techniques.

3. Action Level: 0.5-inch deflection in any direction (x, y or z). Immediately notify the Owner and Remediation Engineer.
   a. Stop all work and immediately backfill any open excavation.
   b. Evaluate and, if necessary and appropriate, modify construction techniques and/or sequencing.
   c. Evaluate and, if necessary and appropriate, modify the limits of excavation as determined by the Remediation Engineer.

B. Optical Survey
   1. Once installed, survey and document, by robotic total station, the baseline coordinates (northing and easting) and elevation of each optical survey points before any removal activities begin. Provide survey data to Remediation Engineer no later than the end of the subsequent work day.
   2. Survey and document, by robotic total station, the coordinates (northing and easting) and elevation of each optical survey point twice a week with a minimum of 1 day between surveys during dredging and backfilling activities, with results submitted to the Remediation Engineer no later than the end of the subsequent work day.
      a. Both raw and reduced data shall be provided on summary tables and plots. Data plots shall show absolute vertical deformation versus time and absolute horizontal deformation versus time.
   3. Notification Level: 1.5 inches of movement in any direction. Immediately notify Remediation Engineer.
      a. Additional optical surveying will continue on a repeatable basis for the location where the movement occurred, and any other optical monitoring points deemed necessary by Remediation Engineer, for at least two consecutive days to determine if further movement occurs.
      b. If movement cease, work can continue. If work continues, optical surveying will continue daily for the first two consecutive days of work at the monitoring point where the movement occurred, and any other monitoring points deemed necessary by Remediation Engineer.
   4. Action Level: 2.0 inches of movement in any direction. Immediately notify Remediation Engineer.
      a. Stop all work.
      b. If additional movement is detected at or greater than 2.0 inches, work shall stop and Remediation Contractor shall backfill removal area.
   5. When the optical survey limits have been reached, Remediation Contractor must then propose a method to continue removal activities to be reviewed by the Remediation Engineer and Owner that prevents further movement of the sheet piles (e.g. sequential excavation and backfilling).

3.03 DAMAGE TO INSTRUMENTATION

A. The Remediation Contractor shall protect all instruments and appurtenant fixtures, leads, connections, and other components of instrumentation from damage due to construction operations, weather, and vandalism.

B. If an instrument is damaged or inoperative, the Remediation Contractor shall repair or replace the damaged or inoperative instrument within 48 hours with no additional cost to the Owner. The Remediation Engineer will be the sole judge of whether repair or replacement is required.

3.04 REMOVAL

A. Remove instrumentation only when directed by the Owner and/or Remediation Engineer.

B. Repair any damaged or disturbed surfaces to original condition.

C. All instrumentation shall become the property of the Remediation Contractor.

END OF SECTION

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SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals required to perform clearing and grubbing as shown and specified in the Contract Documents.
   2. The Work includes removing from the Site and disposing of trees, shrubs, stumps, roots, brush, logs, vegetation, topsoil, rubbish, and other objectionable material.
   3. Pay all fees associated with transporting and disposing of debris resulting from clearing and grubbing, unless otherwise paid by Owner.
   4. Limits of Clearing and Grubbing Work: Clear and grub only as necessary to facilitate installing temporary facilities as well as performing sediment removal and backfilling activities.

B. Related Sections:
   1. Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
   2. Section 01 57 05, Temporary Controls.
   3. Section 01 74 19, Construction Waste Management and Disposal.

1.02 WARRANTY

A. Remediation Contractor shall warrant that Work performed under this Section will not permanently damage trees, shrubs, turf, and plants designated to remain, or other adjacent work, facilities, or property. If damage resulting from Remediation Contractor's operations becomes evident during the correction period, Remediation Contractor shall replace damaged items and property at no additional cost to Owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

A. Protection:
   1. Throughout the Project, protect existing site improvements, including streets, drives, and Underground Facilities to remain (if any), and adjacent property and structures. Repair damage caused by Remediation Contractor to original condition or replace in kind, to satisfaction of Remediation Engineer, and at no additional cost to Owner.
   2. Do not remove trees without the approval of Owner or Remediation Engineer, unless shown or indicated for removal on the Design Drawings.
   3. Do not locate construction equipment, stored materials, or stockpiles within the drip line of trees and vegetation to remain.

B. Site Preparation:
   1. Obtain, pay costs associated with, and comply with applicable permits, if any, required for clearing and grubbing Work.
   2. Clearing and Grubbing activities shall not occur prior to vegetation survey performed by Remediation Engineer.
   3. Delineation of Clearing and Grubbing Limits:
      a. Locate and clearly flag trees, vegetation, and other items to remain within the limits of clearing and grubbing as shown on the contract drawings.
      b. Provide flagging to delineate limits of areas to be cleared or grubbed. Review at Site with Remediation Engineer before initiating clearing and grubbing Work.
      c. Replace flagging that is lost, removed, or destroyed until clearing and grubbing Work is complete and Remediation Engineer allows removal of flagging.
   4. Erosion and Sediment Controls:
      a. Install applicable erosion and sediment controls before initiating clearing and grubbing Work.
      b. Comply with Section 01 41 26, Storm Water Pollution Prevention Plan and Permit and erosion and sediment control requirements of Section 01 57 05, Temporary Controls.
      c. Adjust, relocate, or install additional erosion and sediment controls as clearing and grubbing Work progresses to undisturbed areas of the Work areas.

3.02 CLEARING AND GRUBBING

A. Remove all trees, shrubs, stumps, roots, brush, logs, rubbish, and debris within the construction work limits as required to perform the work or as indicated in the Contract Documents. Blanket tree removal is prohibited.

B. Trees, shrubs, and other dense vegetation shall be removed to ground surface.

C. Trees and shrubs to remain that have been damaged or require trimming shall be treated and repaired under the direction of a qualified arborist, or other professional with qualifications acceptable to Remediation Engineer. Trees and shrubs intended to remain, that are damaged beyond repair or that are removed, shall be replaced by Remediation Contractor at no additional cost to Owner.

3.03 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

A. Shrubs shall be chipped on site; wood chips may be used as mulch during site restoration activities.

B. Trees shall be cut into manageable-sized pieces to support transport and disposition.

C. Properly transport and dispose of cleared and grubbed materials, as necessary at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
   1. Site-Clearing Wastes: Comply with Section 01 74 19, Construction Waste Management and Disposal.
   2. Site-Grubbing Wastes: Comply with Section 02 61 15, Handling and Disposal of Impacted Sediment and Debris.

END OF SECTION

SECTION 31 52 13

SHEET PILE ENCLOSURE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified
   1. Work under this Section includes, but is not limited to, the following items, including labor, materials, equipment, and services necessary for and incidental to the following:
      a. Transport to the Site of sheet piles (herein referred to as "enclosure piling") from Elmira, NY and other necessary materials listed herein and shown on the Design Drawings. The steel piles shall be provided by Owner. Owner, Remediation Contractor and Remediation Engineer shall coordinate as needed to facilitate the delivery.
      b. Removal of riprap and other debris as necessary to install enclosure piling.
      c. Cut enclosure piling to lengths needed according to the Design Drawings.
      d. Installation of enclosure piling without damaging existing structures (i.e. floodwall), pavement, overhead and subsurface utilities, and other improvements adjacent to the installation and removal areas.
      e. Monitor enclosure piling and adjacent existing structures in accordance with the requirements of Specification Section 31 09 13, Geotechnical Instrumentation and Monitoring.
      f. Removal and decontamination/cleaning of temporary enclosure piling.
      g. Transport enclosure piling back to Elmira, NY.
   2. All labor, materials, equipment, surveys, and services necessary for or incidental to the following:
      a. Driving of the temporary steel sheet pile.
      b. Cutting of sheet pile when required.
      c. Welding of sheet pile where required.
      d. Removing and cleaning temporary sheet piles.
   3. In addition to identifying the technical requirements related to this component of the project, this specification also establishes the Owner's expectations regarding the enclosure piling installation, including the level of effort to be put forth by the Remediation Contractor concerning the installation activities.
      a. It is the Remediation Contractor's responsibility to thoroughly review the sheet pile wall design configuration and the available information concerning subsurface conditions, including the presence of gravel, cobbles, boulders, or other potential obstructions or other conditions that may impede sheet pile installation. From this review, the Owner anticipates that the Remediation Contractor will review and understand the scope of the steel sheeting installation and the nature of the subsurface conditions that may be encountered during installation. The Owner also anticipates that the Remediation Contractor will provide the materials, equipment, and level and experience of labor necessary to install the steel sheeting consistent with the Design Drawings.
      b. The Remediation Contractor shall notify the Remediation Engineer if the implemented measures do not result in design piling depth. The Remediation Engineer shall provide the Remediation Contractor with direction for installing the difficult piling. Piling installations shall not continue until the Remediation Engineer has determined the proper path forward.
   4. Removal will not extend below the limits depicted on the Design Drawings, unless approved by the Remediation Engineer, and is determined that such work is necessary and can be conducted in a safe manner.

B. Related Work Specified Elsewhere
   1. Section 02 51 00, Decontamination
   2. Section 31 09 13, Geotechnical Instrumentation and Monitoring
   3. Section 31 05 05, Aggregates for Earthwork

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. Driving and Erecting: Installer shall be regularly engaged in the driving and erection of enclosure piling.

B. Qualifications of Welders: In accordance with the American Welding Society (AWS), and qualified within the past year.

C. Codes and standards:
   1. American Welding Society (AWS).
   2. American Society for Testing and Materials (ASTM).
   3. American Institute of Steel Construction (AISC).

D. Driving operators and foreman shall have a minimum of three years' experience installing enclosure piling (steel sheet piles).

1.03 SUBMITTALS

A. Certification: Provide documentation of agreement with licensed installer for provisions of quality control service for the sheet pile installation. Provide current welder certifications for personnel to perform welding. Only personnel with current certifications will be permitted to weld materials.

B. Resumes for key Remediation Contractor/subcontractor personnel, including project manager, on-site superintendent/foreman, on-site health and safety officer, and equipment operators. Also, number of years continuously engaged in sheet pile installation and summaries of representative Project experience.

C. Submit a Sheet Piling Installation Plan as a single bound document submittal or as part of Section 01 15 00, Contractor's Project Operations Plan. It shall:
   1. Describe the anticipated approach for installing the enclosure piling to the design configuration, assuming that no significant installation difficulties are encountered.
   2. Include details of proposed methods to drive sheeting to the depths indicated on the Design Drawings and references to specific equipment makes/models and level of effort that will be used for standard enclosure piling installation.
   3. Identify certain contingency measures (see Parts 1.03D and 1.03E below) that the Remediation Contractor would employ in response to difficult subsurface conditions or vibration exceedances, including but not limited to, different hammer sizes and vibratory frequencies and attempts to partially extract and then re-advance a given sheet.
   4. Describe quality control measures and equipment that will be used to ensure tight interlocking joints are maintained in order to minimize water seepage through the sheet pile interlocks. Also include details of structural sheet pile interlock connectors.
   5. Include shop drawings for a sheet pile installation template (or demonstrate ability of equipment to maintain alignment during driving), showing all details and specifications of template components used to insure vertical and horizontal alignment is maintained during enclosure piling installation.
   6. Include proposed welding procedures and certification of welders.
   7. Include number of years continuously engaged in sheet pile installation and summaries of representative Project experience.

8. Include resumes for key Remediation Contractor/subcontractor personnel, including project manager, onsite superintendent/foreman, onsite health and safety officer, and equipment operators.
9. Include a list of equipment, including 'cut sheets', anticipated to be used for the installation of the sheet piling. For the sheet pile installation, the Remediation Contractor will include certification that each pile hammer delivered to the site is suitable for the anticipated conditions, including with regard to impact energy, static weight, and overhead clearance.

D. Sheeting Installation Contingency Measures: For the steel sheeting, the Remediation Contractor is expected to achieve the design configuration (including depths) through the use of conventional pile driving methods or through the use of "best efforts". If the steel sheeting cannot be installed to the design depth using the means and methods identified in the Remediation Contractor's Piling Installation Plan (see Part 1.03C above), the Remediation Contractor shall notify the Owner and/or the Remediation Engineer. Subsequently, the Remediation Contractor may participate in discussions with onsite personnel representing the Owner and Remediation Engineer regarding the potential implementation of one or more of the contingency measures identified below, and/or any Remediation Contractor-identified/Owner-approved alternate approaches (refer to Part 1.03G below). The contingency measures or alternate approaches to be implemented (if any) will consider the specific circumstances of the installation (e.g., depth of refusal, location of sheet pile relative to design depth, measures that have already been implemented, and experience gained elsewhere within the site), and will be at the direction of the Owner. The following contingency measures shall be considered.
   1. Move alignment – propose new alignment and proceed with pre-drilling and/or pre-driving to avoid obstructions and refusals.
   2. Pre-Driving – Pre-driving using a small diameter steel spud or a steel H-pile driven in location(s) where sheet pile refusal has occurred. The spacing of the pre-driving locations shall be field determined.
   3. Pre-Drilling – Pre-drilling using 6-inch diameter augers to confirm the depth of the sheet pile refusal, possibly address/remove the obstruction, and/or further assess the nature of the obstruction and provide additional information to assess other/further contingency measures. The pre-drilling will also be used in an attempt to open the obstruction by drilling through it (e.g., using a tricone bit). The spacing of pre-drilling location(s) shall be field determined.
   4. Driving shoes – install sheets with driving shoes to help aid in installation around obstructions and sand and gravel.

E. Alternate Installation Approaches: As a supplement to the contingency measures identified above, and to fully represent and consider "best efforts" regarding attempts to achieve the steel sheeting design configuration and limit vibrations induced by pile driving, the Remediation Contractor shall identify other potential alternate means and measures of steel sheeting installation for review by the Owner in its Piling Installation Plan. To be considered as a potential alternate measure, any approach offered by the Remediation Contractor must be fully described, and include:
   1. A detailed description of the alternate including cut-sheets (where applicable);
   2. An explanation of how the potential alternate approach would be implemented at the site;
   3. A summary of the alternate's successful application in similar environs (including references for independent confirmation); and
   4. A discussion of its specific applicability to the project (e.g., the circumstances under which it may be considered for use, as well as its limitations). To be considered for possible implementation, any potential alternate approach must be pre-approved by the Owner. No field trials will be permitted until the Owner is satisfied that a potential alternative is a viable option.

F. Provide accurate records of each sheet pile installed. Submitted records shall include the following information:
   1. Pile identification number, along with location.
   2. Date and time of driving.
   3. Model of hammer and energy rating.
   4. Length of sheet pile in the ground when driving is complete.
   5. Rate of penetration in feet/minute, as well as changes in rate of penetration and depth at which change occurred.
   6. Detailed remarks concerning alignment, obstructions, etc.

1.04 COORDINATION

A. Provide piling and equipment at least 10 days prior to beginning enclosure piling installation activities.

B. Notify the Remediation Engineer at least 10 days prior to beginning enclosure piling installation operations at any location. Prior to notification, the Remediation Contractor shall ensure that all required submittals have been submitted to the Remediation Engineer and returned by the Remediation Engineer as “Reviewed” or “Reviewed and Noted.”

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Enclosure piling shall be supplied by Owner. All materials shall be undamaged, and shall conform to pertinent AISC, ANSI, ASTM or other industry standards.

B. Custom steel corner pieces shall be supplied by Contractor. All materials shall be undamaged, and shall conform to pertinent AISC, ANSI, ASTM or other industry standards.

C. Splicing of sheet piling is not permitted.

D. Select the proposed pile driving equipment, including hammers and other required items, and submit complete descriptions of the proposed equipment is subject to the review by the Remediation Engineer. Changes in the selected pile driving equipment will not be allowed after the equipment has been approved except as specified and directed. No additional contract time will be allowed for Remediation Contractor proposed changes in the equipment.
   1. Pile Driving Hammers.
      a. Pile driving hammers will be of the vibratory, or impact type.
         1) Remediation Contractor shall use vibratory pile driving to extent practical, and only use impact pile driving when approved by the Remediation Engineer.
         2) Vibratory pile driving hammers shall be sized appropriately by the pile driving contractor based on available subsurface information and specifications of piling to be driven.
         3) For impact hammers, a pile cushion block shall be required to protect the enclosure piling integrity.
         4) Submit the following information for each impact hammer proposed:
            a) Make and model
            b) Ram mass weight (pounds)
            c) Anvil mass weight (pounds)
            d) Rated stroke (inches)
            e) Rated energy range (foot-pounds)
            f) Rated speed (blows per minute)

g) Steam or air pressure, hammer, and boiler and/or compressor (pounds per square inch [psi])
h) Rated bounce chamber pressure curves or charts, including pressure correction chart for type and length of hose used with pressure gauge (psi)
i) Pile driving cap, make, and mass weight (pounds)
j) Cushion block dimensions and material type
k) Power pack description

2.02 GENERAL REQUIREMENTS

A. General
Except as otherwise specifically noted in the Design Drawings, or specified herein, all materials and work for structural steel and miscellaneous metal work shall be in conformance with applicable provisions of the latest edition of the AISC *Steel Construction Manual*.

B. Field Erection
1. Structural steel and miscellaneous metal shall be stored on blocking so that no metal touches the ground and water cannot collect thereon. The material shall be protected against bending under its own weight or superimposed loads.
2. Before assembly, surfaces to be in contact with each other shall be thoroughly cleaned.

PART 3 – EXECUTION

3.01 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, dewatering, and other hazards that could develop during enclosure operations.

B. Provide adequate clearance of support and protection systems within work areas to allow for proper installation/construction of required site features.

C. Monitor enclosure piling daily during removal activities and for as long as excavation remains open. Promptly correct bulges, breakage, or leaks, to ensure that removal areas remain stable.

D. Damages to or destabilizing adjacent facilities, structures and/or pavement caused by activities associated with the installation or removal of the enclosure piling shall be promptly be repaired or replaced in-kind at the Remediation Contractor's expense.

E. Establish necessary lengths as determined on the Design Drawings.

F. Locate and protect all underground utilities, existing structures.

G. Locate and protect all aboveground utilities, existing structures.

3.02 INSTALLATION OF ENCLOSURE PILING

A. The Remediation Contractor shall remove any material that stops driving prior to continuation of driving, or develop an alternative methodology, reviewed by the Remediation Engineer, for completing enclosure piling installation.

B. Plumb steel sheet piling within four percent of pile length.

C. Sheet piling shall be constructed to meet all safety requirements.

D. Enclosure piling shall be installed using a template to maintain vertical and horizontal alignment during installation.

E. Set Up Enclosure Piling
   1. Drive piles with equipment suitable for the conditions encountered. The method and equipment selected shall deliver the necessary energy to drive the piling to the design depths as shown on the Design Drawings and minimize damage to each end of piling and adjacent interlocks. Suitable procedures must be employed to prevent damage to pile tops and joints.
   2. Care should be maintained during pile pick-up to prevent damage due to excessive bending or twisting while positioning pile for driving. In the opinion of the Remediation Engineer, twisted or bent pile sections may be rejected from use.
   3. Monitor, prevent, and correct any tendency of sheet piles to bend, twist or rotate, and to pull out of interlock. Care must be maintained throughout the installation process to ensure that piles do not declutch. The integrity of each pile and interlocked joint must be maintained during and after driving.
   4. Piles damaged or driven outside the above tolerances shall be replaced. Any sheet pile ruptured in the interlock or otherwise damaged during driving shall be immediately pulled and replaced.
   5. The Remediation Contractor shall take necessary precautions to ensure adjacent piles do not penetrate deeper during pile installation.
   6. The Remediation Contractor shall pull any sheet pile that is known to have pulled out of interlock or is suspected of having tip or interlock damage and re-drive it.
   7. Splicing of sheet piling is not permitted.

3.03 RECORDS

A. Mark identification number clearly visible on each sheet pile with a waterproof marking device, within two feet of the top, before driving is initiated.

B. Spray paint all sheet piles rejected from the work for any reason, at the time of rejection, with the letter “X” within three feet of both ends.

3.04 REJECTION

A. If excavation system components are rejected from the work because of deviation from location, plumbness requirement, excessive bending, twisting, pulling out of interlock, or other reasons, the Remediation Contractor shall take suitable corrective action at no additional cost to the Owner and such corrective action shall be reviewed by the Remediation Engineer. Suitable action includes extracting, furnishing, and driving of replacement sheet piles, so that all sheet piles installed meet the requirements of this Section and as indicated on the Design Drawings.

3.05 EXTRACTION AND REPAIRS

A. Area 1 to be backfilled in accordance with Section 31 05 05, Aggregates for Earthwork to 2 feet below finished grade and then sheet piles shall be extracted. Area 2 to be backfilled in accordance with Section 31 05 05 Aggregates for Earthwork to original grade and then sheet piles shall be extracted.

B. Remove enclosure piling when approved by the Remediation Engineer and when construction has progressed sufficiently to support excavation and bear soil and hydrostatic

pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities; repair the above items as needed.

C. Enclosure removal sequence: Remove downstream wall first; remove upstream wall second; remove wall parallel to the river last.

3.06 PROVISIONS FOR REUSE OF STEEL SHEET PILING

A. Following extraction, the Remediation Contractor shall clean steel sheet piling and inspect for any damage that may have occurred while driving and/or extracting the piling.

B. Upon extraction, the Remediation Contractor shall transport steel sheet piling to the designated decontamination pad for subsequent cleaning/decontamination in accordance with Section 02 51 00, Decontamination. Impacted material which falls from the piling during extraction and transport to the decontamination pad shall be collected by the Remediation Contractor and appropriately disposed off-site.

C. All piling must be inspected by the Remediation Engineer for reuse prior to redriving on following excavation area of steel sheet pile installation.

END OF SECTION

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SECTION 32 12 00

FLEXIBLE PAVING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install flexible, hot-mix, hot-laid, asphalt concrete pavement.
   2. The Work includes:
      a. Preparation such as saw-cutting, cold milling, cleaning, compaction, and other preparation for installing asphalt concrete pavement.
      b. Providing asphalt concrete paving materials.
      c. Providing tack coat material.
      d. Providing pavement markings where shown or indicated.
      e. Providing quality controls and testing.

B. Coordination:
   1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before paving.

C. Related Sections:
   1. Section 31 05 05, Aggregates for Earthwork.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:
   1. ASTM D2950/D2950M, Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
   2. ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
   3. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3[600 kN-m/m3]).
   4. ASTM D6938, Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 QUALITY ASSURANCE

A. Qualifications:
   1. Asphalt Concrete Production Facility: Production facility for asphalt concrete, tack coat materials, and other bitumastic materials shall be approved by NYSDOT for furnishing such materials for NYSDOT highways.
   2. Remediation Contractor's Testing Laboratory: Retain the services of an independent testing laboratory to perform testing and determine compliance with the Contract Documents of the materials provided under this Section. Testing laboratory shall comply with ASTM E329, and shall be experienced in the types of testing required.

B. Regulatory Requirements:
   1. Reference Specifications and Details: Comply with applicable requirements of the NYSDOT Standard Specifications (effective September 1, 2016) and Standard Sheets.

C. Quality Assurance Testing:
   1. Test bituminous materials and asphalt concrete mix design for each asphalt concrete material in accordance with reference specifications indicated in Article 1.03 of this Section.
   2. In lieu of quality assurance testing, submit evidence and certification of material compliance with reference specifications indicated in Article 1.03 of this Section. When evidence of conformance submitted is not acceptable to Remediation Engineer, perform quality assurance testing.
   3. To facilitate testing laboratory, Remediation Contractor shall:
      a. Secure and deliver to testing laboratory representative Samples of materials that Contractor proposes to furnish and that are required to be tested.
      b. Furnish such labor as is necessary to obtain and handle Samples at the Site or at asphalt concrete production facility and other material sources.
      c. Advise testing laboratory and Remediation Engineer sufficiently in advance of operations to allow for completion of quality assurance tests and for the assignment of personnel.

1.04 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings:
      a. Submit the proposed asphalt concrete mix design for each asphalt concrete material, and other bituminous materials, required under this Section. Provide complete data on materials, including location in the Work, source, material content and percentages, temperatures, and all other pertinent data.
      b. Proposed gradation for each aggregate to be used for subbase and in asphalt paving material. Submit gradation test results for the same material furnished on a previous project. Indicate the proportion of reclaimed asphalt pavement.
      c. In lieu of the information required under Paragraphs 1.04.A.1.a and 1.04.A.1.b, above, submit certificates of compliance with the reference specifications indicated in Article 1.03 of this Section, for each for the following:
         1) Each asphalt concrete mix design required.
         2) Bituminous materials required.
         3) Aggregates to be used in asphalt paving, from each material source and each required gradation.
         4) Density of uncompacted asphalt concrete material.
         5) Density of previously-compacted, previously-tested asphalt concrete material.
         6) Density and voids analysis for each asphalt concrete material test specimen.
         7) Evidence of asphalt concrete plant inspection and compliance with the reference specifications indicated in Article 1.03 of this Section.

B. Informational Submittals:
   1. Qualifications Statements:
      a. Asphalt Concrete Production Facility: Submit name, address, and proof of NYSDOT approval for asphalt concrete production facility.
      b. Remediation Contractor’s Testing laboratory: Submit name and qualifications of testing laboratory to be employed, and qualifications of testing laboratory's personnel that will perform quality assurance and field quality control testing required in this Section. If more than one laboratory will be employed, submit qualifications statement for each laboratory.
   2. Quality Assurance Test Data Submittals:
      a. Submit for quality assurance tests required.
   3. Delivery Tickets:

a. Submit copy of delivery ticket for each load of asphalt concrete, tack coat materials, and other materials obtained from asphalt concrete production facility, signed by Remediation Contractor.

4. Field Quality Control Submittals:
   a. Submit results of required field quality control testing.

1.05 SITE CONDITIONS

A. Environmental Requirements:
   1. Temperature:
      a. For binder course paving lifts equal to or greater than two inches thick, atmospheric temperature shall be 40 degrees F and rising.
      b. For top course paving or other pavement courses in lifts less than two inches thick, temperature of surface on which pavement is to be placed shall be 50 degrees F or greater.
   2. Prohibitions:
      a. Do not place asphalt paving materials when weather is foggy or during precipitation.
      b. Do not place asphalt paving materials when the base on which the material will be placed contains moisture in excess of optimum.
   3. Place asphalt paving materials only when Remediation Engineer concurs that weather conditions are suitable.

PART 2– PRODUCTS

2.01 SYSTEM PERFORMANCE

A. System Description:
   1. Subbase Course: Provide NYSDOT Type 2 subbase course of the thickness shown or indicated, in accordance with reference specifications indicated in Article1.03. of this Section.
   2. Asphalt Pavement Courses: Provide the following:
      a. Binder Course: 2.5 inches compacted thickness.
      b. Surface Course: 1.5 inches compacted thickness.

2.02 ASPHALT CONCRETE MIXES

A. Asphalt Concrete Mixtures: Provide the following materials designed and manufactured in accordance with the reference specifications indicated in Article 1.03 of this Section:
   1. Binder Course: NYSDOT Item No. 402.258902, 25.0 F9 Binder Course HMA, 80 Series Compaction.
   2. Surface Course: NYSDOT Item No. 402.128202, 12.5 F2 Top Course HMA, 80 Series Compaction.

2.03 BITUMINOUS MATERIALS

A. Bituminous Materials for Asphalt Concrete:
   1. Bituminous materials for asphalt concrete shall comply with the reference specifications indicated in Article 1.03 of this Section, for the asphalt concrete mixes specified.

B. Tack Coat:
   1. Tack coat shall be emulsified asphalt that conforms to the requirements of Section 702 (Table 702-7 and/or 702-8) of the reference specifications indicated in Article 1.03 of this Section.

2.04 AGGREGATES IN ASPHALT PAVEMENTS

A. Aggregates for Asphalt Concrete:
   1. Aggregate materials used in asphalt pavement shall be in accordance with the reference specifications indicated in Article 1.03 of this Section, for the asphalt concrete mix designs indicated.

PART 3 – EXECUTION

3.01 INSPECTION

A. Examine the subgrade, subbase, and base on which asphalt paving will be installed and notify Remediation Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

B. Do not place materials on subgrades or subbase that is muddy or has water thereon.

3.02 PREPARATION

A. Preparation: Before starting installation of asphalt paving, perform the following:
   1. Grade Control: Establish and maintain throughout asphalt paving installation the required lines and grades, including crown and cross-slope for each asphalt concrete course during construction operations.
   2. Subgrade: The subgrade shall be shaped to line and grade and compacted with self-propelled rollers. Compaction shall be to 95 percent Standard Proctor Maximum Density (ASTM D698) throughout the sub-grade.
   3. Provide and compact subbase as required to achieve the finished grades as shown and as specified in this Section. Remediation Contractor shall verify aggregate and asphalt paving can be installed at the required thicknesses and to the final grades indicated on the Contract Drawings without cutting into existing material except for area specifically indicated to be cut on the Contract Drawings. Subbase material shall be compacted to 95 percent Standard Proctor Maximum Density (ASTM D698). Before installing asphalt pavement, obtain Remediation Engineer's concurrence that subgrade and subbase are suitable for installing asphalt pavement.

3.03 INSTALLATION OF ASPHALT PAVING

A. General:
   1. Provide final pavement surfaces of uniform texture, at required grades and cross-sections.
   2. Construct paved surfaces to the lines, grades, and typical sections shown or indicated. If grading is not provided, match existing lines and grades.

B. Installation of Asphalt Concrete:
   1. Asphalt concrete mixture shall be transported to the area of paving and placed as soon as possible after mixing.

2. Placement of each asphalt concrete course shall be completed over the full width of the section under construction during each day's paving operations.
3. Spread and finish asphalt concrete courses by means of self-propelled mechanical spreading and finishing equipment. Compacted thickness of layers placed shall not exceed 150 percent of specified thickness unless approved in writing by Remediation Engineer.
4. Compaction:
    a. Rollers:
        1) Use sufficient rolling equipment to satisfactorily compact and finish the quantity of asphalt concrete placed. There shall be not less than two rollers on the Project at all times. When acceptable to the Remediation Engineer, one of the rollers may be a pneumatic-tire roller.
        2) During rolling operations, roller speed shall not exceed three miles per hour. When sufficient number of rollers is not available, reduce the quantity of asphalt concrete placed to accommodate the available rollers' speed.
        3) Required rollers shall be in acceptable operating condition, prior to placing of asphalt concrete.
        4) Use of vibratory rollers in lieu of steel-wheeled rollers is acceptable, however when thickness of asphalt concrete is one inch or less, rolling shall be in the static mode.
    b. Rolling of initially-placed asphalt concrete material, or breakdown rolling, shall begin as soon as the asphalt concrete mixture will bear the roller without undue displacement.
    c. Rolling shall be longitudinal, overlapping on successive trips by not less than one-half roller rear wheel width, and not more than three-quarters of roller rear wheel width. Alternate trips of the roller shall be of slightly different lengths.
    d. At all times, roller motion shall be slow enough to avoid displacing the asphalt concrete.
    e. Operate rollers continuously from breakdown of laid asphalt concrete through finish rolling.
    f. Perform finish rolling using a steel-wheeled roller or a vibratory steel-wheel roller operating in the static mode.
    g. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.
    h. At each location not accessible to roller, thoroughly compact asphalt concrete with tampers and finish, where necessary, with a hot smoothing iron to provide uniform, smooth layer over the entire area so compacted.
5. Each compacted asphalt concrete course shall be within plus-or-minus 1/4 inch of the indicated thickness. Total thickness of asphalt pavement shall be within plus-or-minus 1/2 inch of the indicated thickness.
6. Placement of Adjacent Strips of New Asphalt Concrete:
    a. When more than one width of asphalt concrete material will be placed, a six-inch wide strip of asphalt concrete adjacent to the area on which the future material is to be placed shall not be rolled until such future material is placed.
    b. Do not leave the unrolled strip unrolled for more than two hours after placement, unless the six-inch unrolled strip is first heated with a joint heater.
    c. After the first strip or width of asphalt concrete is compacted, place, finish, and compact the second width or strip as required for the first width, except that rolling shall be extended to include the six-inch strip of the first width not previously compacted.

C. Construction Joints:
   1. Construction joints shall be made in such a manner as to ensure a neat junction, thorough compaction, and bond throughout.
   2. Provide a transverse joint extending over the full width of the strip being laid and at right angles to its centerline at the end of each work day and at other times when the placement of hot-mix asphalt concrete will be suspended for a period of time that will allow asphalt concrete mixture to chill.
   3. Thoroughly compact by rolling the forward end of a freshly laid strip of asphalt concrete before the asphalt concrete mixture becomes chilled. When the Work is resumed, the end shall be cut vertically for the full depth of the layer.

D. Joining of Pavements:
   1. When pavement is to join previously-laid pavement or concrete, the existing or previously-laid pavement shall be neatly and carefully edged to allow for overlapping and feathering of the subsequent course of asphalt concrete material.
   2. Where new pavement is to meet existing pavement, the existing pavement shall be saw-cut and notched.
   3. Where new pavement will meet existing asphalt pavement, remove existing pavement 12 inches onto undisturbed existing pavement course at edges where new pavement will meet existing pavement.
   4. Tack Coat:
      a. Provide tack coat material at the following locations:
         1) At edges where new pavement will connect to existing or previously-installed pavement.
         2) On surface of existing or previously-installed pavement course over which new pavement will be installed, prior to placement of the subsequent pavement course. Tack coat may be deleted when a succeeding layer of asphalt pavement is being applied over a freshly-placed asphalt pavement course that has been subjected to very little or no traffic, with approval of Remediation Engineer.
         3) Where new pavement will abut curbing, concrete gutters, drainage structures and frames, manhole cover frames, valve boxes, and similar items.
      b. Tack Coat Installation: Install tack coat immediately prior to installing pavement. Place pavement while tack coat is wet. Apply tack coat in accordance with reference specifications indicated in Article 1.03 of this Section.

E. Curing:
   1. Do not allow traffic onto pavement until directed by Remediation Engineer. Traffic will not be allowed on new asphalt concrete pavement until surface temperature is less than 140 degrees F.
   2. Hold construction traffic on new pavement to a minimum as acceptable to Remediation Engineer.

F. Defective Pavement Work:
   1. When directed by Remediation Engineer, remove and replace defective asphalt paving Work. Cut out such areas of defective pavement and fill with fresh asphalt concrete materials, compacted to required density.

3.04 FIELD QUALITY CONTROL

A. Site Tests: Employ a testing laboratory to perform field quality control testing.
   1. Testing Laboratory Scope:
      a. Perform field density tests to verify that required compaction of asphalt materials has been obtained.

b. Test the proposed materials for compliance with the Contract Documents, as directed by Remediation Engineer.
c. Submit reports of all test results to Remediation Engineer and Remediation Contractor.

2. Asphalt Concrete Mix Temperature: Measure temperature at time of placement, record, and submit to Remediation Engineer.
3. Surface Smoothness:
   a. Test finished surface of each asphalt paving course for smoothness, using a 10-foot straightedge applied parallel to and at right angles to centerline of paved areas.
   b. Check surfaced areas at intervals as directed by Remediation Engineer.
   c. Surfaces will be acceptable relative to smoothness when measurements are equal to or less than the following:
      1) Binder Course: 3/8 inch vertical in 10 feet horizontal.
      2) Top Course: 1/4 inch vertical in 10 feet horizontal.
      3) Crowned Surfaces:
         a) Test crowned surfaces with a crown template, centered and at right angles to the crown.
         b) Surfaces will be acceptable when variance is equal to or less than 1/4 inch from the template.
   c. Elevation: Finished surface of pavement shall be within plus-or-minus 1/2 inch of elevations shown or indicated.
4. Density:
   a. Asphalt: Test in accordance with ASTM D2950/D2950M. Test one sample every 1,000 square feet of pavement. Test for each asphalt concrete course installed.
   b. Subbase: Test in accordance with ASTM D6938/D6938M. Test one sample every 1,000 square feet of pavement. Test for each lift of sub-base course installed.
   c. In addition, when directed by Remediation Engineer, compare density of in-place asphalt paving materials against laboratory specimen or certificates on same asphalt pavement mixture, using nuclear density device.
   d. Criteria for Acceptance: Density of in-place asphalt pavement material shall be not less than 90 percent of the recorded laboratory specimen or certificate density. Density shall be not greater than 98 percent.
5. Asphalt Concrete Pavement Thickness: Depth check readings shall be taken for each course of compacted pavement at a frequency of one reading from every 1,000 square feet of compacted pavement. Comply with thickness tolerance specified in Article 3.03 of this Section.
6. Repair holes from test specimens in accordance with this Section's requirements for repairing defective Work.
7. Submit test results, certified by testing laboratory, to Remediation Engineer within 24 hours of completion of test.

3.05 ADJUSTING

A. Frames and Covers:
   1. Set frames of drainage structures, manholes, valve boxes, and similar items to final grade. Adjust frames of existing structures and frames furnished under other Sections. Frames shall be at substantially similar elevation to finished top course of pavement.
   2. Replace covers and gratings of existing structures immediately following adjusting associated frames. Install covers and gratings of structures provided under the Project as quickly as possible.

3. Where there is a delay between adjusting of frames and installation of top course, provide temporary bituminous material around perimeter of each frame to smooth vehicle access over the frame. Maintain and repair temporary bituminous material as required until placement of top course. Remove temporary bituminous material before installing top course.

B. Pavement Adjustment:
   1. Repair or replace in manner acceptable to Remediation Engineer areas of pavement that are observed to pond or collect water.

3.06 CLEANING

A. After completing paving operations, clean surfaces of excess or spilled bituminous materials, excess asphalt concrete, and foreign matter.

3.07 PROTECTION

A. Protect finished pavement until pavement has become properly hardened and cool.
   1. Cover openings of drainage structures, manholes, valve boxes, and similar items in the paved area until permanent coverings are provided.

END OF SECTION

SECTION 32 90 00

PLANTINGS AND GENERAL SITE RESTORATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install restoration features.
   2. All types of surfaces, sidewalks, curbs, gutters, and other features disturbed, damaged, or destroyed during the performance of the Project, shall be restored and maintained as specified herein.
   3. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to or better than the condition of each before the Project began, as reviewed by the Owner.

B. RELATED WORK SPECIFIED ELSEWHERE
   1. Section 32 12 00, Flexible Paving.
   2. Section 31 05 05, Aggregates for Earthwork.
   3. Section 32 92 00, Turfs and Grasses.

1.02 REFERENCE STANDARDS

A. New York State Department of Transportation (NYSDOT) Standard Specifications

1.03 SUBMITTALS

A. The Remediation Contractor shall submit a schedule of restoration operations for review. Any changes to the agreed upon restoration schedule must be reviewed and accepted by the Owner and/or Remediation Engineer. The replacement of surfaces at any time, as scheduled or as directed, will not relieve the Remediation Contractor of the responsibility to repair damages by settlement or other failures.

B. Manufacturer's product data for fencing, concrete curbs and gutters (if pre-cast), fertilizers, hydroseed mix, etc., if used.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asphalt Pavement – See Section 32 12 00, Flexible Paving.

B. Selected Fill – See Section 31 05 05, Aggregates for Earthwork.

PART 3 – EXECUTION

3.01 STONE OR GRAVEL SURFACING

A. All areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.
   1. The depth of the stone or gravel shall be at least equal to the existing.
   2. After compaction, the surface shall conform to the slope and grade of the area being replaced.

3.02 OTHER TYPES OF RESTORATION

A. Trees, shrubs, and landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and based on discussions with the property owner, unless otherwise directed by the Owner.
   1. Dig pits and beds at least 6 inches larger than the plant root system to be installed in that location.
   2. Remove non-biodegradable containers prior to planting.
   3. Support plants as follows:
      a. One-inch diameter plants: one stake and one tie.
      b. Two-inch diameter plants: two stakes and two ties.
   4. Provide and install wood chip mulch by hand to form a continuous blanket over the soil surrounding the plant, approximately 2 inches in uniform thickness at loose measurement.
   5. An initial watering of planted trees will occur immediately after planting and will be performed throughout the growing season, as needed, until accepted by the Owner.
   6. Do not install plant life when the temperature may drop below 35 °F or rise above 90 °F.
   7. Where applicable, install live stakes when dormant (i.e., before budding out) in the late fall or early spring (no later than early April). Additionally, install trees and shrubs in the spring or fall, and not in the summer months.
   8. Do not install plant life when the wind velocity exceeds 30 miles per hour.

B. Turfs and grasses
   1. Install turfs and grasses in accordance with Section 32 92 00, Turfs and Grasses.

C. Fences destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location, or as directed by the Owner.

D. Concrete curbs, gutters, and sidewalks destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location, or as directed by the Owner

E. All bituminous concrete pavement or other paved driveways shall be replaced with material to match the existing surface condition and in accordance with Section 32 12 00, Flexible Paving, unless otherwise specified.

F. Other site features removed or damaged as a result of the construction operations shall be restored in-kind to their original location and condition unless otherwise indicated in the Remedial Design, or as directed by the Owner.

G. Existing riprap-lined shoreline area will be restored by placing riprap along the riverbank ad in near-shore areas, as necessary, to prevent erosion/scour in accordance with the IRM Design Report and Section 31 05 05, Aggregates for Earthwork.

3.03 ACCEPTANCE CRITERIA AND MAINTENANCE

A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one year following the date of substantial completion or other such date as determined by the Owner.
   1. Turf and grasses see Section 32 92 00, Turfs and Grasses for details.

B. Where restored features (trees, shrubs, curbs, pavement, etc.) do not comply with specified acceptance criteria, reestablish the feature and continue extended service period until the feature(s) comply with criteria for acceptance.

C. If applicable, remove erosion-control measures after plantings and grasses extended service period ends.

END OF SECTION

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SECTION 32 92 00

TURFS AND GRASSES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Remediation Contractor shall provide all labor, materials, tools, equipment and incidentals as shown, specified and required to restore all disturbed grass areas to conditions equal to or better than existing and to the satisfaction of the Owner.
   2. Types of products required include the following.
      a. Topsoil.
      b. Wildflower and Grass seed mixture.
      c. Fertilizers.
      d. Mulches.
      e. Erosion-control materials.
      f. Accessories.

B. Related Sections:
   1. Section 31 05 05, Aggregates for Earthwork.
   2. Section 31 11 00, Clearing and Grubbing.

1.02 DEFINITIONS

A. The term “finish grade” shall be used to describe the finished surface elevation of planting soil.

B. The term “manufactured topsoil” shall be used to describe soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil acceptable as a component of loam.

C. The term “loam” shall be used to describe topsoil that has been mixed with additional organic and inorganic additives, as specified.

D. The term “percentage pure live seed” shall be defined as the percent (%) purity multiplied by percent (%) germination divided by 100 to equal the percent pure live seed (PLS) and shall be calculated for all seed lots using each seed lots own unique purity and germination test results. A PLS pound shall be defined as the bulk weight of seed required to equal one pound of 100 percent pure, germinated seed.

E. The term “subgrade” shall be used to describe the surface of subsoil remaining after completing excavation; or the top surface of a fill or backfill immediately beneath

F. Seed may be mixed by an approved method on-Site or at the seed supplier’s facilities. If the seed is mixed on-site, each variety shall be delivered in the original containers and shall bear the supplier’s certified analysis. Where seed is mixed by the seed supplier, provide Remediation Engineer with the seed supplier’s certified statement as to the composition of the mixture.

1.03 SUBMITTALS

A. Action Submittals: Submit the following:
   1. Product Data:
      a. Manufacturer's product data, specifications and installation instructions for all required materials including but not limited to; seed mix, fertilizers, and erosion control products.
      b. Composition and analysis of commercial fertilizers and all purchase receipts showing the total quantity actually purchased for this Project.
      c. Proportions of each component contained in hydro seed mixture, if required. Identify number of pounds of each component required for each 100 gallons of water. Include the number of square feet of lawn, grass meadow or wildflower meadow mixture that can be installed with each full tank of hydro seed mixture.

B. Informational Submittals: Submit the following:
   1. Certificates:
      a. Certification of Wildflower and Grass Seed mixture: For each seed mixture, furnish seed supplier's certification stating the botanical and common name, and percentage by weight of each species and variety, and percentage of purity, germination and weed seed. Include the year of production and date of packaging. Certify that seed has been stored in compliance with all recommendations of the seed supplier.

1.04 PROJECT CONDITIONS

A. Environmental Requirements:
   1. Proceed with and complete turfs and grasses planting as rapidly as portions of the Site become available, working within the seasonal limitations for each type of lawn, grass and wildflower planting required.
   2. Proceed with planting only when current and forecasted weather conditions are favorable to successful planting and establishment of turfs and grasses.
      a. Do not spread seed when wind velocity exceeds five miles per hour.
      b. Do not plant when drought, or excessive moisture, or other unsatisfactory conditions prevail.
   3. Herbicides, chemicals and insecticides shall not be used on areas bordering wetlands.

B. Scheduling:
   1. Coordinate planting with specified extended service periods to provide required service from date of Substantial Completion. Plant during one of the following periods:
      a. Seeding and planting may be performed between October 1 to freeze-up as well as between April 1, or soon thereafter as the soil can be worked, and July 30.
      b. If topsoil placement occurs between July 30 and September 30, apply a cover crop of annual rye grass at a rate of 25 pounds per acre, in addition to the specified seed mix, and cover with erosion control fabric to provide temporary erosion protection.
      c. Seeding and planting is not recommended between August 1 and September 30.

1.05 WARRANTY

A. General Warranty: The Remediation Contractor shall be responsible for establishing a dense, healthy stand of perennial grass cover, with a uniform cover density of at least 80 percent. The Remediation Contractor shall maintain all vegetative ground cover (including grass), monitor, and maintain temporary erosion and sedimentation controls, repair any observed erosion, and reseed areas of poor grass growth until a dense, healthy stand of grass cover has been established. Upon full establishment of grass cover (i.e. to 80% cover density),

Remediation Contractor shall remove all remaining temporary erosion and sedimentation controls (straw/hay/straw bales, silt fence, etc.) from the site.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Topsoil:
   1. All soil accepted as topsoil, whether obtained from on-Site or off-site sources, shall comply with topsoil requirements in accordance with Section 31 05 05, Aggregates for Earthwork.
   2. Topsoil Source: Reuse surface soil stockpiled on-Site, where possible. Verify suitability of stockpiled surface soil to produce topsoil, as specified. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
      a. Supplement acceptable on-Site soil with manufactured topsoil from off-Site sources, when quantities available on-Site are insufficient to complete the Work.
   3. Topsoil Source: Amend existing in-place surface soil to produce topsoil, where possible. Verify suitability of surface soil to produce topsoil, as specified. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
      a. Supplement acceptable surface soil with manufactured topsoil from off-Site sources, when quantities available on Site are insufficient to complete the Work.

B. Seed Mix:
   1. Ernst Seeds ERNMX-166 Low-Growing Wildflower and Grass mix or approved equal: Provide a mixture of fresh, clean, new-crop seed complying with the tolerance for purity and germination established by AOSA. Provide seed of each species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed specified.
   2. Seed Species: Seed of grass and wildflower species as follows, with not less than 95 percent germination, not less than 80 percent pure seed, and not more than 0.25 percent weed seed by weight:
      a. Full Sun: Proportioned by weight as follows:
         1) Forty-three percent Sheep Fescue (Festuca saximontana)
         2) Thirty-one percent Annual Ryegrass (Lolium multiflorum)
         3) Seven percent Perennial Blue Flax (Linum perenne)
         4) Six percent Partridge Pea (Chamaecrista fasciculate)
         5) Three percent Butterfly Milkweed (Asclepias tuberosa)
         6) Three percent Oxeye Daisy (Chrysanthemum leucanthemum)
         7) Two percent Lanceleaf Coreopsis (Coreopsis lanceolate)
         8) One and one-half percent Shasta Daisy (Chrysanthemum maximum)
         9) One percent Blackeyed Susan (Rudbeckia hirta)
         10) One percent Aromatic Aster (Aster oblongifolius)
         11) One-half percent Orange Coneflower (Rudbeckia fulgida)
         12) One-half percent Spotted Beebalm (Monarda punctate)
         13) One-half percent Common Yarrow (Achillea millefolium)
         14) One-half percent Mistflower (Eupatorium coelestinum)
         15) One-half percent Hairy Beard Tongue (Penstemon hirsutus)

C. Erosion-Control Materials:
   1. Erosion-Control Fiber Mesh: For slopes <3H:1V, 100% Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 pounds per square yard, with 50 to 65 percent open area. Include manufacturer's recommended 6-inches long steel wire staples.
   2. Erosion Control Blanket: For slopes >3:1, North American Green BioNet C125BN or approved equal, installed in accordance with manufacturer's recommendations.

PART 3 - EXECUTION

3.01 INSPECTION

A. Remediation Contractor shall examine the areas and conditions under which turfs and grasses Work is to be performed, and notify Remediation Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to Remediation Engineer.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydro seeding overspray, as necessary.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Excavate or fill subgrade, as required, to bring subgrade to elevations within 6-inches of existing surface. Maintain all angles of repose. Confirm that subgrade is at proper elevations and that no further earthwork is required to bring the subgrade to proper elevations.

D. Remove all construction debris, trash, rubble and all extraneous materials from subgrade. In the event that fuels, oils, concrete washout or other material harmful to plant growth or germination have been spilled into the subgrade, excavate the subgrade sufficiently to remove all such harmful materials and fill with approved fill, compacted to the required subgrade compaction level.

E. Backfill topsoil, as required, to bring elevations to existing surface grade. Maintain all angles of repose. Confirm that final grade is at proper elevations and that no further earthwork is required to bring the final grade to proper elevations.

3.03 SEEDING

A. In accordance with New York State Standards and Specifications for Erosion and Sediment Control, NYSDEC, November 2016. Sow Low-Growing Wildflower and Grass seed mixture at a minimum rate of not less than 45-pounds for every acre.

B. Remediation shall apply specified seed mix without delay to prevent erosion or displacement of soils and discharge of soil-bearing runoff to adjacent properties or waterways.

C. Protect seeded areas, with slopes less than one on three, by providing erosion-control fiber mesh and where slopes exceed one on three, by providing erosion-control blankets. Install erosion-control materials according to manufacturer's written instructions and as follows:

1. Vertically down slope without stretching fabric.
2. Install hold down staples three per square yard minimum in center of fabric or as required to hold and shape the fabric to the contours of the slope. Install hold down staples along edges and overlaps of fabric at 9 inches on centers minimum, or as required to hold and shape the fabric to the contours of the slope.
3. Lap fabric 4-inches minimum and turn edges of fabric into 8-inch deep by 16-inch wide earth trench and fill trench with earth.

D. Using a uniform fine spray, thoroughly and evenly water seeded areas. Provide adequate water to moisten seedbed to a depth of 2-inches.
   1. Maintain all seedbeds in a uniformly moist condition, conducive to seed germination and plant establishment, as specified.

E. Reseed areas that remain without mulch or erosion controls for longer than three days.

F. Take precautions to prevent damage or staining of construction or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

G. Prevent foot or vehicular traffic, or the movement of equipment, over the mulched areas. Reseed areas damaged as a result of such activity.

3.04 HYDROSEEDING

A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

3.05 ACCEPTANCE CRITERIA FOR TURFS AND GRASSES

A. Turfs and grasses Work will be considered acceptable when:
   1. Seeded Meadow: A dense, healthy stand of perennial grass and wildflower cover exists with a uniform cover density of at least 80 percent for a minimum of one year post-seeding.

B. Promptly remove soil and debris, created by turfs and grasses Work, from paved areas. Clean wheels of vehicles before leaving Site to avoid tracking soil and loam onto roads, walks, or other paved areas.

C. Remove erosion-control measures after turfs and grasses extended service period ends.

D. Take all precautions to ensure that hydroseed slurry is only placed on the areas designated. Completely clean any overspray, on areas not designated to receive slurry.

3.06 INSPECTION AND ACCEPTANCE

A. Where turfs and grasses do not comply with specified acceptance criteria, reestablish turfs and grasses and continue extended service period until turfs and grasses comply with criteria for acceptance.

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SECTION 35 20 23

DREDGING AND SUBAQUEOUS BACKFILL

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified:
   1. Provide all supervision, labor, materials, tools, equipment, accessories, and appurtenances necessary to perform sediment removal and related Work.

B. Related Specifications:
   1. Section 01 57 05, Temporary Controls.
   2. Section 01 71 23, Field Engineering.
   3. Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris.
   4. Section 31 05 05, Aggregates for Earthwork.

1.02 SUBMITTALS

A. Pre-Construction:
   1. As part of the Project Operations Plan, prepare and submit a Sediment Removal and Backfill Plan to the Owner and Remediation Engineer for review and approval prior to commencing sediment removal operations. The Sediment Removal Plan shall include details for the Work planned for the upcoming construction season. At a minimum, the Sediment Removal and Backfill Plan shall include:
      a. Proposed survey procedures.
      b. Proposed methods, procedures, and equipment for debris removal during sediment removal, including the segmentation and transport of debris that may be encountered during sediment removal.
      c. Description, dimensions, capacity, and drawings or photographs of the removal equipment to be used for removal of river sediments.
      d. Description of sediment removal and backfill equipment to be utilized, including number and type equipment including bucket types, dredge platforms, etc. (if applicable).
      e. Description, number and type of barges, trucks, or other vehicles to be used for material transport, including debris and import material.
      f. Proposed inspection procedure to verify barges are clean and functioning prior to mobilization and demobilization.
      g. Delineation of the Work Areas to be used by the Remediation Contractor, including the areas to be used for sediment offloading and/or import material loading, removed sediment stabilization, temporary stockpiling, and de-watering. Additionally, the sequencing of sediment removal must be described (order of areas that will be dredged and sequencing with other vessels using the river and/or other vehicles using the road).
      h. Description and location of navigation aids to be used as required by Part 3.06 of this section.
      i. Description of sediment removal equipment positioning and visualization software to be utilized for sediment removal in addition to the planned sediment removal progression.

j. Proposed methods for avoiding, protecting, or removing and replacing public and private utilities. Include the procedures for locating and protecting and utilities that could be encountered and impacted by sediment removal operations.
k. Proposed methods and procedures for sediment removal and backfill placement within acceptable tolerances (see Section 01 71 23, Field Engineering).
l. A description of contingent measures to address odors that may occur during sediment removal or transport of sediment or debris.
m. Identify designated location for temporary sediment staging including description of all necessary containment systems for temporary sediment staging area.
n. Planned sequence of removal and backfill operations.
o. Detailed schedule of dredging and backfilling Work in accordance with the accepted Progress Schedule.

B. During Construction:
1. Submit any proposed significant changes to operating procedures or equipment, such as use of an entirely different sediment removal technology, to the Owner and Remediation Engineer for review and approval prior to implementation.
2. Submit updates to the Sediment Removal and Backfill Plan as requested by the Remediation Engineer or, as necessary, to account for different methods, procedures, or conditions to those presented in the approved Sediment Removal and Backfill Plan.
3. Submit sediment removal status summary in daily progress reports in accordance with Section 01 32 26, Construction Progress Reporting.
4. Material Delivery Tickets: Submit copy of delivery ticket for each load of off-site material delivered to the Site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, NYSDOT item number when applicable, and quantity delivered.
5. Samples: Provide adequate quantities of backfill material to the Remediation Engineer for analytical sampling. Specifically, provide access to each backfill material source a minimum of 21 days prior to intended use of the material.

1.03 DEFINITIONS

A. Bucket Refusal Areas: Bucket refusal areas are areas where the sediment removal bucket encounters the top of a hard surface (e.g., bedrock, boulders) that it is unable to penetrate.

B. Debris: Debris includes, but is not limited to, wood, vegetation, and manmade objects. Debris also includes potentially significant cultural resources, and floating or submerged aquatic vegetation that is present in the sediment removal area.

C. Debris Field: Debris including, but not limited to, wood, vegetation, and manmade objects, that comprises the majority of material within the bucket bite for a given location, prevents full closure of the dredge bucket, significantly overhangs closed dredge buckets, and/or interferes with the penetration of the dredge bite, but does not include bucket refusal areas. The Remediation Contractor shall use its best judgment and direction from the Remediation Engineer (if provided) to determine whether a debris field is present in the sediment removal area.

D. Design Dredge Prism XYZ File: The Design Dredge Prism XYZ File is an electronic data file that specifies the horizontal (X and Y) and Vertical (Z) extent of material to be removed as part of the sediment removal. The electronic data file contains X, Y, and Z values on a 1-foot by 1-foot basis within the footprint of the dredge area and the adjoining side slope areas.

E. Sediment Removal: Sediment Removal includes the removal of all sediment and debris necessary to achieve the Required Elevations shown in the Design Dredge Prism XYZ File and materials that may be necessary to achieve the Required Elevations in the Design Dredge Prism XYZ File (e.g., material removed to create a stable side slope).

F. Best Management Practices (BMPs): BMPs shall be implemented by the Remediation Contractor as directed by the Remediation Engineer. BMPs that shall be implemented by the Remediation Contractor at the direction of the Remediation Engineer include, but are not limited to, the following operational procedures:
   1. Implement sediment removal in a manner that ensures stable slopes along the exposed face of uncut areas inside the sediment removal area boundary to minimize bank sloughing or failure. This may involve a stair step configuration of bucket bites in continuous areas where the thickness of the sediment removal cut to achieve the Required Elevations is greater than two times the bite depth of the sediment removal bucket being used at that location.
   2. Reduce the rate of dredging to minimize sediment suspension.
   3. Conduct bulk removal of sediments in contiguous areas where the thickness of the sediment removal cut to achieve the Required Elevations is greater than two times the bite depth of the sediment removal bucket being used at that location. The bulk removal would be accomplished by dredging the entire area to an interim elevation that is 0.5 feet above the Required Elevation in that area. This would be followed by fine grade dredging that would be to re-occupy the area and dredge to the Required Elevations.
   4. Implement sediment removal of slopes in a stairstep fashion where the bucket bites proceed from the top of the slope to the bottom of the slope to minimize sloughing.

A. Required Elevations: The Required Elevations include the following within the sediment removal area boundaries:
   a. The elevations in the Design Dredge Prism XYZ File.
   b. The elevations of bucket refusal, if encountered prior to achieving the Required Elevations shown in the Design Dredge Prism XYZ File.

   Required Elevations do not include areas where a specific setback, offset, exclusion area is approved in writing by the Remediation Engineer.

1.04 MATERIAL TO BE REMOVED

A. Character of Material to be Removed:
   1. Information regarding the physical and chemical properties of material to be removed from the River is provided in the Contract Documents. The information is based on field investigation and laboratory testing of the materials from the River. Although the results of such explorations are considered generally representative of the subsurface conditions at their respective locations, local variations in the subsurface materials are to be expected and, if encountered, shall not be considered materially difference within the purview of the Contract.
   2. The Remediation Contractor is encouraged to assess the geotechnical characteristics of the sediments at the Site through their own exploratory methods as dredging progresses and to use that information to supplement the information provided in the Contract Documents for planning purposes if material characteristics differ from what is indicated by available data. Any additional work of this nature will be at no additional cost to the Owner.

1.05 CONTRACT WORK AREA

A. Access:
   1. Access is available to the Remediation Contractor via the Site entrance located at 279 Court St., Binghamton, New York.
   2. Remediation Contractor access to the Susquehanna River shall be via 336 Court St, Binghamton, New York unless otherwise indicated in the Contract Documents.
   3. Remediation Contractor shall comply with public roadway requirements for weight and height.
   4. If the Remediation Contractor desires to access the shoreline near the site for personnel or equipment loading and offloading, at locations other than the property for which the Owner is seeking an access agreement, these locations must be identified in the Remediation Contractor's Project Operations Plan. Access to these locations must be accepted by the Remediation Engineer and secured by the Remediation Contractor. Any costs for access or use of such sites for these purposes will be at the Remediation Contractor's expense.

B. Protection of Adjacent Property and Structures:
   1. Conduct Work in such a manner that no removed material (i.e., sediment or debris) is placed or otherwise deposited outside of dredging limits (e.g., existing side channels, basins, docking areas, or other areas).
   2. The Remediation Contractor shall review and verify the condition of existing structures adjacent to the Contract Work Area prior to beginning Work to ascertain existing conditions, including photographic documentation. Work shall be conducted in a manner to protect the stability of structures on or adjacent to the Contract Work Area.

C. Shoreline:
   1. Work shall be conducted such that shoreline materials adjacent to and upland of the dredge areas are not destabilized and do not enter the dredge areas, as shown on the drawings. Sloughing or erosion of these shoreline areas into the dredge cut is not acceptable either during or immediately following dredging. Any consequence of the Remediation Contractor's actions will solely be borne by the Remediation Contractor.

1.06 BARGE LOADING

A. Load barges using methods that do not create an unsafe situation causing spillage or submergence (tipping) of the barge. Load barges evenly to maintain stability of the barge. Once movement of the dredge bucket toward the barge begins, the dredge shall maintain continuous movement of the bucket toward the barge until the dredged material is loaded in the barge; except where barge stability is a concern, where otherwise noted, or where otherwise approval in writing by the Remediation Engineer.

B. Conduct dredging and barge loading operations in a manner to optimize the quantity of sediment in the barges while maintaining barge stability and integrity.

1.07 SEDIMENT OIL SHEEN RESPONSE

Implement measures to control sediment oil sheens on the river water surface resulting from dredging and debris removal operations in accordance with Section 01 57 05, Temporary Controls.

PART 2 - PRODUCTS

2.01 SEDIMENT REMOVAL EQUIPMENT

A. Sediment Removal Equipment:
   1. All buckets must be equipped with monitoring capabilities to inform the operator if the bucket is not completely closed. Separate logs of closed and partially closed (i.e., held open by debris or other obstruction) buckets shall be reported by the real-time kinematics differential global positioning system (RTK DGPS).
   2. The bucket shall be designed to maintain enclosure of sediments when the bucket is being raised through the water column; minimize, to the maximum extent practical, the generation of suspended sediments during bucket lowering, closing, and raising in the water column; and minimize the amount of water contained, in the dredge bucket as it is closed. The bucket shall include features designed by the buckets' manufacturer that allow free water overlying the sediment in the bucket to drain once the dredge bucket has been raised above the water surface. The sediment removal equipment shall be capable of making a flat cut to minimize the amount of non-target materials removed during dredging. In addition, the equipment shall be designed to remove sediments at near in situ densities and minimize the amount of water contained in the bucket and placed within the barge.
   3. Buckets of various sizes, types, and configurations shall be provided as necessary to maximize effectiveness based on the cut thicknesses and different substrate conditions anticipated to be encountered.

B. Dredge Bucket/Head Positioning Equipment
   1. The dredge shall be equipped RTK DGPS with the necessary sensors, to enable accurate positioning of the dredge bucket or head. The bucket or head shall have a positioning tolerance of plus or minus 0.25 feet vertically and plus or minus 0.25 feet horizontally. The information generated by the RTK DGPS shall be provided to the Owner and Remediation Engineer upon request.

2. The Remediation Contractor shall have a qualified positioning equipment technical support personnel on the Site whenever dredging activities take place. Qualifications and experience of these individuals shall be supplied to the Remediation Engineer for approval.
3. The RTK DGPS shall be capable of:
    a. Inputting and presenting a dredge prism file (an x, y, z file on a gridded interval of 1 foot by 1 foot).
    b. Recording all excavator sensor information in standard ASCII format or other format approved by the Remediation Engineer to a hard disc so that the position and movements of the excavator can be reviewed at a later date (playback capability).
    c. Producing plots showing the location where each dredge bucket closing (x,y,z) was attempted and if the bucket was closed.
    d. Showing the dredge operator, in real-time, the depth of material as the bucket takes a bite in relation to the dredge prism.
    e. Using a true 3-dimensional computational system to calculate the position of the bucket taking into account the tile and list of dredge platform as well as standard positioning sensors.
    f. Show that the dredge positioning system's error budget allows it to with within the stated vertical and horizontal accuracies. The error budget should include all errors associated with measuring the positioning of the bucket.
4. Hypack, Inc.'s Dredgepack System is an acceptable version of such a RTK DGPS. If the Remediation Contractor chooses to use an alternate positioning system, it must be approved by the Remediation Engineer.
5. The RTK DGPS for the dredge shall be verified in the field 15 days prior to the scheduled use of equipment. The equipment verification can be completed on land or on water and shall demonstrate the ability to achieve, monitor, and report these tolerances. The Remediation Engineer will be present for the operation and must approve the verification procedures. Procedures for verification shall be submitted to the Remediation Engineer for written approval at least 30 days in advance of field verification. On-land verifications are considered contingent and shall be re-verified once the equipment is on the water and before the equipment is used for dredging. The Remediation Contractor must verify its error budget (i.e., quality control check of all positioning sensors to verify that individually and together they operate within an error range that satisfies the error budget requirement) at least one time per day.
6. If GPS downtime is greater than 10 hours per week for work in the dredge area, alternate positioning equipment systems must be used with written approval from the Remediation Engineer.

C. Tow Boats:
    1. All Remediation Contractor-furnished tow boats utilized for propelling barges and other equipment shall be of size adequate for pushing the anticipated load and shall have necessary reserve power for maneuvering with material barges under emergency conditions as well as for control of material barges at the offloading point.

D. Dredged Material Transport Barges:
    1. Provide material barges sized as necessary to access the dredge area as shown on the Drawings. Provide sufficient quantities to minimize delays associated with barge transport back and forth to the transloading area.

E. Navigation aids (e.g., buoys) as required by Part 3.06 of this section.

2.02 BACKFILL EQUIPMENT

A. Backfill equipment shall meet the substantial and applicable requirements defined in Part 2.01 of this section.

2.03 RIVER BACKFILL

A. River backfill shall meet the requirements of Section 31 05 05, Aggregates for Earthwork.

PART 3– EXECUTION

3.01 SEQUENCE OF SEDIMENT REMOVAL WORK

A. Subsurface Utility Location – prior to sediment removal and handling, the Remediation Contractor shall perform utility clearance activities in accordance with Section 01 71 33, Protection of Work and Property.

B. Prior to the start of sediment removal, Remediation Contractor shall perform the pre-construction bathymetric survey in accordance with Section 01 71 23, Field Engineering. If Remediation Contractor elects to perform pre-construction debris survey as discussed in Section 01 71 23, Field Engineering the debris survey shall be completed before start of dredging.

C. Prior to the start of sediment removal, complete pruning of vegetation along the shorelines as necessary to complete the Work. Pruning operations shall be completed sufficiently in advance of the dredge such that it does not interfere or conflict with sediment removal production.

D. Prior to the start of sediment removal, complete removal of large debris from the river bottom surface and shoreline. Debris removal operations will proceed in advance of dredging such that these operations do not interfere with sediment removal and to minimize the potential for debris interference with the environmental dredging bucket.
   1. Existing riprap from the shoreline and dredge area shall be removed and staged on-site for cleaning of visual impacts, characterization, and potential reuse in accordance with Section 31 05 05, Aggregates for Earthwork.

E. Prior to initiating removal activities, Remediation Contractor shall perform pre-construction structural monitoring and install geotechnical monitoring devices in accordance with Section 02 21 19, Structural Surveys, Section 31 09 13, Geotechnical Instrumentation and Monitoring, and the approved Project Operations Plan. Remediation Contractor shall confirm that geotechnical monitoring devices are operational and properly functioning prior to initiating removal activities.

F. The Remediation Contractor shall provide temporary erosion and sediment controls in accordance with Section 01 57 05, Temporary Controls. The Remediation Contractor shall install temporary containment system in accordance with Section 31 52 13, Sheet Pile Enclosure.

G. Implement procedures that minimize sediment resuspension during dredging and debris removal. Implement turbidity and sheen control measures in accordance with Section 01 57 05, Temporary Controls.

H. Conduct dredging to the Required Elevations.
   1. In preparation for dredging activities, Remediation Contractor shall assess the site-specific conditions presented in the Contract Documents. Following their assessment of site conditions, Remediation Contractor shall determine the appropriate dredging equipment for completion of the Work, and shall choose such equipment and any associated features to minimize, to the extent practical, generation of suspended sediments. This section assumes that mechanical dredging will be performed; however alternate methods may be proposed by the Remediation Contractor in the Project Operations Plan for review by the Remediation Engineer and Owner.
   2. The Remediation Contractor will follow the method presented in the Project Operations Plan for dredging progression. Any deviations from this plan must be approved by the Owner. The dredging progression is expected to be conducted from shallow water areas to deep water areas to avoid recontamination of previous removal areas. There will be a 1-foot overlap of consecutive cuts based on the accuracy of the positioning equipment to account for sediment sloughing during dredging activities. No more than 2 feet of material will be removed in any dredge pass as a precaution to limit sloughing.
   3. Monitor sediment removal activities via conventional survey techniques, equipment positioning and visualization software, as outlined in the approved Sediment Removal and Backfilling Plan. Include sediment removal progress in daily reports in accordance with Section 01 71 23, Field Engineering.
   4. The Remediation Contractor shall promptly notify, upon discovery and before conditions are further disturbed, through written and oral notice to the Remediation Engineer of:
      a. Physical conditions that differ materially from those indicated in Contract Documents.
      b. Unknown physical conditions at site, of an unexpected nature, which differ materially from those ordinarily encountered and are generally recognized as inherent in type of work provided in this project.
   5. Upon discovery, Remediation Contractor shall promptly provide written and oral notice to Remediation Engineer of delays in schedule due to equipment malfunction or weather.

I. Conduct post-dredging bathymetric survey in accordance with Section 01 71 23, Field Engineering following completion of dredging and prior to backfill placement.

J. Conduct equipment decontamination prior to backfill placement.

K. Conduct backfill placement as discussed in Part 3.08 of this Section.
   1. Documentation of the interface between backfill types shall be documented using the RTK DGPS.

L. Conduct post-construction bathymetric survey in accordance with Section 01 71 23, Field Engineering following completion of backfill placement.

M. Conduct equipment decontamination prior to demobilization.

3.02 DREDGING PROCEDURES

A. Provide the Remediation Engineer with sufficient notice and with means to examine areas and conditions under which sediment removal will be performed. Remediation Engineer will advise Remediation Contractor when the Remediation Engineer is aware of conditions that may be detrimental to proper and timely completion of the Work. The Remediation Contractor shall address such conditions to the satisfaction of the Owner and Remediation Engineer before proceeding with Work related to these conditions.

B. The Remediation Contractor shall remove debris from within the dredge area as part of dredging as necessary to facilitate dredging to the Required Elevations.
   1. The amount, type, and location of debris in the Sediment Removal Areas may differ from that shown on the Drawings; therefore, it will be necessary for the Remediation Contractor to determine the extent of debris present at any given time and location.
   2. If debris cannot be removed using the dredge bucket, the Remediation Contractor shall be prepared to use and implement alternate procedure and/or equipment to remove debris as necessary to facilitate dredging to the Required Elevations.
   3. Grabbing and removing debris shall be limited to three attempts.
   4. The Remediation Contractor shall notify the Remediation Engineer if debris encountered during debris removal or dredging extends into the riverbank beyond the shoreline. The Remediation Contractor shall not remove debris that extends into the riverbank beyond the shoreline unless directed by the Remediation Engineer.
   5. Debris shall be transported within a barge or scow approved for such use by the Remediation Engineer for offloading. Debris shall not be loaded, stored, or transported in/on deck barges or on the combing/decking of hopper barges.
   6. (If appropriate based on selected dredging method.) Debris may be transported in the same barge as dredged sediment, but must be segregated within the hold of the barge such that it may be offloaded separately and before the dredged sediment is offloaded.

C. During dredging, the use of multiple attempts to achieve a full bucket or stockpiling of material within the river or on shoreline is not permitted. Design the equipment and methods to minimize the release of resuspended sediments during dredging and entrainment of surface water in dredged material.

D. It is acceptable to dredge with sediment adhering to the bucket provided that this does not prevent the Remediation Contractor from complying with the projects resuspension standards.
   1. The dredge bucket or head shall be placed in a manner as to provide complete horizontal coverage of the area targeted for sediment removal during each dredge pass. Bucket or head placement shall not allow for gaps between the bucket or head placement or skipping planned bucket or head bite locations. Horizontal coverage shall be documented with output from the RTK DGPS.

E. Removal methods shall minimize suspension of sediments during dredging and entrainment of surface water in dredged material. A spill plate, or approved equivalent, alongside the barges to control material sloughing off the bucket shall be used to prevent sediments from accumulating on the outside of the barge and falling into Susquehanna River during dredging and loading operations. Accumulated sediment shall be removed from the outside of the barges prior to leaving the dredge area.

F. If at any point during the dredging process, the turbidity monitoring data indicates turbidity levels above the turbidity action level specified in the dredging permit, or distinct turbidity plumes are visible the Remediation Contractor will implement response actions as described in the Remediation Contractor's Contingency Plan.

G. Immediately notify the Remediation Engineer if a Debris Field is encountered in the sediment. Perform dredging in Debris Field areas in accordance with Part 3.02.J.

H. Implement procedures that minimize sediment resuspension during dredging (including debris removal).

I. Implement BMPs during dredging as directed by the Remediation Engineer.

J. Implement sediment oil sheen response measures in accordance with Section 01 57 05, Temporary Controls.

K. Dredging Procedures in Areas where Bucket or Dredge Head Refusal is Encountered
   1. The following procedure shall be followed in areas where bucket or dredge head refusal is encountered:
      a. The Remediation Contractor shall dig to the Required Elevations of the dredge prism or to bucket or dredge head refusal, whichever is encountered first.
      b. If bucket or dredge head refusal is encountered at a location, mark the location using the RTK DGPS positioning software and notify the Remediation Engineer. The Remediation Engineer will notify the NYSDEC Project Representative.
      c. The Remediation Contractor shall then continue to dredge the area, but rather than dig at each and every bucket or head station, the dredge operator shall attempt to dig the port, center, and starboard bucket stations in that bucket or head set. If sediment is not present at these locations, the dredge operator shall move ahead to the next bucket or head station and repeat the process. If sediment is encountered at any of the three bucket or head stations, the dredge operator shall continue to dig at that location until either the Required Elevations are reached or refusal is encountered, whichever is encountered first, and the dredge operator shall then dig the adjacent stations in that set in a similar manner until the dredge pass is completed for that set.
      d. The Remediation Engineer will confirm the areas designated as refusal. The Remediation Contractor shall provide means acceptable to the Remediation Engineer for the Remediation Engineer to visually inspect the refusal areas.
      e. Provide information to the Remediation Engineer that documents the locations and elevations where refusal areas are encountered. Provide the Remediation Engineer with a target file with XYZ locations of all buckets or heads that encountered refusal.

L. Dredging Procedures in Areas a Where Debris Field is Encountered
   1. The following procedures shall be followed in areas where a Debris Field is encountered
      a. If a Debris Field is encountered at a location, immediately notify the Remediation Engineer. The Remediation Engineer will notify the NYSDEC Project Representative.
      b. The Remediation Contractor shall continue to dredge the area to the Required Elevations within the specified tolerance.
      c. If a Debris Field appears to be present at the Required Elevations, the Remediation Contractor shall mark that location using the RTK DGPS.
      d. Provide information to the Remediation Engineer documenting the locations and elevations where a Debris Field appears to be present in the sediment at the Required Elevations. Provide the Remediation Engineer with a target file with XYZ locations of all buckets that encountered Debris Field at the Required Elevations. This target file shall be limited to data related to Debris Field encountered at the Required Elevations.
      e. The Remediation Engineer will provide direction to the Remediation Contractor whether additional dredging is necessary in areas where a Debris Field appears to be present at the Required Elevations.

3.03 DREDGE TOLERANCES

A. Extent of dredging versus the target grades will be monitored by comparing the RTK DGPS XYZ file with the Design Dredge Prism XYZ File. Equipment-based RTK DGPS may only be used for progress tracking.

B. Remediation Contractor shall perform post-dredge bathymetric survey in accordance with Section 01 71 23, Field Engineering and submit the results of the survey to the Remediation Engineer for confirmation that the sediment removal limits have been met.

C. Sediment removal will be considered complete when at least 95 percent of the total area dredged is at or below the corresponding Required Elevations, subject to the following clarifications:
   1. The comparison shall be performed by comparing the pre-construction and interim post-dredging surface surveys (see Section 01 71 23, Field Engineering).
   2. The allowable over dredge shall be -0.5 feet dredge surface shown in the Design Drawings.
   3. Field identified bucket refusal, as accepted by the Remediation Engineer, are considered to have achieved the Required Elevations in those areas.
   4. Horizontal tolerance shall be plus 0.2 feet unless otherwise specified or approved by Owner and Remediation Engineer.
   5. Vertical tolerance shall be minus 0.2 feet unless otherwise specified or approved by Owner and Remediation Engineer.
   6. Note: Area 1 and Area 2 will be evaluated separately with regard to the 95 percent criteria.

D. The Remediation Contractor shall provide target cut elevations to the dredge operators that differ in elevation form the design Dredge Prism XYZ file to assist in achieving Required Elevations. The Remediation Contractor shall review daily and iteratively adjust their target cut elevations provided to the dredge operator as the work progresses to ensure that the dredging pass in any given location is consistently achieving the Required Elevations and that consistent improvement in the accuracy of dredging with the least number of bucket bites is being demonstrated.

E. The Remediation Engineer will identify if removal of additional sediment is required to achieve specified tolerances. It is generally expected that the Remediation Engineer will provide direction on any re-dredging to achieve specified tolerances within approximately 3 days of the Remediation Contractor notification that the dredge area is ready for evaluation.

3.04 UNAUTHORIZED REMOVAL AND MISPLACED MATERIAL

A. Material that slides, falls, or caves into the established limits of removals due to any cause whatsoever above the volume estimated by the dredge prism illustrated on the Design Drawing, shall be removed and disposed of at Remediation Contractor’s expense and no extra compensation shall be paid to the Remediation Contractor for materials required to backfill void areas left by the slide, fall, or cave-in.

B. All material removal outside lines and grades shown or indicated and that are not approved by Remediation Engineer and the Owner, together with removing and disposing of the associated material, shall be at Remediation Contractor's expense. Fill unauthorized removal with backfill material at Remediation Contractor’s expense.

C. Material that is deposited elsewhere than at the stockpile area is considered misplaced material. If materials are misplaced by the Remediation Contractor, the Remediation Contractor will be required to remove such misplaced material and deposit it where directed by the Owner at the Remediation Contractor’s expense.

3.05 INTERFERENCE WITH NAVIGATION

A. The Remediation Contractor shall plan construction activities to minimize conflict with other vessels within the waterway (navigation channel) and all privately-operated facilities. The shifting or moving of dredges or the interruption of dredging operations may be required to accommodate the movement of other vessels and floating equipment not associated with the Remediation Contractor's activities. Where such conflicts cannot be avoided, required coordination by the Remediation Contractor and those impacted by the work must be arranged, and the Owner must be informed of such conflicts and plans to prevent future conflicts. Non-project vessels will not be permitted in the Work Area during conduct of work without the acceptance of the Owner. At a minimum, the Remediation Contractor will provide lighted buoys to be placed upstream, downstream, and out from the work area. Lights attached to water quality monitoring stations may serve this purpose. All lighting activities and requirements will be in compliance with all applicable United States Coast Guard standards and regulations.

3.06 DREDGED SEDIMENTS DEWATERING

A. Dewatering of dredged sediments shall be in accordance with Section 02 61 05, Handling and Disposal of Impacted Sediments and Debris.

3.07 BACKFILL

A. Backfill shall not be placed until all dredging activities have been completed and post-dredging survey has been completed and reviewed by the Remediation Engineer in accordance with Part 3.03 of this Section.

B. If dredging equipment is used for cover placement, the equipment shall be decontaminated prior to handling backfill.

C. Remediation Contractor shall choose an appropriate placement method to minimize resuspension of residual bottom sediments to prevent mixing with the backfill.

D. Dredge areas shall be backfilled as shown in the Design Drawings and as follows:
   1. River Backfill shall be placed from the dredge surface to the final backfill surface.
   2. The final backfill surface shall be ± 0.5 feet from the pre-construction surface in 95 percent or more of the total area, with no net fill of the dredge area.
   3. If the maximum tolerance for the design backfill is exceeded, the Remediation Contractor shall identify any areas of overfilling to the Owner and the Remediation Engineer for further discussion. The Owner shall not be responsible for any costs associated with excess fill material, associated placement activities, and/or removal of excess fill, if required.
   4. Note: Area 1 and Area 2 will be evaluated separately with regard to the 95 percent criteria.

E. Survey control shall be maintained throughout backfill placement activities, and shall be utilized to confirm the horizontal and vertical extents of placement have been achieved in accordance with Section 01 71 23, Field Engineering.

END OF SECTION

APPENDIX C

Community Air Monitoring Plan

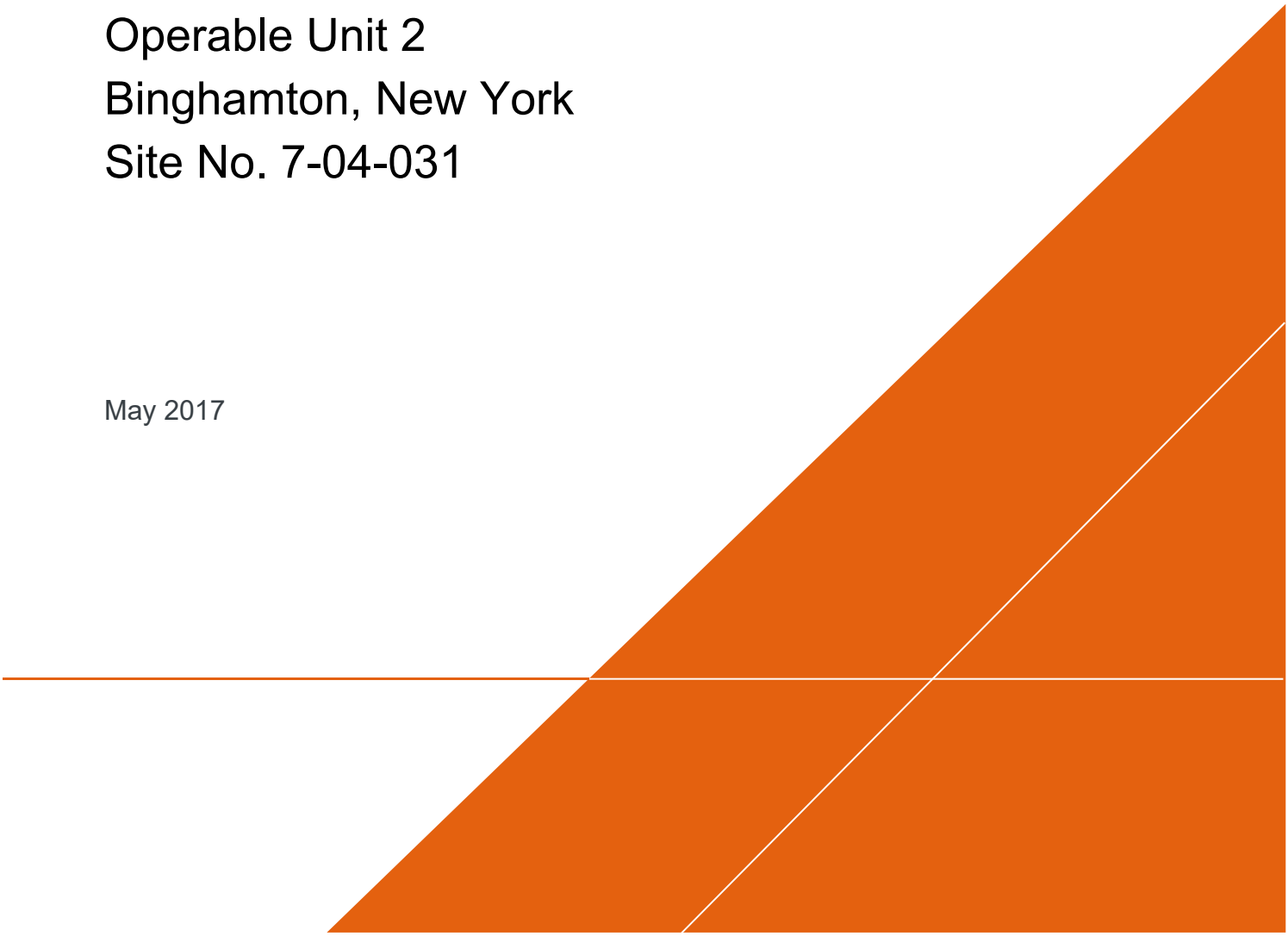
ARCADIS Design & Consultancy for natural and built assets

NYSEG

COMMUNITY AIR MONITORING PLAN

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017



COMMUNITY AIR MONITORING PLAN

Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Date:

May 2017

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TABLE

ATTACHMENTS

1 INTRODUCTION

This *Community Air Monitoring Plan* (CAMP) has been prepared to support the implementation of remedial activities at the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031) (the Site). Details related to the remedial activities are presented in the *Interim Remedial Measure Design Report* (IRM Design Report), to which this CAMP is an appendix. Specification Sections referenced in this CAMP are included in Appendix B to the IRM Design Report.

The purpose of this CAMP is to describe the monitoring activities that will be conducted by the Remediation Engineer to monitor for potential airborne releases of constituents of concern (COCs) during the implementation of remedial activities. This CAMP specifies the air emission action levels, air monitoring procedures, monitoring schedule, and data collection and reporting to be performed during the implementation of remedial activities.

As indicated in Section 01 35 49, Community Air Monitoring Plan, the Remediation Engineer is responsible for providing all labor, materials, and equipment necessary to implement the community air monitoring program specified herein. The Remediation Contractor is ultimately responsible for confirming that all corrective measures associated with the community air monitoring program (including the control of dust, vapors, and odors) are conducted in accordance with this CAMP and Section 01 57 05, Temporary Controls.

1.1 Site Location and Description

The Operable Unit (OU)-1 portion of the Site is owned by NYSEG and is located in an industrial section of the City of Binghamton, in Broome County, New York. OU-1 occupies lots identified as 271-291 and 293 Court Street. The 293 Court Street property was formerly used as a natural gas service center by Columbia Gas Transmission Corporation.

OU-1 is bordered to the north by a major Norfolk Southern rail line and yard, an asphalt works plant, and a scrap yard; to the south by Court Street, which runs parallel to the Susquehanna River (separated by a flood wall); to the east by the 295 Court Street property, which contains a warehouse owned by 295 Court Street Associates, LLC; and to the west by Brandywine Avenue. Two buildings are present on OU-1: a small gas regulator station and a building used for storage. The remainder of OU-1 consists of a gravel lot used by NYSEG for equipment/material storage and parking.

OU-2 includes river sediments within the Susquehanna River and is located immediately across from and downgradient of OU-1. OU-2 is bordered to the north by Court Street (separated by a flood wall) and to the west by the Tompkins Street Bridge.

1.2 Summary of Remedial Activities

In general, the remedial activities to be performed at the Site consist of:

- Sediment removal from and backfilling of Area 1, which is located in the Susquehanna River across Court Street from the southwest corner of OU-1 adjacent to the Court Street flood wall and the City of Binghamton land bounded by Court Street and Tompkins Street. The vertical extent of removal in Area 1 ranges from 1 to 5 feet.
- Sediment removal from and backfilling of Area 2, which is located in the Susquehanna River across Court Street from the southeast corner of OU-1 adjacent to the Court Street flood wall. The vertical extent of removal in Area 2 is 1 foot.

Additional details regarding remedial activities are provided in the IRM Design Report.

2 ODOR, VAPOR, AND DUST CONTROL

As defined in the New York State Department of Health (NYSDOH) Generic CAMP (included as Attachment 1), intrusive remedial activities to be performed at the Site have the potential to generate localized impacts to air quality. Remedial components that have the potential to generate air emissions include, but may not be limited to, the following:

- Removal of site sediment
- Material handling (e.g., offloading of removed sediments, manipulation of removed sediments to render them suitable for off-site treatment/disposal, stockpiling of materials, and loading of materials for transport to an off-site treatment/disposal facility)
- Backfilling
- Other ancillary intrusive activities

Odor, vapor, and dust emissions resulting from these activities will be controlled using a combination of the following:

- Water spray
- BioSolve® PinkWater®
- Polyethylene sheeting (for covering material stockpiles)
- Vapor suppression foam (i.e., Rusmar AC-645 Long-Duration Foam)

BioSolve® PinkWater® and Rusmar AC-645 Long-Duration Foam will be mobilized to the Site before any intrusive or dust-generating activities are initiated and will be maintained on the Site in sufficient supply throughout the project. A solution of BioSolve® PinkWater® and water will be sprayed on sediments during active dredging/load-out activities. Rusmar AC-645 Long-Duration Foam will be sprayed on dredged sediments to form a thick, viscous vapor barrier before extended work breaks and at the end of each work day.

The following construction techniques and site management practices will also be used during the project to control odor, vapor, and dust emissions:

- Removal and backfilling, and loading, handling, and unloading dredged material and clean fill material, in a manner that minimizes the generation of airborne dust
- Hauling excavated material and clean fill material in properly covered vehicles
- Restricting vehicle speeds on temporary access roads and active haul routes
- Covering stockpiles of clean fill material with polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day
- Complying with applicable erosion and sediment control requirements of Section 01 57 05, Temporary Controls
- Complying with cleaning requirements of Section 01 74 05, Cleaning

As required by Section 01 57 05, Temporary Controls, odor, vapor, and dust controls will be proactively employed by the Remediation Contractor during the work to: 1) prevent exceedances of the total volatile organic compound (VOC) and Particulate Matter of 10 microns in diameter or smaller (PM_{10}) action levels specified in Section 01 35 49, Community Air Monitoring Plan and Section 3.4 of this CAMP; and 2) mitigate MGP-related odor emissions to the extent practicable and to the satisfaction of NYSEG, the Remediation Engineer, New York State Department of Environmental Conservation (NYSDEC), and NYSDOH.

3 AIR MONITORING PROCEDURES

The community air monitoring program is intended to be a discrete program that will be operated in conjunction with the exclusion zone (i.e., work zone) air monitoring program (conducted by the Remediation Contractor). The Remediation Engineer will conduct real-time community air monitoring throughout the remedial construction. Monitoring will be conducted at representative locations at the perimeter of the exclusion zone for VOCs and total suspended particulates (particulates). However, particulate monitoring will not be performed during precipitation events. Additional information regarding the monitoring locations, equipment, and action levels is presented below.

3.1 Monitoring Location Selection and Deployment

VOCs and particulate monitoring station locations will be determined daily based on data from the on-site meteorological monitoring station and the nature of the anticipated remediation activities. An upwind location for both VOC and particulate monitoring will be selected at the start of each workday. Two downwind locations (based on predominant wind direction) for both VOC and particulate monitoring will also be selected. The VOC and particulate monitoring stations will be deployed each day before the start of work activities. If wind direction shifts radically during the workday and for an extended period of time, such that the upwind location and downwind locations no longer fall within acceptable guidelines (±60-degree compass change from the original wind direction), the monitoring stations will be relocated so that the upwind and downwind locations are maintained. Air monitoring location changes will be documented in a field logbook.

The selection and deployment of monitoring locations will include all active work areas. Based on the activities scheduled to be performed each day, this may include the OU-2 removal area(s), the transloading area, and/or the OU-1 upland area. Multiple sets of monitoring stations may be required to accommodate multiple work areas, based on the activities schedule to be performed each day.

3.2 Volatile Organic Compound Monitoring

Real-time monitoring for VOCs will be conducted at the Site during remedial activities. As required by the NYSDOH Generic CAMP (Attachment 1), VOCs will be monitored continuously during intrusive and/or potential dust-generating activities (e.g., dredging, backfilling, and material handling activities) using instrumentation equipped with electronic data-logging capabilities. A real-time VOC monitor (RAE MiniRAE 3000 or equivalent), equipped with either a photoionization detector or flame ionization detector, calibrated to 100 parts per million (ppm) isobutylene, will be used to monitor for VOCs. All average concentrations (calculated for continuous 15-minute increments [e.g., 08:00 to 08:15, 08:15 to 08:30]) and any instantaneous readings taken to facilitate activity decisions will be recorded using an electronic data logger and/or in the field logbook.

3.3 Total Suspended Particulate Monitoring

Real-time monitoring for particulates will be conducted during remedial activities at the Site. As required by the NYSDOH Generic CAMP (Attachment 1), real-time airborne particulate monitoring will be conducted continuously during intrusive and/or potential dust-generating activities (e.g., dredging, backfilling, and material handling activities) using instrumentation equipped with electronic data-logging

capabilities. A real-time particulate monitor (TSI 8530 DustTrak II or equivalent) will be used for particulate monitoring. All average concentrations (calculated for continuous 15-minute increments [e.g., 08:00 to 08:15, 08:15 to 08:30]) and any instantaneous readings taken to assess an appropriate course of action will be recorded using an electronic data logger and/or in the field logbook.

Fugitive dust migration will be visually assessed during all work activities, and reasonable dust-suppression techniques will be used during any site activities that may generate fugitive dust (Section 2).

3.4 Alert and Action Levels

Alert and action levels for VOCs and ambient air particulate concentrations are specified in Section 01 35 49, Community Air Monitoring Plan. Alert and action levels and response actions are in general accordance with those outlined in the NYSDOH Generic CAMP (Attachment 1). The Vapor Emission Response Plan (Attachment 2) provides a flow chart illustrating the response actions to be taken for specific VOC monitoring thresholds.

The alert and action levels are to be used to initiate corrective actions, if necessary, based on real-time monitoring. Each piece of monitoring equipment will have alarm capabilities (audible and/or visual) to indicate exceedances of the alert levels.

If the alert level(s) is exceeded, work activities may continue following the implementation of response measures if the action level(s) is not exceeded. If the action level(s) is exceeded, work activities will be temporarily halted and evaluated while monitoring continues and response measures are implemented. If VOCs and/or ambient air particulate concentrations decrease below the action level, work activities can resume with continuous monitoring. If the action level(s) is exceeded, an exceedance report will be prepared in accordance with Section 01 35 49, Community Air Monitoring Plan.

3.5 Manufactured Gas Plant-Related Odor Monitoring

During working hours, the Remediation Engineer will perform periodic walks around the perimeter of the work area(s) to monitor for MGP-related odors. These perimeter checks will be performed more frequently, as necessary, depending on the work being performed and meteorological factors such as change in wind direction. Meteorological factors that can influence odor generation and dissemination generally include temperature, humidity, precipitation, atmospheric pressure, wind direction, and wind speed. These factors can work synergistically with a positive or negative impact on MGP-related odor generation and transport/dispersion. For example, MGP-related odors generally tend to be less prevalent with lower temperatures, precipitation, or high humidity. Additionally, MGP-related odor dissemination is greatly influenced by wind direction and wind speed. Meteorological factors, including wind direction, will be monitored during the remedial construction activities.

If MGP-related odors are noticed along the perimeter of the work area, work will continue and odor-, vapor-, and dust-suppression techniques employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the work area perimeter for MGP-related odors will be performed.

Odor complaints (if any) will be directed to the on-site NYSDEC contact, if present, or will otherwise be directed to the NYSDEC Project Manager. The legitimacy of the complaint will be verified based on the work activities being performed, the predominant wind direction, and other meteorological factors. In

response to verified odor complaints, perimeter monitoring will continue and additional odor, vapor, and dust controls will be employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate.

If MGP-related odors continue to be noticed at the perimeter of the work area, work will be stopped while activities are reevaluated. The source or cause of the MGP-related odors will be identified and additional modifications of construction techniques or additional methods to abate emissions will be implemented. Work will resume provided the measures are successful at abating the odors noticed along the work area perimeter.

3.6 Meteorological Monitoring

Meteorological monitoring will be conducted continuously at the Site using a portable meteorological monitoring system. The meteorological monitoring system will be deployed at a location in accordance with siting criteria established by the United States Environmental Protection Agency and NYSDEC for meteorological monitoring systems (Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV - Meteorological Measurements, as revised August 1989; and New York State Air Guide-19 – "Oversight of Private Air Monitoring Networks," dated June 1989). Use of these guidelines enables the meteorological monitoring system to provide representative observations of the local meteorological conditions. A digital meteorological monitoring system (Wireless Vantage Pro2 by Davis Instruments or equivalent) will be used to collect the meteorological data. At a minimum, the meteorological monitoring system will monitor wind speed, wind direction, relative humidity, and ambient temperature. The meteorological monitoring system will be equipped with electronic data-logging capabilities.

3.7 Instrument Calibration

Calibration of the VOC, particulate, and meteorological monitoring instrumentation will be conducted in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and particulate monitors will be calibrated daily (at a minimum), and calibrations will be recorded in the field logbook.

4 MONITORING SCHEDULE AND REPORTING

The following subsections identify the monitoring schedule and data collection/reporting requirements.

4.1 Monitoring Schedule

Air monitoring will be conducted prior to initiation of the remedial action to establish adequate baseline data and until such time that significant material handling activities are complete (i.e., removal of stockpiled impacted materials for off-site transportation and treatment/disposal). As previously indicated, real-time VOC and particulate monitoring will be performed during intrusive and/or potential dust-generating activities (e.g., dredging, backfilling, and material handling activities).

The frequency of air monitoring will be relative to the level of site work activities being conducted and may be adjusted as the work proceeds and in consideration of the monitoring results. Air monitoring for VOCs and dust may be discontinued during periods of heavy precipitation that would otherwise result in unreliable data or damage to the monitoring equipment. Meteorological monitoring will be performed continuously during work activities.

4.2 Reporting

The Remediation Engineer will prepare a weekly (or more frequent if requested by NYSDEC and/or NYSDOH) summary of the 15-minute average community air monitoring results (for VOCs and particulates). The summary will also include, but not be limited to, a description of community air monitoring exceedances (if any), work activities associated with the exceedances, and corrective actions implemented to address the exceedances.

The time and outcome of each MGP-related odor perimeter check will be documented in a daily log, specifically noting the presence or absence of MGP-related odors and identifying the general location(s) along the perimeter where MGP-related odors (if any) are noticed. These daily logs, as well as documentation of any odor complaints received from the public, will be included in the aforementioned weekly CAMP reports to be submitted to NYSDEC/NYSDOH.

The weekly summary will be submitted in an electronic format to the NYSDEC/NYSDOH and NYSEG representatives listed in Table 4-1. A copy of the data will be maintained at the Remediation Engineer field office trailer.

Table 4-1 Court Street CAMP Contact List

Name	Affiliation	Contact Information
Sarah Saucier	NYSDEC	T: 518.402.9662 sarah.saucier@dec.ny.gov
Geoff Laccetti	NYSDOH	T: 518.402.7860 geoff.laccetti@health.ny.gov
Tracy Blazicek	NYSEG	T: 607.762.8839 tlblazicek@nyseg.com

ATTACHMENT 1

Generic Community Air Monitoring Plan

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. APeriodic@ monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

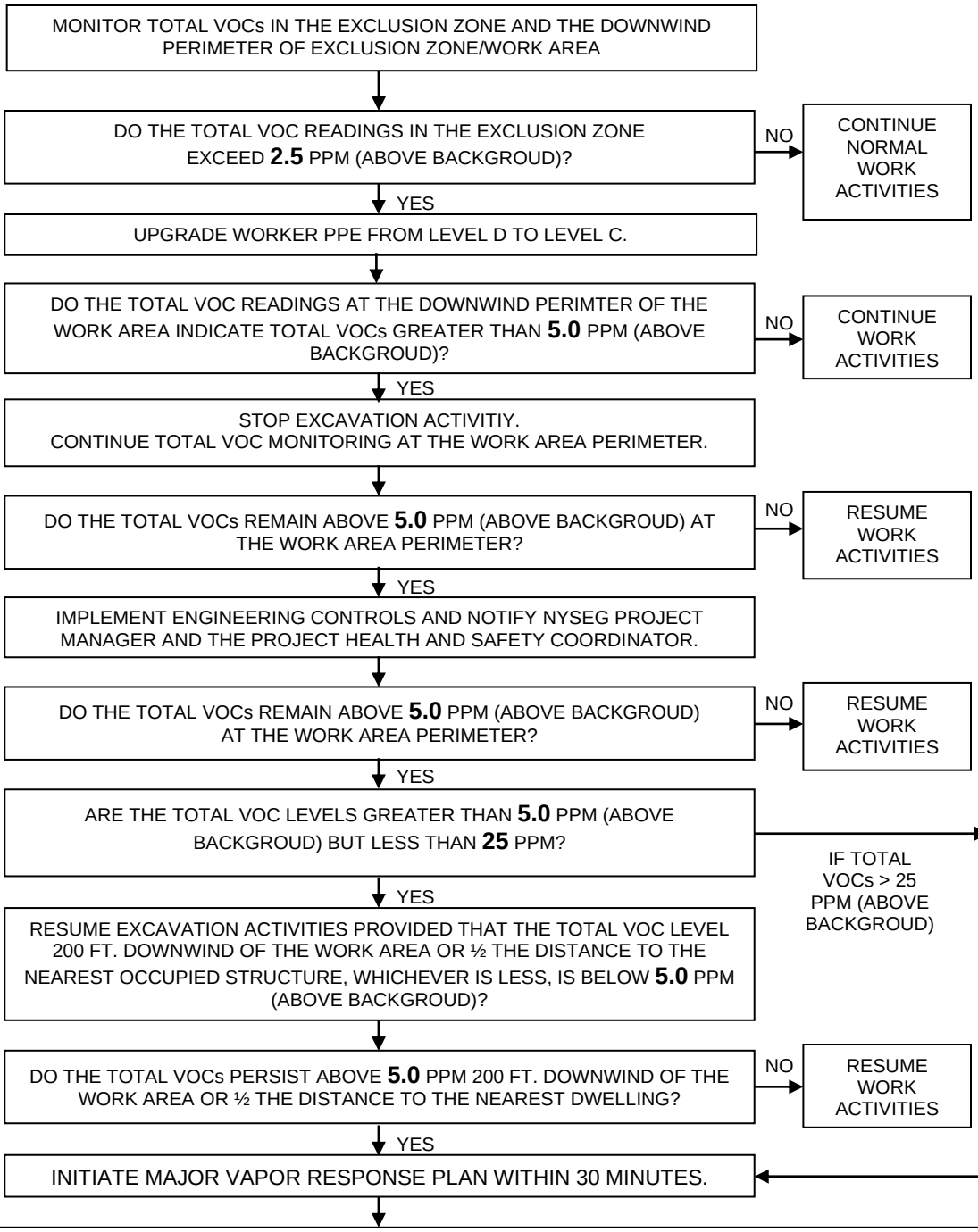
Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

ATTACHMENT 2

Vapor Emission Response Plan

Attachment 2 – Vapor Emission Response Plan
NYSEG – Court Street Former MGP Site – Binghamton, New York



1. Cover the removal area and/or staged material with polyethylene sheeting.
2. Notify NYSEG – Tracy Blazicek at 607.762.8839; NYSDEC – Sarah Saucier at 518.402.9662; and NYSDOH – Geoff Laccetti at 518.402.7860.
3. Total VOC levels will be monitored within 20 feet of the nearest downwind residential or commercial structure. (20-foot zone).
4. Continue air monitoring 15-minute intervals in the 20- foot zone. If two successive readings below action levels are measured, air monitoring intervals may be halted or modified by the Remediation Engineer, with approval of the NYSDEC and NYSDOH.
5. If the Total VOC levels persist above 5.0 PPM within the 20-foot zone, NYSEG and the Remediation Engineer will consult with the Emergency Response Agencies to determine appropriate actions to be implemented. NYSEG has the ultimate authority during major vapor emission emergencies.

APPENDIX D

Community and Environmental Response Plan

ARCADIS Design & Consultancy for natural and built assets

NYSEG

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Date:

May 2017

CONTENTS

1 INTRODUCTION

This *Community and Environmental Response Plan* (CERP) has been prepared to support the implementation of remedial activities at the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031) (the Site). Details related to the remedial activities are presented in the *Interim Remedial Measure Design Report* (IRM Design Report), to which this CERP is an appendix.

This CERP has been prepared in accordance with 2010 New York State Department of Environmental Conservation (NYSDEC) DER-10: *Technical Guidance for Site Investigation and Remediation*. The purpose of this CERP is to present a summary of the site monitoring and work practices that will be completed to address potential short-term impacts to the surrounding community and/or environmental resources. Additional details regarding site monitoring and work practices are presented in the IRM Design Report and the associated appendices including, but not limited to:

- Design Drawings (Appendix A)
- Technical Specifications (Appendix B)
- Community Air Monitoring Plan (CAMP) (Appendix C)
- Construction Quality Assurance Plan (Appendix E)
- Contingency Plan (Appendix F)
- Storm Water Pollution Prevention Plan (SWPPP) (Appendix G)
- Waste Management Plan (WMP) (Appendix H)

Section 2 of this CERP summarizes the monitoring to be conducted during remedial construction activities, and Section 3 describes site management and controls.

1.1 Site Location and Description

The Operable Unit (OU)-1 portion of the Site is owned by NYSEG and is located in an industrial section of the City of Binghamton, in Broome County, New York. OU-1 occupies lots identified as 271-291 and 293 Court Street. The 293 Court Street property was formerly used as a natural gas service center by Columbia Gas Transmission Corporation.

OU-1 is bordered to the north by a major Norfolk Southern rail line and yard, an asphalt works plant, and a scrap yard; to the south by Court Street, which runs parallel to the Susquehanna River (separated by a flood wall); to the east by the 295 Court Street property, which contains a warehouse owned by 295 Court Street Associates, LLC; and to the west by Brandywine Avenue. Two buildings are present on OU-1: a small gas regulator station and a building used for storage. The remainder of OU-1 consists of a gravel lot used by NYSEG for equipment/material storage and parking.

OU-2 includes river sediments within the Susquehanna River and is located immediately across from and downgradient of OU-1. OU-2 is bordered to the north by Court Street (separated by a flood wall) and to the west by the Tompkins Street Bridge.

1.2 Summary of Remedial Activities

In general, the remedial activities to be performed at the Site consist of:

- Sediment removal from and backfilling of Area 1, which is located in the Susquehanna River across Court Street from the southwest corner of OU-1, adjacent to the Court Street flood wall and the City of Binghamton land, bounded by Court Street and Tompkins Street. The vertical extent of removal in Area 1 ranges from 1 to 5 feet.
- Sediment removal from and backfilling of Area 2, which is located in the Susquehanna River across Court Street, from the southeast corner of OU-1, adjacent to the Court Street flood wall. The vertical extent of removal in Area 2 is 1 foot.

Additional details regarding remedial activities are provided in the IRM Design Report.

1.3 Project Responsibilities

Responsibilities of the Owner (NYSEG), the Remediation Engineer, and the Remediation Contractor, as they relate to the implementation of this CERP, are as follows:

- *NYSEG* – Primary responsibility is to coordinate with the Remediation Contractor and Remediation Engineer (as necessary) to implement the required work activities in conformance with the IRM Design Report. NYSEG is responsible for contracting with a Remediation Engineer; Remediation Contractor; and select waste haulers and waste treatment/disposal facilities.
- *Remediation Engineer* – Responsibility is to provide project management/oversight to observe and monitor implementation of the remedial activities. The Remediation Engineer is responsible for performing community air monitoring in accordance with the site-specific CAMP and reviewing turbidity monitoring data collected by the Remediation Contractor. The Remediation Engineer is also responsible for collecting imported fill and waste characterization samples (both water and removed sediment), as necessary, and contracting with a laboratory for analysis of collected samples, as necessary.
- *Remediation Contractor* – Primary responsibility is to complete remedial activities as presented in the IRM Design Report. The Remediation Contractor is responsible for verifying that community air monitoring is implemented prior to conducting intrusive site activities. The Remediation Contractor is responsible for performing turbidity monitoring in accordance with the IRM Design Report and implementing controls to address community air or turbidity monitoring exceedances, if necessary. The Remediation Contractor is also responsible for conducting and implementing the general site management practices and controls described in Section 3.

2 SITE MONITORING

This section presents a summary of the monitoring to be conducted during implementation of the remedial activities to evaluate potential short-term impacts to the surrounding community.

2.1 Community Air Monitoring

Community air monitoring will be conducted by the Remediation Engineer during intrusive and/or potential dust-generating activities (e.g., dredging, backfilling, and material handling activities). Detailed requirements for air monitoring procedures are presented in the site-specific CAMP. Air monitoring procedures will be completed in accordance with the May 2010 New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan* and generally consist of monitoring for volatile organic compounds (VOCs) and particulates at multiple locations to establish site background conditions and to evaluate air quality at the perimeter of the active remediation work areas (e.g., removal area(s), transloading area, and OU-1).

As presented in the CAMP and Section 01 35 49, Community Air Monitoring Plan, which is included as part of Appendix B of the IRM Design Report, exceedances of VOC and/or particulate action levels will require emission controls and dust-suppression measures. Control measures to be implemented by the Remediation Contractor are presented in Section 01 57 05, Temporary Controls. Additionally, the CAMP includes community notification procedures to be conducted if air monitoring action levels continue to be exceeded after implementation of emission controls.

2.2 Odor Monitoring

During working hours, the Remediation Engineer shall perform periodic walks around the perimeter of the work area to monitor for MGP-related odors in accordance with the CAMP. The perimeter checks will be performed more frequently, as necessary, depending on the work being performed. If MGP-related odors are noticed along the perimeter of the work area, work will continue and odor, vapor, and dust suppression techniques employed to abate emissions, in accordance with Specification Section 01 57 05, Temporary Controls. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the work area perimeter for MGP-related odors will be performed. If MGP-related odors continue to be noticed at the perimeter of the work area, work will be stopped while activities are re-evaluated. The source or cause of the MGP-related odors will be identified and additional modifications of construction techniques or additional methods to abate emissions will be implemented. Work will resume provided the measures are successful at abating the odors noticed along the work area perimeter.

Detailed requirements of odor monitoring are presented in the site-specific CAMP.

2.3 Turbidity Monitoring

During sediment removal activities, the Remediation Contractor will conduct turbidity monitoring at locations both upstream and downstream of the active work area(s). The actual monitoring locations will be determined in the field based on accessibility. The upstream location will represent the background turbidity level to support comparison to the downstream location. Details of turbidity monitoring are

presented in the IRM Design Report and Section 01 57 05, Temporary Controls, which is included as part of Appendix B of the IRM Design Report.

As specified in the IRM Design Report, “early warning level” and “action level” values have been established, as have response actions required if each level is reached. The following actions will be taken if the “action level” is observed:

- Temporary cease of remedial activities to perform a visual inspection of the condition or performance of the existing erosion and sedimentation control measures.
- Continued monitoring at the downstream and upstream locations to determine if the prior result differential was an anomaly or if the elevated reading was possibly a short-duration event.
- Review of the ongoing activities and implementation of additional controls and/or operational modification(s) or suspension of work operations until the turbidity returns to an acceptable level.

2.4 Structural and Geotechnical Monitoring

During intrusive in-water work (i.e., installation and removal of the temporary containment system and sediment removal and backfill activities), the Remediation Contractor will conduct structural monitoring of the Court Street flood wall, the abutment of the former bridge for Tompkins Street, and the existing pump house and adjacent concrete spillway in accordance with Specification 02 21 19, Structural Surveys.

In addition, during intrusive in-water work the Remediation Contractor will conduct geotechnical monitoring to assess and document movement of structures adjacent to the work area (i.e., the Court Street flood wall, the abutment of the former bridge for Tompkins Street, and the existing pump house) in accordance with Section 31 09 13, Geotechnical Instrumentation and Monitoring.

3 SITE MANAGEMENT AND CONTROLS

This section presents a summary of site management practices and controls that will be implemented to minimize potential short-term impacts to the surrounding community during remedial activities.

3.1 Site Security and Traffic Control

Public access to the Site and work areas will be restricted during the remedial activities, to the extent practicable. Details regarding site security and project signage are presented on the Design Drawings and in Section 01 58 13, Temporary Project Signage and Section 01 71 33, Protection of Work and Property.

Temporary lane closures may occur for Court Street in preparation for and during performance of the remedial activities. If temporary lane closure(s) is necessary, the Remediation Contractor will use flagmen to manage traffic.

3.2 Erosion, Sediment, and Turbidity Controls

Erosion, sediment, and turbidity control measures (e.g., silt fence, straw bale, temporary containment system) will be provided, installed, and maintained by the Remediation Contractor to prevent silting and muddying of existing drainage systems, streams, rivers, etc. Details regarding locations and types of controls are presented on the Design Drawings and in Section 01 41 26, SWPPP and Permit, Section 01 57 05, Temporary Controls, and the SWPPP.

Erosion, sediment, and turbidity control measures will be installed and maintained in accordance with the latest edition of the NYSDEC New York State Standards and Specifications for Erosion and Sediment Control. At a minimum, the Remediation Contractor will inspect erosion, sediment, and turbidity control measures daily and after storm events. Inspection results will be summarized in weekly inspection reports. Report requirements are provided in Section 01 41 26, SWPPP and Permit.

In general, the Remediation Contractor will take all precautions to prevent, or reduce to a minimum, any damage to surface water from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials within or adjacent to existing and new drainage systems, the Susquehanna River, or other nearby water bodies. The Remediation Contractor is prohibited from the following:

- Dumping spoil material into any drainage way, surface waters, or unspecified locations.
- Pumping silt-laden water from trenches or from within the sediment removal area into any drainage way, surface waters, or unspecified locations.
- Damaging vegetation beyond the extent necessary for remedial construction.
- Disposing of trees, brush, and other debris in any stream corridors, drainage way, or unspecified locations.

Following completion of the remedial activities, the Remediation Contractor will restore disturbed surfaces as indicated in the IRM Design Report, or as approved by NYSEG and the Remediation Engineer.

3.3 Waste Management

In general, waste materials generated during implementation of the remedial activities will be managed based on the results of the waste characterization sampling and in accordance with the WMP.

3.3.1 Solid Waste

A portion of the removed sediment material is anticipated to be disposed as a non-hazardous solid waste at facilities approved by NYSEG. The remainder of the removed sediment material will be disposed of at a NYSEG-approved conditionally exempt disposal facility. Removed debris will be disposed or recycled at an appropriate facility approved by NYSEG.

3.3.2 Liquid Waste

All construction-related waters generated during remedial activities (i.e., decontamination water, water from sediment dewatering, and water removed from material staging areas) will be collected and treated in accordance with the IRM Design Report.

3.3.3 Non-Aqueous Phase Liquid

Free-phase non-aqueous phase liquid (NAPL) encountered during dredging/material dewatering activities will be collected (if in sufficient quantities to be recovered), placed in appropriate containers (e.g., 55-gallon drums), and staged on-site for characterization by the Remediation Engineer prior to off-site disposal at an NYSEG-approved (or selected) facility. Following characterization, the Remediation Contractor will coordinate with the NYSEG-selected off-site disposal facility for the transportation and disposal of the containerized NAPL.

3.4 Transportation Controls

The term “transporter” means the transporter and the Remediation Contractor if/when the transporter is subcontracted to the Remediation Contractor. The following is the preferred trucking route for the off-site transportation of solid and liquid wastes generated by the remedial activities at the Site. The preferred trucking route for waste transporters, as well as haulers transporting materials to the Site, includes the following roadways (in order of closest to farthest from the Site):

- Court Street
- Brandywine Avenue or NY-363
- Robinson Street and Alice Street (may be necessary for better right-hand turn to the Site)
- NY-7
- Interstate 81

Final trucking routes will be approved by NYSEG and/or the Remediation Engineer prior to use.

The preferred barge transport route for the transportation of solid and liquid non-hazardous and hazardous (if any) waste generated by the remedial activities at the Site, as well as restoration materials imported to the removal area(s), will be the most direct line between the removal area(s) and the

transloading area. The final barge transport route may be subject to modification based on river currents and/or water depth; the final route will be approved by NYSEG and/or the Remediation Engineer prior to use. The preferred trucking route for waste transporters, as well as haulers of import material, between the transloading area and the OU-1 temporary staging area is along Court Street.

3.5 Decontamination

The Remediation Contractor will decontaminate (as necessary) all personnel and equipment that come into contact with excavated materials in accordance with Section 02 51 00, Decontamination. At a minimum, the Remediation Contractor will decontaminate (to the satisfaction of NYSEG, the Remediation Engineer, and/or NYSDEC) the project equipment (including, but not limited to, removal equipment, trucks, barges, pumps, and hand tools) that comes in contact with removed materials prior to using the equipment to handle clean material and/or equipment being removed from the Site. Any visible soils, sediments, or other debris will be promptly removed and disposed of in a manner consistent with the materials excavated.

The Remediation Contractor will conduct decontamination of personnel and equipment within the constructed decontamination area(s) illustrated on the Design Drawings, as appropriate based on the work being performed. The Remediation Contractor will perform decontamination activities until no visible soil, sediment, debris, or stains are present on the equipment surfaces (to the satisfaction of NYSEG, the Remediation Engineer, and/or NYSDEC).

APPENDIX E

Construction Quality Assurance Plan

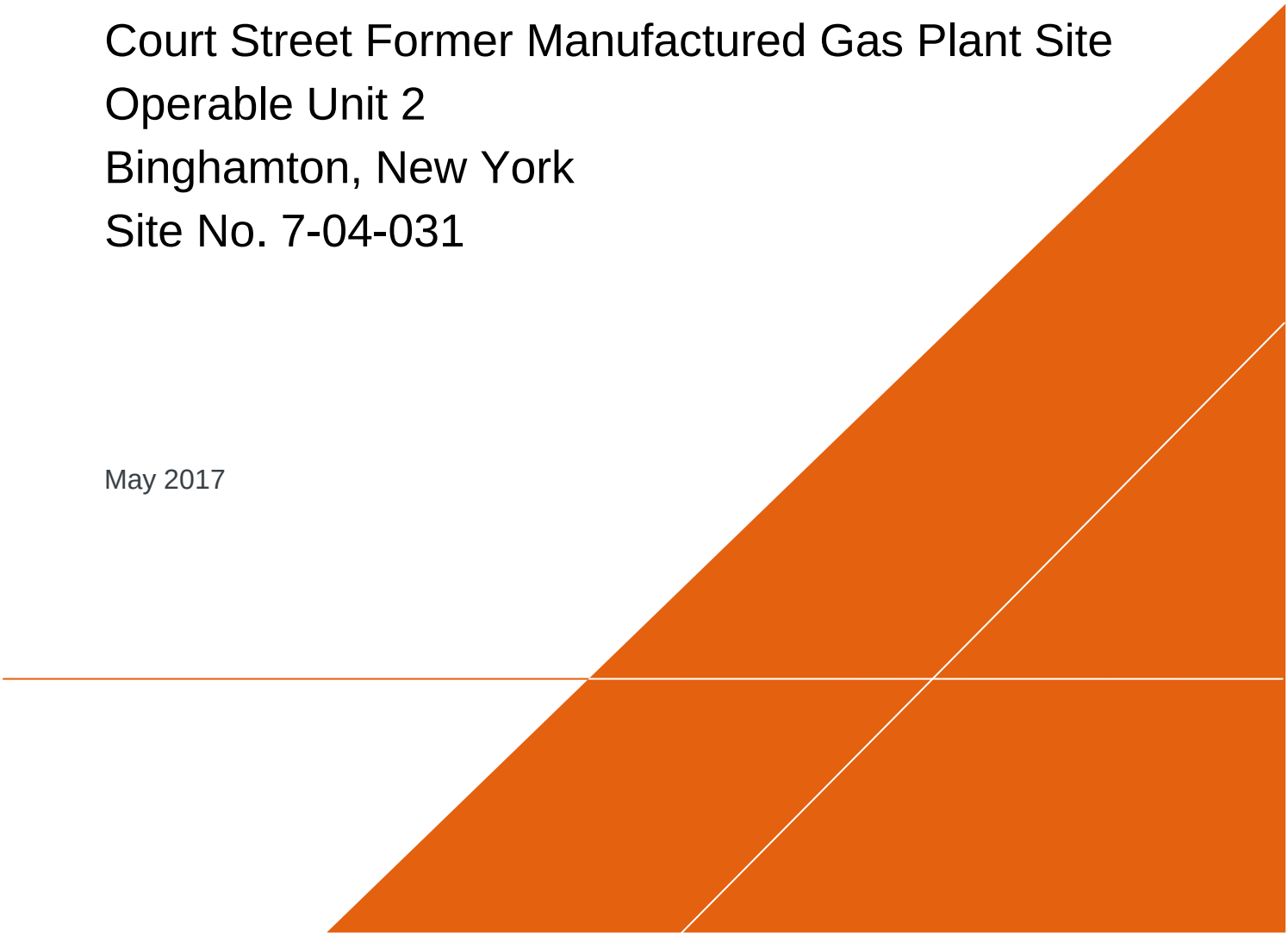
ARCADIS Design & Consultancy for natural and built assets

NYSEG

CONSTRUCTION QUALITY ASSURANCE PLAN

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017



CONSTRUCTION QUALITY ASSURANCE PLAN

Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Date:

May 2017

CONTENTS

1 INTRODUCTION

This *Construction Quality Assurance Plan* (CQAP) has been prepared to support the implementation of remedial activities at the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031) (the Site). This CQAP describes the materials, procedures, and testing necessary for proper construction, evaluation, and documentation during remedial activities. Details related to the remedial activities are presented in the *Interim Remedial Measure Design Report* (IRM Design Report), to which this CQAP is an appendix. Design Drawings referenced in this SWPPP are included in Appendix A to the IRM Design Report. Specification Sections referenced in this SWPPP are included in Appendix B to the IRM Design Report.

1.1 Summary of Remedial Construction Activities

In general, the remedial activities to be performed at the Site consist of:

- Sediment removal from and restoration of Area 1, which is located in the Susquehanna River across Court Street from the southwest corner of Operable Unit (OU)-1, adjacent to the Court Street flood wall and the City of Binghamton land, bounded by Court Street and Tompkins Street. The vertical extent of removal in Area 1 ranges from 1 to 5 feet.
- Sediment removal from and restoration of Area 2, which is located in the Susquehanna River across Court Street, from the southeast corner of OU-1, adjacent to the Court Street flood wall. The vertical extent of removal in Area 2 is 1 foot.

Additional details regarding the remedial activities are provided in the IRM Design Report.

1.2 Definitions and Terms

The following terms and abbreviations are used throughout this CQAP. The definition of each term or abbreviation is consistent throughout this CQAP:

- *ASTM* – ASTM International.
- *Contract Documents* – The technical work and Remediation Contractor requirements are described in several documents that collectively represent the Contract Documents. These documents include the Purchase Order between NYSEG and the Remediation Contractor, the NYSEG Request for Proposal and any addenda, and the IRM Design Report.
- *CQA* – Construction quality assurance.
- *Design Engineer* – The Design Engineer (Arcadis) is responsible for assisting NYSEG with services prior to implementation of the remedial activities, such as preparation of the IRM Design Report, preparation of permit applications, and community relations and stakeholder communications.
- *IRM Design Report* – The IRM Design Report collectively includes the text, Design Drawings, Technical Specifications, the Community Air Monitoring Plan, the Citizen Participation Plan, the Community Environmental Response Plan (CERP), this CQAP, the Contingency Plan, the Storm Water Pollution Prevention Plan (SWPPP), and the Waste Management Plan (WMP).

- *Remediation Contractor* – The person, persons, or firm designated by NYSEG to perform the remedial activities, including the person, persons, or firm hired by the Remediation Contractor to install the components of the remedial work and the person, persons, or firm designated by the Remediation Contractor to perform work associated with the remedial activities. The Remediation Contractor is responsible for construction quality control.
- *Remediation Engineer* – For the purpose of this CQAP, the Remediation Engineer is the person, persons, or firm responsible for verifying that the Remediation Contractor completes the remedial construction activities in accordance with the IRM Design Report. In addition, the Remediation Engineer is responsible for the quality assurance/quality control (QA/QC) aspects of the project. Duties will include CQA sampling, testing, determination of work limits, and measurement of work for payment and final acceptance.

2 ROLES, QUALIFICATIONS, AND RESPONSIBILITIES

This section identifies the general roles, qualifications, and responsibilities of NYSEG, the Remediation Engineer, and Remediation Contractor personnel.

2.1 NYSEG

NYSEG has the final authority on all aspects of the remedial construction activities. NYSEG is empowered to determine the amount, quality, acceptability, and fitness of all remedial construction completed in accordance with the Contract Documents.

The NYSEG Project Manager is knowledgeable of the project requirements and objectives and is familiar with the Contract Documents. The NYSEG Project Manager will be on Site, as required, during construction activities. The responsibility of the NYSEG Project Manager is to review the quality of construction that meets or exceeds that defined by the Contract Documents.

2.2 Remediation Engineer

The Remediation Engineer will provide on-site and office-based assistance to NYSEG throughout the duration of remedial activities. The Remediation Engineer will have experience in a position of significant responsibility for construction projects similar in magnitude and complexity to the project being undertaken. The Remediation Engineer must be knowledgeable of the project requirements and objectives and must be familiar with the Contract Documents.

The Remediation Engineer will observe construction activities and document that the materials and workmanship delivered by the Remediation Contractor comply with the requirements of the Contract Documents and are of sufficient quality to permit the development of construction completion certifications as required by the New York State Department of Environmental Conservation (NYSDEC).

The Remediation Engineer's on-site personnel must demonstrate knowledge of construction procedures and materials, project requirements, and applicable test methods through a combination of formal education, training, and experience. The project personnel will be under the direct supervision of a Professional Engineer licensed in the State of New York. The Remediation Engineer's on-site personnel will be familiar with the use of equipment and methodology needed to sample and test air, sediment, water, and other materials.

The Remediation Engineer's specific responsibilities with regard to the implementation of this CQAP are outlined in the remaining sections of this document.

2.3 Remediation Contractor

The Remediation Contractor will be trained and experienced, and demonstrate that the person or persons designated by the Remediation Contractor to perform work associated with the remedial activities have similar experience in the construction, installation, and performance of the various components outlined in the Contract Documents including, but not limited to, sheet pile installation, sediment removal, and material handling/management.

The Remediation Contractor's specific responsibilities with regard to the implementation of this CQAP are outlined in the remaining sections of this document.

3 CONSTRUCTION PROGRESS DOCUMENTATION AND REPORTING

The documentation of CQA activities will support a determination of whether construction activities have been conducted in accordance with the Contract Documents.

3.1 Documentation

The documentation process includes recognition of construction tasks that will be observed and documented; assignment of responsibilities for the observation, testing, and documentation of these tasks; and completion of the required reports, data sheets, forms, and checklists to provide an accurate record of the work performed during the remedial activities.

3.1.1 Daily Field Construction Reports

The Remediation Engineer will complete a Daily Field Construction Report (DFCR) of each day's construction activities. The DFCRs will be submitted at the end of the week in an electronic format to NYSEG's Project Manager. The DFCR will contain, at a minimum, the following information:

- Date, project name, location, and number of workers on Site for the Remediation Contractor
- Time that work starts and ends, in addition to the time of work stoppages related to inclement weather, insufficient equipment or personnel, or other reasons
- Data on weather conditions, including temperature, cloud cover, and precipitation
- Remediation Contractor's workforce, equipment, and materials delivered to or removed from the job site
- Chronological description of work in progress, including notices to or requests from the Remediation Contractor and/or installer
- Description of any health and safety issues
- Testing performed by on-site personnel, if any, and results, if collected on Site
- A record of pertinent communications with other on-site parties, outside companies, regulatory agencies, or consultants regarding the day's construction activities
- Documentation of problems and/or deficiencies noted during construction (e.g., when construction material or activity is observed or tested that does not meet the requirements set forth in the Contract Documents), and corrective action employed by the Remediation Contractor to address the problems or deficiencies

3.1.2 Erosion, Sediment, and Turbidity Control Inspection Reports

The Remediation Contractor is responsible for completing erosion, sediment, and turbidity control inspections and submitting inspection reports on a weekly basis. Erosion, sediment, and turbidity control measures that need repair or maintenance and/or are not functioning as designed shall be repaired or

corrective action(s) shall be taken by the Remediation Contractor. Details regarding the frequency and scope of the inspections, as well as a blank inspection report, are provided in Section 01 41 26, SWPPP and Permit.

3.1.3 Health and Safety Accident Reports

In the event any accident occurs on Site during the remedial activities, NYSEG's incident and accident reports will be completed by affected personnel. The Remediation Engineer and NYSEG's Project Manager will be contacted in the event of an accident. NYSEG's accident report sheets will be attached to the Remediation Contractor's Health and Safety Plan (HASP) and will be located in the field project trailer.

3.1.4 Transportation Log

The Remediation Engineer will prepare a transportation log to record all loads of solid or liquid waste that are transported off Site. The transportation log will remain in the field office during remedial construction activities.

3.1.5 Photographic Documentation

The Remediation Engineer will take photographs to document observations, problems, deficiencies, and work in progress. Photographs will be in color format and will be filed in chronological order in a computer storage system.

The following information will be documented in the daily report or a logbook for each photograph:

- Date and time
- Location where photograph was taken
- Description of the subject matter

3.1.6 Contractor Submittals

The Remediation Contractor shall prepare and submit, to the Remediation Engineer, all submittals required by the Contract Documents and in accordance with Specification Sections 01 33 00 (Submittal Procedures) and 01 78 39 (Project Record Documents). Information contained in the Remediation Contractor's submittals that is not applicable to the specification furnished should be clearly lined out or deleted. The Remediation Contractor's submittals must be easily legible, clean, and clearly reproduced.

All required submittals will be reviewed by the Remediation Engineer for conformance with the requirements presented in the Contract Documents. The Remediation Contractor will not be permitted to perform any activity that directly or indirectly involves the item or items covered by a submittal until a "reviewed" or "reviewed and noted" stamp is provided by the Remediation Engineer.

The Remediation Engineer's review shall in no way be construed as permitting departure from the Contract Documents, except where the written request by the Remediation Contractor and written acceptance by the Remediation Engineer and NYSEG for such departure are provided, in accordance with Section 01 26 00, Contract Modification Procedures. The Remediation Engineer's review does not

relieve the Remediation Contractor of any responsibility to comply with applicable laws, rules, regulations, or agreements.

3.1.7 Project Record Documents

Project record documents will be maintained at the Site (in an organized manner) and updated by the Remediation Contractor as work progresses and as items are approved. Additional information and requirements for project record documents are provided in Section 01 78 39, Project Record Documents. Project record documents include, but are not limited to, the following:

- IRM Design Report (and any addenda)
- Change orders and/or other modifications to the Contract Documents. Additional information on change orders is provided in Section 01 26 00, Contract Modification Procedures.
- Remediation Engineer's field orders or written instructions. Additional information on field orders is provided in Section 01 26 00, Contract Modification Procedures.
- Approved Remediation Contractor submittals (e.g., shop drawings, working drawings, and samples)
- Meeting minutes
- Field test records
- Remediation Contractor's updated work schedule
- As-built survey drawings
- Permits
- Shipping papers (e.g., waste manifests and bills of lading)
- Contractor's HASP, including appropriate training/medical monitoring certifications, site and emergency contact information, and emergency route(s) to hospital

3.1.8 Construction Completion Report

A Construction Completion Report (CCR) will be prepared, and stamped/signed by the Remediation Engineer at the end of construction. The report will meet the requirements of NYSDEC DER-10, as specified in the IRM Design Report.

3.2 Project Meetings

Daily, weekly, and/or monthly project safety inspections and/or progress and coordination meetings will be conducted for the duration of the construction activities. Project meetings will be conducted in accordance with Specification Sections 01 31 19.13 (Pre-Construction Conference) and 01 31 19.23 (Progress Meetings). A brief description of the project meetings and inspections/reviews to be conducted is provided below.

3.2.1 Pre-Construction Meeting

Following award of the contract and prior to Remediation Contractor mobilization, a pre-construction meeting will be held at the Site to introduce project team members representing the Remediation Contractor, NYSEG, the Remediation Engineer, and NYSDEC. The meeting will be scheduled by NYSEG soon after the award of the contract. The meeting will be conducted to review Contract Document requirements, establish a detailed schedule of operations, and resolve issues (if any) raised by the attending parties.

The Remediation Engineer will prepare a summary of the pre-construction meeting. A copy of this summary will be provided to each of the parties in attendance. Failure by the Remediation Contractor to inform NYSEG or the Remediation Engineer, within seven days of receiving this summary, of any discrepancies or inaccuracies contained therein indicates that the Remediation Contractor concurs with the Remediation Engineer's summary of the meeting.

3.2.2 Daily Site Safety and Coordination Meetings

Daily meetings will be attended by the Remediation Contractor's representative(s), the Remediation Engineer's representative(s), NYSEG (as necessary), and other parties to be on Site during the day to discuss day-to-day operations, daily schedule, health and safety issues, Remediation Contractor coordination issues, and general project status.

3.2.3 Periodic Progress and Coordination Meetings

Periodic progress and coordination meetings will be held on Site weekly, or as required, for the duration of the project. Participants in these meetings will include on-site representatives of the Remediation Contractor and the Remediation Engineer. NYSEG and NYSDEC may also attend some or all of the weekly progress and coordination meetings. Progress and coordination meetings will be held to discuss issues, including, but not limited to, project status, schedule, scope of work, and overall project implementation.

Site inspections/reviews will be conducted by NYSEG and/or the Remediation Engineer as part of the periodic progress and coordination meetings prior to, during, and at the completion of the remedial activities. The weekly progress and coordination meetings will be scheduled by the Remediation Engineer.

3.2.4 Project Close-Out Meeting

A project close-out meeting will be held at the end of the remedial construction activities. Participants in the meeting will include the Remediation Contractor, NYSEG, the Remediation Engineer, and NYSDEC. The meeting will be scheduled by the Remediation Engineer. As part of the meeting, a final site inspection will be conducted by NYSEG, the Remediation Engineer, and NYSDEC.

4 PRE-CONSTRUCTION AND MOBILIZATION ACTIVITIES

This section describes the construction and testing procedures for the activities that will take place prior to the start of the remedial activities as described in the Contract Documents.

4.1 Pre-Construction Structural Survey

The Remediation Contractor will contract with a third-party engineering firm to conduct a pre- and post-construction structural survey. The pre-construction survey will serve as the baseline for the post-construction survey. The inspections will document the pre-construction condition of the Court Street flood wall, former bridge abutment, and pump house and adjacent concrete spillway, in accordance with Section 02 21 19, Structural Surveys.

CQA Observations

The Remediation Engineer will visually observe and document that survey activities are performed by the Remediation Contractor in accordance with Section 02 21 19, Structural Surveys and that survey documentation conforms to the requirements of Section 01 78 39, Project Record Documents. The Remediation Engineer will also obtain photographic documentation of post-construction conditions prior to the initiation of construction activities.

4.2 Pre-Construction Topographic Survey

The Remediation Contractor will retain a New York State licensed surveyor to conduct a pre-construction survey of the project area to document existing (pre-construction) site conditions and grades in upland support areas and the OU-2 remediation area in the Susquehanna River. During these activities, the surveyor will also establish survey control to support performance of construction, documentation, and testing of subsequent work activities (e.g., temporary containment system, sediment removal). Interim survey(s) and post-construction surveys will also be performed.

CQA Observations

The Remediation Engineer will visually observe and document that survey activities are performed by the Remediation Contractor's licensed surveyor in accordance with Section 01 71 23, Field Engineering and that survey documentation conforms to the requirements of Section 01 78 39, Project Record Documents. The Remediation Engineer will also obtain photographic documentation of pre-construction conditions prior to the initiation of construction activities.

4.3 Utility Identification

Prior to intrusive activities, the Remediation Engineer will document the following:

- Dig Safely New York is contacted by the Remediation Contractor and the utility clearance is completed.
- A private utility mark-out is conducted by the Remediation Contractor.
- Utility locations/alignments are marked out on the ground or with buoys in the river.

The locations, alignments, and construction of utilities shown on the Design Drawings are approximate and based on information available to NYSEG and the Design Engineer. Any differences identified by the Remediation Contractor between the utilities shown on the Design Drawings and those encountered in the field will be brought to the immediate attention of NYSEG and the Remediation Engineer prior to implementation of any intrusive activities.

4.4 Erosion, Sediment, and Turbidity Control Measures

Prior to the start of intrusive upland or in-water activities, the Remediation Contractor shall construct/install erosion, sediment, and turbidity control measures in accordance with the Contract Documents, including Sections 01 41 26, SWPPP and Permit and 01 57 05, Temporary Controls. During construction, the Remediation Contractor is responsible for maintaining operation of the control measures.

CQA Observations

The Remediation Engineer will document, through visual observations, that erosion, sediment, and turbidity control measures are constructed and maintained in accordance with the Contract Documents.

4.5 Turbidity Monitoring

During in-water activities, the Remediation Contractor shall perform turbidity monitoring in accordance with the Contract Documents, including Section 01 57 05, Temporary Controls. If turbidity monitoring criteria are exceeded, the Remediation Contractor is responsible for modifying work activities to meet the criteria.

CQA Observations

The Remediation Engineer will review and discuss turbidity monitoring data with the Remediation Contractor and the appropriate actions to be taken if turbidity results are above the “early warning” or “action” levels. If turbidity monitoring criteria are exceeded, the Remediation Engineer will document that the Remediation Contractor implements the appropriate response actions.

4.6 Geotechnical Monitoring

Prior to the start of intrusive upland or in-water activities, the Remediation Contractor shall install tiltmeters in accordance with the Contract Documents, including Section 31 09 13, Geotechnical Instrumentation and Monitoring. During construction, the Remediation Contractor is responsible for maintaining the equipment and for performing geotechnical monitoring in accordance with Section 31 09 13, Geotechnical Instrumentation and Monitoring.

CQA Observations

The Remediation Engineer will document, through visual observations, that instrumentation is installed and maintained in accordance with the Contract Documents.

The Remediation Engineer will review and discuss monitoring data with the Remediation Contractor and the appropriate actions to be taken if notification and action levels are reached.

4.7 Temporary Site Security

Temporary site features and site security measures (e.g., fencing, signage) will be installed by the Remediation Contractor in accordance with Specification Sections 01 58 13 (Temporary Project Signage) and 01 71 33 (Protection of Work and Property).

CQA Observations

The Remediation Engineer will visually observe and document that temporary site security measures and signage are installed, inspected, and maintained by the Remediation Contractor in accordance with the Contract Documents.

4.8 Support Areas

Prior to the start of the remedial activities, the Remediation Contractor will construct and set up remedial support areas (e.g., equipment/personnel decontamination area, material staging areas, transloading area, field office[s], and sanitation facilities). The Remediation Contractor is responsible for submitting to the Remediation Engineer a figure indicating the proposed locations of such areas for approval prior to mobilization (if different than shown on the Design Drawings).

CQA Observations

The Remediation Engineer will visually confirm and document that support areas are constructed in accordance with the Contract Documents. The Remediation Engineer will also confirm that the remedial support areas are constructed/established in acceptable locations (i.e., as indicated in the Contract Documents or approved alternate locations).

5 TEMPORARY CONTAINMENT SYSTEM

The Remediation Contractor will install, monitor, and remove the temporary containment system around the sediment removal area(s) in accordance with the Contract Documents.

5.1 Installation

Prior to sediment removal within each area, the Remediation Contractor shall install a temporary containment system around the areas as shown on the Design Drawings and in accordance with Section 31 52 13, Sheet Pile Enclosure.

CQA Observations

The Remediation Engineer will observe installation activities to 1) document that they are being performed in accordance with the Contract Documents; 2) confirm that no existing structures are affected (e.g., former bridge abutment, pump house, floodwall) in accordance with Specification Sections 02 21 19 (Structural Surveys) and 31 09 13 (Geotechnical Instrumentation and Monitoring) and; 3) report non-conformances to the Remediation Contractor. Once installation is complete, the surveyor (contracted by the Remediation Contractor) will record the final as-built horizontal and vertical limits of the temporary containment system.

5.2 Inspections and Monitoring

The Remediation Contractor shall perform visual integrity inspections of the temporary containment system at least twice per week by boat for signs of distress or unintended gaps in the enclosure. Signs of distress or gaps will be reported to the Remediation Engineer immediately and be repaired by the Remediation Contractor. If no signs of distress or gaps are identified, the results of the inspection will be reported to the Remediation Engineer within in the Remediation Contractor's daily field report.

The Remediation Contractor shall monitor wall deflections by surveying reflective survey targets (i.e., optical survey points) installed on the enclosure as required by the Design Drawings and Sections 31 09 13, Geotechnical Instrumentation and Monitoring.

CQA Observations

The Remediation Engineer will visually observe and document that inspections are performed by the Remediation Contractor in accordance with Section 31 52 13, Sheet Pile Enclosure. The Remediation Engineer will also review inspection reports provided by the Remediation Contractor.

The Remediation Engineer will visually observe and document that monitoring of the optical survey points is being performed by the Remediation Contractor's surveyor in accordance with Section 31 09 13, Geotechnical Instrumentation and Monitoring. The Remediation Engineer will also review monitoring results provided by the Remediation Contractor and the appropriate actions to be taken if notification and action levels are reached.

5.3 Removal

Following sediment removal and backfill, the Remediation Contractor will perform a post-construction sediment survey (Section 8.4) and confirm with the Remediation Engineer that sediment remediation activities in the area(s) are complete. Once the Remediation Engineer confirms that remediation activities in the area(s) are complete, the Remediation Contractor will remove the sheet pile enclosure around the area in accordance with Section 31 52 13, Sheet Pile Enclosure.

CQA Observations

The Remediation Engineer will confirm that a survey of the restored sediment area has been completed and sheet piles can be removed. The Remediation Engineer will also observe and document that sheet pile removal is being performed by the Remediation Contractor in accordance with Section 31 52 13, Sheet Pile Enclosure.

6 SEDIMENT REMOVAL AND HANDLING

Sediment removal and handling activities will be performed by the Remediation Contractor in accordance with the Contract Documents.

6.1 Sediment Removal

The Remediation Contractor shall perform sediment removal activities in accordance with the Contract Documents, including the following specifications:

- Section 01 57 05, Temporary Controls
- Section 01 71 23, Field Engineering
- Section 02 61 15, Handling and Disposal of Impacted Sediment and Debris
- Section 35 20 23, Dredging and Subaqueous Backfill

The sediment removal areas are shown on the Design Drawings.

CQA Observations

The Remediation Engineer will observe sediment removal activities to 1) document that they are being performed in accordance with the Contract Documents and; 2) report non-conformances to the Remediation Contractor. Throughout removal activities, the Remediation Engineer will confirm achievement of removal depth and extent as described in the Contract Documents using interim survey data provided by the Remediation Contractor. Once sediment removal is completed, the surveyor (contracted by the Remediation Contractor) will record the final limits (horizontal and vertical) of the removal action.

6.2 Sediment Dewatering, Handling, and Disposal

The Remediation Contractor shall complete material dewatering in accordance with the Contract Documents, including the following specifications:

- Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris
- Section 35 20 23, Dredging and Subaqueous Backfill

CQA Observations

The Remediation Engineer shall confirm that excavated sediments are amended, as necessary, to facilitate off-site transportation/disposal. If the excavated sediment does not pass the paint filter test and/or any additional requirements of the treatment/disposal facilities, excavated sediment will be amended with a dewatering agent(s). The Remediation Contractor shall use appropriate means and methods to dewater materials prior to transportation to the NYSEG-approved off-site treatment/disposal facility.

During sediment removal activities, the Remediation Engineer will observe and document the effectiveness of dewatering activities.

The Remediation Engineer will conduct waste characterization sampling and assist NYSEG with selection of the proper facility for treatment and disposal of waste materials in accordance with the WMP, Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris, and all applicable federal, state, and local regulations.

The Remediation Engineer will maintain the following documentation for waste handling, treatment, and disposal activities:

- Bills of lading/waste manifests
- Chain of custody records
- Trucking logs
- Waste profiles
- Counter-signed waste manifests and facility disposal receipts for waste material transported off Site for treatment/disposal

6.3 Liquid Waste Handling and Disposal

The Remediation Contractor shall manage construction water in accordance with the Contract Documents, including Section 01 53 53, Temporary Water Treatment and Management.

CQA Observations

The Remediation Engineer will observe and document that water collected is stored and/or treated in locations with secondary containment and that the water is treated on Site and discharged in accordance with all applicable permits, laws, and regulations. The Remediation Engineer will collect effluent samples and coordinate analytical testing in accordance with forthcoming discharge permit(s).

7 BACKFILLING

The sediment removal area will be restored with backfill of suitable aggregate material(s) in accordance with the IRM Design Report.

7.1 Sediment Backfill Material

The Remediation Contractor will select an appropriate off-site fill source and provide the Remediation Engineer with material for analytical testing at least four weeks prior to bringing the selected material on Site. If sample results indicate that the material does not meet the requirements of Section 31 05 05, Aggregates for Earthwork, the Remediation Contractor must identify a new source for the material, provide the required data report for the new source of material, and provide the Remediation Engineer with material for analytical testing prior to the use of such material on Site.

Remediation Contractor Submittals

Remediation Contractor submittal requirements for backfilling activities and proposed fill materials are presented in Section 31 05 05, Aggregates for Earthwork.

CQA Observations

The Remediation Engineer will submit samples for testing and document that the laboratory used to analyze the proposed fill material is certified by the New York State Department of Health Environmental Laboratory Approval Program for the parameters being analyzed. Additionally, the Remediation Engineer will confirm that the analytical results meet the objectives of Section 31 05 05, Aggregates for Earthwork.

7.2 Sediment Backfill Placement

Following confirmation of sediment removal (by survey methods), the Remediation Contractor will perform backfilling activities in accordance with the IRM Design Report, Design Drawings, and Section 32 20 23, Dredging and Subaqueous Backfill.

CQA Observations

The Remediation Engineer will observe backfill placement activities to 1) document that they are being performed in accordance with the IRM Design Report and; 2) report non-conformances to the Remediation Contractor. The Remediation Engineer will visually observe and document that survey activities are performed by the Remediation Contractor's licensed surveyor in accordance with Section 01 71 23, Field Engineering and that survey documentation conforms to the requirements of Section 01 78 39, Project Record Documents.

8 SITE RESTORATION AND DEMOBILIZATION

Following completion of removal and backfilling activities, the Remediation Contractor shall restore the upland features disturbed, damaged, or destroyed during remedial activities to pre-construction condition and demobilize labor, equipment, and materials from the Site in accordance with the IRM Design Report. Site restoration and demobilization activities shall be completed and tested as indicated below.

8.1 Ground Cover and Planting Restoration

Following backfilling activities, the Remediation Contractor shall restore the upland staging area and loading area in consultation with affected property owners and in accordance with the Contract Documents, including the following specifications:

- Section 32 90 00, Planting and General Site Restoration
- Section 32 92 00, Turfs and Grasses

CQA Observations

The Remediation Engineer will observe surface restoration activities to document that the activities are completed in accordance with the Contract Documents, including, at a minimum, that the previously vegetated surfaces are restored in-kind or as approved by NYSEG and/or the property owner.

8.2 Pavement Restoration

Following backfilling activities, the Remediation Contractor shall restore the previously existing asphalt or paved surface in consultation with affected property owners and in accordance with the Contract Documents, including the following specifications:

- Section 32 12 00, Flexible Paving
- Section 32 90 00, Plantings and General Site Restoration

CQA Observations

The Remediation Engineer will observe surface restoration activities to document that the activities are completed in accordance with the Contract Documents, including, at a minimum, that the existing asphalt or paved surfaces are restored in-kind or as approved by NYSEG and/or the property owner.

8.3 Decontamination

The Remediation Contractor will decontaminate (as necessary) all personnel and equipment that comes into contact with excavated materials in accordance with the Contract Documents, including Section 02 51 00, Decontamination. All construction vehicles leaving the Site shall be decontaminated (as necessary) by the Remediation Contractor to prevent the tracking of soil on public roads or other places off Site. For the purposes of cleaning and decontamination, “leaving the Site” includes vehicles traveling between the transloading area and the OU-1 area, if any. The Remediation Contractor will conduct decontamination activities within the decontamination area shown on the Design Drawings.

CQA Observations

The Remediation Engineer will observe that the Remediation Contractor performs decontamination activities within the constructed decontamination area(s) until no visible signs of soil, debris, or stains are present on the equipment surfaces prior to the equipment being removed from the Site.

8.4 Post-Construction Structural Survey

The post-construction structural survey shall be conducted by the same engineering firm that conducted the pre-construction structural survey (see Section 4.1). The post-construction structural survey will be conducted consistent with the pre-construction structural survey. The inspection should document the post-construction condition of the Court Street flood wall, former bridge abutment, and pump house and adjacent concrete spillway in accordance with Section 02 21 19, Structural Surveys.

CQA Observations

The Remediation Engineer will visually observe and document that survey activities are performed by the Remediation Contractor's licensed surveyor in accordance with Section 02 21 19, Structural Surveys and that survey documentation conforms to the requirements of Section 01 78 39, Project Record Documents. The Remediation Engineer will also obtain photographic documentation of pre-construction conditions prior to the initiation of construction activities.

8.5 Post-Construction Topographic Survey

The post-construction survey shall be conducted by the same surveyor that conducted the pre-construction survey (see Section 4.2). The post-construction survey shall cover the same limits as the pre-construction survey to verify that areas have been restored to pre-construction conditions. The Remediation Contractor will supply the survey information (including an as-built survey, signed and sealed by the Remediation Contractor's New York State licensed surveyor), in accordance with Section 01 71 23, Field Engineering, to the Remediation Engineer for inclusion in the CCR, to be prepared upon completion of all remedial activities.

CQA Observations

The Remediation Engineer will visually observe and document that survey activities are performed by the Remediation Contractor's licensed surveyor in accordance with Section 01 71 23, Field Engineering and that survey documentation conforms to the requirements of Section 01 78 39, Project Record Documents. The Remediation Engineer will also obtain photographic documentation of pre-construction conditions prior to the initiation of construction activities.

8.6 Demobilization

The Remediation Contractor will demobilize from the Site following completion of all remedial activities in accordance with the Contract Documents. Demobilization will include, at a minimum, the following:

- Dismantling the work area(s), equipment/personnel decontamination area(s), and other remedial support areas.

- Disposing of decontamination area construction materials in accordance with Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris.
- Removing the temporary field offices and restoring the area to pre-construction conditions (or better).
- Removing from the Site all materials, equipment, and support structures.

CQA Observations

The Remediation Engineer will observe the Remediation Contractor demobilization activities to document that the following activities were completed in accordance with the IRM Design Report:

- Equipment and construction-related materials have been cleaned/decontaminated prior to demobilization from the Site.
- Work area(s), equipment/personnel decontamination area(s), and other remedial support areas have been dismantled and areas restored to pre-construction condition.
- All Remediation Contractor materials, equipment, and support systems have been removed from the Site.

APPENDIX F

Contingency Plan

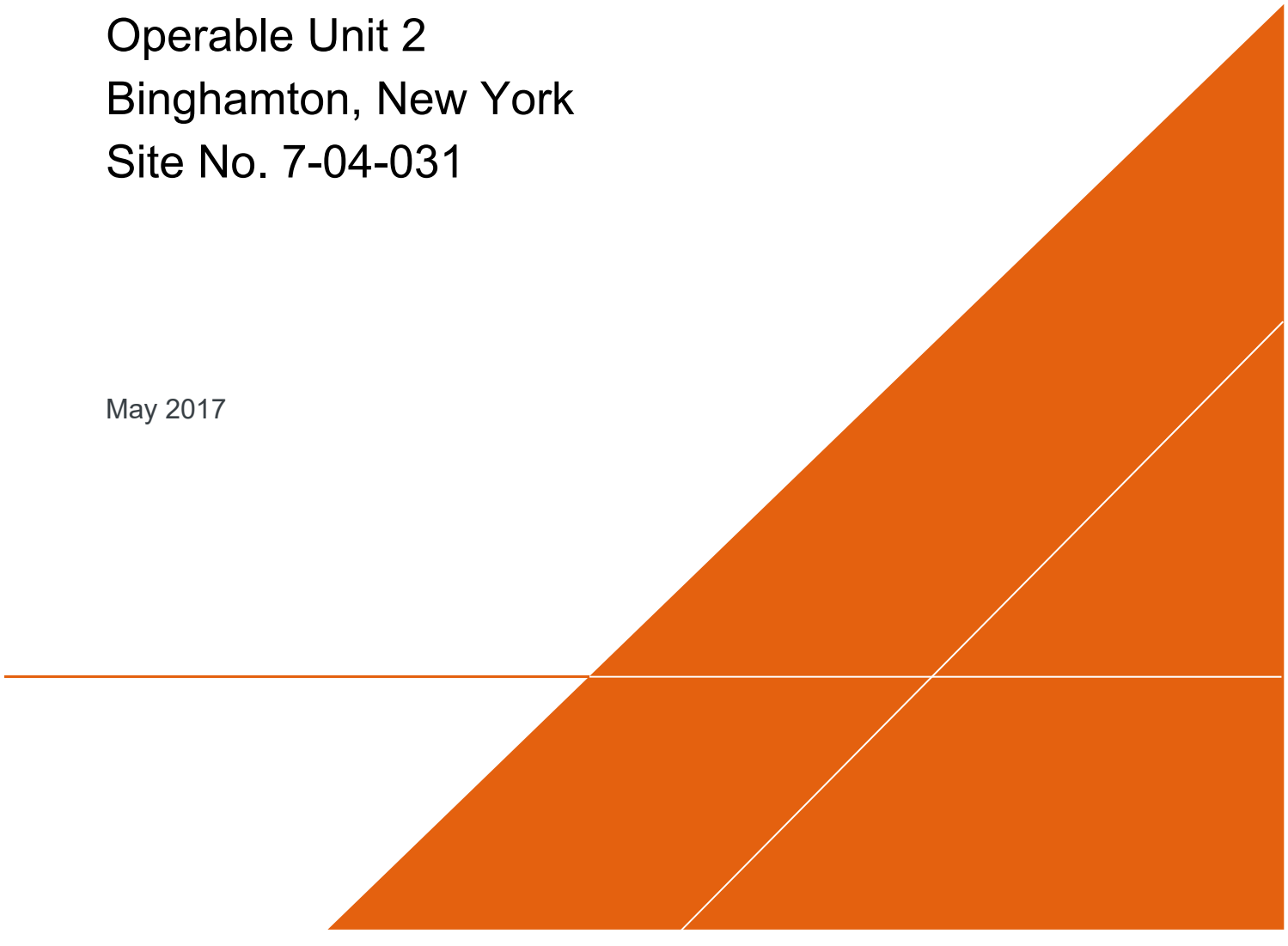
ARCADIS Design & Consultancy for natural and built assets

NYSEG

CONTINGENCY PLAN

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017



CONTINGENCY PLAN

Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Date:

May 2017

CONTENTS

1 INTRODUCTION

This *Contingency Plan* has been prepared to support the remedial construction activities at the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031) (the Site). The Contingency Plan outlines response procedures for potential emergencies that may occur during construction of the selected remedy at the Site. Details related to the selected remedy are presented in the *Interim Remedial Measure Design Report* (IRM Design Report), to which this Contingency Plan is an appendix. Specification Sections referenced in this Contingency Plan are included in Appendix B to the IRM Design Report.

1.1 Contingency Plan Responsibilities

NYSEG's Remediation Contractor will identify a Site Health and Safety Officer (SHSO) in accordance with Section 01 15 00, Remediation Contractor's Project Operations Plan. The SHSO will be made aware of any emergencies and coordinate any response activities conducted at the Site. The SHSO will also serve as the overall Project Emergency Coordinator (PEC) and have the ultimate authority in specifying and facilitating any contingency action.

If the SHSO is not able to perform the duties of the PEC, the SHSO will specify another senior individual (working for the Remediation Contractor) to serve as the PEC, such as an on-site foreman and/or supervisor. The alternate PEC shall become familiar with contingency plans developed the Remediation Contractor and their subcontractors (if any).

1.2 Identifying Hazards and Assessing Risk

The objectives during any emergency are to first protect human health and safety, and then the environment. Possible hazards to human health or the environment that may result from any emergency situation shall be identified by the PEC. The PEC shall take into consideration both direct and indirect effects of the incident. The PEC shall assess the possible risks to human health or the environment that may result from the emergency (e.g., release, fire, explosion, or severe weather conditions). The PEC shall make this assessment by:

- Identifying the materials involved in the incident
- Consulting the appropriate occupational health guideline or safety data sheets (SDSs) to determine the potential effects of exposure/release, and appropriate safety precautions
- Identifying the exposure and/or release pathways and the quantities of materials involved

Based on this information, the PEC shall determine the best course of action for dealing with the emergency and identify possible follow-up requirements (e.g., equipment repair and material disposal).

If the Remediation Contractor's personnel cannot control the incident without incurring undue risk, the PEC shall implement the Site Evacuation Procedures described in Section 3.1. If the off-site neighboring population is at risk, the PEC shall implement the Off-Site Evacuation Procedures described in Section 3.2. The PEC shall notify the Remediation Engineer, NYSEG's Project Manager, and the appropriate government agencies and departments that a situation resulting in the need for evacuation has occurred.

Should emergency assistance in treating injuries or carrying out the evacuation be required, the PEC shall request assistance of local emergency response personnel (e.g., ambulance service, fire department, and police department).

1.3 Conditions for Implementing the Contingency Plan

Potential emergency conditions that require implementation of this Contingency Plan include the following:

- Fire or explosion
- Occurrence of a spill or material release
- Severe weather conditions
- Physical or chemical injury to a worker

These emergency conditions are discussed in the following subsections. Additional emergency conditions that may require implementation of this Contingency Plan shall be identified by the PEC.

1.3.1 Fire and/or Explosion Conditions

Contingency procedures shall immediately be implemented upon notification that any of the following scenarios involving a fire and/or explosion are imminent or have occurred:

- A fire that causes, or could cause, the release of toxic fumes
- A fire that could possibly ignite nearby flammable materials or could cause heat-induced explosions
- A fire that could possibly spread to off-site areas
- A danger that an explosion could occur, causing a safety or health hazard
- An explosion

1.3.2 Spill or Material Release Conditions

The following scenarios involving a spill or material release, whether imminent or having already occurred, shall cause implementation of contingency procedures:

- A spill or material release that could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard
- A spill or material release that could cause the release of toxic vapors or fumes into the atmosphere in concentrations higher than the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs)
- A spill or material release that can be contained on Site where a potential exists for groundwater or surface water contamination
- A spill or material release that cannot be contained on Site, resulting in a potential for off-site soil contamination, sediment contamination, and/or groundwater or surface water pollution

All spills or material releases shall be reported immediately to the PEC. The PEC shall immediately identify the character, source, amount, and extent of any release. Initial identification shall be based on visual analysis of the material and location of the release. If the released material cannot be identified, samples of potentially affected media shall be taken for analysis, as directed by NYSEG.

1.3.3 Severe Weather Conditions

The following severe weather conditions, whether imminent or having already occurred, shall cause implementation of contingency procedures:

- A tornado has been sighted in the area
- A tornado warning is in effect for the area
- A lightning storm is underway in the area (storm center less than 5 miles away)
- Other severe weather or weather-induced conditions (e.g., hurricane or flood)

1.3.4 Physical or Chemical Injury Conditions

The following worker injuries shall cause implementation of contingency procedures:

- Major physical injuries
- Chemical injuries
- Severe symptoms of chemical overexposure

2 CONTINGENCY PROCEDURES

If any of the aforementioned conditions for implementing the Contingency Plan are met, the appropriate following contingency procedure(s) shall be performed.

2.1 Contingency Procedures for Fire/Explosion

When a fire or explosion appears imminent or has occurred, all normal site activity shall cease. The PEC shall assess the potential risk and severity of the situation and decide whether the emergency event is or is not readily controllable with existing portable fire extinguishers or site equipment and materials at hand. Firefighting shall not be conducted at the risk to site workers. Local fire departments shall be contacted in all situations in which fires and/or explosions have occurred. The following steps shall be taken for a localized fire:

- Contact local fire departments
- Move all personnel to an upwind location at an appropriately safe distance away
- Determine if fire is within on-site personnel capabilities to attempt initial firefighting
- Determine if smoke and/or fumes from fire are potentially impacting off-site areas
- If fire is not impacting off-site areas and is within on-site personnel capabilities, utilize the most appropriate means of extinguishing fire (e.g., fire extinguishers, water, covering with soil)
- Once fire is extinguished, containerize and properly dispose of any spilled material, runoff, or soil

If the situation appears uncontrollable and poses a direct threat to human life, fire departments shall be contacted and the evacuation procedures described in Section 3 shall be implemented. If the potential for an impending explosion is high, the entire area within a 1,000-foot radius of the fire source shall be evacuated. The PEC shall alert personnel when all danger has passed, as determined by the chief fire fighter from the responding fire departments. All equipment (e.g., fire extinguishers) used in the emergency shall be cleaned and refurbished as soon as possible after the emergency has passed so that it will be ready for use in the event of any future emergency.

2.2 Contingency Procedures for Spills or Material Releases

If a hazardous waste spill, material release, or process upset resulting in a probable vapor release is identified, the PEC shall immediately assess the magnitude and potential seriousness of the spill or release based upon:

- SDS for the material spilled or released
- Source of the release or spillage of hazardous material
- An estimate of the quantity released and the rate at which it is being released
- The direction in which the spill or air release is moving

- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result
- Potential for fire and/or explosion resulting from the situation
- Estimates of area under influence of the release

If the spill or release is determined to be within the on-site emergency response capabilities, the PEC shall initiate implementation of the necessary remedial action. If the accident is beyond the capabilities of the operating crew, all personnel not involved with emergency response activity shall be evacuated from the immediate area and the appropriate emergency response group(s) shall be contacted.

2.3 Contingency Procedures for Severe Weather

When severe weather is forecasted or occurs, the information shall be immediately relayed to the PEC. In the case of a tornado sighting, the PEC shall initiate emergency evacuation procedures (see Section 3), and all personnel shall be directed to proceed indoors after completing appropriate shutdown procedures. In the case of a tornado warning, or lightning storm, the PEC shall have operations stopped and direct all personnel to stand by for information regarding emergency procedures. Other types of weather or weather-induced conditions (e.g., hurricane or flooding) for which long-range prediction is available may also require action as identified herein.

When the severe weather has passed, the PEC shall direct the Remediation Contractor to inspect on-site equipment to check its readiness for operation prior to restarting operations. If an inspection indicates a fire, explosion, or release has occurred as a result of a severe weather condition, the contingency procedures for those events shall be followed.

If flooding is anticipated based on the results of weather and Susquehanna River flow monitoring, the Remediation Contractor shall implement the following contingency measures:

- Secure all water-based vessels from flooding conditions and move all heavy equipment to the highest landside elevation
- If overbank flooding is possible, secure (or remove from the Site, if possible) all chemicals and materials, including impacted material within staging areas

2.4 Contingency Procedures for Physical Injury to Workers

Regardless of the nature and degree of the injury, the PEC shall be notified of all injuries requiring first aid treatment of any kind. The PEC shall complete a report of the injury or incident.

Upon notification that a worker has been injured, the PEC shall immediately determine the severity of the accident, and whether the victim can be safely moved from the incident site. Local medical assistance shall be requested immediately, if appropriate.

Minor injuries sustained by workers shall be treated on Site using materials from first aid kits. Whenever possible, such treatment shall be administered by trained personnel in a “clean” support zone. Examples of minor injuries include small scrapes and blisters. Minor injuries would not be expected to trigger implementation of the Contingency Plan.

A major injury sustained by a worker will require professional medical attention at a hospital. The PEC shall immediately call for an ambulance and contact the hospital to which the injured worker will be transported. The PEC shall notify the NYSEG Project Manager as soon as practical. The hospital and ambulance should be advised of:

- The nature of the injury
- Whether the injured worker will be decontaminated prior to transport
- When and where the injury was sustained
- The present condition of the injured worker (e.g., conscious, breathing)

2.5 Contingency Procedures for Chemical Injury to Workers

Injuries involving hazardous chemicals or symptoms of severe chemical overexposure shall result in implementation of the Contingency Plan. Upon notification that a chemical injury has been sustained or severe symptoms of chemical exposure are being experienced, the PEC shall notify the hospital and ambulance of the occurrence. The PEC shall provide, to the extent possible, the following information:

- The nature of the injury (e.g., eyes contaminated)
- The chemical(s) involved
- The present condition of the injured worker (e.g., conscious, breathing)
- Whether the injured worker will be decontaminated prior to transport
- When and where the injury was sustained

The victim shall be immediately removed from the incident site using appropriate personal protective equipment (PPE) and safety equipment. Rescuers shall check for vital signs and, if possible, remove contaminated outer clothing. If the victim's eyes have been contaminated, personnel trained in administering first aid shall flush the victim's eyes with eyewash solution until the emergency response team arrives.

Details on the nature of the contaminant and methods for treating exposure or injury can be obtained from the SDSs or occupational health guidelines.

3 EMERGENCY EVACUATION PROCEDURES

In the event that emergency conditions require evacuation, the site and off-site evacuation procedures described in the following subsections shall be implemented.

3.1 Site Evacuation Procedures

If an emergency occurs that requires the evacuation of an on-site area to ensure personnel safety, including, but not limited to, fire, explosion, severe weather, hazardous waste/material spills, or a significant release of vapors into the atmosphere, an air horn shall be sounded on the Site by the nearest person aware of the event. The horn shall sound continuously for approximately 15 seconds, signaling that immediate evacuation of all personnel from the area is necessary, as a result of an existing or impending danger. In areas where only two or three people are working side by side, and the need to evacuate can be communicated verbally by the nearest person aware of the event, the air horn is not necessary.

All heavy equipment in the area shall be shut down. Under no circumstances shall incoming visitors (other than emergency response personnel) be allowed to enter any area where an emergency is occurring. Visitors or observers and all non-essential personnel present in the area of an emergency shall be instructed to evacuate the area immediately.

The Remediation Contractor's foremen and/or supervisors will be responsible for ensuring that emergency response requirements specific to their own operations are implemented. These parties shall report their activities to the PEC. The PEC, however, has final authority regarding all emergency response activities.

All non-essential personnel shall evacuate the emergency areas and notify personnel in adjacent areas to evacuate. The evacuated workers shall assemble at the site construction office trailer, where the PEC shall give directions for implementing necessary actions. In the event that the primary assembly area is involved, unapproachable, or unsafe due to the event, evacuated workers shall assemble at the alternate assembly area identified by the PEC.

Personnel are to avoid encountering smoke/gas plumes as practicable during evacuation and assembling.

The PEC shall take charge of all emergency response activities and dictate the procedures to be followed until emergency personnel arrive. The PEC shall assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive.

After initiating emergency response procedures, the PEC shall assign appropriate personnel to check and attempt to ensure that access roads are not obstructed. If traffic control is necessary (e.g., in the event of a fire or explosion), personnel who have been trained in traffic control procedures and designated at the project safety meeting shall take over these duties until emergency units arrive.

The PEC shall remain at the Site to provide any assistance requested by emergency response personnel when arriving at the Site. The PEC shall have the authority to shut down any part of or the entire project after an emergency, until the PEC deems it safe to continue operations. The PEC shall dictate any necessary changes in project safety practices as a result of the emergency that has occurred, or as required for preventing further emergencies.

3.2 Off-Site Evacuation Procedures

If the PEC deems that human health beyond the site limits is at risk, the PEC shall notify the appropriate agencies and departments (e.g., NYSEG Project Manager, police, New York State Department of Environmental Conservation, fire department) of the need, or potential need, to institute off-site evacuation procedures. The PEC shall provide, at a minimum, the following information:

- His or her name and telephone number
- Name and address of facility
- Time and type of incident (e.g., release, fire)
- Name and quantity of material or materials involved, to the extent this information is known
- The extent of injuries, if any
- The possible hazards to human health or environment
- Cleanup procedures

3.3 Susquehanna River Evacuation Procedures

In the event that the PEC determines evacuation from the Susquehanna River is necessary, all personnel shall proceed immediately to the designated rallying point (established in the Remediation Contractor's Health and Safety Plan). Personnel within in-river work areas will promptly return to land and secure vessels.

Upon exiting the in-river work area, project personnel shall proceed to the designated rallying point and immediately report to the PEC for roll call. The primary rallying point should be the material staging area or other designated area.

3.4 Personnel Accountability Procedures After Evacuation

After evacuation, all personnel are responsible for reporting to his or her foreman and/or supervisor so an accurate role call can be made. The foreman and/or supervisor will report the roll call for their group to the PEC, who is responsible for accounting for each employee. All personnel will be accounted for by name. The PEC will then report their role call to the SHSO.

All site personnel and visitors not assigned to a foreman and/or supervisor will be required to sign in with the SHSO upon entering the Site. Upon evacuation, site personnel and visitors not assigned to a foreman and/or supervisor shall proceed promptly to the designated rallying point and report directly to the SHSO.

APPENDIX G

Storm Water Pollution Prevention Plan

ARCADIS Design & Consultancy for natural and built assets

NYSEG

STORM WATER POLLUTION PREVENTION PLAN

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017

STORM WATER POLLUTION PREVENTION PLAN

Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Date:

May 2017

CONTENTS

ATTACHMENT

1. Natural Resources Conservation Service Soil Map

1 INTRODUCTION

This *Storm Water Pollution Prevention Plan* (SWPPP) has been prepared to support the implementation of remedial activities at the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031) (the Site). Details related to the remedial activities are presented in the *Interim Remedial Measure Design Report* (IRM Design Report), to which this SWPPP is an appendix. Design Drawings referenced in this SWPPP are included in Appendix A to the IRM Design Report. Specification Sections referenced in this SWPPP are included in Appendix B to the IRM Design Report.

This SWPPP summarizes the storm water management practices that will be implemented during the remedial construction activities to control potential impacts to site-related storm water runoff. This SWPPP has been prepared in accordance with the substantive requirements of the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Discharges from Construction Activity (SPDES General Permit) (NYSDEC 2015).

1.1 Remedial Activities

In general, the remedial activities to be performed at the Site consist of:

- Sediment removal from and restoration of Area 1, which is located in the Susquehanna River across Court Street from the southwest corner of Operable Unit (OU)-1, adjacent to the Court Street flood wall and the City of Binghamton land, bounded by Court Street and Tompkins Street. The vertical extent of removal in Area 1 ranges from 1 to 5 feet.
- Sediment removal from and restoration of Area 2, which is located in the Susquehanna River across Court Street, from the southeast corner of OU-1, adjacent to the Court Street flood wall. The vertical extent of removal in Area 2 is 1 foot.

Additional details regarding the remedial activities are provided in the IRM Design Report.

1.2 Revisions

This SWPPP will be kept current so that at all times it accurately documents the erosion, sediment, and turbidity control practices that are being used or will be used during construction. At a minimum, this SWPPP will be amended 1) whenever the current provisions prove to be ineffective at minimizing pollutants in storm water discharges from the Site; 2) whenever there is a change in design, construction, operation, or maintenance at the Site that has or could have an effect on the discharge of pollutants; and 3) to address issues or deficiencies identified during an inspection by the Remediation Contractor's qualified inspector, NYSDEC, or other regulatory authority having jurisdiction.

1.3 SWPPP Organization

The remainder of this SWPPP is organized into four sections as follows:

- Section 2 (Site Background) presents general information regarding existing (pre-construction) conditions at the Site.
- Section 3 (Erosion, Sediment, and Turbidity Controls) summarizes the means and methods that will be used to control erosion, sediment, and turbidity during the remedial construction activities.
- Section 4 (Pollution Prevention Practices) summarizes the pollution prevention and control measures that will be implemented during the remedial construction activities.
- Section 5 (References) presents a list of documents used in the preparation of this SWPPP.

2 SITE BACKGROUND

This section provides general information regarding the pre-remediation conditions at the Site.

2.1 Site Location and Description

The OU-1 portion of the Site is owned by NYSEG and is located in an industrial section of the City of Binghamton, in Broome County, New York. OU-1 occupies lots identified as 271-291 and 293 Court Street. The 293 Court Street property was formerly used as a natural gas service center by Columbia Gas Transmission Corporation.

OU-1 is bordered to the north by a major Norfolk Southern rail line and yard, an asphalt works plant, and a scrap yard; to the south by Court Street, which runs parallel to the Susquehanna River (separated by a flood wall); to the east by the 295 Court Street property, which contains a warehouse owned by 295 Court Street Associates, LLC; and to the west by Brandywine Avenue. Two buildings are present on OU-1: a small gas regulator station and a building used for storage. The remainder of OU-1 consists of a gravel lot used by NYSEG for equipment/material storage and parking.

OU-2 includes river sediments within the Susquehanna River and is located immediately across from and downgradient of OU-1. OU-2 is bordered to the north by Court Street (separated by a flood wall) and to the west by the Tompkins Street Bridge. A Natural Resources Conservation Service soil map is included as Attachment 1 of this plan.

2.2 Site Operational History

OU-1 formerly housed an MGP that manufactured gas from approximately 1888 to 1939, during which time operations gradually expanded westward from the eastern portion of OU-1 and eventually covered the entire OU-1 area. Various structures were located within OU-1, including four gas holders, seven oil tanks, a tar-separating well, a machine shop, and a governor house. By about 1969, all aboveground structures associated with the MGP had been dismantled. The findings of previous investigations (BBL 2002) indicated that non-aqueous phase liquid (NAPL), primarily coal tar dense NAPL, had been observed in subsurface soils on the Site. NAPL is present in both unsaturated and saturated soils in the OU-1 portion of the Site. To address the potentially mobile NAPL, an NAPL barrier wall was constructed along the western and southern OU-1 property boundaries (Arcadis 2008).

A former storm sewer that collected runoff from a large portion of the City of Binghamton traversed the Site from north to south and emptied into the Susquehanna River. Historical drawings indicate that the on-site portion of the storm sewer was constructed between 1885 and 1924 within the former bed of Brandywine Creek. The storm sewer consisted of a buried 66-inch-diameter reinforced concrete pipe that conveyed stormwater north to south across the western portion of the OU-1 portion of the Site.

Site investigations previously identified that potentially impacted groundwater and/or NAPL was infiltrating into the storm sewer and entering the Susquehanna River at the outfall immediately adjacent to the OU-1 portion of the Site (BBL 2002). In 2012, NYSEG abandoned in place the existing 66-inch storm sewer and replaced it with a water- and NAPL-tight storm sewer system across the OU-1 portion of the Site to prevent infiltration of potentially impacted groundwater and NAPL (Arcadis 2012). The new 63-inch storm

sewer is owned and maintained by the City of Binghamton, and discharges into a pump house also owned and maintained by the City of Binghamton.

In addition to this storm sewer discharge, a 24-inch outfall pipe and two other pipes located east of OU-1 also discharge to the Susquehanna River through the flood wall.

2.3 Surface Water Hydrology

Site topography slopes gently downward to the south across most of OU-1 and across Court Street. The south side of Court Street contains a flood wall and former bridge abutment. These structures are vertical, abutting the Susquehanna River and creating an elevation difference from Court Street to the river of more than 10 feet. The Susquehanna River flows from the east to the southwest. The paved areas, consisting of Court Street and surface sidewalks, and outfalls adjacent to the Site allow for surface water runoff to the Susquehanna River.

3 EROSION, SEDIMENT, AND TURBIDITY CONTROLS

This section presents the means and methods for erosion, sediment, and turbidity control to be utilized as part of remedial construction activities.

3.1 Interim Remedial Measure Design Components

This section summarizes the erosion, sediment, and turbidity controls that will be used or constructed during the remedial construction activities. Erosion, sediment, and turbidity controls will be installed, inspected, and maintained by the Remediation Contractor in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (NYS Standards and Specifications) (NYSDEC 2016) and the following components of the IRM Design Report:

- Section 01 41 26, SWPPP and Permi)
- Section 01 57 05, Temporary Controls
- Section 31 52 13, Sheet Pile Enclosure
- Design Drawing 3, Upland Site Preparation Plan
- Design Drawing 4, Material Transportation Plan
- Design Drawing 5, Sediment Removal Plan
- Design Drawing 6, Sediment Removal Area 1 Sheet Pile Design Profile
- Design Drawing 7, Sediment Removal Area 1 Cross Sections
- Design Drawing 8, Sediment Removal Area 2 Sheet Pile Design Profile and Cross Sections
- Design Drawing 9, Site Restoration Plan
- Design Drawing 11, Erosion, Sediment, and Turbidity Control Details
- Design Drawing 12, Miscellaneous Details

As site conditions allow, temporary erosion, sediment, and turbidity controls will be installed before initiating any intrusive activities, and additional controls will be installed during construction (as needed) to achieve the storm water management objectives of this SWPPP and the SPDES General Permit.

3.2 Temporary Structural Measures

This section describes the temporary structural measures to be utilized for erosion, sediment, and turbidity control as part of remedial construction activities.

3.2.1 Silt Fencing and Straw Bale Dikes

Silt fencing, rolled erosion control material, and/or straw bale dikes will be used to reduce or otherwise control the potential for off-site migration of suspended sediments in storm water runoff, and will be installed before any existing soils or vegetation is disturbed at the Site (including the transloading area). Silt fencing, rolled erosion control material, and straw bale dikes (where used) will be installed and

maintained by the Remediation Contractor in accordance with Section 5A of the NYS Standards and Specifications, Section 01 57 05, Temporary Controls, and Design Drawings 3 and 12.

3.2.2 Temporary Containment System

Turbidity curtains and/or sheet piles will be installed to reduce the turbidity of suspended sediment downstream of the sediment removal area. Turbidity curtains will be installed and maintained by the Remediation Contractor in accordance with Section 01 57 05, Temporary Controls and Design Drawings 5 and 11. A sheet pile enclosure system will be installed and maintained by the Remediation Contractor in accordance with Section 31 52 13, Sheet Pile Enclosure and Design Drawings 5, 6, 7, and 8. The Remediation Engineer will conduct turbidity monitoring in accordance with the requirements set forth in the Community and Environmental Response Plan (CERP; Appendix D to this IRM Design Report).

3.3 Periodic Inspections

The Remediation Contractor will inspect erosion, sediment, and turbidity controls at the frequency specified in Section 01 41 26, SWPPP and Permit. Remediation Contractor personnel responsible for periodic inspections will meet the requirements of a “qualified inspector” as defined in Appendix A of the SPDES General Permit. The results of each inspection, including any corrective actions to be taken, will be documented using the Storm Water Inspection Report form included in Section 01 41 26, SWPPP and Permit.

Any deficiencies observed during an inspection, and any maintenance activities or corrective actions required to address those deficiencies, will be communicated to the Remediation Engineer within one working day after the inspection. Maintenance activities and corrective actions will be initiated within two working days of the inspection and will be completed before the next scheduled inspection. If site conditions prevent the completion of maintenance activities or corrective actions before the next scheduled inspection, such conditions will be documented in the Storm Water Inspection Report, and the maintenance activities/corrective actions will be completed as soon as site conditions permit.

Erosion, sediment, and turbidity controls will be inspected and maintained by the Remediation Contractor for the duration of the remedial construction activities, and until such time as all disturbed or open-soil areas at the Site have achieved “final stabilization” as defined in Appendix A of the SPDES General Permit.

3.4 Site Restoration

All disturbed areas will be restored to pre-construction grades and conditions. A final inspection will be performed by the Remediation Engineer to verify that all restoration areas have achieved final stabilization. If restoration areas are not sufficiently stabilized, corrective actions will be taken by the Remediation Contractor and a second final site inspection will be performed. Upon acceptance of the final site stabilization, the Remediation Contractor will remove any temporary erosion, sediment, and turbidity controls (e.g., silt fencing, straw bale dikes, turbidity curtain) that are no longer needed.

3.5 Post-Construction Storm Water Management Controls

Due to the nature of the work being performed (i.e., removal of impacted material under a NYSDEC-approved IRM Design Report), post-construction water quality and quantity controls are not required.

4 POLLUTION PREVENTION PRACTICES

This section summarizes the prevention practices that will be implemented by the Remediation Contractor to control impacted materials, spills, and construction debris from becoming sources of pollutants in site-related storm water runoff.

4.1 Interim Remedial Measure Design Components

Pollution prevention measures will comply with the following components of the IRM Design Report:

- Section 01 35 29, Contractor's Health and Safety Plan
- Section 01 35 43.13, Environmental Procedures for Hazardous Materials
- Section 01 53 53, Temporary Water Management and Management
- Section 01 57 05, Temporary Controls
- Section 01 74 05, Cleaning
- Section 01 74 19, Construction Waste Management and Disposal
- Section 02 51 00, Decontamination
- Section 02 61 15, Handling and Disposal of Impacted Sediments and Debris
- Design Drawing 3, Upland Site Preparation Plan
- Design Drawing 4, Material Transportation Plan
- Design Drawing 5, Sediment Removal Plan
- Design Drawing 6, Sediment Removal Area 1 Sheet Pile Design Profile
- Design Drawing 7, Sediment Removal Area 1 Cross Sections
- Design Drawing 8, Sediment Removal Area 2 Sheet Pile Design Profile and Cross Sections
- Design Drawing 10, Temporary Water Treatment System Piping and Instrumentation Diagram
- Design Drawing 12, Miscellaneous Details

4.2 Impacted Material Handling, Transportation, and Treatment/Disposal

This section outlines the handling, transportation, and treatment/disposal methods to be implemented for impacted material as part of remedial construction activities.

4.2.1 Sediment

Sediment will be excavated to the horizontal and vertical limits depicted on the Design Drawings. Excavated sediment will be removed from the remedial area, transported by barge to the material transloading area, solidified (as necessary) within the barge, and either directly loaded for off-site

transport to a NYSEG-approved waste management facility or loaded for transport to the temporary staging area established at OU-1 for further stabilization prior to off-site transport to a NYSEG-approved waste management facility.

Sediment to be transported over public roadways will be loaded into properly licensed and permitted vehicles (pursuant to Title 6, Part 364 of the New York Codes, Rules, and Regulations [6 NYCRR Part 364]), and will be transported in accordance with applicable laws and regulations. Transport vehicles will be watertight and/or fully lined with polyethylene liners (or equivalent), and will be equipped with functioning tailgate locks and non-mesh (solid), waterproof tarpaulins.

Before leaving the Site, transport vehicles will be staged and inspected within a temporary decontamination area (constructed as shown on Design Drawings 3 and 4), and will be cleaned of any visible soil. Upon leaving the Site, transport vehicles will follow approved haul routes as specified in the CERP.

4.2.2 Debris

Debris generated during the remedial activities is anticipated to include vegetation, stumps/root balls, and/or stone. Such materials will be segregated as appropriate from other excavated materials, downsized (as required by disposal facilities), and handled separately, where practicable. Debris will be stockpiled on Site within a fully lined roll-off container for characterization prior to off-site disposal. The debris will be transported from the Site to an appropriate off-site disposal facility in properly licensed and permitted trucks (pursuant to 6 NYCRR Part 364). Before leaving the Site, transport vehicles will be staged and inspected within a temporary decontamination area (constructed as shown on Design Drawings 3 and 4), and will be cleaned of any visible debris. Upon leaving the Site, transport vehicles will follow approved haul routes as specified in the CERP.

4.2.3 Construction-Related Water

Construction-related water generated during the remedial construction activities (e.g., decontamination water, water generated during dewatering, groundwater/surface water encountered) will be collected and transported to the temporary water treatment system for treatment and discharge in accordance with the IRM Design Report and applicable discharge permit.

Alternatively, if appropriate, construction-related water may be transported from the Site to an appropriate off-site disposal facility in properly licensed and permitted tanker trucks (pursuant to 6 NYCRR Part 364). Before leaving the Site, transport vehicles will be staged and inspected within a temporary decontamination area (constructed as shown on Design Drawings 3 and 4), and will be cleaned of any visible materials. Upon leaving the Site, transport vehicles will follow approved haul routes as specified in the CERP.

4.3 Spill Prevention, Control, and Response

As required by Section 01 35 29, Contractor's Health and Safety Plan, the Remediation Contractor will prepare a site-specific Health and Safety Plan (HASP) that addresses spill prevention and control, and response procedures to spills and other site emergencies during the remedial construction activities. The HASP will include evacuation procedures for site personnel, directions and a figure showing the route to

the local hospital, and a contact list with telephone numbers for local and state emergency responders (e.g., police, ambulance, fire, and poison control).

4.3.1 Spill Prevention

The Remediation Contractor's spill prevention practices will include, at a minimum, the following:

- Performing regular inspections of construction vehicles, equipment, and portable fuel tanks to check for leaks.
- Performing routine maintenance on construction vehicles and equipment in accordance with the manufacturer's specifications.
- Promptly repairing or replacing damaged or defective construction vehicles and equipment.
- Storing on-site fuel tanks within a secondary containment area or providing alternate secondary containment (e.g., double-walled fuel tanks, containment dikes).
- Refueling vehicles on level ground within a designated area away from steep slopes and storm water runoff conveyance features (e.g., ditches/diversions, storm sewers). Never performing refueling over the water without booms and/or absorbent pads.
- Attending to construction vehicles and equipment while refueling.
- Turning off internal combustion engines before refueling with a flammable liquid.
- Replacing the cap on vehicle fuel tanks before starting the engine.
- Securing/locking fuel pump dispensers when not in use to avoid accidental fuel release.
- Storing construction vehicles and equipment away from site hazards and sensitive resources, to the extent practicable.
- During material transport operations, inspecting all vehicles (including barges) prior to leaving the loading area, transloading area, and staging area to ensure no contaminated material is on the outside of the vehicle (i.e., tail gate, tires, sides of barge), and that the containment area within the vehicle is properly secured so that no contaminated material spills onto public roadways or waterways.

4.3.2 Spill Control and Response

The Remediation Contractor will maintain on Site a sufficient quantity of fire extinguishers, spill kits, and oil-absorbent pads, rolls, and booms as required to contain spills (should they occur) and prevent the potential migration of pollutants beyond the work area. In the event of a spill, the Remediation Contractor will immediately notify NYSEG and implement the following response measures:

1. *Stop/Isolate Source:* As conditions allow, the Remediation Contractor will attempt to stop or isolate the source of the spill by closing valves and/or shutting down affected vehicles or equipment.

2. *Containment:* If the spilled material is floating on a water surface, spill-absorbent pads/booms will be placed across the path of the floating spill. If the spilled material sinks below the water surface, a dam, weir, or other containment method will be used to stop the flow of the spilled material. If the spill occurs on land, a containment unit will be constructed to stop the flow of the spilled material and sorbents will be applied as necessary.
3. *Cleanup:* Spills in water will be recovered using pumps and sorbents as necessary until the spilled material is recovered and no sheen or other evidence of the spill is observed on the water surface. Spills on land will be recovered using pumps, sorbents, and heavy equipment, as necessary until the spilled material is recovered. Construction vehicles and equipment used in the cleanup, or otherwise affected by the spill, will also be cleaned/decontaminated.
4. *Collection, Storage, and Disposal:* Impacted materials, sorbents, and other wastes will be collected and stored in New York State Department of Transportation-approved containers. The containers will be labeled with the waste type and date of accumulation, and will be transported off Site for disposal at a permitted facility in accordance with all applicable laws and regulations.
5. *Post-Spill Maintenance:* Following the cleanup of the spill, the Remediation Contractor will verify that all impacted materials, vehicles, and equipment have been either transported off Site for disposal, or decontaminated, as appropriate. The vehicle or piece of equipment that may have caused the spill will also be repaired. If the vehicle or piece of equipment cannot be repaired, it will be removed from the Site and replaced.

Spill notifications and reporting to the necessary agencies will be coordinated by NYSEG and/or the Remediation Engineer. Appropriate emergency response groups, including the local fire department, NYSDEC, and the National Response Center, will be contacted immediately if the spill or material release has impacted soil, groundwater, or surface water, or is beyond the capabilities of on-site personnel to control using the methods described above.

4.4 Dust Controls

Dust controls will be used to prevent surface and air movement of dust from disturbed or open-soil areas and material staging areas that may cause off-site damage, health hazards, and traffic safety problems. Dust controls will be proactively employed by the Remediation Contractor in accordance with Section 01 57 05, Temporary Controls, and may include one or more of the following practices:

- Excavating, loading, handling, and backfilling materials in a manner that minimizes the generation of dust.
- Hauling excavated materials and clean backfill materials in properly tarped/covered transport vehicles.
- Restricting vehicle speeds on temporary access roads and active haul routes.
- Covering excavations and temporary stockpiles with 10-mil polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day.
- Wetting down temporary access roads and active haul roads.

4.5 Good Housekeeping Practices

Good housekeeping practices will be employed to reduce the potential for construction materials to enter site-related storm water runoff. The Remediation Contractor will maintain the Site in a neat and orderly condition throughout the remedial construction activities in accordance with Section 01 74 05, Cleaning. This will include the 1) routine collection and disposal of trash, rubbish, and sanitary wastes; 2) proper storage of construction materials and equipment at the Site; and 3) routine cleaning of public rights-of-way, streets, and sidewalks.

5 REFERENCES

Arcadis. 2008. NAPL Barrier Wall Interim Remedial Measure Engineering Certification Report. June (Revised).

Arcadis. 2012. 66-Inch Storm Sewer Replacement Construction Completion Report, Court Street Former Manufactured Gas Plant Site. September.

BBL. 2002. Final Remedial Investigation Report, Binghamton Court Street Former Manufacturer Gas Plant Site. December.

National Cooperative Soil Survey (Natural Resources Conservation Service). 2015. Soils information downloaded on June 16, 2016 from NRCS Web Soil Survey website: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Source information based on Broome County, New York Soil Survey Area Version 13. September 20, 2015.

NYSDEC. 2015. SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-10-001. January 29.

NYSDEC. 2016. New York State Standards and Specifications for Erosion and Sediment Control. November.

ATTACHMENT 1

NRCS Soil Map

Soil Map—Broome County, New York
(Court St. Former MGP OU-2)

Map Scale: 1:9,440 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Broome County, New York
Survey Area Data: Version 14, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 10, 2011—Oct 8, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Broome County, New York (NY007)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
ChC	Chenango and Howard gravelly loams, 5 to 15 percent slopes	15.8	9.0%
Cv	Cut and fill lands, gravelly materials	12.6	7.2%
Cy	Cut and fill lands, silty materials	34.8	19.8%
Mf	Made land, sanitary land fill	35.3	20.1%
MhB	Mardin channery silt loam, 2 to 8 percent slopes	2.4	1.4%
W	Water	50.8	28.8%
Wd	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	24.3	13.8%
Totals for Area of Interest		**176.1**	**100.0%**

APPENDIX H

Waste Management Plan

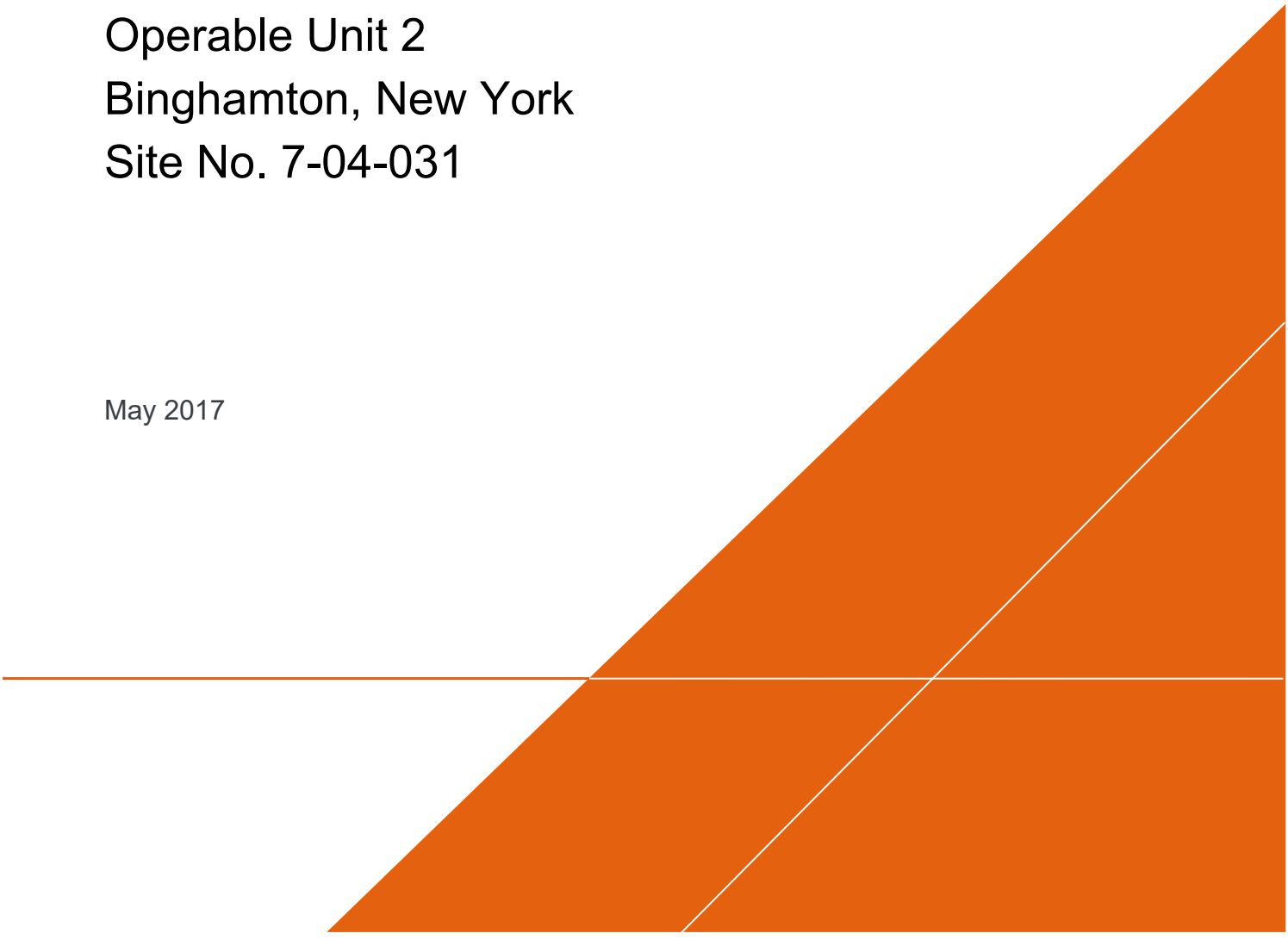
ARCADIS Design & Consultancy for natural and built assets

NYSEG

WASTE MANAGEMENT PLAN

Court Street Former Manufactured Gas Plant Site
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

May 2017



WASTE MANAGEMENT PLAN

Court Street
Former Manufactured Gas Plant Site,
Operable Unit 2
Binghamton, New York
Site No. 7-04-031

Date:

May 2017

CONTENTS

1 INTRODUCTION

This *Waste Management Plan* (WMP) has been prepared to support the implementation of remedial activities at the NYSEG Court Street Former Manufactured Gas Plant (MGP) Site located in Binghamton, New York (Site No. 7-04-031) (the Site). This WMP describes the characterization, handling, treatment, and disposal requirements for various waste materials anticipated to be generated as a result of the remedial activities described in *the Interim Remedial Measure Design Report* (IRM Design Report), to which this WMP is an appendix.

The on-site management requirements for the anticipated waste to be generated as a result of remedial activities are described in Section 2 of this WMP. Requirements for waste loading and off-site transportation are presented in Section 3.

1.1 Applicable Codes, Standards, and Specifications

Waste management activities will be conducted in accordance with all local, state, and federal rules, laws, and regulations, including:

- United States Environmental Protection Agency (USEPA) requirements, including Title 40 of the Code of Federal Regulations (CFR)
- Occupational Safety and Health Administration (OSHA) requirements, including Title 29 CFR Parts 1910 and 1926, including Part 1910.120 “Hazardous Waste Operations and Emergency Response”
- State of New York Rules and Regulations, including Title 6 of the Official Compilation of Codes, Rules, and Regulations (6 NYCRR) Parts 360, 364, 370, and 372 regarding treatment/disposal, transportation, and management of hazardous waste
- New York State Department of Environmental Conservation (NYSDEC) DER-4 – *Management of Coal Tar Wastes and Coal Tar Contaminated Soil and Sediment from Former Manufactured Gas Plants* (DER-4)
- Applicable guidelines of the New York State Department of Health
- Transportation regulations, including United States Department of Transportation regulations, including Title 29 Parts 171 and 172, and New York State Department of Transportation rules and regulations
- NYSEG waste management and recycling procedures for conducting work at company facilities

Whenever there is a conflict or overlap of regulatory criteria, the most stringent provision will apply.

1.2 Waste Management Responsibilities

NYSEG will have the following waste management responsibilities:

- Acting as the “Generator” for material resulting from remedial activities for off-site treatment and/or disposal of the waste.

- Contracting with waste haulers and waste disposal vendors for thermal treatment of conditionally exempt materials (the Remediation Contractor will contract with other waste haulers and vendors).
- Providing bills of lading (BOLs)/manifests for the off-site shipment of waste materials from the Site. These shipping documents may be provided to the Remediation Engineer to sign as an agent for NYSEG, under separate agreement with NYSEG.

The Remediation Engineer will be responsible for the following:

- Contracting with a laboratory for the analysis of sediment/soil, water, and other waste samples, as appropriate.
- Conducting imported material, removed sediment, and treated water characterization sampling, as needed.
- Preparing waste profiles for off-site treatment/disposal of wastes generated as part of remedial activities.
- Reviewing and signing (as an authorized agent for NYSEG) waste manifests/BOLs for shipments of waste materials generated by remedial activities.

The Remediation Contractor will be responsible for the following:

- Contracting with waste haulers and waste disposal vendors for the landfill disposal of non-hazardous materials.
- Coordinating with waste haulers and waste disposal vendors contracted by NYSEG to facilitate off-site transportation of conditionally exempt material waste streams.

2 MATERIAL HANDLING AND TREATMENT/DISPOSAL

Materials anticipated to be generated during the remedial activities include:

- Removed sediment
- Debris
- Remediation water
- Non-aqueous phase liquid (NAPL)
- Miscellaneous waste

The following subsections describe the material handling activities specific to each of the above-listed material type.

2.1 Removed Sediment

Final off-site treatment/disposal options will be evaluated with the selected Remediation Contractor. Removed sediment is anticipated to be transported off Site for treatment and disposal at a NYSEG-selected conditionally exempt waste disposal facility or for disposal as non-hazardous waste at a non-hazardous waste disposal facility. The Remediation Engineer is responsible for collecting waste characterization samples and submitting the samples for laboratory analysis, as required by the NYSEG-selected waste disposal facility. The Remediation Engineer shall coordinate with potential disposal facilities to verify waste characterization analytical requirements prior to the collection of waste characterization samples.

If encountered, excavated sediment that contains visible impacts (or elevated concentrations of benzene, based on waste characterization sampling conducted by the Remediation Engineer) will be disposed of off Site at a low temperature thermal desorption (LTTD) facility (i.e., ESMI's Fort Edward facility). This waste shall be treated/disposed of in a manner consistent with DER-4. The policy outlines criteria wherein soil and sediments that have been contaminated with coal tar waste from MGPs exhibiting only the hazardous waste toxicity characteristic for benzene (D018) may be excluded from the requirements of 6 NYCRR Parts 370 through 374 and 376 when they are destined for permanent thermal treatment. If additional sampling and analysis are requested by the LTTD facility, the Remediation Engineer shall coordinate with the facility to review site-specific sampling analytical and frequency requirements. In general, sediment to be disposed of at the LTTD facility shall be analyzed for the following:

- Total Petroleum Hydrocarbons (gasoline range organics and diesel range organics) using USEPA Method 8015
- Total Volatile Organic Compounds using USEPA Method 8260B
- Total Semi-Volatile Organic Compounds using USEPA Method 8270C
- Total Polychlorinated Biphenyls using USEPA Method 8080
- Total Metals using USEPA Method 6010B
- Total Mercury using USEPA Method 7471B
- Total Cyanide using USEPA Method 9010

- Percent Sulfur using USEPA Method D129-64
- British Thermal Units (BTUs) using ASTM D240-87

In the event that any characterization results or field observations indicate that certain sediments are unsuitable for LTTD treatment/disposal, as determined by NYSEG and the Remediation Engineer, in consultation with the treatment facility, NYSEG shall arrange for off-site incineration and/or disposal at a facility in accordance with applicable rules and regulations (including local flow control regulations).

The Remediation Contractor is responsible for all stabilization and dewatering activities associated with excavated sediment to meet the requirements of the selected off-site treatment/disposal facility (e.g., paint filter test, additional moisture content requirements), prior to the transportation of such materials to the off-site, permitted treatment/disposal facility. The Remediation Contractor shall appropriately containerize (containing no free water and including completely lining and covering bulk waste hauling vehicles) the sediments for transport to the off-site treatment/disposal facility in accordance with applicable rules and regulations. The Remediation Contractor shall coordinate the scheduling with off-site transportation/disposal facilities, as well as with waste haulers contracted by NYSEG.

2.2 Debris

Debris generated during remedial activities is anticipated to include vegetation, stumps/root balls, and/or stone. Such materials will be segregated as appropriate from other excavated materials, downsized (as required by disposal facilities), and handled separately, where practicable. The Remediation Contractor shall mobilize debris crushing/downsizing equipment prior to initiating excavation activities to minimize potential work delays once/if materials requiring downsizing are encountered.

Debris will be stockpiled on Site by the Remediation Contractor within a fully lined roll-off container for characterization (by the Remediation Engineer) prior to off-site disposal. Following characterization by the Remediation Engineer, the Remediation Contractor will downsize (as required by the waste transportation and disposition vendors), and appropriately containerize (i.e., completely line and cover waste hauling vehicles) the debris to facilitate transportation to the off-site disposal facility based on the characterization results and in accordance with applicable rules and regulations (including local flow control regulations).

2.3 Remediation Water

All construction-related waters generated during remedial activities (i.e., equipment decontamination water, water removed from work areas, and water removed from barges) will be collected for treatment and/or disposal in accordance with the IRM Design Report.

If appropriate, the Remediation Contractor will coordinate with NYSEG-selected waste transportation vendors and disposal facilities to manage and remove the containerized water from the work area. Waste transportation and disposal activities will be conducted in accordance with all applicable state and federal requirements, as well as the requirements set forth by the disposal facility.

2.4 Non-Aqueous Phase Liquid

NAPL collected during excavation/material dewatering activities will be collected (by the Remediation Contractor, if present in sufficient quantities to be recovered), placed in appropriate containers (e.g., 55-

gallon drums), and staged on Site for characterization by the Remediation Engineer prior to off-site disposal. Following characterization, the Remediation Contractor will coordinate with the NYSEG-approved off-site disposal facility for the transportation and disposal of the containerized NAPL.

2.5 Miscellaneous Wastes

Miscellaneous wastes generated during remedial activities may be classified as general refuse or remediation-related waste material. General refuse (that has not contacted any MGP-related waste materials) such as materials used to construct staging and access areas may be managed as a non-hazardous waste and disposed of off Site at a non-hazardous solid waste disposal facility.

Remediation-related waste materials that either are in, or come in contact with, materials that contain MGP-related impacts during the remedial activities will be considered potentially impacted. These waste materials may include, but are not limited to, the following:

- Ancillary wastes generated as a result of the remedial activities, including, but not limited to, materials used to construct the decontamination area
- Temporary erosion, sediment, and turbidity control measures (e.g., silt fencing, straw bales, turbidity curtains)
- Temporary environmental control measures (e.g., booms)
- Scrap geotextile
- Used disposable equipment
- Used personal protective equipment (PPE)
- Used sampling equipment

The Remediation Contractor will containerize the miscellaneous wastes (e.g., in 55-gallon drums as appropriate based on volume of material) to facilitate waste characterization sampling (as appropriate) by the Remediation Engineer. The Remediation Contractor will arrange for the transportation and disposal of the collected and containerized miscellaneous waste based on the characterization results and in accordance with applicable rules and regulations (including local flow control regulations). The Remediation Engineer will determine if the miscellaneous waste can be transported/disposed of under the existing waste profiles or if a new waste profile(s) is required. If a new waste profile(s) is required, NYSEG (or the Remediation Engineer) will be responsible for preparing new waste profiles and manifest forms.

3 WASTE LOADING AND OFF-SITE TRANSPORTATION

This section presents minimum transporter requirements to be followed during loading and transportation of solid and liquid non-hazardous and hazardous wastes generated by the remedial activities at the Site. In addition to the vehicle and driver requirements presented below, additional routing requirements are presented in the Community and Environmental Response Plan included as Appendix D of the IRM Design Report.

The term “transporter” means the transporter and the Remediation Contractor if/when the transporter is subcontracted to the Remediation Contractor.

The transporter will provide all necessary supervision, labor, training, permits, hazardous waste manifests (when required), PPE, tools, equipment, materials, and all items incidental and necessary to transport solid and liquid waste between individual work areas on-site (i.e., removal area, transloading area, and/or temporary staging area) and from the Site to the permitted disposal facilities.

The transporter shall comply with the following minimum requirements:

- Any truck or barge found to be unacceptable by the Remediation Engineer will be rejected, and the cost for any rejected truck or barge shall be incurred by the transporter. If NYSDEC on-site personnel find any trucks or barges to be unacceptable, NYSDEC should notify NYSEG (or the Remediation Engineer directly), which, in turn, shall notify the truck driver or barge operator.
- The transporter shall adhere to the following rules while at the Site (including transportation between the removal area, transloading area, and/or temporary staging area), in transit from the Site to the waste disposal facility, and at the waste disposal facility:
    - Prior to entry to the Site, truck drivers shall stage trucks only in areas designated by the Remediation Engineer. While staged, truck engines shall be shut off. Trucks shall not idle for more than 5 minutes.
    - Truck drivers shall announce their arrival at the Site to the Remediation Engineer.
    - Truck drivers are generally restricted to their trucks and designated waiting areas. Drivers are not permitted to access the Site without permission from NYSEG or the Remediation Engineer.
    - Transporters must supply and wear hard hats, safety glasses, safety shoes, long pants (jogging pants or warm-up pants are not permitted), and gloves, at a minimum, at all times when outside the truck cab for personal protection. Transporters are responsible for supplying any other protective equipment necessary for completing their tasks in a safe manner.
    - Transporters shall line the entire waste transport container (dump truck box, dump trailer, roll-off waste container, etc.) that will be used to haul hazardous solid waste, conditionally exempt MGP site remediation waste, or non-hazardous waste (e.g., to top of the side boards) with 6-mil thick polyethylene sheeting. Certain waste transport containers used to haul construction and demolition (C&D) debris may also need to be lined as indicated above. All waste transport containers shall have a watertight tailgate with a gasket between the box and tailgate, and tailgates shall be secured with locking turnbuckles. If free liquids are observed to be leaking from the container of the truck once loaded, the truck cannot leave the loading area.
    - Barges to be used to transport waste shall be watertight.

- All trucks and barges are subject to inspection by the Remediation Engineer upon arrival at the Site. If trucks or barges are not clean (as determined by the Remediation Engineer), they will be rejected. Cleaning of trucks or barges is not permitted at the Site.
- All trucks shall be equipped with working audible and visual backup signals.
- When waste transport containers are being loaded, and when directed by the Remediation Engineer, the engine shall be shut off. The engine may be restarted and the truck or barge driven away only after the "all clear" direction is provided to the driver by the loading equipment operator or by a site representative.
- No waste transport container shall be loaded above the sideboards and no waste shall be permitted to spill out of the waste transport container. Before trucks leave the loading areas, the exterior of the waste hauling portion of the vehicle and tires shall be cleaned (by the Remediation Contractor's site workers) to remove any residual waste. Before barges leave the loading areas, the exterior of the barge shall be cleaned (by the Remediation Contractor's site workers) to remove any residual waste.
- The Remediation Contractor's site workers shall reposition the cover bars over the waste material. Drivers shall not walk over waste material.
- Before leaving the loading area, drivers shall cover truck loads with a solid fabric (i.e., vinyl, reinforced polyethylene) that extends over the entire load and is secured to resist wind forces at highway speeds.
- Drivers shall obey all traffic signs and notices (obey the posted speed limit) and comply with weight restrictions.
- Barge/boat operators shall obey all navigation signs and notices.
- Drivers and operators shall obey rules posted on the Site and contained in any of the site-specific Health and Safety Plans used at the Site by the Remediation Contractor.
- Drivers and operators shall report any accidents to the NYSEG Project Coordinator and cooperate with any subsequent accident investigation.
- No children under 16 years of age shall be allowed at the Site.
- No passengers are allowed in the active work area(s) or loading area(s).
- Truck drivers/barge operators shall slow down and use extra caution during inclement weather (i.e., rain, fog, snow).
- Truck drivers/barge operators shall use extra caution around blind corners (watch for pedestrians and construction equipment).
- Smoking, eating, and/or drinking is not permitted within the active work area(s) or loading area(s), but may be permitted in designated areas of the Support Zone.

After disposal of waste, the transporter is responsible for properly decontaminating the waste hauling portion of the vehicle.

ATTACHMENT 1

City of Binghamton Historic Drawings

Chiseled '+' in M.H. Frame (S. Edge)
No Ties
A' 26+01.30

Chiseled '+' in M.H. Frame (S. Edge)
No Ties
A' 27+97.40

Chiseled '+' on Top Bearing ⊕ anchor bolts for Bridge Beams
Conc. N.W.E.R. in Hub
A' 29+24.11 (Under Bridge)

Chiseled '+' in M.H. Frame (S. Edge)
No Ties
A' 30+10.67

Conc. N.W.E.R. in Hub
NW.E's in 6 M.'s
A' 31+26.35 = C' 15+26.12

BM 2 Elev. 856.37
Chiseled square S.W. Corner of Cheekwall of Bridge

13 Washington Hawthorn Trees

7 Washington Hawthorn Trees

10 Washington Hawthorn Trees

Junipers

Top of Bank

Ditch

MH A-8 ℄ A 28+27, 15' Lt

58 LF Exist. 42" RCP Rehabilitate by Joint Sealing

Exist. MH 'FF' ℄ A 28+79, 55' Lt.

116 LF Exist. 42" RCP Rehabilitate by Joint Sealing

Exist. MH 'G' ℄ A 27+97, on ℄ To be Abandoned

Prop. 42" RCP

Abandoned 40" Brick San

Dry Stone Wall

E. River

Dry Rip Rap

Boring B-4

MH A-7 ℄ A 28+10, 10.5' Rt.

SUSQUEHANNA RIVER

TOMPKINS ST. BRIDGE

COURT ST.

Survey ℄

End Bridge

Sign

Signal Pole

Signal M.H.

Signal Box

Tel. M.H.

Pump House

80 C.I.P.

Transformer

Sign

36" C.I.P. San.

Grate Top (4'-11" x 2'-11")

Sluice Gate w/ Floor Stand Operator

Gravity Wall

Trash Rack

Conc. Slab

Conc. Wall

4' Ch. Link Ft.

Exist. MH 'EE' ℄ C 15+82 B.T.P.A., 18' Rt. Install Temporary Bypass Pumps - Close Sluice Gate during Rehabilitation Work. Install Temporary Pipe Stopper on 20" C.I.P.

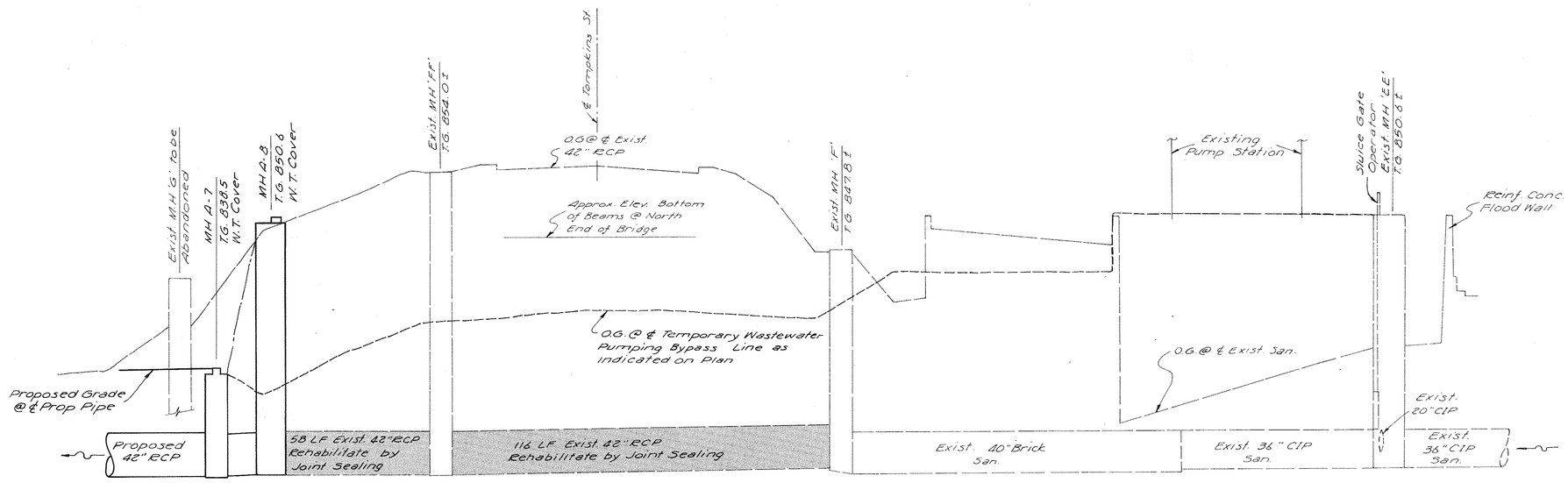
Exist. MH 'F' ℄ A 30+09, on ℄

℄ Temporary Wastewater Pumping Bypass Line Install above ground (Item Bypass Line & Pumping)

Remove and Replace Chain Link Fence as req'd. Cost to be incl. in Item: Bypass Line & Pumping. See Note

NOTE: The Item "Bypass Line and Pumping" shall include the complete restoration to the satisfaction of the Engineer of all disturbed areas necessitated by the work for the rehabilitation of the existing 42" RCP, including top soil and seeding. No trees and shrubs are to be disturbed during the work for the rehabilitation operation.

PLAN



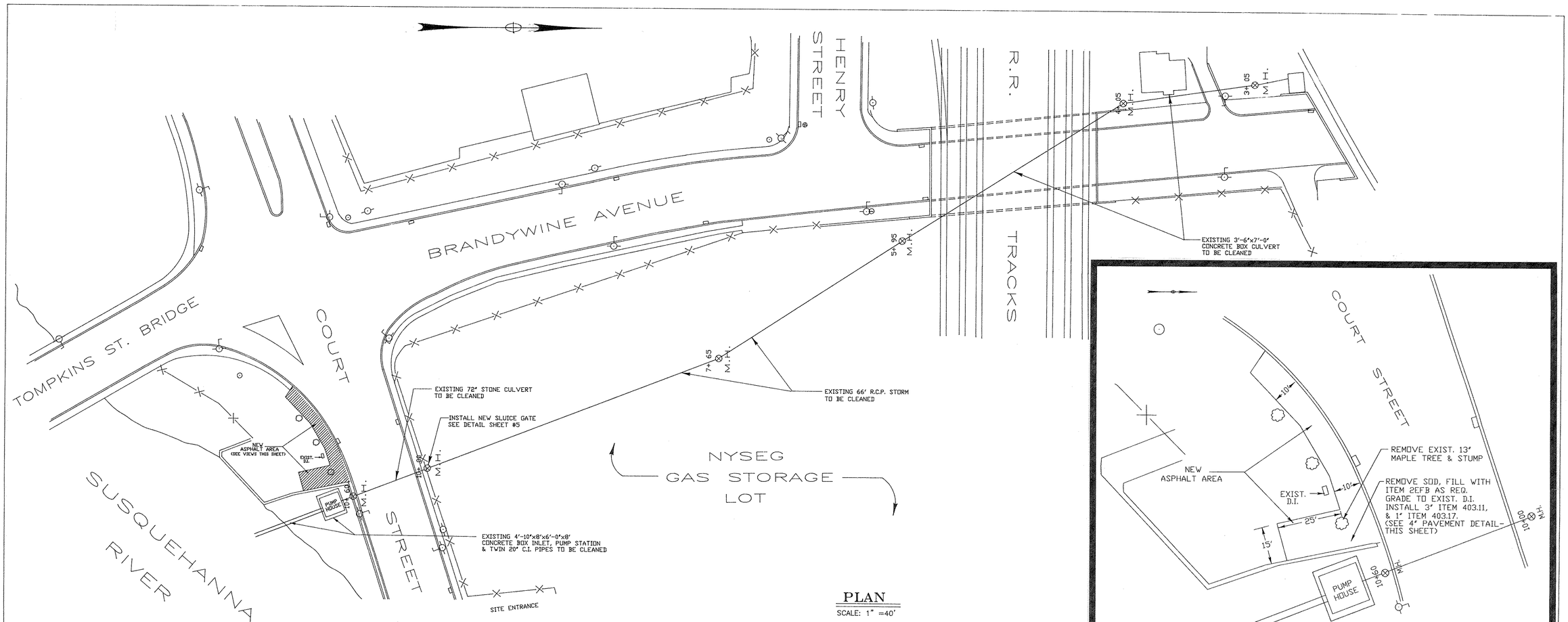
PROFILE

DESIGNED BY		
ELM		
TRACED BY		
RLS & NHB	March 14, 1977	T.G. MH A-7
CHECKED BY	Rev. Date	Item
CTH & ELM		

CITY OF BINGHAMTON
BROOME COUNTY NEW YORK
SANITARY SEWER
COURT STREET INTERCEPTOR
TOMPKINS ST. to SUSQUEHANNA ST.
PLAN AND PROFILE
REHABILITATION
TOMPKINS ST. @ COURT ST.

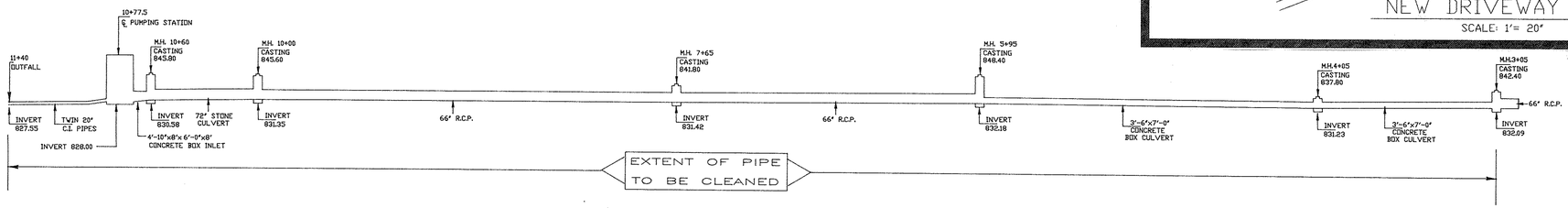
VERNON O. SHUMAKER
CONSULTING ENGINEERS
VESTAL, N. Y.
V.O. Shumaker 27884

DATE Dec. 1976 V.O. SHUMAKER N.Y.S.P.E. LIC. NO.
SCALE Horizontal: 1"=20' Vertical: 1"=5'
SHEET 10 OF 19

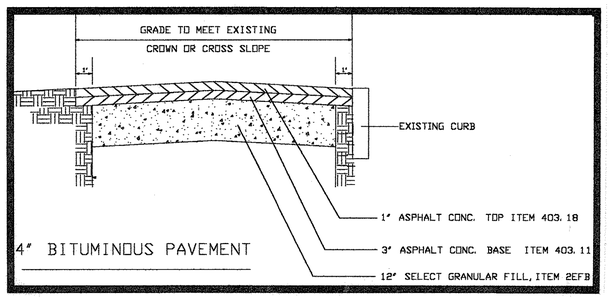


PLAN
SCALE: 1" =40'

NEW DRIVEWAY VIEW
SCALE: 1"= 20'



PROFILE
SCALE: HORZ. – 1"=40'
VERT. – 1"=40'



4" BITUMINOUS PAVEMENT

DATE REVISION

TOMPKINS STREET STORM PUMPING STATION

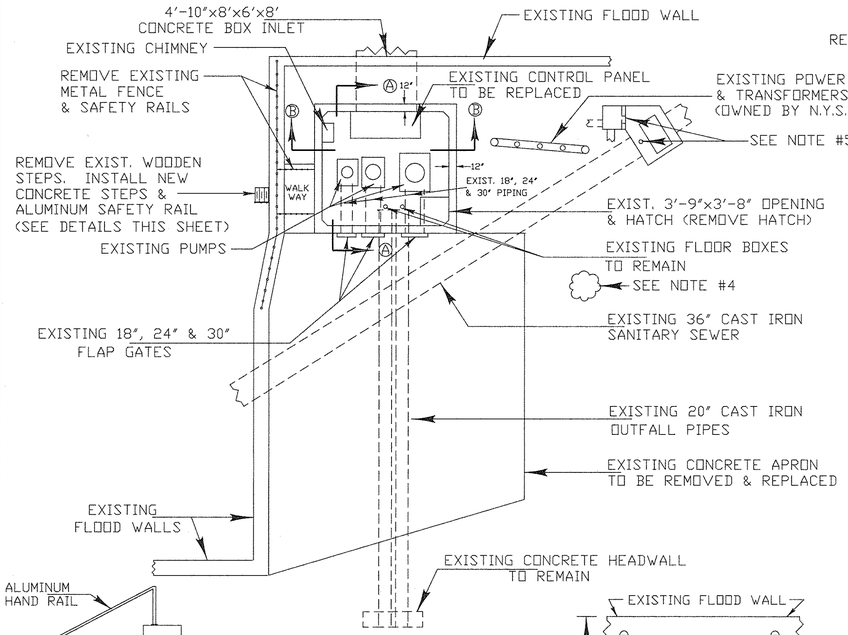
PLAN & PROFILE

DESIGNED R.L.D
DRAWN R.L.D
CHECKED J.E.L.
DATE 01/99
SCALE NOTED
SHEET 2 OF 7

CITY OF BINGHAMTON
NEW YORK
DEPARTMENT OF ENGINEERING

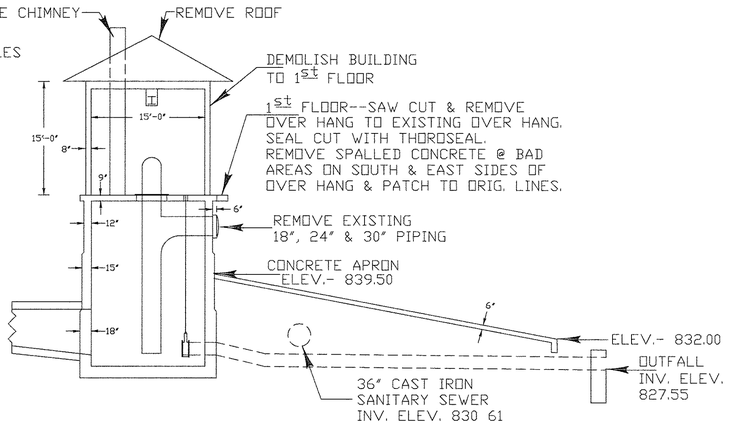
CITY ENGINEER
N.Y.S. P.E. LIC. NO.

DRAWING NO. 1999-02



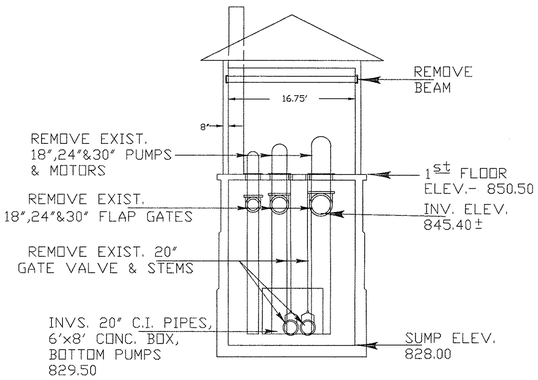
EXISTING PUMPING STATION

TOP VIEW



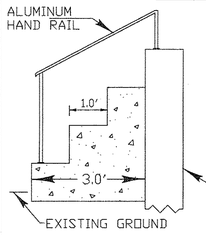
EXISTING PUMPING STATION

SECTION Ⓐ - Ⓐ



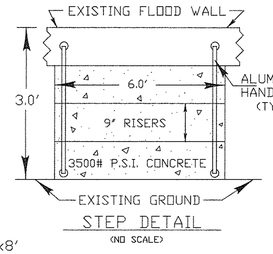
EXISTING PUMPING STATION

SECTION Ⓑ - Ⓑ



STEP DETAIL

(NO SCALE)

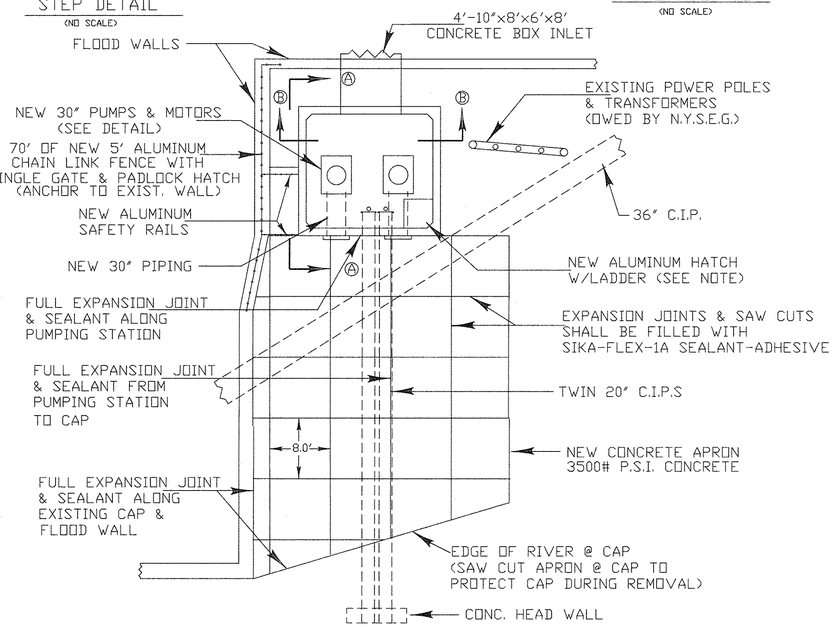


STEP DETAIL

(NO SCALE)

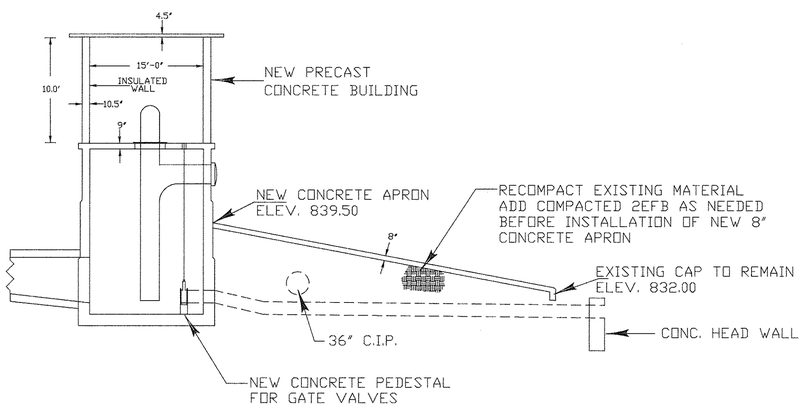
NOTES:

1) ALL EXISTING WOODEN PLATFORMS & METAL BRACING SHALL BE REMOVED FROM WET WELL & DISPOSED OF BY CONTRACTOR.
2) REMOVE EXISTING BAR SCREEN & PLATFORM FROM THE CONCRETE BOX CULVERT @ M.H. 10+60 (SEE SHEET # 2).
3) REMOVE EXISTING METAL RUNG LADDER @ HATCH OPENING & DISPOSE OF. INSTALL A NEW 27' LONG, 24" WIDE ALUMINUM LADDER WITH MEBAC SOLID 1" LADDER RUNGS, INCLUDING STAIN-LESS STEEL MOUNTING HARDWARE & SAFETY RAIL (OR EQUAL). INSTALL NEW ALUMINUM HATCH. CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.
4) REMOVE MAPLE TREE EAST OF PUMPING STATION. LEAVE STUMP
5) REMOVE EXISTING 36" SLUICE GATE, STEM & LIFT @ 36" SANITARY SEWER CONTROL BLOCK M.H., EAST OF PUMPING STATION. FILL STEM OPENING IN M.H. WITH CONCRETE. PLUG 24" OVERFLOW. ITEM #207
6) EXISTING CONCRETE APRON CONTAINS #4 BARS 1' ON CENTER, BOTH DIRECTIONS.
7) NEW 8" CONCRETE APRON SHALL HAVE AN EPOXY COATED REBAR MAT OF #5 BARS 1' ON CENTER, BOTH DIRECTIONS, 3" FROM BOTTOM OF APRON. SAW CUT EXPANSION JOINTS SHALL BE 3" IN DEPTH.
8) NEW CONCRETE APRON SHALL BE PLACED WHEN THERE IS NO DANGER OF HIGH WATER IN RIVER. RIVER MUST BE BELOW ELEV.- 832.00 FOR AT LEAST 7 DAYS FOR CURING.



PUMPING STATION RENOVATIONS

TOP VIEW



PUMPING STATION RENOVATIONS

SECTION Ⓐ - Ⓐ

PUMPING STATION RENOVATIONS

SECTION Ⓑ - Ⓑ

DATE REVISION

TOMPKINS STREET STORM PUMPING STATION

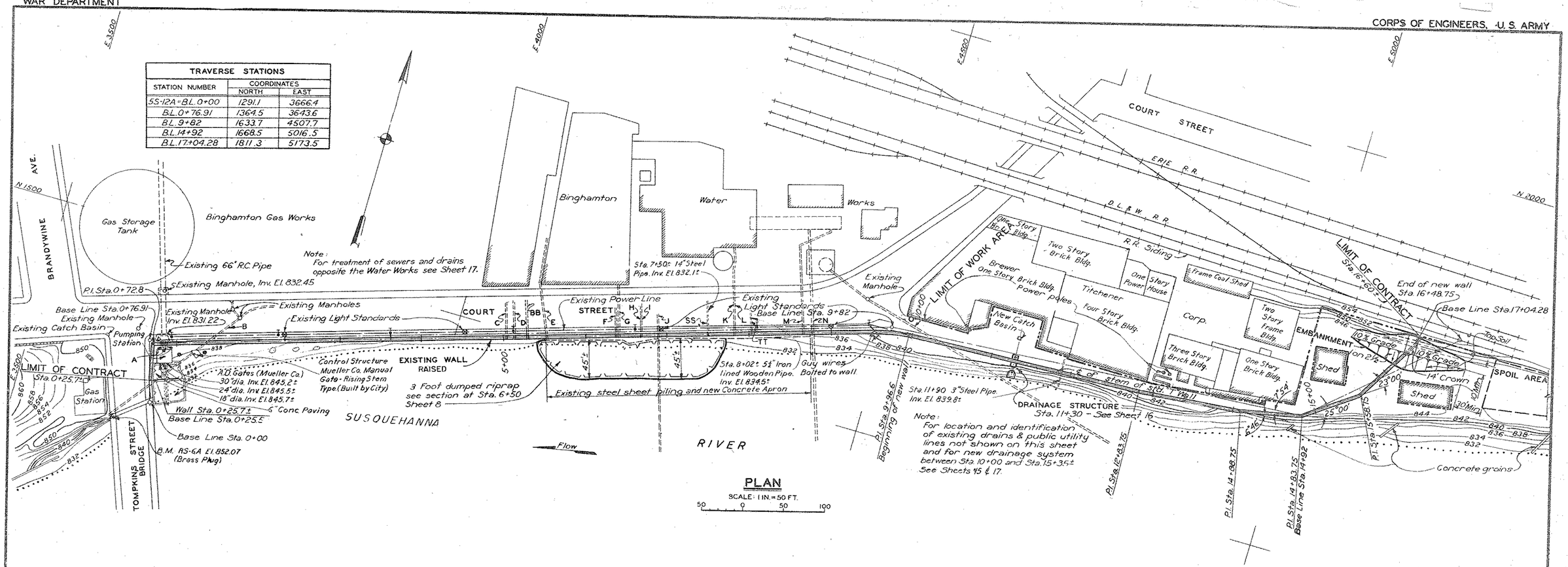
PUMP STATION RENOVATIONS

DESIGNED R.L.D.	CITY OF BINGHAMTON
DRAWN R.L.D.	NEW YORK
CHECKED J.E.L.	DEPARTMENT OF ENGINEERING
DATE 01/99	
CITY ENGINEER	SCALE 1" = 10'
N.Y.S. P.E. LIC. NO.	SHEET 3 OF 7
	DRAWING NO. 1999-02

WAR DEPARTMENT

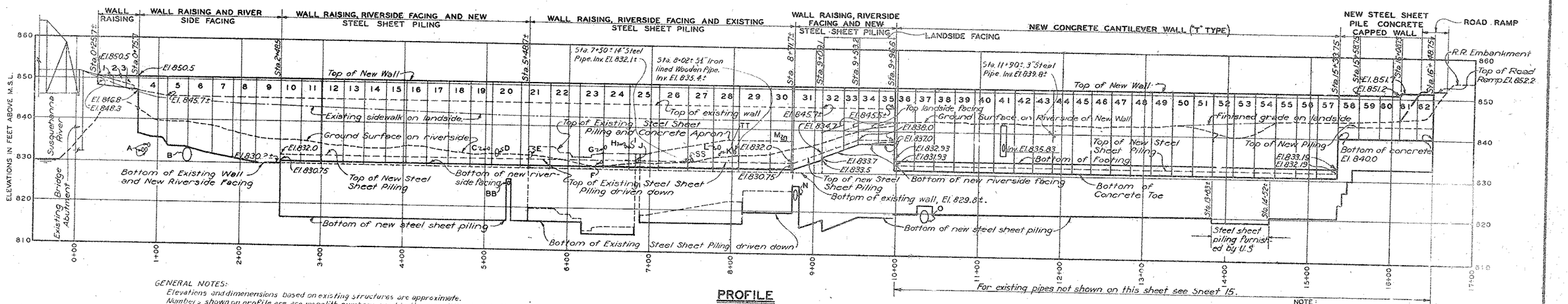
CORPS OF ENGINEERS, U.S. ARMY

TRAVERSE STATIONS		
STATION NUMBER	COORDINATES NORTH	EAST
SS-12A = B.L. 0+00	1291.1	3666.4
B.L. 0+76.91	1364.5	3643.6
B.L. 9+82	1633.7	4507.7
B.L. 14+92	1668.5	5016.5
B.L. 17+04.28	1811.3	5173.5



PLAN

SCALE: 1 IN. = 50 FT.



PROFILE

SCALE: HOR. 1 IN. = 50 FT.
VERT. 1 IN. = 10 FT.

GENERAL NOTES:

Elevations and dimenensions based on existing structures are approximate.
Numbers shown on profile are are monolith numbers used in the monolith schedule, Sheet 11.
For a description and treatment of existing pipes and conduits identified by letters, see schedule on Sheet 17.

REFERENCE SHEETS:

General Plan, Sheet 2.
Cross Sections, Sheets 7, 8, 9 & 10.
Drainage Plan & Profile, Sheet 15.
Flood Wall Details, Sheet 11.
Pipe Schedule, Sheet 17.
Steel Reinforcements, Sheets 101W to 107W incl.

NOTE: ELEVATIONS ARE IN FEET AND REFER TO THE PLANE OF MEAN SEA LEVEL AT SANDY HOOK, N.J.

RECORD DRAWING

TYPE	DATE	REVISION	REV. BY	CK. BY	AP. BY
M.R.	1-20-46	As Constructed.	S.J.B.	V.L.B	S.D.C.
C.O. "C"	8-1-41	Added landside facing and revised bottom of existing wall for monoliths 32 to 35 Incl. Minor revisions.	R.B.	A.L.	[illegible]
C.O. "2"	4-23-41	Added Pipe BB. Steel Sheet Piling cut.	H.J.S.	A.L.	[illegible]
C.O. "1"	12-18-40	Top El. of Steel Sheet Piling & Concrete Toe changed from Sta 2+48.5 to Sta. 9+08.1 Lengths of Monoliths 33, 60, 61, 62 changed	P.B.	A.L.	[illegible]
Add "1"	11-29-40	Location & Extent of piling furnished by U.S. indicated	P.B.	A.L.	[illegible]

SOUTHERN NEW YORK FLOOD CONTROL PROJECT

BINGHAMTON, N.Y. SECTION NO. 3 SUSQUEHANNA RIVER

PLAN AND PROFILE

STA. 0 + 25.7± TO STA. 16 + 60±

SHEET 6 OF 13 SHEETS

SCALES AS SHOWN

U.S. ENGINEER OFFICE, BINGHAMTON DISTRICT, BINGHAMTON, N.Y. — OCT. 22, 1940

SUBMITTED: SENIOR ENGINEER

RECOMMENDED: PRINCIPAL ENGINEER

APPROVED: MAJOR, CORPS OF ENGINEERS, DISTRICT ENGINEER

DESIGN SECTION: SENIOR ENGINEER

DRAWN BY: F.B.
TRACED BY: R.E.R.
CHECKED BY: A.L.

FILE NO. 6406-4