Phase III Design Documents Submittal
Watertown (Engine Street) Former MGP Site
NYSDEC Site No. 6-23-011
Watertown, New York

Prepared for
Niagara Mohawk Power Corporation d/b/a
National Grid, Syracuse, New York

April 29, 2024

Project Number: 160117

New York State Professional Engineer Certification:

I, Adam R. Sherman, certify that I am currently a NYS registered professional engineer and that this Remedial Design Submittal was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (DER-31).

Adam R. Sherman

Signer Name: Adam Sherman
Signing Reason: I approved this document.
Signing Time: 2024-04-29 08:45:32(PDT)

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Section 1

Phase III Design Submittals

On behalf of Niagara Mohawk Power Corporation, doing business as National Grid, this design submittal has been prepared by Brown and Caldwell Associates (BC) to provide the Final Phase III Design Documents for the Watertown (Engine Street) Former MGP Site; Watertown, Jefferson County, New York (referred to as the "Site").

The Remedial Design Report (RDR) for the Site was submitted to the New York State Department of Environmental Conservation (NYSDEC) in May 2014 and was approved by the NYSDEC in a letter dated July 14, 2014. The May 2014 RDR established that the remedial action implementation required by the March 2009 Record of Decision (ROD) would be completed in three phases (Phases I, II, and III) and that detailed design packages for each of the phases would be provided to the NYSDEC for review and approval.

The May 2014 RDR, as it pertains to the Phase III remedial action, shall be considered incorporated by reference into the Phase III Design Documents. Note that the Phase III drawings and technical specifications included in Appendices A and B supersede the drawings and specifications provided in the May 2014 RDR as it relates to the Phase III remediation and restoration components.

Draft Phase III Design Documents were submitted to the NYSDEC on December 22, 2023. The NYSDEC provided comments to the Draft Phase III Design Documents in a letter dated February 14, 2024. A letter providing responses to the NYSDEC comments was submitted to the NYSDEC on March 7, 2024 (included for reference as Appendix C). The NYSDEC approved the response to comments in an email dated March 13, 2024. This submittal of the Final Phase III Design Documents includes the revisions to address the NYSDEC comments.

1.1 Background

Phase I remediation was completed March to October 2019 and included excavation (16,147 cubic yards [cy]), soil mix wall (SMW) installation (1,061 feet long and 4,519 cy in volume), and implementation of a surface cover (2.1 acres) on National Grid-owned property east of CSX railroad and south of 36-inch sanitary sewer easement. Phase I remediation was documented in a Construction Completion Report (CCR), prepared by BC, dated September 2020, and approved by NYSDEC in a letter dated December 1, 2020.

Phase IIA remediation was completed June to December 2020 and included excavation (17,341 cy), soil mix wall (SMW) installation (733 feet long and 3,537 cy in volume), and implementation of a surface cover (1.3 acres) on National Grid-owned and City-owned properties east of CSX railroad and north of the 36-inch sanitary sewer easement. Phase IIA remediation was documented in a CCR, prepared by BC, dated May 2021, and approved by NYSDEC in a letter dated July 7, 2021.

As discussed in the Phase IIA CCR, part of Phase IIA activities included inspection of the northern excavation sidewall adjacent to the Black River riverbank to assess the potential presence, nature, and extent of MGP-related impacts in order to determine if additional excavation of the riverbank was necessary as part of a subsequent phase of Remedial Action (i.e., Phase IIB). The post-excavation inspection did not identify any MGP-related impacts within the riverbank and Phase IIB

excavation was determined to not be necessary. The Phase IIA CCR also revised/updated Phase III to include the remaining remedial action construction activities:

- **Phase IIIA:** Delineation and removal of near-shore hardened tar deposits and impacted sediments along the portion of the river north of Phase I and IIA areas along with several isolated off-site areas located downstream. Following removal of impacted materials, areas will be restored in kind.
- **Phase IIIB:** In situ solidification (ISS) of an area west of the CSX railroad tracks on property occupied by Verizon. Installation of a network of bedrock tar/oil recovery wells (approximately 10 wells) on both on-site and off-site areas.

This submission provides the design packages (drawings and specifications) for Phases IIIA and IIIB remediation construction, each of which is discussed in more detail in the sections below.

These design packages do not include or establish the plans for post-construction monitoring activities required by the March 2009 ROD. The monitoring well network for future groundwater quality/NAPL monitoring, including potential new monitoring wells (as requested during the December 6, 2023 teleconference call by the NYSDEC for the sanitary sewer corridor), will be the subject a future submission and will be documented in the eventual Site Management Plan (SMP) for the Site.

1.2 Phase IIIA Remedial Action: Sediment Removal

The ROD identified eight locations along the southern bank of the Black River where sediment deposits have been observed to contain visual observations of sheens or hardened tar. The locations are identified with sediment sample identifiers S3, S4, S5, S10, S11, S12, S13, and S14 (refer to Phase IIIA Drawings C-111 and C-112).

This stretch of the Black River experiences rapid flow rates that can fluctuate substantially. The Hudson River-Black River Flow Regulating District manages flow in the river, including periods of holding back water and water releases. A stream gauging station (USGS Station 04260500), which is located approximately 200 feet downstream of the Vanduzee Street Bridge (bridge crosses the Black River approximately 1,400 feet downstream of the Site) indicates that the mean of monthly discharges ranged from 1,820 cubic feet per second (cfs) for August to 10,000 cfs for April. The average of the mean of monthly discharges is 4,240 cfs. On a daily basis, the river level can fluctuate very rapidly in response to the holding or release of water at upstream dams or due to precipitation in the surrounding drainage area.

Due to the river conditions, the river bottom in the vicinity of the Site is comprised of bedrock and/or very coarse-grained material such as boulders, cobbles, and gravel. Deposits of sediments of sand-size or less are scarce along the southern shore of the river near the Site and, where present, are thin. This is due to the generally erosional environment created by the rapid currents in this stretch of the river. The sediment pockets requiring removal are generally small (typically 10 to 20 feet long by 2 to 4 feet wide by 6 to 18 inches thick). The S4/S5 area is the most extensive, extending from the outlet of a former 15-inch pipe and extending roughly 160 feet downstream.

The following summarizes the anticipated approach for removal/restoration of the designated sediment removal areas:

- Assessments during pre-design investigation indicated that flows less than 1,600 cfs would be adequately low for conducting remediation activities. The contractor will be required to coordinate the timing of the work with river flow conditions, coordinate with the Hudson River-Black River Flow Regulating District, and respond to high flow conditions by removing materials/equipment and temporarily stabilizing work areas.

- Removal activities would start at upstream locations and progress downstream.
- Prior to sediment removal, an energy break (e.g., sandbag barrier, concrete bin blocks, or other) would be placed at the edge of the river to surround the removal area and sediment turbidity curtain/oil boom would be installed within the energy break.
- Due to the variable nature of the materials targeted for removal, the small extent of the individual deposits, and the varying characteristics of the locations, removal may be accomplished using various removal techniques (or a combination thereof) such as mechanical excavator (e.g., large excavator positioned at top of bank and/or small machines along shoreline), shovels, hand scrapers, vacuum equipment, or other techniques.
- The general dimensions of the removal areas are depicted on Phase IIIA Drawings C-111 and C-112, however, the extent of removal will be determined in the field based on visual observations by the Engineer's Representative, in consultation with the NYSDEC. Sediment removal at each of the sediment removal locations will be completed, to the extent practicable, until non-MGP-impacted sediment are identified visually or until bedrock or coarse non-impacted substrates, such as cobbles or boulders, are encountered. This includes materials containing visible tar/NAPL and materials exhibiting sheens that are suspected to be related to MGP-related waste materials (based on odor or proximity to other visible MGP-related impacts) will be targeted for removal to the extent practicable.
- Following removal, the areas will be restored as follows, in accordance with Phase IIIA Drawing C-140:
  - Beyond the toe of slope (i.e., within the riverbed), restoration of removal areas will consist of placement of crushed stone (NYSDOT No. 1 or No. 2 stone [0.25 to 1.5-inch stone]) or, as directed by the Engineer's Representative in consultation with the NYSDEC, no restoration may be performed in areas where bedrock or coarse-grained materials will remain exposed.
  - Where removal extends into the toe of bank, restoration will consist of a combination/blend of angular boulders (24-inch minimum dimension), angular rip rap (median size of 8 inches), and/or crushed stone (NYSDOT No. 1 or No. 2 stone [0.25 to 1.5-inch stone]), as appropriate pending extent of removal area and as directed by the Engineer's Representative in consultation with the NYSDEC. This restoration approach is consistent with the NYSDEC's proposed restoration stated in the July 7, 2014 RDR approval letter.
  - Limited vegetated areas (e.g., grasses, plantings, trees, etc.) present above the water line at the edge of the bank may require removal to complete the remediation activities, if directed by the Engineer's Representative in consultation with the NYSDEC. These areas will be delineated and documented prior to disturbance. Following removal activities, the vegetated areas will be restored by blending stone materials with topsoil planting mix followed by seeding. If trees are removed, then tree plantings will also be installed and will consist of river birch, black willow, or sycamore species (3- to 5-inch caliper size) planted at a 10-foot spacing (i.e., one per 100 square feet), which is consistent with the NYSDEC's proposed restoration stated in the July 7, 2014 RDR approval letter.

1.3 Phase IIIB Remedial Action: ISS and NAPL Recovery Wells

The NYSDEC-approved RDR calls for ISS in a relatively small area west of the CSX railroad tracks (refer to Phase IIIB Drawing C-110). The area encompassing approximately 4,500 square feet and four locations with MGP-related impacts: SB-24 (21 to 22.1 feet [ft] below ground surface [bgs]), SB-217 (18 to 22.7 ft bgs), SB-218 (20 to 22.7 ft bgs), and MW11R (20.6 to 22 ft bgs).

The ISS treatment area spans the 36-inch diameter sanitary sewer pipe (built 1965) and the remediation activities utilize the same off-sets established in Phases I and IIA, which are a 5-foot

offset from pipe side walls and a 2-foot off-set from the top of the pipe. The ISS operations will include the following:

- Excavation over top of sewer pipe and throughout the ISS area (i.e., pre-ISS excavation) to accommodate ISS swell and allow for installation of the 4-foot-thick surface cover. The excavated soil (approximately 800 to 900 cy) will be characterized and managed off-site at a permitted treatment/disposal facility.
- ISS will then be implemented using bucket-mixing techniques where a cementitious grout is added to the soil at a prescribed rate and mixed to create a homogeneous blend of soil/grout. The ISS treatment will extend down to the bedrock surface (approximately 20 to 24 feet bgs). The soil/grout mixture will then be allowed to cure to create an ISS monolith which physically encapsulates MGP-impacted soil. The ISS treatment volume is estimated to be approximately 2,500 to 3,000 cy.
- Following ISS, ISS swell will be removed as necessary to provide room for the 4-foot-thick cover. Geotextile fabric will be installed on top of the ISS mass to serve as a demarcation layer. Approximately, 3 feet of clean, imported fill (approved for import by the NYSDEC) will then be placed on top of the fabric, followed by 6 inches of subbase stone and a 6-inch asphalt pavement layer.
- An estimated 308 cubic yards of soil will remain untreated by ISS around the sanitary sewer. This assumes an average depth of 11 feet of soil (approximately El. 390.5 to El. 379.5) over an area of 796 square feet, less the volume occupied by the 36-inch diameter sewer pipe.

The non aqueous phase liquid (NAPL) recovery component of the remedy includes the installation of 10 bedrock NAPL recovery wells to address the bedrock operable unit (OU) of the Site (referred to as OU-2). The wells will be incorporated into a NAPL recovery program that will be established and documented in the SMP for the Site. Locations for the bedrock NAPL recovery wells were based on accumulated Site data from investigation activities, previous NAPL gauging/removal activities (refer to Appendix D), and observations/surveying of bedrock during Phases I and IIA. Below is a summary of the basis for each bedrock NAPL recovery well location depicted on Phase IIIB Drawing C-120:

- **RW-1:** Positioned hydraulically downgradient of bedrock well MW-11R (to be decommissioned during Phase IIIB), where 0.84 gallons of NAPL were previously recovered from bedrock, and structurally down-dip of former bedrock well MW-8R (decommissioned in Phase IIA), where 40 gallons of NAPL were previously recovered from bedrock.
- **RW-2:** Positioned hydraulically down/side-gradient of: (1) the former tar well located on the western side of the Site where tar was observed on the bedrock surface and in shallow fractures during Phase I excavation activities (rock was apparently locally excavated for installation of tar well); and in (2) former bedrock well MW-4R (decommissioned during Phase IIA), where 0.66 gallons of NAPL were previously recovered from bedrock. Positioned structurally down-dip of former bedrock well MW-8R (decommissioned in Phase IIA), where 40 gallons of NAPL were previously recovered from bedrock. Also, the location is positioned north-northwest of the former tar well area, which the most frequent orientation measured of the vertical to near-vertical joints in the shallow bedrock (Chaumont Limestone) observed along the shore of the river near the site and in a former exposure of bedrock located directly east of the site east of the Site (see Remedial Investigation [RI] Report prepared by BBL and dated 2007).
- **RW-3:** Positioned to intersect the base of a northeast-trending trough identified during Phase IIA in the top of bedrock surface close to former well MW-8R (where 40 gallons of NAPL were previously recovered from bedrock). It is possible that low areas in the top of bedrock surface influenced NAPL migration to some degree, and where it entered the bedrock system. Also is north-northwest of the former tar well area, which is the orientation of the bedrock joints measured in the shallow bedrock.

- **RW-4:** Positioned to intersect a shallow north-northeast trending trough in the top of bedrock surface identified during Phase IIA. The trough appears to be a trench excavated into rock to install the former 15-inch diameter storm sewer that ran through this area (removed during remediation activities). NAPL impacts were observed on the bedrock surface in the trough. The well is located on the hydraulically downgradient end of the trough and is structurally down-dip of former bedrock well MW-7R (decommissioned during Phase IIA) where 0.57 gallons of NAPL were previously recovered from bedrock.
- **RW-5:** Positioned hydraulically downgradient of bedrock wells north and east of the former MGP where NAPL was previously recovered from bedrock (MW-6RD [0.31 gallons] and former MW-3R [0.25 gallons], decommissioned in Phase IIA) and where there were NAPL indications in bedrock during drilling, but no NAPL recovery from the well during the RI (MW-18R).
- **RW-6:** Positioned structurally down-dip of former bedrock well MW-4R (decommissioned during Phase IIA) and up-dip of bedrock well MW-11R (to be decommissioned in Phase IIIB). The well is positioned to intersect the bottom of a northeast-oriented trough in the bedrock surface identified during the Phase IIA.
- **RW-7:** Positioned proximal to, and structurally down-dip of former bedrock well MW-4R (decommissioned during Phase IIA) and up-dip of bedrock well MW-11R (to be decommissioned in Phase IIIB). Located hydraulically downgradient of the area of the former tar well. Also is north-northwest of the former tar well area, which is the orientation of the bedrock joints measured in the shallow bedrock. Location is positioned to intersect the base of a northeast-oriented trough in the bedrock surface identified during Phase IIA.
- **RW-8:** Positioned structurally up-dip of former bedrock wells MW-4R and MW-17R (both decommissioned during Phase IIA), and proximal to former bedrock well MW-3R (decommissioned during Phase IIA) from which NAPL was previously recovered during RI (0.66, 0.14 and 0.25 gallons, respectively). Location is also downgradient of where NAPL was observed on the top of rock surface and in rock fractures in the area of the former retort house during Phase I. Location is positioned to intersect a slight depression in the top of bedrock surface, as identified during Phase IIA.
- **RW-9:** Positioned in area of former tar well where NAPL was observed on top of rock and in shallow fractures where rock was apparently locally excavated for installation of the tar well.
- **RW-10:** Positioned in the area of a former retort where, during Phase I activities, NAPL was observed in bedding plane fractures that cropped out under a concrete foundation. Located structurally down-dip of former bedrock well MW-19R (decommissioned during Phase I) where NAPL was observed during drilling in the shallow bedrock (approximately 10 ft bgs).

Refer to Section 3.7.3 and 3.7.4 of the May 2014 RDR for the initial NAPL recovery method and frequency.

The SMP will include a provision to install additional recovery wells or evaluate other remedial measures should post-remediation monitoring indicate the NAPL/coal tar is migrating to the river and/or to off-site properties outside the Project Area defined in the SMP. It is not anticipated that new wells will be installed because a well fails to produce NAPL, as this can be a positive indication that mobile NAPL is not present in the vicinity of the well. The overall NAPL recovery program will be evaluated as data is generated and potential modifications to the system will be coordinated with the NYSDEC.

1.4 RDR Modifications

As discussed previously, the May 2014 RDR, as it pertains to the Phase III remedial action, shall be considered incorporated by reference into the Phase III Design Documents. Note that the Phase III drawings and technical specifications included in Appendices A and B supersede the drawings and

specifications provided in the May 2014 RDR as it relates to the Phase III remediation and restoration components. The Phase III Design Documents are consistent with the May 2014 RDR, however, there are some modifications. The following represent some of the more significant modifications:

- The ISS limits have been refined to account for information obtained from pre-design investigation activities, coordination with the City of Watertown regarding offsets to be protective of the sanitary sewer, and omission of remediation activities within the right-of-way of the active railroad operated by CSX Railroad, Inc.
- Restoration details have been modified to take into account NYSDEC comments provided in the July 14, 2014 RDR approval letter and recent NYSDEC-approved designs for similar settings on other National Grid MGP Sites.
- The location of the proposed NAPL recovery wells have been modified as discussed in Section 1.3.

1.5 Green Remediation Considerations

In accordance with the NYSDEC program policy document, DER-31/Green Remediation, elements of green remediation and sustainability and best management practices that will be implemented during the Phase III remedy construction, including:

- Reducing vehicle idling.
- Beneficial re-use of concrete (if encountered and approved for re-use).
- Use of local suppliers, when feasible, for materials/products used in construction.
- Use of local or regional treatment/disposal facilities, when feasible.
- Use of local subcontractors, when feasible.
- Use of ultra low-sulfur diesel fuel.

An environmental footprint analysis will be prepared and included in the construction completion reports for Phase III.

1.6 Permits and Approvals

For Phase IIIA (Sediments Removal), following NYSDEC's approval of the Phase IIIA design package, National Grid and BC will coordinate with property owners to establish access agreements and with the United States Army Corps of Engineers (USACE) and NYSDEC for permitting/approvals requirements to complete the sediment remediation/restoration activities along the Black River.

For Phase IIIB (ISS and NAPL Recovery Wells), following NYSDEC's approval of the Phase IIIB design package, National Grid and BC will coordinate with property owners to establish access agreements and with CSX Railroad, Inc. for permitting to conduct work adjacent to the active railroad.

In addition, management of water generated during remediation is anticipated to be disposed/treated off-site. If it is determined that on-site treatment and discharge of treated water to surface water (i.e., Black River) is necessary, a SPDES permit equivalent would be obtained through coordination with the NYSDEC Division of Remediation (DER). National Grid would apply for and obtain a SPDES permit equivalent prior to the start of construction if discharge to the river is anticipated.

1.7 Contractor Selection

National Grid will select the Remedial Action Contractor in accordance with its corporate policies and procedures. It is anticipated that the selection process will be performed via a Request for Proposal

(RFP). An RFP package will be prepared containing sufficient background information, Construction Drawings, Technical Specifications, Special Conditions for the work and access (e.g., permit conditions, access agreements with the property owners), and National Grid's contracting information. It is anticipated that the RFP package will be issued to a selected group of potential contractors requesting the submittal of a technical and cost proposal. Evaluation criteria and a scoring matrix will be prepared for review of the proposals to objectively rank the submitted proposals.

During the RFP process, questions from contractors will be addressed by National Grid and BC. Following receipt of proposals, National Grid may seek to clarify contractor proposals through questions and interviews. The selection of a contractor will be based on the evaluation criteria and the responses to questions.

Following selection of the contractor, a Notice to Proceed will be issued to the contractor and pre-construction activities will commence.

1.8 Construction Submittals

The Drawings, Specifications, permit conditions/requirements, and other contract documents specify the required submittals for the Phase III remedial action projects. Selected submittals will be provided to the NYSDEC prior to mobilization and additional submittals will be provided after mobilization. Below is a list of submittals that are anticipated to be provided to the NYSDEC (the * symbol below denotes a pre-construction submittal - other are submittals submitted after mobilization):

- *Contractor Site-Specific Health and Safety Plan (CSSHASP)
- *Contractor Contingency Plan (CCP)
- *Construction Management Plan (CMP), which is a collection of numerous plans, including those for survey control, CAMP implementation, decontamination, security, traffic control, vibration and settlement monitoring, erosion and sediment control, demolition, excavation, dewatering, ISS, backfilling, restoration, and waste management
- Remediation Wastewater Treatment Plan (if part of the remedy) meeting the requirements of the SPDES Permit Equivalent
- *Project Sign Sketch
- Meeting agendas and meeting summary notes
- Weekly Work Zone and Community Air Monitoring results
- Start-up testing results and monthly wastewater treatment reports (if part of the remedy)
- Fill Source and Quality Documentation (submitted as part of request to import or re-use fill)

Other submittals that document aspects of the completed work (including but not limited to record surveys, waste management documentation, work zone and community air monitoring data, etc.) will be provided as part of the Construction Completion Report.

After the submittal list has been finalized with the selected contractor, it will be provided to the NYSDEC to confirm the submittals they would like to receive.

Section 2

Schedule

The schedule for Phase III implementation is contingent on many factors including the timing for obtaining access agreements with various property owners, establishment of an agreement with CSX Railroad, Inc., obtaining permits for work to be completed within the river, contractor procurement, weather/seasonal conditions, contractor procurements schedules, and the selected contractor's construction schedule and sequencing. Below is a preliminary Phase III project schedule.

Activity	Estimated Duration (Calendar Days)	Estimated Start Date	Estimated Completion Date
Phase III Design Documents			
Draft to NYSDEC			December 22, 2023
NYSDEC Review and Comments			February 14, 2024
Response to Comments			March 7, 2024
NYSDEC Review and Response			March 13, 2024
Prepare and Submit Final to NYSDEC			April 2024
NYSDEC Review and Approval	30	May 2024	May 2024
Permitting and Access Agreements	365	June 2024	June 2025
Bid Package and Contractor Procurement	365	June 2025	June 2026
Construction Phase	180	July 2026	December 2026
Preparation and Submittal of Construction Completion Report	120	January 2027	April 2027

Notes:

1. *The duration for NYSDEC reviews is assumed.*
2. *The duration and timing for field activities are estimated and dependent on a number of factors, including scope, timing of NYSDEC approvals, weather conditions, contractor availability, permitting, and site access.*
3. *The schedule may also be modified if the Phase IIIA (Sediments Removal) and Phase IIIB (ISS and NAPL Recovery Wells) are completed as separate construction projects.*

Section 3

References

Arcadis Blasland, Bouck, and Lee, October 2007. “Remedial Investigation Report, Watertown Engine Street Former Manufactured Gas Plant, Watertown, New York”.

Arcadis, January 2009. “Feasibility Study Report, Former Manufactured Gas Plant, Engine Street, Watertown, New York”.

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NYSDEC, December 1992. “Order on Consent (Index No. D0-0001-92100) between Niagara Mohawk Power Corporation (NMPC) and the New York State Department of Environmental Conservation (NYSDEC)”.

NYSDEC, November 2003. “Order on Consent (Index No. A4-0473-0000) between Niagara Mohawk Power Corporation (NMPC) and the New York State Department of Environmental Conservation (NYSDEC)”.

NYSDEC, March 2009. “Record of Decision, Niagara Mohawk Watertown Engine Street Former Manufactured Gas Plant, Operable Units 1, 2, and 3, Watertown, Jefferson County, New York, Site Number 6-23-011”.

NYSDEC, May 3, 2010. “DER-10/Technical Guidance for Site Investigation and Remediation; NYSDEC Program Policy”.

NYSDEC, January 20, 2011. “DER-31/Green Remediation; NYSDEC Program Policy”.

.

Appendix A: Phase IIIA Design Package

Construction Drawings: Phase III Remedial Action – Sediment Removal

Technical Specifications: Phase III Remedial Action – Sediment Removal

(submitted as separated electronic files)

Appendix B: Phase IIIB Design Package

Construction Drawings: Phase III Remedial Action – ISS and NAPL Recovery

Technical Specifications: Phase III Remedial Action – ISS and NAPL Recovery

(submitted as separated electronic files)

Appendix C: Response to Department Comments on Draft Phase III Design Documents

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March 7, 2024

Parag Amin, P.E. – Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
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160117.740

Subject: Response to Department Comments
Draft Phase III Design Documents dated December 2023
NM – Watertown Engine St. MGP
Watertown, Jefferson County, New York
Site ID No.: 623011

Dear Mr. Amin:

On behalf of National Grid, Brown and Caldwell Associates (BC) has prepared this letter in response to comments provided by the New York State Department of Environmental Conservation (NYSDEC or Department) on the Draft Phase III Design Documents dated December 2023. The comments were provided in a letter from the Department dated February 14, 2024.

To efficiently finalize the Phase III Design Documents, we have provided responses to the Department's comments herein. Following the Department's review and approval of the responses, the Phase III Design Documents will be revised accordingly and final documents, signed and sealed by a Registered New York State Professional Engineer, will be provided along with the appropriate certification statements from Chapter 1.5 of the Department's DER-10 Technical Guidance for Site Investigation and Remediation.

For convenience, the Department's comments are provided below in bold, italic text followed by the response.

General Comments

1. ***Please note that the DOH Project Manager has changed to Jonathan Robinson (Johnathan.Robinson@health.ny.gov). Please revise design documents accordingly.***

Response: Noted. This revision will be reflected in the submittal of the final Phase III design documents.

2. ***Please note the Construction Management Plan and any other contractor or sub-contractor submittals, permits etc. must be provided to the Department at least two weeks prior to the mobilization.***

Response: We will note the Department's required submittal review timeframe. Regarding the actual submittals provided to the Department, there are many contractor submittals that are provided prior to and during construction. Since many are provided during construction, it is not feasible to provide all submittals 2 weeks prior to mobilization. Typically, we provide a select number of pre-construction submittals to the Department prior to mobilization and additional submittals after mobilization. For

example, below is a list of submittals that have been provided to the Department on similar projects (* denotes a pre-construction submittal and other are submittals submitted after mobilization):

- *Contractor Site-Specific Health and Safety Plan (CSSHASP)
- *Contractor Contingency Plan (CCP)
- *Construction Management Plan (CMP), which is a collection of numerous plans, including those for survey control, CAMP implementation, decontamination, security, traffic control, vibration and settlement monitoring, erosion and sediment control, demolition, excavation, dewatering, ISS, backfilling, restoration, and waste management
- Remediation Wastewater Treatment Plan (if part of the remedy) meeting the requirements of the SPDES Permit Equivalent
- *Project Sign Sketch
- Meeting agendas and meeting summary notes
- Weekly Work Zone and Community Air Monitoring results
- Start-up testing results and monthly wastewater treatment reports (if part of the remedy)
- Fill Source and Quality Documentation (submitted as part of request to import or re-use fill)

Other submittals that document aspects of the completed work (including but not limited to record surveys, waste management documentation, work zone and community air monitoring data, etc.) are provided as part of the Construction Completion Report.

After the submittal list has been finalized with the selected Contractor, it will be provided to the Department to confirm the submittals they would like to receive.

Phase III Design Cover Letter: Phase III Remedial Action

3. ***Please indicate the approved Remedial Design Report dated May 2014 as it pertains to Phase III remedy construction is incorporated by reference into the Phase III Design Documents.***

Response: Yes, a statement will be included in the final Phase III design documents to incorporate the May 2014 Remedial Design Report (RDR) by reference. However, the intent is for the Phase III drawings and technical specifications to supersede the drawings and specifications provided in the May 2014 RDR as it relates to the Phase III remediation and restoration components. Please confirm that this is also the Department's understanding.

4. ***Please include the detailed project schedule for implementing Phase III remedy construction beginning with the submission of the draft design document up to the submission of the construction completion report.***

Response: The schedule for Phase III implementation is contingent on many factors including the timing for obtaining access agreements with various property owners, establishment of an agreement with CSX Railroad, Inc., obtaining permits for work to be completed within the river, contractor procurement, weather/seasonal conditions,

contractor procurements schedules, and the selected contractor's construction schedule and sequencing. Below is a preliminary Phase III project schedule, which will be included in the submittal of the final Phase III design documents.

Activity	Estimated Duration (Calendar Days)	Estimated Start Date	Estimated Completion Date
Phase III Design Documents			
Draft to NYSDEC			December 2023
NYSDEC Review and Comments			February 2024
Response to Comments	30	February 2024	March 2024
NYSDEC Review and Response	30	March 2024	April 2024
Prepare and Submit Final to NYSDEC	45	April 2024	May 2024
NYSDEC Review and Approval	30	May 2024	June 2024
Permitting and Access Agreements	365	July 2024	July 2025
Bid Package and Contractor Procurement	365	July 2025	July 2026
Construction Phase	180	July 2026	December 2026
Preparation and Submittal of Construction Completion Report	120	January 2026	April 2027

The duration for NYSDEC reviews is assumed.

The duration and timing for field activities are estimated and dependent on a number of factors, including scope, timing of NYSDEC approvals, weather conditions, contractor availability, permitting, and site access.

The schedule may also be modified if the Phase IIIA (Sediments Removal) and Phase IIIB (ISS and NAPL Recovery Wells) are completed as separate construction projects.

5. ***As required by DER-31 Green Remediation, please include the elements of the green remediation & sustainability and best management practices to be implemented during the remedy construction. Also, indicate that the environmental footprint analysis will be included in the construction completion report.***

Response: Elements of green remediation and sustainability and best management practices that will be implemented during the remedy construction, include:

- Reducing vehicle idling.
- Beneficial re-use of concrete (if encountered and approved for re-use).
- Use of local suppliers, when feasible, for materials/products used in construction.
- Use of local or regional treatment/disposal facilities, when feasible.
- Use of local subcontractors, when feasible.
- Use of ultra low-sulfur diesel fuel.

An environmental footprint analysis will be prepared and included in the construction completion report.

6. ***As required by the Department's letter dated February 6th, 2014, please describe major modifications to Phase III remedial design including the restoration plans presented in the approved Remedial Design Report dated May 2014.***

Response: We do not believe any of the modifications to the Phase III remedial components or restoration design are considered major modifications from the May 2014 RDR. The following represent some of the more significant modifications:

- The in situ solidification (ISS) limits have been refined to account for information obtained from pre-design investigation activities, coordination with the City of Watertown regarding offsets to be protective of the sanitary sewer, and omission of remediation activities within the right-of-way of the active railroad operated by CSX Railroad, Inc.
- Restoration details have been modified to take into account NYSDEC comments provided in the July 14, 2014 RDR approval letter and recent Department-approved designs for similar settings on other National Grid MGP Sites (e.g., Cohoes [Linden Street] Former MGP Site and Troy [Water Street] Site).
- The location of the proposed nonaqueous phase liquid (NAPL) recovery wells have been modified as discussed in the December 22, 2023 letter.

7. *Phase IIIA Remedial Action: Sediment Removal, second last bullet: As per the Department's letter dated February 6th, 2014, please indicate the sediment removal from each of the eight identified locations will continue until non-impacted sediments are identified visually or until bedrock or coarse non-impacted substrates, such as cobbles or boulders are encountered. Additionally, please note the Department's letter dated July 11th, 2014, modified Limits of Removal of the bank soil and sediment by including the removal of the sediments and riverbank soils containing sheen, not just the bank soil and sediment which contains "sheen with the tar like odor". Please modify the text, drawings, and specifications (if necessary) accordingly.*

Response: As indicated on Drawings C-111 and 112 (Sediment Removal Plans) and Specification Section 31 23 16 (Sediment Removal and Restoration), sediment removal will be completed to the satisfaction of the Design Engineer's Representative, in consultation with the NYSDEC. This statement will be expanded to state that sediment removal at each of the sediment removal locations will be completed, to the extent practicable, until non-MGP-impacted sediment are identified visually or until bedrock or coarse non-impacted substrates, such as cobbles or boulders, are encountered.

As indicated in the May 2014 RDR, there are several potential sources of sheens in the river sediment, including naturally occurring sources or other non-MGP sources. Material exhibiting sheens that are suspected to be related to MGP-related waste materials (based on odor or proximity to other visible MGP-related impacts) will be targeted for removal to the extent practicable.

8. *Phase IIIA Remedial Action: Sediment Removal, last bullet: The text in the first paragraph indicates the restoration within the river is going to be backfilled with NYSDOT No. 1 or No. 2 (0.25 to 1.5- inch) stones. The segment of the Black River adjacent to the site is described as fast flowing. Please describe the details of the design to ensure the backfill will stay in place and will not get eroded.*

Response: Yes, at times, this segment of river can be fast-flowing, however, as indicated in the May 2014 RDR, the sediment removal areas are primarily located in areas sheltered to some degree from river flow by local rises in river bottom elevation formed by bedrock outcrops or by variations along the riverbank. This is the reason

sediment has accumulated in these isolated depositional areas. As indicated on Drawing C-140 (Restoration Plan), as directed by the Design Engineer's Representative in consultation with the NYSDEC, the sediment removal areas will be restored with either crushed stone (to replace the sediment in these small depositional areas) or exposed substrate will remain, and the area will be allowed to naturally silt in over time. If stone materials are utilized to restore the sediment removal areas, they are anticipated to remain in place in these depositional areas.

9. *Phase IIIA Remedial Action: Sediment Removal, last bullet: The text in the second paragraph indicates the restoration of the areas where removal extends into the toe of the bank is consistent with the Department's proposed restoration stated in its approval letter. The description of the restoration described herein does not appear to be consistent with the Department's proposed restoration e.g. the Department proposed to use rectangular rocks (2' x 2' x 3' or larger) not angular, and certainly not large rip-rap, use of jute netting etc. Please identify and explain all the changes made to the Department's proposal.*

Response: The proposed restoration of blending topsoil materials with large stone has been successfully utilized on other former MGP Sites (e.g., recently completed riverbank restoration at the Cohoes [Linden Street] Former MGP Site) and is considered appropriate in this setting. Biodegradable erosion control mating, as specified in Section 31 23 16 (Sediment Removal and Restoration), may be used in restoration areas that are susceptible to erosion (e.g., slopes greater than 5:1).

10. *Phase IIIB, ISS: Please include the volume of soils around the 36" sanitary sewer pipe which is going to be left untreated by ISS.*

Response: It is estimated that approximately 308 cubic yards of soil will remain untreated by ISS around the sanitary sewer. This assumes an average depth of 11 feet of soil (approximately El. 390.5 to El. 379.5) over an area of 796 square feet less the volume occupied by the 36-inch diameter sewer pipe.

11. *Phase IIIB Remedial Action: NAPL Recovery Wells: Remedy element B.2 of the ROD requires the method and frequency of NAPL removal must be determined during remedial design and remedial action phase. Please explain why those details will be specified in the Site Management Plan instead.*

    Please note that the Site Management Plan (SMP) must have a provision to install additional recovery wells should the proposed locations/depths of the recovery wells fail to produce the NAPL and/or post remediation monitoring indicates the NAPL/coal tar etc. is migrating to the river and/or to off-site properties.

    Also, in the RW-3 bullet, please indicate the volume of historic NAPL recovered in MW- 8R.

Response: For initial NAPL recovery method and frequency, refer to Section 3.7.3 and 3.7.4 of the May 2014 RDR.

The SMP will include a provision to install additional recovery wells or evaluate other remedial measures should post-remediation monitoring indicate the NAPL/coal tar etc. is migrating to the river and/or to off-site properties outside the Project Area defined in the SMP. It is not anticipated that new wells will be installed because a well fails to produce NAPL, as this can be a positive indication that mobile NAPL is not present in the

vicinity of the well. The overall NAPL recovery program will be evaluated as data is generated and potential modifications to the system will be coordinated with the Department.

The volume of NAPL recovered at MW-8R is indicated on Drawing C-120 (NAPL Recovery Well Plan and Detail). The volume will be added to the cover letter of the final Phase III design document submission.

Phase III (Sediment Removal) - Construction Drawings

12. *Drawing C-140, Restoration Plan: Please include the planimetric view and cross sections depicting the restoration of the bank and riverbed for each of the three restoration scenarios discussed in the Phase III Remedial Design Summary letter dated December 22, 2023. Also, please modify the label "Refer to Note 1 ....Removal Locations" for each of the eight bank soil & sediment removal areas by including A, B or C, whichever is likely to be applicable for the given areas.*

Response: Representative planimetric and cross-section details of the restoration scenarios will be provided with the revised drawing set. For each sediment removal area, one or more restoration scenario may apply depending on the extent of the removal. The drawing notes will be revised to indicate that any combination of the three restoration scenarios could apply to the removal areas, as directed by the Engineer's Representative in consultation with the Department.

Phase III (Sediment Removal) - Technical Specifications

13. *Please ensure the Sediment Removal and Restoration specification indicate the bank soil and sediment removal areas are restored in conformance with the requirement of 6 NYCRR Part 608 as required by the Record of Decision (ROD) and approved Remedial Design Report.*

Response: The proposed work within and adjacent to the river had been developed to be in conformance with 6 NYCRR Part 608. As stated, United States Amry Corps of Engineers (USACE) permitting will be obtained for this work. A requirement of the USCAE permitting process is to obtain a Water Quality Certification (WQC) from the NYSDEC.

14. *Section 31 23 16, subsection 3.04: Please remove the word "hardened". Any undiscovered tar encountered while implementing Phase IIIA remedy must be removed.*

Response: Noted. This revision will be reflected in the revised Section 31 23 16 (Sediment Removal and Restoration).

15. *Section 31 23 16, subsection 3.05 Soil/Sediment Removal; Please note that to enable the inspection of the removal areas to ensure cleanup goals described above in the RDR approval letter are met, the area must be free from any water.*

Response: As noted in Section 31 23 19 (Dewatering and Water Management), dewatering will be performed to allow for visual inspection of the river bottom.

16. *Section 31 23 19 Dewatering and Water Management: Please ensure the specification requires the remedial contractor to acquire and comply with the effluent discharge permit.*

Response: As indicated in the specifications and on Drawing C-111 (Sediment Removal Plan), the anticipated plan is to collect water generated from the remediation activities and manage it off-site at a permitted facility. Under this scenario, an effluent discharge permit will not be necessary. If on-site treatment and surface water discharge is employed as an alternative, then an effluent discharge permit will be obtained and adhered to. Section 31 23 19 (Dewatering and Water Management) will be revised to clarify this.

17. *Section 31 25 13 Erosion and Sediment Control: Please clarify what monitoring e.g. turbidity and/or other parameters, will be performed in the Black River during sediment removal and restoration.*

Response: The river will be visibly monitored for turbidity that causes a substantial visible contrast to natural conditions. This requirement will be added to Section 31 23 16 (Sediment Removal and Restoration). In addition, this requirement is anticipated to also be specified in the USACE permit conditions.

Phase III (ISS and NAPL Recovery Wells) - Construction Drawings

18. *C-120: Along with ground surface contours, also please show the top of the bed rock contours. For the volume of NAPL recovered shown in the figure, please indicate the days or months over which those volumes were recovered.*

Response: Bedrock contours will be added to Drawing C-120 (NAPL Recovery Well Plan and Detail). The timeframes for NAPL recovery at the pre-existing wells are summarized on Table 2-11 of the May 2014 RDR and Table 5 of the Remedial Investigation Report. This information will be incorporated into the information on Drawing C-120 (NAPL Recovery Well Plan and Detail).

19. *C-900: Please include the ISS conceptual panel layout for the areas not near sensitive features. If it is same as for the sensitive areas, please indicate as such.*

Response: As indicated in Section 31 32 00 (In Situ Solidification), ISS cell layouts are a required submittal for the selected remedial contractor. The cell size is dependent on many factors, including the capabilities of the machine used by the contractor, the expected ISS production rates, duration of the workday during mixing operations, and the geometry of the treatment area. Based on this, the cell layouts are not depicted on the design drawings. The cell layout will be included in the CMP submittal that can be provided to the Department.

Phase III (ISS and NAPL Recovery Wells) - Technical Specifications

20. *Section 31 05 13, 2.02 Imported Backfill Materials, paragraph A.2: Please revise 80 sieve to 100 as the sieve size standard has changed recently for importing virgin sand, gravel, stones, rock etc. without chemical analysis.*

Response: Noted. This revision will be reflected in the revised Section 31 05 13 (Soils and Aggregates for Earthwork).

Phase III (Sediment Removal) and Phase III (ISS and NAPL Recovery Wells) (i.e., both sets) – Technical Specifications

21. *CAMP Monitoring equipment shall consist of at least one upwind and one downwind station. In the event multiple intrusive activities are occurring simultaneously in geographically separated areas, additional CAMP stations will be required. In the event the wind direction would place the downwind unit in the Black River, the station may be relocated to reflect the nearest potential receptor population.*

Response: This comment is noted and is addressed in the project technical documents. Section 01 52 00 (Work Zone and Community Air Monitoring and Control) of both specification sets identifies the NYSDEC-approved Community Air Monitoring Plan (CAMP), which was included as Appendix M of the May 2014 RDR, as a related document and requires the contractor's plan to conform with this CAMP. The NYSDEC-approved CAMP will be incorporated as a relevant technical document within the bid documents.

22. *The technical specifications should include a public notification element to mitigate the potential for recreational users on and/or along the Black River and at the adjacent Whitewater Park to encounter remediation work areas and/or potential contaminants during remedial activities. Measures should be in place to ensure recreational users and the public do not inadvertently enter work areas or interact with the proposed safeguards (sediment controls, cofferdams, oil boom etc.).*

Response: As addressed in Section 01 54 00 (Site Security) of both specification sets, the contractor is required to restrict access to work areas through the use of signage, fencing, security personnel, and other security measures. In addition, National Grid and BC will coordinate with the City of Watertown on the timing and scope of the work and determine if additional signage or notifications are required.

23. *Section 01 52 00 Work Zone and Community Monitoring Control, 1.02 References: In addition to DOH Generic Community Air Monitoring Plan Appendix 1A of DER-10, this section should also reference and comply with Appendix 1B Fugitive Dust and Particulate Monitoring of DER-10.*

Response: Noted. This revision will be reflected in the revised Section 01 52 00 (Work Zone and Community Air Monitoring and Control) of both specification sets.

24. *Section 01 52 00 Work Zone and Community Monitoring Control, 1.03 Submittals, B Daily Field Reports: In addition to identifying action level exceedances and describing response actions, this document should also indicate if the actions were effective in mitigating the source of the exceedances.*

Response: Noted. The effect of mitigation measures and subsequent air monitoring results will certainly be part of the daily air monitoring field reports. We believe this requirement is adequately addressed in Parts 1.03-B-7 and 1.03-B-8. However, the requirement will be made clarified in the revised Section 01 52 00 (Work Zone and Community Air Monitoring and Control) of both specification sets.

25. *Section 01 52 00 Work Zone and Community Monitoring Control, 1.03 Submittals D Community Air Monitoring Results: Please revise this section to reflect that the Department and DOH will be notified within 24 hours of exceedances of the action levels. Otherwise, CAMP data may be submitted to departments on a weekly basis.*

Response: Noted. This requirement will be reflected in the revised Section 01 52 00 (Work Zone and Community Air Monitoring and Control) of both specification sets.

26. ***Section 01 52 00 Work Zone and Community Monitoring Control, 1.03 Submittals D Community Air Monitoring Results: Please indicate the Department and DOH will be notified upon the receipt of dust, vapor, odor, and/or noise complaints.***

Response: Noted. This requirement will be reflected in the revised Section 01 52 00 (Work Zone and Community Air Monitoring and Control) of both specification sets.

Phase III (Sediment Removal) and Phase III (ISS and NAPL Recovery Wells) (i.e., both sets) – Construction Drawings

27. ***Overall Existing Conditions Plan: Please ensure the drawings adequately identify the park adjacent to the Department of Public Works Building as well as residential uses along Lawrence and Sill Street.***

Response: Noted. These areas will be identified on the revised Drawing C-100 (Overall Existing Conditions Plan) of both drawing sets.

Following Department approval of the responses provided in this letter, the final Phase III Design Documents will be prepared and submitted along with certification statements in accordance with Chapter 1.5 of the Department's DER-10 Technical Guidance for Site Investigation and Remediation. In addition, as requested by the Department, track changes versions of text documents and annotated drawings will be provided, to identify places where revisions were made.

Please contact me at (518) 560-5911 or the National Grid Project Manager, Steve Beam, at (315) 428-5690 if you have any questions or require additional information.

Very truly yours,

Brown and Caldwell Associates

Adam R. Sherman, P.E.
Managing Principal

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Appendix D: Summary Tables of Previous NAPL Gauging and Recovery

TABLE 2-11
SUMMARY OR TAR OR OIL RECOVERY AND INTERVALS OF TAR OR OIL INDICATORS IN BEDROCK
WATERTOWN (ENGINE ST.) FORMER MGP SITE
WATERTOWN, NEW YORK

Location (Date Well Completed)	Bedrock Unit Position (ft., bgs)		Depth of Potential Tar or Oil Indicators During Drilling (ft., bgs)	Well Screen Interval (ft., bgs) [Footage of Formation Screened (ft.)]	Volume of Tar or Oil Recovered in Well Thru Jan 2007 (a) (gallons)
MW-3R	*TOR:*	4.6			
(6/30/1997)	Chaumont LS			22-45	
				[Chaumont LS-5]	0.25
	Contact:	±27		[Lowville LS-18]	
	Lowville LS		±39		
	TD:	44			
MW-4R	*TOR:*	14.2			
(7/8/1997)	Chaumont LS			32.2-52.2	
				[Chaumont LS-0]	0.66
	Contact:	±30		[Lowville LS-20]	
	Lowville LS		±48.9		
	TD:	54.2			
MW-6RS	*TOR:*	4			
(7/3/1997)	Chaumont LS			7.3-17.3	
	TD:	19.3		[Chaumont LS-10]	0
	Contact:	NA			
	Lowville LS				
	TD:	NA			
MW-6RD	*TOR:*	4.8			
(8/25/2004)	Chaumont LS			18-23	
				[Chaumont LS-0.3]	0.31
	Contact:	18.65	20.7	[Lowville LS-4.7]	
	Lowville LS		21-25		
	TD:	25			
MW-7R	*TOR:*	9			
(7/1/1997)	Chaumont LS			26-46	
				[Chaumont LS-0]	0.57
	Contact:	±25.5	28.5-33.5	[Lowville LS-20]	
	Lowville LS		38.5-43.5		
	TD:	48.5			
MW-8R	*TOR:*	12.8			
(7/9/1997)	Chaumont LS			27-47	
				[Chaumont LS-4]	40
	Contact:	±31	37.2	[Lowville LS-16]	
	Lowville LS		39-49		
	TD:	49			
MW-8RI	*TOR:*	11.9			
(NA)	Chaumont LS			NA	
					NA
	Contact:	±27	43.3-50		
	Lowville LS				
	TD:	50			
MW-11R	*TOR:*	24			
(8/20/2004)	Chaumont LS		31.6	29-49	
			32.9	[Chaumont LS-4.7]	0.84
	Contact:	±33.7	36	[Lowville LS-15.3]	
	Lowville LS				
	TD:	41			

TABLE 2-11
SUMMARY OR TAR OR OIL RECOVERY AND INTERVALS OF TAR OR OIL INDICATORS IN BEDROCK
WATERTOWN (ENGINE ST.) FORMER MGP SITE
WATERTOWN, NEW YORK

Location (Date Well Completed)	Bedrock Unit Position (ft., bgs)	Depth of Potential Tar or Oil Indicators During Drilling (ft., bgs)	Well Screen Interval (ft., bgs) [Footage of Formation Screened (ft.)]	Volume of Tar or Oil Recovered in Well Thru Jan 2007 (a) (gallons)
MW-12R	*TOR:* 19.8			
(8/30/2004)	Chaumont LS		34-54	
			[Chaumont LS-2.9]	0
	Contact: ±36.9	51-54	[Lowville LS-17.1]	
	Lowville LS			
	TD: 56			
MW-15RS/RD	*TOR:* 13.6		15-25 (S well screen)	
(9/13/2004)	Chaumont LS	21.5	[Chaumont LS-10]	0
		23-25.5	[Lowville LS-0]	
	Contact: ±34.7	48	43-63 (D well screen)	
	Lowville LS	49.5-50.5	[Chaumont LS-0]	0
	TD: 65.5		[Lowville LS-20]	
MW-16R	*TOR:* 10.6			
(7/2/2004)	Chaumont LS		33-53	
			[Chaumont LS-0]	0
	Contact: ±28.7	50-55	[Lowville LS-20]	
	Lowville LS			
	TD: 55			
MW-17R	*TOR:* 8.3	22.9		
(7/30/2004)	Chaumont LS	23	12-31.3	
		27.7	[Chaumont LS-16.5]	0.14
	Contact: ±28.5		[Lowville LS-2.8]	
	Lowville LS			
	TD: 50			
MW-18R	*TOR:* 3.4			
(8/9/2004)	Chaumont LS		33-53	
			[Chaumont LS-0]	0
	Contact: ±24.4	50-55	[Lowville LS-20]	
	Lowville LS			
	TD: 55			
MW-19R	*TOR:* 4.8			
(8/10/2004)	Chaumont LS	10.35	33-53	
			[Chaumont LS-0]	0
	Contact: ±26.2	50-53	[Lowville LS-20]	
	Lowville LS			
	TD: 55			

Notes:
(a) NAPL recovery data from Table 5 of RI Report (Arcadis BBL, October 2007).
Abbreviations:
bgs - Below ground surface
TOR - Top of Bedrock
Contact - Contact between Chaumont and Lowville Limestones
LS - Limestone

Table 5. NAPL Monitoring and Removal Summary, Remedial Investigation
National Grid, Watertown (Engine Street) Former MGP Site, Watertown, New York

	MW-3R		MW-4R		MW-6RI		MW-7R		MW-8R		MW-11R		MW-17R	
Date	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)
January 2007	0	0	0	Trace	0.13	25	0	0	0.05	25	0.29	100	0.98	250
December 2006	NA	15	NA	Trace	0.08	25	NA	Trace	0.14	Trace	0.47	200	1.16	250
November 2006	0.23	10	Trace	0	0.11	20	Trace	0	0.22	0	0.39	0	1.27	25
October 2006	0.05	0	NA	50	0.55	250	0.01	0	0.14	0	0.13	0	0	0
August 2006	0.1	0	0.29	120	0.19	100	NA	20	0.35	100	1.38	200	--	--
June 2006	0.06	0	0.25	100	0.18	25	0	0	0.85	500	0.17	25	--	--
March 2006	0	0	0.23	0	0.16	100	0	15	0.87	400	1.52	1000	0	0
February 2006	0	0	0.12	10	0.39	100	0	0	0.8	60	2.05	1250	--	--
January 2006	0	0	0.19	40	--	--	0.1	0	0.34	60	--	--	--	--
December 2005	0.02	0	0.18	20	--	--	0.8	10	0.4	180	--	--	--	--
October 2005	0.17	0	0.34	150	0.35	50	1.01	200	0.45	150	0	0	--	--
September 2005	0.26	10	0.43	130	0.66	385	0.81	15	0.42	60	--	--	--	--
August 2005	--	--	0.32	0	0.58	0	0.29	0	0.50	0	0	0	0	0
June 2005	0	0	0.30	0	0.55	100	0.26	0	0.56	0	0.90	150	--	--
May 2005	0.62	150	0.25	0	0.55	0	0.3	0	0.40	0	--	--	--	--
April 2005	0.35	0	0.30	0	1.21	0	0.3	0	1.80	1,100	0	0	0	0
January 2005	0	0	0.00	0	--	--	0	0	1.74	0	0.95	150	Trace	0
December 2004	0.23	0	0.20	0	0	0	0.3	0	1.75	600	0	0	Trace	0
November 2004	0	0	0.17	0	0.10	0	0.32	0	1.79	600	0	0	Trace	0
October 2004	0.49	120	0.20	0	0	0	0.22	0	2.77	1,700	0.60	100	Trace	0
September 2004	0	0	0.00	0	0	0	0.31	0	3.13	1,700	0	0	0	0
August 2004	0.28	0	0.65	150	NI	NI	0.13	0	2.49	2,400	NI	NI	--	--
July 2004	0.115	0	0.30	0	NI	NI	0.13	0	1.95	3,000	NI	NI	NI	NI
June 2004	0.25	60	0.25	0	NI	NI	0.12	0	0.75	1,650	NI	NI	NI	NI
April 2004	0.325	0	0.23	0	NI	NI	0.2	0	0.91	950	NI	NI	NI	NI
March 2004	0.30	60	0.23	0	NI	NI	0.13	0	1.14	700	NI	NI	NI	NI
February 2004	0.20	0	0.22	0	NI	NI	0.11	0	3.44	1,900	NI	NI	NI	NI
December 2003	0.12	0	0.12	0	NI	NI	0.11	0	2.24	1,650	NI	NI	NI	NI
November 2003	0.11	0	0.00	0	NI	NI	0.10	0	3.71	3,100	NI	NI	NI	NI
October 2003	0	0	0.00	0	NI	NI	0.13	0	2.78	5,650	NI	NI	NI	NI
September 2003	0	0	0.09	30	NI	NI	0.11	0	4.06	8,350	NI	NI	NI	NI
August 2003	0	0	0.00	0	NI	NI	0.11	0	2.30	3,000	NI	NI	NI	NI
July 2003	0	0	0.00	0	NI	NI	0.09	0	4.09	7,000	NI	NI	NI	NI
June 2003	0.15	40	0.00	0	NI	NI	0.09	0	0.87	1,000	NI	NI	NI	NI
May 2003	0	0	0.35	230	NI	NI	0.22	0	0.37	200	NI	NI	NI	NI
April 2003	0	0	0.26	50	NI	NI	0.18	0	0.11	0	NI	NI	NI	NI
March 2003	0	0	0.28	30	NI	NI	0.16	0	2.18	1,900	NI	NI	NI	NI
February 2003	--	--	--	--	NI	NI	--	--	--	--	NI	NI	NI	NI
January 2003	0	0	0.11	0	NI	NI	0.09	0	2.47	1,100	NI	NI	NI	NI
December 2002	0	0	0.01	0	NI	NI	0.12	0	4.91	4,100	NI	NI	NI	NI

See Notes on Page 3.

Table 5. NAPL Monitoring and Removal Summary, Remedial Investigation
National Grid, Watertown (Engine Street) Former MGP Site, Watertown, New York

	MW-3R		MW-4R		MW-6RI		MW-7R		MW-8R		MW-11R		MW-17R	
Date	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)	Average DNAPL Thickness (feet)	Approx. Vol. Removed (ml)
November 2002	0	0	0.25	30	NI	NI	0.07	0	5.91	7,600	NI	NI	NI	NI
October 2002	0	0	0.30	90	NI	NI	0.03	0	3.88	4,100	NI	NI	NI	NI
September 2002	0	0	0.20	0	NI	NI	0.06	0	2.65	2,800	NI	NI	NI	NI
August 2002	0	0	0.06	0	NI	NI	0.08	0	2.54	2,500	NI	NI	NI	NI
June 2002	0	0	0.00	0	NI	NI	0.05	0	0.40	160	NI	NI	NI	NI
May 2002	0	0	0.00	0	NI	NI	0.10	0	0.43	150	NI	NI	NI	NI
April 2002	0	0	0.30	32	NI	NI	0.20	20	1.00	450	NI	NI	NI	NI
January 2002	0	0	0.20	0	NI	NI	0	0	0.56	200	NI	NI	NI	NI
December 2001	0	0	0.19	25	NI	NI	0	0	0.68	400	NI	NI	NI	NI
November 2001	0	0	0.15	0	NI	NI	0	0	0.53	100	NI	NI	NI	NI
October 2001	0	0	0.14	0	NI	NI	0	0	0.40	100	NI	NI	NI	NI
September 2001	0	0	0.50	27	NI	NI	0	0	0.22	125	NI	NI	NI	NI
August 2001	0	0	0.16	30	NI	NI	0	0	2.56	6,300	NI	NI	NI	NI
July 2001	0	0	0.12	40	NI	NI	0	0	3.21	7,150	NI	NI	NI	NI
June 2001	0	0	0.21	50	NI	NI	0	0	2.96	7,100	NI	NI	NI	NI
May 2001	0	0	0.15	50	NI	NI	0.02	10	2.47	4,300	NI	NI	NI	NI
April 2001	0	0	0.02	20	NI	NI	0	0	3.09	3,225	NI	NI	NI	NI
March 2001	0.03	10	0.07	50	NI	NI	0.02	20	1.85	3,230	NI	NI	NI	NI
February 2001	0	0	0.02	30	NI	NI	0	0	1.07	1,250	NI	NI	NI	NI
January 2001	0	0	0.03	15	NI	NI	0.10	45	1.17	1,200	NI	NI	NI	NI
December 2000	0.27	30	0.01	45	NI	NI	0.04	20	1.14	3,370	NI	NI	NI	NI
November 2000	0	0	0.00	0	NI	NI	0	0	1.37	2,050	NI	NI	NI	NI
October 2000	0	0	0.07	25	NI	NI	0	0	1.92	2,850	NI	NI	NI	NI
September 2000	0	0	0.01	10	NI	NI	0	0	3.25	9,120	NI	NI	NI	NI
August 2000	0	0	0.00	0	NI	NI	0	0	4.41	9,450	NI	NI	NI	NI
July 2000	0.03	0	0.12	57	NI	NI	0.01	10	2.27	7,020	NI	NI	NI	NI
June 2000	0.66	453	0.23	750	NI	NI	0.58	1,760	4.07	11,350	NI	NI	NI	NI
	Total Volume Removed:	0.96 Liters	Total Volume Removed:	2.45 Liters	Total Volume Removed:	1.18 Liters	Total Volume Removed:	2.1 Liters	Total Volume Removed:	153 Liters	Total Volume Removed:	3.08 Liters	Total Volume Removed:	0.525 Liters

See Notes on Page 3.

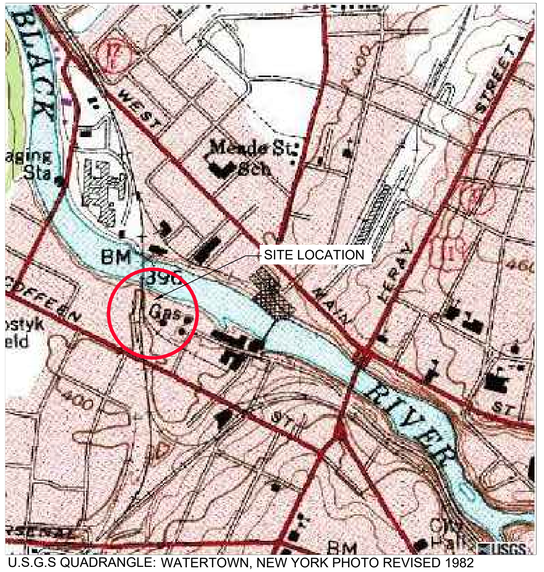
Table 5. NAPL Monitoring and Removal Summary, Remedial Investigation
National Grid, Watertown (Engine Street) Former MGP Site, Watertown, New York

Notes:

ml = milliliters.
Total volume removed given in liters.
NAPL thickness measurements were obtained with an oil/water interface probe.
NAPL was removed from monitoring wells using either a dedicated polyethylene bailer on a polypropylene rope or a peristaltic pump and dedicated polyethylene tubing.
TIC = Top of the inner well casing.
Monthly NAPL thicknesses based on the average thickness for the month. The monitoring/removal program was conducted 1 to 3 times per month during the initiation of the program in 2000; however, based on the recently observed rate of NAPL accumulation in wells, the frequency of monitoring has decreased to once per month to once every-other month.
0 = A measurable thickness of NAPL was not observed.
MW-8R covered with 6 to 8 feet of snow on January 31, 2003 and March 6, 2003 and unable to access.
January 2004 - unable to access wells for gauging due to large snow piles.
MW-6R was covered with equipment and could not be gauged June 3 or June 24, 2004.
-- = No measurement.
NI = Monitoring well not yet installed.
January 2005 - unable to remove DNAPL due to extreme cold weather. Also, access blocked to many wells due to snow piles.
December 2005 - unable to gauge MW-6RD or MW-11R due to snow and ice cover.
NA = DNAPL was not detected by the oil/water interface probe at MW-4R; however, 50 milliliters of DNAPL were removed by bailing.

CONSTRUCTION DRAWINGS
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL
WATERTOWN (ENGINE STREET) FORMER MGP SITE (SITE NUMBER 6-23-011)
WATERTOWN, NEW YORK

LIST OF DRAWINGS

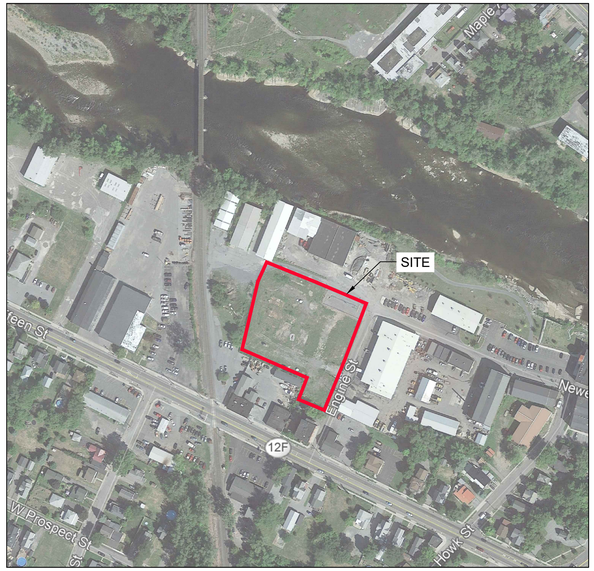


U.S.G.S QUADRANGLE: WATERTOWN, NEW YORK PHOTO REVISED 1982

NORTH

LOCATION MAP

SCALE: N.T.S.



NORTH

VICINITY MAP

SCALE: N.T.S.

PREPARED FOR

NIAGARA MOHAWK POWER CORPORATION (D/B/A NATIONAL GRID)
300 ERIE BOULEVARD WEST
SYRACUSE, NEW YORK 13202

PREPARED BY

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES

500 NORTH FRANKLIN TURNPIKE
RAMSEY, NEW JERSEY 07446

300 GREAT OAKS BLVD, SUITE 300
ALBANY, NEW YORK 12203

APRIL 2024

Adam R. Sherman

Signer Name: Adam Sherman
Signing Reason: I approved this document.
Signing Time: 2024-04-29 08:43:59(PDT)

GENERAL NOTES

1. DIFFERENCES IDENTIFIED BY THE CONTRACTOR BETWEEN THE REMEDIAL DESIGN AND ACTUAL SITE CONDITIONS, WHICH MAY AFFECT CONSTRUCTION, SHALL BE SUBMITTED TO NATIONAL GRID, OR THEIR DULY APPOINTED REPRESENTATIVE AND DESIGN ENGINEER IN WRITING FOR CLARIFICATION.
2. INFORMATION RELATED TO SUBSURFACE CONDITIONS SHOULD BE CONSIDERED APPROXIMATE AND SHOULD NOT BE RELIED ON AS A COMPLETE DEPICTION OF SITE CONDITIONS.
3. THE TECHNICAL WORK AND CONTRACTOR REQUIREMENTS ARE DESCRIBED IN SEVERAL COMPONENTS THAT COLLECTIVELY REPRESENT THE REMEDIAL DESIGN. THESE COMPONENTS INCLUDE THE DESIGN DRAWINGS, TECHNICAL SPECIFICATIONS, AND OTHER DESIGN REPORT APPENDICES (E.G., CONSTRUCTION QUALITY ASSURANCE PLAN; COMMUNITY AIR MONITORING PLAN; AND STORMWATER POLLUTION PREVENTION PLAN). THESE COMPONENTS SHOULD BE THOROUGHLY REVIEWED BY THE CONTRACTOR. INFORMATION PRESENTED IN ANY OF THE ABOVE DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR'S OBLIGATIONS TO SATISFY THE COMPONENTS SPECIFIED IN THE OTHER DOCUMENTS. IN ADDITION, IN THE EVENT THAT THERE ARE DISCREPANCIES IN THE INFORMATION CONTAINED IN THE ABOVE-LISTED DOCUMENTS, THE CONTRACTOR SHALL IDENTIFY SUCH DISCREPANCIES IN WRITING FOR REVIEW BY NATIONAL GRID, THEIR APPOINTED REPRESENTATIVES, AND DESIGN ENGINEER.
4. PORTIONS OF THIS PROPERTY FALL WITHIN A 100-YEAR FLOOD PLAIN, WITH NO SPECIFIC FLOOD ZONE SHOWN. THIS WAS DETERMINED USING GIS MAPPING PROVIDED BY THE CITY OF WATERTOWN GIS MAPPING WEB SITE. (https://maps.watertown-ny.gov/portal/home/) THE FEDERAL EMERGENCY MANAGEMENT AGENCY COULD NOT PROVIDE ANY FLOOD DATA FOR THIS AREA.
5. THE REMEDIAL DESIGN REPORT (RDR) FOR THE SITE WAS SUBMITTED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) IN MAY 2014 AND WAS APPROVED BY THE NYSDEC IN A LETTER DATED JULY 14, 2014. THE MAY 2014 RDR, AS IT PERTAINS TO THE PHASE III REMEDIAL ACTION, SHALL BE CONSIDERED INCORPORATED BY REFERENCE INTO THE PHASE III DESIGN DOCUMENTS. NOTE THAT THE PHASE III DRAWINGS AND TECHNICAL SPECIFICATIONS SUPERSEDE THE DRAWINGS AND SPECIFICATIONS PROVIDED IN THE MAY 2014 RDR AS IT RELATES TO THE PHASE III REMEDIATION AND RESTORATION COMPONENTS.

UTILITY NOTES

1. UTILITY LOCATIONS OBTAINED FROM INFORMATION PROVIDED BY THE UTILITY COMPANIES, FIELD MARKOUTS FROM UTILITY COMPANIES (SURVEYED BY DELTA ENGINEER, ARCHITECTS, AND LAND SURVEYORS), AND SUBSURFACE UTILITY SCAN PERFORMED BY ENVIRONSCAN, INC., AND SUPPLEMENTED BY FIELD OBSERVATIONS BY BROWN AND CALDWELL ASSOCIATES.
2. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES SHOWN ON THESE DRAWINGS ARE BASED ON FIELD LOCATIONS, WHERE VISIBLE OR FROM RECORDED DRAWINGS PROVIDED TO THE UNDERSIGNED. THEREFORE, LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE ADDITIONAL FACILITIES OR UTILITIES, THE EXISTENCE OF WHICH ARE NOT KNOWN. CONTACT AND COORDINATE WITH DIG SAFELY NEW YORK FOR SUBSURFACE UTILITY LAYOUT BEFORE ANY EARTH DISTURBING ACTIVITIES BEGIN. THE DIG SAFELY NEW YORK NUMBER IS 811. THEIR WEBSITE IS WWW.DIGSAFELYNEWYORK.COM.
3. APPROXIMATE LOCATION OF SANITARY SEWER AND STORM SEWER WAS OBTAINED FROM DRAWINGS PROVIDED BY CITY OF WATERTOWN ENGINEERING DEPARTMENT AND CITY OF WATERTOWN CODE ENFORCEMENT.
4. THE CONTRACTOR SHALL VERIFY THE PRESENCE AND LOCATIONS OF ALL ABOVEGROUND AND UNDERGROUND SITE FEATURES RELEVANT TO AND POTENTIALLY ENCOUNTERED DURING PERFORMANCE OF THIS PROJECT. ADDITIONAL SITE FEATURES/UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE DRAWINGS.
5. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY BRACING, REMOVAL, RELOCATION, AND REPLACEMENT OF ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES, AND/OR OVERHEAD WIRES THAT ARE NEAR OR WITHIN THE PROJECT WORK LIMITS OF CONSTRUCTION, OR THAT MAY INTERFERE WITH THE PROJECT.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION, RELOCATION, AND/OR MAINTENANCE OF UNDERGROUND AND OVERHEAD UTILITIES WHICH MAY BE IMPACTED DURING CONSTRUCTION. ALL UTILITIES, UNLESS STATED OTHERWISE, SHALL REMAIN FUNCTIONAL DURING THE PROGRESSION OF THIS PROJECT.
7. AN EXISTING GAS REGULATOR STATION IS LOCATED IN THE NORTHEASTERN CORNER OF THE NATIONAL GRID PROPERTY. THE GAS REGULATOR STATION WILL REMAIN IN OPERATION THROUGHOUT THE PROJECT AND SHALL BE PROTECTED FROM POTENTIAL DAMAGE BY THE CONTRACTOR.

BASE MAP SOURCE NOTES

1. ACTUAL SITE FEATURES MAY DIFFER FROM THOSE DEPICTED ON THE DESIGN DRAWINGS AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL IDENTIFY AND DOCUMENT CHANGES (IN WRITING) TO SITE FEATURES TO THE EXTENT THAT THEY COULD POTENTIALLY IMPACT IMPLEMENTATION OF THE PROJECT.
2. EXISTING TOPOGRAPHY AND PROPERTY LINE INFORMATION IS OBTAINED FROM THE ELECTRONIC DRAWING FILE "TOPOGRAPHICAL SURVEY, SOIL BORING & MONITORING WELLS LOCATIONS, FORMER MGP SITE, COFFEEN STREET, SILL STREET, LAWRENCE STREET AND ENGINE STREET, CITY OF WATERTOWN, JEFFERSON COUNTY, STATE OF NEW YORK", PREPARED BY DELTA ENGINEERS, ARCHITECTS & LAND SURVEYORS, 4873 NEW YORK STATE ROUTE #5, VERNON, NEW YORK 13476, DATED JUNE 7, 2010 AND REVISED ON NOVEMBER 27, 2018 TO INCLUDE ADDITIONAL TOPOGRAPHIC INFORMATION NEAR THE FORMER BOAT BARN AND NASCO BUILDING. ALL ELEVATIONS ARE TIED INTO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).

SAFETY NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY MEASURES AND PROGRAMS IN CONNECTION WITH THE PROJECT. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTIONS TO PROTECT, SITE WORKERS, CONSTRUCTION OVERSIGHT PERSONNEL, AND SITE VISITORS.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF 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 THE OCCUPATIONAL SAFETY AND HEALTH ACT 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 CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS SET FORTH UNDER 29 CFR 1910 AND 29 CFR 1926. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND THE 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, INC.
3. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, AND PROVIDE ALL EXCAVATION SHORING/BRACING, SCAFFOLDING, SHIELDING, DUST/VAPOR/ODOR PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES REQUIRED. AS NEEDED, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT LIGHT DURING NIGHT HOURS TO SECURE SUCH PROTECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING SECURITY ON SITE FOR THE DURATION OF WORK FROM THE DATE OF INITIAL MOBILIZATION UNTIL THE DATE OF FINAL DEMOBILIZATION, OR AS OTHERWISE DIRECTED BY NATIONAL GRID, THEIR DULY APPOINTED REPRESENTATIVE, OR DESIGN ENGINEER.
4. 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 CONTRACTOR SHALL DEVELOP AND IMPLEMENT APPROPRIATE HEALTH AND SAFETY MEASURES FOR ITS EMPLOYEES, SUBCONTRACTORS, AND SITE VISITORS, AND FOR PROTECTION OF THE ENVIRONMENT AND SURROUNDING COMMUNITY. THE CONTRACTOR'S HEALTH AND SAFETY PLAN SHALL BE DEVELOPED IN ACCORDANCE WITH APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS.
5. THE CONTRACTOR'S HEALTH AND SAFETY PLAN 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. OF ADDITIONAL NOTE AND EMPHASIS ARE THOSE ACTIVITIES THAT POTENTIALLY INVOLVE WORK WITHIN THE EXCAVATION AREAS ONCE EXCAVATION/BACKFILL ACTIVITIES ARE INITIATED, AND THAT POTENTIALLY REQUIRE WORKER ACCESS INTO THE EXCAVATED AREAS. THE CONTRACTOR SHALL CLEARLY IDENTIFY AND EVALUATE THE SPECIFIC TYPES OF ACTIVITIES THAT COULD INVOLVE WORKER ENTRY INTO THE EXCAVATION AREAS, SPECIFIC INGRESS/EGRESS ROUTES AND PROVISIONS, PERSONNEL AND WORK AREA MONITORING, PERSONAL PROTECTION EQUIPMENT, COMMUNICATIONS, ETC. FURTHER, TO THE EXTENT PRACTICABLE (AS DETERMINED BY THE CONTRACTOR), THE CONTRACTOR IS ENCOURAGED TO MINIMIZE WORKER ENTRY INTO THE EXCAVATED AREAS.

ABBREVIATIONS

AGS	ABOVE GROUND SURFACE
A.K.A.	ALSO KNOWN AS
BC	BROWN AND CALDWELL ASSOCIATES
BGS	BELOW GROUND SURFACE
BR	BEDROCK
CAMP	COMMUNITY AIR MONITORING PLAN
CC	CORE BORING
CF	CUBIC FEET
CFR	CODE OF FEDERAL REGULATIONS
C.I.	CAST IRON
CL	CENTERLINE
ECL	ENVIRONMENTAL CONSERVATION LAW
EL	ELEVATION
EMH	ELECTRICAL MANHOLE
ESC	EROSION AND SEDIMENT CONTROL
FT	FEET
IN	INCHES
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MW	MONITORING WELL
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NMPC	NIAGARA MOHAWK POWER CORPORATION
N.T.S.	NOT TO SCALE
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NYSDOT	NEW YORK STATE DEPARTMENT OF TRANSPORTATION
OB	OVERBURDEN
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OWS	OIL/WATER SEPARATOR
OZ	OUNCE
PPE	PERSONAL PROTECTIVE EQUIPMENT
PZ	PIEZOMETER
RA	REMEDIAL ACTION
ROD	RECORD OF DECISION
RD	REMEDIAL DESIGN
SB	SOIL BORING
SF	SQUARE FOOT
SPDES	STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
SSO	SITE SAFETY OFFICER
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
SY	SQUARE YARD
TLS	TAR LIQUOR SUMP
TP	TEST PIT
TYP	TYPICAL
YR	YEAR

SYMBOLS AND ABBREVIATIONS NOTES

1. ABBREVIATIONS ARE FOR REFERENCE ONLY. NOT ALL ABBREVIATIONS ARE USED IN THIS CONTRACT.
2. CONTACT THE DESIGN ENGINEER DURING BIDDING FOR ANY SYMBOLS NOT LISTED IN THE CONTRACT.
3. INDIVIDUAL DRAWINGS WITH NOTES REGARDING SYMBOLS TAKE PRECEDENCE OVER THESE SYMBOLS.

EXISTING CONDITIONS LEGEND

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 — EXISTING GROUND CONTOUR
- X — FENCE
- RAILROAD TRACKS
- S — SANITARY SEWER LINE
- ST — STORM SEWER LINE
- W — WATER MAIN
- OHW — OVERHEAD WIRE
- UC — UNDERGROUND CABLE
- UE — UNDERGROUND ELECTRIC LINE
- T — TELEPHONE
- G — GAS LINE
- FHA — SPECIAL FLOOD HAZARD AREA (ZONE A) SUBJECT TO INUNDATION BY 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD)
- MW — MONITORING WELL
- SG-2 — STREAM GAGE
- BM #2 — BENCHMARK
- STORMWATER CATCH BASIN
- MANHOLE
- GAS VALVE

REMEDIAL ACTION LEGEND

- LOW — LIMIT OF WORK
- LOD — LIMIT OF DISTURBANCE
- APPROXIMATE ALIGNMENT OF COFFERDAM/SEDIMENT CURTAIN/OIL BOOM
- TEMPORARY STAGING AREA
- S10 — SEDIMENT REMOVAL LOCATION
- SITE ACCESS/TRAFFIC FLOW
- SILT FENCING OR FILTER SOCK
- CATCH BASIN PROTECTION

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
153076_DBorder.dwg

STATE OF NEW YORK — ADAM RICHARD SHERMAN — 127330 — LICENSED PROFESSIONAL ENGINEER

ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 127330

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

GENERAL NOTES AND LEGEND

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BC PROJECT NUMBER 160117
CLIENT PROJECT NUMBER
DRAWING NUMBER C-000
SHEET NUMBER OF

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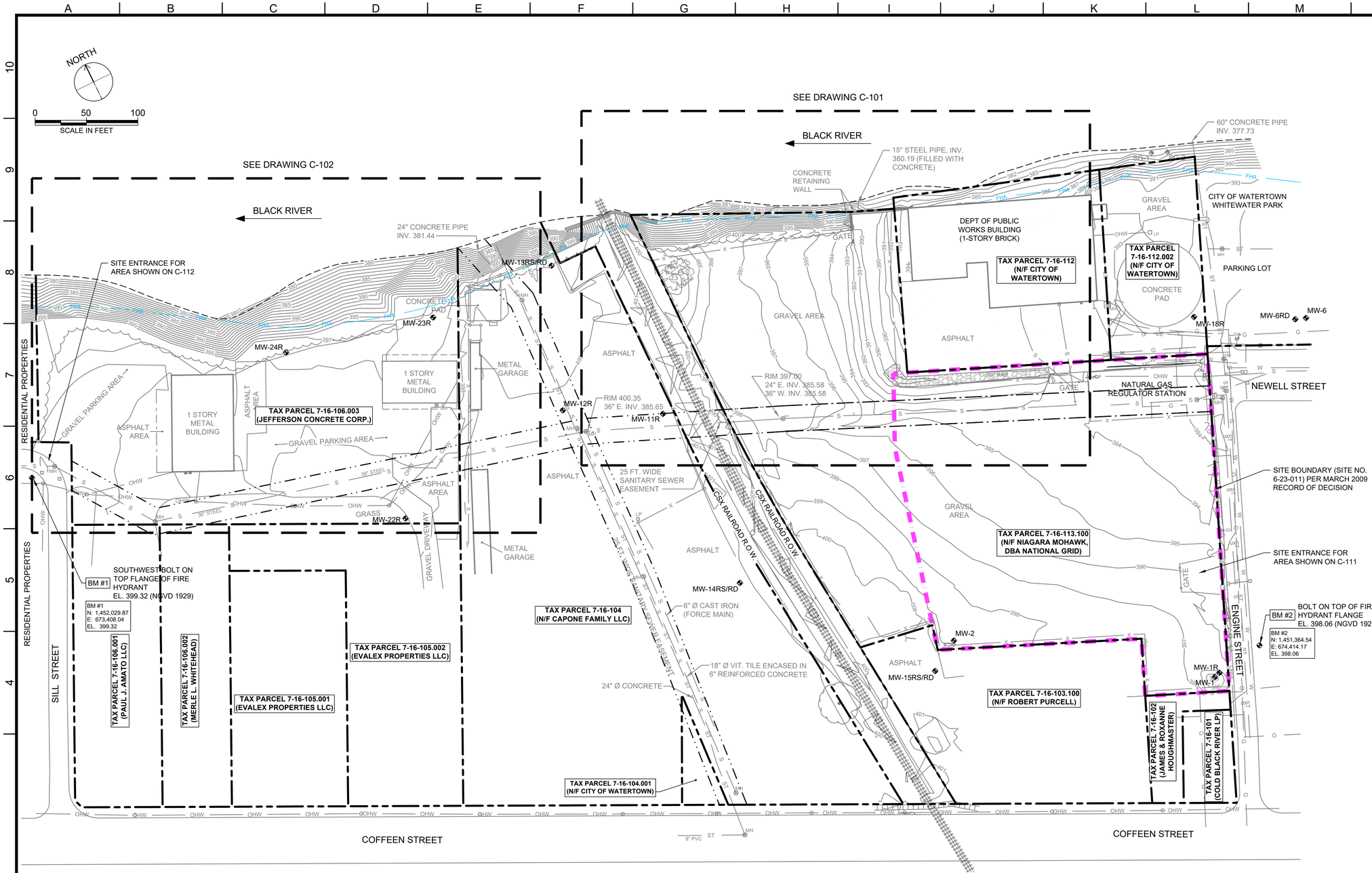

SOURCE NOTES:

1. SURVEY IN CENTRAL ZONE OF THE STATE PLANE COORDINATE SYSTEM IN NEW YORK STATE (NAD 1983). ELEVATIONS SHOWN ARE BASED ON VERTICAL DATUM NGVD 1929.
2. BASEMAP INFORMATION AND PROPERTY BOUNDARY LINE AND TAX PARCEL LINE INFORMATION IS TAKEN FROM A MAP ENTITLED "SOIL BORING & MONITORING LOCATIONS" - FORMER MGP SITE-COFFEEN STREET, SILL STREET, LAWRENCE STREET, AND ENGINE STREET-CITY OF WATERTOWN-JEFFERSON COUNTY-STATE OF NEW YORK DONE BY DELTA ENGINEERS, ARCHITECTS, & LAND SURVEYORS, 4873 NYS RT. 5, VERNON, NY 13476, DATED JUNE 7, 2010.
3. PROPERTY LINE AND PROPERTY OWNER INFORMATION UPDATED BASED ON CITY OF WATERTOWN TAX MAP FOR SECTION 07, BLOCK 16 DATED DECEMBER 27, 2016.
4. UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLACED ON THIS DRAWING FROM FIELD LOCATIONS (WHERE VISIBLE), VARIOUS SURVEYS, OR FROM HISTORICAL DRAWINGS. EXTENTS OF SUBSURFACE FEATURES SHOULD BE CONSIDERED APPROXIMATE.
5. INFORMATION DEPICTED ON THE NATIONAL GRID PROPERTY (TAX PARCEL 7-16-113.100) AND CITY OF WATERTOWN PROPERTY (TAX PARCEL 7-16-112) ARE BASED ON RECORD SURVEYS PERFORMED BY NMB LAND SURVEYING PLLC, 20 TROY AVENUE, WYNANTSKILL, NY 12198, DATED JANUARY 28, 2020, AND MARCH 12, 2021, WHICH DEPICT POST-REMEDIATION CONDITIONS (FOLLOWING COMPLETION OF PHASE I AND PHASE IIA REMEDIATION).
6. SITE BOUNDARY BASED ON MARCH 2009 RECORD OF DECISION FOR NYSDEC SITE NO. 6-23-011.
7. PORTIONS OF THIS PROPERTY FALL WITHIN A 100-YEAR FLOOD PLAIN, WITH NO SPECIFIC FLOOD ZONE SHOWN. THIS WAS DETERMINED USING GIS MAPPING PROVIDED BY THE CITY OF WATERTOWN GIS MAPPING WEB SITE. (https://maps.watertown-ny.gov/portal/home/) THE FEDERAL EMERGENCY MANAGEMENT AGENCY COULD NOT PROVIDE ANY FLOOD DATA FOR THIS AREA.

LEGEND:

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 EXISTING GROUND CONTOUR
- X FENCE
- RAILROAD TRACKS
- S SANITARY SEWER LINE
- ST STORM SEWER LINE
- W WATER MAIN
- OHW OVERHEAD WIRE
- UC UNDERGROUND CABLE
- UE UNDERGROUND ELECTRIC LINE
- T TELEPHONE
- G GAS LINE
- FHA SPECIAL FLOOD HAZARD AREA (ZONE A) SUBJECT TO INUNDATION BY 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD)
- MW MONITORING WELL
- SG-2 STREAM GAGE
- BM #2 BENCHMARK
- STORMWATER CATCH BASIN
- MANHOLE
- GAS VALVE

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
153076_02SPV19.dwg
153076_02GDV19.dwg
153076_DBorder.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087005
DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

OVERALL EXISTING CONDITIONS PLAN

FILENAME
160117_PH3(SED)_C-100.dwg
BC PROJECT NUMBER
160117
CLIENT PROJECT NUMBER
DRAWING NUMBER
C-100
SHEET NUMBER
OF

Apr 24, 2024 - 2:55pm
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RJohnson

NORTH

0 20 40
SCALE IN FEET

BLACK RIVER

15" STEEL PIPE, INV. 380.19 (FILLED WITH CONCRETE)

CONCRETE RETAINING WALL

GATE

DEPT OF PUBLIC WORKS BUILDING (1-STORY BRICK)

TAX PARCEL 7-16-112 (N/F CITY OF WATERTOWN)

GRAVEL AREA

TAX PARCEL 7-16-113.100 (N/F NIAGARA MOHAWK, DBA NATIONAL GRID)

ASPHALT

CSX RAILROAD R.O.W.

RIP RAP

GATE

RIM 400.35
36" E. INV. 385.65

MW-11R

MH

25 FT. WIDE SANITARY SEWER EASEMENT

25 FT. WIDE SANITARY SEWER EASEMENT

RIM 397.00
24" E. INV. 385.58
36" W. INV. 385.58

GRAVEL AREA

ASPHALT

NOTES:

1. REFER TO SOURCE NOTES ON DRAWING C-100.

LEGEND:

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 EXISTING GROUND CONTOUR
- X FENCE
- RAILROAD TRACKS
- S SANITARY SEWER LINE
- ST STORM SEWER LINE
- W WATER MAIN
- OHW OVERHEAD WIRE
- UC UNDERGROUND CABLE
- UE UNDERGROUND ELECTRIC LINE
- T TELEPHONE
- G GAS LINE
- FHA SPECIAL FLOOD HAZARD AREA (ZONE A) SUBJECT TO INUNDATION BY 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD)
- MW MONITORING WELL
- STORMWATER CATCH BASIN
- MANHOLE
- GAS VALVE

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
153076_02SPV19.dwg
153076_02GDV19.dwg
153076_DBorder.dwg

ADAM RICHARD SHERMAN
LICENSED PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087606
DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

EXISTING CONDITIONS DETAIL PLAN (SHEET 1 OF 2)

FILENAME: 160117_PH3(SED)_C-100.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-101
SHEET NUMBER OF:

Apr 24, 2024 - 2:56pm RJohnson
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NORTH

0 20 40
SCALE IN FEET

BLACK RIVER

24" CONCRETE PIPE
INV. 381.44

CONCRETE PAD

MW-23R

MW-24R

MW-22R

25 FT WIDE SANITARY SEWER EASEMENT

METAL GARAGE

1 STORY METAL BUILDING

TAX PARCEL 7-16-106.003
(JEFFERSON CONCRETE CORP.)

1 STORY METAL BUILDING

ASPHALT AREA

GRAVEL PARKING AREA

ASPHALT AREA

GRAVEL PARKING AREA

25 FT WIDE SANITARY SEWER EASEMENT

25 FT WIDE SANITARY SEWER EASEMENT

ASPHALT AREA

GRASS

RESIDENTIAL PROPERTIES

RESIDENTIAL PROPERTIES

SILL STREET

36" STEEL

MH

NOTES:

1. REFER TO SOURCE NOTES ON DRAWING C-100.

LEGEND:

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 EXISTING GROUND CONTOUR
- X FENCE
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Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

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DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

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153076_02SPV19.dwg
153076_02GDV19.dwg
153076_DBorder.dwg

STATE OF NEW YORK * ADAM RICHARD SHERMAN * 087668 * LICENSED PROFESSIONAL ENGINEER

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087668

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

EXISTING CONDITIONS DETAIL PLAN (SHEET 2 OF 2)

FILENAME: 160117_PH3(SED)_C-100.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-102
SHEET NUMBER OF

Apr 24, 2024 - 2:55pm
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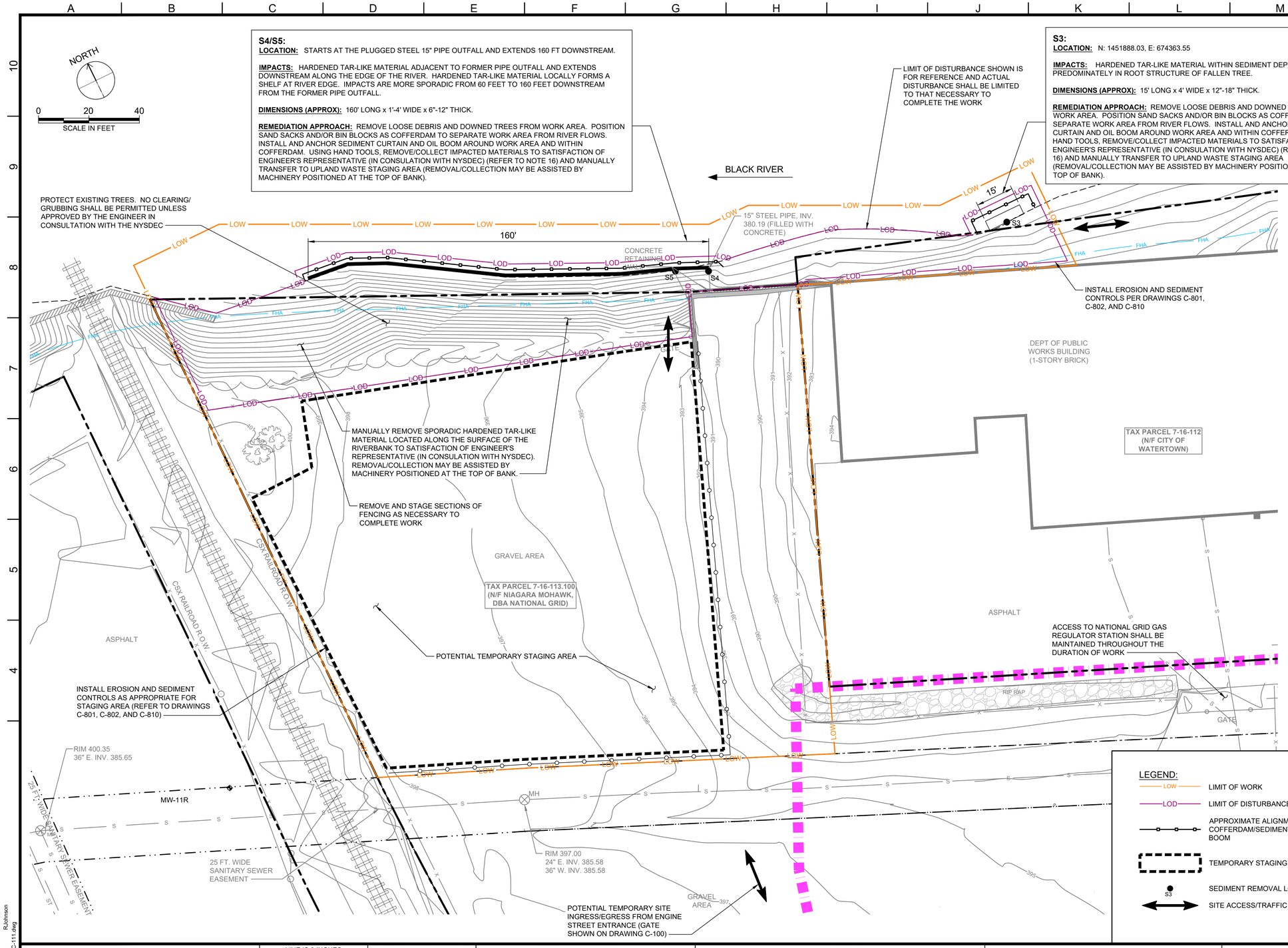
RJohnson



NOTES:

1. REFER TO SPECIFICATION SECTION 01 10 00 FOR A SITE DESCRIPTION, INCLUDING RIVER FLOW INFORMATION, AND SUMMARY OF THE WORK ACTIVIES. REFER TO SPECIFICATION SECTION 01 10 00 ATTACHMENTS A AND B FOR PHOTOGRAPHIC LOGS OF THE SEDIMENT REMOVAL AREAS.
2. REFER TO SPECIFICATION SECTION 31 23 16 FOR RIVERBANK HARDENED TAR REMOVAL AND SEDIMENT REMOVAL/RESTORATION REQUIREMENTS. REMOVAL ACTIVITIES ARE ANTICIPATED TO BE COMPLETED USING MANUAL METHODS POTENTIALLY ASSISTED BY MACHINERY POSITIONED AT THE TOP OF THE RIVERBANK.
3. WORK WITHIN THE RIVER SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS AND CONDITIONS OF THE USACE PERMIT. THE BLACK RIVER SHALL BE MONITORED VISUALLY FOR TURBIDITY THAT CAUSES A SUBSTANTIAL CONTRAST TO NATURAL CONDITIONS.
4. CONTRACTOR SHALL CONDUCT WORK IN THE RIVER DURING PERIODS OF LOW FLOW BASED ON WEATHER FORECASTS AND COORDINATION WITH THE BLACK RIVER DAM OPERATIONS. DURING PREDICTED PERIODS OF HIGH FLOW OR PREDICTED STORM EVENTS, THE CONTRACTOR SHALL TEMPORARILY STABILIZE DISTURBED AREAS WITH CRUSHED STONE OR RIP-RAP AND REMOVE TEMPORARY CONTROLS THAT MAY BE DAMAGED OR DISPLACED BY HIGH RIVER FLOWS (E.G., TURBIDITY CURTAINS, OIL BOOMS). CONTRACTOR SHALL WORK IN SMALL AREAS TO ALLOW FOR FLEXIBILITY TO REACT TO RIVER CONDITIONS.
5. REFER TO DRAWINGS C-801, C-802, AND C-810 AND SPECIFICATION SECTION 31 25 13 FOR EROSION AND SEDIMENT CONTROL PLANS, DETAILS, AND REQUIREMENTS. EROSION AND SEDIMENT CONTROLS SHALL BE IN PLACE PRIOR TO CONDUCTING REMOVAL ACTIVITES AND SHALL REMAIN IN PLACE UNTIL RESTORATION IS COMPLETE.
6. DEWATERING SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 31 23 19 TO FACILITATE WORK AND ALLOW FOR VISUAL INSPECTION OF THE RIVER BOTTOM. EXTRACTED WATER SHALL BE CONTAINERIZED ON-SITE IN FRAC TANKS, CHARACTERIZED, AND TRANSPORTED OFF-SITE FOR TREATMENT/DISPOSAL. CONTRACTOR SHALL INSTALL CONTROLS AND IMPLEMENT THE WORK IN A MANNER THAT MINIMIZES DEWATERING VOLUMES TO THE EXTENT PRACTICABLE, AS DETERMINED BY THE CONSTRUCTION MANAGER. THE CONTRACTOR WILL BE REQUIRED TO MODIFY THE WORK IF DEWATERING VOLUMES ARE DEEMED EXCESSIVE OR DEWATERING ACTIVITIES ARE OTHERWISE NOT SATISFACTORY TO THE CONSTRUCTION MANAGER.
7. REFER TO DRAWING C-140 FOR WORK AREA RESTORATION.
8. CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO THE AREAS DEPICTED ON THESE DRAWINGS UNLESS OTHERWISE APPROVED BY NATIONAL GRID.
9. ACCESS/TRAFFIC ROUTES SHOWN ARE GENERALIZED. ACTUAL ACCESS/TRAFFIC ROUTES SHALL BE ESTABLISHED BY THE CONTRACTOR IN COORDINATION WITH THE DESIGN ENGINEER AND CONSTRUCTION MANAGER.
10. CONTRACTOR SHALL SEQUENCE WORK IN A MANNER THAT LIMITS IMPACT TO ON-SITE ACTIVITIES AND TRAFFIC. WORK SHALL BE PERFORMED IN ACCORDANCE WITH EXECUTED ACCESS AGREEMENTS BETWEEN NATIONAL GRID AND PROPERTY OWNER(S).
11. CONTRACTOR SHALL ESTABLISH, MAINTAIN, AND PROTECT THE PROJECT WORK LIMITS INCLUDING SUPPORT ZONES, EXCLUSION ZONES, AND CONTAMINATION REDUCTION ZONES.
12. CONSTRUCTION TRAILERS, EQUIPMENT STAGING, MATERIAL STOCKPILES, WASTE CONTAINMENT AREA, TEMPORARY CONSTRUCTION ENTRANCE AND EXIT, AND DECONTAMINATION PAD SHALL BE LOCATED WITHIN THE LIMIT OF WORK.
13. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO IMPLEMENT COMMUNITY AIR MONITORING PLAN SPECIFIED IN THE COMMUNITY AIR MONITORING PLAN (CAMP).
14. CONTRACTOR SHALL MANAGE WASTE MATERIALS IN UPLAND STAGING AREAS AND AS REQUIRED IN THE TECHNICAL SPECIFICATIONS (SECTION 31 70 00).
15. CONTRACTOR SHALL MINIMIZE IMPACT TO EXISTING VEGETATION. PROTECT EXISTING TREES OUTSIDE OF THE WORK AREAS AND TRAFFIC WAYS AND WITHIN THE LIMIT OF WORK.
16. CONTRACTOR SHALL COMPLETE SEDIMENT REMOVAL TO THE SATISFACTION OF THE DESIGN ENGINEER'S REPRESENTATIVE, IN CONSULTATION WITH THE NYSDEC. REMOVAL AT EACH OF THE SEDIMENT REMOVAL LOCATIONS WILL BE COMPLETED, TO THE EXTENT PRACTICABLE, UNTIL NON-MGP-IMPACTED SEDIMENT ARE IDENTIFIED VISUALLY OR UNTIL BEDROCK OR COARSE NON-IMPACTED SUBSTRATES, SUCH AS COBBLES OR BOULDERS, ARE ENCOUNTERED.

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
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Bench_Mark.dwg
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153076_02GDV19.dwg
153076_DBorder.dwg
S0-SEDDEP_20xScale.dwg
Wells_20xScale.dwg
153076_RemActions.dwg

STATE OF NEW YORK * ADAM RICHARD SHERMAN * 087466 * LICENSED PROFESSIONAL ENGINEER

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087466

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

SEDIMENT REMOVAL PLAN
(SHEET 1 OF 2)

FILENAME 160117_PH3(SED)_C-111.dwg
BC PROJECT NUMBER 160117
CLIENT PROJECT NUMBER
DRAWING NUMBER C-111
SHEET NUMBER OF

Apr 24, 2024 - 2:56pm RJohnson
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S14:
LOCATION: N: 1452196.23, E: 673510.22

IMPACTS: BLACK DISCOLORED SOIL AT THE EDGE OF BANK. MODERATE TAR-LIKE ODOR WITH NO SHEEN. TAR-LIKE MATERIAL APPEARS TO BE TRAPPED WITHIN ROOT STRUCTURE.

DIMENSIONS (APPROX): 10' LONG x 4' WIDE x 12"-18" THICK

REMEDIATION APPROACH: REMOVE LOOSE DEBRIS AND DOWNED TREES FROM WORK AREA. POSITION SAND SACKS AND/OR BIN BLOCKS AS COFFERDAM TO SEPARATE WORK AREA FROM RIVER FLOWS. INSTALL AND ANCHOR SEDIMENT CURTAIN AND OIL BOOM AROUND WORK AREA AND WITHIN COFFERDAM. USING HAND TOOLS, REMOVE/COLLECT IMPACTED MATERIALS TO SATISFACTION OF ENGINEER'S REPRESENTATIVE (IN CONSULTATION WITH NYSDEC) (REFER TO NOTE 16 ON C-111) AND MANUALLY TRANSFER TO UPLAND WASTE STAGING AREA (REMOVAL/COLLECTION MAY BE ASSISTED BY MACHINERY POSITIONED AT THE TOP OF BANK).

S13:
LOCATION: N: 1452186.44, E: 673526.52

IMPACTS: SILT/SAND DEPOSITS WITH SLIGHT SHEEN/ODOR WHEN DISTURBED.

DIMENSIONS (APPROX): 6' LONG x 2' WIDE x 6"-12" THICK. EXTENDS FROM EDGE OF WATER TO 2' INTO THE RIVER AND LOCATED BETWEEN TWO BEDROCK OUTCROPS.

REMEDIATION APPROACH: REMOVE LOOSE DEBRIS AND DOWNED TREES FROM WORK AREA. POSITION SAND SACKS AND/OR BIN BLOCKS AS COFFERDAM TO SEPARATE WORK AREA FROM RIVER FLOWS. INSTALL AND ANCHOR SEDIMENT CURTAIN AND OIL BOOM AROUND WORK AREA AND WITHIN COFFERDAM. USING HAND TOOLS, REMOVE/COLLECT IMPACTED MATERIALS TO SATISFACTION OF ENGINEER'S REPRESENTATIVE (IN CONSULTATION WITH NYSDEC) (REFER TO NOTE 16 ON C-111) AND MANUALLY TRANSFER TO UPLAND WASTE STAGING AREA (REMOVAL/COLLECTION MAY BE ASSISTED BY MACHINERY POSITIONED AT THE TOP OF BANK).

S12:
LOCATION: N: 1452087.90, E: 673637.80

IMPACTS: SILT/SAND DEPOSITS WITH SLIGHT SHEEN/ODOR WHEN DISTURBED.

DIMENSIONS (APPROX): 13' LONG x 7' WIDE x 6"-12" THICK. EXTENDS FROM EDGE OF WATER TO 7' INTO THE RIVER.

REMEDIATION APPROACH: REMOVE LOOSE DEBRIS AND DOWNED TREES FROM WORK AREA. POSITION SAND SACKS AND/OR BIN BLOCKS AS COFFERDAM TO SEPARATE WORK AREA FROM RIVER FLOWS. INSTALL AND ANCHOR SEDIMENT CURTAIN AND OIL BOOM AROUND WORK AREA AND WITHIN COFFERDAM. USING HAND TOOLS, REMOVE/COLLECT IMPACTED MATERIALS TO SATISFACTION OF ENGINEER'S REPRESENTATIVE (IN CONSULTATION WITH NYSDEC) (REFER TO NOTE 16 ON C-111) AND MANUALLY TRANSFER TO UPLAND WASTE STAGING AREA (REMOVAL/COLLECTION MAY BE ASSISTED BY MACHINERY POSITIONED AT THE TOP OF BANK).

S11:
LOCATION: N: 1452082.58, E: 673660.55

IMPACTS: HARDENED TAR-LIKE MATERIAL UNDER ROOT STRUCTURE POSITIONED BETWEEN BEDROCK OUTCROPS AT THE EDGE OF WATER.

DIMENSIONS (APPROX): 20' LONG x 4' WIDE x 12"-18" THICK

REMEDIATION APPROACH: REMOVE LOOSE DEBRIS AND DOWNED TREES FROM WORK AREA. POSITION SAND SACKS AND/OR BIN BLOCKS AS COFFERDAM TO SEPARATE WORK AREA FROM RIVER FLOWS. INSTALL AND ANCHOR SEDIMENT CURTAIN AND OIL BOOM AROUND WORK AREA AND WITHIN COFFERDAM. USING HAND TOOLS, REMOVE/COLLECT IMPACTED MATERIALS TO SATISFACTION OF ENGINEER'S REPRESENTATIVE (IN CONSULTATION WITH NYSDEC) (REFER TO NOTE 16 ON C-111) AND MANUALLY TRANSFER TO UPLAND WASTE STAGING AREA (REMOVAL/COLLECTION MAY BE ASSISTED BY MACHINERY POSITIONED AT THE TOP OF BANK).

S10:
LOCATION: N: 1452081.30, E: 673676.17

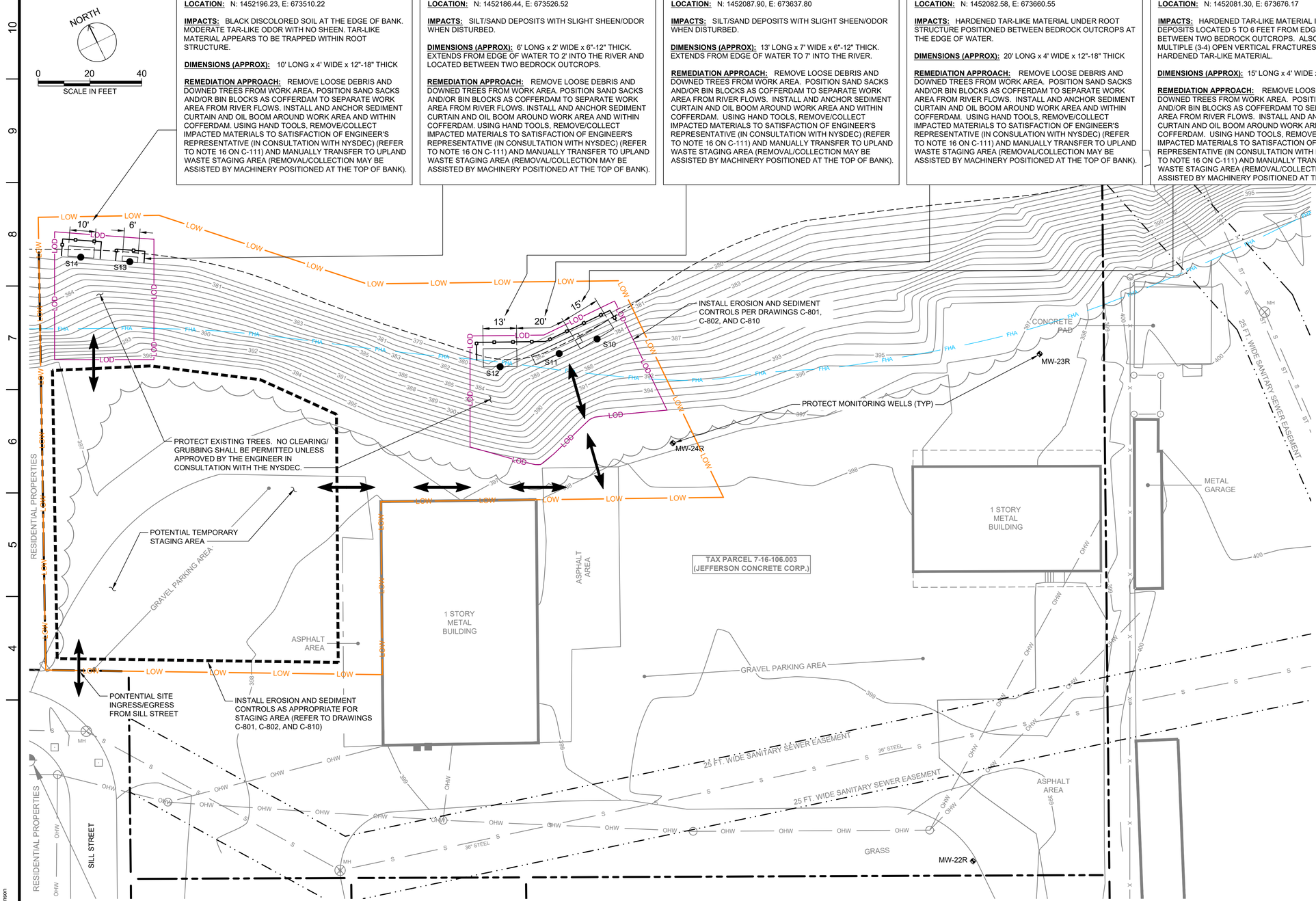
IMPACTS: HARDENED TAR-LIKE MATERIAL IN SEDIMENT DEPOSITS LOCATED 5 TO 6 FEET FROM EDGE OF WATER BETWEEN TWO BEDROCK OUTCROPS. ALSO INCLUDES MULTIPLE (3-4) OPEN VERTICAL FRACTURES FILLED WITH HARDENED TAR-LIKE MATERIAL.

DIMENSIONS (APPROX): 15' LONG x 4' WIDE x 6"-12" THICK.

REMEDIATION APPROACH: REMOVE LOOSE DEBRIS AND DOWNED TREES FROM WORK AREA. POSITION SAND SACKS AND/OR BIN BLOCKS AS COFFERDAM TO SEPARATE WORK AREA FROM RIVER FLOWS. INSTALL AND ANCHOR SEDIMENT CURTAIN AND OIL BOOM AROUND WORK AREA AND WITHIN COFFERDAM. USING HAND TOOLS, REMOVE/COLLECT IMPACTED MATERIALS TO SATISFACTION OF ENGINEER'S REPRESENTATIVE (IN CONSULTATION WITH NYSDEC) (REFER TO NOTE 16 ON C-111) AND MANUALLY TRANSFER TO UPLAND WASTE STAGING AREA (REMOVAL/COLLECTION MAY BE ASSISTED BY MACHINERY POSITIONED AT THE TOP OF BANK).

NOTES:

1. REFER TO NOTES ON C-111.



LEGEND:

- LOW — LIMIT OF WORK
- LOD — LIMIT OF DISTURBANCE
- APPROXIMATE ALIGNMENT OF COFFERDAM/SEDIMENT CURTAIN/OIL BOOM
- TEMPORARY STAGING AREA
- S10 — SEDIMENT REMOVAL LOCATION
- SITE ACCESS/TRAFFIC FLOW

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES

- Basemap_Topo-Bdry Srvy.dwg
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- Flood-Area.dwg
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- 153076_02GDV19.dwg
- 153076_DBorder.dwg
- Wells_20xScale.dwg
- S0-SEDDEP_20xScale.dwg
- 153076_RemActions.dwg

ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 091466

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

SEDIMENT REMOVAL PLAN (SHEET 2 OF 2)

FILENAME: 160117_PH3(SED)_C-112.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-112
SHEET NUMBER OF:

Apr 24, 2024 - 2:56pm RJohnson
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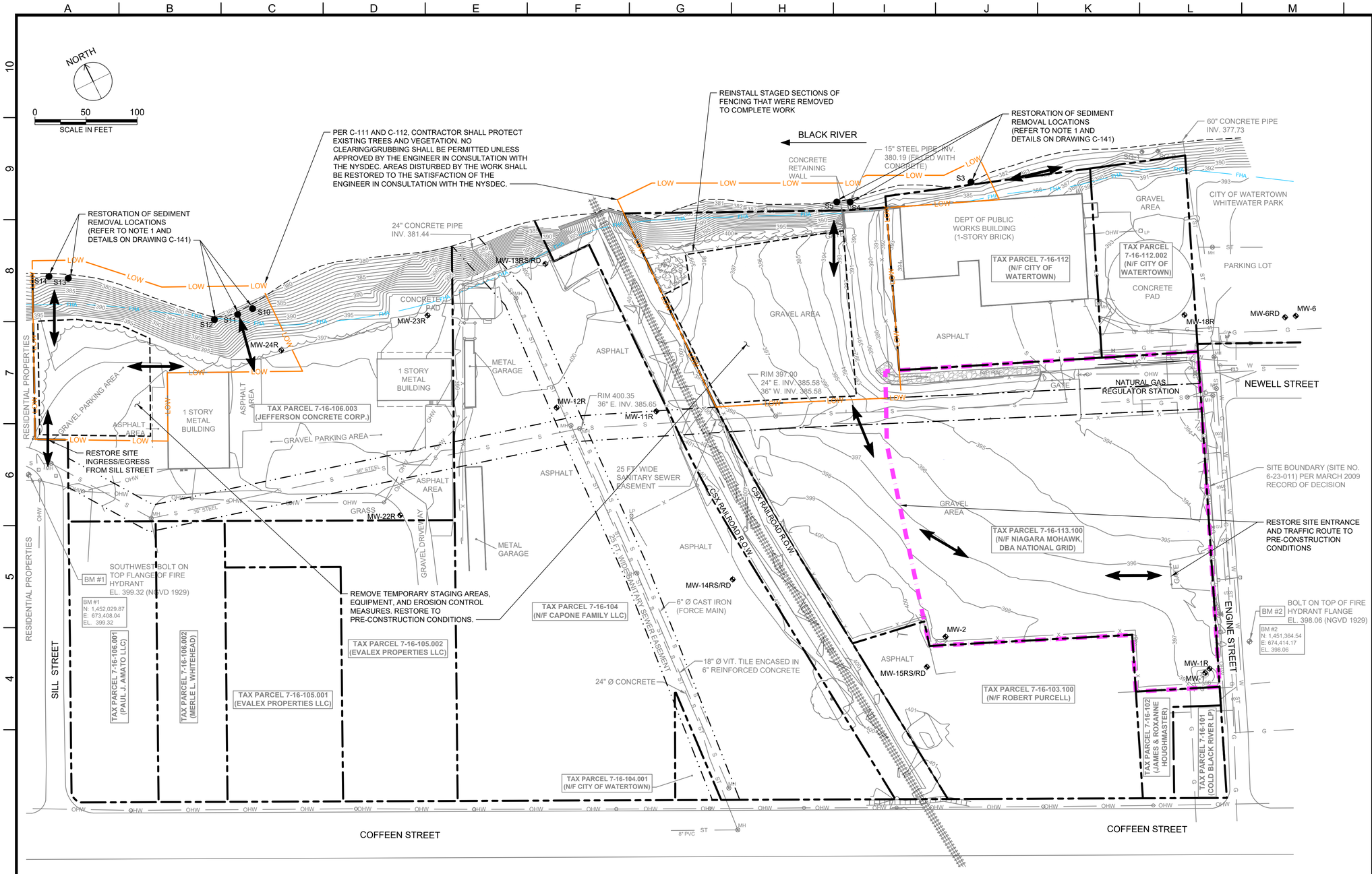

NOTES:

1. THE FOLLOWING PROVIDES DETAILS FOR RESTORATION OF THE SEDIMENT REMOVAL AREAS. ANY COMBINATION OF THE THREE RESTORATION SCENARIOS COULD APPLY BASED ON THE EXTENT OF THE REMOVAL. RESTORATION WILL BE DETERMINED BY THE ENGINEER'S REPRESENTATIVE, IN CONSULTATION WITH THE NYSDEC:
   A. BEYOND THE TOE OF SLOPE (I.E., WITHIN THE RIVERBED), RESTORATION OF REMOVAL AREAS MAY CONSIST OF PLACEMENT OF CRUSHED STONE [NYSDOT NO. 1 OR NO. 2 STONE (0.25" TO 1.5")] OR, AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC, NO RESTORATION WILL BE PERFORMED IN AREAS WHERE BEDROCK OR COARSE-GRAINED MATERIALS WILL REMAIN EXPOSED. REFER TO DETAIL 1 ON DRAWING C-141.
   B. WHERE REMOVAL EXTENDS INTO THE TOE OF BANK, RESTORATION SHALL CONSIST OF A COMBINATION/BLEND OF ANGULAR BOULDERS (24" MIN. DIMENSION), ANGULAR RIP RAP (D50 = 8"), AND/OR CRUSHED STONE [NYSDOT NO. 1 OR NO. 2 STONE (0.25" TO 1.5")], AS APPROPRIATE PENDING EXTENT OF REMOVAL AREA AND AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC. REFER TO DETAIL 2 ON DRAWING C-141.
   C. VEGETATED AREAS (GRASSES, PLANTINGS, TREES, ETC.) PRESENT ABOVE THE WATER LINE AT THE EDGE OF THE BANK MAY REQUIRE REMOVAL TO COMPLETE THE REMEDIATION ACTIVITIES, IF DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC. THESE AREAS SHALL BE DELINEATED AND DOCUMENTED PRIOR TO DISTURBANCE. FOLLOWING REMOVAL ACTIVITIES, THESE VEGETATED AREAS SHALL BE RESTORED, AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC, BY BLENDING STONE MATERIALS WITH TOPSOIL PLANTING MIX FOLLOWED BY SEEDING. IF TREES ARE REMOVED, THEN PLANTINGS SHALL ALSO BE INSTALLED AND SHALL CONSIST OF RIVER BIRCH, BLACK WILLOW, OR SYCAMORE SPECIES (3-5 INCH CALIPER SIZE) PLANTED AT A 10-FOOT SPACING (I.E., ONE PER 100 SQUARE FEET). REFER TO DETAIL 3 ON DRAWING C-141.
2. EROSION CONTROL MATTING SHALL BE INSTALLED IN VEGETATED RESTORATION AREAS, UNLESS OTHERWISE APPROVED BY THE DESIGN ENGINEER.
3. REFER TO SPECIFICATION SECTION 32 92 19 FOR SEEDING AND PLANTING INSTALLATION REQUIREMENTS AND POST-CONSTRUCTION MONITORING AND MAINTENANCE.
4. EROSION AND SEDIMENT CONTROL MEASURES AND DEWATERING ACTIVITIES SHALL BE MAINTAINED UNTIL SURFACE RESTORATION IS COMPLETED AND ARE STABILIZED.
5. VEGETATED AREAS INCLUDING THE RIVERBANK AND UPLAND AREAS WHICH ARE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED. PLACEMENT OF ADDITIONAL TOPSOIL TO SUPPLEMENT EXISTING TOPSOIL (E.G., ON THE RIVERBANK) SHALL BE PERFORMED AS NECESSARY AND AS APPROVED BY NATIONAL GRID'S REPRESENTATIVE.
6. RESTORE UPLAND CRUSHED STONE AND GRAVEL SURFACES IN-KIND INCLUDING SURFACE GRADING TO PROVIDE SMOOTH TRANSITION TO UNDISTURBED AREAS AND TO PROMOTE STORMWATER DRAINAGE TOWARDS THE RIVERBANK. PLACE ADDITIONAL IMPORTED CRUSHED STONE AS NECESSARY (E.G., FILLING RUTS, FIXING LOW LYING AREAS, ETC.) AND AS APPROVED BY NATIONAL GRID'S REPRESENTATIVE.

LEGEND:

- LOW — LIMIT OF WORK
- TEMPORARY STAGING AREA
- SITE ACCESS/TRAFFIC FLOW
- S10 — SEDIMENT REMOVAL LOCATION

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

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DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

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S9-SEDDEP_50xScale.dwg
153076_RemActions.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087406
DATE

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

RESTORATION PLAN

FILENAME: 160117_PH3(SED)_C-140.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-140
SHEET NUMBER OF

Apr 24, 2024 - 2:56pm
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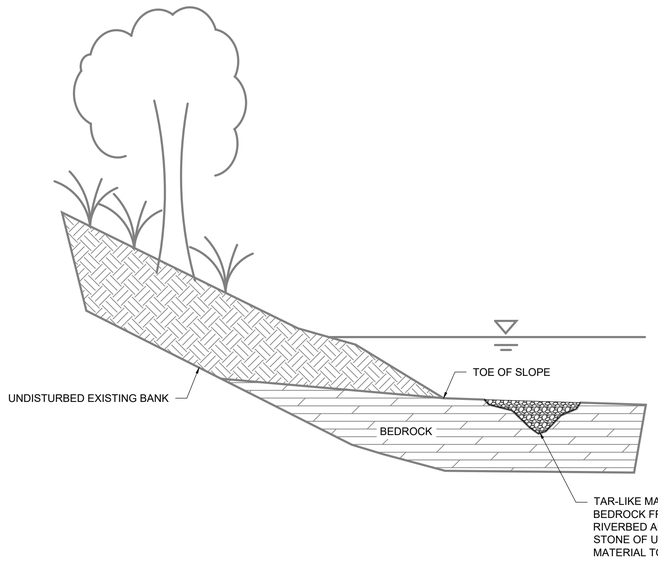
RJohnson

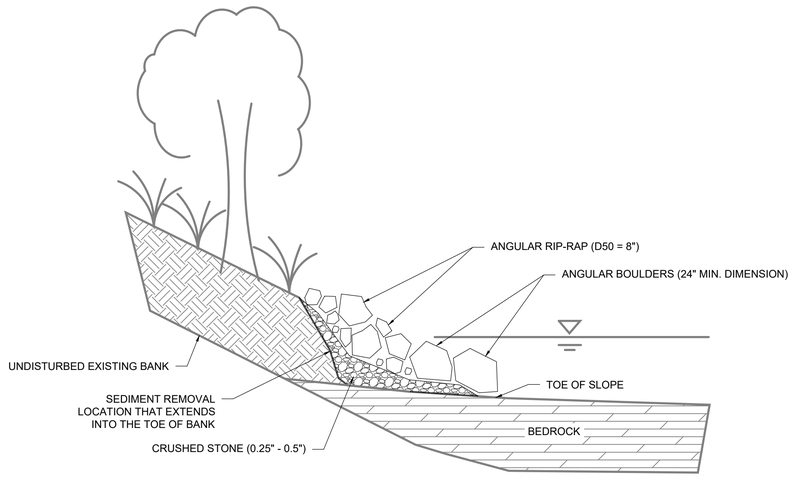


RESTORATION TYPE A DETAIL
(SEDIMENT REMOVAL AREA BEYOND TOE OF BANK)

DETAIL 1 / C-141

SCALE: N.T.S.

NOTE:
1. PER DRAWING C-140, BEYOND THE TOE OF SLOPE (I.E., WITHIN THE RIVERBED), RESTORATION OF REMOVAL AREAS MAY CONSIST OF PLACEMENT OF CRUSHED STONE [NYSDOT NO. 1 OR NO. 2 STONE (0.25" TO 1.5")] OR, AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC, NO RESTORATION WILL BE PERFORMED IN AREAS WHERE BEDROCK OR COARSE-GRAINED MATERIAL WILL REMAIN EXPOSED.

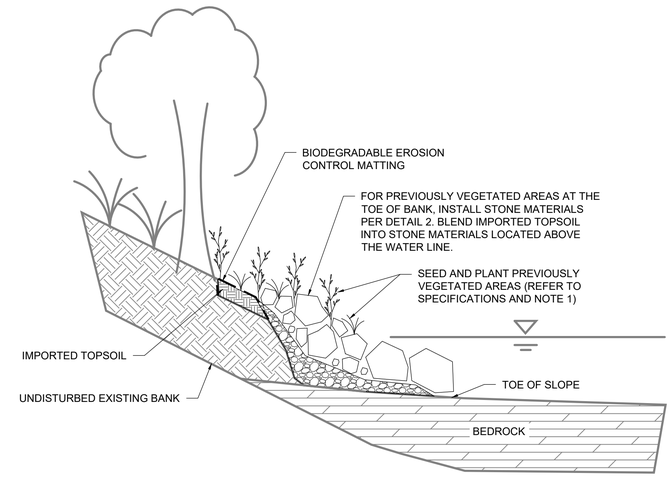


RESTORATION TYPE B DETAIL
(SEDIMENT REMOVAL AREA INTO THE TOE OF BANK)

DETAIL 2 / C-141

SCALE: N.T.S.

NOTE:
1. PER DRAWING C-140, WHERE REMOVAL EXTENDS INTO THE TOE OF BANK, RESTORATION SHALL CONSIST OF A COMBINATION/BLEND OF ANGULAR BOULDERS (24" MIN. DIMENSION), ANGULAR RIP RAP (D50 = 8"), AND/OR CRUSHED STONE [NYSDOT NO. 1 OR NO. 2 STONE (0.25" TO 1.5")], AS APPROPRIATE PENDING EXTENT OF REMOVAL AREA AND AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC.



RESTORATION TYPE C DETAIL
(VEGETATED AREAS AT TOE OF BANK)

DETAIL 3 / C-141

SCALE: N.T.S.

NOTE:
1. VEGETATED AREAS (GRASSES, PLANTINGS, TREES, ETC.) PRESENT ABOVE THE WATER LINE AT THE EDGE OF THE BANK MAY REQUIRE REMOVAL TO COMPLETE THE REMEDIATION ACTIVITIES, IF DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC. THESE AREAS SHALL BE DELINEATED AND DOCUMENTED PRIOR TO DISTURBANCE. FOLLOWING REMOVAL ACTIVITIES, THESE VEGETATED AREAS SHALL BE RESTORED, AS DIRECTED BY THE ENGINEER'S REPRESENTATIVE IN CONSULTATION WITH THE NYSDEC, BY BLENDING STONE MATERIALS WITH TOPSOIL PLANTING MIX FOLLOWED BY SEEDING. IF TREES ARE REMOVED, THEN PLANTINGS SHALL ALSO BE INSTALLED AND SHALL CONSIST OF RIVER BIRCH, BLACK WILLOW, OR SYCAMORE SPECIES (3-5 INCH CALIPER SIZE) PLANTED AT A 10-FOOT SPACING (I.E., ONE PER 100 SQUARE FEET).

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: A. GUTTA
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
153076_DBorder.dwg

ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087406

DATE

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

RESTORATION DETAILS

FILENAME: 160117_PH3(SED)_C-810.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-141
SHEET NUMBER: OF

Apr 24, 2024 - 2:57pm R.Johnson
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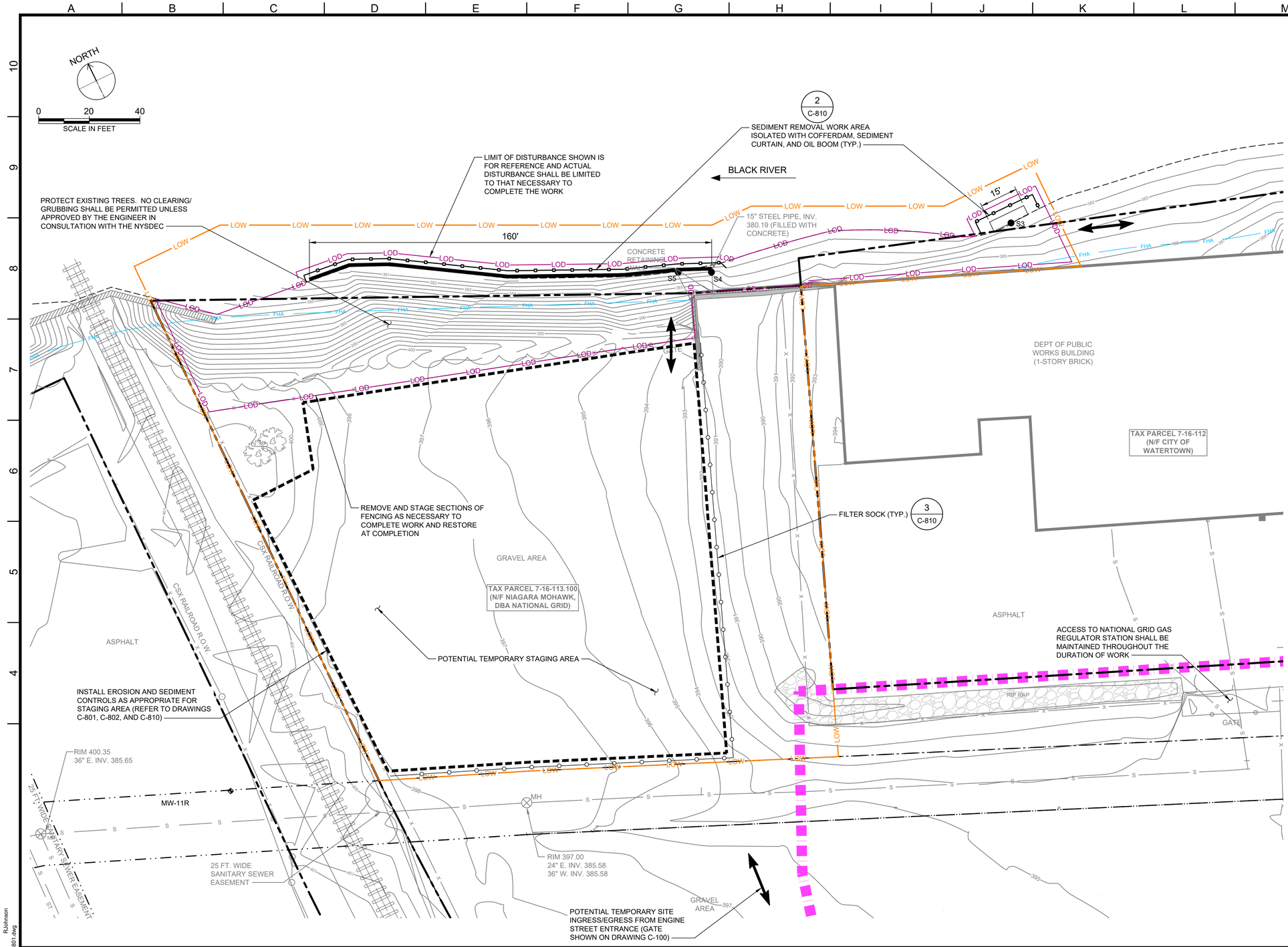

NOTES:

1. REFER TO SOURCE NOTES ON C-100.
2. REFER TO EROSION AND SEDIMENT CONTROL NOTES ON C-810.

LEGEND:

- LOW — LIMIT OF WORK
- LOD — LIMIT OF DISTURBANCE
- APPROXIMATE ALIGNMENT OF COFFERDAM/SEDIMENT CURTAIN/OIL BOOM
- TEMPORARY STAGING AREA
- S3 — SEDIMENT REMOVAL LOCATION
- SITE ACCESS/TRAFFIC FLOW
- FILTER SOCK

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES

- Basemap_Topo-Bdry Srvy.dwg
- dms_deleted.Bench_Mark.dwg
- SOIL-MIX-WALL.dwg
- Surface-Work.dwg
- Flood-Area.dwg
- 153076_02SPV19.dwg
- 153076_02GDV19.dwg
- 153076_DBorder.dwg
- S0-SEDDEP_20xScale.dwg
- Wells_20xScale.dwg
- 153076_RemActions.dwg

ADAM RICHARD SHERMAN — PROFESSIONAL ENGINEER — N.Y. LICENSE NO: 087466 — DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

EROSION AND SEDIMENT CONTROL PLAN (SHEET 1 OF 2)

FILENAME: 160117_PH3(SED)_C-801.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-801
SHEET NUMBER OF:

Apr 24, 2024 - 2:59pm RJohnson
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NORTH

0 20 40
SCALE IN FEET

2
C-810

SEDIMENT REMOVAL WORK AREA ISOLATED WITH COFFERDAM, SEDIMENT CURTAIN, AND OIL BOOM (TYP.)

INSTALL EROSION AND SEDIMENT CONTROLS PER DRAWINGS C-801, C-802, AND C-810

PROTECT EXISTING TREES. NO CLEARING/ GRUBBING SHALL BE PERMITTED UNLESS APPROVED BY THE ENGINEER IN CONSULTATION WITH THE NYSDEC.

PROTECT MONITORING WELLS (TYP)

POTENTIAL TEMPORARY STAGING AREA

FILTER SOCK (TYP.) 3 C-810

POTENTIAL SITE INGRESS/EGRESS FROM SILL STREET

CATCH BASIN INLET PROTECTION (TYP.) 6 C-810

24" CONCRETE PIPE INV. 381.44

CONCRETE PAD

25 FT WIDE SANITARY SEWER EASEMENT

MW-23R

MW-24R

MW-22R

METAL GARAGE

1 STORY METAL BUILDING

TAX PARCEL 7-16-106.003 (JEFFERSON CONCRETE CORP.)

ASPHALT AREA

GRAVEL PARKING AREA

GRASS

SILL STREET

S10 S11 S12 S13 S14

10' 6' 13' 20' 15'

NOTES:

1. REFER TO SOURCE NOTES ON C-100.
2. REFER TO EROSION AND SEDIMENT CONTROL NOTES ON C-810.

LEGEND:

- LOW — LIMIT OF WORK
- LOD — LIMIT OF DISTURBANCE
- APPROXIMATE ALIGNMENT OF COFFERDAM/SEDIMENT CURTAIN/OIL BOOM
- TEMPORARY STAGING AREA
- S10 — SEDIMENT REMOVAL LOCATION
- SITE ACCESS/TRAFFIC FLOW
- FILTER SOCK
- CATCH BASIN PROTECTION

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES

Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
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153076_02GDV19.dwg
153076_DBorder.dwg
Wells_20xScale.dwg
S0-SEDDEP_20xScale.dwg
153076_RemActions.dwg

ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 091466

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

EROSION AND SEDIMENT CONTROL PLAN (SHEET 2 OF 2)

FILENAME 160117_PH3(SED)_C-802.dwg
BC PROJECT NUMBER 160117
CLIENT PROJECT NUMBER
DRAWING NUMBER C-802
SHEET NUMBER OF

Apr 24, 2024 - 2:59pm RJohnson
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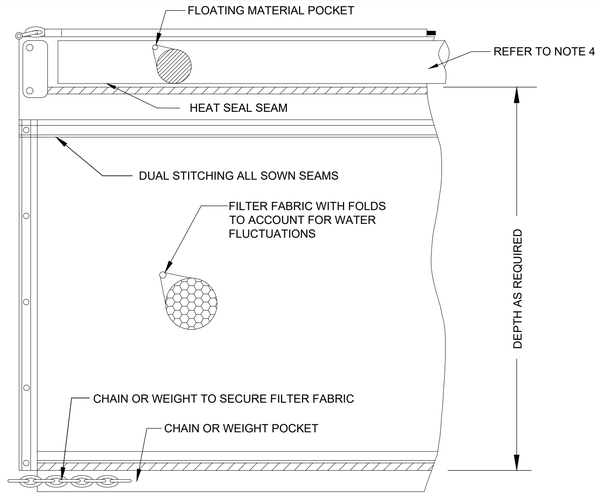
GENERAL ESC NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (LATEST EDITION).
2. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. CONTRACTOR SHALL BASE THE SEDIMENT REMOVAL WORK AREA BASED ON THESE DRAWINGS.
4. PHYSICALLY MARK LIMITS OF LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREAS TO BE PROTECTED.
5. DIVERT STORMWATER RUNOFF AWAY FROM HIGHLY ERODIBLE SOILS AND STEEP SLOPES TO STABLE AREAS.
6. CLEAR ONLY WHAT IS REQUIRED FOR IMMEDIATE CONSTRUCTION ACTIVITY.
7. RE-STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION IN THAT AREA IS COMPLETED. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, SHALL IMMEDIATELY RECEIVE SEEDING AND MULCHING. MAINTENANCE OF TEMPORARY SEEDING MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION UNTIL PERMANENT RESTORATION IS COMPLETED.
8. STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED TO CONTROL VEHICLE TRACKING MATERIAL OFF SITE.
9. TEMPORARY SEDIMENT TRAPPING DEVICES SHALL NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTRIBUTORY DRAINAGE AREAS.
10. CONTRACTOR SHALL UNDERSTAND THE ESC PLAN AND, IF A NYSDEC SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY IS APPLICABLE, PERSONNEL SHALL SIGN THE CERTIFICATION STATEMENT REQUIRED BY PERMIT.
11. CONTRACTOR SHALL DESIGNATE RESPONSIBILITY FOR THE ESC PLAN TO ONE INDIVIDUAL.
12. INSPECTION OF ESC COMPONENTS SHALL BE CONDUCTED TO DETERMINE WHEN ESC MEASURES NEED MAINTENANCE OR REPAIR. PAY PARTICULAR ATTENTION TO INSPECTIONS REQUIRED AFTER RAINFALL. THE INSPECTION PROGRAM SHALL ALSO STATE THE COMPLETION OF IDENTIFIED REPAIR AND MAINTENANCE ITEMS.
13. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
14. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
15. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER.
16. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET, TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED AS REQUIRED TO CONTROL DUST.
17. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF WORK ACCORDING TO THE ESC PLAN.



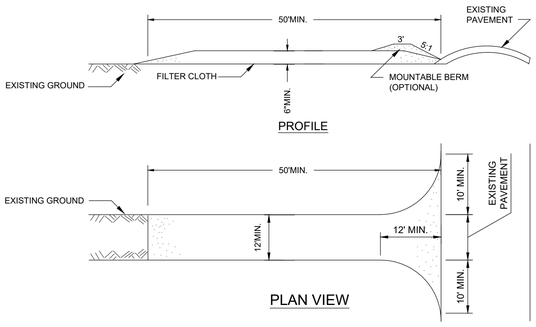
SEDIMENT CURTAIN

DETAIL 1 / C-810

SCALE: N.T.S.

SEDIMENT CURTAIN NOTES:

1. CURTAIN MATERIAL SHALL BE FLEXIBLE AND IMPENETRABLE TO PREVENT DISTURBED SEDIMENT FROM THE WORK AREA TO ENTER THE WATER BODY.
2. THE HEIGHT OF THE CURTAIN SHALL BE 20 PERCENT GREATER THAN THE DEPTH OF THE WATER TO ALLOW FOR WATER LEVEL FLUCTUATIONS
3. WEIGHTS SHALL BE PLACED ALONG THE BOTTOM TO SECURE THE CURTAIN FROM MOVING AND ACHIEVE CLOSURE.
4. FLOATS SHALL BE ATTACHED AT THE TOP OF THE CURTIAN TO SUSPEND IT IN PLACE. INSTALL AND SECURE AN OIL BOOM ON THE INSIDE OF THE SEDIMENT CURTAIN FLOAT.
5. SEDIMENT CURTAIN SHALL BE DESIGNED FOR USE IN RIVER ENVIRONMENT AND WITH ANTICIPATED WATER FLOW RATES.



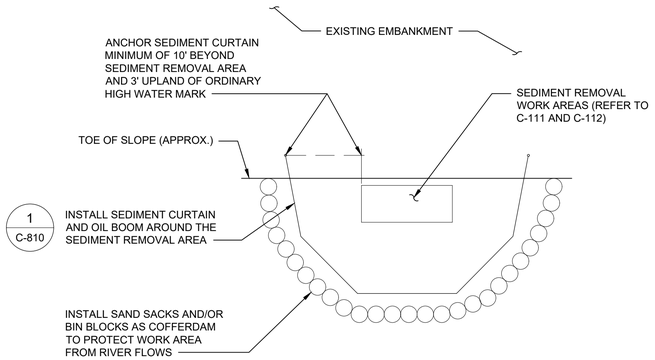
STABILIZED CONSTRUCTION ENTRANCE

DETAIL 4 / C-810

SCALE: N.T.S.

STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE (I.E., ON THE DECONTAMINATION PAD).
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH PRECIPITATION EVENT.



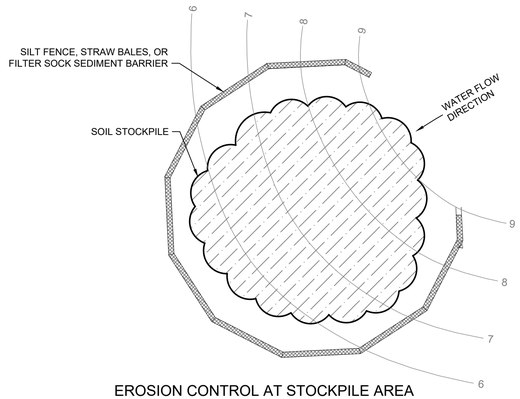
SEDIMENT WORK AREA

DETAIL 2 / C-810

SCALE: N.T.S.

SEDIMENT WORK AREA NOTES:

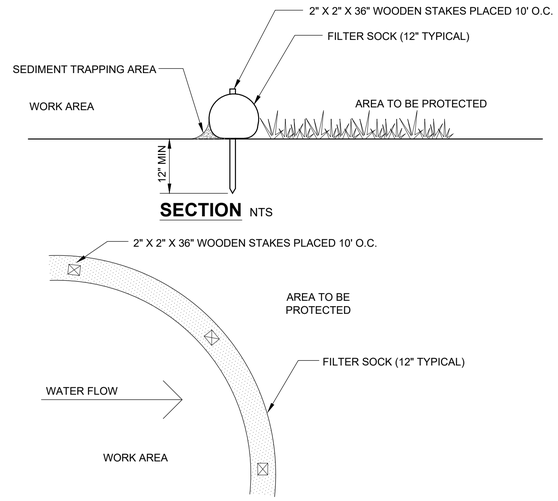
1. THE SEDIMENT CURTAIN SHALL BE LOCATED BEYOND THE LATERAL LIMITS OF THE SEDIMENT REMOVAL AREA AND FIRMLY ANCHORED IN PLACE.
2. THE ALIGNMENT SHOULD BE SET AS CLOSE TO THE WORK AREA AS POSSIBLE BUT NOT SO CLOSE AS TO DISTURB CONSTRUCTION EQUIPMENT.
3. THE SEDIMENT CURTAIN SHALL BE INSPECTED DAILY AND REPAIRED OR REPLACED IMMEDIATELY IF DAMAGED AND/OR NOT FUNCTIONING PROPERLY.
4. SUPPLEMENTAL ANCHORS OF THE SEDIMENT CURTAIN TOE SHALL BE USED, AS NEEDED, SUITABLE TO THE WATER FLOW RATE.
5. THE COFFERDAM SHALL BE INSTALLED OUTSIDE OF THE SEDIMENT CURTAIN TO PROTECT THE SEDIMENT REMOVAL AREA.
6. WHEN REMOVING THE SEDIMENT CURTAIN AND COFFERDAM, THEY SHALL BE CAREFULLY PULLED TOWARD THE BANK AND REMOVED TO MINIMIZE THE RELEASE OF ATTACHED SEDIMENT.



EROSION CONTROL AT STOCKPILE AREA

DETAIL 5 / C-810

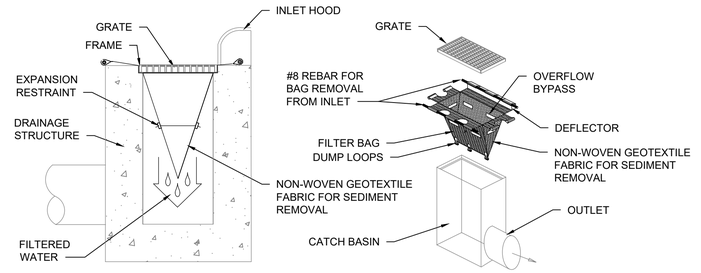
SCALE: N.T.S.



FILTER SOCK SEDIMENT BARRIER DETAIL

DETAIL 3 / C-810

SCALE: N.T.S.



CATCH BASIN INLET PROTECTION

DETAIL 6 / C-810

SCALE: N.T.S.

NOTES:

1. INLET PROTECTION SHALL BE INSTALLED PRIOR TO CLEARING AND GRADING OR EXCAVATION ACTIVITY.
2. CONTRACTOR TO PERFORM MAINTENANCE AS NEEDED TO MAINTAIN A FUNCTIONING INLET PROTECTION.
3. INLET PROTECTION SHALL, AT A MINIMUM, BE INSPECTED DURING SWPPP INSPECTION, OR BASED ON LOCAL CONDITIONS OR REQUIREMENTS.
4. SEDIMENT SHALL BE REMOVED FROM THE UNIT WHEN IT BECOMES HALF FILLED OR SEDIMENT IS WITHIN 6" FROM BOTTOM OF THE OVERFLOW.
5. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING, AND RE-INSERTING IT INTO THE CATCH BASIN. DISPOSE OF SEDIMENT IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
6. CARE SHALL BE TAKEN SO THAT SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO STRUCTURE DURING REMOVAL. MATERIAL THAT FALLS INTO STRUCTURE SHALE BE REMOVED IMMEDIATELY.
7. DURING THE CONSTRUCTION PERIOD, ADDITIONAL CATCH BASIN INSERTS OTHER THAN THOSE INDICATED ON THE DRAWINGS SHOULD BE INSTALLED AS NEEDED TO PREVENT CONSTRUCTION RUNOFF FROM LEAVING THE SITE.
8. FILTER BAGS SHALL BE REMOVED FROM THE CATCH BASIN ONCE CONTRACTOR GETS APPROVAL FROM JURISDICTIONAL REVIEWER OR INSPECTOR.
9. CONTRACTOR TO HAVE FILTER BAG MATERIAL AND CONSTRUCTION APPROVED BY OWNER/ENGINEER PRIOR TO IMPLEMENTING.
10. THE CATCH BASIN INSERT SHALL HAVE A BUILT-IN HIGH FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
11. NON-WOVEN GEOTEXTILE FABRIC SHALL BE USED OR AS STATED IN LOCAL REQUIREMENTS.

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
153076_DBorder.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087606
DATE

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR
PHASE III REMEDIAL ACTION - SEDIMENT REMOVAL

EROSION AND SEDIMENT CONTROL DETAILS

FILENAME: 160117_PH3(SED)_C-810.dwg
BC PROJECT NUMBER: 160117
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-810
SHEET NUMBER OF

Apr 24, 2024 - 12:29pm
R.Johnson
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Technical Specifications
Phase III Remedial Action (Sediment Removal)
Watertown (Engine Street) Former MGP Site
Watertown, New York

Adam R. Sherman

Signer Name: Adam Sherman
Signing Reason: I approved this document.
Signing Time: 2024-04-29 08:44:00(PDT)

Adam R. Sherman, P.E.
Senior Principal Engineer
New York State P.E. License #087306

SECTION 01 10 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Summary.
   2. Site Description.
   3. Selected Remedy.
   4. General Scope of Work.
   5. Green Remediation.
   6. Contract/Bid Items.
   7. Submittals.
   8. Construction Management Plan.
   9. Contractor's Use of Site.
   10. Property Owner Occupancy.
   11. Work Sequence and Schedule.
   12. Construction Quality Control.
   13. Contingency.
   14. Waste Management, Transportation and Disposal.
   15. Products.

B. Related Sections and Documents:
   1. Contract Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements specified in the Contract Documents.
   3. United State Army Corps of Engineers (USACE) Permit.

C. References:
   1. When standards are referenced, such referenced standards shall be considered part of these Technical Specifications as if fully repeated herein.
   2. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SITE DESCRIPTION

The former Manufactured Gas Plant (MGP) Site is located on the west side of Engine Street (at the corner of Engine Street and Newell Street) in Watertown, Jefferson County, New York. The Site is an approximate 2-acre area and is bounded by City of Watertown property (Department of Public Works [DPW] operations) to the north, private properties to the south, Engine Street to the east, and National Grid property along the CSX railroad right-of-way to the west.

The Project Area covers a larger area which extends to the Black River to the north (onto both National Grid and City of Watertown properties), to the west (across the CSX railroad right-of-way) onto property currently used for Verizon operations (property owned by the Capone Family LLC), and along the edge of the Black River immediately north of the Site and extending approximately 700 feet downstream (i.e., west) adjacent to property owned by Jefferson Concrete Corporation.

The Project Area is generally of low relief and slopes gently toward the Black River to the north. There is one building, located immediately north of the Site along the Black River, which is the City of Watertown DPW's one-story maintenance and storage building/garage. A natural gas regulator station is also present in the northeastern corner of the Site within an approximate 0.2-acre fenced-in area. The Site is secured with a perimeter chain link fence.

The Site and surrounding areas located east of the CSX railroad right-of-way and extending north to the bank of the Black River were remediated as part of Phase I (2019) and Phase II (2020) remediation activities. These areas are currently finished with a crushed stone surface cover (engineering control), with the exception of the DPW property, which contains the DPW building and asphalt pavement.

This Scope of Work addresses the Black River portion of Phase III remediation activities, which include removal of impacted sediment and riverbank soils located along the edge of the Black River north of the Site and in sporadic areas extending approximately 700 feet downstream adjacent to property owned by Jefferson Concrete Corporation. With the exception of the area immediately north of the retaining wall and DPW building, where bedrock is exposed, the riverbank is steep and irregular and generally consists of established dense wooded vegetation (trees, underbrush, fallen logs, and other vegetative debris), which extends down to the edge of the river. Refer to Drawing C-100.

River flows adjacent to the Site can fluctuate very rapidly in response to the holding or release of water at upstream dams or due to precipitation in the river drainage area. The USGS, in cooperation with the Hudson River-Black River Flow Regulating District, maintains and operates a stream gauging station (Station No. 04260500) which is located approximately 200 feet downstream of the Vanduzee Street Bridge. This bridge crosses the Black River approximately 1,400 feet downstream of the Site. Data collected from this station for the time period from the year 1920 to the present indicates that the mean of monthly discharges ranges from 1,820 cubic feet per second (cfs) for August to 10,000 cfs for April. The average of the mean of monthly discharges is 4,240 cfs. During drier periods, the flowrates can drop to lower levels. Field work conducted at the Site indicates that flows less than approximately 1,600 cfs would be adequately low for conducting in-river field activities, including removal.

Observations during field work indicate that much of the river bottom in the vicinity of the Site is comprised of bedrock and/or very coarse-grained material such as boulders, cobbles, and gravel. Deposits of sediments of sand-size or less are scarce along the southern shore of the river near the Site and, where present, are thin. This is due to the generally erosional environment created by the rapid currents in this stretch of the river. Refer to the photographic logs of the sediment removal areas included as Attachments A and B to this Section.

1.03 SELECTED REMEDY

The selected remedial alternative for the Site has been divided into several phases, as follows:

1. **Phase I (*completed in 2019 and not included in this scope*):** Remedial activities in areas located east of the CSX-owned railroad right-of-way and south of the City of Watertown's sanitary sewer utility easement. Remedial action included installation of a soil mix wall along the perimeter of the excavation area (for sidewall support and water control), dewatering and treatment, excavation of soil, tar, and structures in the targeted area to the top of the bedrock surface, and construction of an environmental cover system (crushed stone) to serve as an engineering control.
2. **Phase II (*completed in 2020 and not included in this scope*):** Remedial activities in the areas located east of the CSX-owned railroad right-of-way and north of and including the City of Watertown's sanitary sewer easement. Remedial action included installation of a soil mix wall along the perimeter of the excavation area (for sidewall support and water control), dewatering and treatment, removal of a former storm sewer pipe and its contents, excavation of soil, tar, and structures in the targeted area to the top of the bedrock surface, and construction of an environmental cover system (asphalt pavement and crushed stone) to serve as an engineering control.
3. **Phase III:** Remedial activities include sediment and riverbank soil removal along the edge of the Black River adjacent to National Grid and non-National Grid owned parcels both east and west of the CSX railroad right-of-way (***scope addressed by these Specifications***), in situ solidification (ISS) of soil in an area west of the CSX railroad right-of-way (***not included as part of this scope***), and installation of NAPL recovery wells throughout the Project Area (***not included as part of this scope***).
    a. The selected remedial alternative addressed by this Scope of Work to address impacted sediments and riverbank soils along the edge of the Black River includes physical removal of MGP-impacted sediments/soils from seven targeted deposit areas along the southern edge of the Black River. The seven sediment removal areas are designated as S3, S4/S5, S10, S11, S12, S13, and S14 (refer to Drawings C-111 and C-112).

1.04 GENERAL SCOPE OF WORK

A. The scope of the work as part of the Remedy, includes mobilization to the Site, Site preparation, excavation of MGP-impacted sediment and riverbank soils, and restoration.

B. Prior to mobilization, a Site inspection will be conducted to properly document the existing Site conditions. A pre-construction meeting will be held prior to the initiation of the construction activities. Attendees are anticipated to include representatives from the Contractor, National Grid, Construction Manager, and Design Engineer. The purpose of the meeting will be to discuss the details of the construction activities, security plans, sequencing plans, community and work zone air monitoring, temporary facilities and controls, waste management, Site use, personnel responsibilities, and schedule.

C. The Contractor will employ the services of a third-party subcontractor to implement the NYSDEC-approved Community Air Monitoring Plan (CAMP) and the Contractor's Site-Specific Health and Safety Plan (CSSHASP).

D. Project Scope of Work includes, but is not limited to the following activities, including all supervision, labor, materials, and equipment, and in accordance with the Construction Drawings and Specifications:
    1. Pre-Mobilization:
        a. Attend a pre-construction meeting scheduled by the Construction Manager.

b. Preparation of required submittals in accordance with National Grid's Standard General Conditions and the Technical Specifications for review by National Grid, Construction Manager, and Design Engineer.

c. Preparation of CSSHASP to apply to all contractor personnel on-site during construction, including but not limited to, Contactor's employees and Subcontractor's employees. At a minimum, the CSSHASP must meet the requirements of 29 CFR 1910 and 29 CFR 1926, as applicable. Perform construction activities in accordance with the CSSHASP.

d. Preparation of project-specific plans including, but not limited to the Construction Quality Control Project Plan (CQCPP) and Construction Management Plan (CMP).

e. Preparation and submission of Work Schedule to National Grid, Construction Manager, and Design Engineer for review, including a detailed description of the proposed sequence of construction.

f. Obtain necessary constructions permits and provide necessary notifications.

g. Schedule and conduct a pre-construction Site inspection.

2. Mobilization:
   a. Mobilize necessary personnel, equipment, and materials to the Site.
   b. Establish laydown and staging areas including those for material storage, imported fill stockpiles, and excavated soil stockpiles.
   c. Perform utility clearance in Work areas.
3. Temporary Facilities and Controls and Site Preparation:
   a. Include all items required by National Grid's Standard General Conditions.
   b. Provide and maintain temporary utilities, including electricity, lighting, and water, as necessary, to complete the work in accordance with the Contract Documents.
   c. Provide and maintain temporary facilities, including office trailers (with electricity, lighting, heating/cooling, phone, high-speed internet service, drinking water), sanitary facilities, parking, construction access roads, etc.
   d. Install project signage.
   e. Provide and maintain site controls including temporary construction fencing, traffic control, and dust, odor, and noise controls.
   f. Maintain site security. Maintain a list of persons authorized for site entry.
   g. Implement the Contractor Site-Specific Health and Safety Plan (CSSHASP).
   h. Provide personnel, materials, and equipment to implement the NYSDEC-approved Community Air Monitoring Plan (CAMP).
   i. Provide personnel, materials, and equipment to implement the NYSDEC-approved Odor Control Plan (OCP).
   j. Provide and maintain erosion and sediment control (ESC) measures in accordance with the Specifications and Construction Drawings, New York State Standards and Specifications for Erosion and Sediment Control, and in accordance with the NYSDEC-approved Stormwater Pollution Prevention Plan (SWPPP).
   k. Establish and maintain traffic control measures for construction traffic and site visitors (NYSDEC, National Grid, Construction Manager, Design Engineer, etc.).
   l. Setup equipment, vehicle, and personnel decontamination areas.
   m. Construct material, equipment, and waste staging areas.

n. Clearing and grubbing of vegetation (per the Drawings, this task should be kept to the minimum necessary to complete the work).
o. Protect designated environmental monitoring wells.

4. Survey and Record Documents:
   a. Employ third-party Surveyor licensed in the State of New York to conduct site surveying work, including:
      1) Verification of existing conditions.
      2) Demarcating the limits of the remediation areas.
      3) Marking the location of utilities.
      4) Performing progress surveying for verifying field quantities for payment items.
      5) Documenting the final horizontal and vertical limits and elevations of the removal areas and final Site conditions.
      6) Preparation of progress and record drawings.
5. Dewatering and Water Management
   a. Implement and maintain a dewatering system to facilitate sediment removal activities. Dewatering shall remove all water within work areas to provide access and facilitate the visual inspection of the removal areas and bedrock surface.
6. Sediment and Riverbank Soils Removal:
   a. Removal of designated sediment and riverbank soils. The actual extent of the excavations will be determined based on field observations by the Design Engineer and in consultation with the NYSDEC.
   b. Segregate and stage sediment/soil for subsequent management (transportation and off-site disposal).
   c. Place, grade, and compact backfill.
7. Waste Management:
   a. Perform waste management activities for waste materials generated during remedial action implementation, including but not limited to vegetation, excavated sediments/soils, wastewater, non-aqueous phase liquid (NAPL), miscellaneous construction debris and wastes.
   b. Coordinate with National Grid and disposal facilities for waste profiling and waste acceptance.
   c. Schedule and coordinate off-Site transportation and treatment/disposal.
   d. Load waste materials into licensed/registered/permitted haulers.
   e. Transport waste materials using licensed/registered/permitted haulers to permitted treatment/disposal facilities on National Grid's list of approved facilities.
   f. Treatment/disposal of waste materials at permitted treatment/disposal facilities on National Grid's list of approved facilities.
   g. Execute and manage waste documentation (including manifests, bills of lading, disposal certificates, weight tickets).
8. Backfilling:
   a. Provide labor, equipment, materials to backfill excavation/removal areas with imported fill materials in accordance with the Construction Drawings and Specifications.
9. Site Restoration:

a. Restoration of disturbed sediment removal areas, as specified in the Construction Drawings and Specifications, and disturbed upland areas to pre-construction conditions.
b. Restoration of Site fencing (if removed to implement the Work).
c. Restoration of utilities (if affected by the Work).

10. Demobilization:
    a. Remove equipment and temporary facilities.
    b. Demobilization of personnel, equipment, and materials.
    c. Remove ESC controls.
    d. Perform final site cleaning and site inspection.
    e. Submit project close-out documentation.

1.05 GREEN REMEDIATION

A. In accordance with the NYSDEC program policy document, DER-31/Green Remediation, the following elements of green remediation and sustainability and best management practices shall be implemented during the Phase III remedy construction:
    a. Reduced vehicle idling.
    b. Beneficial re-use of concrete (if encountered and approved for re-use).
    c. Use of local suppliers, when feasible, for materials/products used in construction.
    d. Use of local or regional treatment/disposal facilities, when feasible.
    e. Use of local subcontractors, when feasible.
    f. Use of ultra-low-sulfur diesel fuel.

1.06 CONTRACT/BID ITEMS

A. Refer to Contract Documents, Bid Form, and Payment Item Descriptions.

1.07 SUBMITTALS

A. Prepare and submit project submittals required by these Specifications for review and approval in accordance with Section 01 33 00 - Submittal Requirements.

1.08 CONSTRUCTION MANAGEMENT PLAN

A. Submit a Construction Management Plan (CMP) for review and comment by National Grid, Construction Manager, and Design Engineer. After the CMP has been accepted by National Grid, portions of the CMP will be submitted to NYSDEC. NYSDEC submittal shall be made by National Grid or its designated representative.

B. The Contractor shall sequence work activities and schedule submission of the CMP within 14 calendar days after the date of the Contract and at least 21 calendar days before mobilization for review and comment by National Grid, Construction Manager, and Design Engineer.

C. The CMP shall, at a minimum contain a description/plan of the following:
    1. Detailed construction schedule including detailed breakdown of construction sequencing.

2. General discussion on health and safety and reference to the CSSHASP (refer to Section 01 30 65), including Safety Data Sheets (SDS, formerly Material Safety Data Sheets) for all materials brought on-Site.
3. General discussion on construction quality control and reference to the CQCPP (Part 1.11 of this Section).
4. Incorporate or reference a standalone Contractor Contingency Plan (Part 1.12 of this Section).
5. Survey Control Plan (Section 01 30 20).
6. Temporary Site facilities and controls (Section 01 50 00).
7. Site preparation including staging area(s) and temporary construction access, decontamination areas (refer to Drawings, Section 01 50 00, and Section 01 52 20).
8. Traffic Control Plan (Section 01 50 00).
9. Equipment and Vehicle Decontamination Plan (Section 01 52 20).
10. Site Security Plan (Section 01 54 00).
11. Work Zone and Community Air Monitoring Implementation Plan, including dust, vapor, odor, and noise control measures (refer to Section 01 52 00) in accordance with NYSDEC-approved CAMP and CSSHASP.
12. Sediment Removal and Restoration Plan (Section 31 23 16) including description vegetative restoration activities (Section 32 92 19).
13. Dewatering and Water Management (Section 31 23 19)
14. Storm Water Pollution Prevention Plan (SWPPP) (Section 31 25 13).
15. Waste Management Plan (Section 31 70 00).

1.09 CONTRACTOR'S USE OF SITE

A. Access to Site: Limited to Limit of Work shown on the Construction Drawings or as otherwise approved by National Grid. Ingress and egress to and from the work areas shall only be by the means designated by the Construction Manager and in accordance with the access agreement between the Property Owners and National Grid.

B. Permits: Perform Work in accordance with local, county, and state agency permit restrictions, requirements, and conditions.

C. Construction Operations: Limited to Limit of Work as designated on the Drawings. Due to neighboring residential properties, and proximity to the Black River, sequence Work and locate equipment and materials staging areas, temporary waste containment areas, and decontamination pads in such a manner as to disturb the smallest reasonable and practical area to perform Work in a safe and efficient manner.

D. Under no circumstances shall the Contractor perform Work or conduct any activities at the Site outside of the Limit of Work or use any other means of ingress or egress to and from the Site without the written approval of National Grid or Construction Manager.

E. Disturbed areas outside the Limit of Work shall be restored to original conditions at no cost to Property Owner or National Grid.

F. Construction activities shall remain within the Limit of Work and not encumber the regular operation and maintenance routines of adjacent properties.

G. Assume full responsibility for Site security during Work. Section 01 50 00 includes requirements intended to provide a base expectation for Site security to be utilized by the Contractor in developing the Site Security Plan.

H. Conform to all applicable laws, regulations, permits and Contract Documents.

I. Assume full responsibility for the health and safety of Contractor's employees and subcontractors while at the Site and for implementation of the CSSHASP for the Work.

1.10 PROPERTY OWNER OCCUPANCY

A. The Property Owners (refer to Part 1.02) shall be provided access to their properties with the exception of the designated for the Work, which shall be delineated and secured with temporary fencing.

B. Buildings on-site shall not be used by Contractor.

C. It shall be assumed adjacent property owners/tenants will occupy their respective properties/facilities. Remediation activities shall be performed and sequenced in a manner that does not interfere with operations on adjacent properties. Contractor shall consider neighboring operations or activities and sequence work activities to minimize impact on neighboring operations.

1.11 WORK SEQUENCE AND SCHEDULE

A. Work sequencing shall be in accordance with the general sequence identified in the Construction Drawings or other technical contract documents (e.g., Special Conditions), unless otherwise approved by the Construction Manager and Design Engineer.

B. Contractor shall perform work in a manner that will allow the adjacent Property Owners' operations to maintain normal activities on their sites. Contractor must ensure that neighboring operations or activities are not disturbed, interrupted, or prohibited as a result of the Work.

C. Good lighting and all other necessary facilities for carrying out and inspecting the Work shall be provided and maintained at all points where such work is being done. Minimum permissible illumination intensities are identified in 29 CFR 1910.120.

D. Work activities are limited to Monday through Friday, 7:00 am to 5:00 pm, unless otherwise requested a minimum of 1 week in advance and approved in writing by Construction Manager.

   1. Work activities in the river shall not be permitted during dawn, dusk, nor night time.

E. Unless otherwise especially permitted, no Work shall be done on Sundays, July 4 (or designated holiday for July 4); Thanksgiving Day and the day after; Christmas Day and the day before; New Year's Day; and the Monday designated holidays for Memorial Day and Labor Day, except as necessary for the proper care and protection of Work already performed and for maintenance and operation of the dewatering pumps and treatment plant.

F. Work sequencing shall be conducted in a manner that prevents contamination or recontamination of areas not contaminated or already decontaminated.

G. Work sequencing shall be conducted in a manner to coordinate staging, stockpiling, and loading of waste to be transported and disposed off-Site.

H. The Work sequence shall be reflected in the Contractor's Work Schedule as part of the CMP. Notify National Grid and the Construction Manager of schedule changes, and submit an updated project schedule with any modifications, including modifications to the sequence of Work.

1.12 CONSTRUCTION QUALITY CONTROL

A. Quality Control and Control of Installation:
   1. Monitor quality control over subcontractors, suppliers, products, services, site conditions, and workmanship to produce Work of specified quality.
   2. Comply with manufacturers' instructions, including each step-in sequence.
   3. When manufacturers' instructions conflict with Contract Documents, request clarification from Design Engineer before proceeding.
   4. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
   5. Perform Work by persons qualified to produce required and specified quality.
   6. Verify field measurements are as indicated on Construction Drawings.

B. Prepare and submit for review a CQC Project Plan (CQCPP) (may be a component of the CMP) that is based on the Design Engineer's Construction Quality Assurance Project Plan (CQAPP). The CQCPP shall identify personnel, procedures, control, instructions, tests, records, and forms to be used and include, at a minimum:
   1. Procedures for controlling activities related to inspection, testing and documentation, including those of Contractor's subcontractors, suppliers, and laboratories.
   2. Control, verification, and acceptance testing procedures for each specific test, to include the test name, testing equipment, Specification section paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test.
   3. Compliance with specified standards, codes, tolerances, except for when specified requirements indicate more stringent standards.
   4. Procedures for tracking inspections, verification, and acceptance tests including documentation.
   5. Procedures for tracking construction deficiencies for identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

C. General Requirements
   1. The Contractor shall be responsible for quality control and shall establish and maintain an effective quality control process in compliance with the contract. The quality control process shall consist of plans, procedures, and the organization necessary to produce an end product that complies with the Contract Documents.
   2. Activities affecting quality shall be accomplished under controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity such as adequate

cleanliness; and assurance that all prerequisites for the given activity have been satisfied.

3. Quality control testing shall include all the tests required by the Technical Specifications along with field inspection of the Work.
4. Deliver materials to the Site in the approved manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to the approved submittals. Certifications from the manufacturer for materials shall be included with the shipment.
5. Store materials in accordance with manufacturer's recommendations, under cover (if appropriate) in a clean, dry, aboveground location. Remove materials which are damaged or otherwise not suitable for installation from the Site and replace with acceptable materials.
6. When manufacturers' instructions conflict with Contract Documents, request clarification from Design Engineer before proceeding.

1.13 CONTINGENCY

A. Prepare, submit, and implement a Contingency Plan (may be a component of the CMP) that includes, at a minimum:
   1. Plans for pollution prevention of all material brought to the work Site that shall include methods of addressing spills that occur on-Site and off-Site during remedial construction activities. Description of the methods, means, and facilities required to prevent soil, water, structure, equipment, and material impacts caused by spills; provide information regarding spill containment and cleanup; and provide information related to decontamination measures. Spill response procedures shall comply with National Grid requirements and procedures.
   2. Procedures that Contractor’s personnel will take in response to an emergency.
   3. Identification of responsible personnel (primary and secondary emergency coordinators) who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency.
   4. Include a current list of all emergency equipment and evacuation plans.
   5. Emergency vehicular access/egress.
   6. Evacuation procedures for personnel from the Site.
   7. A list of all contact personnel with phone numbers, including: Contractor; City of Watertown fire official(s); ambulance service; local, county, and State police; and local hospitals, including routes to local hospitals, and procedures for notifying each.
   8. A Flood Event Contingency Plan with measures to protect the work Site(s) (including sediment removal areas) and waterways, from impacts in the event of high water and/or flood conditions. The Contractor’s Flood Event Contingency Plan shall demonstrate the Contractor’s understanding of the Project and consider the following:
      a. Point of contact with the Black River Dam operator (New York State Hudson River – Black River Regulating District) and scheduled dam releases during the Work.
      b. Definition of a highwater or flood event in terms of safe working conditions.
      c. Monitoring of weather reports (at least daily) to identify potential conditions that may result in a flood event.

d. Sequencing of the sediment removal and restoration activities considering the time required to remove or secure the cofferdam, sediment curtain, and other temporary controls in anticipation of highwater or flood event.

e. Adjusting on-site activities in response to monitored weather reports and maintaining a stockpile of backfill and restoration materials on-site to allow backfilling activities to be implemented without delays associated with waiting for delivery of the material to the Site.

1.14 WASTE MANAGEMENT, TRANSPORTATION, AND DISPOSAL

A. Wastes generated from the remediation activities (clearing, grubbing, excavation, and other construction activities) shall be characterized, profiled, and transported by the Contractor to be disposed of at a National Grid-approved off-Site disposal facility listed in the "*National Grid USA Environmentally Approved Hazardous Waste Disposal and Recycling Facilities*" included with the Contract Documents, and in accordance with the approved Contractor Waste Management Plan and these Specifications.

B. Contractor is responsible for identifying and coordinating with primary and backup disposal facilities for the Work.

PART 2 PRODUCTS

2.01 PRODUCTS USED DURING WORK

A. Products shall not be used during Work activities which have not been reviewed by National Grid, Construction Manager, and/or Design Engineer as appropriate and as specified in these Specifications.

B. If the physical and/or engineering properties of products delivered to the Site differ from those submitted and reviewed by Construction Manager and/or Design Engineer, Contractor may perform additional testing to verify compliance with the Specifications.

   1. Contractor, Construction Manager, and Design Engineer shall be responsible to determine if products differ from those submitted in accordance with the Specifications.

C. As specified in these Specifications, request inspection of prepared Work (including products, materials, constructed structures, etc.) by Construction Manager and/or Design Engineer.

   1. If the physical and/or engineering properties of installed products are determined to differ from the products reviewed by National Grid, Construction Manager, and/or Design Engineer as appropriate and as specified in these Specifications, Contractor shall remove and install appropriate products.

PART 3 EXECUTION

Not Used.

END OF SECTION

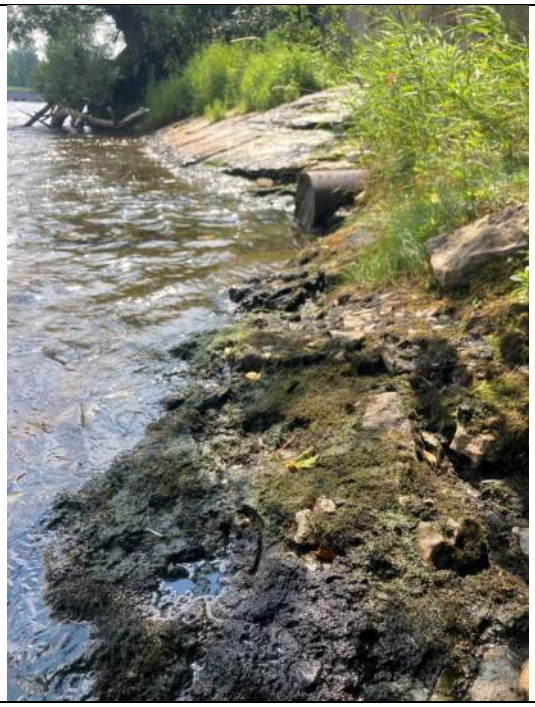
Attachment A
July 2022 Photographic Log

Photograph #1 (7/12/22) – Area of S3 deposit. View looking downstream (northwest). Hardened tar visible in root structure of fallen tree and faint tar odor when disturbed.

Photograph #2 (7/12/22) – Area upstream of S3 deposit. View looking downstream (northwest).

Photograph #3 (7/12/22) – Area of S4/S5 deposit starting at former 15" diameter outfall (plugged). View looking downstream.

Photograph #4 (7/12/22) – Area of S4/S5 deposit. View looking downstream (northwest). Plugged outfall pipe in lower left corner. Hardened tar along the toe of riverbank, slight sheen, moderate tar-like odor upon disturbing.

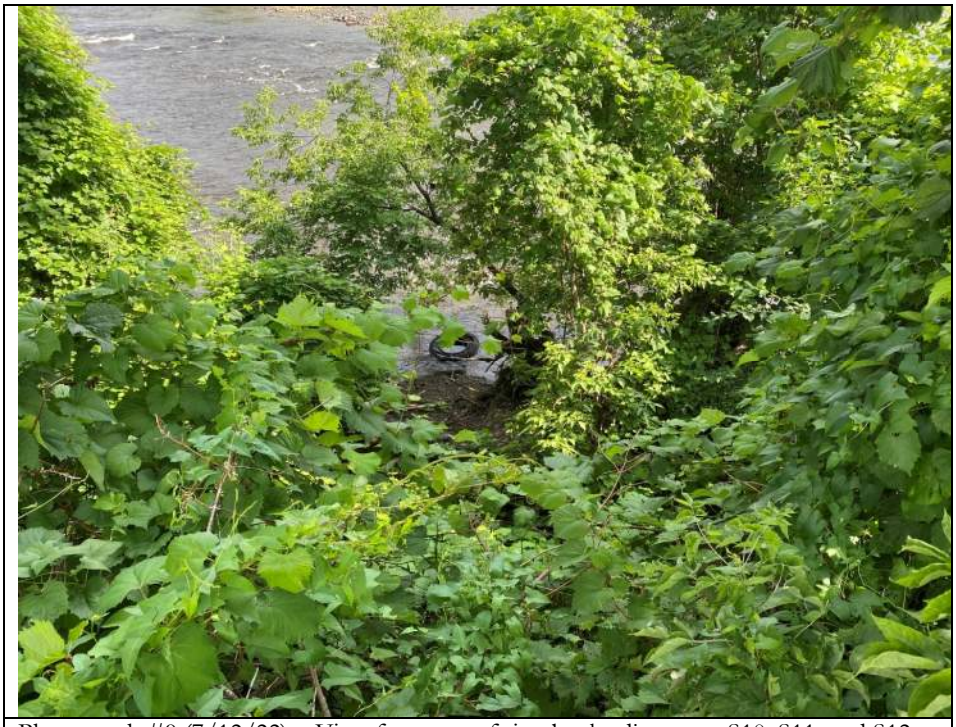


Photograph #5 (7/12/22) – Area of S4/S5 deposit. View looking upstream (southeast). Plugged 15" diameter outfall pipe in background.

Photograph #6 (7/12/22) – Area of S4/S5 deposit. Hardened tar and asphalt-like material on riverbank.

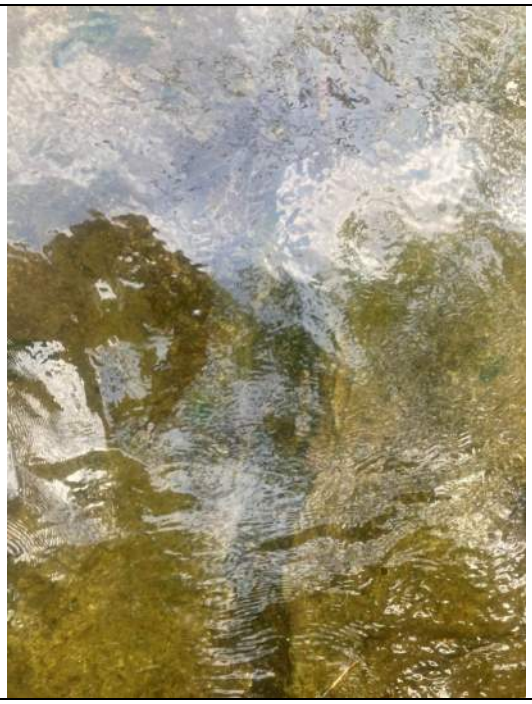
Photograph #7 (7/12/22) – Area of S4/S5 deposit. Hardened tar in root structure.

Photograph #8 (7/12/22) – Upland area adjacent to riverbank at location of S10, S11, and S12 deposits. View looking southwest.

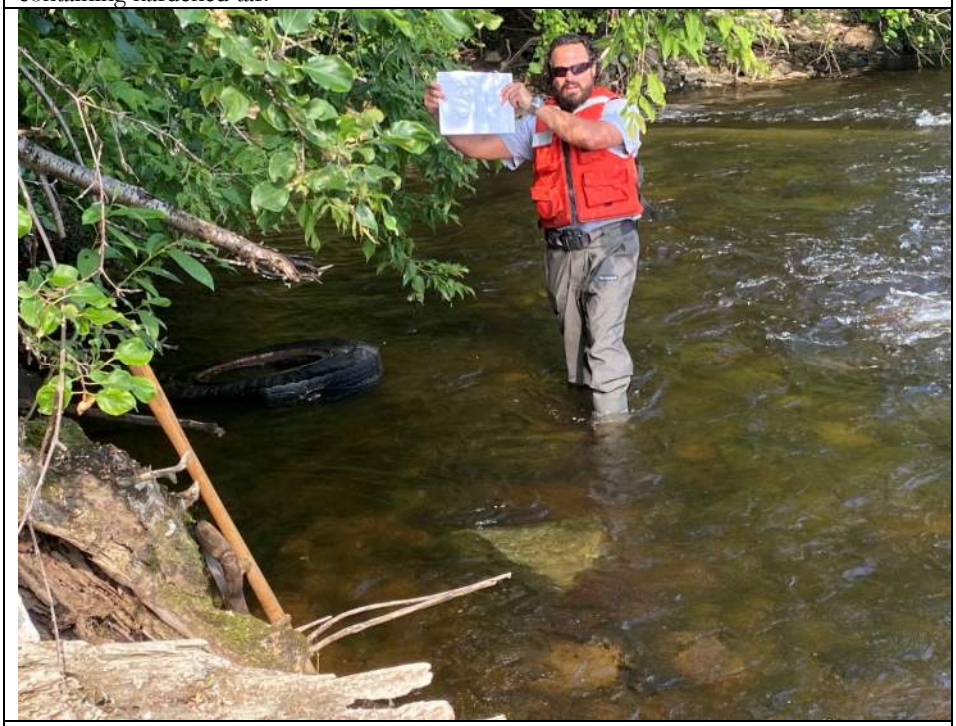


Photograph #9 (7/12/22) – View from top of riverbank adjacent to S10, S11, and S12 deposits.

Photograph #10 (7/12/22) – Area of S10 deposit. View looking toward the river (northeast). Multiple open vertical fractures filled with hardened tar. Faint tar-like odor upon disturbing.



Photograph #11 (7/12/22) – Area of S10 deposit. High angle fracture in limestone containing hardened tar.



Photograph #12 (7/12/22) – Area of S11 deposit. View toward downstream shoreline.

Photograph #13 (7/12/22) – Area of S11 deposit. View toward upstream shoreline. Hardened tar visible in root structure.

Photograph #14 (7/12/22) – Area of S11 deposit. View of sediment deposits.

Photograph #15 (7/12/22) – Area of S12 deposit. View looking toward river (northeast). Trace impacts, slight sheen, and faint tar-like odor upon disturbing.

Photograph #16 (7/12/22) – Area of S13/14 deposit. View of sheen over top of water.

Photograph #17 (7/12/22) – Area of S13 deposit. View looking downstream (northwest). Very faint tar-like odor upon disturbing sediment.

Photograph #18 (7/12/22) – Area of S13 deposit. View looking upstream (southeast).

Photograph #19 (7/12/22) – Upland area adjacent to riverbank at location of S13 and S14. View looking southwest.

Photograph #20 (7/12/22) – Area of S14 deposit. View looking downstream (northwest). Black discolored soil at edge of riverbank with moderate tar-like odor upon disturbing.

Photograph #21 (7/12/22) – Area of S14 deposit. View looking upstream (southeast).

Attachment B
June 2010 Photographic Log

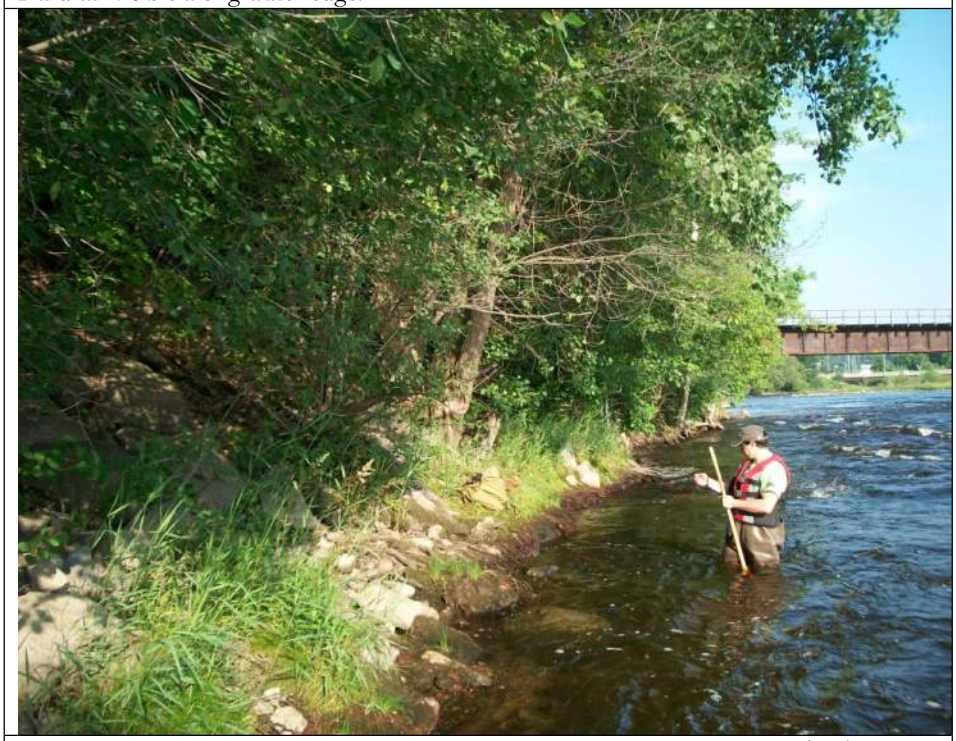
Photograph #1 – Area of S3 deposit. View toward shore and downstream (6/18/10).

Photograph #2 – Area of S3 deposit. View toward shore and upstream (6/18/10).

Photograph #3 – Area of S3 deposit. View toward shore (7/16/07 photograph from RI Report [Arcadis BBL, October 2007]).

Photograph #4 – Area of S4 deposit. View toward downstream direction (6/18/10). Plugged 15" diameter outfall pipe in foreground. Hard tar visible downstream of pipe along water edge.

Photograph #5 –Area of S4/S5 deposits directly downstream of plugged 15" diameter outfall pipe shown in photograph 4. View toward downstream direction (6/18/10). Hard tar visible along water edge.



Photograph #6 – Area of S5 deposit. View toward downstream direction (6/18/10). Hard tar visible along edge of water.

Photograph #7 – Area of S10 deposit. View toward shore and upstream (6/18/10).

Photograph #8 – Area of S10 deposit. View toward southern shore (6/17/10).

Photograph #9 – Area of S10 deposit. High angle fracture in limestone approximately perpendicular to shoreline (6/17/10). Dark material in fracture is hard tar.

Photograph #10 – Area of S10 deposit (6/17/10). Next to shovel is a piece of hard tar removed from fracture in Photograph #9.

Photograph #11 – Area of S11 deposit. View toward shore and downstream (6/18/10).

Photograph #12 – Area of S11 deposit. View toward shore and upstream (6/18/10).

Photograph #13 – Area of S12 deposit. View toward southern shoreline (6/18/10).

Photograph #14 – Area of S12 deposit. View toward shore and downstream (6/18/10).

Photograph #15 – Area of S13 deposit. View toward shore and downstream (6/18/10).

Photograph #16 – Area of S14 deposit. View toward shore and downstream (6/18/10).

Photograph #17 – Area of S14 deposit. View toward southern shoreline (6/18/10).

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Coordination and project conditions.
   2. Pre-Construction/Site Mobilization Meeting.
   3. Progress meetings.
   4. Daily Tailgate Meetings.
   5. Problem or Work Deficiency Meetings.
   6. Substantial Completion Meeting.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 50 – Work Restrictions.
   4. Section 01 30 65 – Health and Safety Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.

1.02 SUBMITTALS

A. Review draft meeting minutes prepared and distributed by the Construction Manager following meetings described herein. Provide comments, schedule updates, schedule forecasts (e.g., task start/end dates, material deliveries, etc.), changes or additions to on-Site personnel, and discussion of work-related issues as appropriate and provide to the Construction Manger within one day of draft meeting minutes being distributed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 COORDINATION AND PROJECT CONDITIONS

A. Coordinate Work schedule and submittals to ensure efficient and orderly sequence of interdependent Work activities.

B. Provide full-time capable and experienced Construction Superintendent, Resident QC Engineer, Competent Person(s), and third-party Site Safety Officer (SSO, refer to Section 01 30 65 for SSO requirements) for the duration of the remedial construction activities at the Site. These individuals shall be totally responsible for the execution of the work as representatives of the Contractor and shall coordinate all activities with National Grid

and the Construction Manager. If qualified, the Construction Superintendent can act as a Competent Person.

C. Coordinate, supervise, direct, and cooperate fully with subcontractors, manufacturers, fabricators, suppliers, distributors, installers, and testing agencies whose services, materials and/or equipment are required to ensure the completion of the Work and comply with the Work Schedule (refer to Section 01 10 00).

D. Provide all necessary coordination with the pertinent utility companies and governmental entities regarding the implementation of the proposed remedial construction activities.

E. The Contractor shall participate in all project coordination and progress meetings to comply with the project schedule.

3.02 PRE-CONSTRUCTION MEETING

A. The Construction Manager shall schedule meeting after Notice of Award.

B. Attendance Required: National Grid (or a National Grid authorized representative), Construction Manager, Design Engineer, Contractor Project Manager and Superintendent, and Contractor Site Safety Officer.

C. Agenda:
   1. Execution of National Grid-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.
   4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
   5. Designation of personnel representing parties in the Contract (i.e., National Grid, Contractor, and Subcontractors), the Construction Manager, and the Design Engineer. Review of the responsibilities of each party.
   6. Review lines of authority and communication.
   7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   8. Summary of the Design Documents and Contract Documents.
   9. Summary of Work.
   10. Use of premises by Contractor and Limit of Work.
   11. Scheduling.

3.03 SITE MOBILIZATION MEETING

A. Construction Manager shall schedule meeting after Notice of Award at the Site prior to Contractor occupancy.

B. Attendance Required: National Grid, Construction Manager, Design Engineer, Contractor Project Manager and Superintendent, Contractor Site Safety Officer, and major Subcontractors. A NYSDEC representative may also attend the meeting.

C. Agenda:
   1. Safety Minute.
   2. Summary of Work.
   3. Summary of Design Documents and Contract Documents.
   4. Use of premises by Contractor and Limit of Work.
   5. National Grid requirements.
   6. Review the responsibilities of each party.
   7. Review lines of authority and communication.
   8. Discuss project details:
      a. Construction facilities.
      b. Temporary controls.
      c. Temporary utilities.
      d. Utility management and protection.
      e. Remedial Action implementation and Work sequencing.
      f. Construction quality assurance and quality control.
      g. Surveying.
      h. Security and housekeeping procedures.
   9. Safe Work Practices.
   10. Work Schedule.
   11. Subcontractors.
   12. Procedures for maintaining record documents.

3.04 PROGRESS MEETINGS

A. Construction Manager shall schedule meetings throughout progress of the Work at maximum weekly intervals, as appropriate based on Work activities, or as requested by National Grid.

B. Attendance Required: National Grid, Construction Manager, Design Engineer, Contractor Project Manager and Superintendent, Contractor Site Safety Officer, and major subcontractors and suppliers, as appropriate to agenda topics for each meeting. A NYSDEC representative may also attend the progress and coordination meetings.

C. Agenda:
   1. Safety Minute.
   2. Review/approval of minutes from previous meetings.
   3. Review of Work progress.
   4. Field observations, problems, and decisions.
   5. Identification of problems impeding planned progress.
   6. Review of submittals schedule and status of submittals.
   7. Maintenance of progress schedule.
   8. Corrective measures to regain projected schedules.
   9. Planned progress during succeeding work period.
   10. Coordination of projected progress.

11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

3.05 DAILY TAILGATE MEETINGS

A. Contractor shall conduct daily meetings prior to commencing Work for the day. At the Contractor's discretion, additional tailgate meetings may be conducted (e.g., in response to a change in work activities, near miss, after lunch break, etc.).

B. Attendance Required: Parties conducting Work including the Contractor and any Subcontractors, Contractor Site Supervisor, Contractor Site Safety Officer, Construction Manager, and Design Engineer.

C. Agenda:
   1. Safety Minute.
   2. Planned work for the day.
   3. Location of work.
   4. Required personnel and equipment.
   5. Associated health and safety considerations.
   6. Applicable quality and work standards.
   7. Surveying, testing, sampling, and other construction quality control to be performed.

D. Prepare daily attendance sheets. Daily tailgate meeting attendees shall sign the attendance sheet. Contractor shall maintain records of daily attendance sheets at the Site.

3.06 PROBLEM OR WORK DEFICIENCY MEETINGS

A. Construction Manager shall schedule a special meeting when and if a problem or deficiency is present or likely to occur. These meetings may be initiated/requested by National Grid, Construction Manager, Design Engineer, Contractor, or other involved party(ies).

B. Attendance Required: National Grid, Construction Manager, Design Engineer representative, Contractor Project Manager, Contractor Site Supervisor, Contractor Site Safety Officer, and major subcontractors and suppliers, as appropriate to agenda topics for each meeting.

C. Agenda:
   1. Define and discuss the problem or deficiency.
   2. Review alternative solutions.
   3. Identify an action plan to resolve the problem or deficiency.

3.07 SUBSTANTIAL COMPLETION MEETING

A. Construction Manager shall schedule the meeting at substantial completion of scope of work.

B. Attendance Required: National Grid, Construction Manager, Design Engineer, Contractor Project Manager, Contractor Site Supervisor, and Contractor Site Safety Officer. A NYSDEC representative may also attend the meeting.

C. Agenda:
   1. Safety Minute.
   2. Discuss the status of scope of work.
   3. Identify any outstanding items.
   4. Identify plans for completing scope of work, including outstanding items.
   5. Identify plans and schedule for demobilization.
   6. Discuss record documents and schedule for submittal of record documents to Design Engineer.

END OF SECTION

SECTION 01 30 20

SURVEY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Surveying Requirements.
   2. Surveying Scope of Work.
   3. Drawing Requirements.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Land Surveyor name and qualifications.

B. Survey Control Plan as part of the Construction Management Plan (Section 01 10 00). Plan shall identify survey control points, include methods for recording survey data within the remediation area, and a list of survey submittals.

C. Submit Existing Conditions Survey and Record Survey packages that depict existing conditions including Site features or conditions determined to be different than shown on Drawings, installed Work, and subsurface features encountered during Work (including utilities and structures). Survey drawing packages shall include the following:
   1. Survey point file in electronic ASCII format, comma delineated with all data points (PNEZD), field code/description used to develop the mapping.
   2. Electronic CAD files shall be prepared in AutoCAD Civil 2022. Field codes, code blocks, and associated layering shall be in accordance with AIA standards.
   3. Digital aerial photographs, if used, in jpg or tiff file format and geo-referenced to the project coordinate system.
   4. For each draft survey deliverables, provide an electronic copy of the complete survey in AutoCAD Civil 2022 (or compatible with 2022) and a PDF file.
   5. For each final survey deliverable, provide an electronic copy of the complete survey in AutoCAD Civil 2022 (or compatible with 2022) and a signed/sealed PDF file.

1.03 SURVEYING REQUIREMENTS

A. Employ third-party Land Surveyor registered in State of New York and approved by National Grid and/or Construction Manager. Initial and record surveying work shall be performed by the Land Surveyor (not the Contractor) and products shall be signed and sealed by a registered State of New York Licensed Land Surveyor.

B. Field and Progress surveying work may be performed by the Land Survey or by trained Contractor personnel under the supervision of the Land Surveyor. Land Surveyor shall perform field calibration of Contractor surveying equipment weekly (at a minimum).

C. Maintain complete and accurate log of survey control and survey work as Work progresses.

D. Surveyor shall comply with OSHA HAZWOPER training requirements.

E. Locate and protect survey control and reference points. Promptly notify National Grid, Construction Manager, and/or Design Engineer of discrepancies discovered.

F. Land Surveyor shall identify survey control points prior to the start of Work and submit to Design Engineer as part of Survey Control Plan.

1.04 SURVEYING SCOPE OF WORK

A. Initial Review and Existing Conditions Surveying:
   1. The Contractor and their subcontractors shall review the Existing Conditions Drawings and the Photograph Log (refer to Section 01 10 00 Summary of Work) and submit discrepancies or differences in Site conditions to the Design Engineer prior to mobilization.
   2. Locate and identify existing utilities, natural features, and grades within the Limit of Work.
   3. Surveys shall provide spot elevations of natural features (e.g., large trees, edges of heavy vegetation) as well as monitoring wells, stormwater features, curbs, concrete pads, guiderails, structures, and other man-made features within the Limit of Work.
   4. Prior to the start of clearing or intrusive work perform Existing Conditions Survey and submit package to Design Engineer.

B. Record Surveying:
   1. Record survey shall include, but not be limited to, the Limit of Work, the horizontal and vertical limits of the remediation, structures and natural features encountered (e.g., trees and root structures removed), utilities, and horizontal limits and type of restoration (e.g., remediation areas, support areas, etc.).
   2. Prepare a tabular summary of pre- and post-remediation elevations for each of the removal locations and include on the associated drawing.
   3. All topographic information shall be referenced to the specified coordinate system.

C. Survey Control:
   1. Provide physical horizontal and vertical control points based on the project's control system and information for Contract Documents including survey points, a basis of bearing, benchmarks, and datum information.

2. Surveys shall be performed in a Global Coordinate System datum in the State Plane Coordinate System for New York.
3. Coordinates shall reference the North American Datum (NAD) of 1983 in units of feet. Elevations shall reference the National Geodetic Vertical Datum (NGVD) of 1929 in units of feet.
4. Incorporate record information into CAD base map files based on field survey, boundary information and record information and the review and resolution of conflicting field and/or record information.

1.05 DRAWING REQUIREMENTS

A. Existing Conditions Survey and Record Survey:
   1. Drawings (electronic or hardcopy) shall be provided at an appropriate scale approved by the Engineer plotted on American National Standards Institute (ANSI) D (22" x 34") drawing. A legend/key map which includes lines, symbols, hatches, and other drawing features, and a description of each shall be included on the drawings.
   2. Drawings shall depict the horizontal limits and elevations in 0.5-foot contours representing the bottom of excavation, final grade with each contour identified, restoration types, and locations of existing, demolished, removed, and new Site features.
      a. Provide an overall key map showing the project area, sediment/soil removal locations, and the extent of each detail map.
      b. Provide individual detail maps showing pre-remediation, post-excavation, and post-restoration conditions at each area. Where practical provide the pre-remediation, post-excavation, and post-restoration conditions at each area on a single sheet.
   3. Surveys shall be oriented with true north oriented as shown on the Design Drawings. Provide north arrow for true north.

B. Quality Requirements:
   1. Confirm drawing dimensions and elevations.
   2. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to National Grid and Design Engineer.
   3. Maintain complete and accurate log of control and survey work as Work progresses.
   4. Survey information shall be entered in AutoCAD at the actual elevation.
   5. Vertical survey tolerance to be maintained during construction is 0.10 foot for general Site grading and 0.01 foot for structural features unless otherwise specified in the Drawings or approved by the Design Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 30 50

WORK RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Use of Site.
   2. Working in Proximity to Overhead Utilities.
   3. Occupancy Requirements.
   4. Open Excavations.
   5. Replacement of Property.
   6. Housekeeping.

B. Related Sections and Documents
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 56 – Health and Safety Requirements.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 USE OF SITE

A. All work shall be performed during hours specified in Section 01 10 00.

B. Do not disturb portions of Site beyond the Limit of Work as specified in Section 01 10 00 and as depicted on the Drawings.

C. Permits:
   1. Contactor to comply with permit requirements and conditions regulated by local, county, and/or state agencies.
   2. Contractor shall review and comply with the United States Army Corp of Engineers (USACE) permit conditions.

D. Work Area Access:
   1. The Contractor is responsible for maintaining access to the Site, including traffic controls, for Contractor personnel, National Grid, the Construction Manager, the Design Engineer, Construction Quality Assurance personnel, and Site visitors.
   2. Designate areas for decontamination, parking, materials and equipment storage, temporary waste containment areas and other operations as needed in support of the Work.

E. Roadways, Driveways, and Entrances: Keep roadways and Site entrances serving premises clear and available to emergency vehicles at all times. Do not use these areas for parking or storage of materials.

F. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

G. Site Access to the work areas shall be from the locations depicted on the Drawings.

1.03 DPW BUILDING

A. The City of Water DPW building will be used by the DPW during construction including during construction work hours. Contractor shall notify DPW of activities occurring near their building.

1.04 OCCUPANCY REQUIREMENTS

A. National Grid, Construction Manager, Design Engineer, and Construction Quality Assurance personnel may occupy the Site during the Work.

B. The property owners (CSX Railway, City of Watertown Department of Public Works, Jefferson Concrete Corp.) and businesses located near the Site, outside the Limit of Work, will remain in operation during the Work. The Contractor shall cooperate with property owners, National Grid, Construction Manager, and the Design Engineer to minimize disruption to adjacent property owners/businesses and their operations.

1.05 OPEN EXCAVATIONS

A. Open excavations for the sediment removal areas shall be adequately safeguarded by installing a cofferdam, sediment curtain, and oil boom, in accordance with these Specifications, the Drawings, and the USACE permit. The Contractor shall limit the size of open excavations to the extent possible. Refer to Drawing C-810.

1.06 REPLACEMENT OF PROPERTY

A. Replace all pavements, fences, guiderails, vegetated areas, and any other public or private property damaged during work. Damaged features shall be replaced with new features to the satisfaction of the property owner or affected party.

B. If it is observed that the Contractor neglects his responsibilities as set forth above, National Grid and/or Construction Manager will notify the Contractor to that effect. If the Contractor does not take reasonable steps after notification to correct the neglected situation, National Grid may hold payment of any monies due or that may become due to the Contractor until property is replaced to the satisfaction of National Grid and the property owner or affected party.

1.07 HOUSEKEEPING

A. As work progresses, remove all unused tools and equipment, surplus materials, waste materials, rubbish, refuse, and other debris from the Site in a timely manner and ensure that the Site is at all times maintained in a neat and orderly condition.

B. At the completion of the Project, promptly remove all construction tools and equipment surplus materials, waste materials, rubbish, refuse, and other debris from the Site and leave the Site in a neat and orderly condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 30 65

HEALTH AND SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Contractor's Site-Specific Health and Safety Plan (CSSHASP).
   3. References and Standards.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 52 00 – Work Zone and Community Site Monitoring and Control.
   6. Brown and Caldwell's Site-Specific Health and Safety Plan.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Submit CSSHASP in accordance with Section 01 33 00.

B. Concurrent with submission of the CSSHASP, submit the resume of a Certified Industrial Hygienist (CIH) of a third-party subcontractor.

C. Within 14 calendar days of Notice of Award but no less than 14 calendar days prior to commencement of field activities, submit the following to Owner's Representative:
   1. Written CSSHASP containing all requirements under 29 CFR 1910.120. The plan must be stamped by a Certified Industrial Hygienist (CIH) and shall be written to avoid misinterpretation, ambiguity, and mistakes that verbal orders cause.
   2. CSSHASP approval and certification by a certified Industrial Hygienist for review and approval by Owner and Owner's Representative.
   3. Documentation of medical monitoring including doctor's release to perform work.
   4. Documentation of 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and applicable 8-hour annual HAZWOPER refresher training and other applicable training (e.g., confined space entry).
   5. Documentation of personnel respirator qualification and fit testing.

D. During Construction Activities:
   1. All required forms and OSHA records will be kept on Site as applicable.

2. Work Zone Monitoring results and Community Air Monitoring results shall be submitted in accordance with Section 01 52 00.

1.03 CONTRACTOR SITE SPECIFIC HEALTH AND SAFETY PLAN (CSSHASP)

A. Contractor shall prepare a CSSHASP which establishes policies and procedures to protect workers and the public from the potential hazards posed by implementation of the work. This CSSHASP shall apply to all personnel on Site during construction, including but not limited to, Contractor's employees and Subcontractor's employees.

B. Employ the services of an independent third-party subcontractor, including a Health and Safety Officer, to implement the CSSHASP. The third-party Health and Safety Officer must be pre-approved by the Owner. The independent third-party subcontractor may be the same entity that is used to implement the community air monitoring required in Section 01 52 00.

C. The CSSHASP shall be reviewed and certified by a CIH.

D. The Contractor shall be responsible for providing all personnel, facilities, equipment and materials to protect on-Site workers from physical injury and adverse health effects due to exposure to Site hazards.

E. At a minimum, the CSSHASP plan shall:
   1. Comply with the requirements of National Grid Documents.
   2. Include the work zone air monitoring action levels. Contractor shall be aware of work zone action levels identified in BC's HASP.
   3. Include perimeter vapor and dust Action Levels for this project as specified in Section 01 52 00.
   4. Include any additional requirements that the Contractor deems to be appropriate or applicable to the Work, the Site, or the Contractor's methods and/or equipment.
   5. Name key personnel and alternates responsible for Site safety and provide the contact information for each person.
   6. Describe operations to be conducted to implement the Work and identify risks associated with each operation conducted.
   7. Confirm that personnel are adequately trained to perform their job responsibilities and to handle the specific hazardous situations they may encounter.
   8. Describe the protective clothing and equipment to be worn by personnel during various Site operations.
   9. Describe any Site-specific medical surveillance requirements.
   10. Describe the program for periodic air monitoring, personnel monitoring, and environmental sampling.
   11. Describe the actions to be taken to mitigate existing hazards to make the work environment less hazardous.
   12. Describe Site-specific emergency response procedures.
   13. Define Site control measures and include a Site map.
   14. Establish decontamination procedures for personnel and equipment.
   15. Describe audit/inspection program to ensure compliance with the CSSHASP.

16. Designation of Work-Specific Areas, including exclusion zone, contamination reduction zone, and health/safety/emergency facilities.
17. Include any additional requirements that the Contractor deems to be appropriate or applicable to the Work, the Site, or the Contractor's methods and/or equipment.

1.04 REFERENCES AND STANDARDS

A. Federal OSHA Standards:
   1. Air Contaminants - Permissible Exposure Limits; OSHA 3112.
   2. General Industry Standards and Interpretations; Volumes 1 - 3- OSHA 2077; U.S. Department of Labor, Occupational Safety and Health Administration; Specifically Sections: 29 CFR 1910.1000 1050 (air contaminants), 1910.120 (Hazardous Waste Operations and Emergency Response), 1910.1200 (Hazard Communication), 1910.301 Subpart S (Electrical), 1910.146 (Permit Required Confined Space) 1910.147 (Control of Hazardous Energy (Lockout/Tagout)), 1904 (Recordkeeping and Reporting Occupational Injuries and Illnesses), 1990 (Identification, Classification and Regulation of Potential Occupational Carcinogens), and 1926 (Safety and Health Regulations for Construction).
   3. Hazardous Waste Inspections Reference Manual; U.S. Department of Labor; Occupational Safety and Health Administration.
   4. OSHA Field Operations Manual; U.S. Department of Labor; Occupational Safety and Health Administration.

B. National Grid's Health and Safety Requirements.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00

SUBMITTAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittal procedures.
   2. Contractor-prepared work plans.
   3. Construction progress schedule.
   4. Proposed products list.
   5. Product data.
   6. Shop drawings.
   7. Samples.
   8. Design data.
   9. Test reports.
   10. Certificates.
   11. Manufacturer's instructions.
   12. Manufacturer's field reports.
   13. Construction photographs.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General and Supplementary Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. Section 01 10 00 – Summary of Work.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations

1.02 SUBMITTAL PROCEDURES

A. Prepare and provide a complete list of required submittals. Within 5 calendar days after date of National Grid-Contractor Agreement, Contractor shall submit list to Construction Manager for review.

B. Transmit each submittal with National Grid-approved cover page/transmittal form.

C. Sequentially number transmittal forms with reference to the appropriate Technical Specification and/or Drawing. Mark revised submittals with original number and sequential alphabetic suffix.

D. Apply Contractor's stamp, signature or initials certifying that the submittal satisfies the requirements of the Work and Contract Documents.

E. Schedule and submit submittals to expedite Project. Coordinate submission of related items (e.g., compile and submit together information for soils and aggregates for earthwork) to expedite review of submittals.

F. Submit an electronic copy of each submittal to Design Engineer. Submit an electronic copy of submittals to additional parties (e.g., Construction Manager) as required by other Technical Specification sections. Prepare and deliver hard copies of submittals to National Grid, Construction Manager, and Design Engineer as requested.

G. Contractor shall allow up to 10 calendar days for review and comment on each draft work plan submitted for review. For other submittals, allow 7 calendar days. Timeframes exclude delivery time to and from Contractor.

H. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

I. When a submittal is revised for resubmission, identify changes made since previous submission on the cover page/transmittal form and within the submittal.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested for Work will not be recognized or processed, unless related to alternative items approved by Design Engineer.

1.03 CONTRACTOR-PREPARED WORK PLANS

A. The Contractor shall prepare and submit electronic copies of contractor-prepared work plans including the Construction Management Plan (CMP), as specified in Section 01 10 00, to National Grid, Construction Manager, and Design Engineer for review within 14 calendar days after the date of the National Grid-Contractor Agreement and at least 21 calendar days prior to mobilization. Prepare and deliver hard copies of contractor-prepared work plans to National Grid, Construction Manager, and/or Design Engineer as requested.

B. After the Contractor-prepared work plans have been accepted by National Grid, they will be submitted by National Grid (or their representative) to NYSDEC for review and comment.
   1. The Contractor shall sequence work activities and schedule submission of the work plans to allow 10 calendar days for NYSDEC to review and comment on the CMP.

1.04 CONSTRUCTION PROGRESS SCHEDULE

A. Submit initial schedules within 14 calendar days after date of National Grid-Contractor Agreement and at least 21 calendar days prior to mobilization. After review, resubmit required revised data within 7 calendar days.

B. Submit revised Progress Schedules at each construction progress meeting and with each Application for Payment.

C. Revisions to Construction Progress Schedule:
   1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
   2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
   3. Prepare narrative report to define problem areas, anticipated delays, and impact on Progress Schedule. Report corrective action taken, or proposed, and its effect.

D. Distribute copies of reviewed schedules at each Weekly Progress Meeting and to Project site file, subcontractors, suppliers, and other concerned parties.

E. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

F. Submit computer generated chart with separate line for each section of Work, identifying first workday of each week.

G. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

H. Indicate estimated percentage of completion for each item of Work at each submission and at each Weekly Progress Meeting.

I. Indicate delivery dates for products.

J. Submit revised Progress Schedules with each Application for Payment.

1.05 PROPOSED PRODUCTS LIST

A. Within 15 calendar days after date of National Grid-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.06 PRODUCT DATA

A. Product Data: Submit to National Grid, Design Engineer, and Construction Manager for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

1.07 SHOP DRAWINGS

A. Shop Drawings: Submit to National Grid, Design Engineer, and Construction Manager for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. When required by individual specification sections, provide shop drawings, signed, and sealed by professional engineer licensed in the State of New York, and responsible for designing components shown on shop drawings.
   1. Include signed and sealed calculations to support design.
   2. Make revisions and provide additional information when required by authorities having jurisdiction.

1.08 SAMPLES

A. Samples: Submit to National Grid, Design Engineer, and Construction Manager for review for limited purpose of checking for conformance with information given and the Contract Documents.

B. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

C. Include identification on each sample, with full Project information.

D. Submit number of samples specified in individual specification sections. National Grid, Design Engineer, and Construction Manager's will retain one sample.

E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

F. Samples will not be used for testing purposes unless specifically stated in specification section.

1.09 DESIGN DATA

A. Submit for review and comment by National Grid, Design Engineer, and Construction Manager.

B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

A. Submit for Design Engineer's approval.

B. Submit test reports for information for limited purpose of assessing conformance with information given and the Contract Documents.

1.11 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or subcontractor to National Grid, Design Engineer, and Construction Manager.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to National Grid, Design Engineer, and Construction Manager.

1.12 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to National Grid, Design Engineer, and Construction Manager.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

A. Submit reports to National Grid, Design Engineer, and Construction Manager.

B. Submit report within 5 calendar days of observation for information for limited purpose of assessing conformance with the information given and the design specified in the Contract Documents.

1.14 CONSTRUCTION PHOTOGRAPHS

A. Provide photographs of Site and construction throughout progress of Work.

B. Each month submit photographs with Application for Payment.

C. Digital photographs: Provide high resolution photographs on a flash drive.

D. Take Site photographs from differing directions indicating relative progress of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 40 10

PROTECTION OF WORK AND PROPERTY

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Project conditions and coordination.
   3. Protection of work.
   4. Barricades and warning signals.
   5. Protection of existing utilities and structures.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 30 50 – Work Restrictions.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 30 65 – Health and Safety Requirements.
   7. Section 01 50 00 – Temporary Facilities and Controls.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Existing Conditions Assessment: Assessment and documentation (photographs and/or video) of on-site features which may be affected by the Work, including but not limited to the City of Watertown DPW building, the existing retaining wall along the Black River, the Natural Gas Regulator Station, the CSX Railroad right-of-way, the metal-sided garage building on Jefferson Concrete property, other buildings and structures in the vicinity of the work area, fencing, and utility infrastructure.
   1. Develop and submit a list of damages to property that existed prior to the start of construction. Submit the list to the Construction Manager and Design Engineer at least 2 weeks prior to the start of any construction for the Construction Manager and/or Design Engineer to verify the damages. The lists shall include the following information:
      a. Location of damage
      b. Nature of damage
      c. Extent of damage

B. Post-Construction Assessment: Assessment and documentation (photographs and/or video) of on-site features at the conclusion of construction activities, including the

structures and site features documented in the Existing Conditions Assessment, and new structures and site features installed as part of the work (e.g., asphalt pavement, new stormwater management structures, etc.).

1.03 PROJECT CONDITIONS AND COORDINATION

A. Underground utilities are defined to be, but are not limited to: sanitary sewer, water, storm sewer, stormwater, natural gas, electrical conduit, telecommunications, cable, other piping, etc.

B. All overhead utilities located on or adjacent to the Site (e.g., overhead utilities on Newell Street and Newell Street Extension, Engine Street, Coffeen Street, Sill Street, Lawrence Street) that have the potential to be damaged by the work or access/egress for construction related traffic shall be demarcated in accordance with this Section. Contractor shall coordinate with the appropriate utility purveyors to flag overhead lines, as necessary, prior to the start of work.

C. Underground structures known to National Grid and the Design Engineer are shown on the Drawings. This information is shown to assist the Contractor and was generated using with the information available. The information shown on the Drawings is not guaranteed to be accurate or complete.

D. Notify Dig Safely New York (1-800-962-7962 or 811) prior to conducting any intrusive activities and for a utility stakeout request. Field verify and field mark-out all underground utilities and structures indicated on Drawings. Request an official mark-out of utilities at and in the immediate vicinity of the Site and limits of work to verify the location of underground utilities.

E. Coordinate with the utility company who owns the utility during the performance of the Work to determine which utilities, presented on the Drawings, reference drawings, utility mark-up and encountered in the field, are active and which may be abandoned.

F. All utilities whose facilities may be affected by the implementation of the Work shall be notified at least 72 hours in advance of the start of any operation that might affect such facilities.

G. Support and protect active utilities to prevent damage and to prevent service interruption. The Contractor shall meet the requirements of the utility owner whose utility is affected by the Work with regards to support and protection of any existing utilities impacted by the proposed construction activities.

H. The Contractor shall be liable for all damage and expense for direct or indirect damage caused to an active utility and is responsible to have it repaired promptly at no additional cost to National Grid. The Contractor shall repair any damage to protected structures and utilities during construction operations in accordance with the pertinent New York State, City of Watertown, Jefferson County, and/or utility authorities and as directed by the Construction Manager.

I. Surface structures are defined as all existing structures and other facilities at or above the ground surface. Surface structures include, but are not limited to, monitoring wells, piezometers, utility poles (including anchors and support cables), fire hydrants, electrical

panels, curbs, piles, fencing, foundations, and all other facilities that are visible above the ground surface.

J. The locations of the proposed construction activities are fixed and any proposed changes in the location of Work shall be approved by the Construction Manager to avoid unanticipated underground structures or impediments.

K. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, the Construction Manager will direct the Contractor in writing to perform the necessary work.

L. All utilities affected by the work shall be de-energized and/or shutdown in accordance with the appropriate lockout/tagout procedures when interrupted. Do not interrupt utilities unless permitted in writing by the utility owner and then only after arranging for temporary utility services, if required. No users shall be left without utility services.

M. Coordinate with utility companies and the appropriate city and county authorities when working within utility easements.

N. Take photographs or video of surrounding structures, including buildings, fences, monitoring wells, and utility lines, prior to starting the construction activities to provide a basis for establishing existing conditions including damage present before construction activities

O. Replace and restore all existing surface facilities, including but not limited to fencing, guard rails, posts, guard cables, signs, poles, markers, and curbs, which are temporarily removed to facilitate the performance of the Work, to their original condition at no additional cost to National Grid.

P. Necessary changes in the location of the proposed remedial activities shall be made by the National Grid and/or the Construction Manager to avoid unanticipated underground structures.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PROTECTION OF WORK

A. To prevent damage, injury or loss, the Contractor's actions shall include, but not be limited to, the following:
   1. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with the progress of the Work or the work of any other subcontractor.
   2. All flammable materials to be maintained on-site shall be stored in appropriate flammable storage cabinets. All temporary fuel storage tanks shall have secondary containment.
   3. Provide suitable storage facilities in accordance with manufacturer's recommendations for all materials which are subject to damage by exposure to weather, theft, breakage or otherwise.

4. Frequent clean-up of all refuse, rubbish, scrap materials, and debris caused by Site operations, so that the area of the work shall present a safe, orderly and workmanlike appearance at all times.
5. Provide barricades and fences around openings, excavations, and other hazardous areas in accordance with applicable requirements and Occupational Safety and Health Association (OSHA) regulations.
6. Failure to comply with these provisions could result in stoppage of work until they are met. Any costs incurred due to this work stoppage shall be borne by the Contractor.

B. Immediately repair damages to curbs, monuments, overhead utilities, subsurface utilities, or other property caused by the Contractor, and to the satisfaction of the feature's owner following completion of the Work. Damage to property and the repair will be compared to the pre-construction inspection documentation. The costs for these repairs will be borne solely by the Contractor.

C. Immediately notify the Construction Manager of all claims and complaints resulting from the work. Provide assistance, as required, to resolve all claims and complaints.

3.02 BARRICADES AND WARNING SIGNALS

A. Furnish and erect barricades, fences, lights, warning signs, and danger signals, as required, and take other precautionary measures for the protection of persons or property and of the Work, where work is performed on or adjacent to any roadway, right-of-way, or public place.

3.03 PROTECTION OF EXISTING UTILITIES, STRUCTURES, AND OTHER SITE FEATURES

A. Flag, barricade or otherwise suitably protect existing buildings, above and below ground facilities, above and below ground utilities, and public roadways during construction operations.

B. Existing Utility Poles: Protect and support existing on-site utility poles that are actively in service and are within or near the Work area. Protect and support the existing on-site utility poles that are to remain in place in accordance with the requirements of the pertinent utility company.

C. Overhead electrical lines are present at and around the Site. The Contractor shall use extreme care during the implementation of the remedial construction activities so as not to damage or interfere with these utilities. Contractor shall coordinate with the owner of these lines to establish minimum setbacks from these overhead lines for all equipment and personnel.
   1. Provide and install temporary "goal posts" beneath overhead wires at traffic crossings and post signage stating, "OVERHEAD WIRES ABOVE".

D. Protection of Underground and Surface Structures: Sustain in-place and protect from direct or indirect damage, structures to remain.

E. Existing 36-inch Sanitary Sewer: Protect the existing 36-inch sanitary sewer (oriented east-west across the project area) from direct or indirect damage (e.g., construction traffic).

F. City of Watertown Department of Public Works (DPW) Building: Protect the existing DPW building from direct or indirect damage including foundation, subsurface utilities, and overhead and personnel doorways.

G. Existing Retaining Wall Along Black River: Protect the existing retaining wall along the Black River from direct or indirect damage.

H. Existing Riverbank: Protect and support the existing Riverbank slope along the Black River from direct or indirect damage including minimizing clearing activities and protection of existing vegetation, diverting overland stormwater runoff flows away from the work areas, and protecting the riverbank during sediment removal activities from erosional river flow before restoration is complete.

I. National Grid Gas Regulator Station: Protect and support the gas regulating station from direct or indirect damage, including maintaining access to the area for National Grid personnel.

J. Jefferson Concrete Metal-Sided Garage Building: Protect the existing building from direct or indirect damage including concrete pads, bollards, foundation, subsurface utilities, and overhead and personnel doorways.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Temporary Utilities:
      a. Electricity and lighting
      b. Telephone service
      c. Internet service
      d. Heating and cooling
      e. Water supply
      f. Decontamination water management
      g. Sanitary facilities
   2. Construction Facilities:
      a. Field offices and sheds
      b. Vehicular access
      c. Parking
      d. Progress cleaning and waste removal
      e. Project identification
      f. Traffic regulation
      g. Equipment storage
      h. Decontamination facilities
      i. Health and safety equipment storage
      j. Fuel and flammable materials storage
      k. Equipment and material staging areas
      l. Waste collection areas
      m. All other temporary facilities required to perform the work.
   3. Temporary Controls:
      a. Barriers
      b. Enclosures and fencing
      c. Security
      d. Water control
      e. Dust control
      f. Noise control
      g. Erosion and sediment control
      h. Pollution control
   4. Removal of Utilities, Facilities, and Controls

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. Section 01 33 00 – Submittal Requirements.
   3. Section 01 40 10 – Protection of Work and Property.
   4. Section 01 52 00 – Work Zone and Community Air Monitoring and Control.
   5. Section 01 52 20 – Decontamination Requirements.
   6. Section 01 54 00 – Site Security.
   7. Section 31 23 16 – Sediment Removal and Restoration.
   8. Section 31 25 13 – Erosion and Sediment Control.
   9. Section 31 70 00 – Waste Management, Transportation, and Disposal

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations

1.02 SUBMITTALS

A. Project Signage Sketch: Prepare, submit and obtain approval for the proposed sign configuration, contents, appearance, and materials of construction and a figure showing the proposed sign location.

B. Occupancy Permits: Permits and/or approvals for use and occupancy for the temporary offices and other buildings, shed, etc., as necessary. Provide to National Grid at least 5 business days in advance of occupying structures.

C. Product and Equipment Data: Product and equipment data for items in this section. Contractor shall provide to National Grid at least 5 business days prior to use.

D. As part of the Construction Management Plan, describe traffic control and protection measures to be implemented within and around the Project Area, the truck haul routes, and anticipated truck traffic volume. Contractor-prepared Traffic Control Plan shall be prepared in accordance with local requirements and the Maintenance and Protection of Traffic Plan (MPTP) included with the Remedial Design Report. Traffic Control Plan may be reviewed and approved by the local jurisdictions (city and county), as applicable.

1.03 TEMPORARY UTILITIES

A. Electricity and Lighting (if necessary)
   1. All temporary electric service required throughout Site shall be provided by the Contractor.
   2. The Contractor is responsible for extending electrical service to the site facilities. The Contractor shall ascertain Site power requirements and inform National Grid of such requirements in advance.
   3. Service shall be brought to immediate work areas of the Site, as required, by construction-type power cords. Distribution boxes and circuit wiring shall be provided, if required, to meet the required power needs. All electrical service shall meet the substantive requirements of applicable building codes.

4. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
    a. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
    b. Provide warning signs at power outlets other than 110 to 120 V.
    c. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades or other traffic areas.
    d. Provide metal conduit enclosures or boxes for wiring devices.
    e. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.
5. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations.
    a. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
    b. Provide one 100-W incandescent lamp per 500 sq. ft., uniformly distributed, for general lighting, or equivalent illumination.
    c. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.
6. Provide and maintain lighting for construction operations
7. Provide and maintain lighting entire site after dark as necessary for security purposes.
8. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps for specified lighting levels.
9. Maintain lighting and provide routine repairs.

B. Temporary Internet Service
    1. Provide temporary internet access throughout construction period for common use facilities used by all personnel engaged in construction activities.
        a. Internet service shall be from a broadband and/or fiber optic network. Dial up service shall not be considered suitable.
        b. Internet access shall be provided to all personnel by ethernet cable (one ethernet cable shall be made available for each project personnel) and/or wireless local area network.

C. Temporary Heating and Cooling (if necessary)
    1. Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that is EnergyStar certified and will not have a harmful effect on completed installations or elements being installed.

D. Temporary Water Service

1. The Contractor shall determine the site water requirements and provide adequate water from accepted sources.
2. Non-potable site water may be stored in holding tanks and distribution piping or by tank trucks or any combination thereof.
3. A high-pressure steam-cleaning system shall be provided, as appropriate, for equipment and vehicles use, after the mud and/or dirt has been cleaned from the equipment.
4. The Contractor shall also ensure that the available water source on-site is adequate to implement and apply odor suppression measures as required by National Grid or the Construction Manager during the implementation of the planned remedial construction activities. The Contractor shall modify or enhance the available water supply as required to facilitate the implementation of the odor suppression and dust control measures at no additional cost to National Grid or the Construction Manager.

E. Decontamination Water Management
1. The Contractor shall be responsible to collect the wastewater resulting from the cleaning of the equipment and pump to an on-site treatment system. The collected wastewater shall be managed in accordance with Section 31 70 00.

F. Temporary Sanitary Facilities
1. Provide temporary toilets, wash facilities, and drinking-water. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
2. The Contractor shall adhere to the requirements and specifications in Section SC-5.0, Temporary Sanitary Facilities, of National Grid's Supplementary Conditions.
    a. Disposable Supplies: Provide toilet tissue, soap, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
    b. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
    c. Wash Facilities: Install wash facilities supplied with water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled. Provide eyewash stations and similar facilities for convenience, safety, and sanitation of personnel.
    d. Drinking Water Facilities: Provide potable bottled water and/or drinking water units. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 degrees F.
    e. Locate toilets and drinking water fixtures so personnel need not walk more than 200 feet to facilities from work area.

1.04 CONSTRUCTION FACILITIES

A. Field Offices and Sheds
1. The Contractor shall be responsible for providing all construction facilities for use by project personnel during the Work and for obtaining necessary permits and/or approvals for use and occupancy of these facilities.
2. Prior to installation of offices and shed, consult with the Construction Manager regarding requirements, locations, access, and related facilities.

3. All trailers other than storage sheds shall be provided with the following minimum requirements:
    a. Grounded Lighting: Lighting shall be electric, non-glare type producing a minimum illumination level of 50 foot-candles measured at desk height.
    b. Heating and Cooling: Heating and cooling shall be capable of maintaining ambient temperatures within the trailer of approximately 70°F. Heating and cooling apparatus shall be EnergyStar certified.
    c. Potable bottled water.
    d. Fire Protection: Fire extinguishers shall be non-toxic dry chemical type, UL approved for Class A, B, and C fires (minimum rating of 2A, 108, 10C).
    e. Telephone Service: Provide minimum of two telephone lines for use by National Grid, the Construction Manager, and Design Engineer.
4. Office Trailer (National Grid, Construction Manager, and Design Engineer):
    a. Provide a 400-square foot office trailer with two offices and a center meeting area for use by National Grid, the Design Engineer, and Construction Manager.
    b. Offices - At a minimum, each of the offices shall include the following:
        1) Built-in desks (one in each office)
        2) Built-in overhead shelves
        3) High speed wireless internet access
        4) Two adjustable office chairs with swivels
        5) Two fireproof file cabinets
        6) 10 folding chairs
        7) Two folding conference tables
        8) Coffee machine
        9) Microwave oven
        10) Medium size compact refrigerator
        11) One all-in-one printer, copier, scanner, and fax capable of 11" x 17" color and black and white printing, copying, and scanning; Canon Color Laser All-in-One Printer Model No. 6848B001, or approved equal)
        12) Reams of 8.5" x 11" and 11" x 17" paper
5. NYSDEC/NYSDOH Office Trailer:
    a. Provide a 160 square foot office trailer for use by NYSDEC and NYSDOH.
    b. Offices - At a minimum, each office shall include the following:
        1) One office desk
        2) Built-in overhead shelves
        3) One office chair with swivels
        4) One fireproof file cabinet
        5) Compact refrigerator (minimum 4 cu. ft)
6. Contractor shall be responsible for providing all construction trailers and sheds for their own use.
7. Facilities shall be structurally sound and weather-tight, with floors raised above ground and open to allow free circulation of air.
8. All trailers and equipment supplied by the Contractor shall be removed from the site at the close of construction.

9. As possible, locate offices and sheds away from temporary waste containment areas at locations approved by the Construction Manager.
10. Preparation: Fill and grade sites for temporary structures sloped for drainage away from buildings.
11. Installation:
    a. Install office spaces ready for occupancy 15 business days after date fixed in Notice to Proceed.
    b. Employee Residential Occupancy: Not allowed on Site.
12. Maintenance and Cleaning:
    a. Periodic cleaning and maintenance for office and storage areas. The Contractor will clean the floor of the office trailers a minimum of once per week or as directed by National Grid/Construction Manager/Design Engineer.
    b. Maintain approach walks free of mud, water, and snow.
13. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

B. Vehicular Access
1. Maintain on-Site access routes from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
2. Extend and relocate vehicular access as Work progress requires.
3. Provide unimpeded access to Site for emergency vehicles at all times.
4. Provide and maintain access to fire hydrants and control valves free of obstructions.
5. Provide means of removing mud from vehicle wheels before leaving the Site (i.e., entering public streets).

C. Parking
1. Provide temporary parking areas, utilizing existing surface as possible or construct compacted gravel parking area, to accommodate construction personnel.
2. Park in areas identified on the Drawings or areas approved by the Construction Manager.
3. When site space is not adequate, provide additional off-site parking.
4. Parking on city streets is not permitted.
5. Do not allow heavy vehicles or construction equipment in parking areas.
6. All personnel on-Site must back all vehicles into parking spots.
7. Contractor is responsible for providing parking signage. Signage for backing into parking spots must be posted in all parking areas. Parking signage shall be a black and white sign with 2-inch-high lettering that states the following:

MANDATORY

BACK IN PARKING

8. Maintenance:
    a. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.

b. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

9. Removal and Repair:
   a. Remove temporary materials and construction at Substantial Completion.
   b. Repair existing facilities damaged by use to original condition.

D. Progress Cleaning and Waste Removal
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
   2. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

E. Project Identification
   1. General
      a. Furnish, install, and maintain a project sign.
      b. Submit a sketch of the project sign (including dimensions and materials) and a figure showing the proposed location and orientation for the project sign at the site for review and approval by the National Grid and the Construction Manager.
      c. The sign face background shall be white.
      d. All lettering shall be black in color and a minimum 2 inches in height.
      e. The back of the sign and all supports shall be painted white.
      f. The sign shall be adequately supported and braced and properly positioned and aligned.
      g. The project sign shall be posted in prominent locations on the site perimeter fence near site access gates following the notice to proceed.
      h. Contractor shall obtain any necessary approvals or permits to post the sign.
      i. The sign is to remain onsite until the Project completion, and notification from the Construction Manager. At that time, the sign is to be dismantled and shall become the Contractor's property.
   2. Materials
      a. All lumber shall be structural quality and exterior grade (pressure treated).
      b. All bolts, nuts, and washers shall be plated or galvanized steel.
      c. The project sign shall be rectangular with minimum dimensions of 6 feet (W) by 3 feet (H).
      d. Paint shall be weather resistant, suitable for exterior sign applications, and compatible with exterior grade plywood and primer.
   3. Sign Content:

National Grid
Remedial Action
Watertown (Engine Street) Former Manufactured Gas Plant (MGP) Site
(NYSDEC Site No. 6-23-011)
Watertown, New York
New York State Department of Environmental Conservation
Kathy Hochul, Governor

TBD, NYSDEC Commissioner
Jeffrey M. Smith, Mayor

Contacts:
NYSDEC – Parag Amin (518-402-9648)
NYSDOH – Jonathan Robinson (518-402-7881)
National Grid – Steve Beam (315-663-5304)

F. Traffic Regulation
   1. Implement traffic control and protection measures in accordance with the approved Contractor-prepared Traffic Control Plan and the Maintenance and Protection of Traffic Plan (MPTP) included in the Remedial Design Report.
   2. Signs, Signals, And Devices:
      a. Provide signs at approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
      b. As determined necessary by the City or Construction Manager, provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
      c. Post-mounted traffic control and informational signs, traffic cones and drums, flares and lights: As approved by authority having jurisdiction and as specified in the approved Traffic Control Plan.
      d. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
      e.
   3. Flagging Personnel: Provide trained and equipped flagging personnel to regulate traffic when construction operations or traffic encroach on public traffic lanes.
   4. Removal
      a. Remove signs, signals, and devices when no longer required.
      b. Repair damage caused by installation in accordance with Section 01 10 00 and Section 01 40 10.
      c. Remove post settings, if applicable.

G. Decontamination Facilities
   1. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets as required by Drawings and Section 01 52 20.

H. Health and Safety Equipment Storage
   1. A partitioned health and safety equipment storage area shall be provided and shall have access through a lockable door. Sufficient shelving shall be installed for storage and inventory control of small items.

I. Fuel and Flammable Materials Storage
   1. Store all flammable materials brought to the Site, as specified in Section 01 40 10.
   2. Fuel storage tanks shall have secondary containment capable of storing 110% of the tank volume.

J. Equipment and Material Staging Areas

1. Establish equipment and non-waste material staging areas at locations indicated in the Drawings, as specified in Section 31 05 13, and as approved by the Construction Manager.
2. Temporary Waste Containment Areas (TWCA) shall be constructed as specified in Section 31 70 00 and in conformance with the Drawings.

K. Waste Collection Areas
1. Utilize waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label any hazardous, dangerous, or unsanitary waste materials separately from other waste.

1.05 TEMPORARY CONTROLS

A. Barriers
1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
2. Provide barricades required by authorities having jurisdiction for public rights-of-way.
3. Provide protection for site features including but limited to chain link fencing, gates, monitoring wells, buildings, and utilities designated to remain.
4. Protect non-owned vehicular traffic, stored materials, and structures from damage.

B. Enclosures and Fencing
1. Construction: Commercial grade chain link fence with privacy slats or privacy screens.
2. Provide, install, and maintain a 6-foot-high fence along Limits of Work; equip with vehicular gates with locks.
3. Exterior Enclosures:
   a. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons.
   b. Provide access doors with self-closing hardware and locks.

C. Security
1. Security Program:
   a. Contractor shall be responsible for Site security in accordance with Section 01 54 00.
   b. Prepare and implement a Site-Specific Security Plan.
   c. Maintain program throughout construction period until directed by the Construction Manager.
2. Entry Control:
   a. Restrict entrance of persons and vehicles into Project Site.
   b. Allow entrance only to authorized persons with proper identification.
   c. Maintain log of workers and visitors, make available to National Grid and/or the Construction Manager on request.

D. Water Control

1. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
2. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion, as described in the Erosion and Sediment Control Plan and Stormwater Pollution Prevention Plan.
3. Perform temporary dewatering as necessary as specified in Section 31 23 19.

E. Dust Control
1. Execute Work by methods to minimize raising dust from construction operations.
2. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
3. Implement dust monitoring as required by the Community Air Monitoring Plan.

F. Erosion and Sediment Control
1. The Contractor shall be responsible for Erosion and Sediment Control in accordance with Section 31 25 13, Drawings, and the New York State Standards and Specifications for Erosion and Sediment Control (NYSSESC).

G. Noise Control
1. Execute work by methods to minimize the noise level from construction operations.
2. Provide noise muffling devices for all construction equipment presenting a potential noise nuisance.

H. Pollution Control
1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
2. Comply with pollution and environmental control requirements of authorities having jurisdiction.

I. Removal of Utilities, Facilities, and Controls
1. Remove temporary utilities, equipment, facilities, and materials prior to Final Application for Payment inspection.
2. Clean and repair damage caused by installation or use of temporary work.
3. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to pre-existing conditions.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 52 00

WORK ZONE AND COMMUNITY AIR MONITORING AND CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Work Zone and Community Dust Monitoring.
   2. Dust Control.
   3. Work Zone and Community Vapor and Odor Monitoring.
   4. Vapor and Odor Control.
   5. Noise Monitoring.
   6. Noise Control.
   7. Work Zone and Community Air Monitoring and Control Plan.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. NYSDEC-approved Community Air Monitoring Plan (CAMP).
   4. Section 01 10 00 – Summary of Work.
   5. Section 01 30 65 – Health and Safety Requirements.
   6. Section 01 33 00 – Submittal Requirements.
   7. Section 01 50 00 – Temporary Facilities and Controls.

1.02 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations – Part 1910.95 and Part 1910.1000, Table Z-1.

B. New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP) (Appendix A of DER-10).

C. New York State Department of Environmental Conservation (NYSDEC) Fugitive Dust and Particulate Monitoring (Appendix 1B of DER-10).

1.03 SUBMITTALS

A. Prepare dust, vapor, odor, and noise control plans as part of the Construction Management Plan identified in Section 01 10 00. Dust, vapor, odor, and noise control plans shall conform to the Site CAMP and specifically include:
   1. A description of each remedial activity and the proposed dust, vapor, and odor control methods and potential receptors for each activity.

2. A list of measures that will be conducted if action levels (Work Zone action levels, as specified in the CSSHASP and/or community action levels, as specified in the CAMP) are exceeded, including specific task and personnel responsible to implement tasks.
3. The implementation of a communication response system for recording an early response to address complaints from the public and a list of personnel responsible to inform the public about the release and subsequent mitigation activities.

B. Daily Air Monitoring Field Reports, submitted to Design Engineer by 10:00 AM the following workday, presenting dust, vapor, odor and noise data, as specified in this Section. The Daily Air Monitoring Field Report shall include the following:
   1. Weather conditions (including general weather, temperature, wind direction and speed).
   2. General description of work activities.
   3. Scaled map of the work area depicting air monitoring locations.
   4. Summary of VOC and particulate concentrations (including typical values, maximum 15-minute averages, maximum absolute values, and background conditions).
   5. Identify action level conditions (if any).
   6. Description of response actions (if any).
   7. Documentation of odor complaints received by on-Site or off-Site receptors (if any) and associated response actions. Document the date, time, entity filing the complaint, affected location, nature of on-Site work preceding the complaint, and a description of the response action implemented and the outcome.
   8. Results of the use of dust, vapor, odor, or noise mitigation measures that were used to mitigate the source of exceedances.

C. Work Zone Monitoring Results:
   1. Work zone monitoring results shall be continuously reviewed by Contractor. Contractor shall notify Construction Manager and Design Engineer immediately of concentrations above established action levels for volatile organic compounds (VOCs), dust and odors. These elevated conditions will be recorded in the Contractor's Daily Field Reports and be available for review.
   2. Contractor shall submit monitoring results via electronic files on a weekly basis.
   3. Complete monitoring results shall be submitted within 7 calendar days of completion of Work.

D. Community Air Monitoring Results:
   1. Community air monitoring results shall be continuously reviewed by Contractor. Contractor shall notify Construction Manager and Design Engineer immediately of concentrations above established action levels for volatile organic compounds (VOCs), dust and odors. These elevated conditions will be recorded in the Contractor's Daily Field Reports and be available for review.
   2. The NYSDEC and NYSDOH shall be notified within 24 hours of exceedances of the established action levels for VOC, dust, and odors.
   3. The NYSDEC and NYSDOH shall be notified promptly (i.e., within 24 hours) of any dust, odor, vapor, and/or noise complaints received from the community.
   4. Contractor shall submit monitoring results, including data from the instruments, via electronic files on a weekly basis.

5. Complete monitoring results shall be submitted within 7 calendar days of completion of Work.

E. Weekly reports summarizing the results of the Daily Air Monitoring Field Reports. The reports shall include any action level conditions and the actions taken to control emissions from the Site. Reports shall be submitted to Construction Manager and Design Engineer on a weekly basis.

F. Documentation on third-party subcontractor proposed for CAMP implementation. The subcontractor shall be a qualified firm that regularly provides these services. Subcontractor's field personnel shall have at least 5 years of experience with similar activities at environmental sites and shall operate under the supervision of an office-based Certified Industrial Hygienist (CIH).

G. Product and Equipment Data: Submit product information a minimum of 5 working days before use of the material to Construction Manager and Design Engineer for approval. Contractor's subcontractor, who has been approved by National Grid, shall maintain on-site a sufficient quantity of backup equipment in the event of failure so that the progress of the work is not interrupted. Work should not be delayed due to an equipment failure and the lack of backup equipment.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide sufficient quantities of materials (e.g., water, vapor and odor suppressants) and application of such materials, as required to control dust, odor, and vapors and meet the requirements of this Section to the satisfaction of Construction Manager and Design Engineer.

B. Maintain an adequate supply of water, vapor and odor suppressants as well as the equipment to utilize these materials on-Site. These materials will be maintained at the Site prior to invasive Site activities. The Contractor may obtain a permit and approval from the City of Watertown to utilize a fire hydrant as a water source. Coordinate with the City, per the requirements of the permit, as necessary.

C. Dust, odor, and vapor control materials and equipment (including back-up equipment) shall be staged on-site and available for use at all times during construction.

2.02 MONITORING EQUIPMENT

A. Monitoring equipment shall be as specified in this Section and in the Construction Management Plan. All equipment must be checked to ensure that it is operational prior to daily invasive activities. Contractor is responsible for having backup equipment on-Site in the case of equipment failure in order to avoid delays in implementation of the work.

2.03 VAPOR AND ODOR CONTROL

A. Odor and vapor control products shall be specifically designed for use in odor and vapor control and shall have demonstrated success in suppressing the odors and vapors anticipated during remedial action construction.

B. Odor and vapor control products shall be manufactured by BioSolve® or approved equal.

C. Contractor shall provide the following equipment for odor control: two pressure washers for BioSolve® application. Equipment shall be provided and maintained in good-working condition.

PART 3 EXECUTION

3.01 DUST MONITORING

A. Perform continuous dust monitoring in the Work Zone during the implementation of the remedial construction activities in accordance with the CSSHASP.

B. Retain the services of a third-party subcontractor, approved by National Grid, to implement the CAMP in accordance with the NYSDEC-approved CAMP. The third-party subcontractor may be the same subcontractor retained for health and safety plan implementation.

C. Collect background dust data for a period of one week prior to beginning Work. The background readings shall be taken in an area removed and upwind of the Site and shall include data collected during periods of differing wind directions (if possible).

D. Construction Manager and Design Engineer reserves the right to request instantaneous perimeter monitoring depending on continuous air monitoring results and/or receipt of complaints.

E. Submit a daily report presenting the results of the Work Zone dust monitoring.

F. Submit a daily report presenting the results of the dust monitoring performed in accordance with the CAMP.

G. Submit a weekly summary presenting the results of CAMP activities including any community complaints and the associated response actions.

3.02 DUST CONTROL

A. Conduct all operations and maintain the work area so as to minimize and suppress dust associated with the Work.

B. Dust control measures shall be employed to mitigate the release of airborne particulate matter in the Work Zone and beyond the property line of the facility in accordance with CSSHASP, CAMP, and Technical Specifications.

C. In the event that it becomes necessary, in the opinion of National Grid, Construction Manager, an NYSDEC representative, and/or Design Engineer to provide additional measures to control the release of dust, Contractor shall implement such measures immediately, at no additional cost.
   1. Additional measures may include mobilization and routine operation of a street sweeper on roads near the Site.

D. National Grid, Construction Manager, and/or Design Engineer reserves the right to suspend Work at any time, if necessary, due to dust generation which causes a safety or

an air quality problem or which may cause contamination of adjacent areas. Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

E. Visible dust shall not be permitted to leave the Site.

F. The primary method of dust control will be the application of water spray using water trucks and/or flat hose(s) connected to a water supply.

G. When visible dust or dust above action levels is noted leaving the Work Zone, at the perimeter, the temporary construction roadway, or when directed by Construction Manager or Design Engineer, Contractor shall apply dust suppression techniques (e.g., potable water spray) and halt Work if necessary until the condition is mitigated.

H. After implementation of dust suppression techniques, walk perimeter of Work Zone and verify absence of dust, resume work activities and continue monitoring.

I. Trucks exiting the Site shall be inspected to ensure tires and undercarriages are clean and that tarps are secured. Excessive mud and loose soil observed on the trucks shall be manually removed with brooms and brushes, as necessary.

J. Provide a designated area where the trucks can be inspected, and where excessive mud and loose soil observed on the trucks will be manually removed with brooms and brushes.

K. Inspect truck routes on-Site and off-Site during high truck traffic periods for accumulation of excessive soil or dust. Remove soil or dust from off-Site truck routes if excessive build-up of Site soils or dust occurs as determined by Construction Manager.

L. Truck routes will be wet down by the water truck to minimize dust emissions.

M. During freezing temperatures, calcium chloride will be spread in lieu of water to minimize the potential for ice at the Site.

N. Additional dust control measures shall include covering soil stockpiles when active loading or unloading is not being performed and limiting the area of disturbed ground surface to minimize erosion and dust generation.

3.03 VAPOR AND ODOR MONITORING

A. Perform continuous organic vapor and odor monitoring in the Work Zone in accordance with the CSSHASP.
   1. Site perimeter shall be monitored for nuisance odors using olfactory methods.
   2. If odors are detected at the perimeter, Contractor shall immediately notify Construction Manager and Design Engineer. Contractor will take immediate action to mitigate the odor per the approved plans.
   3. Document observed nuisance odors or receipt of an odor complaint.

B. Retain the services of a third-party subcontractor to perform perimeter vapor and odor monitoring in accordance with the NYSDEC-approved CAMP. Third party subcontractor

retained for perimeter air monitoring may be the same subcontractor retained for CSSHASP implementation.

C. Collect background organic vapor level data for a period of 1 week prior to beginning Work. The background reading shall be taken in an area removed and upwind of the Site and shall include data collected during periods of differing wind directions (if possible).

D. Construction Manager and Design Engineer reserves the right to request instantaneous perimeter monitoring depending on continuous air monitoring results and/or receipt of complaints.

E. Submit a daily report presenting the results of the Work Zone organic vapor and odor monitoring.

F. Submit a daily report presenting the results of the organic vapor monitoring performed in accordance with the CAMP.

G. Submit a weekly summary presenting the results of CAMP activities including any community complaints and the associated response actions.

3.04 VAPOR AND ODOR CONTROL

A. Contractor shall conduct all operations and maintain the work area so as to minimize and suppress vapors and objectionable odors associated with the Work.

B. Vapor and odor control measures shall be employed in accordance with the CSSHASP, CAMP, and the Technical Specifications.

C. Vapor/odor control measures shall be employed preemptively to minimize the release of volatile organic compounds and odors beyond the property lines of the Site in accordance with the CAMP.

D. Implement vapor/odor control procedures (e.g., covering temporary waste containment areas, spraying BioSolve®) at the request of Construction Manager or Design Engineer.

E. In the event that it becomes necessary, in the opinion of Construction Manager, a NYSDEC representative, and/or Design Engineer, for the Contractor to provide additional measures to suppress vapors/odors, such measures shall be implemented immediately.

F. National Grid, Construction Manager and/or Design Engineer reserve the right to suspend Work at any time, if necessary, due to vapors or objectionable odors which cause a safety or air quality problem. Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

G. When vapors/odors above action levels are noted in the Work Zone, at the perimeter, or when directed by Construction Manager or Design Engineer, Contractor shall deploy control measures and halt Work if necessary until the condition is mitigated.

H. After the application of control measures, walk perimeter of Work Zone and verify absence of odors, resume work activities, and continue monitoring.

3.05 NOISE MONITORING

A. Perform noise monitoring within the Work Zone and a minimum of twice a day at the nearest property boundary in the direction of the nearest receptor.

B. Monitor and record background noise prior to start of Work.

C. Noise monitoring shall be performed during heavy work activities. Additional noise monitoring shall be performed at the direction of Construction Manager or Design Engineer. Construction Manager and Design Engineer reserves the right to monitor simultaneously and as necessary. Noise levels shall not exceed the levels specified without implementation of a hearing protection program.

D. Submit a daily report presenting the results of the day's noise monitoring.

3.06 NOISE CONTROL

A. National Grid, Construction Manager, and /or Design Engineer reserve the right to suspend Work at any time, if necessary, due to noise generation causing a safety or excessive vibration hazard. In the event the OSHA limit of 85 dBA is exceeded for 8 hours per day or a peak level of 140 dBA is exceeded at the boundary of the Site, a hearing protection program shall be implemented.

B. Contractor shall comply with all noise ordinances applicable to the Site (OSHA, City, County, State, etc.)

C. No vehicles or equipment shall be started or operated outside of the designated work hours. No idling of vehicles shall occur before the designated work hours. Idling shall be limited to 5 minutes. See Section 01 10 00 for work hours.

END OF SECTION

SECTION 01 52 20

DECONTAMINATION REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Potable water.
   3. Decontamination equipment and materials.
   4. General requirements.
   5. Decontamination Pad.
   6. Decontamination requirements.
   7. Inspections.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 01 52 00 – Work Zone and Community Air Monitoring Control.
   7. Section 31 23 16 – Sediment Removal and Restoration.
   8. Section 31 23 19 – Dewatering and Water Management.
   9. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 REFERENCES

A. Applicable State and Federal regulations for the handling, management, and disposal of solid and/or hazardous waste.

1.03 SUBMITTALS

A. Decontamination Plan: The Plan shall detail all equipment, materials, products, and procedures proposed for the decontamination of vehicles, equipment, materials, personnel, and debris leaving the site. The Decontamination Plan will be part of the Construction Management Plan (CMP) in accordance with Section 01 10 00 and 01 33 00.

B. Certification of Potable Water Source
    1. Contractor shall certify to National Grid that all water brought on-site for potable use is supplied by a potable water source. Certification shall be in the form of a letter from a municipal agency confirming that the source of water brought on-site is suitable for human consumption, or in the form of current laboratory analyses documenting that the water contains no contaminants above USEPA drinking water standards and/or New York State Department of Health standards.
    2. Contractor shall certify to National Grid that all water used and collected on-site for the purposes of personnel and equipment decontamination will be contained, treated as required, disposed off-site in accordance with local, state, and federal regulations

PART 2 PRODUCTS

2.01 POTABLE WATER

A. Contractor shall provide potable drinking water in sufficient quantity and of sufficient quality required for implementation of the contract documents and completion of the project.

B. Contractor may obtain water to perform decontamination operations from an existing water hydrant or existing water service on or within the proximity of the Site. Contractor shall obtain all necessary permits and approvals from local authorities and/or property owners. Water use shall be metered. A City-approved backflow prevention device shall be installed on hydrants used as a source for water. The quantity of water required for equipment and personnel decontamination, dust control, and other site activities shall be determined by the Contractor.

C. Contractor shall be responsible for removal of all temporary water supply lines and equipment at the completion of the project.

2.02 DECONTAMINATION EQUIPMENT AND MATERIALS

A. Holding Tanks
    1. Contractor shall provide any holding tanks required for use on-site to store clean decontamination water. Holding tank(s) should be sized accordingly to prevent down time from insufficient storage capacity.

B. Transfer Pumps
    1. Contractor shall provide transfer pumps, as necessary, to transfer wash water to and from the decontamination pad.

C. Pressure Washers
    1. Contractor shall provide two portable low-volume, high-pressure washers for use on-site and one as a backup. Pressure washes shall be the property and responsibility of Contractor.

D. Hoses and Fittings
    1. Contractor shall provide all necessary hoses and fittings necessary to connect the pressure washer(s) to the water supply and to connect the transfer pumps to the holding tanks.

E. Decontamination Fluid Additives
   1. Contractor may use additives such as surfactants or water-borne abrasives to facilitate removal of hardened material from equipment or demolition debris. All additives are subject to the approval of the Construction Manager.
   2. Contractor shall be responsible for the proper collection and treatment of decontamination fluids containing additives used during the project.

F. Miscellaneous Equipment
   1. Contractor may use steam-generating pressure washers for equipment with the approval of the Construction Manager.
   2. Contractor shall be responsible for providing all scrub brushes or other equipment necessary to remove caked or hardened material from the equipment, materials, and construction vehicles.
   3. Contractor shall also be responsible for providing all miscellaneous equipment such as buckets, shovels, etc. necessary to handle, transfer, and/or remove construction water and associated sediment from the decontamination pad and any necessary storage containers during construction activities.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. All personnel entering the exclusion zone, as defined in the CSSHASP (see Section 01 30 65), shall be decontaminated when exiting the exclusion zone.

B. All vehicles and equipment entering the exclusion zone, as defined in the CSSHASP (see Section 01 30 65), shall be decontaminated when exiting the exclusion zone.

C. All bulky debris such as concrete rubble, empty drums, synthetic liners and miscellaneous utilities such as piping shall require decontamination prior to off-Site transportation and disposal. All bulky debris shall be clean and washed to the extent that visible contamination is removed from bulky debris.

D. Contractor shall use the decontamination pad for the decontamination of all equipment and vehicles which have entered the exclusion and/or contamination reduction zones. Contractor shall ensure that any equipment, vehicles, or personnel that have been in contact with the exclusion and/or contamination reduction zones are decontaminated properly before leaving these zones.

3.02 DECONTAMINATION PAD

A. Contractor shall install and maintain personnel decontamination stations in accordance with the CSSHASP.

B. Contractor shall install and maintain equipment and vehicle decontamination pads in accordance with this section. Contractor may propose a pre-fabricated decontamination station and/or alternative pad design for review and approval by Design Engineer.

C. The decontamination pad(s) shall consist of an area of suitable size for decontaminating construction equipment used by the Contractor.

D. The decontamination pad(s) area shall be modified as needed to accommodate the equipment. Large rocks, stones and other obstructions shall be removed from the prepared subgrade to prevent damage to the overlying decontamination pad containment system.

E. The area shall be graded to direct liquids to a low area to be the sump if a natural low area is not present. Berms, a minimum of 6 inches high, shall be installed along the perimeter of the decontamination pad. The berm around the low area (i.e., the sump area) may be higher at Contractor's discretion to contain water.

F. The pad area and berms shall then be lined with one layer of continuous LLDPE (or approved equal) liner and a layer of non-woven geotextile (above the LLDPE liner). The approved liner shall be installed in one continuous piece and the geotextile layers shall be overlapped a minimum of 12 inches.

G. Wood planks or mats shall be placed as appropriate for the equipment to provide a stable working surface for decontamination.

H. The pad(s) shall be able to hold a minimum of 4 inches of standing water at the shallowest point within the containment.

I. Barriers shall be erected to capture and redirect overspray onto the decontamination pad.

3.03 DECONTAMINATION REQUIREMENTS

A. Personnel decontamination procedures shall be performed in accordance with the CSSHASP.

B. All solids and liquids generated from equipment decontamination and personnel decontamination shall be collected, contained, and handled by the Contractor in accordance with all applicable Federal and State solid and/or hazardous waste regulations and policies and Section 31 70 00.

C. All equipment requiring decontamination shall be washed to the extent that visible contamination is removed.

D. The decontamination process shall be performed in such a manner that all water used and visible contamination removed during decontamination falls onto the decontamination pad.

E. The decontamination pad shall be washed down at the completion of each day of work. Solids and liquids accumulated within the decontamination pad shall be removed daily, as operationally required, or as required by Construction Manager.

F. The pad(s) shall be kept empty and protected from rainwater with a polyethylene liner when not in use.

G. Upon completion of the Work, the decontamination pad materials will be managed as waste, in accordance with Section 31 70 00.

H. The decontamination areas shall be returned to pre-existing conditions upon completion of the Work.

3.04 INSPECTIONS

A. Contractor shall oversee all decontamination activities and prepare Decontamination Inspection forms for equipment and materials decontaminated. Decontamination Inspection forms shall be submitted to Construction Manager and/or Design Engineer. Contractor is responsible for decontamination and shall make the final determination as to if a piece of equipment, tool, or bulk recyclable remnant structure or pipe being removed from the Site has been properly decontaminated.

B. The Contractor shall inspect each decontamination pad daily and after storm events and make repairs as necessary.

END OF SECTION

SECTION 01 54 00

SITE SECURITY

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Site Security Plan.
   2. Site Security Requirements.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, include Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 30 00 – Administrative Requirements.
   3. Section 01 30 50 – Work Restrictions.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.

1.02 SUBMITTALS

A. Develop Site Security Plan as part of Construction Management Plan in accordance with Section 01 10 00 and Section 01 33 00. Site Security Plan shall address, at a minimum, the following items:
   1. Personnel and/or subcontractors responsible for implementing and maintaining security measures in the work area including names and assigned functions.
   2. Description of proposed security operations during working and non-working hours at the Site.
   3. Description of proposed means and methods of security during working and non-working, and frequency of security checks at the Site.
   4. Description of proposed methods for responding to breaches in security, including but not limited to:
      a. Entry of unauthorized personnel and/or vehicles into the Site.
      b. Destruction and/or vandalism of security provisions.

B. A list of persons authorized for Site entry shall be submitted to the Construction Manager during Mobilization. The list shall be updated to reflect changes in personnel, subcontractors, etc., and resubmitted as appropriate.

1.03 SITE SECURITY REQUIREMENTS

A. The Contractor shall be responsible for maintaining site security at all times throughout the duration of the contract.

B. The Contractor may elect to employ uniformed, security personnel at the site during non-working hours at the Contractor's expense. The Contractor may designate an employee to perform security operations during working hours. Security personnel may be provided

by an independent third-party company. These personnel do not need medical monitoring or OSHA training provided they do not enter any Contamination Reduction or Exclusion Zone.

C. Outside of working hours, the Contractor shall be responsible for securing the site at the end of each work period and opening the site at the beginning of each work period.

D. Protect work and property from theft, vandalism, and unauthorized entry.

E. Maintain security program throughout construction period. Restrict entrance of unauthorized persons and vehicles into Site.

F. Allow entrance only to authorized persons with proper identification.

G. No claim shall be made against National Grid, Construction Manager, or Design Engineer for damage resulting from trespass or loss of Contractor's equipment.

H. The Contractor shall make good all damage to on-site property and adjacent property owner's arising from failure to provide adequate security.

I. Install and maintain privacy screening (woven geotextile) along Site perimeter fence.

J. If existing fencing or barriers are breached or removed for purposes of construction, notify Construction Manager immediately and provide and maintain temporary security fencing in a manner satisfactory to Construction Manager.

K. Post signs at entrance gates and along perimeter fencing at a minimum frequency of one every 100 feet. Signs shall read "UNAUTHORIZED ENTRANCE TO THE WORK AREA IS PROHIBITED", with minimum 2-inch tall black lettering on a white surface. Signs shall be rectangular with minimum dimensions of 24 inches wide by 18 inches high. Signs shall be securely attached to the fencing, maintained throughout the work, and removed at the completion of the Project.

L. Post signs at entrance gates directing site visitors to sign-in at the field office. Signs shall read "ALL SITE VISITORS ARE REQUIRED TO SIGN-IN AT THE FIELD OFFICE", with black lettering on a white surface. Signs shall be rectangular with minimum dimensions of 24 inches wide by 18 inches high. Signs shall be securely attached to the fencing, maintained throughout the work, and removed at the completion of the Project.

M. The Contractor shall be responsible for all costs associated with providing the access restriction features, maintaining all features during construction and removal and disposal of temporary features at the end of the Project.

N. Entrance Control:
   1. Require each person to have available proper photo identification.
   2. Maintain a list of persons authorized for Site entry and submit a copy of the list to Construction Manager.
   3. Maintain log of workers and visitors and submit to Construction Manager weekly. Include the date, name, address, affiliation, purpose of visit, and time in and time out, for each worker/visitor.

4. Site visitors shall not be permitted to enter active work areas unless authorized by Construction Manager or National Grid and only after receiving a safety briefing from the Site Safety Officer.
5. Vehicular access shall be restricted to authorized vehicles only. Construction Manager reserves the right to search all Contractor vehicles.
6. Personal vehicles shall not be authorized to enter the Contamination Reduction or Exclusion Zone.

O. Security Station:
   1. Provide an area designated for security operations. This area may be part of Contractor's offices or a separate enclosure.
   2. Maintain a minimum of two portable two-way radios for the Contractor, two portable two-way radios for the Construction Manager, and one base radio station. All sets shall be able to and receiving from any other set, at any point within the Limits of Work. All portable units shall be rechargeable and shall be able to operate continuously without recharge for 8 hours.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 70 00

DEMOBILIZATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Closeout procedures.
   2. Final Site cleaning.
   3. Protecting installed construction.
   4. Project record documents.
   5. Requirements for final inspection.
   6. Product warranties and product bonds.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 20 – Survey Requirements.
   4. Section 01 30 65 – Health and Safety Requirements.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 50 00 – Temporary Facilities and Controls.
   7. Section 01 52 20 – Decontamination Requirements.
   8. Section 31 25 13 – Erosion and Sediment Controls.

1.02 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Construction Manager's review.

B. Provide closeout submittals in accordance with Technical Specifications including but not limited to:
   1. Manufacturer's certifications
   2. Inspection certifications and/or reports
   3. Qualifications
   4. Permits, permit closeouts, approvals, or documentation of required notifications
   5. Records of field tests, inspections, and/or measurements
   6. Documentation of fill materials used at the Site
   7. Waste Disposal Manifests and Certificates of Disposal
   8. Other information pertinent to the completion of the Work
   9. Certification of Site and Equipment Cleaning
   10. Record Drawings

1.03 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. The final cleaning shall be performed by the Contractor and shall include the following:
   1. Transport of all containerized soil/sediment waste removed under this contract to a National Grid approved disposal facility.
   2. Transport of all waste water generated under this contract to an National Grid approved disposal facility.
   3. Cleaning and removal of all the Contractor's construction equipment and materials.
   4. Collection and management of all the Contractor generated material including decontamination water and equipment on the Site for which cleaning is inappropriate.
   5. Repair of any erosion or runoff related damage.
   6. Grading and restoration, as required, of all areas used by the Contractor.
   7. Removal of all materials such as excess construction material, wood, debris and any other foreign material.
   8. Removal of all construction equipment.
   9. Sweep paved areas.

C. Equipment, Materials, and Tool Cleaning and Decontamination: Equipment, materials, and tool cleaning shall consist of degreasing (if required) followed by high-pressure water and/or decontamination in accordance with Section 01 52 20.

D. Temporary Facilities: Cleaning of the temporary facilities shall be limited to the existing building, materials, and products used as required in Section 01 52 20 and Section 01 50 00.

1.04 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection, as appropriate, for installed products. Control activity in work areas to prevent damage.

1.05 PROJECT RECORD DOCUMENTS

A. Maintain one set of the following record documents on-Site and record design and/or field revisions to the Work on the appropriate record documents:
   1. Design Drawings
   2. Technical Specifications
   3. Contract Documents
   4. Permits (as required)
   5. Change Orders and other modifications to the Contract
   6. Reviewed Shop Drawings, Product Data, and Samples
   7. Manufacturer's instruction for assembly, installation, and adjusting

B. Ensure entries are complete and accurate, enabling future reference by Construction Manager.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: In accordance with Section 01 30 20.
   1. Legibly mark each item to record actual construction including:
      a. Field changes of dimension and detail.
      b. Details not on original Contract drawings.

G. Submit documents to Construction Manager with claim for final Application for Payment.

1.06 ADMINISTRATIVE PROVISIONS

A. When the Contractor considers the work to be complete, they shall submit to the Construction Manager a written certification that:
   1. Contract Documents have been reviewed.
   2. Work has been inspected for compliance with Contract Documents.
   3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
   4. All construction equipment, excess construction material, debris and other foreign material has been removed.
   5. Work is complete and ready for final inspection.

1.07 FINAL INSPECTION

A. Prior to removal from Site, all cleaned equipment and material shall be inspected and accepted by the Construction Manager.

B. Certification of cleaning shall be attested to by the Site Safety Officer. A copy of each cleaning certificate shall be provided to the Construction Manager.

C. The work shall be successfully completed and approved by the Construction Manager prior to demobilization.

1.08 PRODUCT WARRANTIES AND PRODUCT BONDS (AS APPLICABLE)

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of applicable item of work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Submit prior to final Application for Payment.

F. Time of submittals:
   1. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

G. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 31 05 13

SOILS AND AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. References.
   2. Submittals.
   3. Backfill and Fill Materials.
   4. Examination of Materials.
   5. Stockpiling of Backfill and Fill Materials.
   6. Protection of Installed Work.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 –Summary of Work.
   3. Section 01 33 00 – Submittal Requirements.
   4. Section 31 23 16 – Sediment Removal and Restoration.

1.02 REFERENCES

A. New York State Department of Transportation (NYSDOT) Standard Specifications (most recent edition).

B. New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation 6 NYCRR Part 375.

C. NYSDEC, Division of Remediation, Technical Guidance for Site Investigation and Remediation (DER-10), May 2010.

D. ASTM International:
   1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   2. ASTM D2974 – Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
   3. ASTM D2976 – Standard Test Method for pH of Peat Materials.
   4. ASTM D4318 - Standard Test Method Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 SUBMITTALS

A. Samples of fill materials proposed for use shall be submitted, per Section 01 33 00, to Design Engineer a minimum of 2 weeks in advance of delivery to the Site. Samples shall

consist of 2 pounds (lbs) of each type of material. No materials shall be imported to the Site without approval of Design Engineer.

B. Imported Fill and Stone Materials:
   1. Material Source: Submit name of imported material source and certification from the source stating that the materials are permitted mine or quarry with a statement that to the best of the affiant's knowledge, the material is not contaminated pursuant to any applicable remediation standards and is free of extraneous or deleterious material and/or solid waste, and a description of the steps taken to confirm such.
   2. Bills of lading to document the source(s) of the material, including the name of the affiant and relationship to the source, and the location where the materials were obtained, including the street, town, state, and a brief source history.
   3. A particle-size analysis, plasticity index test (on portion passing No. 200 sieve), and for topsoil an organic content and pH test, in accordance with ASTM standards. Test reports shall be submitted directly from the testing laboratory to the Design Engineer.
   4. Laboratory analytical results or certificates supporting that the source quality conforms to the requirements identified in Part 2. The results of the fill analyses shall be submitted to NYSDEC by the Design Engineer for approval prior to delivery and use of the materials to the Site.
   5. Provide information necessary for Design Engineer to prepare and submit the NYSDEC form entitled "Request to Import/Reuse Fill or Soil" and supporting documentation.
   6. Fill materials shall not be imported to the Site until approval is provided by the NYSDEC and the Design Engineer.

C. Submit information and qualifications of proposed analytical laboratory.

D. Submit information and qualifications of proposed geotechnical laboratory.

E. Laboratory Test Reports:
   1. Prior to acceptance of fill materials, conduct quality tests in accordance with the requirements of this Section and appropriate reference standards.
   2. Submit the laboratory test reports to the Design Engineer.

PART 2 PRODUCTS

2.01 QUALITY CONTROL

A. Prior to acceptance of fill materials for use, perform quality tests in accordance with the requirements of this Section and appropriate reference standards. Design Engineer reserves the right to accept or reject fill materials based on conformance with the materials properties outlined in this Section.

B. Employ an independent geotechnical testing laboratory, approved by Design Engineer, to perform the tests on each different source and/or material proposed for use in the Work.

C. Employ an independent analytical testing laboratory certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) to perform the testing on each different source and/or material proposed and submit the test data to the Design Engineer. The results of the tests will be provided to the NYSDEC

to gain their approval, dependent on the analytical results, prior to delivery and use on the Site.

D. Geotechnical Testing: Collect fill material samples and perform geotechnical testing to check for compliance with this Section.

E. Chemical Analytical Testing: Collect fill material samples and submit to analytical laboratory to check for compliance with this Section.

2.02 IMPORTED BACKFILL AND FILL MATERIALS

A. Source Quality Control:
   1. Employ a NYSDOH ELAP-certified approved analytical testing laboratory to perform the analytical testing on each different source and/or material.
   2. Imported fill materials shall be sampled in accordance with the rates specified in the NYSDEC, Division of Remediation, Technical Guidance for Site Investigation and Remediation (DER-10), May 2010, Table 5.4(e)10-Recommended Number of Soil Samples (reproduced below). Samples will be analyzed for Target Analyte List (TAL) volatile organic compounds (VOCs), TAL semi-volatile organic compounds (SVOCs), TAL metals, cyanide (total and amenable), and. PCBs/Pesticides. Analytical testing shall be required unless exempted by DER-10 (e.g., for virgin crushed stone material documented to be from a permitted mine or quarry provided that is documented to contain less than 10% by weight material which would pass through a size 100 sieve).
   3. Analytical data of TAL VOCs, TAL SVOCs, TAL metals, cyanide (total and amenable), and PCBs/Pesticides shall demonstrate compliance with the applicable soil cleanup objectives (SCOs) in 6 NYCRR 375.6 for Unrestricted Use (inclusive of SCOs for Protection of Groundwater and SCOs for Protection of Ecological Resources). Refer to the Allowable Constituent Levels for Imported Fill or Soil table contained in Appendix 5 of DER-10 (attached).
   4. Testing frequency shall be according to DER-10 Table 5.4(e)10 reproduced for reference:

Contaminant	VOCs	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
> 1000	Add an additional 2 VOC discrete samples and 1 composite sample for each additional 1,000 cubic yards or consult with DER		

   5. Grab (discrete) samples shall be allowed for VOC analyses only.

6. Composite samples shall be prepared by collecting discrete samples from three to five random locations from the volume of soil to be tested which shall then be mixed (composited) and analyzed for SVOCs, inorganic, and PCB/pesticides.
7. If results from analytical data of TAL VOCs, TAL SVOCs, TAL metals, cyanide (total and amenable), and PCBs/Pesticides indicate concentrations above specified criteria, the Contractor shall submit another proposed material source.
8. Contractor shall coordinate with Design Engineer for collection of samples to be analyzed for emerging contaminants [per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane] from each different proposed source.
    a. Samples shall be collected at the frequency required by DER-10 Table 5.4(e)10.
    b. Samples collected for analysis of PFAS shall be tested for total concentration. If PFAS are detected above the reporting limit, a synthetic precipitation leaching procedure (SPLP) PFAS analysis shall be conducted (coordinated with laboratory by Design Engineer).
    c. Contractor shall coordinate with Design Engineer for turnaround time and shall account for total PFAS and SPLP PFAS analyses in the project schedule.
    d. Emerging contaminant results shall be reported in a Category B deliverable prepared by the analytical laboratory.
    e. If, by the determination of NYSDEC, results from analytical data of emerging contaminants PFAS and 1,4-Dioxane indicate that concentrations of emerging contaminants are present and will impact groundwater, Contractor shall submit another proposed material source.
9. Employ independent geotechnical testing laboratory approved by the Design Engineer to perform the tests on each different source and/or material proposed for use in the Work and submit the test data to the Design Engineer.
    a. Perform plasticity index testing in accordance with ASTM D4318.
        1) Testing frequency: One composite representative sample.
    b. Perform particle-size testing in accordance with ASTM standards.
        1) Testing frequency: One composite representative sample.
10. If delivered materials are determined by the Construction Manager or Design Engineer to be significantly different than those previously submitted, additional geotechnical testing shall be performed at no additional cost.
11. If results from geotechnical analysis do not meet the specifications, the Contractor shall submit another proposed material source.

B. Riprap/Boulders
    1. Certified clean imported NYSDOT Stone, consisting of material from a permitted mine or quarry documented to not exceed the Site SCOs.
    2. Free of extraneous debris or solid waste.
    3. Riprap/boulders size shall be as specified on the Drawings.
    4. Consisting of material from a permitted mine or quarry documented to not exceed the Site SCOs.

C. Topsoil – Special Planting Mix:
    1. Certified clean imported natural, friable, sandy loam, topsoil from a permitted facility documented to meet the source quality requirements specified in this Section and free of trash, refuse, material toxic or otherwise deleterious to plant growth, woody

vegetation and stumps, roots, brush, stones, clay lumps, or similar objects, contaminated material, or frozen material.

2. Coordinate with Design Engineer to schedule a joint site visit to topsoil sources to visually inspect that the source is reasonably free of invasive species, perennial weeds, and does not contain objectionable plant material, toxic amounts of either acid or alkaline elements, or vegetable debris undesirable or harmful to plant life prior to import to the site.
3. Conforming to NYSDOT Topsoil – Special Planting Mix within the following limits:

Sieve Size	Percent Passing
2 inch	100
1 inch	85-100
1/4 inch	65-100
No. 200	20-40
2 Micron	5-35

4. The pH of the material shall be between 6.0 and 7.0.
5. The organic content shall be not less than 5% on a dry weight basis.
6. Testing and Analysis:
   a. Perform particle-size testing in accordance with ASTM standards. Testing frequency: One composite representative sample per 500 cy of imported material.
   b. Perform pH testing in accordance with ASTM D2976. Testing frequency: One (1) composite representative sample per 500 cy of imported material.
   c. Perform organic content testing in accordance with ASTM D2974. Testing frequency: One composite representative sample per 500 cy of imported material.
   d. Coarse Aggregate, Size Designation 1, 2, or 3:
      1) Certified clean imported NYSDOT Coarse Aggregate from a permitted mine or quarry and documented to meet the source quality requirements specified in this Section.
      2) Free of extraneous debris or solid waste.
      3) Conforming to NYSDOT Table 703-4 Sizes of Stone, Gravel and Slag, Size Designation 1, 2, or 3 within the following limits:

U.S. Standard Sieve Size	Size 1	Size 2	Size 3
2 1/2 inch	-	-	100
2 inch	-	-	90-100
1 1/2 inch	-	100	35-70
1 inch	100	90-100	0-15
½ inch	90-100	0-15	-
¼ inch	0-15	-	-

PART 3 EXECUTION

3.01 EXAMINATION OF MATERIALS

A. Prior to placing backfill/fill materials, request materials inspection by Construction Manager and/or Design Engineer.

B. If the physical and/or engineering properties of materials delivered to the site differ significantly from the samples received and tested, perform additional testing to verify compliance with the specifications.

C. Any material placed that does not conform to these Specifications shall be removed and replaced with conforming material, at no cost to National Grid.

3.02 STOCKPILING OF BACKFILL/FILL MATERIALS

A. Stockpile materials on site at locations approved by Construction Manager and/or Design Engineer.

B. Stockpile in sufficient quantities to meet project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

E. Stockpiles shall not be taller than 8 feet.

3.03 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage during construction.

B. In the event of damage to installed work, repair or replace damaged work to the satisfaction of Construction Manager and Design Engineer, and at no additional expense to National Grid.

END OF SECTION

Attachment A

DER-10 Appendix 5: Allowable Constituent Levels for Imported Fill or Soil Subdivision 5.4 (e)

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.

SECTION 31 10 00

SITE CLEARING AND PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Examination.
   2. Site Preparation.
   3. Protection.
   4. Clearing.
   5. Removal.

B. Related Sections:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 40 10 – Protection of Work and Property.
   4. Section 01 50 00 – Temporary Facilities and Controls.
   5. Section 01 52 00 – Work Zone and Community Air Monitoring and Control.
   6. Section 31 25 13 – Erosion and Sediment Controls.
   7. Section 31 70 00 – Waste Management, Transportation, and Disposal.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations

1.02 SITE CLEARING RESTRICTIONS

A. Do not disturb areas outside the Limit of Work.

B. Surface disturbance from clearing (e.g., vegetation removal, grubbing, and other site clearing activities) within the Limit of Work shall only be permitted to the extent necessary for access. Before clearing an area, delineate the area and request a review of the extents by the Design Engineer. Once an area is approved by the Design Engineer, in consultation with the NYSDEC, clearing shall be conducted immediately prior to the associated work activities.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing trees and vegetation designated to remain are tagged or identified.

B. Construct waste staging area(s) for staging removed materials.

3.02 GENERAL PREPARATION

A. Call Local Utility Line Information service not less than 3 working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.

B. Construct stabilized construction entrances in accordance with Section 31 25 13.

C. Install temporary construction fencing as specified in Section 01 50 00.

D. Manage and protect existing utilities designated to remain as specified in Section 01 40 10

E. Implement erosion and sediment control measures in accordance with Section 31 25 13 prior to ground disturbance activities (e.g., demolition, grubbing, etc).

3.03 PROTECTION OF EXISTING FEATURES

A. Protect existing property in accordance with Section 01 14 10.

B. Protect trees, plant growth, and features designated to remain.

C. Protect existing buildings, structures, roads, sidewalks, guiderails, signage, curbs, and catch basins identified to remain from damage.

D. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.04 CLEARING OF VEGETATION AND SURFACE FEATURES

A. Clear debris, rubble, and vegetation from the Limit of Work as needed to complete the Work and as approved by the Construction Manager and/or Design Engineer, except as otherwise noted in this Section.

B. Remove trees, stumps, shrubs, and other vegetation within Limit of Work.
   1. Aboveground vegetation shall be chipped or otherwise resized and loaded into haulers for transportation to an off-site composting facility in accordance with Section 31 70 00.
   2. Subsurface vegetation (e.g., stumps and roots) shall be left in place as practical to complete the work. Grubbed vegetation shall managed as waste in accordance with Section 31 70 00.

C. Perform selective removal of fencing to facilitate work area access. Stage removed fencing and re-install once the work is completed.

3.05 HANDLING AND STOCKPILING

A. Handle and stockpile materials on-site generated during site preparation and clearing.

3.06 REMOVAL

A. Characterize wastes generated during site preparation and clearing, and load into trailer beds (lined as appropriate) for transportation to off-Site resource recovery facility or disposal facility, as appropriate and approved by National Grid, and in accordance with Section 31 70 00.

B. Continuously clean-up and remove waste materials from Site. Do not allow materials to accumulate on-Site.

C. Do not burn or bury materials on-Site. Leave Site in clean condition.

END OF SECTION

SECTION 31 23 16

SEDIMENT REMOVAL AND RESTORATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Soil/sediment excavation.
   2. Soil/sediment handling.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC, September 2016).
   3. United State Army Corps of Engineers (USACE) Permit.
   4. Section 01 10 00 – Summary of Work.
   5. Section 01 30 20 – Survey Requirements.
   6. Section 01 30 65 – Health and Safety Requirements.
   7. Section 01 33 00 – Submittal Requirements.
   8. Section 01 40 10 – Protection of Work and Property.
   9. Section 31 05 13 – Soils and Aggregates for Earthwork.
   10. Section 31 23 19 – Dewatering and Water Management.
   11. Section 31 25 13 – Erosion and Sediment Control.
   12. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 SUBMITTALS

A. Submit a workplan for soil/sediment removal and restoration as part of the Construction Management Plan (CMP) identified in Section 01 10 00. The workplan shall include at a minimum:
   1. Description of the sequence and construction methods to install and remove the cofferdam, turbidity curtain, and oil boom.
   2. Description of the proposed sediment removal methods for each location including anticipated personnel, tools, and equipment.
   3. Description of dewatering activities and the proposed definition of surface water control (e.g., lowering water level to top of riverbed, minimizing flow velocity through the work area to create a still-water condition, etc.).
   4. Detailed matrix or flowchart to be used by the Contractor and Construction Manager for determining when work within the river can proceed based on river flows, and a description of the proposed monitoring and lines of communications for when work in the river is halted.
   5. Description of backfilling methods and sequencing.

6. Description of the sequence and methods for removal of the oil boom, turbidity curtain, and cofferdam.
7. Proposed products (e.g., seed mixture, erosion matting) to be used for restoration.

1.03 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations.

B. Local utility standards and requirements when working near utility lines, as defined by each utility owner.

C. Removal areas shall be restored in conformance with the requirements of 6 New York Codes, Rules and Regulation (NYCRR) Part 608.

PART 2 PRODUCTS

2.01 MATERIALS

A. Backfill materials shall be as specified in Section 31 05 13.

B. Biodegradable erosion matting shall be North American Green BioNet S150BN™ Erosion Control Blanket or approved equivalent.

C. Seeding shall be as specified in Section 32 92 19.

D. Odor and vapor control materials as specified in Section 01 52 00.

PART 3 EXECUTION

3.01 PREPARATION

A. Approximate existing Site conditions are indicated on the Drawings. Examine and confirm existing Site conditions prior to the start of Work. Inform National Grid, Construction Manager, and Design Engineer immediately if observed Site conditions differ from Drawings.

B. Call Dig Safely New York, City of Watertown, and utility purveyors not less than 72 hours before performing Work.
   1. Request underground utilities to be located and marked within the Project Area and adjacent properties.
   2. Do not proceed with intrusive activities until the mark out is complete and confirmed.

C. Protect active utilities indicated to remain from damage.

D. Coordinate Work in the vicinity of utilities with the utility purveyor.

E. Protect Site structures and features in accordance with Section 01 40 10.

F. Protect benchmarks and survey control points from equipment and vehicular traffic. Benchmarks and survey marks that are missing or damaged shall be replaced by the Contractor's Surveyor at the expense of the Contractor.

G. Furnish and install temporary construction fencing in accordance with the Drawings and Section 01 50 00.

H. Implement dust, odor, and vapor controls in accordance with the Contractor-prepared Dust, Odor, and Noise Control Plan (Section 01 52 00).

I. Install erosion and sediment controls as specified in Section 31 25 13, the Construction Drawings, and the approved Erosion and Sediment Control Plan.

J. The Black River shall be monitored visually for turbidity that causes a substantial visible contrast to natural conditions.

K. Install and maintain personnel and equipment decontamination areas as specified in Section 01 52 00.

L. Construct temporary waste containment areas in accordance with Section 31 70 00.

M. The tar and soil/sediment removal areas shall be accessed via the riverbank. The riverbank is steep and irregular with established mature vegetation. Debris (downed trees, tires, metal debris) shall be removed in accordance with Section 31 10 00. Clearing of vegetation shall be minimized and performed in accordance with 31 10 00 only after approval from the Design Engineer in consultation with NYSDEC.

3.02 DEWATERING

A. Dewatering shall be performed as specified in Section 31 23 19.

3.03 SURVEYING

A. Surveying shall be performed as specified in Section 01 30 20.

3.04 TAR REMOVAL

A. All excavation work shall be performed in compliance with applicable Federal, State, and OSHA regulations.

B. Promptly notify Construction Manager and Design Engineer of unexpected subsurface conditions as encountered.

C. Removal of tar from the riverbank is anticipated to be completed using hand tools, power tools, and/or excavation equipment positioned at the top of the riverbank.

D. Tar is sporadically located along the riverbank and is occasionally interspersed with vegetation (e.g., around tree trunks and roots).

E. Prior to removal, Contractor shall coordinate a riverbank inspection with the Design Engineer and a representative from NYSDEC to identify and mark the locations of tar.

F. Removal of tar shall be performed to the satisfaction of the Design Engineer, in consultation with the NYSDEC.
   1. Removal at each of the sediment removal locations shall be completed, to the extent practicable, until non-MGP-impacted sediment are identified visually or until bedrock

or coarse non-impacted substrates, such as cobbles or boulders, are encountered. This includes materials containing visible tar/NAPL and materials exhibiting sheens that are suspected to be related to MGP-related waste materials (based on odor or proximity to other visible MGP-related impacts) will be targeted for removal to the extent practicable.

2. When tar has been removed from an area, the Contractor shall facilitate inspection of the area by the Design Engineer. The Design Engineer, in consultation with the NYSDEC, shall determine if additional removal is necessary.
3. As directed by the Design Engineer perform additional removal.
4. Backfilling and restoration shall be performed as directed by the Design Engineer and may commence after tar removal at that location is deemed complete by the Design Engineer.

3.05 SOIL/SEDIMENT REMOVAL

A. All excavation work shall be performed in compliance with applicable Federal, State, and OSHA regulations.

B. Promptly notify Construction Manager and Design Engineer of unexpected subsurface conditions as encountered.

C. Soil/Sediment removal is anticipated to be completed using hand tools, power tools, and/or excavation equipment positions at the top of the riverbank.
   1. Equipment shall not be permitted on the riverbank or within the Special Flood Hazard Area as shown on the Drawings.

D. Soil/sediment removal shall be performed to the horizontal and vertical limits as indicated on the Drawings. The dimensions of the removal areas on the Drawings are approximate and actual dimensions will vary.
   1. Soil/sediment removal shall include the removal of soil/sediment, MGP-related impacts, vegetation, and cleaning of cracks in the bedrock surface to the satisfaction of the Design Engineer, in consultation with the NYSDEC.
   2. Removal at each of the sediment removal locations shall be completed, to the extent practicable, until non-MGP-impacted sediment are identified visually or until bedrock or coarse non-impacted substrates, such as cobbles or boulders, are encountered. This includes materials containing visible tar/NAPL and materials exhibiting sheens that are suspected to be related to MGP-related waste materials (based on odor or proximity to other visible MGP-related impacts) will be targeted for removal to the extent practicable.
   3. When soil/sediment has been removed from an area, the Contractor shall facilitate inspection of the area by the Design Engineer and NYSDEC. The Design Engineer, in consultation with the NYSDEC, shall determine if additional soil/sediment removal is necessary.
   4. As directed by the Design Engineer perform additional soil/sediment removal.
   5. Backfilling and removal of temporary controls may commence after soil/sediment removal at that location is deemed complete by the Design Engineer, in consultation with the NYSDEC.

E. All material that is suspended or settles within the water column or that slides, falls, or caves into the established sediment removal areas due to any case whatsoever, shall be

removed and disposed of at the Contractor's expense and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall, or cave-in.

F. Notify Construction Manager and Design Engineer of unexpected subsurface conditions.

G. All excavation outside the limits shown on the Construction Drawings, which is not approved by the Construction Manager, together with the removal and disposal of the excavated material, shall be at the Contractor's expense. The unauthorized excavation shall be filled and compacted with the specified backfill materials by the Contractor at no additional cost to National Grid.

3.06 WASTE MANAGEMENT

A. Solid waste, including soil/sediment, hardened tar, water, and free liquids, shall be managed as waste in accordance with Section 31 70 00.

3.07 BACKFILLING

A. Preparation:
   1. Do not use backfill materials until approved by Design Engineer. Any material that does not conform to the Specifications shall be removed and replaced with conforming material at no cost to National Grid.
   2. Do not place backfill materials in an area until the area has been inspected and approved by Design Engineer.
   3. Do not place backfill materials until surveying has been performed as required by Section 01 30 20.
   4. Stockpile backfill materials on-site in sufficient quantities to meet the project schedule and requirements.
   5. Separate differing materials apart to prevent mixing.
   6. Direct surface water and stormwater away from stockpiled materials to prevent erosion or deterioration of materials.

B. Backfill Placement (where required):
   1. Place backfill in a single continuous layer.
   2. Employ placement methods that minimizes lateral spread of backfill when placing material through standing water.
   3. Place crushed stone material as directed by the Design Engineer.
   4. Place boulders individually at locations specified by the Design Engineer.
   5. Place riprap materials to the specified thickness at locations specified by the Design Engineer. Where topsoil is to be mixed with riprap stone material, Contractor shall blend topsoil and riprap to the satisfaction of the Design Engineer prior to placement to the specified thickness.
   6. Remove surplus backfill materials from the Site at no additional cost.

3.08 RESTORATION

A. Restoration areas shall be graded to blend in with surrounding grade and to minimize low-lying areas.

B. Seeding and plantings shall be in accordance with the Drawings and Section 32 92 19.

C. Erosion control matting, used to restore areas that are susceptible to erosion, shall be installed in accordance with the manufacturer's installation guidance (e.g., the RollMax Systems Installation Guide for BioNet S150BN). Stakes shall be biodegradable bamboo or approved equivalent.

D. Protect installed work and provide special protection as necessary to protect installed work.

E. Provide temporary and removeable protection, as appropriate, for installed products and control and/or restrict activities in restored areas to prevent damage.

END OF SECTION

SECTION 31 23 19

DEWATERING AND WATER MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Dewatering system design and installation.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. United State Army Corps of Engineers (USACE) Permit.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 30 65 – Health and Safety Requirements.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 52 00 – Work Zone and Community Air Monitoring and Controls.
   7. Section 01 52 20 – Decontamination Requirements.
   8. Section 31 23 16 – Sediment Removal and Restoration.
   9. Section 31 25 13 – Erosion and Sediment Control.
   10. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 SUBMITTALS

A. Submit information and statement of qualifications:
   1. Dewatering system: proposed designer, installer, and operator.

B. Prior to commencement of sediment removal and dewatering activities, submit a Dewatering Plan as part of the Construction Management Plan (Section 01 10 00) to National Grid and the Design Engineer for review and approval.
   1. The plan shall describe the design, installation, operation, and maintenance of a temporary dewatering system that shall control surface water and precipitation entering the work area during construction.
      a. The plan shall include a reference to the Sediment Removal Plan's definition of surface water control (refer to Section 31 23 16).
   2. The plan shall include a description of the dewatering system, including dewatering techniques and equipment, anticipated flow rates, location of equipment and piping, and storage system piping and layout.
   3. The plan shall also include a description of operation and maintenance activities (as appropriate).
   4. The plan shall include a description of procedures for dismantling the system and product data for equipment and materials proposed for the dewatering system including but not limited to pumps, motors, valves, screens, filters, and standby generators.

C. Daily Dewatering Field Reports documenting the operation and maintenance of the dewatering systems. Daily field reports shall include the volume of water removed by dewatering system per day and total volume to date.

1.03 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations.

1.04 QUALIFICATIONS

A. The Dewatering Plan shall be prepared by a an individual experienced with the type and scope of this Work.

B. The dewatering system shall be operated by an Operator trained and experienced with the type and size of systems to be used at the Site.

1.05 PERFORMANCE REQUIREMENTS

A. At all times, provide and maintain proper and satisfactory means and devices for the removal of water within the excavation areas, and shall remove such water as it may collect, in such a manner as shall not interfere with the execution of the Work.

B. Adequate standby equipment shall be kept available at all times to insure operation and maintenance of the dewatering system during power failure.

C. Prior to disturbing soil/sediment within the cofferdam, water generated from the initial drawdown may be discharged directly into the river with Design Engineer approval in consultation with the NYSDEC.

D. Visibly impacted water, as determined by the Design Engineer in consultation with the NYSDEC, and water generated after disturbing soil/sediment within the cofferdam shall be containerized and managed as waste in accordance with Sections 31 70 00. If on-site treatment and surface water discharge is employed as an alternative, then an effluent discharge permit shall be obtained from the NYSDEC and adhered to.

E. Dewatering shall only occur after cofferdam has been installed and accepted by the Design Engineer.

F. Contractor shall minimize to the extent practicable the amount of dewatering and volume of water requiring management as necessary to complete the Work.

G. Contractor shall assume sole responsibility for surface water control.
   1. The Contractor shall halt sediment removal activities at the direction of the Construction Manager or Design Engineer if at any time the Construction Manager or Design Engineer deem current work practices are not in accordance with these Specifications.
   2. The Contractor shall cooperate with the Construction Manager and Design Engineer to identify the problem(s) and solution(s) and shall implement the agreed upon solution(s).
   3. Sediment removal activities shall resume only after approval by the Construction Manager.

H. The dewatering system shall control water within the work areas and allow for visual inspection of the post-removal river bottom.

I. Provide dewatering equipment in good-working order, including piping, hoses, pumps, and storage tanks.

PART 2 PRODUCTS

2.01 DEWATERING EQUIPMENT

A. Select dewatering equipment to meet specified performance requirements.

B. Provide sufficient spare parts and equipment to replace parts or equipment requiring repairs and allow for continued dewatering.

C. Provide materials and equipment necessary to prevent freezing of dewatering system components (e.g., heat tracing for pipe, heaters, aeration, etc.).

PART 3 EXECUTION

3.01 PREPARATION

A. Prevent surface water from entering excavation areas, and from flooding site and surrounding area (e.g., utilizing runoff diversion berms).

B. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from National Grid or Construction Manager and authorities having jurisdiction.

3.02 GENERAL REQUIREMENTS

A. Dewatering shall only occur after cofferdam has been installed and accepted by the Design Engineer.

B. The dewatering system shall be in-place and successfully operated before sediment removal activities begin.

C. Measure total daily volume pumped from the dewatering system using a flow totalizer.

D. Following backfilling, restoration, and removal of the turbidity curtain and the sediment trapped within the turbidity curtain, surface water levels shall be allowed to return to its natural level in such a manner as to prevent disturbance of restored areas.

E. Maintain on-site sufficient storage for water generated by dewatering operations and other remedial activities.

F. Prevent freezing of dewatering system components and collected liquids stored in on-site drums, tanks, treatment equipment, pipes, and hoses.

3.03 DEWATERING OPERATION AND MAINTENANCE

A. Provide supervision of dewatering system, when in-use, by personnel skilled in operation, maintenance, and replacement of system components.

B. Inspect the dewatering system, piping/hoses, and storage containers daily. Make required repairs and perform scheduled maintenance.

C. Provide all electrical controls and power distribution. Costs for maintenance of electrical components associated with the dewatering shall be the responsibility of the Contractor. The Contractor shall meter and pay all costs for power associated with dewatering.

D. When the dewatering system cannot control water within the work area, notify Construction Manager and halt sediment removal work until surface water is controlled.

E. Supplement or modify dewatering system and provide other remedial measures to control water within excavation. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.

F. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to existing structures, adjacent property, or adjacent water wells.

G. Do not discontinue dewatering operations without Construction Manager's approval.

3.04 SYSTEM DISMANTLING AND REMOVAL

A. Dismantle and remove dewatering system after dewatering operations are discontinued or as approved by National Grid or Construction Manager.

END OF SECTION

SECTION 31 25 13

EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies installation, maintenance, and removal of measures related to erosion and sediment control.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. United State Army Corps of Engineers (USACE) Permit.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 31 23 16 – Sediment Removal and Restoration.
   7. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 REFERENCES

A. New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC, also known as the "Bluebook", latest edition).

B. United States Environmental Protection Agency (USEPA) –Office of Water; Storm Water Management for Construction Activities.

C. Storm Water Pollution Prevention Plan (SWPPP); Watertown (Engine Street) Former Manufactured Gas Plant (MGP) (included in the May 2014 Remedial Design Report).

1.03 SUBMITTALS

A. Prepare and submit an Erosion and Sediment Control Plan, prepared in accordance with this Section and the NYSDEC-approved SWPPP, to Construction Manager and Design Engineer for review and approval. The plan shall be developed as part of the Construction Management Plan (CMP) in accordance with Section 01 10 00.
   1. The plan shall include qualifications of the personnel proposed to perform the inspection and documentation of the SWPPP activities.

B. Submit product information on erosion control products for the review and approval by Construction Manager and Design Engineer.

C. Submit SWPPP inspection reports with photographs documenting conditions of erosion and sediment control measures and photographs of repaired/replaced controls.

PART 2 PRODUCTS

2.01 EARTH DIKE (IF USED)

A. Earth dike shall be constructed of certified clean material.

B. Straw used for stabilization of earth dikes shall be un-decayed.

C. Plastic sheeting, if used for protection of earth dikes, shall be 10 mil thick polyethylene sheeting, or as approved by Design Engineer.

D. Crushed stone used for stabilization of earth dikes shall be NYSDOT Size 3 coarse aggregate, or as approved by Design Engineer.

E. Check dams along earth dikes shall consist of:
   1. NYSDOT Size 3 coarse aggregate
   2. Filtrexx® SiltSoxx™
   3. ACF Environmental© ErosionEEL™ or Triangular Silt Dike™
   4. Or as approved by Design Engineer

2.02 SEDIMENT CURTAIN

A. Curtain material shall be flexible and impenetrable to trap sediment.

B. The height of the curtain shall be 20 percent greater than the depth of the water to allow for water level fluctuations.

C. The curtain shall be weighted at the bottom and the bottom anchor shall be flexible so that it will lie along the contour of the water body bottom.

D. The top bar float shall sufficiently be buoyant to suspend the curtain.

2.03 SANDBAG BARRIERS (COFFERDAM)

A. Sandbag material:
   1. Polypropylene, polyethylene, or polyamide material.
   2. Minimum fabric weight of 4 oz/sy.
   3. Minimum grab strength of 100 psi (ASTM D4632).
   4. Mullen burst strength exceeding 300 psi (ASTM D3786).
   5. Ultraviolet stability exceeding 70%.

B. Sandbag dimensions: length: 18 to 24 inches, width: 12 to 18 inches, thickness: 6 to 8 inches.

C. Filled weight: 50 to 125 pounds.

D. Super Sack® (if used): Super Sack® or alternative product shall be submitted to Design Engineer.

E. Sand material shall be imported, certified clean material.

2.04 BIN BLOCKS (COFFERDAM)

A. Bin blocks shall be interlocking pre-cast concrete blocks with a built-in lifting hook and approximate dimensions of 2-foot x 2 foot x 6-foot, or approved equivalent.

2.05 FILTER SOCK

A. Installation, products, maintenance, and removal of filter sock shall conform to NYSSSESC requirements.

B. The compost infill of the filter sock shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of manmade foreign matter.

C. All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements.

2.06 SILT FENCE

A. Silt fence shall conform to NYSSSESC requirements. Prefabricated silt fence shall be manufactured by Geofab, Envirofence, or approved equal.

B. Silt fence fabric shall be inert to chemicals commonly found in soil, and resistant to mildew, rot, insects, and rodent attack. Silt fence cloth shall be Filter X, Mirafi 100X, Stabilink T140N or approved equal.

C. Prefabricated silt fence shall be manufactured by Geofab, Envirofence, or approved equal.

2.07 CATCH BASIN INLET PROTECTION

A. Contractor to have the filter bag material approved by National Grid and the engineer prior to implementing.

B. Inlet protection shall be installed prior to any activity.

C. The catch basin insert shall have a built-in high flow relief system (overflow bypass).

2.08 STABILIZED CONSTRUCTION ENTRANCES

A. Temporary construction entrances shall be constructed of 2-inch crushed stone (NYSDOT Size 3 coarse aggregate) with geotextile fabric underlay as shown on the Drawings.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Comply with applicable requirements in the NYSSSESC.

B. Comply with all applicable regulatory requirements to obtain required permits or certifications prior to the start of Work.

C. Contractor is responsible for the installation, maintenance, and removal of erosion and sediment control measures during the Work.

D. Implement any corrective actions identified by Construction Manager or Design Engineer during daily inspections.

E. Temporary erosion and sediment control measures shall be installed and maintained in accordance with the NYSSESC.

F. Storm drain inlet protection shall be constructed around all stormwater drains and maintained throughout construction.

3.02 SWPPP INSPECTIONS

A. The Contractor's personnel, as designated in the Erosion and Sediment Control Plan, shall inspect erosion and sediment control measures weekly and following precipitation, and in accordance with NYSSSESC requirements.

B. Summarize inspection results in weekly inspection reports and submit weekly to the Construction Manager for review. Inspection reports shall include, at a minimum, the following information:

5. Date and time of each inspection.
6. Name and title of person(s) performing each inspection.
7. Weather and soil conditions (e.g., dry, wet, saturated, etc.) at the time of each inspection.
8. Condition of the stormwater runoff at all points of discharge from the construction site, including discharges from conveyance systems (e.g., pipes, culverts, ditches, etc.) and overland flow.
9. Identification of any erosion and sediment control measures that require repair or maintenance.
10. Identification of any erosion and sediment control measures that were not properly installed or are not functioning as designed.
11. Description and sketch of areas that are disturbed at the time of inspection and any areas that have been stabilized (temporary and/or final) since the last inspection.
12. Corrective action(s) to be taken to install, repair, replace or maintain erosion and sediment control measures.

3.03 STABILIZED CONSTRUCTION ENTRANCES

A. Clear the entrance/exit area of all vegetation, roots, and other objectionable material.

B. Grade the subgrade surface so that the entrance/exit will have a cross slope.

C. Place stone to the dimensions, grade, and locations shown on the Drawings.

3.04 STOCKPILES

A. Stockpiles shall be located within the Limit of Work and at locations approved by Construction Manager and Design Engineer.

B. Filter socks shall be placed around stockpile areas and access to the stockpile area shall be from the upgrade locations.

C. Stockpiles shall be covered with polyethylene liner (minimum thickness 10 mil plastic sheeting, or approved equivalent) and secured when active loading or unloading is not being performed.

3.05 CATCH BASIN INLET PROTECTION

A. Remove debris from around storm drains prior to construction of inlet protection.

B. Storm drain inlet protection shall be installed as shown on the Drawings.

C. The dimensions of the storm drain inlet protection near the City of Watertown Department of Public Works Building (DPW Building) should be adjusted as approved by Construction Manager and Design Engineer if the temporary sediment pool appears to encroach towards the DPW Building

3.06 SEDIMENT REMOVAL WORK AREA

A. The sediment curtain shall be installed beyond the lateral limits of the sediment removal area and be firmly anchored in place.

B. The cofferdam shall be installed on the outside of the sediment curtain to protect the sediment removal area from surface water flows.

3.07 PROVISIONS FOR EROSION CONTROL DURING WORK

A. Implement and maintain erosion and sediment control measures around all areas to be disturbed prior to disturbing ground, in accordance with the Drawings and Specifications, and to the complete satisfaction of Construction Manager and Design Engineer. Construction Manager and Design Engineer will periodically observe erosion and sediment control structures to confirm that the Contractor is maintaining these features.

B. Take sufficient precautions during Work to prevent the erosion/transport of materials such as soil, non-aqueous phase liquids (NAPL), wastes, fuels, and oils into the surface waters of New York. Storm water catch basins or drains, and outlets to drainage channels and the Black River shall be protected from sediment laden run-off. Use all best management practices (BMPs) necessary to protect inlets from sediment and debris.

C. Care shall be taken to prevent the discharge of sediment laden stormwater runoff to surface waters.

D. Accumulated soil, silt and debris shall be removed by the Contractor from behind the face of the silt fence, straw bales, check dams, sand bag barriers, and other BMPs as needed to maintain BMP effectiveness. At a minimum, soil and silt will be removed when

it accumulates to a depth 6 inches behind the barrier or BMP. Clogged or damaged BMPs shall be replaced immediately. The Contractor shall notify Construction Manager and Design Engineer of such checks and repairs so that the Work can be inspected and documented.

E. Soil and silt which accumulates from any area subject to remediation and prior to that area being remediated (e.g., originates from the excavation area prior to removal of all designated soil) shall be treated as waste material. Accumulated soil and silt shall be managed and disposed off-site in accordance with Section 31 70 00.

F. Erosion and sediment control measures will be maintained at all times by the Contractor. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented.

G. Maintain stabilized construction entrances in a condition to prevent mud or soil from leaving the Site. This may require periodic turning over of coarse aggregate and/or topdressing with new coarse aggregate. Immediately remove soil, mud and all objectionable materials spilled, washed, or tracked onto any road. Collected materials will be treated as waste materials and managed and disposed off-Site disposal per Section 31 70 00.

H. Removed erosion and sediment control measures will be properly disposed off-site by the Contractor.

3.08 REMOVAL OF EROSION AND SEDIMENT CONTROLS

F. Erosion and sediment controls may be removed from the Site following the conclusion of remediation and restoration activities.

G. When removing the sediment curtain and cofferdam, they shall be carefully pulled toward the bank and removed to minimize the release of attached sediment.

H. Minor disturbances caused by removal of erosion and sediment controls (e.g., disturbance of established vegetation caused by removal of silt fencing) shall be graded to match surrounding grade and seeded (as applicable).

END OF SECTION

SECTION 31 70 00

WASTE MANAGEMENT, TRANSPORTATION, AND DISPOSAL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Management of cleared vegetation, excavated soil/sediment, wastewater, NAPL, and miscellaneous construction debris.
   2. Waste characterization.
   3. Waste transportation and disposal.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. NYSDEC document "Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment" (DER-4).
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 01 52 20 – Decontamination Requirements.
   7. Section 31 05 13 – Soils and Aggregates for Earthwork.
   8. Section 31 10 00 – Site Clearing Preparation.
   9. Section 31 23 16 – Sediment Removal and Restoration.
   10. Section 31 23 19 – Dewatering and Water Management.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Submit a Contractor Waste Management Plan as a component of the Construction Management Plan (CMP) identified in Section 01 10 00. The plan shall include an identification and description of the following:
   1. Each waste stream (e.g., vegetation, excavated soils, wastewater, NAPL) that has the potential to be generated as a result of construction activities.
   2. The National Grid pre-approved treatment facilities, disposal facilities and waste haulers to be used (name, address, contact person, hours of operation, and USEPA/NYSDEC permit/registration numbers, and copies of permits).
   3. For each facility, identification of the acceptance/waste characterization criteria and any restrictions for acceptance of waste streams.
   4. Product data and manufacturer specifications on materials used to construct the Temporary Waste Containment Areas (TWCA).
   5. Measures to minimize freezing of collected wastewater during cold weather.

6. Sampling and analysis activities for waste characterization (including characterization for treatment/recycling).
7. Waste stream preparation prior to transporting.
8. Proposed waste stream characterization and profiling procedures (including a copy of the waste profile form).
9. Manifesting and packing/shipping requirements for waste streams.
10. Identifying NYSDEC-permitted (Part 364 Permit) and National Grid-approved transporters and treatment/recycling facilities for the wastes. Provide permit/registration numbers, type and number of vehicles, copies of permits, and provide safety records, including any incidents reported in the past 5 years.

B. Submit information for the proposed laboratory to be used for waste characterization analysis. Laboratory shall be a certified New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) laboratory.

C. Soil conditioning (soil amendments) product sheets shall be submitted to Design Engineer and NYSDEC for review and approval before delivery to the site.

D. Waste characterization laboratory analytical data.

E. Prior to waste shipment, submit written communication from the treatment/disposal facilities confirming that the waste is acceptable for at their facility, treatment/disposal capacity is available, and the treatment/disposal method.

F. Manifests and Bill of Lading
   1. Provide and complete all required manifest forms and Bill of Lading forms for National Grid for proper transportation and disposal of materials off-site. The Contractor shall be responsible and will be held accountable for assuring that all sampling, analysis, transportation, and disposal requirements of the applicable agencies (e.g., POTW, Federal, State, and local governments, etc.) are complied with and properly documented. All manifests and/or Bills of Lading must be signed by National Grid (or its authorized representative), and the truck driver. **The Contractor shall not sign any manifests or Bills of Lading on behalf of National Grid.**
   2. Manifests and/or Bills of Lading shall be organized by load number and delivered to Construction Manager and/or Design Engineer within 24 hours.
   3. Prepare and submit a summary sheet daily that provides at a minimum, the following information regarding each truck load:
      a. Date
      b. Load Number
      c. Uniform Hazardous Waste Number or Bill of Lading Number
      d. Truck License Plate Number
      e. Estimated gross weight
      f. Estimated tare weight
      g. Estimated net load weight
      h. Actual load weight
      i. Material type (vegetation, non-hazardous soil/sediment, MGP coal tar, wastewater, etc.)
      j. Disposal/recycling method

k. Disposal/recycling facility

G. Completed weight tickets and/or certificates of disposal/destruction.

H. As counter-signed manifests are received from off-site facilities, organize manifests by number, tabulate number of loads and weights of each waste stream in a Microsoft Excel™ file, and submit to Construction Manager and Design Engineer on a weekly basis.

1.03 PERMITS AND REGULATIONS

A. Comply with all Federal, State, and local regulations regarding transportation and disposal of non-hazardous special wastes. These include, but are not limited to:
   1. Trucks used for transportation of non-hazardous special wastes shall be permitted for such use.
   2. Vehicle operator possession of a commercial driver's license with non-hazardous special waste materials endorsement (if applicable).
   3. Registration of vehicle as a special non-hazardous waste carrier (if applicable).
   4. Utilization of shipping papers and/or special non-hazardous waste manifest.
   5. Proper marking and placarding of vehicles.
   6. Placement of emergency response procedures and emergency telephone numbers in vehicle, and operator familiarity with emergency response procedures.
   7. Compliance with load height and weight regulations.

1.04 REFERENCES

A. State of New York Rules and Regulations, including Title 6 of the Official Compilation of Codes, Rules, and Regulations (6 NYCRR) Parts 360, 364, and 370 regarding treatment/disposal, transportation, and management of hazardous waste.

B. New York State Department of Environmental Conservation (NYSDEC) Technical Administrative Guidance Memorandum (TAGM) 4061 – Management of Coal Tar Wastes and Coal Tar Contaminated Soil and Sediment from Former Manufactured Gas Plants (MGPs).

C. Transportation regulations, including U.S. Department of Transportation (USDOT) regulations, including Title 29 Part 171 and 172 and New York Department of Transportation (NYDOT) rules and regulations.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide waste containers (e.g., roll-offs, holding tanks, drums, etc.), as appropriate, meet applicable regulations.

B. All equipment delivered to the site shall be in good working conditions. Equipment and machinery including haul trucks that have visible oil or hydraulic fluid leaks will not be allowed on site until satisfactorily repaired. The Contractor is responsible for the cleanup of any hydraulic fluid spill at the Contractor's expense.

C. Trucks used for transportation of material for off-site disposal shall be watertight. The transport containers shall be equipped with impermeable liners and covers that shall be used during the transportation of wastes from the Site to the disposal facility. All truck beds shall be covered prior to leaving the Site.

D. Construct TWCAs in accordance with the Design Drawings and Specifications.

PART 3 EXECUTION

3.01 PREPARATION

A. Temporary Waste Containment Area (TWCA):
   1. Construct a separate TWCA for each waste type, for the handling and staging of excavated soils/sediments and waste prior to off-site disposal.
   2. Locations of the TWCAs shall be as shown on the Drawings or as pre-approved by Construction Manager.

B. Furnish and install temporary construction fencing surrounding the waste staging areas in accordance with Section 01 50 00.

C. Refer to Sections 31 05 13 for soil/sediment handing and segregation.

3.02 MANAGEMENT OF WASTE MATERIALS

A. Perform Work such that no waste material is spilled during the transfer of materials to a TWCA and loading into disposal trucks. If spills occur, the waste shall be immediately collected, and the spill area shall be appropriately cleaned. Place polyethylene sheeting on the ground surface to catch potential droppings in active waste loading areas (excluding within TWCAs).

B. In the event that materials are encountered that are unsuitable for stockpiling (based on appearance, contents, etc.), as determined by the Construction Manager or Design Engineer, the Contractor shall include provisions/measures to be able to appropriately direct-load those materials into vehicles for direct transport to the National Grid-approved treatment/disposal facilities.

C. Soil/sediment designated for off-site treatment/disposal shall be disposed in accordance with NYSDEC's document "Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment" (DER-4). The guidance outlines the criteria wherein coal tar waste and soils and sediment that have been contaminated with coal tar waste from former MGPs only exhibiting the toxicity characteristic for benzene (D018) may be conditionally excluded from the requirements of 6 NYCRR Parts 370, 374, and 376 (Hazardous Waste Management and Land Disposal Restriction Regulations) when they are destined for permanent thermal treatment.

D. Vegetative debris:
   1. Vegetative debris may be generated from clearing trees, shrubs, and groundcover, and from grubbing roots and root balls.
   2. Cleared above grade vegetation shall be loaded into trailer beds or truck beds for transportation to a National Grid-approved off-site facility for composting.
   3. Subsurface vegetative debris grubbed from areas subject to remediation shall be handled and managed as waste. Subsurface vegetative debris shall be placed in a TWCA for off-site disposal or direct loaded into lined trailer beds for transportation to a National Grid-approved off-site facility for disposal.

E. Excavated Material from Hardened Tar and Sediment Removal Areas:
   1. Removed materials shall be transferred to a temporary waste containment area for subsequent management (e.g., dewatering and conditioning) prior to transportation off-site.
   2. Dewatering and conditioning of waste materials shall be performed in accordance with Part 3.03.
   3. Minimizing and controlling vapors and odors is a primary objective for this project. Contractor shall cover temporary waste containment areas when not in use and shall employ odor mitigation measures when handling and loading soils/sediments.

F. Wastewater generated from remedial activities (including dewatering, decontamination, and other sources) shall be collected and managed. Wastewater may be managed by one of the following methods:
   1. Containerized and sent off-site to an approved treatment/disposal facility, as approved by National Grid, Construction Manager, and Design Engineer.
   2. Other means as approved by National Grid, Construction Manager, and Design Engineer.

G. Non-Aqueous Phase Liquids (NAPL): NAPL will generally be managed as a commingled waste along with the media it is associated with, such as soil, sludge, or debris. NAPL that is segregated into a separate waste stream shall be containerized separately in DOT-approved containers (such as drums) for separate waste characterization and management.

H. Miscellaneous Debris/Waste:
   1. Miscellaneous construction debris such as industrial piping, structural materials, wood, etc. shall be segregated within stockpiles or roll-off containers for off-site recycling or disposal. The debris shall be decontaminated, as necessary, to meet the selected disposal or recycling facility's acceptance criteria.

2. Miscellaneous debris, such as personal protective equipment (PPE), sampling supplies, or other materials, which come in contact with tar or NAPL will be containerized in DOT-approved drums for subsequent waste characterization and off-site disposal.
3. Miscellaneous debris or other miscellaneous trash, which does not contain visible tar or NAPL, will be managed as municipal waste and will be stored and containerized in DOT-approved waste containers.

I. Hazardous materials shall be staged separately and managed in accordance with applicable regulations.

J. If waste materials are encountered that are unsuitable for stockpiling (based on appearance, contents, etc.), as determined by Construction Manager or Design Engineer, include provisions/measures to be able to appropriately direct-load those materials into vehicles for direct transport to the National Grid-approved treatment/disposal facility.

K. Cover and secure stockpiled waste materials with plastic sheeting (minimum 10-mil) or implement odor control measures (e.g., long duration Rusmar® Foam) during inactive periods.

L. Direct surface water away from waste staging areas.

M. Apply odor suppressing measures, as needed, or directed by the Construction Manager, and in accordance with 01 52 00.

N. Stockpiled materials shall be removed from the Site within 7 days of placement, unless a longer duration is approved by Construction Manager and/or National Grid.

3.03 WASTE DEWATERING AND CONDITIONING

A. Use appropriate means and methods to remove water/free liquids from materials following excavation/removal and prior to off-site transportation. This includes excavation dewatering, gravity draining, mixing drier soils that are designated for off-site disposal with wet soils, or application of conditioning agents.

B. The use of conditioning agents (soil amendments), such as lime or cement kiln dust may be used to reduce moisture content of excavated soils, as approved by the Construction Manager and Design Engineer and approved by the selected disposal facility. **The use of quick lime, lime kiln dust or other lime-based materials containing greater than 50% available Calcium/Magnesium Oxide as an amendment is prohibited.**

C. Ensure that soil/waste material to be managed at the low temperature thermal desorption (LTTD) facility meets soil moisture content acceptance criteria. The Contractor shall test and confirm the material meets acceptance criteria prior to shipment. ESMI of NY has indicated that soil moisture contents up to 18 percent (Contractor shall confirm this value) are included in base rates at their LTTD facility. For material sent to ESMI, the soil moisture content shall be below this threshold. Any surcharges for material that does not meet acceptance criteria shall be borne by the Contractor.

D. Conditioning agents (if used) shall be transported and stored at the Site in maximum 1-ton bags. No transportation or storage of bulk quantities will be permitted.

3.04 WASTE CHARACTERIZATION

A. Perform all waste characterization sampling of waste materials indicated for off-site disposal. Perform sampling in conformance with the applicable regulatory requirements (e.g., RCRA regulations) and the requirements of National Grid and the approved off-site treatment/disposal facilities.

B. Waste characterization requirements shall be outlined in the Contractor Management Plan.

C. Excavated Sediment for Off-Site Disposal: Unless otherwise approved by the disposal facility and National Grid, at a minimum, waste characterization sampling shall consist of the following:
   1. One composite sample (3-5 grab samples composited) analyzed for RCRA hazardous characteristics (EPA SW-846 analytical methods) and total PCBs.
   2. Additional composite samples (3-5 grab samples composited) analyzed for TPH (EPA Method 8015 GRO/DRO), Total VOCs (EPA Method 8260B), Total SVOCs (EPA Method 8270C), PCBs (EPA Method 8082), Total Metals (EPA Method 6010 B), Total Cyanide (EPA Method 9010), percent Sulfur (EPA Method D129-64), and BTU (ASTM Method D 240-87) at the following frequency:
      a. First Composite Sample for the first 150 Tons.
      b. Second Composite Sample for the first 300 Tons.
      c. Third Composite Sample for the first 750 Tons.
      d. One Additional Composite per every additional 750 Tons.

D. Tar/NAPL-Impacted Debris (if encountered): Shall consist of sampling and analysis of the debris as required by the disposal facility and/or National Grid. Debris may be characterized using results from the media in contact with the debris, as approved by National Grid.

3.05 WASTE TRANSPORTATION AND DISPOSAL

A. Waste materials shall be transported only at the times and by the routes indicated in the Waste Management Plan and Traffic Control Plan, unless approved by National Grid and/or Construction Manager.

B. The Contractor shall not be permitted to transport waste off-site prior to receipt of characterization sample results for review/acknowledgement by National Grid, Construction Manager, and Design Engineer.

C. Trucks used for off-site transport of waste materials shall have watertight boxes and solid covers. The box shall be lined with polyethylene sheeting (minimum thickness 6-mil) prior to loading and the gate shall be equipped with turnbuckles.

D. The Contractor shall not allow soil to be tracked off-site at any time during the project. Visible soil tracks on streets will not be allowed. Take sufficient precautions to prevent loose soils from adhering to tired treads, wheel wells, etc. Any loose soil spread shall be cleaned up.

E. Maintain daily log of each truck's weight and all waste transported off-site.

F. Waste Transportation:
   1. Contract NYSDEC-permitted (Part 364 Permit) and National Grid-approved waste transportation companies to transport waste materials to approved disposal facilities.
   2. Ensure that transportation vehicles are properly loaded and securely covered with solid linings/covers, equipped with tailgate locks, and do not exceed permitted weights. All vehicles shall be properly covered, secured, and decontaminated prior to leaving the Site.
   3. Prepare and supply waste manifests which will be signed by National Grid, Construction Manager, or Design Engineer.
   4. Manage all disposal documentation including, but not limited to manifests, bills-of lading, weigh tickets, and Certificates of Destruction/Disposal.

G. National Grid, Construction Manager, and Design Engineer will not be held responsible for delays or stoppages associated with the transportation of waste materials from the Site.

END OF SECTION

SECTION 32 92 19

SEEDING AND PLANTING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Summary.
   2. Submittals.
   3. Quality Assurance.
   4. Materials.
   5. Preparation.
   6. General Requirements.
   7. Topsoil Placement.
   8. Seeding.
   9. Mulching.
   10. Planting.
   11. Watering.
   12. Post-Construction Monitoring and Maintenance.
   13. Field Quality Control
   14. Protection of Installed Work.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General apply to this Section.
   2. United State Army Corps of Engineers (USACE) Permit.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 30 20 – Survey Requirements.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 31 05 13 – Soils and Aggregates for Earthwork.
   7. Section 31 25 13 – Erosion and Sediment Control.

1.02 REFERENCES

A. New York State Department of Environmental Conservation (NYSDEC):
   1. New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC, September 2016).

1.03 SUBMITTALS

A. Prepare and include, as part of the Construction Management Plan (Section 01 10 00), the following information:
   1. Qualifications of the landscaper proposed to perform hydroseeding and of the designated personnel to perform monitoring.
   2. Seed mix and application rates

3. Mulch type and application thicknesses for seeding
4. Planting species, source, and means and methods for delivery, on-site staging, planting, temporary staking, and nursery requirements/recommendations
5. Planting 1-year guarantees from nursery
6. Watering frequency for seeded/planted areas
7. Description of monitoring activities (frequency, reporting), maintenance (weeding, invasive species control), and replacement (reseeding).

B. Monitoring, maintenance, and corrective action/restoration reports. Monitoring Reports shall be submitted 2 weeks after the monitoring event has taken place.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with the Design Drawings, these Specifications, and Construction Management Plan.

B. The Contractor should be familiar with the quality of materials available from suppliers in order to minimize the likelihood that unacceptable products will be rejected.

1.05 SURVEYING

A. Survey extents of new vegetation to be included in Record Surveys as specified in Section 01 30 20.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: Section 31 05 13

B. Erosion control matting: Section 31 23 16

C. Seed shall be a mix of perennial fescue and rye species appropriate for the planting season (e.g., summer, fall) as approved by Design Engineer.

D. Plantings: As specified on the Design Drawings.
   1. Ball and Burlap Plants:
      a. Shall be a firm, natural ball of earth of sufficient diameter and depth as necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the “American Standard for Nursery Stock”. Cracked or mushroomed balls are not acceptable.

   2. Container Grown Plants:
      a. Container grown plants shall be healthy, vigorous, well-rooted, and shall have become established in the container in which they are delivered. These plants shall have been in the established container long enough for the fibrous roots to have developed so that the root mass will retain its shape and hold together when removed from the container. No plants shall be loose in the container and shall not be pot bound. The container shall be a minimum SP4 container or

larger, sufficiently rigid to firmly hold the soil protecting the root during transporting, handling, and planting.

E. Fertilizer: Fertilizer shall not be used.

F. Mulch:
   1. For non-hydroseeding application: Straw mulch shall be clean oat or wheat straw well-seasoned before bailing, free from mature seed-bearing stalks or roots of prohibited or noxious weeds and free of rot and mildew. All much materials shall be air-dried and reasonably free of noxious weeds and weed seeds or other materials detrimental to plant growth. Mulch shall be as specified herein and shall be suitable for spreading with standard mulch blowing equipment.
   2. For hydroseeding application: Terra-Mulch® Terra-Wood™ with Tacking Agent 3®, or alternate approved by Design Engineer.

G. Lime (if used): ASTM C602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.

H. Water:
   1. Water shall be clean, clear water free from any objectionable or harmful chemical qualities or organisms capable of inhibiting vigorous growth of plants. Water shall be furnished by the Contractor.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify grades, compaction, and surface conditions have been approved by Construction Manager and/or Design Engineer.

3.02 GENERAL REQUIREMENTS

A. Permanent seeding and plantings shall be conducted in spring (March – May 15) or early fall (September – October 15). Outside of these time frames, temporary seeding shall be conducted in accordance with the requirements of the NYSSSESC.

B. At the option and at the full responsibility of the Contractor, seeding operations may be conducted under unseasonable conditions. The final results shall be as specified in this Section and guaranteed without additional compensation should the seeded areas require re-seeding.

3.03 TOPSOIL PLACEMENT

A. Before placing or depositing topsoil upon any areas, all improvement within the area shall be completed, unless otherwise approved by the Design Engineer. The areas in which topsoil is to be placed or incorporated shall be scarified to a depth of not less than 2 inches before securing topsoil for use.

B. Place topsoil to a uniform depth as indicated on the Drawings.

C. Topsoil shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

D. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched with straw, stabilized by "tracking" with suitable equipment, and erosion control blanket installed where indicated on the Construction Drawings.

E. Where specified to be mixed with riprap stone material, topsoil shall be blended with riprap stone to satisfaction of Design Engineer prior to placement.

3.04 SEEDING

A. Spread seed utilizing a hydro seeder or other method approved by Construction Manager and/or Design Engineer.

B. Seed application rate shall be 20 pounds per acre.

C. After application, apply water to hydroseeded areas as determined appropriate by landscaper.

3.05 MULCH

A. Mulch may be spread mixed into a hydroseed slurry, spread using typical mechanical spreaders, or other method approved by Construction Manager and/or Design Engineer.

B. Mulch application rate shall be appropriate for supporting vegetation growth and as recommended by landscaper or nursery.

3.06 PLANTINGS

A. Plantings shall be installed as depicted on the Design Drawings.

B. All packaging around planting root balls including, but not limited to, metal cages, burlap, and synthetic burlap shall be removed prior to planting. Document the removal of packaging, and Request inspection by Design Engineer of roots/root balls prior to planting.

3.07 WATERING

A. The Contractor shall provide watering as recommended by the landscaper to achieve performance standards during the warranty period.

3.08 PROTECTION DURING CONSTRUCTION

A. The Contractor shall protect restored areas and related work and other site work from damage due to seeding operations, operations by other Contractors or trespassers. Maintain protection during installation until Substantial Completion Acceptance. Treat, repair or replace damaged work immediately.

B. Damage done by the Contractor, or any of their sub-contractors to any parts of the work or existing features to remain, including roots, trunk or branches of large existing trees, soil, paving, utilities, lighting, irrigation, other finished work and surfaces including those

on adjacent property, shall be cleaned, repaired or replaced by the Contractor at no expense to National Grid. The Design Engineer shall determine when such cleaning, replacement or repair is satisfactory.

3.09 POST-CONSTRUCTION MONITORING AND MAINTENANCE

A. Monitor and maintain vegetated areas in accordance with these Specifications.
   1. The Contractor is responsible for monitoring and maintenance of vegetation until final acceptance. This includes, but is not limited to all necessary watering, weed and invasive species control, and the appropriate applications of fungicides and insecticides necessary to maintain plants free of damaging pests.
   2. Contractor is responsible for performing post-construction monitoring, maintenance, reporting, corrective actions/restoration (if required), and invasive species removal (if necessary) for a period of 1 year following Substantial Completion of the project and meeting the performance standards of 100% coverage/establishment of vegetation.
   3. Contractor's monitoring reports shall be submitted to National Grid and the Design Engineer within 2 weeks of monitoring.
   4. National Grid will perform post-construction monitoring and reporting in accordance with the United States Army Corp of Engineer (USACE) permit conditions, as necessary.

B. Mowing shall not be conducted in the restoration areas.

C. Protect seeded areas and prohibit mowing with warning signs (if necessary) during maintenance period.

D. Monitoring activities shall be conducted by the Contractor and the landscaper who performed the restoration to identify growth habitats and indicators of stress (desiccation, nutrient depletion, sun scald, frost damage, herbivory, infestation, etc.).

E. Monitoring information shall be collected twice following Substantial Completion of the work, during the growing season (e.g., once in early spring [April to May] and once in the fall [September to October]).

F. The following information shall be collected and documented in the monitoring report:
   1. Description of areas requiring corrective action, and documentation of corrective actions performed.
   2. Estimate percent aerial coverage of herbaceous growth. Coverage estimates shall be based on visual observations of vegetation coverage within the restoration area. Estimate of areal coverage shall include growth resulting from successful germination of installed seed mix, as well as natural colonization by desirable plant species.
   3. Photograph log documenting each restoration area from multiple directions with notes describing health of the area and herbaceous growth and issues requiring corrective action.
   4. Location and dimensions of areas requiring corrective action. Issues requiring corrective action include, but are not limited to, unvegetated/bare soil, washouts/gullies, dead plants, stressed plants, areas of invasive plant growth, areas of erosion, areas of excessive soil desiccation or flooding. Plant stressors include nutrient depletion, desiccation, stress from flooding, herbivory, infestation, disease,

etc. Estimate of areal cover of invasive species shall be quantified based on visual estimates.

G. Vegetative restoration performance standards:
   1. 1 year after Substantial Completion: 100% coverage of planted seed species or desirable volunteer species (i.e., species not designated as invasive by New York State).
   2. Corrective action:
      a. Corrective measures shall not be conducted without prior written approval from Construction Manager.
      b. Corrective measures shall be conducted as soon as practical following identification of an issue.
      c. Corrective measures identified within the warranty period shall be implemented by the Contractor at no additional cost.
      d. Supplemental seeding shall be conducted within the seasonal timeframes specified by New York State (March through May, or September through October 15).
      e. Supplemental seeding shall be conducted using the species specified herein. Equivalent species may be substituted for the original species if the selected plant or seed mixture is not available at the time of planting, and with prior written consent from Construction Manager.
      f. Corrective measures conducted in the final 3 months of the 1-year warranty period may require additional monitoring beyond the first full growing season in order to demonstrate that the restoration performance standards have been satisfied. The need for additional monitoring shall be determined by Construction Manager.
      g. Post-construction monitoring shall be deemed complete upon issuance of written approval by Construction Manager based on demonstration that restoration performance standards have been satisfied.

3.10 FIELD QUALITY CONTROL

A. Refer to Section 01 30 20 for surveying requirements.

B. If installed Work does not meet specified requirements, as determined solely by Construction Manager, remove Work and replace as necessary to the satisfaction of Construction Manager.

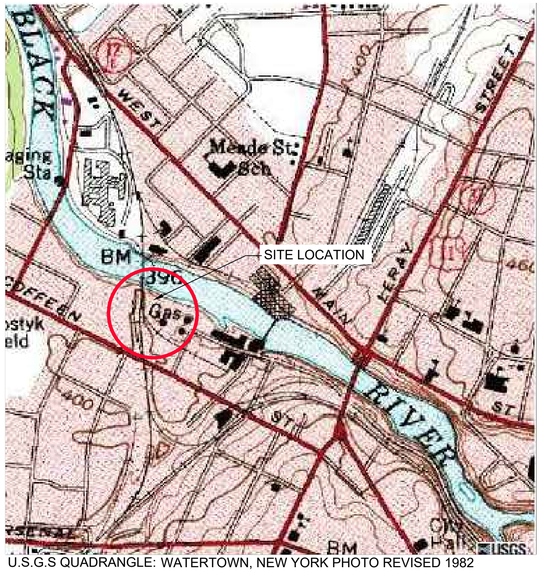
3.11 PROTECTION OF INSTALLED WORK

A. Protect and maintain installed work in accordance with these Specifications and replace damaged Work.

END OF SECTION

CONSTRUCTION DRAWINGS
PHASE III REMEDIAL ACTION
IN SITU SOLIDIFICATION (ISS) AND NAPL RECOVERY WELLS
WATERTOWN (ENGINE STREET) FORMER MGP SITE (SITE NUMBER 6-23-011)
WATERTOWN, NEW YORK

LIST OF DRAWINGS



U.S.G.S QUADRANGLE: WATERTOWN, NEW YORK PHOTO REVISED 1982

NORTH

LOCATION MAP

SCALE: N.T.S.

NORTH

VICINITY MAP

SCALE: N.T.S.

PREPARED FOR

NIAGARA MOHAWK POWER CORPORATION (D/B/A NATIONAL GRID)
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PREPARED BY

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Adam R. Sherman

Signer Name: Adam Sherman
Signing Reason: I approved this document.
Signing Time: 2024-04-29 08:44:00(PDT)

APRIL 2024

GENERAL NOTES

1. DIFFERENCES IDENTIFIED BY THE CONTRACTOR BETWEEN THE REMEDIAL DESIGN AND ACTUAL SITE CONDITIONS, WHICH MAY AFFECT CONSTRUCTION, SHALL BE SUBMITTED TO NATIONAL GRID, OR THEIR DULY APPOINTED REPRESENTATIVE AND DESIGN ENGINEER IN WRITING FOR CLARIFICATION.
2. INFORMATION RELATED TO SUBSURFACE CONDITIONS SHOULD BE CONSIDERED APPROXIMATE AND SHOULD NOT BE RELIED ON AS A COMPLETE DEPICTION OF SITE CONDITIONS.
3. THE TECHNICAL WORK AND CONTRACTOR REQUIREMENTS ARE DESCRIBED IN SEVERAL COMPONENTS THAT COLLECTIVELY REPRESENT THE REMEDIAL DESIGN. THESE COMPONENTS INCLUDE THE DESIGN DRAWINGS, TECHNICAL SPECIFICATIONS, AND OTHER DESIGN REPORT APPENDICES (E.G., CONSTRUCTION QUALITY ASSURANCE PLAN; COMMUNITY AIR MONITORING PLAN; AND STORMWATER POLLUTION PREVENTION PLAN). THESE COMPONENTS SHOULD BE THOROUGHLY REVIEWED BY THE CONTRACTOR. INFORMATION PRESENTED IN ANY OF THE ABOVE DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR'S OBLIGATIONS TO SATISFY THE COMPONENTS SPECIFIED IN THE OTHER DOCUMENTS. IN ADDITION, IN THE EVENT THAT THERE ARE DISCREPANCIES IN THE INFORMATION CONTAINED IN THE ABOVE-LISTED DOCUMENTS, THE CONTRACTOR SHALL IDENTIFY SUCH DISCREPANCIES IN WRITING FOR REVIEW BY NATIONAL GRID, THEIR APPOINTED REPRESENTATIVES, AND DESIGN ENGINEER.
4. THE REMEDIAL DESIGN REPORT (RDR) FOR THE SITE WAS SUBMITTED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) IN MAY 2014 AND WAS APPROVED BY THE NYSDEC IN A LETTER DATED JULY 14, 2014. THE MAY 2014 RDR, AS IT PERTAINS TO THE PHASE III REMEDIAL ACTION, SHALL BE CONSIDERED INCORPORATED BY REFERENCE INTO THE PHASE III DESIGN DOCUMENTS. NOTE THAT THE PHASE III DRAWINGS AND TECHNICAL SPECIFICATIONS SUPERSEDE THE DRAWINGS AND SPECIFICATIONS PROVIDED IN THE MAY 2014 RDR AS IT RELATES TO THE PHASE III REMEDIATION AND RESTORATION COMPONENTS.

UTILITY NOTES

1. UTILITY LOCATIONS OBTAINED FROM INFORMATION PROVIDED BY THE UTILITY COMPANIES, FIELD MARKOUTS FROM UTILITY COMPANIES (SURVEYED BY DELTA ENGINEER, ARCHITECTS, AND LAND SURVEYORS), AND SUBSURFACE UTILITY SCAN PERFORMED BY ENVIRONSCAN, INC., AND SUPPLEMENTED BY FIELD OBSERVATIONS BY BROWN AND CALDWELL ASSOCIATES.
2. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES SHOWN ON THESE DRAWINGS ARE BASED ON FIELD LOCATIONS, WHERE VISIBLE OR FROM RECORDED DRAWINGS PROVIDED TO THE UNDERSIGNED. THEREFORE, LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE ADDITIONAL FACILITIES OR UTILITIES, THE EXISTENCE OF WHICH ARE NOT KNOWN. CONTACT AND COORDINATE WITH DIG SAFELY NEW YORK FOR SUBSURFACE UTILITY LAYOUT BEFORE ANY EARTH DISTURBING ACTIVITIES BEGIN. THE DIG SAFELY NEW YORK NUMBER IS 811. THEIR WEBSITE IS WWW.DIGSAFELYNEWYORK.COM.
3. APPROXIMATE LOCATION OF SANITARY SEWER AND STORM SEWER WAS OBTAINED FROM DRAWINGS PROVIDED BY CITY OF WATERTOWN ENGINEERING DEPARTMENT AND CITY OF WATERTOWN CODE ENFORCEMENT.
4. THE CONTRACTOR SHALL VERIFY THE PRESENCE AND LOCATIONS OF ALL ABOVEGROUND AND UNDERGROUND SITE FEATURES RELEVANT TO AND POTENTIALLY ENCOUNTERED DURING PERFORMANCE OF THIS PROJECT. ADDITIONAL SITE FEATURES/UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE DRAWINGS.
5. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY BRACING, REMOVAL, RELOCATION, AND REPLACEMENT OF ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES, AND/OR OVERHEAD WIRES THAT ARE NEAR OR WITHIN THE PROJECT WORK LIMITS OF CONSTRUCTION, OR THAT MAY INTERFERE WITH THE PROJECT.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, PROTECTION, RELOCATION, AND/OR MAINTENANCE OF UNDERGROUND AND OVERHEAD UTILITIES WHICH MAY BE IMPACTED DURING CONSTRUCTION. ALL UTILITIES, UNLESS STATED OTHERWISE, SHALL REMAIN FUNCTIONAL DURING THE PROGRESSION OF THIS PROJECT.
7. AN EXISTING GAS REGULATOR STATION IS LOCATED IN THE NORTHEASTERN CORNER OF THE NATIONAL GRID PROPERTY. THE GAS REGULATOR STATION WILL REMAIN IN OPERATION THROUGHOUT THE PROJECT AND SHALL BE PROTECTED FROM POTENTIAL DAMAGE BY THE CONTRACTOR.

BASE MAP SOURCE NOTES

1. ACTUAL SITE FEATURES MAY DIFFER FROM THOSE DEPICTED ON THE DESIGN DRAWINGS AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL IDENTIFY AND DOCUMENT CHANGES (IN WRITING) TO SITE FEATURES TO THE EXTENT THAT THEY COULD POTENTIALLY IMPACT IMPLEMENTATION OF THE PROJECT.
2. EXISTING TOPOGRAPHY AND PROPERTY LINE INFORMATION IS OBTAINED FROM THE ELECTRONIC DRAWING FILE "TOPOGRAPHICAL SURVEY, SOIL BORING & MONITORING WELLS LOCATIONS, FORMER MGP SITE, COFFEEN STREET, SILL STREET, LAWRENCE STREET AND ENGINE STREET, CITY OF WATERTOWN, JEFFERSON COUNTY, STATE OF NEW YORK", PREPARED BY DELTA ENGINEERS, ARCHITECTS & LAND SURVEYORS, 4873 NEW YORK STATE ROUTE #5, VERNON, NEW YORK 13476, DATED JUNE 7, 2010 AND REVISED ON NOVEMBER 27, 2018 TO INCLUDE ADDITIONAL TOPOGRAPHIC INFORMATION NEAR THE FORMER BOAT BARN AND NASCO BUILDING. ALL ELEVATIONS ARE TIED INTO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).

SAFETY NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY MEASURES AND PROGRAMS IN CONNECTION WITH THE PROJECT. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTIONS TO PROTECT, SITE WORKERS, CONSTRUCTION OVERSIGHT PERSONNEL, AND SITE VISITORS.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF 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 THE OCCUPATIONAL SAFETY AND HEALTH ACT 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 CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS SET FORTH UNDER 29 CFR 1910 AND 29 CFR 1926. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND THE 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, INC.
3. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, AND PROVIDE ALL EXCAVATION SHORING/BRACING, SCAFFOLDING, SHIELDING, DUST/VAPOR/ODOR PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES REQUIRED. AS NEEDED, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT LIGHT DURING NIGHT HOURS TO SECURE SUCH PROTECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING SECURITY ON SITE FOR THE DURATION OF WORK FROM THE DATE OF INITIAL MOBILIZATION UNTIL THE DATE OF FINAL DEMOBILIZATION, OR AS OTHERWISE DIRECTED BY NATIONAL GRID, THEIR DULY APPOINTED REPRESENTATIVE, OR DESIGN ENGINEER.
4. 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 CONTRACTOR SHALL DEVELOP AND IMPLEMENT APPROPRIATE HEALTH AND SAFETY MEASURES FOR ITS EMPLOYEES, SUBCONTRACTORS, AND SITE VISITORS, AND FOR PROTECTION OF THE ENVIRONMENT AND SURROUNDING COMMUNITY. THE CONTRACTOR'S HEALTH AND SAFETY PLAN SHALL BE DEVELOPED IN ACCORDANCE WITH APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS.
5. THE CONTRACTOR'S HEALTH AND SAFETY PLAN 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. OF ADDITIONAL NOTE AND EMPHASIS ARE THOSE ACTIVITIES THAT POTENTIALLY INVOLVE WORK WITHIN THE EXCAVATION AREAS ONCE EXCAVATION/BACKFILL ACTIVITIES ARE INITIATED, AND THAT POTENTIALLY REQUIRE WORKER ACCESS INTO THE EXCAVATED AREAS. THE CONTRACTOR SHALL CLEARLY IDENTIFY AND EVALUATE THE SPECIFIC TYPES OF ACTIVITIES THAT COULD INVOLVE WORKER ENTRY INTO THE EXCAVATION AREAS, SPECIFIC INGRESS/EGRESS ROUTES AND PROVISIONS, PERSONNEL AND WORK AREA MONITORING, PERSONAL PROTECTION EQUIPMENT, COMMUNICATIONS, ETC. FURTHER, TO THE EXTENT PRACTICABLE (AS DETERMINED BY THE CONTRACTOR), THE CONTRACTOR IS ENCOURAGED TO MINIMIZE WORKER ENTRY INTO THE EXCAVATED AREAS.

ABBREVIATIONS

AGS	ABOVE GROUND SURFACE
A.K.A.	ALSO KNOWN AS
BC	BROWN AND CALDWELL ASSOCIATES
BGS	BELOW GROUND SURFACE
BR	BEDROCK
CAMP	COMMUNITY AIR MONITORING PLAN
CC	CORE BORING
CF	CUBIC FEET
CFR	CODE OF FEDERAL REGULATIONS
C.I.	CAST IRON
CL	CENTERLINE
ECL	ENVIRONMENTAL CONSERVATION LAW
EL	ELEVATION
EMH	ELECTRICAL MANHOLE
ESC	EROSION AND SEDIMENT CONTROL
FT	FEET
IN	INCHES
MAX	MAXIMUM
MIN	MINIMUM
MH	MANHOLE
MW	MONITORING WELL
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NMPC	NIAGARA MOHAWK POWER CORPORATION
N.T.S.	NOT TO SCALE
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NYSDOT	NEW YORK STATE DEPARTMENT OF TRANSPORTATION
OB	OVERBURDEN
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OWS	OIL/WATER SEPARATOR
OZ	OUNCE
PPE	PERSONAL PROTECTIVE EQUIPMENT
PZ	PIEZOMETER
RA	REMEDIAL ACTION
ROD	RECORD OF DECISION
RD	REMEDIAL DESIGN
SB	SOIL BORING
SF	SQUARE FOOT
SPDES	STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
SSO	SITE SAFETY OFFICER
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
SY	SQUARE YARD
TLS	TAR LIQUOR SUMP
TP	TEST PIT
TYP	TYPICAL
YR	YEAR

SYMBOLS AND ABBREVIATIONS NOTES

1. ABBREVIATIONS ARE FOR REFERENCE ONLY. NOT ALL ABBREVIATIONS ARE USED IN THIS CONTRACT.
2. CONTACT THE DESIGN ENGINEER DURING BIDDING FOR ANY SYMBOLS NOT LISTED IN THE CONTRACT.
3. INDIVIDUAL DRAWINGS WITH NOTES REGARDING SYMBOLS TAKE PRECEDENCE OVER THESE SYMBOLS.

EXISTING CONDITIONS LEGEND

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 — EXISTING GROUND CONTOUR
- 384 — TOP OF BEDROCK SURFACE CONTOUR
- PHASE I AND PHASE IIA EXCAVATION LIMITS
- X — FENCE
- RAILROAD TRACKS
- S — SANITARY SEWER LINE
- ST — STORM SEWER LINE
- W — WATER MAIN
- OHW — OVERHEAD WIRE
- UC — UNDERGROUND CABLE
- UE — UNDERGROUND ELECTRIC LINE
- T — TELEPHONE
- G — GAS LINE
- FHA — SPECIAL FLOOD HAZARD AREA (ZONE A) SUBJECT TO INUNDATION BY 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD)
- MW — MONITORING WELL
- SG-2 — STREAM GAGE
- BM #2 — BENCHMARK
- STORMWATER CATCH BASIN
- MANHOLE
- GAS VALVE
- SB-219 — COMPLETED SOIL BORING

REMEDIAL ACTION LEGEND

- LOW — LIMIT OF WORK
- X — TEMPORARY FENCE
- SEDIMENT BARRIER
- TEMPORARY STAGING AREA
- IN SITU SOLIDIFICATION (ISS) AREA
- ISS NEAR SENSITIVE FEATURES
- EXCAVATION AREA
- ASPHALT PAVEMENT SITE COVER
- STABILIZED CONSTRUCTION ENTRANCE
- SITE ACCESS/TRAFFIC FLOW
- PROPOSED NAPL RECOVERY WELL LOCATION
- DECOMMISSIONED BEDROCK MONITORING WELL

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
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ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087466
DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

GENERAL NOTES AND LEGEND

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SHEET NUMBER OF

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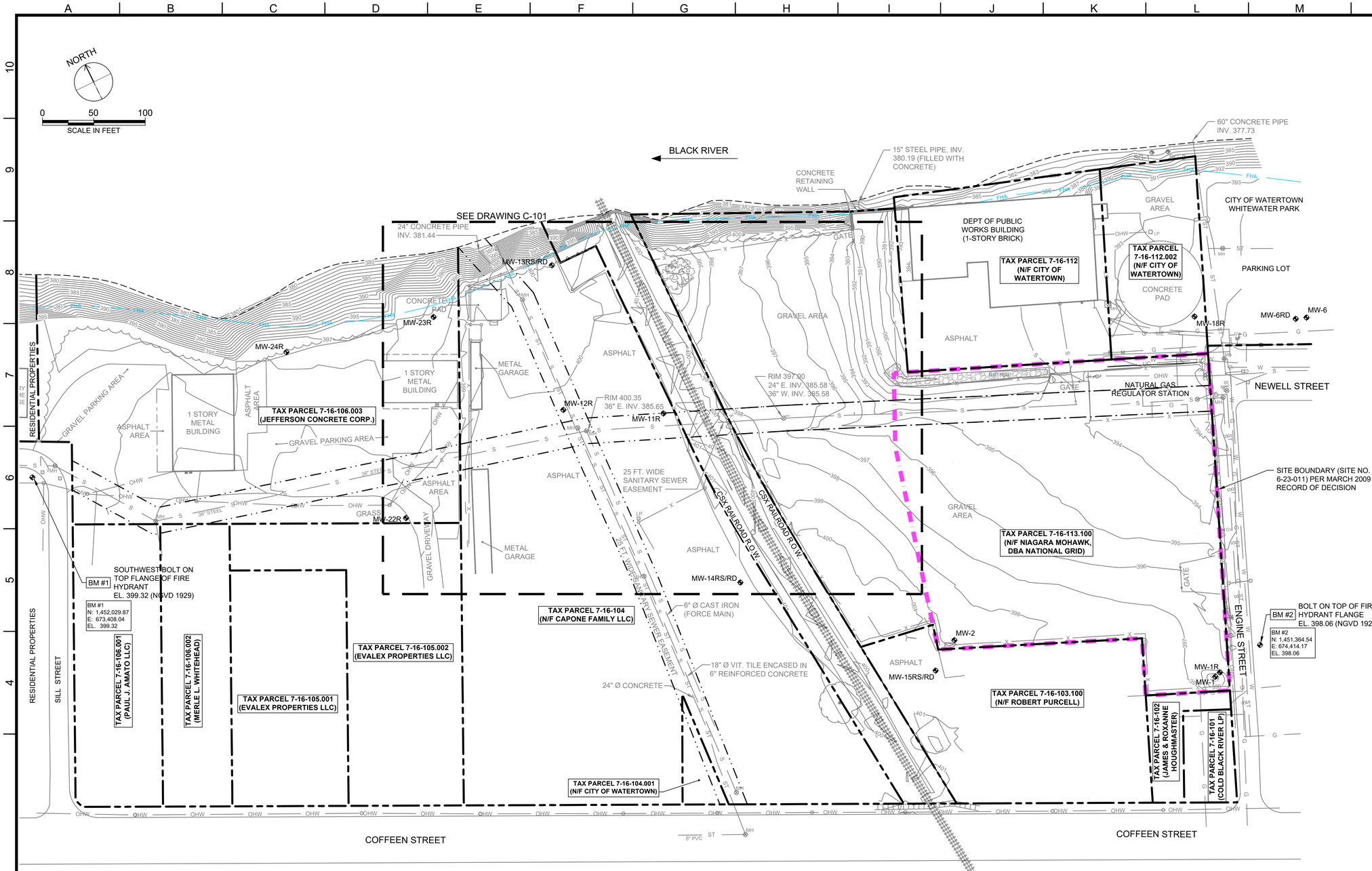

SOURCE NOTES:

1. SURVEY IN CENTRAL ZONE OF THE STATE PLANE COORDINATE SYSTEM IN NEW YORK STATE (NAD 1983). ELEVATIONS SHOWN ARE BASED ON VERTICAL DATUM NGVD 1929.
2. BASEMAP INFORMATION AND PROPERTY BOUNDARY LINE AND TAX PARCEL LINE INFORMATION IS TAKEN FROM A MAP ENTITLED "SOIL BORING & MONITORING LOCATIONS" - FORMER MGP SITE-COFFEEN STREET, SILL STREET, LAWRENCE STREET, AND ENGINE STREET-CITY OF WATERTOWN-JEFFERSON COUNTY-STATE OF NEW YORK DONE BY DELTA ENGINEERS, ARCHITECTS, & LAND SURVEYORS, 4873 NYS RT. 5, VERNON, NY 13476, DATED JUNE 7, 2010.
3. PROPERTY LINE AND PROPERTY OWNER INFORMATION UPDATED BASED ON CITY OF WATERTOWN TAX MAP FOR SECTION 07, BLOCK 16 DATED DECEMBER 27, 2016.
4. UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLACED ON THIS DRAWING FROM FIELD LOCATIONS (WHERE VISIBLE), VARIOUS SURVEYS, OR FROM HISTORICAL DRAWINGS. EXTENTS OF SUBSURFACE FEATURES SHOULD BE CONSIDERED APPROXIMATE.
5. INFORMATION DEPICTED ON THE NATIONAL GRID PROPERTY (TAX PARCEL 7-16-113.100) AND CITY OF WATERTOWN PROPERTY (TAX PARCEL 7-16-112) ARE BASED ON RECORD SURVEYS PERFORMED BY NMB LAND SURVEYING PLLC, 20 TROY AVENUE, WYNANTSKILL, NY 12198, DATED JANUARY 28, 2020, AND MARCH 12, 2021, WHICH DEPICT POST-REMEDIATION CONDITIONS (FOLLOWING COMPLETION OF PHASE I AND PHASE IIA REMEDIATION).
6. SITE BOUNDARY BASED ON MARCH 2009 RECORD OF DECISION FOR NYSDEC SITE NO. 6-23-011.

LEGEND:

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 EXISTING GROUND CONTOUR
- X FENCE
- RAILROAD TRACKS
- S SANITARY SEWER LINE
- ST STORM SEWER LINE
- W WATER MAIN
- OHW OVERHEAD WIRE
- UC UNDERGROUND CABLE
- UE UNDERGROUND ELECTRIC LINE
- T TELEPHONE
- G GAS LINE
- FHA SPECIAL FLOOD HAZARD AREA (ZONE A) SUBJECT TO INUNDATION BY 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD)
- MW MONITORING WELL
- SG-2 STREAM GAGE
- BM #2 BENCHMARK
- STORMWATER CATCH BASIN
- MANHOLE
- GAS VALVE

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
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153076_02GDV19.dwg
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ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087406
DATE

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

OVERALL EXISTING CONDITIONS PLAN

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153076
CLIENT PROJECT NUMBER
DRAWING NUMBER
C-100
SHEET NUMBER
OF

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NORTH

0 20 40
SCALE IN FEET

24" CONCRETE PIPE
INV. 381.44
BLACK RIVER

MW-13RS/RD

MW-23R

CONCRETE PAD

FHA

25 FT. WIDE SANITARY SEWER EASEMENT

CSX RAILROAD R.O.W.

GRAVEL AREA

TAX PARCEL 7-16-113.100
(N/F NIAGARA MOHAWK,
DBA NATIONAL GRID)

GATE

ASPHALT

METAL GARAGE

1 STORY METAL BUILDING

TAX PARCEL 7-16-106.003
(JEFFERSON CONCRETE CORP.)

OHW

MW-12R

RIM 400.35
36" E. INV. 385.65

MW-11R

MH

RIM 397.00
24" E. INV. 385.58
36" W. INV. 385.58

25 FT. WIDE SANITARY SEWER EASEMENT

25 FT. WIDE SANITARY SEWER EASEMENT

25 FT. WIDE SANITARY SEWER EASEMENT

ASPHALT AREA

MW-22R

GRAVEL DRIVEWAY

ASPHALT

TAX PARCEL 7-16-104
(N/F CAPONE FAMILY LLC)

METAL GARAGE

ASPHALT

MW-14RS/RD

NOTES:

1. REFER TO SOURCE NOTES ON DRAWING C-100.

LEGEND:

- PROPERTY BOUNDARY
- EASEMENT LINE
- SITE BOUNDARY (SITE NO. 6-23-011) PER MARCH 2009 RECORD OF DECISION
- EDGE OF WATER (5/25/2010)
- 390 EXISTING GROUND CONTOUR
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- MANHOLE
- GAS VALVE

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
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Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
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ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 057206
DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

EXISTING CONDITIONS DETAIL PLAN

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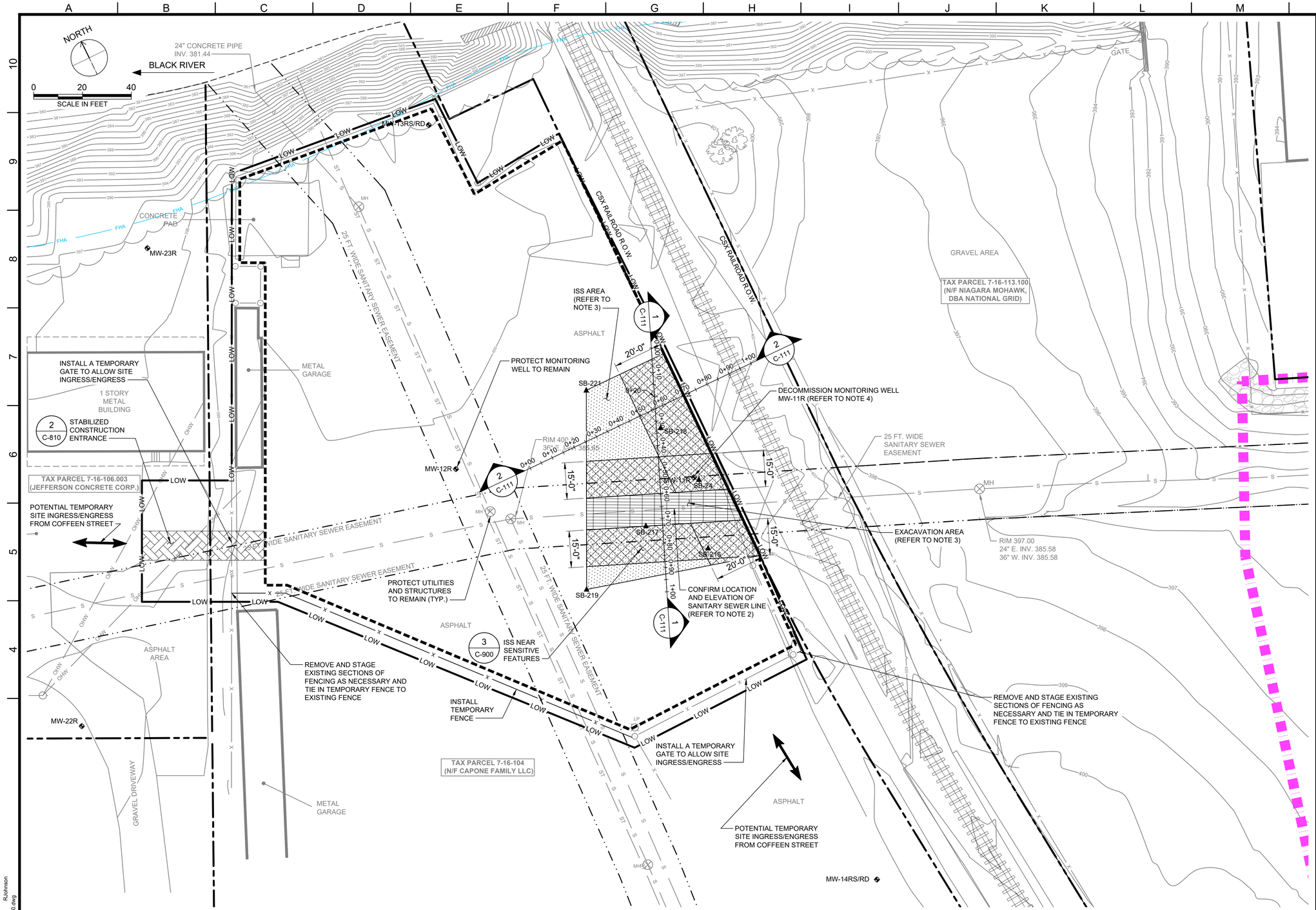

NOTES:

1. REFER TO SPECIFICATION SECTIONS 31 32 00 FOR IN SITU SOLIDIFICATION, 31 23 23 FOR BACKFILLING, AND 31 70 00 FOR WASTE MANAGEMENT.
2. ISS LIMITS AND LOCATION OF THE SANITARY SEWER LINE SHALL BE SURVEYED AND STAKED OUT BY A NEW YORK LICENSED SURVEYOR PRIOR TO COMMENCING EXCAVATION AND ISS ACTIVITIES. THE CROWN OF THE SANITARY SEWER LINE SHALL BE EXPOSED, USING SOFT DIG METHODS, TO CONFIRM ITS LOCATION AND ELEVATION. THE LOCATION AND ELEVATION OF THE CROWN OF THE PIPE SHALL BE SURVEYED EVERY 20 FEET WITHIN THE ISS AREA.
3. ISS SHALL BE IMPLEMENTED TO THE TOP OF BEDROCK. THE SOIL ABOVE THE SANITARY SEWER LINE SHALL BE EXCAVATED AS SHOWN ON DRAWING C-900 DETAIL 2.
4. DECOMMISSION THE DESIGNATED MONITORING WELLS WITHIN THE ISS AREA IN ACCORDANCE WITH "CP-43: GROUNDWATER MONITORING WELL DECOMMISSIONING POLICY" (NYSDEC, NOVEMBER 2009) AND SPECIFICATIONS SECTION 02 61 00.
5. THE CONTRACTOR SHALL PERFORM PERFORMANCE MONITORING OF ISS-TREATED MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 31 32 00.
6. DURING ISS IMPLEMENTATION, THE CONTRACTOR SHALL DOCUMENT THE ISS LIMITS THROUGH SURVEYING BY A NEW YORK LICENSED SURVEYOR AND/OR FIELD MEASUREMENTS APPROVED BY THE DESIGN ENGINEER.
7. BACKFILLING SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION SECTION 31 23 23.
8. EROSION AND SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH NEW YORK STATE GUIDELINES, DRAWINGS C-800 AND 801, AND SPECIFICATION SECTION 31 25 13.

LEGEND:

- LOW — LIMIT OF WORK
- x — TEMPORARY FENCE
- TEMPORARY STAGING AREA
- IN SITU SOLIDIFICATION (ISS) AREA
- ISS NEAR SENSITIVE FEATURES
- EXCAVATION AREA
- STABILIZED CONSTRUCTION ENTRANCE
- SITE ACCESS/TRAFFIC FLOW
- ▲ SB-219 — COMPLETED SOIL BORING

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
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Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
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ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087406
DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

ISS AND EXCAVATION REMEDIATION PLAN

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DRAWING NUMBER C-110
SHEET NUMBER OF

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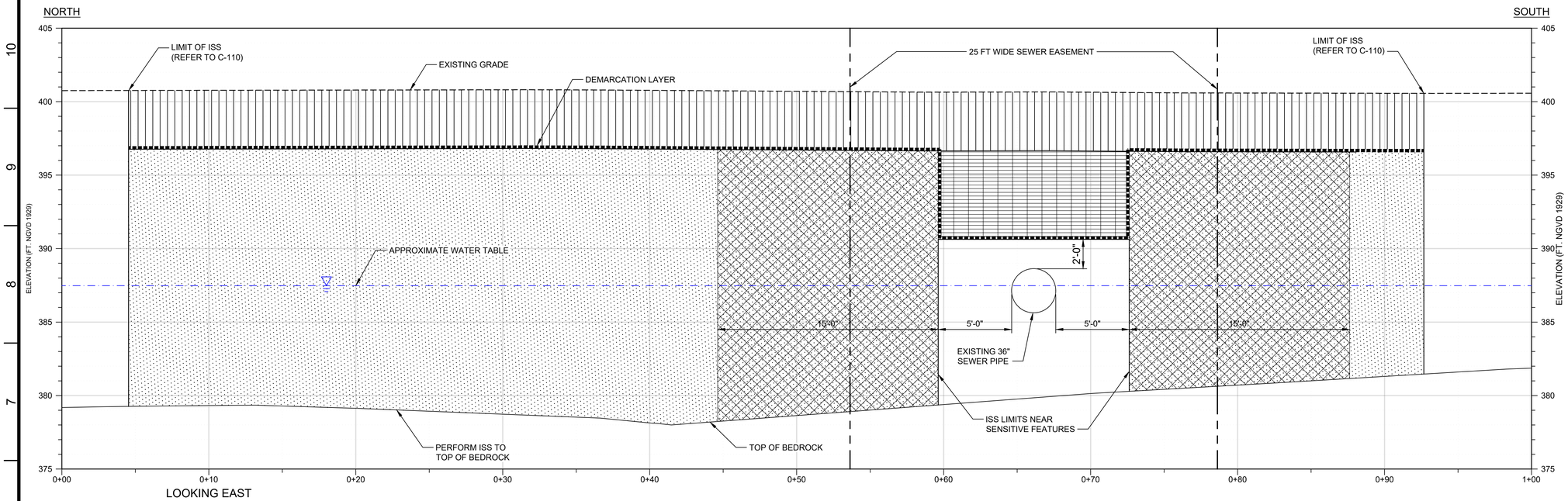


LOOKING EAST

SECTION 1 / C-110

SCALE: 1" = 4' HORIZONTIAL 1"= 4' VERTICAL

0 4' 8' HORIZONTAL SCALE

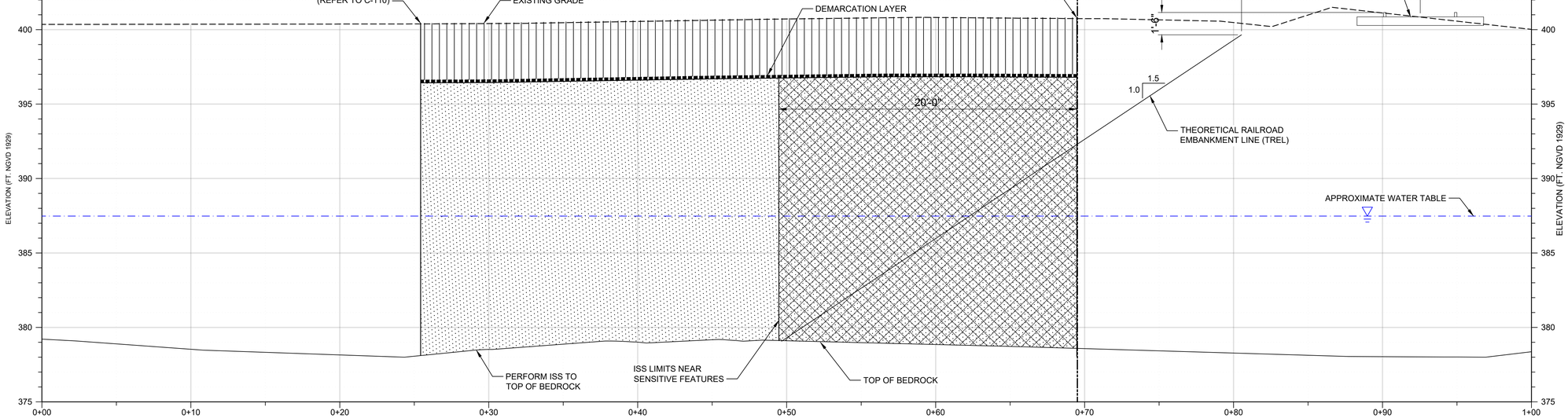
0 4' 8' VERTICAL SCALE

LEGEND:

- PRE-ISS EXCAVATION
- ISS
- ISS NEAR SENSITIVE FEATURES
- EXCAVATION
- EXISTING GRADE
- APPROXIMATE GROUNDWATER TABLE ELEVATION

NOTES:

1. LOCATIONS OF UTILITIES SHALL BE CONSIDERED APPROXIMATE.
2. FOR EXCAVATIONS GREATER THAN 4 FEET, SLOPING OR BENCHING ARE REQUIRED AND MUST BE SELECTED BASED ON SOIL TYPE IN ACCORDANCE WITH OSHA REGULATIONS.
3. APPROXIMATE GROUNDWATER TABLE ELEVATION IS BASED ON DATA COLLECTED DURING THE REMEDIAL INVESTIGATION IN 2006. ACTUAL GROUNDWATER TABLE ELEVATIONS MAY VARY.
4. EXCAVATE MATERIAL FOLLOWING COMPLETION OF ISS AND USING ISS AS WORKING PLATFORM FOR EQUIPMENT (I.E., EQUIPMENT SHALL NOT BE POSITIONED ON TOP OF SANITARY SEWER LINE DURING EXCAVATION).
5. EXCAVATION SHALL EXTEND TO 2 FEET ABOVE THE TOP OF THE SANITARY SEWER LINE.
6. 36" DIAMETER RCP SANITARY SEWER. CONFIRM LOCATION AND TOP ELEVATION OF SEWER PRIOR TO ISS AND EXCAVATION.



LOOKING NORTH

SECTION 2 / C-110

SCALE: 1" = 4' HORIZONTIAL 1"= 4' VERTICAL

0 4' 8' HORIZONTAL SCALE

0 4' 8' VERTICAL SCALE

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
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EXTERNAL REFERENCE FILES

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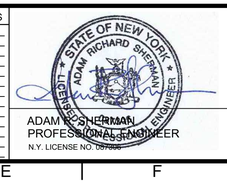

ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 097668

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

REMEDIATION CROSS-SECTIONS

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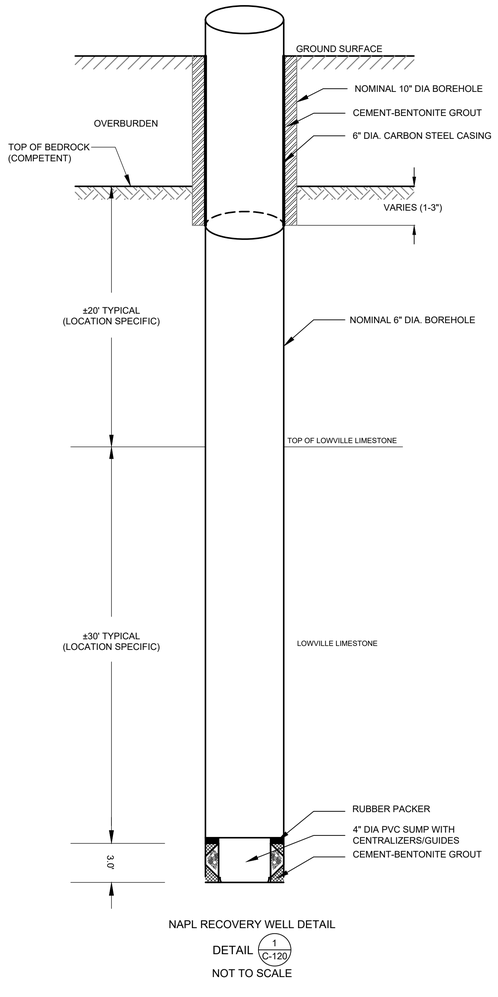
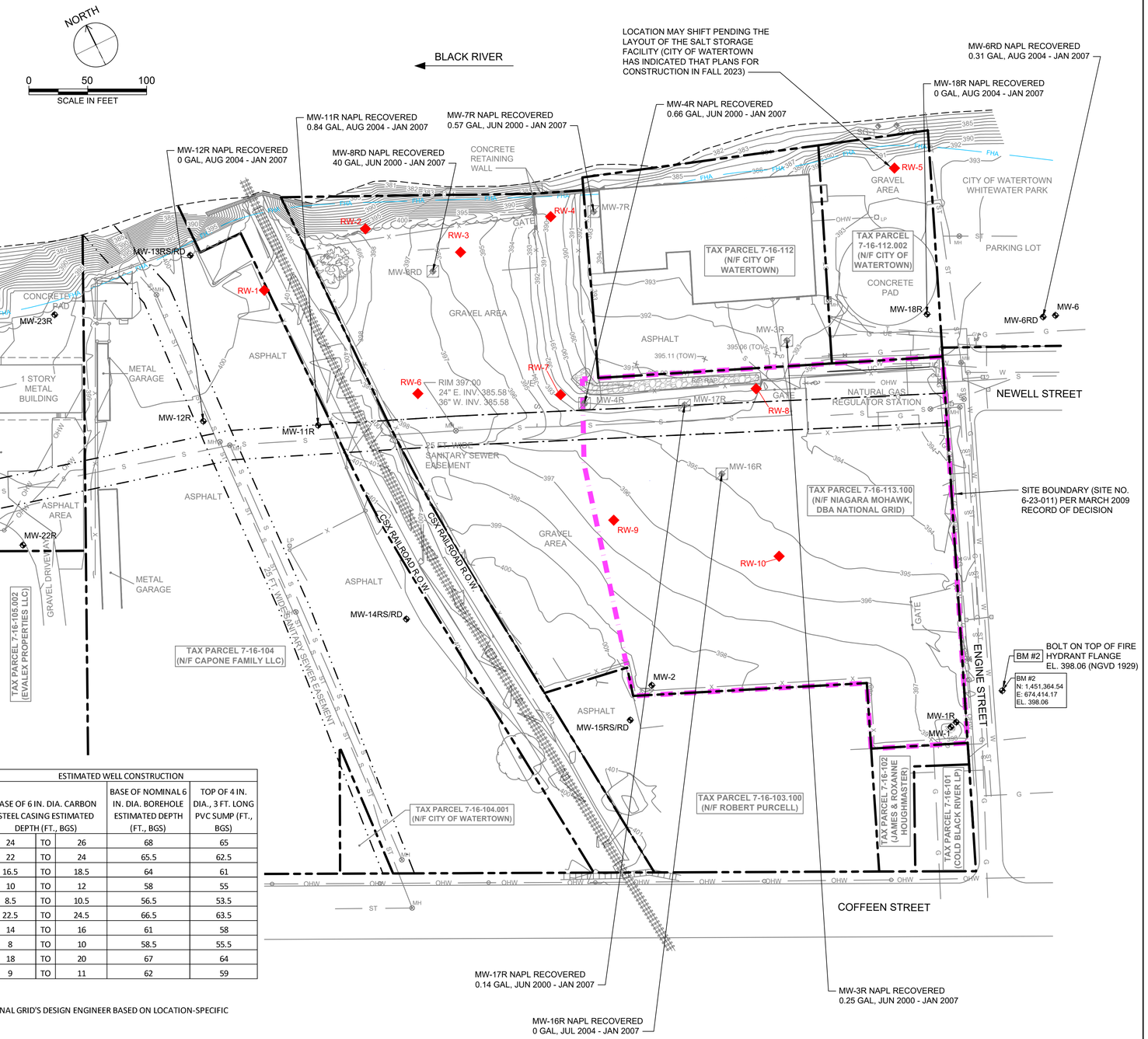


NAPL RECOVERY WELL DETAIL

DETAIL 1 / C-120

NOT TO SCALE



	ESTIMATED SUBSURFACE CONDITIONS					ESTIMATED WELL CONSTRUCTION				
WELL LOCATION	CURRENT GROUND SURFACE ELEVATION. (FT., NGVD29)	TOP OF BEDROCK ELEVATION. (FT., NGVD29) (ESTIMATED)	TOP OF BEDROCK DEPTH (FT., BGS) (ESTIMATED)	TOP OF LOWVILLE FM ELEVATION (FT., NGVD29) (ESTIMATED)	TOP OF LOWVILLE FM DEPTH (FT., BGS) (ESTIMATED)	BASE OF 6 IN. DIA. CARBON STEEL CASING ESTIMATED DEPTH (FT., BGS)			BASE OF NOMINAL 6 IN. DIA. BOREHOLE ESTIMATED DEPTH (FT., BGS)	TOP OF 4 IN. DIA., 3 FT. LONG PVC SUMP (FT., BGS)
RW-1	399	376	23	364	35	24	TO	26	68	65
RW-2	397	376	21	364.5	32.5	22	TO	24	65.5	62.5
RW-3	395.5	380	15.5	364.5	31	16.5	TO	18.5	64	61
RW-4	390	381	9	365	25	10	TO	12	58	55
RW-5	392	384.5	7.5	368.5	23.5	8.5	TO	10.5	56.5	53.5
RW-6	397.5	376	21.5	364	33.5	22.5	TO	24.5	66.5	63.5
RW-7	393	380	13	365	28	14	TO	16	61	58
RW-8	392	385	7	366.5	25.5	8	TO	10	58.5	55.5
RW-9	398	381	17	364	34	18	TO	20	67	64
RW-10	396	388	8	367	29	9	TO	11	62	59

NOTES

1. DEPTH VALUES ARE CONCEPTUAL. ACTUAL RECOVERY WELL CONFIGURATION TO BE DETERMINED BY NATIONAL GRID'S DESIGN ENGINEER BASED ON LOCATION-SPECIFIC INFORMATION.

NOTES:

1. RECOVERY WELLS SHALL BE INSTALLED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION 33 20 10.
2. QUANTITY OF NAPL RECOVERED AT DECOMMISSIONED BEDROCK MONITORING WELLS ARE NOTED NEXT TO THE WELL LABELS.
3. GROUT TO BE PLACED BY TREMIE METHOD IN ANNULUS BETWEEN BOREHOLE AND 6" DIAMETER STEEL CASING FROM BASE OF CASING TO WITHIN 1 FT OF EXISTING GRADE.
4. IT IS ANTICIPATED THAT FLUSH-MOUNTED SURFACE PROTECTIVE COVER SHALL BE INSTALLED AS SHOWN ON DRAWINGS. AN ALTERNATIVE SURFACE COMPLETION (E.G., ABOVE-GRADE PROTECTIVE CASING) MAY BE SELECTED PENDING LOCAL CONDITIONS AT FINAL SELECTED WELL LOCATIONS.
5. REFER TO DRAWING C-121 FOR BEDROCK SURFACE CONTOURS.

LEGEND:

- PROPOSED NAPL RECOVERY WELL LOCATIONS
- DECOMMISSIONED BEDROCK MONITORING WELL (SHOWN FOR REFERENCE)

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES

Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
153076_02SPV19.dwg
153076_02GDV19.dwg
153076_DBorder.dwg
EXST_ROCK.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO: 087668

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

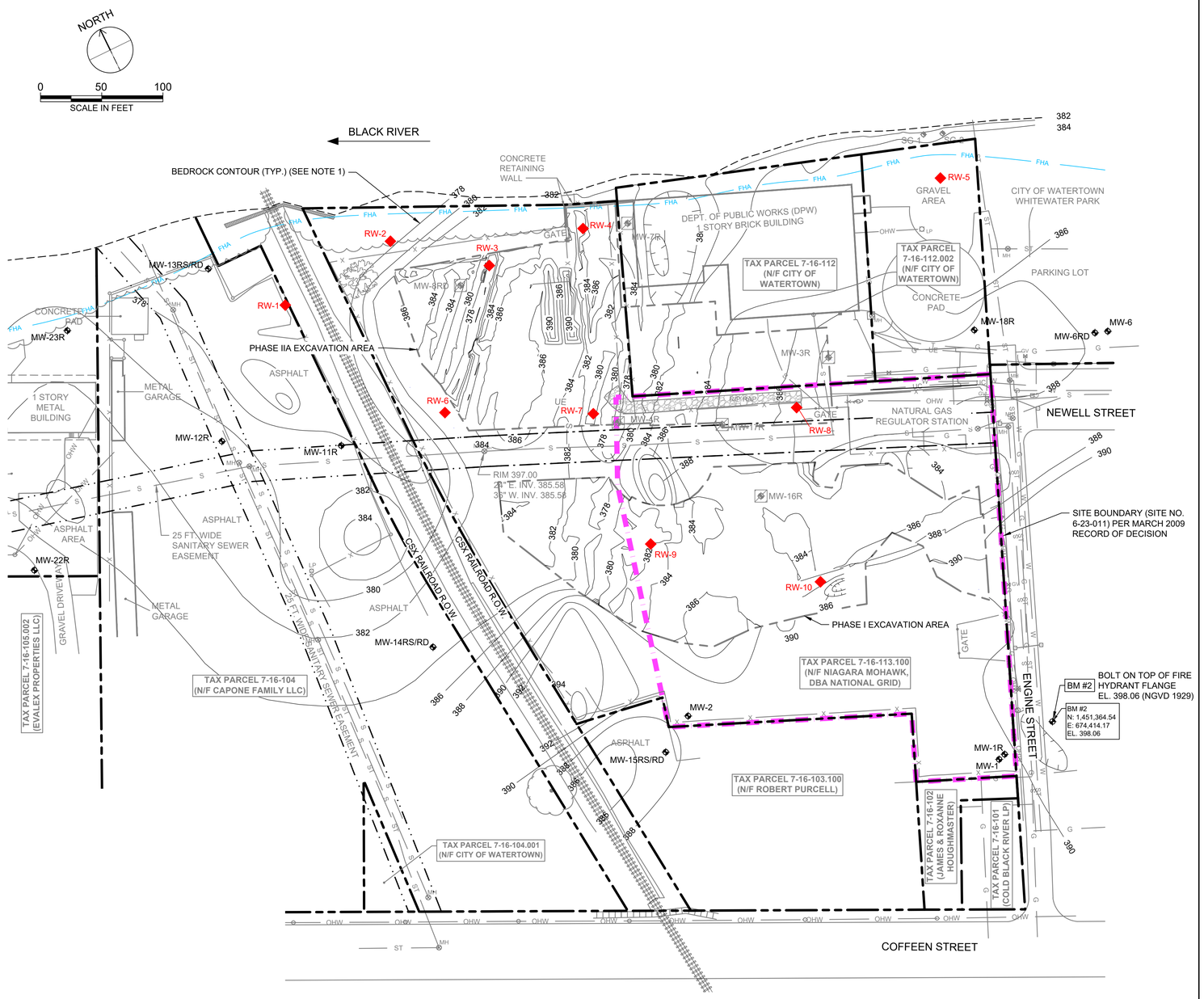
WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

NAPL RECOVERY WELL PLAN AND DETAIL

FILENAME: 153076_PH3(ISS)_C-100.dwg
BC PROJECT NUMBER: 153076
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-120
SHEET NUMBER OF:

Apr 24, 2024 - 3:17pm
C:\bcgvwd\220241\153076_PH3(ISS)_C-120.dwg
RJohnson



NOTES:

1. THE TOP OF BEDROCK CONTOURS ARE BASED ON THE PHASE I RECORD DRAWINGS (NMB LAND SURVEYING, 2020), PHASE II RECORD DRAWINGS (NMB LAND SURVEYING, 2021) FOR THE PHASE I AND PHASE II EXCAVATION FOOTPRINTS. OUTSIDE THE PHASE I AND PHASE II EXCAVATION FOOTPRINTS, THE BEDROCK SURFACE CONTOURS ARE BASED ON DRAWING C-5 OF THE RDR (BC, 2014).

LEGEND:

- 384 — TOP OF BEDROCK SURFACE CONTOUR (SEE NOTE 1)
- PROPOSED NAPL RECOVERY WELL LOCATIONS
- DECOMMISSIONED BEDROCK MONITORING WELL (SHOWN FOR REFERENCE)
- PHASE I AND PHASE IIA EXCAVATION LIMITS

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOil-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
153076_02SPV19.dwg
153076_02GDV19.dwg
153076_DBorder.dwg
EXIST_ROCK.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 097008
DATE

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NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

TOP OF BEDROCK CONTOURS

FILENAME: 153076_PH3(ISS)_C-100.dwg
BC PROJECT NUMBER: 153076
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-121
SHEET NUMBER OF

Apr 24, 2024 - 3:17pm
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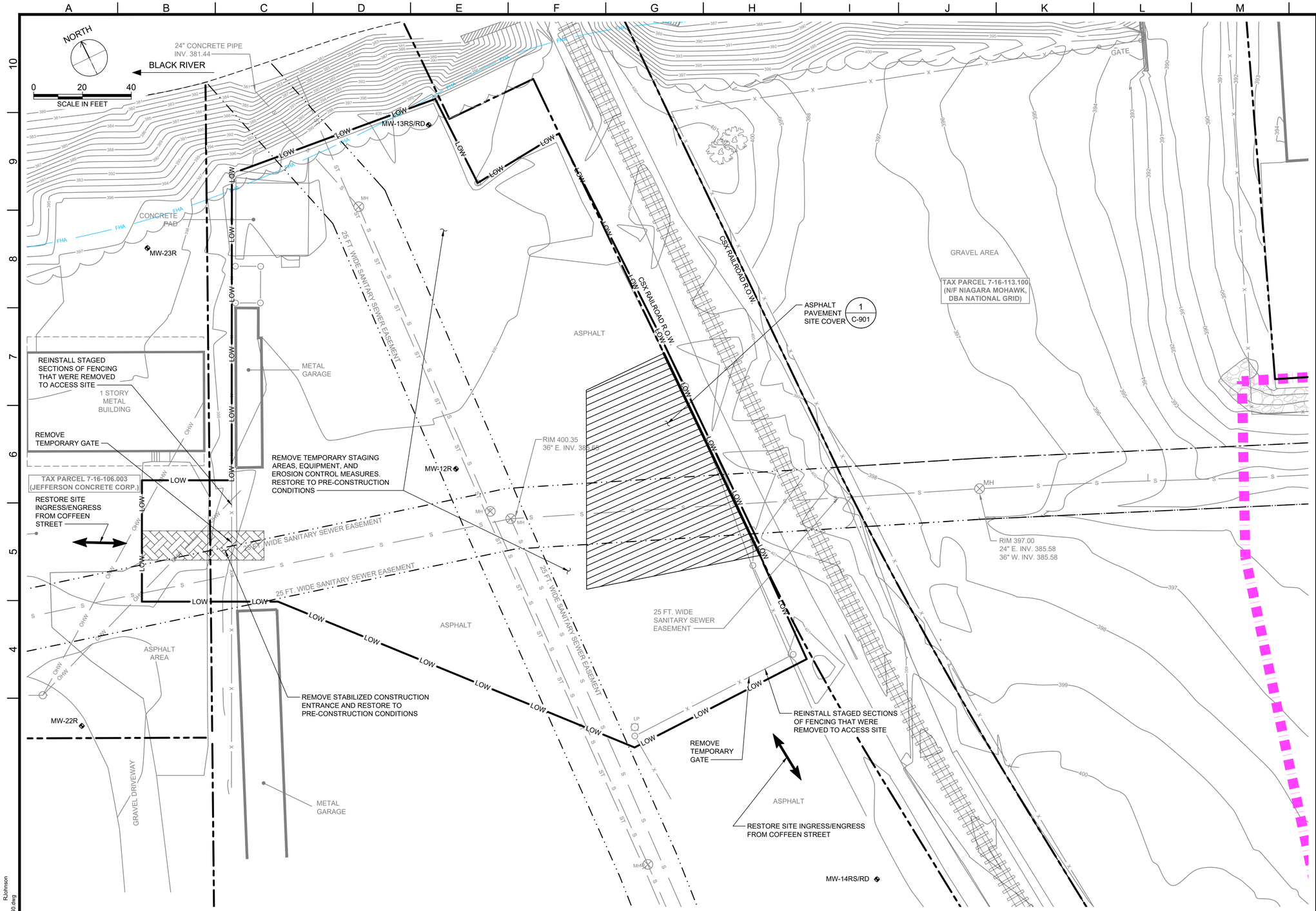
RJohnson



NOTES:

1. REFER TO SPECIFICATION SECTION 31 05 13 FOR SOILS AND AGGREGATES FOR EARTHWORK, 31 23 23 FOR BACKFILLING, FILLING, AND COMPACTION, 31 50 00 FOR SITE COVER AND SURFACE RESTORATION, 32 12 16 FOR ASPHALT PAVING, AND 32 31 13 FOR CHAIN-LINK FENCES AND GATES.
2. REFER TO DRAWING C-901 FOR SURFACE RESTORATION DETAILS.
3. CONTRACTOR SHALL RESTORE ANY UTILITIES THAT WERE TEMPORARILY SHUTDOWN, ISOLATED, OR RE-ROUTED, AS NECESSARY, AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY PURVEYOR.
4. BACKFILL AND GRADE RESTORATION AREAS TO MATCH EXISTING CONDITIONS ELEVATIONS AND TO MAINTAIN STORMWATER RUNOFF PATTERNS.
5. RESTORE NON-REMEDIATION AREAS TO MATCH EXISTING CONDITIONS.

LEGEND:

LOW — LIMIT OF WORK

ASPHALT PAVEMENT SITE COVER

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES

Basemap_Topo-Bdry Srvy.dwg
Bench_Mark.dwg
SOIL-MIX-WALL.dwg
Surface-Work.dwg
Flood-Area.dwg
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153076_02GDV19.dwg
153076_DBorder.dwg
153076_PH3(ISS)_00SPV21.dwg

STATE OF NEW YORK — ADAM RICHARD SHERMAN — LICENSED PROFESSIONAL ENGINEER

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 097656

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

RESTORATION PLAN

FILENAME: 153076_PH3(ISS)_C-140.dwg
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CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-140
SHEET NUMBER OF:

Apr 24, 2024 - 3:18pm
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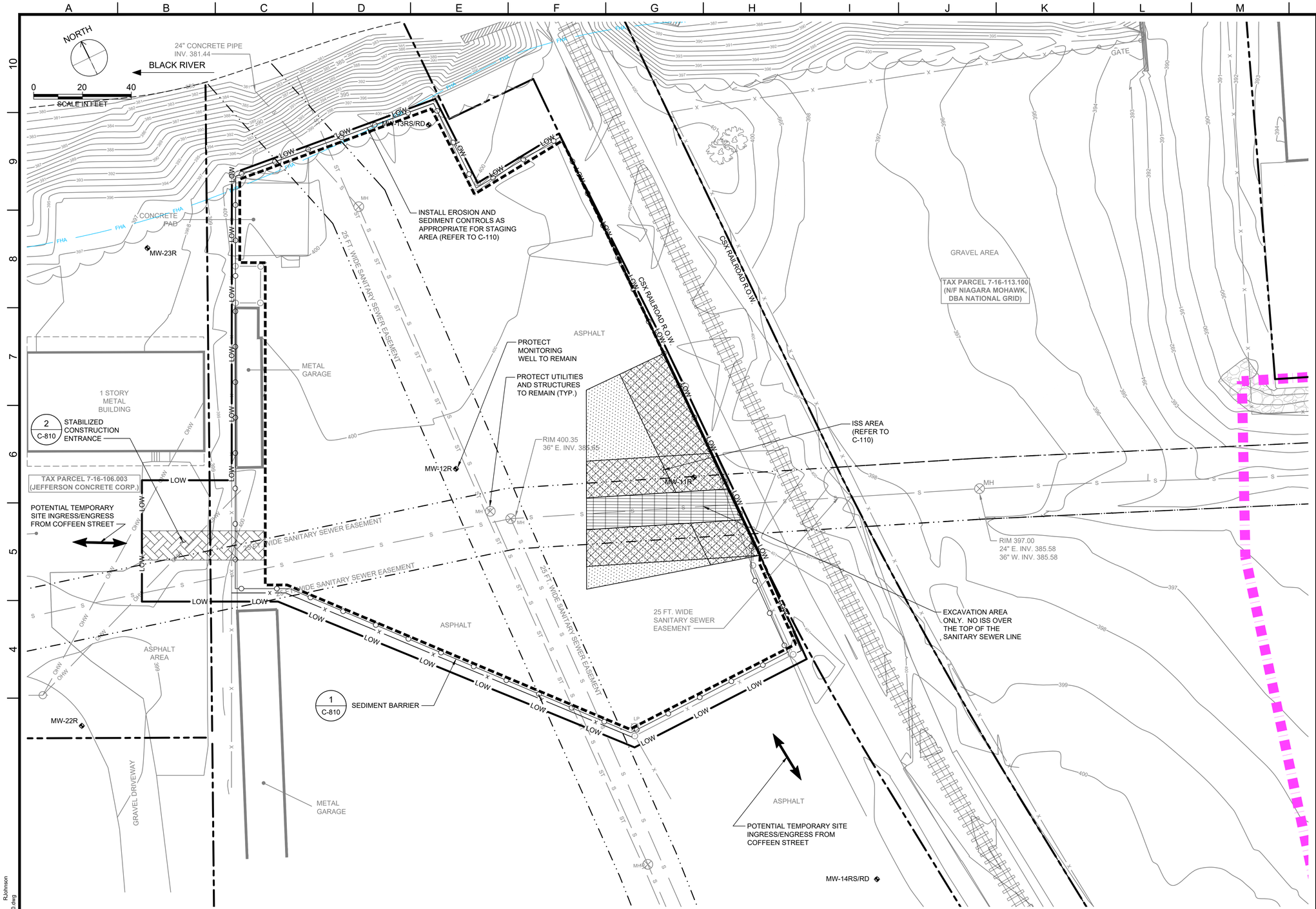

NOTES:

1. REFER TO SOURCE NOTES ON DRAWING C-100.
2. REFER TO EROSION AND SEDIMENT CONTROL NOTES ON DRAWING C-810.
3. CONTRACTOR SHALL MODIFY ESC MEASURES, AS NECESSARY, IF REMEDIATION AREAS ARE MODIFIED.
4. LOCATION OF THE STABILIZED CONSTRUCTION ENTRANCES AND STAGING AND STOCKPILE AREAS MAY BE MODIFIED AS APPROVED BY NATIONAL GRID'S FIELD REPRESENTATIVE.
5. REFER TO SPECIFICATION SECTION 31 25 13 FOR ESC REQUIREMENTS.

LEGEND:

- LOW — LIMIT OF WORK
- x — TEMPORARY FENCE
- SEDIMENT BARRIER
- TEMPORARY STAGING AREA
- STABILIZED CONSTRUCTION ENTRANCE
- IN SITU SOLIDIFICATION (ISS) AREA
- ISS NEAR SENSITIVE FEATURES
- EXCAVATION AREA
- SITE ACCESS/TRAFFIC FLOW

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES

- Basemap_Topo-Bdry Srvy.dwg
- Bench_Mark.dwg
- SOIL-MIX-WALL.dwg
- Surface-Work.dwg
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- 153076_02GDV19.dwg
- 153076_DBorder.dwg
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STATE OF NEW YORK — ADAM RICHARD SHERMAN — 097666 — LICENSED PROFESSIONAL ENGINEER

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 097666

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

EROSION SEDIMENT CONTROL PLAN

FILENAME: 153076_PH3(ISS)_C-800.dwg
BC PROJECT NUMBER: 153076
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-800
SHEET NUMBER OF:

Apr 24, 2024 - 3:19pm RJohnson
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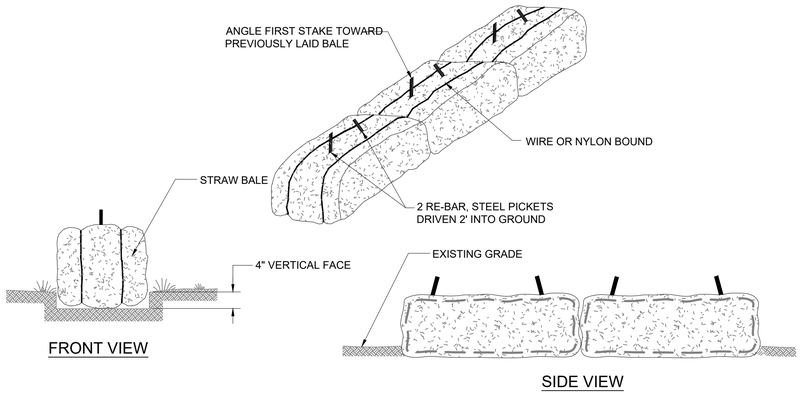
GENERAL ESC NOTES:

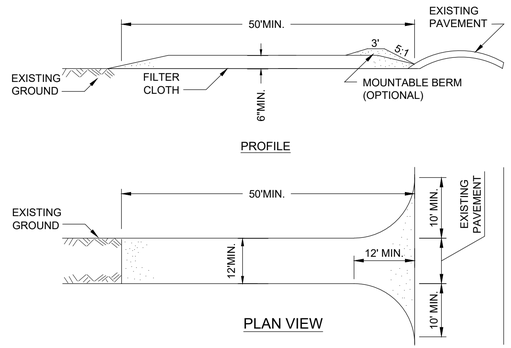
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (LATEST EDITION).
2. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. CONTRACTOR SHALL USE THE SEDIMENT REMOVAL WORK AREA BASED ON THESE DRAWINGS.
4. PHYSICALLY MARK LIMITS OF LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREAS TO BE PROTECTED.
5. DIVERT OFFSITE RUNOFF FROM HIGHLY ERODIBLE SOILS AND STEEP SLOPES TO STABLE AREAS.
6. CLEAR ONLY WHAT IS REQUIRED FOR IMMEDIATE CONSTRUCTION ACTIVITY.
7. RE-STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETED. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND MULCHING. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.
8. STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED TO CONTROL VEHICLE TRACKING MATERIAL OFF SITE.
9. TEMPORARY SEDIMENT TRAPPING DEVICES SHALL NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTRIBUTORY DRAINAGE AREAS. SIMILARLY, STABILIZATION SHALL BE ESTABLISHED PRIOR TO CONVERTING SEDIMENT TRAPS/BASINS INTO PERMANENT (POST-CONSTRUCTION) STORMWATER MANAGEMENT PRACTICES.
10. CONTRACTOR AND SUB-CONTRACTOR PERSONNEL SHALL UNDERSTAND THE ESC PLAN AND, IF A NYSDEC SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY IS APPLICABLE, PERSONNEL SHALL SIGN THE CERTIFICATION STATEMENT REQUIRED BY PERMIT.
11. CONTRACTOR SHALL DESIGNATE RESPONSIBILITY FOR THE ESC PLAN TO ONE INDIVIDUAL.
12. INSPECTION OF ESC COMPONENTS SHALL BE CONDUCTED TO DETERMINE WHEN ESC MEASURES NEED MAINTENANCE OR REPAIR. PAY PARTICULAR ATTENTION TO INSPECTIONS REQUIRED AFTER RAINFALL. THE INSPECTION PROGRAM SHALL ALSO STATE THE COMPLETION OF IDENTIFIED REPAIR AND MAINTENANCE ITEMS.
13. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
14. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
15. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER.
16. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET, TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED AS REQUIRED TO CONTROL DUST.
17. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE.



STRAW BALE SEDIMENT BARRIER

DETAIL 1 / C-810

SCALE: N.T.S.



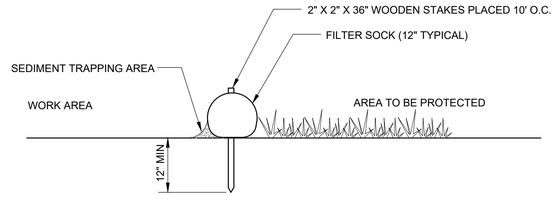
STABILIZED CONSTRUCTION ENTRANCE

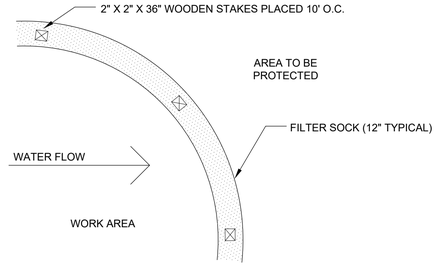
DETAIL 2 / C-810

SCALE: N.T.S.

STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE (I.E., ON THE DECONTAMINATION PAD).
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH PRECIPITATION EVENT.

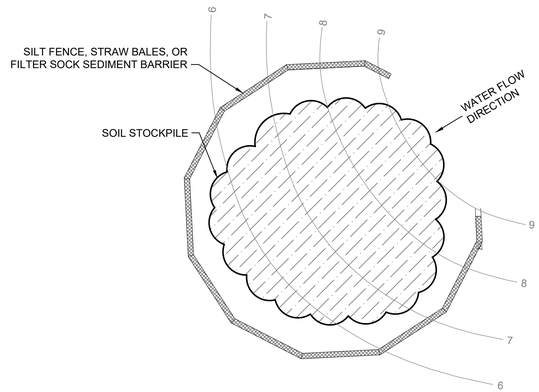




FILTER SOCK SEDIMENT BARRIER DETAIL

DETAIL 3 / C-810

SCALE: N.T.S.



EROSION CONTROL AT STOCKPILE AREA

DETAIL 4 / C-810

SCALE: N.T.S.

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

WARNING: IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW ARTICLE 145, SECTION 7209(2) FOR ANY PERSON, UNLESS HE/SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY. IF THIS ITEM, BEARING THE SEAL OF AN ENGINEER, IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
153076_DBorder.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 087606
DATE

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

EROSION AND SEDIMENT CONTROL DETAILS

FILENAME: 153076_PH3(ISS)_C-810.dwg
BC PROJECT NUMBER: 153076
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-810
SHEET NUMBER OF

Apr 24, 2024 - 3:27pm RJohnson
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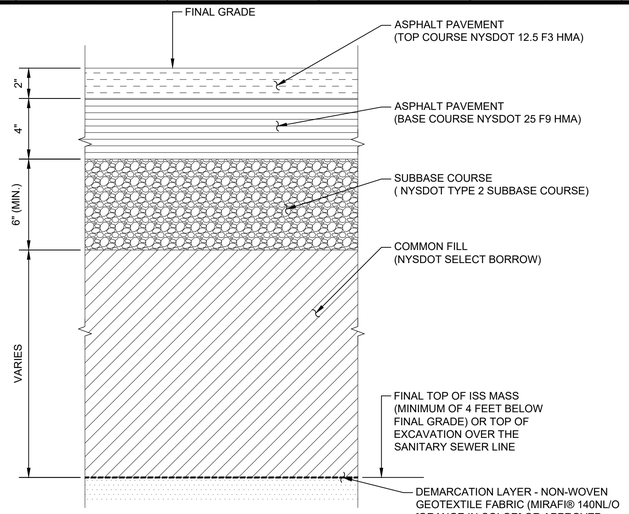


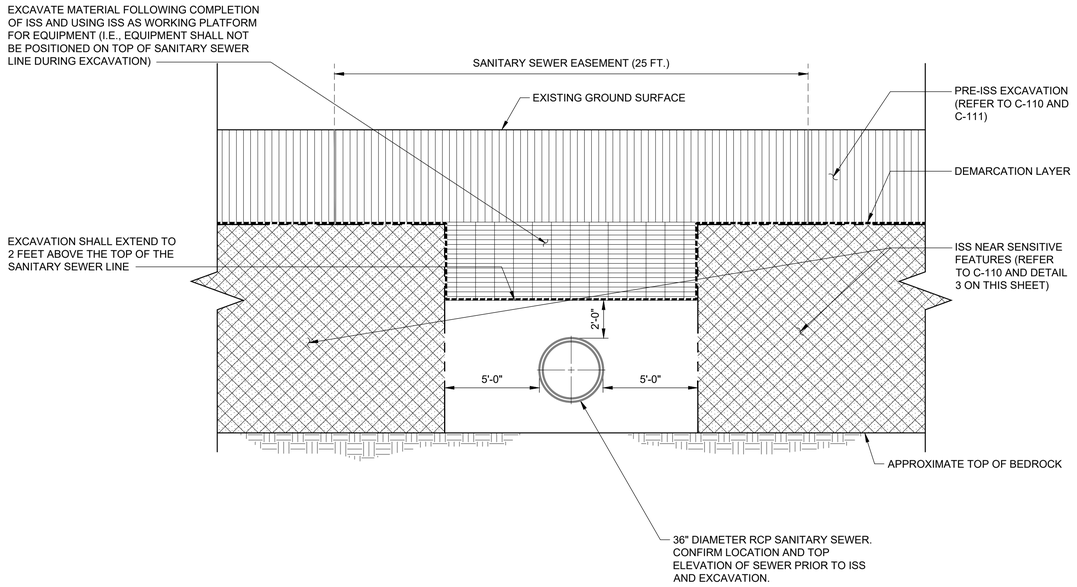
ASPHALT PAVEMENT SITE COVER

DETAIL 1 / C-900

SCALE: N.T.S.

NOTE:

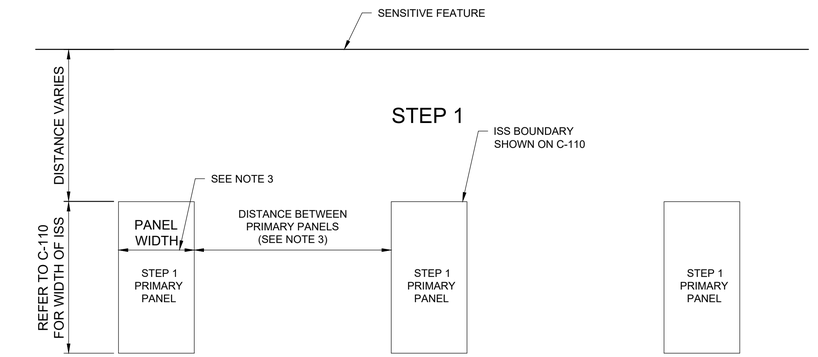
1. REFER TO SPECIFICATION SECTIONS 31 05 13 FOR SOILS AND AGGREGATES FOR EARTHWORK, 31 23 16 FOR BACKFILLING, AND 32 12 16 FOR ASPHALT PAVEMENT.

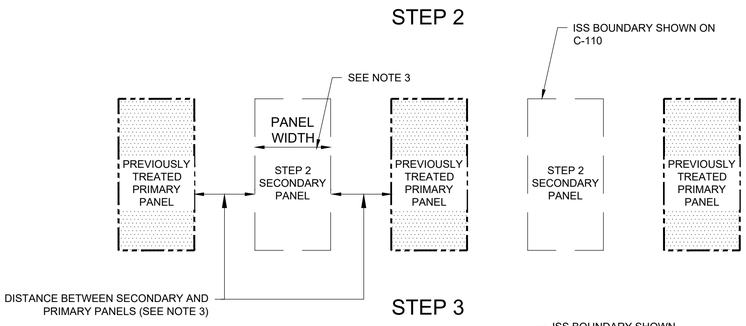


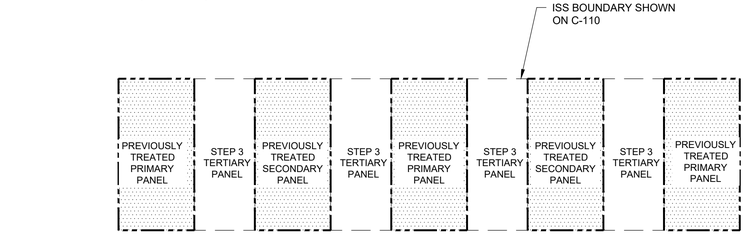
SANITARY SEWER MAIN CORRIDOR ISS AND EXCAVATION

DETAIL 2 / C-900

SCALE: N.T.S.







PANEL INSTALLATION SEQUENCE

1 - PRIMARY PANEL TO BE TREATED FIRST AND ALLOWED TO CURE.

2 - SECONDARY PANEL. DO NOT MIX UNTIL PRIMARY PANELS ATTAIN AN UNCONFINED COMPRESSIVE STRENGTH OF 25 PSI.

3 - TERTIARY PANEL. DO NOT MIX UNTIL SECONDARY PANELS ATTAIN AN UNCONFINED COMPRESSIVE STRENGTH OF 25 PSI.

PLAN

ISS NEAR SENSITIVE FEATURES

DETAIL 3 / C-900

SCALE: N.T.S.

NOTES:

1. ISS INSTALLATION NEAR SENSITIVE FEATURES SHALL FOLLOW THE PRIMARY, SECONDARY, AND TERTIARY PANEL SEQUENCE SHOWN.
2. DO NOT CONDUCT EXCAVATION WITHIN THE ISS UNTIL THE TERTIARY PANELS HAVE ATTAINED A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 25 PSI.
3. ISS PANELS NEAR SENSITIVE FEATURES SHALL BE A MAXIMUM OF 6 FEET WIDE.

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

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DESIGNED:
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CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
153076_DBorder.dwg

ADAM RICHARD SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 097666
DATE

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

REMEDIATION DETAILS (SHEET 1 OF 2)

FILENAME: 153076_PH3(ISS)_C-900.dwg
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CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-900
SHEET NUMBER OF

Apr 24, 2024 - 3:21pm R.Johnson
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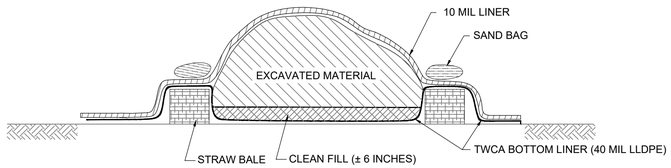


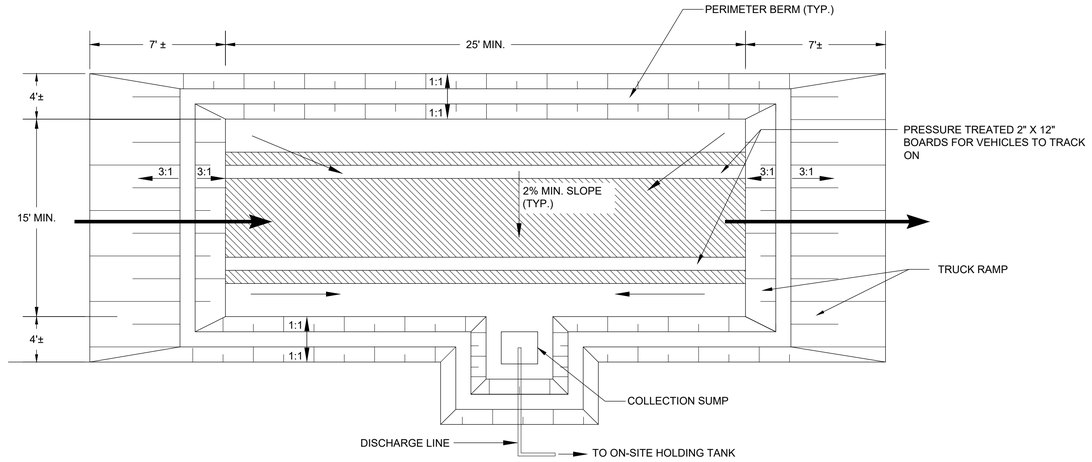
TEMPORARY WASTE CONTAINMENT AREA (TWCA) CROSS-SECTION

DETAIL 1 / C-901

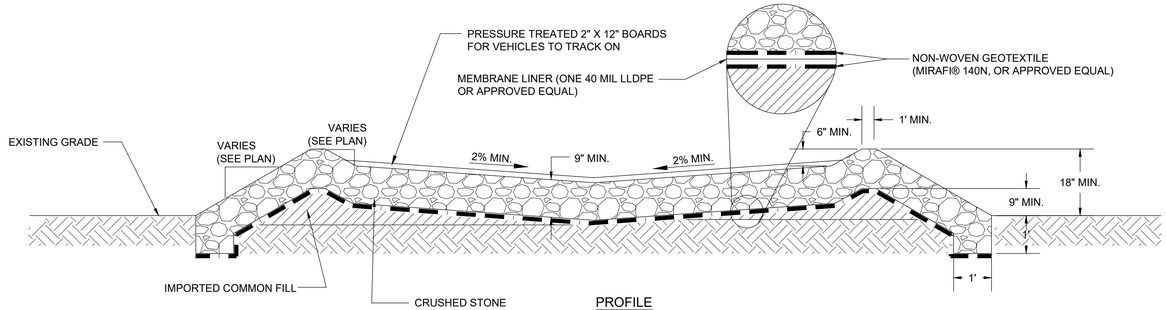
SCALE: N.T.S.

NOTES:

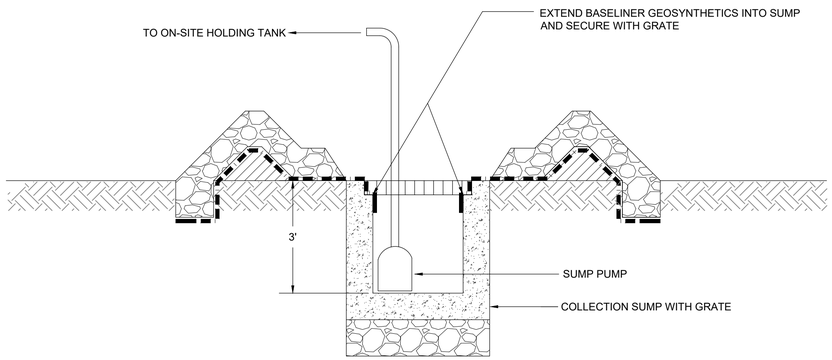
1. STRAW BALES WILL BE PLACED IN A MANNER THAT PREVENTS SEDIMENT AND SOIL IN CONTACT WITH WASTE MATERIAL FROM SPILLING OUT THE TWCA.
2. WASTE MATERIAL WILL BE COVERED SECURELY (FROM RAIN AND WIND DISTURBANCES) WITH A LINER AT THE END OF EACH WORK DAY.
3. WASTE MATERIAL WILL BE PLACED IN A MANNER WHICH, WHEN COVERED WITH LINER, WILL PREVENT POOLING OF RAINWATER.
4. THE LOCATION OF THE STRAW BALES WILL BE ADJUSTED BASED ON THE VOLUME OF WASTE MATERIAL TO PREVENT SAGGING OF THE LINER.
5. SAND BAGS WILL BE PLACED ON TOP OF THE LINER (COVER) TO KEEP THE LINER TAUGHT, AND IN A MANNER WHICH PROMOTES DRAINAGE OFF OF THE LINER AND AWAY FROM THE TWCA.
6. TO MINIMIZE DAMAGE TO THE TWCA DURING LOADING AND UNLOADING OF EXCAVATED MATERIALS, CONTRACTOR SHALL TAKE CARE WHEN OPERATING DIRECTLY ON THE CLEAN FILL LAYER TO AVOID DAMAGING LINER.
7. THICKNESS OF CLEAN FILL SHALL BE FIELD-DETERMINED BY ENGINEER BASED ON SITE CONDITIONS AND CONSTRUCTION OPERATIONS.
8. CONTRACTOR SHALL INSPECT, MONITOR, AND MAINTAIN TWCA BERMS AND LINER THROUGHOUT CONSTRUCTION ACTIVITIES.
9. A BOTTOM LINER IS NOT REQUIRED IF THE TWCA IS LOCATED COMPLETELY WITHIN A REMEDIATION AREA (E.G., AN EXCAVATION AREA). REGARDLESS IF A BOTTOM LINER IS PRESENT, EACH TWCA SHALL BE COVERED SECURELY WITH A LINER AT THE END OF EACH WORK DAY.



PLAN



PROFILE



SUMP PROFILE

DECONTAMINATION PAD

DETAIL 2 / C-901

SCALE: N.T.S.

Brown AND Caldwell

BROWN AND CALDWELL ASSOCIATES
RAMSEY, NJ AND ALBANY, NY

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:
DRAWN: R. JOHNSON
CHECKED:
CHECKED:
APPROVED: A. SHERMAN

EXTERNAL REFERENCE FILES
153076_DBorder.dwg

STATE OF NEW YORK * ADAM RICHARD SHERMAN * LICENSED PROFESSIONAL ENGINEER

ADAM R. SHERMAN
PROFESSIONAL ENGINEER
N.Y. LICENSE NO. 097006

DATE

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

NIAGARA MOHAWK POWER CORP.
(D/B/A NATIONAL GRID)

WATERTOWN (ENGINE STREET)
FORMER MGP SITE
WATERTOWN, NEW YORK

CONSTRUCTION DRAWINGS FOR PHASE III
REMEDIAL ACTION - ISS AND NAPL RECOVERY WELLS

REMEDIATION DETAILS
(SHEET 2 OF 2)

FILENAME: 153076_PH3(ISS)_C-901.dwg
BC PROJECT NUMBER: 153076
CLIENT PROJECT NUMBER:
DRAWING NUMBER: C-901
SHEET NUMBER: OF

Apr 24, 2024 - 3:21pm
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RJohnson

Technical Specifications
Phase III Remedial Action (ISS and NAPL Recovery)
Watertown (Engine Street) Former MGP Site
Watertown, New York

Adam R. Sherman

Signer Name: Adam Sherman
Signing Reason: I approved this document.
Signing Time: 2024-04-29 08:44:00(PDT)

Adam R. Sherman, P.E.
Senior Principal Engineer
New York State P.E. License #087306

Warning: It is a violation of the New York State Education Law Article 145, Section 7209(2) for any person, unless he/she is acting under the direction of a licensed professional engineer, to alter this item in any way. If this item, bearing the seal of an engineer is altered, the altering engineer shall affix to the item his/her seal and the notation "altered by" followed by his/her signature and the date of such alteration, and a specific description of the alteration.

SECTION 01 10 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Summary.
   2. Site Description.
   3. Selected Remedy.
   4. General Scope of Work.
   5. Green Remediation.
   6. Contract/Bid Items.
   7. Submittals.
   8. Construction Management Plan.
   9. Contractor's Use of Site.
   10. Property Owner Occupancy.
   11. Work Sequence and Schedule.
   12. Construction Quality Control.
   13. Contingency.
   14. Waste Management, Transportation and Disposal.
   15. Products.

B. Related Sections and Documents:
   1. Contract Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements specified in the Contract Documents.

C. References:
   1. When standards are referenced, such referenced standards shall be considered part of these Technical Specifications as if fully repeated herein.
   2. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SITE DESCRIPTION

The former Manufactured Gas Plant (MGP) Site is located on the west side of Engine Street (at the corner of Engine Street and Newell Street) in Watertown, Jefferson County, New York. The Site is an approximate 2-acre area and is bounded by City of Watertown property (Department of Public Works [DPW] operations) to the north, private properties to the south, Engine Street to the east, and National Grid property along the CSX railroad right-of-way (ROW) to the west.

This Scope of Work addresses in situ solidification (ISS) and construction of NAPL recovery wells of the Phase III remediation activities. The Project Area for the ISS component of the

work consists of a portion of the property currently used for Verizon operations (property owned by the Capone Family LLC), which is located to the west of the former MGP Site (i.e., on the western side of the CSX railroad right-of-way).

The Project Area for the NAPL Recovery Well installation activities includes the former MGP Site, National Grid property to the north and west extending to the bank of the Black River, City of Watertown (DPW facility) to the north, and the Capone Family LLC property (Verizon operated facility) to the west.

The area is generally of low relief and slopes gently toward the Black River to the north. On the east side of the CSX railroad ROW there is a one-story building located immediately north of the Site along the Black River, which is owned by the City of Watertown and used as a DPW maintenance and storage building/garage. A natural gas regulator station is also present in the northeastern corner of the Site within an approximate 0.2-acre fenced-in area. The Site is secured with a perimeter chain link fence.

On the west side of the CSX railroad ROW, the property is secured with a perimeter chain-link fence and a controlled gate on the southern portion of the property (accessible from Coffeen Street). There are two metal garages located on the property which are used by Verizon.

The Site and surrounding areas located east of the CSX railroad right-of-way and extending north to the bank of the Black River were remediated as part of Phase I (2019) and Phase II (2020) remediation activities. These areas are currently finished with a crushed stone surface cover (engineering control), with the exception of the DPW property, which contains the DPW building and asphalt pavement cover.

1.03 SELECTED REMEDY

The overall selected remedy for the Site has been divided into several phases, as follows:

1. **Phase I (*completed in 2019 and not included in this scope*):** Remedial activities in areas located east of the CSX railroad ROW and south of the City of Watertown's sanitary sewer utility easement. Remedial action included installation of a soil mix wall along the perimeter of the excavation area (for sidewall support and water control), dewatering and treatment, excavation of soil, tar, and structures in the targeted area to the top of the bedrock surface, and construction of an environmental cover system (crushed stone) to serve as an engineering control.
2. **Phase II (*completed in 2020 and not included in this scope*):** Remedial activities in the areas located east of the CSX railroad ROW and north of and including the City of Watertown's sanitary sewer easement. Remedial action included installation of a soil mix wall along the perimeter of the excavation area (for sidewall support and water control), dewatering and treatment, removal of a former storm sewer pipe and its contents, excavation of soil, tar, and structures in the targeted area to the top of the bedrock surface, and construction of an environmental cover system (asphalt pavement and crushed stone) to serve as an engineering control.
3. **Phase III:** Remedial activities include sediment and riverbank soil removal along the edge of the Black River adjacent to National Grid and non-National Grid owned parcels both east and west of the CSX railroad ROW (***not included as part of this scope***), in situ solidification (ISS) of soil in an area west of the CSX railroad ROW (***scope addressed by these Specifications***), and installation of NAPL recovery wells (***scope addressed by these Specifications***).

1.04 GENERAL SCOPE OF WORK

A. The scope of the work as part of the Remedy, includes mobilization to the Site, Site preparation, pre-ISS excavation of surficial soil within the ISS limits, ISS to target limits and depths, installation of NAPL recovery wells, and restoration.

B. A pre-construction meeting will be held prior to the initiation of the construction activities. Attendees are anticipated to include representatives from the Contractor, National Grid, Construction Manager, and Design Engineer. The purpose of the meeting will be to discuss the details of the construction activities, security plans, sequencing plans, community and work zone air monitoring, temporary facilities and controls, waste management, Site use, personnel responsibilities, and schedule.

C. Prior to mobilization, a Site inspection shall be conducted to properly document the existing Site conditions.

D. The Contractor will employ the services of a third-party subcontractor to implement the NYSDEC-approved Community Air Monitoring Plan (CAMP) and the Contractor's Site-Specific Health and Safety Plan (CSSHASP).

E. Project Scope of Work includes, but is not limited to the following activities, including all supervision, labor, materials, and equipment, and in accordance with the Construction Drawings and Specifications:

1. Pre-Mobilization:
    a. Attend a pre-construction meeting scheduled by the Construction Manager.
    b. Preparation of required submittals in accordance with National Grid's Standard General Conditions and the Technical Specifications for review by National Grid, Construction Manager, and Design Engineer.
    c. Preparation of CSSHASP to apply to all contractor personnel on-site during construction, including but not limited to, Contactor's employees and Subcontractor's employees. At a minimum, the CSSHASP must meet the requirements of 29 CFR 1910 and 29 CFR 1926, as applicable. Perform construction activities in accordance with the CSSHASP.
    d. Preparation of project-specific plans including, but not limited to the Construction Quality Control Project Plan (CQCPP) and Construction Management Plan (CMP).
    e. Preparation and submission of Work Schedule to National Grid, Construction Manager, and Design Engineer for review, including a detailed description of the proposed sequence of construction.
    f. Obtain necessary constructions permits and provide necessary notifications.
    g. Schedule and conduct a pre-construction Site inspection.
2. Mobilization:
    a. Mobilize necessary personnel, equipment, and materials to the Site.
    b. Establish laydown and staging areas including those for material storage, imported fill stockpiles, and excavated soil stockpiles.
    c. Perform utility clearance in Work areas.
3. Temporary Facilities and Controls and Site Preparation:
    a. Include all items required by National Grid's Standard General Conditions.

b. Provide and maintain temporary utilities, including electricity, lighting, and water, as necessary, to complete the work in accordance with the Contract Documents.
c. Provide and maintain temporary facilities, including office trailers (with electricity, lighting, heating/cooling, phone, high-speed internet service, drinking water), sanitary facilities, parking, construction access roads, etc.
d. Install project signage.
e. Provide and maintain site controls including temporary construction fencing, traffic control, and dust, odor, and noise controls.
f. Maintain site security of the Project Area. Maintain a list of persons authorized for site entry.
g. Implement the CSSHASP.
h. Provide personnel, materials, and equipment to implement the NYSDEC-approved CAMP.
i. Provide personnel, materials, and equipment to implement the NYSDEC-approved Odor Control Plan (OCP).
j. Provide and maintain erosion and sediment control (ESC) measures in accordance with the Specifications and Construction Drawings, New York State Standards and Specifications for Erosion and Sediment Control, and in accordance with the NYSDEC-approved Stormwater Pollution Prevention Plan (SWPPP).
k. Establish and maintain traffic control measures for construction traffic and site visitors (NYSDEC, National Grid, Construction Manager, Design Engineer, etc.).
l. Setup equipment, vehicle, and personnel decontamination areas.
m. Construct material, equipment, and waste staging areas.
n. Perimeter Utility Trenching (Section 33 05 17):
    1) Excavate trench along perimeter of the ISS area.
    2) Identify, investigate, and document utilities and piping encountered.
    3) Abandon inactive utilities and utilities identified to be removed.
    4) Protect and survey location and depth of existing utilities identified to remain (e.g., sanitary sewer).
    5) Coordinate all work on utilities with the utility owners.
o. Decommission environmental monitoring wells designated to be decommissioned and protect monitoring wells designated to remain (refer to Drawing C-110).
p. Remove, segregate, and stockpile materials generated during excavation and ISS activities for off-site disposal pending inspection by Design Engineer and in consultation with the NYSDEC.

4. Survey and Record Documents:
    a. Employ third-party Surveyor licensed in the State of New York to conduct site surveying work, including:
        1) Verification of existing conditions.
        2) Demarcating the limits of each remedial component (ISS area, NAPL recovery well locations, etc.) prior to commencement of the Remedial Action activities.
        3) Marking the location of utilities.
        4) Performing progress surveying for verifying field quantities for payment items.

5) Documenting the final horizontal and vertical limits and elevations of the ISS, NAPL recovery wells, and final Site conditions.
6) Preparation of progress and record drawings.

5. Structure and Foundation Removal (if required):
   a. Demolition of at-grade and subsurface structures within the extents of the ISS area, as needed to implement the remedial actions.
   b. Segregation and staging of demolition debris, including segregation and management of concrete demolition debris for disposal or potential recycling.
6. In Situ Solidification (ISS):
   a. Mobilization, assembly, and testing of grout plant to produce the design mix meeting the requirements of the Specifications.
   b. ISS start-up phase.
   c. Excavation of surface material within the ISS limits above the sanitary sewer pipe and to accommodate soil mixing-related swell (i.e., pre-ISS excavation).
   d. Implementation of ISS.
   e. Management of excess swell material generated from ISS activities and removal of solidified mass down to a depth of 4 feet below final grade (i.e., post-ISS excavation).
7. NAPL Recovery Wells:
   a. Mobilization of a New York State-certified driller to construct the recovery wells.
   b. Management of waste generated during recovery well construction (i.e., surface debris [asphalt, concrete], drill cuttings, purge water, personal protective equipment [PPE], packaging, disposal containers, etc.).
8. Dewatering and Water Management
   a. Implement and maintain a dewatering system on standby in case it is needed to facilitate excavation and ISS work.
9. Waste Management:
   a. Perform waste management activities for waste materials generated during remedial action implementation, including but not limited to vegetation, excavated sediments/soils, wastewater, non-aqueous phase liquid (NAPL), miscellaneous construction debris and wastes.
   b. Coordinate with National Grid and disposal facilities for waste profiling and waste acceptance.
   c. Schedule and coordinate off-Site transportation and treatment/disposal.
   d. Load waste materials into licensed/registered/permitted haulers.
   e. Transport waste materials using licensed/registered/permitted haulers to permitted treatment/disposal facilities on National Grid's list of approved facilities.
   f. Treatment/disposal of waste materials at permitted treatment/disposal facilities on National Grid's list of approved facilities.
   g. Execute and manage waste documentation (including manifests, bills of lading, disposal certificates, weight tickets).
10. Backfilling:

a. Provide labor, equipment, and materials to backfill excavation and ISS areas with imported fill materials in accordance with the Construction Drawings and Specifications.

11. Site Restoration:
    a. Restoration of disturbed areas (e.g., entrances, remediation areas), as specified in the Construction Drawings and Specifications, to pre-construction conditions.
    b. Restoration of site ingress/egress.
    c. Restoration of surfaces with asphalt pavement.
    d. Restoration or in-kind replacement of fencing removed to implement the Work.
    e. Restoration of utilities (if affected by the Work).
12. Demobilization:
    a. Remove equipment and temporary facilities.
    b. Demobilization of personnel, equipment, and materials.
    c. Remove ESC controls.
    d. Perform final site cleaning and site inspection.
    e. Submit project close-out documentation.

1.05 GREEN REMEDIATION CONSIDERATIONS

A. In accordance with the NYSDEC program policy document, DER-31/Green Remediation, the following elements of green remediation and sustainability and best management practices shall be implemented during the Phase III remedy construction:
    a. Reduced vehicle idling.
    b. Beneficial re-use of concrete (if encountered and approved for re-use).
    c. Use of local suppliers, when feasible, for materials/products used in construction.
    d. Use of local or regional treatment/disposal facilities, when feasible.
    e. Use of local subcontractors, when feasible.
    f. Use of ultra-low-sulfur diesel fuel.

1.06 CONTRACT/BID ITEMS

A. Refer to Contract Documents, Bid Form, and Payment Item Descriptions.

1.07 SUBMITTALS

A. Prepare and submit project submittals required by these Specifications for review and approval in accordance with Section 01 33 00 - Submittal Requirements.

1.08 CONSTRUCTION MANAGEMENT PLAN

A. Submit a Construction Management Plan (CMP) for review and comment by National Grid, Construction Manager, and Design Engineer. After the CMP has been accepted by National Grid, portions of the CMP will be submitted to NYSDEC. NYSDEC submittal shall be made by National Grid or its designated representative.

B. The Contractor shall sequence work activities and schedule submission of the CMP within 14 calendar days after the date of the Contract and at least 21 calendar days

before mobilization for review and comment by National Grid, Construction Manager, and Design Engineer.

C. The CMP shall, at a minimum contain a description/plan of the following:
   1. Detailed construction schedule including detailed breakdown of construction sequencing.
   2. General discussion on health and safety and reference to the CSSHASP (refer to Section 01 30 65), including Safety Data Sheets (SDS, formerly Material Safety Data Sheets) for all materials brought on-Site.
   3. General discussion on construction quality control and reference to the CQCPP (Part 1.11 of this Section).
   4. Incorporate or reference a standalone Contractor Contingency Plan (Part 1.12 of this Section).
   5. Survey Control Plan (Section 01 30 20).
   6. Settlement and Vibration Monitoring Plan (01 40 10)
   7. Temporary Site facilities and controls (Section 01 50 00).
   8. Site preparation including staging area(s) and temporary construction access, decontamination areas (refer to Drawings, Section 01 52 20, and Section 31 10 00).
   9. Traffic Control Plan (Section 01 50 00).
   10. Equipment and Vehicle Decontamination Plan (Section 01 52 20).
   11. Site Security Plan (Section 01 54 00).
   12. Work Zone and Community Air Monitoring Implementation Plan, including dust, vapor, odor, and noise control measures (refer to Section 01 52 00) in accordance with NYSDEC-approved CAMP and CSSHASP.
   13. Sanitary Sewer Protection Plan (Section 33 20 00) and means and methods to perform utility locating and cut/cap if necessary (Section 33 05 17).
   14. ISS Plan (Section 31 32 00).
   15. Excavation, Backfill, and Compaction Plan (Sections 31 23 16 and 31 23 23).
   16. Plan for implementation of the NYSDEC-approved SWPPP (Section 31 25 13).
   17. Waste Management Plan (Section 31 70 00).
   18. Site Restoration Plan (Section 31 50 00).

1.09 CONTRACTOR'S USE OF SITE

A. Access to Site: Limited to Limit of Work shown on the Construction Drawings or as otherwise approved by National Grid. Ingress and egress to and from the work areas shall only be by the means designated by the Construction Manager and in accordance with the access agreement between the Property Owners and National Grid.

B. Permits: Perform Work in accordance with local, county, and state agency permit restrictions, requirements, and conditions.

C. Construction Operations: Limited to Limit of Work as designated on the Drawings. Considering the nearby residential properties, construction access through neighboring properties and around active businesses, proximity of the Work to the Black River and to the CSX railroad ROW, sequence Work and locate equipment and material staging areas, temporary waste containment areas, decontamination pads, and traffic routes in such a

manner to minimize disturbance to the community and perform Work in safe manner (for construction and non-construction personnel).

D. Under no circumstances shall the Contractor perform Work or conduct any activities at the Site outside of the Limit of Work or use any other means of ingress or egress to and from the Site without the written approval of National Grid or Construction Manager.

E. Disturbed areas outside the Limit of Work shall be restored to original conditions at no cost to Property Owner or National Grid.

F. Construction activities shall remain within the Limit of Work and not encumber the regular operation and maintenance routines of adjacent properties.

G. Assume full responsibility for Site security during Work. Section 01 50 00 includes requirements intended to provide a base expectation for Site security to be utilized by the Contractor in developing the Site Security Plan.

H. Conform to all applicable laws, regulations, permits and Contract Documents.

I. Assume full responsibility for the health and safety of Contractor's employees and subcontractors while at the Site and for implementation of the CSSHASP for the Work.

1.10 PROPERTY OWNER OCCUPANCY

A. The Property Owners (refer to Part 1.02) shall be provided access to their properties with the exception of the areas designated for the Work, which shall be delineated and secured with temporary fencing.

B. Buildings on-site shall not be used by Contractor.

C. It shall be assumed adjacent property owners/tenants will occupy their respective properties/facilities. Remediation activities shall be performed and sequenced in a manner that does not interfere with operations on adjacent properties. Contractor shall consider neighboring operations or activities and sequence work activities to minimize impact on neighboring operations.

1.11 WORK SEQUENCE AND SCHEDULE

A. Work sequencing shall be in accordance with the general sequence identified in the Construction Drawings or other technical contract documents (e.g., Special Conditions), unless otherwise approved by the Construction Manager and Design Engineer.

B. Contractor shall perform work in a manner that will allow the adjacent Property Owners' operations to maintain normal activities on their sites.

C. Good lighting and all other necessary facilities for carrying out and inspecting the Work shall be provided and maintained at all points where such work is being done. Minimum permissible illumination intensities are identified in 29 CFR 1910.120.

D. Work activities are limited to Monday through Friday, 7:00 am to 5:00 pm, unless otherwise requested a minimum of 1 week in advance and approved in writing by Construction Manager.

E. Unless otherwise especially permitted, no Work shall be done on Sundays, July 4 (or designated holiday for July 4); Thanksgiving Day and the day after; Christmas Day and the day before; New Year's Day; and the Monday designated holidays for Memorial Day and Labor Day, except as necessary for the proper care and protection of Work already performed.

F. Work sequencing shall be conducted in a manner that prevents contamination or recontamination of areas not contaminated or already decontaminated.

G. Work sequencing shall be conducted in a manner to coordinate staging, stockpiling, and loading of waste to be transported and disposed off-Site.

H. The Work sequence shall be reflected in the Contractor's Work Schedule as part of the CMP. Notify National Grid and the Construction Manager of schedule changes, and submit an updated project schedule with any modifications, including modifications to the sequence of Work.

1.12 CONSTRUCTION QUALITY CONTROL

A. Quality Control and Control of Installation:
   1. Monitor quality control over subcontractors, suppliers, products, services, site conditions, and workmanship to produce Work of specified quality.
   2. Comply with manufacturers' instructions, including each step-in sequence.
   3. When manufacturers' instructions conflict with Contract Documents, request clarification from Design Engineer before proceeding.
   4. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
   5. Perform Work by persons qualified to produce required and specified quality.
   6. Verify field measurements are as indicated on Construction Drawings.

B. Prepare and submit for review a CQC Project Plan (CQCPP) (may be a component of the CMP) that is based on the Design Engineer's Construction Quality Assurance Project Plan (CQAPP). The CQCPP shall identify personnel, procedures, control, instructions, tests, records, and forms to be used and include, at a minimum:
   1. Procedures for controlling activities related to inspection, testing and documentation, including those of Contractor's subcontractors, suppliers, and laboratories.
   2. Control, verification, and acceptance testing procedures for each specific test, to include the test name, testing equipment, Specification section paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test.
   3. Compliance with specified standards, codes, tolerances, except for when specified requirements indicate more stringent standards.
   4. Procedures for tracking inspections, verification, and acceptance tests including documentation.
   5. Procedures for tracking construction deficiencies for identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

C. General Requirements

1. The Contractor shall be responsible for quality control and shall establish and maintain an effective quality control process in compliance with the contract. The quality control process shall consist of plans, procedures, and the organization necessary to produce an end product that complies with the Contract Documents.
2. Activities affecting quality shall be accomplished under controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity such as adequate cleanliness; and assurance that all prerequisites for the given activity have been satisfied.
3. Quality control testing shall include all the tests required by the Technical Specifications along with field inspection of the Work.
4. Deliver materials to the Site in the approved manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to the approved submittals. Certifications from the manufacturer for materials shall be included with the shipment.
5. Store materials in accordance with manufacturer's recommendations, under cover (if appropriate) in a clean, dry, aboveground location. Remove materials which are damaged or otherwise not suitable for installation from the Site and replace with acceptable materials.
6. When manufacturers' instructions conflict with Contract Documents, request clarification from Design Engineer before proceeding.

1.13 CONTINGENCY

A. Prepare, submit, and implement a Contingency Plan (may be a component of the CMP) that includes, at a minimum:

1. Plans for pollution prevention of all material brought to the work Site that shall include methods of addressing spills that occur on-Site and off-Site during remedial construction activities. Description of the methods, means, and facilities required to prevent soil, water, structure, equipment, and material impacts caused by spills; provide information regarding spill containment and cleanup; and provide information related to decontamination measures. Spill response procedures shall comply with National Grid requirements and procedures.
2. Procedures that Contractor’s personnel will take in response to an emergency.
3. Identification of responsible personnel (primary and secondary emergency coordinators) who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency.
4. Include a current list of all emergency equipment and evacuation plans.
5. Emergency vehicular access/egress.
6. Evacuation procedures for personnel from the Site.
7. A list of all contact personnel with phone numbers, including: Contractor; City of Watertown fire official(s); ambulance service; local, county, and State police; local hospitals, including routes to local hospitals; neighboring property owners and tenants, and procedures for notifying each.

1.14 WASTE MANAGEMENT, TRANSPORTATION, AND DISPOSAL

A. Wastes generated from the remediation activities (clearing, grubbing, select demolition, pre-ISS excavation, post-ISS excavation, waste water from dewatering and decontamination, recovery well installation, and other construction activities) shall be characterized, profiled, and transported by the Contractor to be disposed of at a National Grid-approved off-Site disposal facility listed in the "*National Grid USA Environmentally Approved Hazardous Waste Disposal and Recycling Facilities*" included with the Contract Documents, and in accordance with the approved Contractor Waste Management Plan and these Specifications.

B. Contractor is responsible for identifying and coordinating with primary and backup disposal facilities for the Work.

PART 2 PRODUCTS

2.01 PRODUCTS USED DURING WORK

A. Products shall not be used during Work activities which have not been reviewed by National Grid, Construction Manager, and/or Design Engineer as appropriate and as specified in these Specifications.

B. If the physical and/or engineering properties of products delivered to the Site differ from those submitted and reviewed by Construction Manager and/or Design Engineer, Contractor may perform additional testing to verify compliance with the Specifications.
   1. Contractor, Construction Manager, and Design Engineer shall be responsible to determine if products differ from those submitted in accordance with the Specifications.

C. As specified in these Specifications, request inspection of prepared Work (including products, materials, constructed structures, etc.) by Construction Manager and/or Design Engineer.
   1. If the physical and/or engineering properties of installed products are determined to differ from the products reviewed by National Grid, Construction Manager, and/or Design Engineer as appropriate and as specified in these Specifications, Contractor shall remove and install appropriate products.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Coordination and project conditions.
   2. Pre-Construction/Site Mobilization Meeting.
   3. Progress meetings.
   4. Daily Tailgate Meetings.
   5. Problem or Work Deficiency Meetings.
   6. Substantial Completion Meeting.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 50 – Work Restrictions.
   4. Section 01 30 65 – Health and Safety Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.

1.02 SUBMITTALS

A. Review draft meeting minutes prepared and distributed by the Construction Manager following meetings described herein. Provide comments, schedule updates, schedule forecasts (e.g., task start/end dates, material deliveries, etc.), changes or additions to on-Site personnel, and discussion of work-related issues as appropriate and provide to the Construction Manger within one day of draft meeting minutes being distributed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 COORDINATION AND PROJECT CONDITIONS

A. Coordinate Work schedule and submittals to ensure efficient and orderly sequence of interdependent Work activities.

B. Provide full-time capable and experienced Construction Superintendent, Site Foreman, Resident QC Engineer, Competent Person(s), and third-party Site Safety Officer (SSO, refer to Section 01 30 65 for SSO requirements), and Site CAMP personnel (refer to Section 01 52 00) for the duration of the remedial construction activities at the Site. These individuals shall be totally responsible for the execution of the work as representatives of the Contractor and shall coordinate all activities with National Grid

and the Construction Manager. If qualified, the Construction Superintendent or Site Foreman can act as a Competent Person.

C. Coordinate, supervise, direct, and cooperate fully with subcontractors, manufacturers, fabricators, suppliers, distributors, installers, and testing agencies whose services, materials and/or equipment are required to ensure the completion of the Work and comply with the Work Schedule (refer to Section 01 10 00).

D. Provide all necessary coordination with the pertinent utility companies and governmental entities regarding the implementation of the proposed remedial construction activities.

E. The Contractor shall participate in all project coordination and progress meetings to comply with the project schedule.

3.02 PRE-CONSTRUCTION MEETING

A. The Construction Manager shall schedule meeting after Notice of Award.

B. Attendance Required: National Grid (or a National Grid authorized representative), Construction Manager, Design Engineer, Contractor Project Manager, Contractor Superintendent, Contractor Foreman, Contractor Site Safety Officer, and Contractor CAMP personnel.
   1. Representatives from NYSDEC may attend.

C. Agenda:
   1. Execution of National Grid-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.
   4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
   5. Designation of personnel representing parties in the Contract (i.e., National Grid, Contractor, and Subcontractors), the Construction Manager, and the Design Engineer. Review of the responsibilities of each party.
   6. Review lines of authority and communication.
   7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   8. Summary of the Design Documents and Contract Documents.
   9. Summary of Work.
   10. Use of premises by Contractor and Limit of Work.
   11. Scheduling.

3.03 SITE MOBILIZATION MEETING

A. Construction Manager shall schedule meeting after Notice of Award at the Site prior to Contractor occupancy.

B. Attendance Required: National Grid, Construction Manager, Design Engineer, Contractor Project Manager, Contractor Superintendent, Contractor Foreman, Contractor Site Safety

Officer, Contractor CAMP personnel, and major Subcontractors. NYSDEC representatives may also attend the meeting.

C. Agenda:
   1. Safety Minute.
   2. Summary of Work.
   3. Summary of Remedial Design Documents and Contract Documents.
   4. Use of premises by Contractor and Limit of Work.
   5. National Grid requirements.
   6. Review the responsibilities of each party.
   7. Review lines of authority and communication.
   8. Discuss project details:
      a. Construction facilities.
      b. Temporary controls.
      c. Temporary utilities.
      d. Utility management and protection.
      e. Remedial Action implementation and Work sequencing.
      f. Construction quality assurance and quality control.
      g. Surveying.
      h. Security and housekeeping procedures.
   9. Safe Work Practices.
   10. Work Schedule.
   11. Subcontractors.
   12. Procedures for maintaining record documents.

3.04 PROGRESS MEETINGS

A. Construction Manager shall schedule meetings throughout progress of the Work at maximum weekly intervals, as appropriate based on Work activities, or as requested by National Grid.

B. Attendance Required: National Grid, Construction Manager, Design Engineer, Contractor Project Manager, Contractor Superintendent, Contractor Foreman, Contractor Site Safety Officer, Contractor CAMP personnel, and major subcontractors and suppliers, as appropriate to agenda topics for each meeting. NYSDEC representatives may also attend the progress and coordination meetings.

C. Agenda:
   1. Safety Minute.
   2. Review/approval of minutes from previous meetings.
   3. Review of Work progress.
   4. Field observations, problems, and decisions.
   5. Identification of problems impeding planned progress.
   6. Review of submittals schedule and status of submittals.
   7. Maintenance of progress schedule.

8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

3.05 DAILY TAILGATE MEETINGS

A. Contractor shall conduct daily meetings prior to commencing Work for the day. At the Contractor's discretion, additional tailgate meetings may be conducted (e.g., in response to a change in work activities, near miss, after lunch break, etc.).

B. Attendance Required: Parties conducting Work including the Contractor and any Subcontractors, Contractor Site Supervisor, Contractor Site Safety Officer, Construction Manager, and Design Engineer.

C. Agenda:
   1. Safety Minute.
   2. Planned work for the day and job hazard analysis (JHA) relevant to planned activities.
   3. Location of work.
   4. Required personnel and equipment.
   5. Associated health and safety considerations.
   6. Applicable quality and work standards.
   7. Surveying, testing, sampling, and other construction quality control to be performed.

D. Prepare daily attendance sheets. Daily tailgate meeting attendees shall sign the attendance sheet. Contractor shall maintain records of daily attendance sheets at the Site.

3.06 PROBLEM OR WORK DEFICIENCY MEETINGS

A. Construction Manager shall schedule a special meeting when and if a problem or deficiency is present or likely to occur. These meetings may be initiated/requested by National Grid, Construction Manager, Design Engineer, Contractor, or other involved party(ies).

B. Attendance Required: National Grid, Construction Manager, Design Engineer representative, Contractor Project Manager, Contractor Superintendent, Contractor Foreman, Contractor Site Safety Officer, Contractor CAMP personnel, and major subcontractors and suppliers, as appropriate to agenda topics for each meeting.

C. Agenda:
   1. Define and discuss the problem or deficiency.
   2. Review alternative solutions.
   3. Identify an action plan to resolve the problem or deficiency.

3.07 SUBSTANTIAL COMPLETION MEETING

A. Construction Manager shall schedule the meeting at substantial completion of scope of work.

B. Attendance Required: National Grid, Construction Manager, Design Engineer, Contractor Project Manager, Contractor Superintendent, Contractor Foreman, Contractor Site Safety Officer, and Contractor CAMP personnel. NYSDEC representatives may also attend the meeting.

C. Agenda:
   1. Safety Minute.
   2. Discuss the status of scope of work.
   3. Identify any outstanding items.
   4. Identify plans for completing scope of work, including outstanding items.
   5. Identify plans and schedule for demobilization.
   6. Discuss record documents and schedule for submittal of record documents to Design Engineer.

END OF SECTION

SECTION 01 30 20

SURVEY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Surveying Requirements.
   2. Surveying Scope of Work.
   3. Drawing Requirements.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Land Surveyor name and qualifications.

B. Survey Control Plan as part of the Construction Management Plan (Section 01 10 00). Plan shall identify survey control points, include methods for recording survey data within the remediation area, and a list of survey submittals.

C. Provide monthly progress survey drawings to Construction Manager and Design Engineer that depict existing conditions including Site features or conditions determined to be different than shown on Drawings, installed Work (limits of disturbance, post-excavation limits and bottom, limits, bottom, and top of ISS, backfill/subgrade elevations, limits of restoration including the location of pipes, and final Site conditions and elevations), and subsurface features encountered during Work (including utilities and structures).
   1. Progress survey information (i.e., coordinates, depths, and elevations) documenting the extent of ISS treatment cells shall be submitted in draft form to the Design Engineer daily during ISS soil mixing for review.
   2. Progress survey drawings shall be prepared weekly during ISS-related activities (i.e., pre-ISS excavation, ISS soil mixing, and post-ISS excavation) or as approved by the Construction Manager and/or Design Engineer.
   3. Progress survey drawings shall include work completed during the previous week.
   4. Progress survey drawings shall be submitted to the Construction Manager and Design Engineer within 2 business days the following week (i.e., during a regular work week without holidays, progress drawings shall be submitted on Tuesday).

D. Submit Existing Conditions Survey and Record Survey packages that depict existing conditions including Site features or conditions determined to be different than shown on Drawings, installed Work, and subsurface features encountered during Work (including utilities and structures). Survey drawing packages shall include the following:
   1. Survey point file in electronic ASCII format, comma delineated with all data points (PNEZD), field code/description used to develop the mapping.
   2. Surface file(s) or the TIN file(s) used to generate contours for existing Site grade, bottom of ISS, top of ISS, top of backfill layers, and final grade.
   3. Electronic CAD files shall be prepared in AutoCAD Civil 2022. Field codes, code blocks, and associated layering shall be in accordance with AIA standards.
   4. Digital aerial photographs, if used, in jpg or tiff file format and geo-referenced to the project coordinate system.
   5. For each draft survey deliverables, provide an electronic copy of the complete survey in AutoCAD Civil 2022 (or compatible with 2022) and a PDF file.
   6. For each final survey deliverable, provide an electronic copy of the complete survey in AutoCAD Civil 2022 (or compatible with 2022), and a signed/sealed PDF file.

1.03 SURVEYING REQUIREMENTS

A. Employ third-party Land Surveyor registered in State of New York and approved by National Grid and/or Construction Manager. Initial and record surveying work shall be performed by the Land Surveyor (not the Contractor) and products shall be signed and sealed by a registered State of New York Licensed Land Surveyor.

B. Field and Progress surveying work may be performed by the Land Survey or by trained Contractor personnel under the supervision of the Land Surveyor. Land Surveyor shall perform field calibration of Contractor surveying equipment weekly (at a minimum).

C. Maintain complete and accurate log of survey control and survey work as Work progresses.

D. Surveyor shall comply with OSHA HAZWOPER training requirements.

E. Locate and protect survey control and reference points. Promptly notify National Grid, Construction Manager, and/or Design Engineer of discrepancies discovered.

F. Land Surveyor shall identify survey control points prior to the start of Work and submit to Design Engineer as part of Survey Control Plan.

G. Horizontal and vertical limits of the ISS shall be documented using both global positioning system (GPS) and conventional surveying methods.

1.04 SURVEYING SCOPE OF WORK

A. Initial Review and Existing Conditions Surveying:
   1. The Contractor and their subcontractors shall review the Existing Conditions Drawings and the Photograph Log (refer to Section 01 10 00 Summary of Work) and submit discrepancies or differences in Site conditions to the Design Engineer prior to mobilization.

2. Locate and identify existing utilities, natural features, and grades within the Limit of Work.
3. Surveys shall provide spot elevations of natural features (e.g., large trees, edges of heavy vegetation) as well as monitoring wells, stormwater features, curbs, concrete pads, guiderails, structures, and other man-made features within the Limit of Work.
4. Prior to the start of clearing or intrusive work perform Existing Conditions Survey and submit package to Design Engineer.

B. Field Progress and Record Surveying:
   1. Demarcate limits of the Limit of Work, fence alignment and grades, waste and material staging areas, ISS areas, property lines, structures and natural features encountered (e.g., tress and root structures removed), utilities, NAPL recovery well locations, and other features as needed to perform Work, as indicated on the Design Drawings or requested by the Construction Manager.
   2. Limits and elevations of bottom of pre-ISS excavation, bottom of ISS treatment, top of ISS treatment, backfilling, site restoration subgrade, subsurface structures (tanks, foundations), and additional surveying as requested by the Construction Manager.
      a. The bottom of ISS treatment shall be surveyed as a grid with 15-foot spacing between adjacent surveyed points.
      b. The final top of ISS treatment (following post-ISS excavation, as specified in Section 31 32 00) shall be surveyed as a grid with a minimum of 15-foot spacing between adjacent surveyed points.
      c. The top of each layer of surface restoration backfill (including base grade, top of subgrade, top of asphalt subbase, etc.) and final surface grade shall be surveyed as a grid with a minimum of 25-foot spacing between adjacent surveyed points.
   3. Provide locations and elevations of all features installed as part of the work including, but not limited to:
      a. New and restored Site features such as asphalt pavement restoration and additional surveying as requested by the Construction Manager.
   4. Table detailing the quantity of Work completed since the previous progress survey, the total Work completed to date, and remaining Work.
      a. A table shall be included on each survey drawing.
      b. Units used in calculating the quantity of Work shall match the appropriate unit used on the application for payment.
   5. All topographic information shall be referenced to the specified coordinate system.

C. Survey Control:
   1. Provide physical horizontal and vertical control points based on the project's control system and information for Contract Documents including survey points, a basis of bearing, benchmarks, and datum information.
   2. Establish a Site horizontal survey grid as specified in Part 1.04.B.2 of this Section. The survey grid shall be used to prepare the initial, field and progress, and record surveys for the Work and will be used to confirm payment quantities and compliance with the Drawings and Specifications.
   3. Surveys shall be performed in a Global Coordinate System datum in the State Plane Coordinate System for New York.

4. Coordinates shall reference the North American Datum (NAD) of 1983 in units of feet. Elevations shall reference the National Geodetic Vertical Datum (NGVD) of 1929 in units of feet.
5. Incorporate record information into CAD base map files based on field survey, boundary information and record information and the review and resolution of conflicting field and/or record information.
6. Electronic CAD files shall be prepared in AutoCAD Civil 2022 (or compatible with 2022). Field codes, code blocks, and associated layering shall be in accordance with AIA standards.

1.05 DRAWING REQUIREMENTS

A. Progress and Record Drawing Surveys:
   1. Progress and Record Drawings (electronic or hardcopy) shall be provided at a scale of 1" = 30' or 1" = 60' (as appropriate) plotted on American National Standards Institute (ANSI) D (22" x 34") drawing. A legend/key map which includes lines, symbols, hatches, and other drawing features, and a description of each shall be included on the drawings.
   2. Progress and Record Drawings shall depict the horizontal limits and elevations in 1-foot contours representing the bottom of ISS, top of ISS, top of subgrade backfill layers, final grade with each contour identified, restoration types, and locations of existing, demolished, removed, and new Site features.
      a. Multiple drawings shall be prepared as necessary to clearly depict the information, including at a minimum:
         1) Existing Site Conditions (similar to Drawing C-100)
         2) ISS Plans (similar to Drawing C-110)
         3) Final and Base Grade Plans
         4) Site Restoration Plan (similar to Drawing C-140)
         5) Details, as appropriate
   3. Surveys shall be oriented with true north oriented up or as shown on the Design Drawings. Provide north arrow for true north and for plan north (if used).

B. Quality Requirements:
   1. Confirm drawing dimensions and elevations.
   2. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to National Grid and Design Engineer.
   3. Maintain complete and accurate log of control and survey work as Work progresses.
   4. Survey information shall be entered in AutoCAD at the actual elevation.
   5. Vertical survey tolerance to be maintained during construction is 0.10 foot for general Site grading and 0.01 foot for structural features unless otherwise specified in the Drawings or approved by the Design Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 30 50

WORK RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Use of Site.
   2. Working in Proximity to Overhead Utilities.
   3. Occupancy Requirements.
   4. Open Excavations.
   5. Replacement of Property.
   6. Housekeeping.

B. Related Sections and Documents
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 56 – Health and Safety Requirements.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 USE OF SITE

A. All work shall be performed during hours specified in Section 01 10 00.

B. Do not disturb portions of Site beyond the Limit of Work as specified in Section 01 10 00 and as depicted on the Drawings.

C. Permits:
   1. Contactor to comply with permit requirements and conditions regulated by local, county, and/or state agencies.

D. Work Area Access:
   1. The Contractor will be responsible for maintaining access to the Site, including traffic controls, for Contractor personnel, National Grid, the Construction Manager, the Design Engineer, Construction Quality Assurance personnel, and Site visitors.
   2. Designate areas for the grout plant, decontamination, parking, materials and equipment storage, contaminated waste staging and other operations as needed in support of the Work.

E. Roadways, Driveways, and Entrances: Keep roadways and Site entrances serving premises clear and available to emergency vehicles at all times. Do not use these areas for parking or storage of materials.

F. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

G. Site access shall be as depicted on the Drawings.

1.03 DPW BUILDING

A. The City of Water DPW building will be used by the DPW during construction including during construction work hours. Contractor shall notify DPW of activities occurring near their building.

1.04 CSX RAILROAD

A. The Contractor shall be aware that CSX is an active rail. During the performance of the work adjacent to and in proximity to the ROW, the Contractor shall meet the requirements of CSX at all times. At a minimum, this includes meeting the CSX requirements for equipment operation, obtaining Railroad Protective Liability Insurances, obtaining flag protection, and obtaining required personnel training.

1.05 WORKING IN PROXIMITY TO OVERHEAD UTILITIES

A. Overhead lines are present at and around the site (e.g., extend along Coffeen Street and adjacent to the Limit of Work). The Contractor shall use extreme care during the implementation of the remedial construction activities so as not to damage or interfere with these utilities. Contractor shall coordinate with the Utility Owner of these lines to establish minimum setbacks and clearances from these overhead lines for all equipment and personnel.

1.06 OCCUPANCY REQUIREMENTS

A. National Grid, Construction Manager, Design Engineer, and Construction Quality Assurance personnel may occupy the Site during the Work.

B. The property owners (National Grid, CSX Railway, Capone Family LLC, City of Watertown, Jefferson Concrete Corp.) and businesses located near the Site, outside the Limit of Work, will remain in operation during the Work. The Contractor shall cooperate with property owners, National Grid, Construction Manager, and the Design Engineer to minimize disruption to adjacent property owners/businesses and their operations.

1.07 OPEN EXCAVATIONS

A. Open excavations shall be adequately safeguarded by providing barricades, caution signs, lights, and other means to prevent unwanted/unknowing access, accidents to persons, and damage to property, in accordance with these Specifications and the Drawings. Such measures shall be installed and maintained pursuant to all applicable regulations. The Contractor shall limit the size of open excavations to the extent possible.

1.08 REPLACEMENT OF PROPERTY

A. Replace all pavements, fences, guiderails, vegetated areas, and any other public or private property damaged during work. Damaged features shall be replaced with new features to the satisfaction of the property owner or affected party.

B. If it is observed that the Contractor neglects his responsibilities as set forth above, National Grid and/or Construction Manager will notify the Contractor to that effect. If the Contractor does not take reasonable steps after notification to correct the neglected situation, National Grid may hold payment of any monies due or that may become due to the Contractor until property is replaced to the satisfaction of National Grid and the property owner or affected party.

1.09 HOUSEKEEPING

A. As work progresses, remove all unused tools and equipment, surplus materials, waste materials, rubbish, refuse, and other debris from the Site in a timely manner and ensure that the Site is at all times maintained in a neat and orderly condition.

B. At the completion of the Project, promptly remove all construction tools and equipment surplus materials, waste materials, rubbish, refuse, and other debris from the Site and leave the Site in a neat and orderly condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 30 65

HEALTH AND SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Contractor's Site-Specific Health and Safety Plan (CSSHASP).
   3. References and Standards.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. NYSDEC-approved Community Air Monitoring Plan (CAMP).
   4. Section 01 10 00 – Summary of Work.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 52 00 – Work Zone and Community Site Monitoring and Control.
   7. Brown and Caldwell's Site-Specific Health and Safety Plan.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Submit CSSHASP in accordance with Section 01 33 00.

B. Concurrent with submission of the CSSHASP, submit the resume of a Certified Industrial Hygienist (CIH) of a third-party subcontractor.

C. Within 14 calendar days of Notice of Award but no less than 14 calendar days prior to commencement of field activities, submit the following to National Grid and the Construction Manager:
   1. Written CSSHASP containing all requirements under 29 CFR 1910.120. The plan must be stamped by a Certified Industrial Hygienist (CIH) and shall be written to avoid misinterpretation, ambiguity, and mistakes that verbal orders cause.
   2. CSSHASP approval and certification by a certified Industrial Hygienist for review and approval by Owner and Owner's Representative.
   3. Documentation of medical monitoring including doctor's release to perform work.
   4. Documentation of 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and applicable 8-hour annual HAZWOPER refresher training and other applicable training (e.g., confined space entry, if required).
   5. Documentation of personnel respirator qualification and fit testing.

D. During Construction Activities:
   1. All required forms and OSHA records will be kept on Site as applicable.
   2. Work Zone Monitoring results and Community Air Monitoring results shall be submitted in accordance with Section 01 52 00.

1.03 CONTRACTOR SITE SPECIFIC HEALTH AND SAFETY PLAN (CSSHASP)

A. Contractor shall prepare a CSSHASP which establishes policies and procedures to protect workers and the public from the potential hazards posed by implementation of the work. This CSSHASP shall apply to all personnel on Site during construction, including but not limited to, Contractor's employees and Subcontractor's employees.

B. Employ the services of an independent third-party subcontractor, including a Health and Safety Officer, to implement the CSSHASP. The third-party Health and Safety Officer must be pre-approved by the Owner. The independent third-party subcontractor may be the same entity that is used to implement the community air monitoring required in Section 01 52 00.

C. The CSSHASP shall be reviewed and certified by a CIH.

D. The Contractor shall be responsible for providing all personnel, facilities, equipment and materials to protect on-Site workers from physical injury and adverse health effects due to exposure to Site hazards.

E. At a minimum, the CSSHASP plan shall:
   1. Comply with the requirements of National Grid Documents.
   2. Include the work zone air monitoring action levels. Contractor shall be aware of work zone action levels identified in BC's HASP.
   3. Include perimeter vapor and dust Action Levels for this project as specified in Section 01 52 00.
   4. Include any additional requirements that the Contractor deems to be appropriate or applicable to the Work, the Site, or the Contractor's methods and/or equipment.
   5. Name key personnel and alternates responsible for Site safety and provide the contact information for each person.
   6. Describe operations to be conducted to implement the Work and identify risks associated with each operation conducted.
   7. Confirm that personnel are adequately trained to perform their job responsibilities and to handle the specific hazardous situations they may encounter.
   8. Describe the protective clothing and equipment to be worn by personnel during various Site operations.
   9. Describe any Site-specific medical surveillance requirements.
   10. Describe the program for periodic air monitoring, personnel monitoring, and environmental sampling.
   11. Describe the actions to be taken to mitigate existing hazards to make the work environment less hazardous.
   12. Describe Site-specific emergency response procedures.
   13. Define Site control measures and include a Site map.
   14. Establish decontamination procedures for personnel and equipment.

15. Describe audit/inspection program to ensure compliance with the CSSHASP.
16. Designation of Work-Specific Areas, including exclusion zone, contamination reduction zone, and health/safety/emergency facilities.
17. Include any additional requirements that the Contractor deems to be appropriate or applicable to the Work, the Site, or the Contractor's methods and/or equipment.

1.04 REFERENCES AND STANDARDS

A. Federal OSHA Standards:
   1. Air Contaminants - Permissible Exposure Limits; OSHA 3112.
   2. General Industry Standards and Interpretations; Volumes 1 - 3- OSHA 2077; U.S. Department of Labor, Occupational Safety and Health Administration; Specifically Sections: 29 CFR 1910.1000 1050 (air contaminants), 1910.120 (Hazardous Waste Operations and Emergency Response), 1910.1200 (Hazard Communication), 1910.301 Subpart S (Electrical), 1910.146 (Permit Required Confined Space) 1910.147 (Control of Hazardous Energy (Lockout/Tagout)), 1904 (Recordkeeping and Reporting Occupational Injuries and Illnesses), 1990 (Identification, Classification and Regulation of Potential Occupational Carcinogens), and 1926 (Safety and Health Regulations for Construction).
   3. Hazardous Waste Inspections Reference Manual; U.S. Department of Labor; Occupational Safety and Health Administration.
   4. OSHA Field Operations Manual; U.S. Department of Labor; Occupational Safety and Health Administration.

B. National Grid's Health and Safety Requirements.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00

SUBMITTAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittal procedures.
   2. Contractor-prepared work plans.
   3. Construction progress schedule.
   4. Proposed products list.
   5. Product data.
   6. Shop drawings.
   7. Samples.
   8. Design data.
   9. Test reports.
   10. Certificates.
   11. Manufacturer's instructions.
   12. Manufacturer's field reports.
   13. Construction photographs.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General and Supplementary Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 70 00 – Demobilization.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTAL PROCEDURES

A. Prepare and provide a complete list of required submittals. Within 5 calendar days after date of National Grid-Contractor Agreement, Contractor shall submit list to Design Engineer and Construction Manager for review.

B. Transmit each submittal with National Grid-approved cover page/transmittal form.

C. Sequentially number transmittal forms with reference to the appropriate Technical Specification and/or Drawing. Mark revised submittals with original number and sequential alphabetic suffix.

D. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.

E. Apply Contractor's stamp, signature or initials certifying that the submittal satisfies the requirements of the Work and Contract Documents.

F. Schedule and submit submittals to expedite Project. Coordinate submission of related items (e.g., compile and submit together information for soils and aggregates for earthwork) to expedite review of submittals.

G. Submit an electronic copy of each submittal to Design Engineer. Submit an electronic copy of submittals to additional parties (e.g., Construction Manager) as required by other Technical Specification sections. Prepare and deliver hard copies of submittals to National Grid, Construction Manager, and Design Engineer as requested.

H. Contractor shall allow up to 10 calendar days for review and comment on each draft work plan submitted for review. For other submittals, allow 7 calendar days, unless otherwise specified. Timeframes exclude delivery time to and from Contractor.

I. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

J. When a submittal is revised for resubmission, identify changes made since previous submission on the cover page/transmittal form and within the submittal.

K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

L. Submittals not requested for Work will not be recognized or processed, unless related to alternative items approved by Design Engineer.

1.03 CONTRACTOR-PREPARED WORK PLANS

A. The Contractor shall prepare and submit electronic copies of contractor-prepared work plans including the Construction Management Plan (CMP), as specified in Section 01 10 00, to National Grid, Construction Manager, and Design Engineer for review within 14 calendar days after the date of the National Grid-Contractor Agreement and at least 21 calendar days prior to mobilization. Prepare and deliver hard copies of contractor-prepared work plans to National Grid, Construction Manager, and/or Design Engineer as requested.

B. After the Contractor-prepared work plans have been accepted by National Grid, they will be submitted by National Grid (or their representative) to NYSDEC for review and comment.
   1. The Contractor shall sequence work activities and schedule submission of the work plans to allow 10 calendar days for NYSDEC to review and comment on the CMP.

1.04 CONSTRUCTION PROGRESS SCHEDULE

A. Submit initial schedules within 14 calendar days after date of National Grid-Contractor Agreement and at least 21 calendar days prior to mobilization. After review, resubmit required revised data within 7 calendar days.
   1. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.

B. Submit revised Progress Schedules at each weekly construction progress meeting and with each Application for Payment.

C. Revisions to Construction Progress Schedule:
   1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
   2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
   3. Prepare narrative report to define problem areas, anticipated delays, and impact on Progress Schedule. Report corrective action taken, or proposed, and its effect.

D. Distribute copies of reviewed schedules at each Weekly Progress Meeting and to Project site file, subcontractors, suppliers, and other concerned parties.

E. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

F. Submit computer generated chart with separate line for each section of Work, identifying first workday of each week.

G. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

H. Indicate estimated percentage of completion for each item of Work at each submission and at each Weekly Progress Meeting.

I. Indicate delivery dates for products.

J. Submit revised Progress Schedules with each Application for Payment.

1.05 PROPOSED PRODUCTS LIST

A. Within 15 calendar days after date of National Grid-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.06 PRODUCT DATA

A. Product Data: Submit to National Grid, Design Engineer, and Construction Manager for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

1.07 SHOP DRAWINGS

A. Shop Drawings: Submit to National Grid, Design Engineer, and Construction Manager for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. When required by individual specification sections, provide shop drawings, signed, and sealed by professional engineer licensed in the State of New York, and responsible for designing components shown on shop drawings.
   1. Include signed and sealed calculations to support design.
   2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
   3. Make revisions and provide additional information when required by authorities having jurisdiction.

1.08 SAMPLES

A. Samples: Submit to National Grid, Design Engineer, and Construction Manager for review for limited purpose of checking for conformance with information given and the Contract Documents.

B. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

C. Include identification on each sample, with full Project information.

D. Submit number of samples specified in individual specification sections. National Grid, Design Engineer, and Construction Manager’s will retain one sample.

E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

F. Samples will not be used for testing purposes unless specifically stated in specification section.

1.09 DESIGN DATA

A. Submit for review and comment by National Grid, Design Engineer, and Construction Manager.

B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

A. Submit for Design Engineer's approval.

B. Submit test reports for information for limited purpose of assessing conformance with information given and the Contract Documents.

1.11 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or subcontractor to National Grid, Design Engineer, and Construction Manager.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to National Grid, Design Engineer, and Construction Manager.

1.12 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to National Grid, Design Engineer, and Construction Manager.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

A. Submit reports to National Grid, Design Engineer, and Construction Manager.

B. Submit report within 5 calendar days of observation for information for limited purpose of assessing conformance with the information given and the design specified in the Contract Documents.

1.14 CONSTRUCTION PHOTOGRAPHS

A. Provide photographs of Site and construction throughout progress of Work.

B. Each month submit photographs with Application for Payment.

C. Digital photographs: Provide high resolution photographs on a flash drive.

D. Take Site photographs from differing directions indicating relative progress of the Work.

E. Submit digital photographs to National Grid, Construction Manager, and Design Engineer with project record documents. Catalog and index in chronological sequence.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 40 10

PROTECTION OF WORK AND PROPERTY

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Project conditions and coordination.
   3. Vibration monitoring.
   4. Settlement monitoring.
   5. Protection of work.
   6. Barricades and warning signals.
   7. Protection of existing utilities and structures.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 30 50 – Work Restrictions.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 30 65 – Health and Safety Requirements.
   7. Section 01 50 00 – Temporary Facilities and Controls.
   8. Section 02 41 16 – Selective Demolition.
   9. Section 33 20 00 – Utility Support and Protection.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Contractor shall prepare and submit, as part of the Construction Management Plan, a Vibration and Settlement Monitoring Plan (VSMP) in accordance with the requirements herein and Section 01 33 00 for review and approval by the Design Engineer. The VSMP shall describe the Contractor's plan for monitoring vibrations and settlements at the existing 36" sanitary sewer. The VSMP shall include personnel requirements, monitoring locations, frequency, vibration threshold criterion, and reporting.

B. Report preliminary vibration and settlement monitoring results to the Construction Manager on the day the results are collected. Submit final results within 24 hours.

C. Existing Conditions Assessment: Assessment and documentation (photographs and/or video) of on-site features which may be affected by the Work, including but not limited to the National Grid property, CSX Railroad right-of-way, Capone Family LLC property, and

City of Watertown Property, buildings and structures in the vicinity of the work area, fencing, and utility infrastructure.

1. Develop and submit a list of damages to property that existed prior to the start of construction. Submit the list to the Construction Manager and Design Engineer at least 2 weeks prior to the start of any construction for the Construction Manager and/or Design Engineer to verify the damages. The lists shall include the following information:
    a. Location of damage
    b. Nature of damage
    c. Extent of damage

D. Post-Construction Assessment: Assessment and documentation (photographs and/or video) of on-site features at the conclusion of construction activities, including the structures and site features documented in the Existing Conditions Assessment, and new structures and site features installed as part of the work (e.g., asphalt pavement, new stormwater management structures, etc.).

1.03 PROJECT CONDITIONS AND COORDINATION

A. Underground utilities are defined to be, but are not limited to sanitary sewer, water, storm sewer, stormwater, natural gas, electrical conduit, telecommunications, cable, other piping, etc.

B. All overhead utilities located on or adjacent to the Site (e.g., overhead utilities on Engine Street and Coffeen Street) that have the potential to be damaged by the work or access/egress for construction related traffic shall be demarcated in accordance with this Section. Contractor shall coordinate with the appropriate utility purveyors to flag overhead lines, as necessary, prior to the start of work.

C. Underground structures known to National Grid and the Design Engineer are shown on the Drawings. This information is shown to assist the Contractor and was generated using with the information available. The information shown on the Drawings is not guaranteed to be accurate or complete.

D. Notify Dig Safely New York (1-800-962-7962 or 811) prior to conducting any intrusive activities and for a utility stakeout request. Field verify and field mark-out all underground utilities and structures indicated on Drawings. Request an official mark-out of utilities at and in the immediate vicinity of the Site and limits of work to verify the location of underground utilities.

E. Coordinate with the utility company who owns the utility during the performance of the Work to determine which utilities, presented on the Drawings, reference drawings, utility mark-up and encountered in the field, are active and which may be abandoned.

F. All utilities whose facilities may be affected by the implementation of the Work shall be notified at least 72 hours in advance of the start of any operation that might affect such facilities.

G. Support and protect active utilities to prevent damage and to prevent service interruption. The Contractor shall meet the requirements of the utility owner whose utility

is affected by the Work with regards to support and protection of any existing utilities impacted by the proposed construction activities.

H. The Contractor shall be liable for all damage and expense for direct or indirect damage caused to an active utility and is responsible to have it repaired promptly at no additional cost to National Grid. The Contractor shall repair any damage to protected structures and utilities during construction operations in accordance with the pertinent New York State, City of Watertown, Jefferson County, and/or utility authorities and as directed by the Construction Manager.

I. Surface structures are defined as all existing structures and other facilities at or above the ground surface. Surface structures include, but are not limited to, monitoring wells, piezometers, utility poles (including anchors and support cables), fire hydrants, electrical panels, curbs, piles, fencing, foundations, and all other facilities that are visible above the ground surface.

J. The locations of the proposed construction activities are fixed and any proposed changes in the location of Work shall be approved by the Construction Manager to avoid unanticipated underground structures or impediments.

K. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, the Construction Manager will direct the Contractor in writing to perform the necessary work.

L. All utilities affected by the work shall be de-energized and/or shutdown in accordance with the appropriate lockout/tagout procedures when interrupted. Do not interrupt utilities unless permitted in writing by the utility owner and then only after arranging for temporary utility services, if required. No users shall be left without utility services.

M. Coordinate with utility companies and the appropriate city and county authorities when working within utility easements.

N. Take photographs or video of surrounding structures, including buildings, fences, monitoring wells, and utility lines, prior to starting the construction activities to provide a basis for establishing existing conditions including damage present before construction activities.

O. Replace and restore all existing surface facilities, including but not limited to fencing, guard rails, posts, guard cables, signs, poles, markers, and curbs, which are temporarily removed to facilitate the performance of the Work, to their original condition at no additional cost to National Grid.

P. Necessary changes in the location of the proposed remedial activities shall be made by the National Grid and/or the Construction Manager to avoid unanticipated underground structures.

1.04 VIBRATION MONITORING

A. Vibration monitoring of structures during the Work shall be performed by the Contractor in accordance with the approved VSMP.

B. Perform background vibration monitoring for a period of 1 week. Report the peak particle velocity as well as the component horizontal and vertical velocities, and associated frequencies for each day (7 a.m. to 5 p.m., or as approved by the Construction Manager).

C. Perform an evaluation of existing on-Site structures to document pre-construction damage to existing structures, evaluate possible causes of existing damage, and determine susceptibility of the structures to damage from vibrations. The results of the existing structure evaluation shall be incorporated into the VSMP.

D. Vibration monitoring shall, at a minimum include:
   1. Continuous monitoring during construction activities including but not limited to construction of the soil mix wall, excavation, demolition, backfilling, and compaction. Vibration monitoring during the Work will be performed by a third-party subcontractor.
   2. Monitoring shall be conducted at a minimum of 2 locations along the existing 36" sanitary sewer and as directed by the Construction Manager or Design Engineer.
      a. Vibration monitoring equipment shall be located in between the construction activity causing vibration and the receptors (building, utilities, etc.).
      b. Vibration monitoring equipment shall be positioned each day, based on the day's work activities and as approved by the Construction Manager/Design Engineer, and may be re-positioned if work activities change.
   3. Documentation of Site activities during the vibration monitoring period (e.g., half or full day) including a description and location of various work tasks and start/stop times of various work tasks.
   4. Documentation of data collected continuously from seismograph(s) including lateral, transverse, and vertical movement recorded through time.
   5. Real-time analysis of data to determine the Peak Particle Velocity (PPV), zero crossing frequency, and fast Fourier transform frequency.

E. The following threshold criteria shall be considered during development of the VSMP:
   1. Work activities near subsurface structures, utilities, and buildings indicated to be protected: Peak Particle Velocity (PPV) = 0.5 inches per second (in./sec.), instantaneous reading, above background.

F. If the PPV threshold is exceeded, the Contractor shall promptly inform the Construction Manager and stop work immediately at no expense to the National Grid. Work shall resume after implementing measures to reduce vibrations as approved by the Construction Manager or National Grid.

G. Following an evaluation of the existing buildings on-Site, the Contractor may propose a different Vibration Monitoring threshold criterion for review by the Construction Manager. in the VSMP.

H. Costs accrued by the Contractor resulting from stopping or pausing work due to vibration monitoring shall be borne by the Contractor.

1.05 SETTLEMENT MONITORING

A. Surveying shall be performed by a surveyor licensed to practice in the State of New York in accordance with Section 01 30 20.

B. The Contractor shall establish and implement a settlement monitoring program for the receptors and existing utilities including but not limited to the existing 36" sanitary sewer and utility poles. The requirements of the settlement monitoring program shall be described in the VSMP and shall, at a minimum, consist of the following:
    1. Proposed settlement monitoring points on existing structures or utilities that may be affected by work activities.
        a. Settlement monitoring points on the 36" sanitary sewer pipe shall be at manhole rims, and at 2 other locations along the pipe.
        b. Additional settlement monitoring points shall be located as requested by the Construction Manager and Design Engineer.
    2. Survey of all settlement monitoring points on 2 separate days prior to mobilization.
    3. Weekly survey of all settlement monitoring points during Work.
    4. Daily survey of settlement monitoring points during the following Work activities:
        a. Selective Demolition
        b. Excavation, Backfilling, Compaction
        c. Soil mixing
    5. If the movement of any settlement monitoring point exceeds 0.02 feet, the Contractor shall temporarily stop work and inform the Construction Manager and Design Engineer immediately.
        a. Work activities may resume following an examination of Work activities for possible causes of the settlement and development of proposed alternative work sequence and/or methods to prevent additional settlement.
        b. Survey the affected settlement monitoring point daily regardless of Work activities until written approval is given by Construction Manager to cease daily surveying.
    6. If the movement of any settlement monitoring point reaches or exceeds 0.04 feet, the Contractor shall stop Work and inform the Construction Manager and Design Engineer immediately.
        a. An evaluation of the relevant structure shall be performed by a structural engineer licensed as a Professional Engineer in the State of New York at the Contractor's expense. The evaluation and recommendations for minimizing and/or preventing additional movement shall be submitted to National Grid, the Construction Manager, and the Design Engineer. Work activities may resume following written approval from the Construction Manager.

C. Costs accrued by the Contractor due to stopping or pausing work due to settlement monitoring shall be borne by the Contractor.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PROTECTION OF WORK

A. To prevent damage, injury or loss, the Contractor's actions shall include, but not be limited to, the following:
   1. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with the progress of the Work or the work of any other subcontractor.
   2. All flammable materials to be maintained on-site shall be stored in appropriate flammable storage cabinets. All temporary fuel storage tanks shall have secondary containment.
   3. Provide suitable storage facilities in accordance with manufacturer's recommendations for all materials which are subject to damage by exposure to weather, theft, breakage or otherwise.
   4. Frequent clean-up of all refuse, rubbish, scrap materials, and debris caused by Site operations, so that the area of the work shall present a safe, orderly and workmanlike appearance at all times.
   5. Provide barricades and fences around openings, excavations, and other hazardous areas in accordance with applicable requirements and Occupational Safety and Health Association (OSHA) regulations.
   6. Failure to comply with these provisions could result in stoppage of work until they are met. Any costs incurred due to this work stoppage shall be borne by the Contractor.

B. Immediately repair damages to curbs, monuments, overhead utilities, subsurface utilities, or other property caused by the Contractor, and to the satisfaction of the feature's owner following completion of the Work. Damage to property and the repair will be compared to the pre-construction inspection documentation. The costs for these repairs will be borne solely by the Contractor.

C. Immediately notify the Construction Manager of all claims and complaints resulting from the work. Provide assistance, as required, to resolve all claims and complaints.

3.02 BARRICADES AND WARNING SIGNALS

A. Furnish and erect barricades, fences, lights, warning signs, and danger signals, as required, and take other precautionary measures for the protection of persons or property and of the Work, where work is performed on or adjacent to any roadway, right-of-way, or public place.

3.03 PROTECTION OF EXISTING UTILITIES, STRUCTURES, AND OTHER SITE FEATURES

A. Flag, barricade or otherwise suitably protect existing buildings, above and below ground facilities, above and below ground utilities, and public roadways during construction operations.

B. Existing Utility Poles: Protect and support existing on-site utility poles that are actively in service and are within or near the Work area. Protect and support the existing on-site utility poles that are to remain in place in accordance with the requirements of the pertinent utility company.

C. Overhead electrical lines are present at and around the Site. The Contractor shall use extreme care during the implementation of the remedial construction activities so as not to damage or interfere with these utilities. Contractor shall coordinate with the owner of these lines to establish minimum setbacks from these overhead lines for all equipment and personnel.
   1. Provide and install temporary “goal posts” beneath overhead wires at traffic crossings and post signage stating, “OVERHEAD WIRES ABOVE”.

D. Protection of Underground and Surface Structures: Sustain in-place and protect from direct or indirect damage, structures to remain.

E. Existing 36-inch Sanitary Sewer: Protect the existing 36-inch sanitary sewer (oriented east-west across the project area) from direct or indirect damage (e.g., construction traffic).

F. CSX Railroad ROW: Protect and support the CSX Railroad ROW from direct or indirect damage including coordinating with CSX Railroad as required in these Technical Specifications and CSX Agreement.

G. Verizon Storage: Protect the existing Verizon storage areas from direct or indirect damage including buildings, structures, concrete pads, bollards, foundation, subsurface utilities, and overhead and personnel doorways.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Temporary Utilities:
      a. Electricity and lighting
      b. Telephone service
      c. Internet service
      d. Heating and cooling
      e. Water supply
      f. Decontamination water management
      g. Sanitary facilities
   2. Construction Facilities:
      a. Field offices and sheds
      b. Vehicular access
      c. Parking
      d. Progress cleaning and waste removal
      e. Project identification
      f. Traffic regulation
      g. Equipment storage
      h. Decontamination facilities
      i. Health and safety equipment storage
      j. Fuel and flammable materials storage
      k. Equipment and material staging areas
      l. Waste collection areas
      m. All other temporary facilities required to perform the work.
   3. Temporary Controls:
      a. Barriers
      b. Enclosures and fencing
      c. Security
      d. Water control
      e. Dust, Odor, and Vapor control
      f. Noise control
      g. Erosion and sediment control
      h. Pollution control
   4. Removal of Utilities, Facilities, and Controls

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. NYSDEC-approved Community Air Monitoring Plan (CAMP).
   3. NYSDEC-approved Odor Control Plan (OCP).
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 40 10 – Protection of Work and Property.
   6. Section 01 52 00 – Work Zone and Community Air Monitoring and Control.
   7. Section 01 52 20 – Decontamination Requirements.
   8. Section 01 54 00 – Site Security.
   9. Section 31 05 13 – Soils and Aggregates for Earthwork
   10. Section 31 23 16 – Excavation.
   11. Section 31 23 23 – Backfilling, Filling, and Compaction.
   12. Section 31 25 13 – Erosion and Sediment Control.
   13. Section 31 32 00 – In Situ Solidification.
   14. Section 31 70 00 – Waste Management, Transportation, and Disposal.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations

1.02 SUBMITTALS

A. Project Signage Sketch: Prepare, submit and obtain approval for the proposed sign configuration, contents, appearance, and materials of construction and a figure showing the proposed sign location.

B. Occupancy Permits: Permits and/or approvals for use and occupancy for the temporary offices and other buildings, shed, etc., as necessary. Provide to National Grid at least 5 business days in advance of occupying structures.

C. Product and Equipment Data: Product and equipment data for items in this section. Contractor shall provide to National Grid at least 5 business days prior to use.

D. As part of the Construction Management Plan, describe traffic control and protection measures to be implemented within and around the Project Area, the truck haul routes, and anticipated truck traffic volume. Contractor-prepared Traffic Control Plan shall be prepared in accordance with local requirements and the Maintenance and Protection of Traffic Plan (MPTP) included with the Remedial Design Report. Traffic Control Plan may be reviewed and approved by the local jurisdictions (city and county), as applicable.

1.03 TEMPORARY UTILITIES

A. Electricity and Lighting (if necessary)
   1. All temporary electric service required throughout Site shall be provided by the Contractor.

2. The Contractor is responsible for extending electrical service to the site facilities. The Contractor shall ascertain Site power requirements and inform National Grid of such requirements in advance.
3. Service shall be brought to immediate work areas of the Site, as required, by construction-type power cords. Distribution boxes and circuit wiring shall be provided, if required, to meet the required power needs. All electrical service shall meet the substantive requirements of applicable building codes.
4. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
    a. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
    b. Provide warning signs at power outlets other than 110 to 120 V.
    c. Provide metal conduit, tubing, or metallic cable for wiring exposed to possible damage. Provide rigid steel conduits for wiring exposed on grades or other traffic areas.
    d. Provide metal conduit enclosures or boxes for wiring devices.
    e. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.
5. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations.
    a. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
    b. Provide one 100-W incandescent lamp per 500 sq. ft., uniformly distributed, for general lighting, or equivalent illumination.
    c. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.
6. Provide and maintain lighting for construction operations
7. Provide and maintain lighting entire site after dark as necessary for security purposes.
8. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps for specified lighting levels.
9. Maintain lighting and provide routine repairs.

B. Temporary Internet Service
    1. Provide temporary internet access throughout construction period for common use facilities used by all personnel engaged in construction activities.
        a. Internet service shall be from a broadband and/or fiber optic network. Dial up service shall not be considered suitable.
        b. Internet access shall be provided to all personnel by ethernet cable (one ethernet cable shall be made available for each project personnel) and/or wireless local area network.

C. Temporary Heating and Cooling (if necessary)

1. Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that is EnergyStar certified and will not have a harmful effect on completed installations or elements being installed.

D. Temporary Water Service

1. The Contractor shall determine the site water requirements and provide adequate water from accepted sources.
2. Non-potable site water may be stored in holding tanks and distribution piping or by tank trucks or any combination thereof.
3. A high-pressure steam-cleaning system shall be provided, as appropriate, for equipment and vehicles use, after the mud and/or dirt has been cleaned from the equipment.
4. The Contractor shall also ensure that the available water source is adequate to implement and apply odor suppression measures as required by National Grid or the Construction Manager during the implementation of the planned remedial construction activities. The Contractor shall modify or enhance the available water supply as required to facilitate the implementation of the odor suppression and dust control measures at no additional cost to National Grid or the Construction Manager.
5. Contractor shall certify to the Owner that water brought on-site for potable use is supplied by a potable water source.
6. Contractor shall obtain permits from the proper municipality (i.e., City of Watertown) prior to use of the municipal water system (e.g., from fire hydrant) for this project.
7. Contractor shall be responsible for removal of all temporary water supply lines and equipment at the completion of the project.

E. Decontamination Water Management

1. The Contractor shall be responsible to collect the wastewater resulting from the cleaning of the equipment and pump to an on-site treatment system. The collected wastewater shall be managed in accordance with Section 31 70 00.

F. Temporary Sanitary Facilities

1. Provide temporary toilets, wash facilities, and drinking-water. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
2. The Contractor shall adhere to the requirements and specifications in Section SC-5.0, Temporary Sanitary Facilities, of National Grid's Supplementary Conditions.
    a. Disposable Supplies: Provide toilet tissue, soap, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
    b. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
    c. Wash Facilities: Install wash facilities supplied with water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled. Provide eyewash stations and similar facilities for convenience, safety, and sanitation of personnel.

d. Drinking Water Facilities: Provide potable bottled water and/or drinking water units. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 degrees F.

e. Locate toilets and drinking water fixtures so personnel need not walk more than 200 feet to facilities from work area.

1.04 CONSTRUCTION FACILITIES

A. Field Offices and Sheds

1. The Contractor shall be responsible for providing all construction facilities for use by project personnel during the Work and for obtaining necessary permits and/or approvals for use and occupancy of these facilities.
2. Prior to installation of offices and shed, consult with the Construction Manager regarding requirements, locations, access, and related facilities.
3. All trailers other than storage sheds shall be provided with the following minimum requirements:
   a. Grounded Lighting: Lighting shall be electric, non-glare type producing a minimum illumination level of 50 foot-candles measured at desk height.
   b. Heating and Cooling: Heating and cooling shall be capable of maintaining ambient temperatures within the trailer of approximately 70°F. Heating and cooling apparatus shall be EnergyStar certified.
   c. Potable bottled water.
   d. Fire Protection: Fire extinguishers shall be non-toxic dry chemical type, UL approved for Class A, B, and C fires (minimum rating of 2A, 108, 10C).
   e. Telephone Service: Provide minimum of two telephone lines for use by National Grid, the Construction Manager, and Design Engineer.
4. Office Trailer (National Grid, Construction Manager, and Design Engineer):
   a. Provide a 400-square foot office trailer with two offices and a center meeting area for use by National Grid, the Design Engineer, and Construction Manager.
   b. Offices - At a minimum, each of the offices shall include the following:
      1) Built-in desks (one in each office)
      2) Built-in overhead shelves
      3) High speed wireless internet access
      4) Two adjustable office chairs with swivels
      5) Two fireproof file cabinets
      6) 10 folding chairs
      7) Two folding conference tables
      8) Coffee machine
      9) Microwave oven
      10) Medium size compact refrigerator
      11) One all-in-one printer, copier, scanner, and fax capable of 11” x 17” color and black and white printing, copying, and scanning; Canon Color Laser All-in-One Printer Model No. 6848B001, or approved equal)
      12) Reams of 8.5” x 11” and 11” x 17” paper

5. NYSDEC/NYSDOH Office Trailer:
    a. Provide a 160 square foot office trailer for use by NYSDEC and NYSDOH.
    b. Offices - At a minimum, each office shall include the following:
        1) One office desk
        2) Built-in overhead shelves
        3) One office chair with swivels
        4) One fireproof file cabinet
        5) Compact refrigerator (minimum 4 cu. ft)
6. Contractor shall be responsible for providing all construction trailers and sheds for their own use.
7. Facilities shall be structurally sound and weather-tight, with floors raised above ground and open to allow free circulation of air.
8. All trailers and equipment supplied by the Contractor shall be removed from the site at the close of construction.
9. As possible, locate offices and sheds away from temporary waste containment areas at locations approved by the Construction Manager.
10. Preparation: Fill and grade sites for temporary structures sloped for drainage away from buildings.
11. Installation:
    a. Install office spaces ready for occupancy 15 business days after date fixed in Notice to Proceed.
    b. Employee Residential Occupancy: Not allowed on Site.
12. Maintenance and Cleaning:
    a. Periodic cleaning and maintenance for office and storage areas. The Contractor will clean the floor of the office trailers a minimum of once per week or as directed by National Grid/Construction Manager/Design Engineer.
    b. Maintain approach walks free of mud, water, and snow.
13. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

B. Vehicular Access
    1. Maintain on-Site access routes from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
    2. Extend and relocate vehicular access as Work progress requires.
    3. Provide unimpeded access to Site for emergency vehicles at all times.
    4. Provide and maintain access to fire hydrants and control valves free of obstructions.
    5. Provide means of removing mud from vehicle wheels before leaving the Site (i.e., entering public streets).

C. Parking
    1. Provide temporary parking areas, utilizing existing surface as possible or construct compacted gravel parking area, to accommodate construction personnel.
    2. Park in areas identified on the Drawings or areas approved by the Construction Manager.

3. When site space is not adequate, provide additional off-site parking.
4. Parking on city streets is not permitted.
5. Do not allow heavy vehicles or construction equipment in parking areas.
6. All personnel on-Site must back all vehicles into parking spots.
7. Contractor is responsible for providing parking signage. Signage for backing into parking spots must be posted in all parking areas. Parking signage shall be a black and white sign with 2-inch-high lettering that states the following:

MANDATORY

BACK IN PARKING

8. Maintenance:
    a. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
    b. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.
9. Removal and Repair:
    a. Remove temporary materials and construction at Substantial Completion.
    b. Repair existing facilities damaged by use to original condition.

D. Progress Cleaning and Waste Removal
1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
2. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

E. Project Identification
1. General
    a. Furnish, install, and maintain a project sign.
    b. Submit a sketch of the project sign (including dimensions and materials) and a figure showing the proposed location and orientation for the project sign at the site for review and approval by the National Grid and the Construction Manager.
    c. The sign face background shall be white.
    d. All lettering shall be black in color and a minimum 2 inches in height.
    e. The back of the sign and all supports shall be painted white.
    f. The sign shall be adequately supported and braced and properly positioned and aligned.
    g. The project sign shall be posted in prominent locations on the site perimeter fence near site access gates following the notice to proceed.
    h. Contractor shall obtain any necessary approvals or permits to post the sign.
    i. The sign is to remain onsite until the Project completion, and notification from the Construction Manager. At that time, the sign is to be dismantled and shall become the Contractor’s property.
2. Materials
    a. All lumber shall be structural quality and exterior grade (pressure treated).
    b. All bolts, nuts, and washers shall be plated or galvanized steel.

c. The project sign shall be rectangular with minimum dimensions of 6 feet (W) by 3 feet (H).

d. Paint shall be weather resistant, suitable for exterior sign applications, and compatible with exterior grade plywood and primer.

3. Sign Content:

National Grid
Remedial Action
Watertown (Engine Street) Former Manufactured Gas Plant (MGP) Site
(NYSDEC Site No. 6-23-011)
Watertown, New York
New York State Department of Environmental Conservation
Kathy Hochul, Governor
TBD, NYSDEC Commissioner
Jeffrey M. Smith, Mayor

Contacts:
NYSDEC – Parag Amin (518-402-9648)
NYSDOH – Jonathan Robinson (518-402-7881)
National Grid – Steve Beam (315-663-5304)

F. Traffic Regulation

1. Implement traffic control and protection measures in accordance with the approved Contractor-prepared Traffic Control Plan and the Maintenance and Protection of Traffic Plan (MPTP) included in the Remedial Design Report.
2. Signs, Signals, And Devices:
   a. Provide signs at approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
   b. As determined necessary by the City or Construction Manager, provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
   c. Post-mounted traffic control and informational signs, traffic cones and drums, flares and lights: As approved by authority having jurisdiction and as specified in the approved Traffic Control Plan.
   d. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
3. Flagging Personnel: Provide trained and equipped flagging personnel to regulate traffic when construction operations or traffic encroach on public traffic lanes.
4. Removal
   a. Remove signs, signals, and devices when no longer required.
   b. Repair damage caused by installation in accordance with Section 01 10 00 and Section 01 40 10.
   c. Remove post settings, if applicable.

G. Decontamination Facilities

1. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets as required by Drawings and Section 01 52 20.

H. Health and Safety Equipment Storage
   1. A partitioned health and safety equipment storage area shall be provided and shall have access through a lockable door. Sufficient shelving shall be installed for storage and inventory control of small items.

I. Fuel and Flammable Materials Storage
   1. Store all flammable materials brought to the Site, as specified in Section 01 40 10.
   2. Fuel storage tanks shall have secondary containment capable of storing 110% of the tank volume.

J. Equipment and Material Staging Areas
   1. Establish equipment and non-waste material staging areas at locations indicated in the Drawings, as specified in Section 31 05 13, and as approved by the Construction Manager.
   2. Temporary Waste Containment Areas (TWCA) shall be constructed as specified in Section 31 70 00 and in conformance with the Drawings.

K. Waste Collection Areas
   1. Utilize waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label any hazardous, dangerous, or unsanitary waste materials separately from other waste.

1.05 TEMPORARY CONTROLS

A. Barriers
   1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
   2. Provide barricades required by authorities having jurisdiction for public rights-of-way.
   3. Provide protection for site features including but limited to chain link fencing, gates, monitoring wells, buildings, and utilities designated to remain.
   4. Protect non-owned vehicular traffic, stored materials, and structures from damage.

B. Enclosures and Fencing
   1. Construction: Commercial grade chain link fence with privacy slats or privacy screens.
   2. Provide, install, and maintain a 6-foot-high fence along Limits of Work; equip with vehicular gates with locks.
   3. Exterior Enclosures:
      a. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons.
      b. Provide access doors with self-closing hardware and locks.

C. Security
   1. Security Program:
      a. Contractor shall be responsible for Site security in accordance with Section 01 54 00.
      b. Prepare and implement a Site-Specific Security Plan.
      c. Maintain program throughout construction period until directed by the Construction Manager.
   2. Entry Control:
      a. Restrict entrance of persons and vehicles into Project Site.
      b. Allow entrance only to authorized persons with proper identification.
      c. Maintain log of workers and visitors, make available to National Grid and/or the Construction Manager on request.

D. Water Control
   1. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
   2. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion, as described in the Erosion and Sediment Control Plan and Stormwater Pollution Prevention Plan.
   3. Perform temporary dewatering as necessary as specified in Section 31 23 19.

E. Dust, Odor, and Vapor Control
   1. Execute Work by methods to minimize raising dust, odor, and vapor from construction operations.
   2. Provide positive means to prevent air-borne dust, odor, and vapors from dispersing into atmosphere.
   3. Implement dust, odor, and vapor monitoring as required by the Community Air Monitoring Plan.
   4. Refer to Section 01 52 00 for additional requirements on work zone and community air monitoring and control.

F. Erosion and Sediment Control
   1. The Contractor shall be responsible for Erosion and Sediment Control in accordance with Section 31 25 13, Drawings, and the New York State Standards and Specifications for Erosion and Sediment Control (NYSSESC).

G. Noise Control
   1. Execute work by methods to minimize the noise level from construction operations.
   2. Provide noise muffling devices for all construction equipment presenting a potential noise nuisance.

H. Pollution Control
   1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
   2. Comply with pollution and environmental control requirements of authorities having jurisdiction.

I. Removal of Utilities, Facilities, and Controls
   1. Remove temporary utilities, equipment, facilities, and materials prior to Final Application for Payment inspection.
   2. Clean and repair damage caused by installation or use of temporary work.
   3. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to pre-existing conditions.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 52 00

WORK ZONE AND COMMUNITY AIR MONITORING AND CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Work Zone and Community Dust Monitoring.
   2. Dust Control.
   3. Work Zone and Community Vapor and Odor Monitoring.
   4. Vapor and Odor Control.
   5. Noise Monitoring.
   6. Noise Control.
   7. Work Zone and Community Air Monitoring and Control Plan.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. National Grid's Health and Safety Requirements Specified in the Contract Documents.
   3. NYSDEC-approved Community Air Monitoring Plan (CAMP).
   4. Section 01 10 00 – Summary of Work.
   5. Section 01 30 65 – Health and Safety Requirements.
   6. Section 01 33 00 – Submittal Requirements.
   7. Section 01 50 00 – Temporary Facilities and Controls.

1.02 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations – Part 1910.95 and Part 1910.1000, Table Z-1.

B. New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP) (Appendix A of DER-10).

C. New York State Department of Environmental Conservation (NYSDEC) Fugitive Dust and Particulate Monitoring (Appendix 1B of DER-10).

1.03 SUBMITTALS

A. Prepare dust, vapor, odor, and noise control plans as part of the Construction Management Plan identified in Section 01 10 00. Dust, vapor, odor, and noise control plans shall conform to the Site CAMP and specifically include:
   1. A description of each remedial activity and the proposed dust, vapor, and odor control methods and potential receptors for each activity.

2. A list of measures that will be conducted if action levels (Work Zone action levels, as specified in the CSSHASP and/or community action levels, as specified in the CAMP) are exceeded, including specific task and personnel responsible to implement tasks.
3. The implementation of a communication response system for recording an early response to address complaints from the public and a list of personnel responsible to inform the public about the release and subsequent mitigation activities.

B. Daily Air Monitoring Field Reports, submitted to Design Engineer by 10:00 AM the following workday, presenting dust, vapor, odor, and noise data, as specified in this Section. The Daily Air Monitoring Field Report shall include the following:
   1. Weather conditions (including general weather, temperature, wind direction and speed).
   2. General description of work activities.
   3. Scaled map of the work area depicting air monitoring locations.
   4. Summary of VOC and particulate concentrations (including typical values, maximum 15-minute averages, maximum absolute values, and background conditions).
   5. Identify action level conditions (if any).
   6. Description of response actions (if any).
   7. Documentation of odor complaints received by on-Site or off-Site receptors (if any) and associated response actions. Document the date, time, entity filing the complaint, affected location, nature of on-Site work preceding the complaint, and a description of the response action implemented and the outcome.
   8. Results of the use of dust, vapor, odor, or noise mitigation measures that were used to mitigate the source of exceedances.

C. Work Zone Monitoring Results:
   1. Work zone monitoring results shall be continuously reviewed by Contractor. Contractor shall notify Construction Manager and Design Engineer immediately of concentrations above established action levels for volatile organic compounds (VOCs), dust and odors. These elevated conditions will be recorded in the Contractor's Daily Field Reports and be available for review.
   2. Contractor shall submit monitoring results via electronic files on a weekly basis.
   3. Complete monitoring results shall be submitted within 7 calendar days of completion of Work.

D. Community Air Monitoring Results:
   1. Community air monitoring results shall be continuously reviewed by Contractor. Contractor shall notify Construction Manager and Design Engineer immediately of concentrations above established action levels for volatile organic compounds (VOCs), dust and odors. These elevated conditions will be recorded in the Contractor's Daily Field Reports and be available for review.
   2. The NYSDEC and NYSDOH shall be notified within 24 hours of exceedances of the established action levels for VOC, dust, and odors and upon receiving dust, vapor, or odor/noise complaints.
   3. The NYSDEC and NYSDOH shall be notified promptly (i.e., within 24 hours) of any dust, odor, vapor, and/or noise complaints received from the community.
   4. Contractor shall submit monitoring results, including data from the instruments, via electronic files on a weekly basis.

5. Complete monitoring results shall be submitted within 7 calendar days of completion of Work.

E. Weekly reports summarizing the results of the Daily Air Monitoring Field Reports. The reports shall include any action level conditions and the actions taken to control emissions from the Site. Reports shall be submitted to Construction Manager and Design Engineer on a weekly basis.

F. Documentation on third-party subcontractor proposed for CAMP implementation. The subcontractor shall be a qualified firm that regularly provides these services. Subcontractor's field personnel shall have at least 5 years of experience with similar activities at environmental sites and shall operate under the supervision of an office-based Certified Industrial Hygienist (CIH).

G. Product and Equipment Data: Submit product information a minimum of 5 working days before use of the material to Construction Manager and Design Engineer for approval. Contractor's subcontractor, who has been approved by National Grid, shall maintain on-site a sufficient quantity of backup equipment in the event of failure so that the progress of the work is not interrupted. Work should not be delayed due to an equipment failure and the lack of backup equipment

PART 2 PRODUCTS

2.01 GENERAL

A. Provide sufficient quantities of materials (e.g., water, vapor and odor suppressants) and application of such materials, as required to control dust, odor, and vapors and meet the requirements of this Section to the satisfaction of Construction Manager and Design Engineer.

B. Maintain an adequate supply of water, vapor and odor suppressants as well as the equipment to utilize these materials on-Site. These materials will be maintained at the Site prior to invasive Site activities. The Contractor may obtain a permit and approval from the City of Watertown to utilize a fire hydrant as a water source. Coordinate with the City, per the requirements of the permit, as necessary.

C. Dust, odor, and vapor control materials and equipment (including back-up equipment) shall be staged on-site and available for use at all times during construction.

2.02 MONITORING EQUIPMENT

A. Monitoring equipment shall be as specified in this Section and in the Construction Management Plan. All equipment must be checked to ensure that it is operational prior to daily invasive activities. Contractor is responsible for having backup equipment on-Site in the case of equipment failure in order to avoid delays in implementation of the work.

2.03 VAPOR AND ODOR CONTROL

A. Odor and vapor control products shall be specifically designed for use in odor and vapor control and shall have demonstrated success in suppressing the odors and vapors anticipated during remedial action construction.

B. Odor and vapor control products shall be manufactured by BioSolve® or approved equal.

C. Contractor shall provide the following equipment for odor control: two pressure washers for BioSolve® application. Equipment shall be provided and maintained in good-working condition.

PART 3 EXECUTION

3.01 DUST MONITORING

A. Perform continuous dust monitoring in the Work Zone during the implementation of the remedial construction activities in accordance with the CSSHASP.

B. Retain the services of a third-party subcontractor, approved by National Grid, to implement the CAMP in accordance with the NYSDEC-approved CAMP. The third-party subcontractor may be the same subcontractor retained for health and safety plan implementation.

C. Collect background dust data for a period of one week prior to beginning Work. The background readings shall be taken in an area removed and upwind of the Site and shall include data collected during periods of differing wind directions (if possible).

D. Construction Manager and Design Engineer reserves the right to request instantaneous perimeter monitoring depending on continuous air monitoring results and/or receipt of complaints.

E. Submit a daily report presenting the results of the Work Zone dust monitoring.

F. Submit a daily report presenting the results of the dust monitoring performed in accordance with the CAMP.

G. Submit a weekly summary presenting the results of CAMP activities including any community complaints and the associated response actions.

3.02 DUST CONTROL

A. Conduct all operations and maintain the work area so as to minimize and suppress dust associated with the Work.

B. Dust control measures shall be employed to mitigate the release of airborne particulate matter in the Work Zone and beyond the property line of the facility in accordance with CSSHASP, CAMP, and Technical Specifications.

C. In the event that it becomes necessary, in the opinion of National Grid, Construction Manager, an NYSDEC representative, and/or Design Engineer to provide additional measures to control the release of dust, Contractor shall implement such measures immediately, at no additional cost.
   1. Additional measures may include mobilization and routine operation of a street sweeper on roads near the Site.

D. National Grid, Construction Manager, and/or Design Engineer reserves the right to suspend Work at any time, if necessary, due to dust generation which causes a safety or

an air quality problem or which may cause contamination of adjacent areas. Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

E. Visible dust shall not be permitted to leave the Site.

F. The primary method of dust control will be the application of water spray using water trucks and/or flat hose(s) connected to a water supply.

G. When visible dust or dust above action levels is noted leaving the Work Zone, at the perimeter, the temporary construction roadway, or when directed by Construction Manager or Design Engineer, Contractor shall apply dust suppression techniques (e.g., potable water spray) and halt Work if necessary until the condition is mitigated.

H. After implementation of dust suppression techniques, walk perimeter of Work Zone and verify absence of dust, resume work activities and continue monitoring.

I. Trucks exiting the Site shall be inspected to ensure tires and undercarriages are clean and that tarps are secured. Excessive mud and loose soil observed on the trucks shall be manually removed with brooms and brushes, as necessary. Trucks which enter the exclusion zone must exit the zone and be decontaminated on a properly constructed decontamination pad in accordance with Section 01 52 00.

J. Provide a designated area where the trucks can be inspected, and where excessive mud and loose soil observed on the trucks will be manually removed with brooms and brushes.

K. Inspect truck routes on-Site and off-Site during high truck traffic periods for accumulation of excessive soil or dust. Remove soil or dust from off-Site truck routes if excessive build-up of Site soils or dust occurs as determined by Construction Manager.

L. Truck routes will be wet down by the water truck to minimize dust emissions.

M. During freezing temperatures, calcium chloride will be spread in lieu of water to minimize the potential for ice at the Site.

N. Additional dust control measures shall include covering soil stockpiles when active loading or unloading is not being performed and limiting the area of disturbed ground surface to minimize erosion and dust generation.

3.03 VAPOR AND ODOR MONITORING

A. Perform continuous organic vapor and odor monitoring in the Work Zone in accordance with the CSSHASP.
   1. Site perimeter shall be monitored for nuisance odors using olfactory methods.
   2. If odors are detected at the perimeter, Contractor shall immediately notify Construction Manager and Design Engineer. Contractor will take immediate action to mitigate the odor per the approved plans.
   3. Document observed nuisance odors or receipt of an odor complaint.

B. Retain the services of a third-party subcontractor to perform perimeter vapor and odor monitoring in accordance with the NYSDEC-approved CAMP. Third party subcontractor retained for perimeter air monitoring may be the same subcontractor retained for CSSHASP implementation.

C. Collect background organic vapor level data for a period of 1 week prior to beginning Work. The background reading shall be taken in an area removed and upwind of the Site and shall include data collected during periods of differing wind directions (if possible).

D. Construction Manager and Design Engineer reserves the right to request instantaneous perimeter monitoring depending on continuous air monitoring results and/or receipt of complaints.

E. Submit a daily report presenting the results of the Work Zone organic vapor and odor monitoring.

F. Submit a daily report presenting the results of the organic vapor monitoring performed in accordance with the CAMP.

G. Submit a weekly summary presenting the results of CAMP activities including any community complaints and the associated response actions.

3.04 VAPOR AND ODOR CONTROL

A. Contractor shall conduct all operations and maintain the work area so as to minimize and suppress vapors and objectionable odors associated with the Work.

B. Vapor and odor control measures shall be employed in accordance with the CSSHASP, CAMP, and the Technical Specifications.

C. Vapor/odor control measures shall be employed preemptively to minimize the release of volatile organic compounds and odors beyond the property lines of the Site in accordance with the CAMP.

D. Implement vapor/odor control procedures (e.g., covering temporary waste containment areas, spraying BioSolve®) at the request of Construction Manager or Design Engineer.

E. In the event that it becomes necessary, in the opinion of Construction Manager, a NYSDEC representative, and/or Design Engineer, for the Contractor to provide additional measures to suppress vapors/odors, such measures shall be implemented immediately.

F. National Grid, Construction Manager and/or Design Engineer reserve the right to suspend Work at any time, if necessary, due to vapors or objectionable odors which cause a safety or air quality problem. Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

G. When vapors/odors above action levels are noted in the Work Zone, at the perimeter, or when directed by Construction Manager or Design Engineer, Contractor shall deploy control measures and halt Work if necessary until the condition is mitigated.

H. After the application of control measures, walk perimeter of Work Zone and verify absence of odors, resume work activities, and continue monitoring.

3.05 NOISE MONITORING

A. Perform noise monitoring within the Work Zone and a minimum of twice a day at the nearest property boundary in the direction of the nearest receptor.

B. Monitor and record background noise prior to start of Work.

C. Noise monitoring shall be performed during heavy work activities. Additional noise monitoring shall be performed at the direction of Construction Manager or Design Engineer. Construction Manager and Design Engineer reserves the right to monitor simultaneously and as necessary. Noise levels shall not exceed the levels specified without implementation of a hearing protection program.

D. Submit a daily report presenting the results of the day's noise monitoring.

3.06 NOISE CONTROL

A. National Grid, Construction Manager, and /or Design Engineer reserve the right to suspend Work at any time, if necessary, due to noise generation causing a safety or excessive vibration hazard. In the event the OSHA limit of 85 dBA is exceeded for 8 hours per day or a peak level of 140 dBA is exceeded at the boundary of the Site, a hearing protection program shall be implemented.

B. Contractor shall comply with all noise ordinances applicable to the Site (OSHA, City, County, State, etc.)

C. No vehicles or equipment shall be started or operated outside of the designated work hours. No idling of vehicles shall occur before the designated work hours. Idling shall be limited to 5 minutes. See Section 01 10 00 for work hours.

END OF SECTION

SECTION 01 52 20

DECONTAMINATION REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Potable water.
   3. Decontamination equipment and materials.
   4. General requirements.
   5. Decontamination Pad.
   6. Decontamination requirements.
   7. Inspections.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 01 52 00 – Work Zone and Community Air Monitoring Control.
   7. Section 31 23 16 – Excavation.
   8. Section 31 23 19 – Dewatering.
   9. Section 31 23 23 – Backfilling, Filling, and Compaction.
   10. Section 31 32 00 – In Situ Solidification.
   11. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 REFERENCES

A. Applicable State and Federal regulations for the handling, management, and disposal of solid and/or hazardous waste.

1.03 SUBMITTALS

A. Decontamination Plan: The Plan shall detail all equipment, materials, products, and procedures proposed for the decontamination of vehicles, equipment, materials, personnel, and debris leaving the site. The Decontamination Plan will be part of the Construction Management Plan (CMP) in accordance with Section 01 10 00 and 01 33 00.

B. Certification of Potable Water Source
    1. Contractor shall certify to National Grid that all water brought on-site for potable use is supplied by a potable water source. Certification shall be in the form of a letter from a municipal agency confirming that the source of water brought on-site is suitable for human consumption, or in the form of current laboratory analyses documenting that the water contains no contaminants above USEPA drinking water standards and/or New York State Department of Health standards.
    2. Contractor shall certify to National Grid that all water used and collected on-site for the purposes of personnel and equipment decontamination will be contained, treated as required, disposed off-site in accordance with local, state, and federal regulations

PART 2 PRODUCTS

2.01 POTABLE WATER

A. Contractor shall provide potable drinking water in sufficient quantity and of sufficient quality required for implementation of the contract documents and completion of the project.

B. Contractor may obtain water to perform decontamination operations from an existing water hydrant or existing water service on or within the proximity of the Site. Contractor shall obtain all necessary permits and approvals from local authorities and/or property owners. Water use shall be metered. A City-approved backflow prevention device shall be installed on hydrants used as a source for water. The quantity of water required for equipment and personnel decontamination, dust control, and other site activities shall be determined by the Contractor.

C. Contractor shall be responsible for removal of all temporary water supply lines and equipment at the completion of the project.

2.02 DECONTAMINATION EQUIPMENT AND MATERIALS

A. Holding Tanks
    1. Contractor shall provide any holding tanks required for use on-site to store clean decontamination water. Holding tank(s) should be sized accordingly to prevent down time from insufficient storage capacity.

B. Transfer Pumps
    1. Contractor shall provide transfer pumps, as necessary, to transfer wash water to and from the decontamination pad.
    2. Contractor shall provide one spare pump for each transfer pump.

C. Pressure Washers
    1. Contractor shall provide two portable low-volume, high-pressure washers for use on-site and one as a backup. Pressure washes shall be the property and responsibility of Contractor.

D. Hoses and Fittings
   1. Contractor shall provide all necessary hoses and fittings necessary to connect the pressure washer(s) to the water supply and to connect the transfer pumps to the holding tanks.

E. Decontamination Fluid Additives
   1. Contractor may use additives such as surfactants or water-borne abrasives to facilitate removal of hardened material from equipment or demolition debris. All additives are subject to the approval of the Construction Manager.
   2. Contractor shall be responsible for the proper collection and treatment of decontamination fluids containing additives used during the project.

F. Miscellaneous Equipment
   1. Contractor may use steam-generating pressure washers for equipment with the approval of the Construction Manager.
   2. Contractor shall be responsible for providing all scrub brushes or other equipment necessary to remove caked or hardened material from the equipment, materials, and construction vehicles.
   3. Contractor shall also be responsible for providing all miscellaneous equipment such as buckets, shovels, etc. necessary to handle, transfer, and/or remove construction water and associated sediment from the decontamination pad and any necessary storage containers during construction activities.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. All personnel entering the exclusion zone, as defined in the CSSHASP (see Section 01 30 65), shall be decontaminated when exiting the exclusion zone.

B. All vehicles and equipment entering the exclusion zone, as defined in the CSSHASP (see Section 01 30 65), shall be decontaminated when exiting the exclusion zone.

C. All bulky debris such as concrete rubble, empty drums, synthetic liners and miscellaneous utilities such as piping shall require decontamination prior to off-Site transportation and disposal. All bulky debris shall be clean and washed to the extent that visible contamination is removed from bulky debris.

D. Contractor shall use the decontamination pad for the decontamination of all equipment and vehicles which have entered the exclusion and/or contamination reduction zones. Contractor shall ensure that any equipment, vehicles, or personnel that have been in contact with the exclusion and/or contamination reduction zones are decontaminated properly before leaving these zones.

3.02 DECONTAMINATION PAD

A. Contractor shall install and maintain personnel decontamination stations in accordance with the CSSHASP.

B. Contractor shall install and maintain equipment and vehicle decontamination pads in accordance with this section. Contractor may propose a pre-fabricated decontamination station and/or alternative pad design for review and approval by Design Engineer.

C. The decontamination pad(s) shall consist of an area of suitable size for decontaminating construction equipment used by the Contractor.

D. The decontamination pad(s) area shall be modified as needed to accommodate the equipment. Large rocks, stones and other obstructions shall be removed from the prepared subgrade to prevent damage to the overlying decontamination pad containment system.

E. The area shall be graded to direct liquids to a low area to be the sump if a natural low area is not present. Berms, a minimum of 6 inches high, shall be installed along the perimeter of the decontamination pad. The berm around the low area (i.e., the sump area) may be higher at Contractor's discretion to contain water.

F. The pad area and berms shall then be lined with one layer of continuous LLDPE (or approved equal) liner and a layer of non-woven geotextile (above the LLDPE liner). The approved liner shall be installed in one continuous piece and the geotextile layers shall be overlapped a minimum of 12 inches. A 9-inch layer of crushed stone shall be placed on top of the geotextile layer. Wood planks or mats shall be placed on top of the 9-inch stone layer to provide a stable traveling surface for vehicle wheels and tracks. The stone shall be graded for easy entrance and exit to vehicles and equipment. The pad(s) shall be able to hold a minimum of 4 inches of standing water at the shallowest point within the containment.

G. Barriers shall be erected to capture and redirect overspray onto the decontamination pad.

3.03 DECONTAMINATION REQUIREMENTS

A. Personnel decontamination procedures shall be performed in accordance with the CSSHASP.

B. All solids and liquids generated from equipment decontamination and personnel decontamination shall be collected, contained, and handled by the Contractor in accordance with all applicable Federal and State solid and/or hazardous waste regulations and policies and Section 31 70 00.

C. All equipment requiring decontamination shall be washed to the extent that visible contamination is removed.

D. The decontamination process shall be performed in such a manner that all water used, and visible contamination removed during decontamination falls onto the decontamination pad.

E. The decontamination pad shall be washed down at the completion of each day of work. Solids and liquids accumulated within the decontamination pad shall be removed daily, as operationally required, or as required by Construction Manager.

F. The pad(s) shall be kept empty and protected from rainwater with a polyethylene liner when not in use.

G. Upon completion of the Work, the decontamination pad materials will be managed as waste, in accordance with Section 31 70 00.

H. The decontamination areas shall be returned to pre-existing conditions upon completion of the Work.

3.04 INSPECTIONS

A. Contractor shall oversee all decontamination activities and prepare Decontamination Inspection forms for equipment and materials decontaminated. Decontamination Inspection forms shall be submitted to Construction Manager and/or Design Engineer. Contractor is responsible for decontamination and shall make the final determination as to if a piece of equipment, tool, or bulk recyclable remnant structure or pipe being removed from the Site has been properly decontaminated.

B. The Contractor shall inspect each decontamination pad daily and after storm events and make repairs as necessary.

END OF SECTION

SECTION 01 54 00

SITE SECURITY

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Site Security Plan.
   2. Site Security Requirements.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, include Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 30 00 – Administrative Requirements.
   3. Section 01 30 50 – Work Restrictions.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.

1.02 SUBMITTALS

A. Develop Site Security Plan as part of Construction Management Plan in accordance with Section 01 10 00 and Section 01 33 00. Site Security Plan shall address, at a minimum, the following items:
   1. Personnel and/or subcontractors responsible for implementing and maintaining security measures in the work area including names and assigned functions.
   2. Description of proposed security operations during working and non-working hours at the Site.
   3. Description of proposed means and methods of security during working and non-working, and frequency of security checks at the Site.
   4. Description of proposed methods for responding to breaches in security, including but not limited to:
      a. Entry of unauthorized personnel and/or vehicles into the Site.
      b. Destruction and/or vandalism of security provisions.

B. A list of persons authorized for Site entry shall be submitted to the Construction Manager during Mobilization. The list shall be updated to reflect changes in personnel, subcontractors, etc., and resubmitted as appropriate.

1.03 SITE SECURITY REQUIREMENTS

A. The Contractor shall be responsible for maintaining site security throughout the duration of the contract.

B. The Contractor may elect to employ uniformed, security personnel at the site during non-working hours at the Contractor's expense. The Contractor may designate an employee to perform security operations during working hours. Security personnel may be provided

by an independent third-party company. These personnel do not need medical monitoring or OSHA training provided they do not enter any Contamination Reduction or Exclusion Zone.

C. Outside of working hours, the Contractor shall be responsible for securing the site at the end of each work period and opening the site at the beginning of each work period.

D. Protect work and property from theft, vandalism, and unauthorized entry.

E. Maintain security program throughout construction period. Restrict entrance of unauthorized persons and vehicles into Site.

F. Allow entrance only to authorized persons with proper identification.

G. No claim shall be made against National Grid, Construction Manager, or Design Engineer for damage resulting from trespass or loss of Contractor's equipment.

H. The Contractor shall make good all damage to on-site property and adjacent property owner's arising from failure to provide adequate security.

I. Install and maintain privacy screening (woven geotextile) along Site perimeter fence.

J. If existing fencing or barriers are breached or removed for purposes of construction, notify Construction Manager immediately and provide and maintain temporary security fencing in a manner satisfactory to Construction Manager.

K. Post signs at entrance gates and along perimeter fencing at a minimum frequency of one every 100 feet. Signs shall read "UNAUTHORIZED ENTRANCE TO THE WORK AREA IS PROHIBITED", with minimum 2-inch tall black lettering on a white surface. Signs shall be rectangular with minimum dimensions of 24 inches wide by 18 inches high. Signs shall be securely attached to the fencing, maintained throughout the work, and removed at the completion of the Project.

L. Post signs at entrance gates directing site visitors to sign-in at the field office. Signs shall read "ALL SITE VISITORS ARE REQUIRED TO SIGN-IN AT THE FIELD OFFICE", with black lettering on a white surface. Signs shall be rectangular with minimum dimensions of 24 inches wide by 18 inches high. Signs shall be securely attached to the fencing, maintained throughout the work, and removed at the completion of the Project.

M. The Contractor shall be responsible for all costs associated with providing the access restriction features, maintaining all features during construction and removal and disposal of temporary features at the end of the Project.

N. Entrance Control:
   1. Require each person to have available proper photo identification.
   2. Maintain a list of persons authorized for Site entry and submit a copy of the list to Construction Manager.
   3. Maintain log of workers and visitors and submit to Construction Manager weekly. Include the date, name, address, affiliation, purpose of visit, and time in and time out, for each worker/visitor.

4. Site visitors shall not be permitted to enter active work areas unless authorized by Construction Manager or National Grid and only after receiving a safety briefing from the Site Safety Officer.
5. Vehicular access shall be restricted to authorized vehicles only. Construction Manager reserves the right to search all Contractor vehicles.
6. Personal vehicles shall not be authorized to enter the Contamination Reduction or Exclusion Zone.

O. Security Station:
   1. Provide an area designated for security operations. This area may be part of Contractor's offices or a separate enclosure.
   2. Maintain a minimum of two portable two-way radios for the Contractor, two portable two-way radios for the Construction Manager, and one base radio station. All sets shall be able to and receiving from any other set, at any point within the Limits of Work. All portable units shall be rechargeable and shall be able to operate continuously without recharge for 8 hours.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 70 00

DEMOBILIZATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Closeout procedures.
   2. Final Site cleaning.
   3. Protecting installed construction.
   4. Project record documents.
   5. Requirements for final inspection.
   6. Product warranties and product bonds.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 20 – Survey Requirements.
   4. Section 01 30 65 – Health and Safety Requirements.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 50 00 – Temporary Facilities and Controls.
   7. Section 01 52 20 – Decontamination Requirements.
   8. Section 31 25 13 – Erosion and Sediment Controls.

1.02 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Construction Manager's review.

B. Provide closeout submittals in accordance with Technical Specifications including but not limited to:
   1. Manufacturer's certifications
   2. Inspection certifications and/or reports
   3. Qualifications
   4. Permits, permit closeouts, approvals, or documentation of required notifications
   5. Records of field tests, inspections, and/or measurements
   6. Documentation of fill materials used at the Site
   7. Waste Disposal Manifests and Certificates of Disposal
   8. Other information pertinent to the completion of the Work
   9. Certification of Site and Equipment Cleaning
   10. Record Drawings

1.03 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. The final cleaning shall be performed by the Contractor and shall include the following:
   1. Transport of all containerized soil/sediment waste removed under this contract to a National Grid approved disposal facility.
   2. Transport of all waste water generated under this contract to an National Grid approved disposal facility.
   3. Cleaning and removal of all the Contractor's construction equipment and materials.
   4. Collection and management of all the Contractor generated material including decontamination water and equipment on the Site for which cleaning is inappropriate.
   5. Repair of any erosion or runoff related damage.
   6. Grading and restoration, as required, of all areas used by the Contractor.
   7. Removal of all materials such as excess construction material, wood, debris and any other foreign material.
   8. Removal of all construction equipment.
   9. Sweep paved areas.

C. Equipment, Materials, and Tool Cleaning and Decontamination: Equipment, materials, and tool cleaning shall consist of degreasing (if required) followed by high-pressure water and/or decontamination in accordance with Section 01 52 20.

D. Temporary Facilities: Cleaning of the temporary facilities shall be limited to the existing building, materials, and products used as required in Section 01 52 20 and Section 01 50 00.

1.04 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection, as appropriate, for installed products. Control activity in work areas to prevent damage.

1.05 PROJECT RECORD DOCUMENTS

A. Maintain one set of the following record documents on-Site and record design and/or field revisions to the Work on the appropriate record documents:
   1. Design Drawings
   2. Technical Specifications
   3. Contract Documents
   4. Permits (as required)
   5. Change Orders and other modifications to the Contract
   6. Reviewed Shop Drawings, Product Data, and Samples
   7. Manufacturer's instruction for assembly, installation, and adjusting

B. Ensure entries are complete and accurate, enabling future reference by Construction Manager.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: In accordance with Section 01 30 20.
   1. Legibly mark each item to record actual construction including:
      a. Field changes of dimension and detail.
      b. Details not on original Contract drawings.

G. Submit documents to Construction Manager with claim for final Application for Payment.

1.06 ADMINISTRATIVE PROVISIONS

A. When the Contractor considers the work to be complete, they shall submit to the Construction Manager a written certification that:
   1. Contract Documents have been reviewed.
   2. Work has been inspected for compliance with Contract Documents.
   3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
   4. All construction equipment, excess construction material, debris and other foreign material has been removed.
   5. Work is complete and ready for final inspection.

1.07 FINAL INSPECTION

A. Prior to removal from Site, all cleaned equipment and material shall be inspected and accepted by the Construction Manager.

B. Certification of cleaning shall be attested to by the Site Safety Officer. A copy of each cleaning certificate shall be provided to the Construction Manager.

C. The work shall be successfully completed and approved by the Construction Manager prior to demobilization.

1.08 PRODUCT WARRANTIES AND PRODUCT BONDS (AS APPLICABLE)

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of applicable item of work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Submit prior to final Application for Payment.

F. Time of submittals:
   1. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

G. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Demolition of asphalt pavement.
   2. Temporary removal of existing fence.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 20 – Survey Requirements.
   4. Section 01 30 65 – Health and Safety Requirements.
   5. Section 01 33 00 – Submittal Requirements.
   6. Section 01 40 10 – Protection of Work and Property.
   7. Section 01 52 00 – Work Zone and Community Air Monitoring and Control.
   8. Section 31 23 16 – Excavation.
   9. Section 31 70 00 – Waste Management, Transportation, and Disposal.
   10. Section 33 05 17 – Perimeter Utility Cut and Cap.

1.02 SUBMITTALS

A. As part of the Construction Management Plan (Section 01 10 00) include a plan for selective demolition including the following information.
   1. Detailed sequence of selective demolition work as it pertains to RA activities.
   2. Reference to the Vibration and Settlement Monitoring Plan (VSMP) (Section 01 40 10) and means and methods to prevent vibrations and settlements of sensitive structures above their respective action limits.
   3. Reference to the Utility Support and Protection Plan for protection of existing utilities.
   4. Selective demolition methods.
   5. Waste management and reference to the Waste Management Plan (Section 31 70 00).
   6. Reference to Dust, Odor, and Noise Control Plan (DONCP) (Section 01 52 00).

B. Submit copy of demolition permits (if any) required by local and state regulatory agencies or written acknowledgement of the work.

C. Selective Demolition Record Documents, closeout submittal: Accurately record actual locations of all subsurface and overhead utilities, subsurface obstructions, and subsurface and surface structures in accordance with Section 01 30 20.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with the Design Documents and the City of Watertown codes and regulations.

1.04 PROJECT CONDITIONS

A. The features to be demolished are indicated on the Design Drawings and shall be confirmed on-Site with the Construction Manager and/or Design Engineer prior to the start of Work.

B. Former MGP-related structures are not anticipated to be present within the Limit of Work based on historical information. If present, former MGP-related structures and their foundations shall be demolished as necessary to complete the Work.

PART 2 PRODUCTS

2.01 DUST AND ODOR CONTROLS

A. Dust and odor controls shall be as specified in Section 01 52 00.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate with Dig Safely New York and local utility companies for mark out of utilities not less than 72 hours before performing demolition activities. Request underground utilities to be located and marked within and surrounding limit of work.

B. Erect and maintain temporary barriers and security devices for Site workers' protection.

C. Protect existing structures indicated to remain.

D. Prevent movement or settlement of adjacent structures or subsurface utilities.

E. Perform work zone and community air monitoring and control as specified in Section 01 52 00.

F. Perform vibration and settlement monitoring as specified in Section 01 40 10.

3.02 DEMOLITION REQUIREMENTS

A. Sequence selective demolition with pre-ISS excavation and ISS activities.

B. Use of explosives is not permitted.

C. Conduct demolition to minimize interference with adjacent structures, off-site properties, or other on-site construction activities.

D. Cease operations immediately when adjacent structures appear to be in danger. Notify Construction Manager and the Design Engineer. Do not resume operations until directed by the Construction Manager.

3.03 GENERAL DEMOLITION

A. Remove full depth of asphalt pavement within the ISS areas.

B. Demolish subsurface foundations, tanks, and other structures encountered during pre-ISS excavation and ISS activities.

C. Structures shall be demolished utilizing a hoe ram, hydraulic hammer, or equivalent attachment mounted on an excavator, backhoe, or other conventional excavation equipment.

D. Masonry/concrete or other debris in ISS cells shall be incorporated into the ISS mix in accordance with Section 31 32 00, as approved by the Construction Manager or Design Engineer.

E. Debris designated for off-site disposal shall be prepared and managed in accordance with Section 31 70 00.

F. If required by the disposal facility, decontamination of debris shall consist of pressure washing using a high pressure, low volume power washer. Physical/mechanical agitation (scraping with hand tools) of soil adhered to debris may be utilized to minimize wastewater generation.

G. Generated decontamination fluids shall be collected, containerized, and transported in accordance with Section 31 70 00.

H. Continuously clean-up and remove demolished materials from the Site.

3.04 EXISTING FENCE

A. Remove the existing chain link fence including fence fabric, posts, gates, and subsurface footings as necessary to facilitate the Work and as designated on the Design Drawings.

B. As practical, prevent damage to fence fabric, posts, and accessories during removal for re-installation as part of Site restoration (Section 31 50 00).
   1. Removed fence shall be inspected by Construction Manager and/or Design Engineer.
   2. Fence determined by Construction Manager or Design Engineer to be suitable for re-installation shall be handled and stored as specified in Section 31 50 00
   3. Fence determined to be unsuitable for re-installation shall be disposed in accordance with Section 31 70 00.

END OF SECTION

SECTION 02 61 00

MONITORING WELL DECOMMISSIONING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Preparation.
   2. Well decommissioning.
   3. Equipment decontamination.
   4. Waste management.

B. Related Sections and Documents:
   1. Construction Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. Section 01 10 56 – Protection of Work and Property.
   3. Section 01 33 00 – Submittal Requirements.
   4. Section 01 40 00 – Quality Requirements.
   5. Section 01 52 20 – Decontamination Requirements.
   6. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 SUBMITTALS

A. Drilling Contractor Information:
   1. Name and address of the drilling company.
   2. Name of proposed Driller.
   3. Copy of Driller's certification and company's New York registration.
   4. Certificate of insurance naming National Grid as additionally insured.

B. Well Decommissioning/Sealing Records. The driller's well decommissioning/sealing records for each well, including the type and amount of material removed from each well prior to decommissioning and the amount and type of material used to decommission each well.

1.03 REFERENCES

A. All applicable federal, state and local regulations.

B. Occupational Safety and Health Administration (OSHA) Regulations.

C. CP-43: "Groundwater Monitoring Well Decommissioning Policy" (New York State Department of Environmental Conservation [NYSDEC], November 2009).

1.04 QUALIFICATIONS

A. Drilling Contractor and proposed driller: Specializing in performing the Work of this section with minimum of 3 years of documented experience.

B. Drilling Contractor shall be on National Grid's approved contractor list.

PART 2 PRODUCTS

2.01 PRODUCTS

A. Grout mixture: A cement-bentonite slurry in the ratio of 7.8 gallons of water to 3.9 pounds of dry powdered bentonite to 94 pounds of dry Portland cement (Type I).

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that site conditions will support equipment for performing decommissioning operations.

B. Protect structures and utilities near each well to be decommissioned from damage. Damage to existing structures shall be repaired and/or damaged structures shall be replaced at no cost to National Grid.

C. Drilling Contractor shall call Dig Safely New York and local utilities not less than 72 hours before initiating work and request underground utilities to be located and marked within and surrounding construction areas. The Drilling Contractor shall maintain documentation of contacts with Dig Safely New York and local utilities.

D. Protect utilities from damage.

3.02 MONITORING WELL DECOMMISSIONING

A. Wells identified for decommissioning shall be decommissioned in accordance with "CP-43: Groundwater Monitoring Well Decommissioning Policy" (NYSDEC).

B. Monitoring wells identified on Construction Drawings shall be properly decommissioned prior to initiation of remediation activities.

C. Refer to attached monitoring well logs for the wells scheduled for decommissioning.

3.03 OVERBURDEN WELLS

A. Overburden wells shall be either completed removed (if within excavation limits) or decommissioned using the grout-in-place method (below).

B. Grout In-Place Method:
   1. Contractor shall perform a well inspection including water level measurement and well depth measurement.
   2. Compare depth measurement to well construction diagram to determine if there is sediment, debris or other materials (e.g., tubing, bailers, etc.) in the screen or riser casing of the well.
      a. If there is material in the screen or riser casing, Contractor shall attempt to remove this material prior to decommissioning.
   3. Observe the surface around the well for indications of channeling by in-flowing surface water.
      a. If indications of channeling are observed, partially excavate the well and inspect the seal to determine if casing perforation is needed prior to grouting.
   4. Record the results of the well inspection on the Monitoring Well Field Inspection Log form (see Attachment A to this specification).
   5. If casing perforation is needed prior to grouting (see 3a above), contractor shall perforate the casing and grout in-place by puncturing, cutting, or splitting the well casing. A minimum of 4 rows of perforations several inches long around the circumference of the pipe and a minimum of 5 perforations per linear foot of casing is recommended.
   6. Following inspection and casing perforation activities (if necessary), a tremie pipe (or tremie hose) hose shall be placed in the well; the bottom discharge end of the tremie pipe shall be lowered to the bottom of the well. Cement/bentonite grout shall be pumped into the well under pressure through the tremie pipe such that the grout discharges to the bottom of the well.
   7. During grouting, the tremie pipe may be raised from the bottom of the well, but is to be positioned such that the discharge end remains submerged in the column of undiluted grout in the well while the grout is being pumped.
   8. Grout shall be pumped into the well until grout appears at the ground surface at the top of the riser casing. Water or other fluids displaced by the grout shall be contained and managed in accordance with Section 31 70 00.
   9. At the completion of decommissioning, the final grout level shall be within 5 feet of the ground surface.
   10. The grout level shall be re-inspected after a minimum 24 hours.
      a. If excessive settling occurs, alternatives such as grouting in stages or thicker grout mixtures shall be considered.
   11. The Contractor shall break up the concrete seal surrounding the casing to remove the concrete pad once the grouting is complete.

12. Stick-up wells shall be hoisted out of the ground by the above-ground protective casing.
    a. If the PVC well casing is hoisted with the protective casing, the PVC well casing shall be cut off by the Contractor after the base of the protective casing is lifted above the ground surface.
13. Restore surface of the borehole to the condition of the area surrounding the borehole.
14. Record the details of the decommissioning on the Well Decommissioning Record (see Attachment B to this Section).

3.04 BEDROCK WELLS

A. Bedrock well decommissioning can be conducted using the grout in-place method or over-drill method at the discretion of the Design Engineer. These methods are described below.

B. Grout In-Place Method:

1. Follow grouting in-place procedures described in Part 3.03.

C. Over-Drill Method:
1. Contractor shall perform a well inspection including water level measurement and well depth measurement.
2. Compare depth measurement to well construction diagram to determine if there is sediment, debris or other materials (e.g., tubing, bailers, etc.) in the screen or riser casing of the well.
    a. If there is material in the screen or riser casing, Contractor shall attempt to remove this material prior to decommissioning.
3. Observe the surface around the well for indications of channeling by in-flowing surface water.
    a. If indications of channeling are observed, partially excavate the well and inspect the seal to determine if casing perforation is needed prior to grouting.
4. Record the results of the well inspection on the Monitoring Well Field Inspection Log form (see Attachment A to this specification).
5. Perform over-drilling of 2-inch PVC casing through the 4-inch steel casing (seated approximately 1 to 2 feet into bedrock) using a 3.75-inch roller bit.
6. Drill out PVC casing and surrounding well materials including cement/bentonite grout, bentonite seal, and filter sand that is inside the 4-inch steel casing and open bedrock borehole.
7. Resume drilling to a depth beyond the total depth of the well by a distance of 0.5 feet.
8. Following removal of drilling string from the 4-inch steel casing, a tremie pipe (or tremie hose) shall be placed in the well; the bottom discharge end of the tremie pipe shall be lowered to the bottom of the well. Cement/bentonite grout shall be pumped into the well under pressure through the tremie pipe such that the grout discharges to the bottom of the well.

9. During grouting, the tremie pipe may be raised from the bottom of the well, but is to be positioned such that the discharge end remains submerged in the column of undiluted grout in the well while the grout is being pumped.
10. Grout shall be pumped into the well until grout appears at the ground surface. Water or other fluids displaced by the grout shall be contained and managed in accordance with Section 31 70 00.
11. Prior to the grout drying, create a borehole with a greater diameter than the original boring and perform over-drilling to a depth consistent with the base of the permanent 4-inch diameter steel casing or to auger refusal, whichever occurs first.
12. Remove permanent 4-inch diameter steel casing.
13. Tremie grout within the annular space between the augers and steel casing until grout appears at the ground surface.
14. Remove drilling equipment and maintain grout level in the borehole while equipment is removed.
15. At the completion of decommissioning, the final grout level shall be within 5 feet of the ground surface.
16. The grout level shall be re-inspected after a minimum of 24 hours.
17. The Contractor shall break up the concrete seal surrounding the casing to remove the concrete pad once the grouting is complete.
18. Restore surface of the borehole to the condition of the area surrounding the borehole.
19. Record the details of the decommissioning construction on the Well Decommissioning Record (see Attachment B to this Section).

3.05 DECONTAMINATION

A. All equipment used for well decommissioning shall be steam cleaned prior to mobilizing to the site and prior to demobilizing from the site.

B. Well decommissioning equipment that comes in contact with subsurface materials shall be decontaminated by steam cleaning prior to use at each location.

C. Equipment decontamination shall be conducted in accordance with the Section 01 52 20 –Decontamination Requirements.

3.06 WASTE MANAGEMENT

A. Solids derived from well decommissioning activities shall be contained and disposed of in accordance with Section 31 70 00 – Waste Management, Transportation, and Disposal.

B. Water or liquids derived from well decommissioning activities shall be contained and disposed in accordance with Section 31 70 00.

3.07 FIELD QUALITY CONTROL

A. Request inspection by the Design Engineer after determining well to be decommissioned is free of debris/materials and/or after debris/materials, if present, have been removed.

B. At the completion of grouting and at the completion of surface restoration, request visual inspection by the Design Engineer.

END OF SECTION

Attachment A

SITE NAME:

SITE ID.: _____
INSPECTOR: _____
DATE/TIME: _____
WEll ID.: _____

MONITORING WELL FIELD INSPECTION LOG
NYSDEC WELL DECOMMISSIONING PROGRAM

	YES	NO
WELL VISIBLE? (If not, provide directions below)		
WELL I.D. VISIBLE?		
WELL LOCATION MATCH SITE MAP? (if not, sketch actual location on back).....		

WELL I.D. AS IT APPEARS ON PROTECTIVE CASING OR WELL: .....

	YES	NO
SURFACE SEAL PRESENT?		
SURFACE SEAL COMPETENT? (If cracked, heaved etc., describe below)		
PROTECTIVE CASING IN GOOD CONDITION? (If damaged, describe below)		

HEADSPACE READING (ppm) AND INSTRUMENT USED..... _____
TYPE OF PROTECTIVE CASING AND HEIGHT OF STICKUP IN FEET (If applicable) _____
PROTECTIVE CASING MATERIAL TYPE: ..... _____
MEASURE PROTECTIVE CASING INSIDE DIAMETER (Inches): ..... _____

	YES	NO
LOCK PRESENT?		
LOCK FUNCTIONAL?		
DID YOU REPLACE THE LOCK?		
IS THERE EVIDENCE THAT THE WELL IS DOUBLE CASED? (If yes,describe below)		
WELL MEASURING POINT VISIBLE?		

MEASURE WELL DEPTH FROM MEASURING POINT (Feet): ..... _____
MEASURE DEPTH TO WATER FROM MEASURING POINT (Feet): ..... _____
MEASURE WELL DIAMETER (Inches): ..... _____
WELL CASING MATERIAL: ..... _____
PHYSICAL CONDITION OF VISIBLE WELL CASING: ..... _____
ATTACH ID MARKER (if well ID is confirmed) and IDENTIFY MARKER TYPE ..... _____
PROXIMITY TO UNDERGROUND OR OVERHEAD UTILITIES..... _____

DESCRIBE ACCESS TO WELL: (Include accessibility to truck mounted rig, natural obstructions, overhead power lines, proximity to permanent structures, etc.); ADD SKETCH OF LOCATION ON BACK, IF NECESSARY.

DESCRIBE WELL SETTING (For example, located in a field, in a playground, on pavement, in a garden, etc.) AND ASSESS THE TYPE OF RESTORATION REQUIRED.

IDENTIFY ANY NEARBY POTENTIAL SOURCES OF CONTAMINATION, IF PRESENT (e.g. Gas station, salt pile, etc.):

REMARKS:

Attachment B

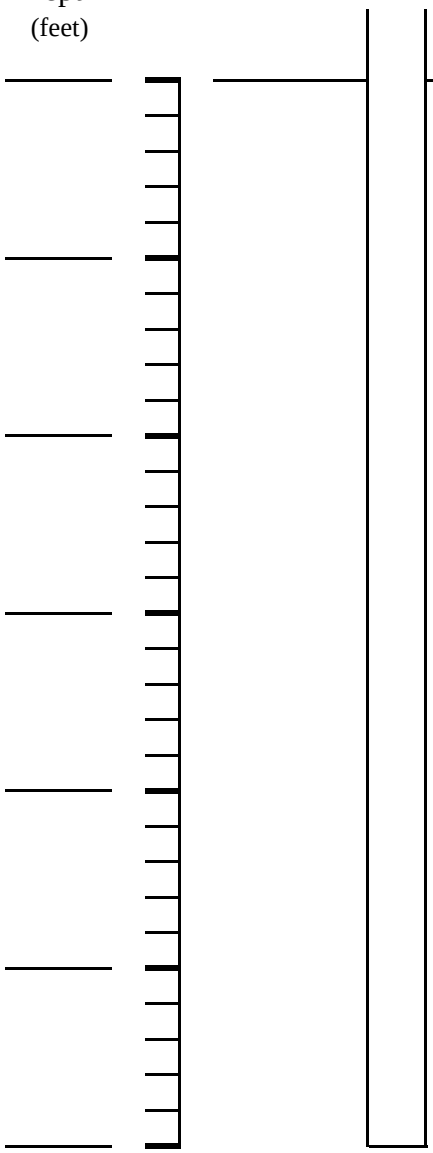
WELL DECOMMISSIONING RECORD

Site Name:	Well I.D.:
Site Location:	Driller:
Drilling Co.:	Inspector:
	Date:

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING	
Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	
CASING PULLING	
Method employed	
Casing retrieved (feet)	
Casing type/dia. (in)	
CASING PERFORATING	
Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	
GROUTING	
Interval grouted (FBLS)	
# of batches prepared	
For each batch record:	
Quantity of water used (gal.)	
Quantity of cement used (lbs.)	
Cement type	
Quantity of bentonite used (lbs.)	
Quantity of calcium chloride used (lbs.)	
Volume of grout prepared (gal.)	
Volume of grout used (gal.)	

WELL SCHEMATIC*



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

Date Start/Finish:	7/7/04, 8/20/04	**Northing:**	1451819.821	**Well ID:**	**MW-11R**
Drilling Company:	Parratt Wolff	**Easting:**	673988.711	**Client:**	Niagara Mohawk, A National Grid Company
Driller's Name:	R Navatla, W.Capers	**Casing Elevation:**	400.26' AMSL		
Rig Type	CME-75	**Surface Elevation:**	400.7' AMSL	**Location:**	Engine Street Site Watertown, NY
Drilling Method:	6.25" HSA/ 6" Down-hole Air Hammer	**Borehole Depth:**	41' below grade		
Sampling Method:	2" Split spoon/ 5' core barrel	**Geologist:**	Dave Cornell		

Depth (ft bgs) / Elevation (ft. AMSL)	Sample Run Number	Sample Interval (ft bgs)	Recovery (feet)	Blows per 6 Inches/ Minutes per foot	N - Value / RQD (%)	PID Headspace (ppm)	Geologic Column	Rock Fractures	Stratigraphic Description	Well Construction
0 / 400	SS-1	0-2	0.8	- 5 3 1	8	ND			ASPHALT.	Flushmount curb box
									Dark brown fine to medium SAND, trace Silt, Coal and fine Gravel, non-plastic, moist. Trace Cinders below 2.0' bgs.	
	SS-2	2-4	0.4	3 2 2 3	4	ND			Brown fine to medium SAND, non-plastic, moist.	4" Steel Casing (0.0' - 29' bgs)
5 / 395	SS-3	4-6	1.3	2 4 3 1	7	ND				Bentonite/cement Grout (0.0' - 24' bgs)
	SS-4	6-8	1.6	1 2 2 3	4	ND			Black CINDERS, COAL and SLAG, non-plastic, moist.	2" ID Sch 40 PVC Riser (0.44' - 29' bgs)
	SS-5	8-10	1.5	3 2 3 1	5	ND			Red-brown fine to medium SAND, non-plastic, moist.	Bentonite/cement Grout (0.5' - 25' bgs)
10 / 390	SS-6	10-12	1.8	1 1 1 1	2	ND				
	SS-7	12-14	1.6	1 1 1 1	2	ND				
15 / 385	SS-8	14-16	1.5	1 1 1 1	2	ND				

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Remarks:
bgs = below ground surface; NA = Not Applicable/Available; WOH = Weight of Hammer; AMSL = Above Mean Sea Level.
Break Types: F = Medium Angle (30-40°), V = High Angle (>70° dip), HZ = Horizontal (<10° dip)

Client:
Niagara Mohawk,
A National Grid Company

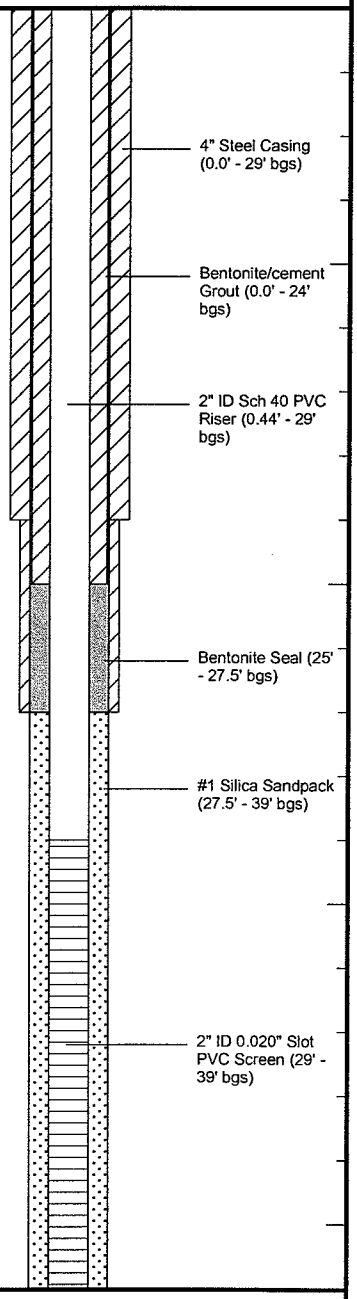
Site Location:
Engine Street Site
Watertown, NY

Well ID: MW-11R

Borehole Depth: 41' below grade

Depth (ft bgs) / Elevation (ft. AMSL)	Sample Run Number	Sample Interval (ft bgs)	Recovery (feet)	Blows per 6 Inches/ Minutes per foot	N - Value / RQD (%)	PID Headspace (ppm)	Geologic Column	Rock Fractures	Stratigraphic Description
	SS-9	16-18	1.8	1 1 1 1	2	ND			Brown PEAT, non-plastic, moist. Little Silt and fine Sand below 17.2' bgs.
	SS-11	18-20	2.0	1 4 12 6	16	ND			Grey-brown SILT and ORGANICS (PEAT), little fine Sand, non-plastic, moist.
20 380	SS-12	20-22	1.4	2 3 5 2	8	42 6.5			Grey-brown SILT and fine to coarse subangular GRAVEL, some fine Sand, little Clay, non-plastic, moist. Saturated with NAPL from 20.6' - 21' bgs. Brown SILT and CLAY, trace fine to medium Gravel, trace NAPL, slightly plastic, moist to wet.
	SS-13	22-24	1.0	2 4 7 14	11	1.2			Grey-brown CLAY, little Silt, non-plastic, moist. Limestone chips in spoon shoe.
25 375	NA	NA	NA	NA	NA	NA			Refusal - Bedrock encountered at 24' bgs.
	1	27-31	3.92	NA	97	ND		HZ HZ HZ HZ	Medium grey LIMESTONE, little Fossils, trace Chert nodules. Nearly horizontal fractures at 27.7', 28.1', 28.75', 30.15' and 30.8' bgs. Munsell color: N3 to N4, Chert nodules N2
30 370	2	31-36	5	NA	92	ND		HZ HZ HZ HZ HZ HZ HZ HZ HZ	Medium grey LIMESTONE, increasing Fossils to a depth of 33.85' bgs, trace Chert. Blue-grey color, trace brachiopod Fossils below 33.85' bgs. Possible Chuamont/Lowville contact at 33.85' bgs. Trace sheen in fractures at 31.56', 32.87' and 36.0' bgs. Nearly horizontal fractures at 31.47', 31.56', 31.8', 32.87', 33.5', 34.01', 34.48', 35.3' and 35.9' bgs. Munsell color: N3 to N4, Chert nodules N2, Lowville 5B 5/1.
35 365									

Well Construction



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Remarks:
bgs = below ground surface; NA = Not Applicable/Available; WOH = Weight of Hammer; AMSL = Above Mean Sea Level.
Break Types: F = Medium Angle (30-40°), V = High Angle (>70° dip), HZ = Horizontal (<10° dip)

Client:
Niagara Mohawk,
A National Grid Company

Site Location:
Engine Street Site
Watertown, NY

Well ID: **MW-11R**

Borehole Depth: 41' below grade

Depth (ft bgs) / Elevation (ft. AMSL)	Sample Run Number	Sample Interval (ft bgs)	Recovery (feet)	Blows per 6 Inches/ Minutes per foot	N - Value / RQD (%)	PID Headspace (ppm)	Geologic Column	Rock Fractures	Stratigraphic Description	Well Construction
40 / 360	3	36-41	5	NA	80	ND		HZ HZ HZ HZ HZ HZ HZ HZ	Medium grey-blue LIMESTONE, trace Fossils to 36.8' bgs. Medium grey color, Worm borings and trace Fossils, trace Shale partings below 40.0' bgs. Nearly horizontal fractures at 36.1', 36.35', 36.8', 37.4', 37.82', 38.74', 38.94', 39.33', 40.17', 40.38' and 40.6' bgs. Munsell color: 5B 5/1to 36.8' bgs, below 36.8' N3 to N4.	#1 Silica Sandpack (27.5' - 39' bgs) 2" ID 0.020" Slot PVC Screen (29' - 39' bgs) Grout (39' - 41' bgs) 2" ID PVC Sump (39' - 41' bgs)
45 / 355										
50 / 350										
55 / 345										

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Remarks:
bgs = below ground surface; NA = Not Applicable/Available; WOH = Weight of Hammer; AMSL = Above Mean Sea Level.
Break Types: F = Medium Angle (30-40°), V = High Angle (>70° dip), HZ = Horizontal (<10° dip)

SECTION 31 05 13

SOILS AND AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. References.
   2. Submittals.
   3. Backfill and Fill Materials.
   4. Examination of Materials.
   5. Stockpiling of Backfill and Fill Materials.
   6. Protection of Installed Work.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 –Summary of Work.
   3. Section 01 33 00 – Submittal Requirements.
   4. Section 31 23 16 – Excavation.

1.02 REFERENCES

A. New York State Department of Transportation (NYSDOT) Standard Specifications (most recent edition).

B. New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation 6 NYCRR Part 375.

C. NYSDEC, Division of Remediation, Technical Guidance for Site Investigation and Remediation (DER-10), May 2010.

D. ASTM International:
   1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   2. ASTM D4318 - Standard Test Method Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 SUBMITTALS

A. Samples of fill materials proposed for use shall be submitted, per Section 01 33 00, to Design Engineer a minimum of 2 weeks in advance of delivery to the Site. Samples shall consist of 2 pounds (lbs) of each type of material. No materials shall be imported to the Site without approval of Design Engineer.

B. Imported Fill and Stone Material Packages:
    1. Material Source: Submit name of imported material source and certification from the source stating that the materials are permitted mine or quarry with a statement that to the best of the affiant's knowledge, the material is not contaminated pursuant to any applicable remediation standards and is free of extraneous or deleterious material and/or solid waste, and a description of the steps taken to confirm such.
    2. Bills of lading to document the source(s) of the material, including the name of the affiant and relationship to the source, and the location where the materials were obtained, including the street, town, state, and a brief source history.
    3. Geotechnical test results identified in Part 2 (e.g., particle-size analysis, plasticity index test [on portion passing No. 200 sieve]). Test reports from the testing laboratory shall be submitted directly to the Design Engineer.
    4. Laboratory analytical results or certificates supporting that the source quality conforms to the requirements identified in Part 2. The results of the fill analyses shall be submitted to NYSDEC by the Design Engineer for approval prior to delivery and use of the materials to the Site.
    5. Provide information necessary for Design Engineer to prepare and submit the NYSDEC form entitled "Request to Import/Reuse Fill or Soil" and supporting documentation.
    6. Fill materials shall not be imported to the Site until approval is provided by the NYSDEC and the Design Engineer.

C. Submit information and qualifications of proposed analytical laboratory.

D. Submit information and qualifications of proposed geotechnical laboratory.

PART 2 PRODUCTS

2.01 QUALITY CONTROL

A. Prior to acceptance of fill materials for use, perform quality tests in accordance with the requirements of this Section and appropriate reference standards. Design Engineer reserves the right to accept or reject fill materials based on conformance with the materials properties outlined in this Section.

B. Employ an independent geotechnical testing laboratory, approved by Design Engineer, to perform the tests on each different source and/or material proposed for use in the Work.

C. Employ an independent analytical testing laboratory certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) to perform the testing on each different source and/or material proposed and submit the test data to the Design Engineer. The results of the tests will be provided to the NYSDEC to gain their approval, dependent on the analytical results, prior to delivery and use on the Site.

D. Geotechnical Testing: Collect fill material samples and perform geotechnical testing to check for compliance with this Section.

E. Chemical Analytical Testing: Collect fill material samples and submit to analytical laboratory to check for compliance with this Section.

2.02 IMPORTED BACKFILL MATERIALS

A. Source Quality Control:

1. Employ a NYSDOH ELAP-certified approved analytical testing laboratory to perform the analytical testing on each different source and/or material.
2. Imported fill materials shall be sampled in accordance with the rates specified in the NYSDEC, Division of Remediation, Technical Guidance for Site Investigation and Remediation (DER-10), May 2010, Table 5.4(e)10-Recommended Number of Soil Samples (reproduced below). Samples will be analyzed for Target Analyte List (TAL) volatile organic compounds (VOCs), TAL semi-volatile organic compounds (SVOCs), TAL metals, cyanide (total and amenable), and. PCBs/Pesticides. Analytical testing shall be required unless exempted by DER-10 (e.g., for virgin crushed stone material documented to be from a permitted mine or quarry provided that is documented to contain less than 10% by weight material which would pass through a size 100 sieve).
3. Analytical data of TAL VOCs, TAL SVOCs, TAL metals, cyanide (total and amenable), and PCBs/Pesticides shall demonstrate compliance with the applicable soil cleanup objectives (SCOs) in 6 NYCRR 375.8(b) for Residential Use (inclusive of SCOs for Protection of Groundwater and SCOs for Protection of Ecological Resources). Refer to the Allowable Constituent Levels for Imported Fill or Soil table contained in Appendix 5 of DER-10 (attached).
4. Testing frequency shall be according to DER-10 Table 5.4(e)10 reproduced for reference:

Contaminant	VOCs	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
> 1000	Add an additional 2 VOC discrete samples and 1 composite sample for each additional 1,000 cubic yards or consult with DER		

5. Grab (discrete) samples shall be allowed for VOC analyses only.
6. Composite samples shall be prepared by collecting discrete samples from three to five random locations from the volume of soil to be tested which shall then be mixed (composited) and analyzed for SVOCs, inorganic, and PCB/pesticides.
7. If results from analytical data of TAL VOCs, TAL SVOCs, TAL metals, cyanide (total and amenable), and PCBs/Pesticides indicate concentrations above specified criteria, the Contractor shall submit another proposed material source.
8. Contractor shall coordinate with Design Engineer for collection of samples to be analyzed for emerging contaminants [per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane] from each different proposed source.
   a. Samples shall be collected at the frequency required by DER-10 Table 5.4(e)10.

b. Samples collected for analysis of PFAS shall be tested for total concentration. If PFAS are detected above the reporting limit, a synthetic precipitation leaching procedure (SPLP) PFAS analysis shall be conducted (coordinated with laboratory by Design Engineer).

c. Contractor shall coordinate with Design Engineer for turnaround time and shall account for total PFAS and SPLP PFAS analyses in the project schedule.

d. Emerging contaminant results shall be reported in a Category B deliverable prepared by the analytical laboratory.

e. If, by the determination of NYSDEC, results from analytical data of emerging contaminants PFAS and 1,4-Dioxane indicate that concentrations of emerging contaminants are present and will impact groundwater, Contractor shall submit another proposed material source.

9. Employ independent geotechnical testing laboratory approved by the Design Engineer to perform the tests on each different source and/or material proposed for use in the Work and submit the test data to the Design Engineer.
   a. Perform plasticity index testing in accordance with ASTM D4318.
      1) Testing frequency: One composite representative sample.
   b. Perform particle-size testing in accordance with ASTM 6913.
      1) Testing frequency: One composite representative sample.
10. If delivered materials are determined by the Construction Manager or Design Engineer to be significantly different than those previously submitted, additional geotechnical testing shall be performed at no additional cost.
11. If results from geotechnical analysis do not meet the specifications, the Contractor shall submit another proposed material source.

B. Select Borrow (Common Fill):
   1. Meets source quality requirements specified in this section.
   2. Free of extraneous debris or solid waste.
   3. Material passing the No. 200 sieve shall be non-plastic.
   4. Coarse-grained sand material conforming to the following limits.

U.S. Standard Sieve Size	Percent Passing by Weight
No. 40	0-70
No. 200	0-15

C. Subbase Couse, Type 2:
   1. Certified clean imported NYSDOT Subbase Course from a permitted mine or quarry and documented to meet the source quality requirements specified in this section.
   2. Free of extraneous debris or solid waste.
   3. Consisting of material from a permitted mine or quarry.
   4. Conforming to NYSDOT Table 733-04A Subbase Gradation for Type 2 subbase within the following limits:

U.S. Standard Sieve Size	Percent Passing by Weight
2 inch	100
¼ inch	25-60
No. 40	5-40
No. 200	0-10

D. Coarse Aggregate, Size Designation 2, 3, 3A, or 4A:
   1. Certified clean imported NYSDOT Coarse Aggregate.
   2. Free of extraneous debris or solid waste.
   3. Consisting of material from a permitted mine or quarry.
   4. Conforming to NYSDOT Table 703-4 Sizes of Stone, Gravel and Slag, Size Designation 2, 3A, 3, or 4A within the following limits:

U.S. Standard Sieve Size	Size 2	Size 3A	Size 3	Size 4A
3 inch	-	-	-	100
2 ½ inch	-	-	100	90-100
2 inch	-	100	90-100	-
1 ½ inch	-	90-100	35-70	0-20
1 inch	90-100	0-15	0-15	-
½ inch	0-15	-	-	-

PART 3 EXECUTION

3.01 EXAMINATION OF MATERIALS

A. Prior to placing backfill materials, request materials inspection by Construction Manager and/or Design Engineer.

B. If the physical and/or engineering properties of materials delivered to the site differ significantly from the samples received and tested, perform additional testing to verify compliance with the specifications.

C. Any material placed that does not conform to these Specifications shall be removed and replaced with conforming material, at no cost to National Grid.

3.02 STOCKPILING OF BACKFILL MATERIALS

A. Stockpile materials on site at locations approved by Construction Manager and/or Design Engineer.

B. Stockpile in sufficient quantities to meet project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

E. Stockpiles shall not be taller than 8 feet.

3.03 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage during construction.

B. In the event of damage to installed work, repair or replace damaged work to the satisfaction of Construction Manager and Design Engineer, and at no additional expense to National Grid.

END OF SECTION

Attachment A

DER-10 Appendix 5: Allowable Constituent Levels for Imported Fill or Soil Subdivision 5.4 (e)

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.

SECTION 31 10 00

SITE CLEARING AND PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Examination.
   2. General preparation.
   3. Temporary construction access.
   4. Protection of existing features.
   5. Clearing.
   6. Handling and stockpiling.
   7. Removal.

B. Related Sections:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 40 10 – Protection of Work and Property.
   4. Section 01 50 00 – Temporary Facilities and Controls.
   5. Section 01 52 00 – Work Zone and Community Air Monitoring and Control.
   6. Section 31 25 13 – Erosion and Sediment Controls.
   7. Section 31 70 00 – Waste Management, Transportation, and Disposal.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations

1.02 SITE CLEARING RESTRICTIONS

A. Do not disturb areas outside the Limit of Work with exception of improving surfaces for construction vehicle traffic. Work outside the Limit of Work shall only be permitted as approved in writing by the Construction Manager.

B. Surface disturbance from clearing (e.g., vegetation removal, grubbing, and other site clearing activities) within the Limit of Work shall only be permitted to the extent necessary for access. Before clearing an area, delineate the area and request a review of the extents by the Design Engineer. Once an area is approved by the Design Engineer, in consultation with the NYSDEC, clearing shall be conducted immediately prior to the associated work activities.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the Limit of Work and verify existing surfaces, features, trees and vegetation designated to remain are tagged or identified.

3.02 GENERAL PREPARATION

A. Call Local Utility Line Information service not less than 3 working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.

B. Install temporary construction fencing as specified in Section 01 50 00.

C. Manage and protect existing utilities designated to remain as specified in Section 01 40 10

D. Implement erosion and sediment control measures in accordance with Section 31 25 13 prior to ground disturbance activities (e.g., demolition of asphalt surfacing, etc.).

3.03 TEMPORARY CONSTRUCTION ACCESS

A. Temporary construction access will require access through properties not owned by National Grid and shall be completed in accordance with applicable access agreements.

B. Contractor shall be solely responsible to establish and maintain access to the Site for Work-related traffic including mobilization and demobilization of equipment and facilities, material deliveries, waste material loadout, contractor and subcontractor personnel traffic, and other traffic related to remedial construction activities. Mobilization activities before construction of temporary construction access shall be limited.

C. Furnish materials, equipment, and personnel to construct and maintain the temporary construction access.

D. Furnish materials, equipment, and personnel to establish and maintain temporary traffic controls. Prior to removing fencing and constructing the temporary entrance, survey and stake or mark out the entrance location. Verify alignment with Construction Manager and Design Engineer prior to start of related Work.

E. Construct stabilized construction entrances and establish erosion and sediment controls downgradient of temporary stabilized construction entrance alignments, as indicated on the Design Drawings and in accordance with Section 31 25 13.

F. Inspect the surface of temporary construction entrances daily. Repair temporary construction access as necessary during Work including regrading and/or placement of additional fill, as appropriate, in areas where ruts, depressions, and washouts are observed.

3.04 PROTECTION OF EXISTING FEATURES

A. Protect existing property in accordance with Section 01 14 10.

B. Protect trees, plant growth, and features designated to remain.

C. Protect existing buildings, structures, roads, sidewalks, guiderails, signage, curbs, and manholes identified to remain from damage.

D. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.05 HANDLING AND STOCKPILING

A. Handle and stockpile materials on-site generated during site preparation. Materials to be re-used shall be protected and managed in a manner to not cause damage. Materials to be recycled or disposed shall be managed in accordance with Part 3.06.

3.06 REMOVAL

A. Characterize wastes generated during site preparation and clearing, and load into trailer beds (lined as appropriate) for transportation to off-Site resource recovery facility or disposal facility, as appropriate and approved by National Grid, and in accordance with Section 31 70 00.

B. Continuously clean-up and remove waste materials from Site. Do not allow materials to accumulate on-Site.

C. Do not burn or bury materials on-Site. Leave Site in clean condition.

END OF SECTION

SECTION 31 23 16

EXCAVATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Soil excavation.
   2. Soi handling.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC, September 2016).
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 30 20 – Survey Requirements.
   5. Section 01 30 65 – Health and Safety Requirements.
   6. Section 01 33 00 – Submittal Requirements.
   7. Section 01 40 10 – Protection of Work and Property.
   8. Section 31 23 19 – Selective Demolition.
   9. Section 31 05 13 – Soils and Aggregates for Earthwork.
   10. Section 31 25 13 – Erosion and Sediment Control.
   11. Section 31 32 00 – In Situ Solidification.
   12. Section 31 41 16 – Excavation Support and Protection.
   13. Section 31 70 00 – Waste Management, Transportation, and Disposal.
   14. Section 33 05 17 – Utility Cup and Cap.
   15. Section 33 20 00 – Utility Support and Protection.

1.02 SUBMITTALS

A. Excavation Plan, as part of the Construction Management Plan identified in Section 01 10 00, including a description of pre-excavation test pit/waste categorization (if used), excavation sequencing, excavation methods, and soil handling, stockpiling, and waste management.

B. Excavation Support and Protection submittals in accordance with Section 31 41 16.

C. Excavation permit if required by local and state regulatory agencies.

1.03 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations.

B. Local utility standards and requirements when working near utility lines, as defined by each utility owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Backfill materials shall be as specified in Section 31 05 13.

B. Excavation support and protection materials as specified in Section 31 41 16.

C. Odor and vapor control materials as specified in Section 01 52 00.

PART 3 EXECUTION

3.01 PREPARATION

A. Approximate existing Site conditions are indicated on the Drawings. Examine and confirm existing Site conditions prior to the start of Work. Inform National Grid, Construction Manager, and Design Engineer immediately if observed Site conditions differ from Drawings.

B. Call Dig Safely New York not less than 72 hours before performing Work.
   1. Request underground utilities to be located and marked within and around the Limit of Work and adjacent properties.
   2. Do not proceed with intrusive activities until the mark out is complete and confirmed.

C. Protect active utilities indicated to remain from damage.

D. Coordinate Work in the vicinity of utilities with the utility purveyor.

E. Protect Site structures and features in accordance with Section 01 40 10.

F. Protect benchmarks and survey control points from equipment and vehicular traffic. Benchmarks and survey marks that are missing or damaged shall be replaced by the Contractor's Surveyor at the expense of the Contractor.

G. Monitoring wells within the excavation and ISS area wall shall be decommissioned in accordance with Section 02 61 00.

H. Furnish and install temporary construction fencing in accordance with the Drawings and Section 01 50 00.

I. Pre-excavation test pits to characterize soil shall be considered to minimize on-site soil staging (and minimize odors) and to facilitate direct loading of soil for transportation to off-site disposal/treatment facilities. If pre-excavation test-pits are performed, samples shall be collected for waste characterization analyses in accordance with Section 31 70 00.

J. Implement dust, odor, and vapor controls in accordance with the Contractor-prepared Dust, Odor, and Noise Control Plan (Section 01 52 00).

K. Install erosion and sediment controls as specified in Section 31 25 13, the Construction Drawings, and the approved Erosion and Sediment Control Plan.

L. Install and maintain personnel and equipment decontamination areas as specified in Section 01 52 00.

M. Excavated material not direct loaded shall be staged within temporary waste containment areas constructed and maintained in accordance with Section 31 70 00.

3.02 DEWATERING

A. Dewatering shall be performed to satisfy the following performance requirements.
   1. At all times, provide and maintain proper and satisfactory means and devices for the removal of water from the excavation and ISS areas.
   2. Perform dewatering to remove water that collects in the excavation and ISS areas in a manner to not interfere with the execution of the Work.
   3. Water pumped or drained from the excavation and ISS areas shall be handled in a suitable manner approved by Construction Manager and Design Engineer, and without injury to adjacent property, the Work under construction, or to pavement, roads, drives and water courses.
   4. Contractor shall assume sole responsibility for dewatering, surface water control, on-Site staging, and off-Site treatment/disposal, and for loss or damage resulting from partial or complete failure of protective measures.
   5. Provide dewatering and storage equipment in good-working order, including piping, hoses, pumps, and storage tanks.
   6. Measure total daily volume pumped from the dewatering system using a flow totalizer.
   7. Maintain on-site sufficient storage and treatment capacity for water generated by dewatering operations and other remedial activities.
   8. Prevent freezing of dewatering and on-site treatment system components and collected liquids stored in on-site drums, tanks, treatment equipment, pipes and hoses.

B. Dismantle and remove dewatering system after dewatering operations are discontinued or as approved by National Grid or Construction Manager.

C. Wastewater shall be containerized, handled, and treated/disposed as specified in Section 31 70 00.

3.03 SURVEYING

A. Surveying shall be performed as specified in Section 01 30 20.

3.04 EXCAVATION

A. All excavation work shall be performed in compliance with applicable Federal, State, and OSHA regulations.

B. Promptly notify Construction Manager and Design Engineer of unexpected subsurface conditions as encountered.

C. Excavations shall be supported in accordance with Section 31 41 16.

D. Perform dewatering in accordance with Part 3.02.

E. Excavation shall be performed to the horizontal and vertical limits as shown on the Drawings and to facilitate ISS (e.g., pre-ISS excavation). The depth and horizontal extents shall be extended as directed by the Design Engineer or Construction Manager based on observations made during excavation. Excavation shall be performed in phases to limit on-site waste staging, potential odor emissions, and potential dewatering requirements.

F. All material that slides, falls, or caves into the established limits of excavation areas due to any case whatsoever, shall be removed and disposed of at the Contractor's expense and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall, or cave-in.

3.05 SOIL HANDLING

A. Water and free liquids shall be managed in accordance with Section 31 70 00.

B. During excavation, segregate soil based on field screening (including visual and olfactory screening) performed by the Design Engineer in consultation with the NYSDEC. Excavated soil shall be categorized and segregated (by the Contractor) into the following categories:
   1. Category 1 Soil - Soil with visible tar or NAPL or substantial odors. Category 1 soil shall be disposed off-site in accordance with 31 70 00.
   2. Category 2 Soil – Soil without visible tar or NAPL that exhibits odor or sheens. Category 2 soil shall be disposed off-site in accordance with 31 70 00.
   3. Category 3 Soil – Soil with significant quantities of purifier waste. Soil containing significant quantities of purifier waste, as determined solely by the Design Engineer in consultation with NYSDEC, shall be segregated and staged separately for characterization and off-site disposal (refer to Section 31 70 00). Category 3 soil shall be disposed off-site in accordance with 31 70 00.
   4. Category 4 Soil – Soil without visible tar or NAPL, odors, or evidence of purifier waste. Category 4 Soil shall be disposed off-site in accordance with 31 70 00.
   5. Saturated soil - saturated soil shall be staged in a material dewatering area (within the excavation area or within a temporary waste containment area) and allowed to drain by gravity until the soil is suitable for handling After draining and analytical testing (if needed) is completed, conditioning may be performed to facilitate handling and management. This may include mixing with drier soil or adding additives such as kiln dust, as approved by the Construction Manager. The use of quick lime, lime kiln dust or other lime-based materials containing greater than 50% available Ca/MgO as an amendment is prohibited.
   6. Concrete debris shall be managed in accordance with Sections 31 70 00.
   7. Other miscellaneous debris shall be managed in accordance with 31 70 00.
   8. Hazardous waste materials shall be managed in accordance with 31 70 00.

C. Soil from different categories shall be stockpiled separately on waste staging pad(s) (refer to Section 31 70 00):
   1. Demarcation and signage shall be installed to clearly identify and separate soil categories.

D. The stockpiled soil shall be managed in accordance with Section 31 70 00 (for soil designated for off-site treatment/disposal).

3.06 WASTE MANAGEMENT

A. Solid waste, including soil/sediment, hardened tar, water, and free liquids, shall be managed as waste in accordance with Section 31 70 00.

3.07 BACKFILLING

A. Backfilling shall be performed as specified in Section 31 23 23.

3.08 RESTORATION

A. Restoration shall be performed as specified in Section 31 50 00.

END OF SECTION

SECTION 31 23 23

BACKFILLING, FILLING, AND COMPACTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Stockpiling.
   2. Backfill and fill materials.
   3. Backfilling and compaction.
   4. Filling and compaction.
   5. Field quality control.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 40 10 – Protection of Work and Property.
   6. Section 31 05 13 – Soils and Aggregates for Earthwork.
   7. Section 23 23 16 – Excavation.
   8. Section 31 25 13 – Erosion and Sediment Control.
   9. Section 31 32 00 – In Situ Solidification.
   10. Section 31 50 00 – Site Cover and Surface Restoration
   11. Section 31 41 16 – Excavation Support and Protection.
   12. Section 31 70 00 – Waste Management, Transportation and Disposal.

1.02 SUBMITTALS

A. Submit a plan for backfilling, filling, and compaction activities as part of the Construction Management Plan in accordance with Section 01 10 00 and Section 01 33 00, including a description of backfilling/filling sequencing, means and methods for filling riprap voids with topsoil, compaction equipment and methods, and soil handling/management.

B. Backfill and fill materials submittals in accordance with Section 31 05 13.

C. Field Compaction Test Results
   1. Submit copy of backfill field compaction test results to Design Engineer at end of each testing day.

1.03 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations.

B. Local utility standards and requirements when working near utility lines, as defined by each utility owner.

C. ASTM International:
   1. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

PART 2 PRODUCTS

2.01 MATERIALS

A. Backfill and fill materials as specified in Section 31 05 13.

B. Geosynthetic materials as required on the Drawings.

PART 3 EXECUTION

3.01 PREPARATION AND EXAMINATION

A. Protect active utilities indicated to remain from damage, and as necessary, coordinate Work in the vicinity of utilities with the utility purveyor.

B. Protect Work and existing structures in accordance with Section 01 40 10.

C. Protect and repair/replace erosion and sediment controls as specified in Section 31 25 13, the Design Drawings, and the approved Stormwater Pollution Prevention Plan (SWPPP).

D. Prepare bottom of excavation surface without standing water, large rocks, debris, or other conditions unsuitable for placement of backfill materials.

E. Prior to placement of backfill materials, perform post-ISS excavation and surveying in accordance with Section 01 30 20.

3.02 STOCKPILING OF BACKFILL AND FILL MATERIALS

A. Stockpile backfill materials on-Site in sufficient quantities to meet project schedule and requirements.

B. Separate differing materials with dividers or stockpile apart to prevent mixing.

C. Direct surface water and stormwater runoff away from stockpiled materials to prevent erosion or deterioration of materials.

3.03 BACKFILL AND FILL PLACEMENT

A. Fill material type, maximum layer depth, relative compaction, and general application are specified in Table A.

Table A

Material type	Max. uncompressed layer, depth (in)	Min. relative compaction of Modified Proctor, %	General application
Select Borrow (Common Fill)	12	95	Backfill of excavations and as required by these Technical Specifications and shown on the Drawings
Coarse Aggregate (Size 2, 3A, 3, or 4A)	12, after compaction	Tamp in place or track-in with excavator	Vehicle tracking pad, decontamination pad, and as required by these Technical Specifications and shown on the Drawings
Subbase Course, Type 2	6	95	Asphalt pavement restoration, crushed stone Site restoration, and as required by these Technical Specifications and shown on the Drawings

B. Do not place backfill over an ISS area until quality control samples indicate that the ISS-treated material in the area to be backfilled has achieved a minimum unconfined compressive strength of 50 psi.

C. Any fill material placed that does not conform to the Specifications shall be removed and replaced with conforming material, at no cost to National Grid.

D. Place backfill materials in continuous layers and compact. Backfill material shall be placed in horizontal layers and compacted with power operated tampers, rollers, idlers, or vibratory equipment.

E. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

F. Place backfill materials to achieve final grade elevations as required on the Design Drawings.

G. Compact backfill materials utilizing standard compaction equipment. Refer to Table A for minimum relative compaction requirements for backfill materials.

H. Employ placement methods that do not disturb or damage other Work and existing structures or utilities.

I. Remove surplus backfill materials from Site.

3.04 FIELD QUALITY CONTROL

A. Refer to Section 01 30 20 for surveying requirements and tolerances.

B. Perform in-place compaction tests in accordance with the following:
   1. Density Test Methods: ASTM D6938.
   2. Testing frequency: Minimum four tests/acre/lift or as directed by Design Engineer.

C. When in-place compaction tests indicate Work does not meet specified requirements, remove unsuitable backfill and replace/retest, or condition unsuitable backfill as necessary, re-compact, and retest.

3.05 PROTECTION

A. Prevent loose soil from falling into excavation; maintain excavation stability. Excavation support and protection shall be in accordance with Section 31 41 16 and applicable OSHA standards.

B. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 31 25 13

EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies installation, maintenance, and removal of measures related to erosion and sediment control.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General and Supplementary Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 33 00 – Submittal Requirements.
   4. Section 01 50 00 – Temporary Facilities and Controls.
   5. Section 31 23 16 – Excavation.
   6. Section 31 23 23 – Backfilling, Filling, and Compaction.
   7. Section 31 50 00 – Site Cover and Surface Restoration.
   8. Section 31 70 00 – Waste Management, Transportation, and Disposal.

1.02 REFERENCES

A. New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC, also known as the "Bluebook", latest edition).

B. United States Environmental Protection Agency (USEPA) –Office of Water; Storm Water Management for Construction Activities.

C. Storm Water Pollution Prevention Plan (SWPPP); Watertown (Engine Street) Former Manufactured Gas Plant (MGP) (included in the May 2014 Remedial Design Report).

1.03 SUBMITTALS

A. Prepare and submit an Erosion and Sediment Control Plan, prepared in accordance with this Section and the NYSDEC-approved SWPPP, to Construction Manager and Design Engineer for review and approval. The plan shall be developed as part of the Construction Management Plan (CMP) in accordance with Section 01 10 00.
   1. The plan shall include qualifications of the personnel proposed to perform the inspection and documentation of the SWPPP activities.

B. Submit product information on erosion control products for the review and approval by Construction Manager and Design Engineer.

C. Submit SWPPP inspection reports with photographs documenting conditions of erosion and sediment control measures and photographs of repaired/replaced controls.

PART 2 PRODUCTS

2.01 EARTH DIKE (IF USED)

A. Earth dike shall be constructed of certified clean material.

B. Straw used for stabilization of earth dikes shall be un-decayed.

C. Plastic sheeting, if used for protection of earth dikes, shall be 10 mil thick polyethylene sheeting, or as approved by Design Engineer.

D. Crushed stone used for stabilization of earth dikes shall be NYSDOT Size 3 coarse aggregate, or as approved by Design Engineer.

E. Check dams along earth dikes shall consist of:
   1. NYSDOT Size 3 coarse aggregate
   2. Filtrexx® SiltSoxx™
   3. ACF Environmental© ErosionEEL™ or Triangular Silt Dike™
   4. Or as approved by Design Engineer

2.02 FILTER SOCK

A. Installation, products, maintenance, and removal of filter sock shall conform to NYSSSESC requirements.

B. The compost infill of the filter sock shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of manmade foreign matter.

C. All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements.

2.03 STRAW BALES

A. Straw bales shall consist of undecayed firmly packed straw.

B. Straw bales shall be 14 inches by 18 inches by 36 inches as prepared by a standard bailing machine.

C. Straw bales shall be firmly bound by at least two separate circuits of rope or band material which will withstand weathering for a minimum of 3 months.

2.04 STABILIZED CONSTRUCTION ENTRANCES

A. Temporary construction entrances shall be constructed of 2-inch crushed stone (NYSDOT Size 3 coarse aggregate) with geotextile fabric underlay as shown on the Drawings.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Comply with applicable requirements in the NYSSSESC.

B. Comply with all applicable regulatory requirements to obtain required permits or certifications prior to the start of Work.

C. Contractor is responsible for the installation, maintenance, and removal of erosion and sediment control measures during the Work.

D. Implement any corrective actions identified by Construction Manager or Design Engineer during daily inspections.

E. Temporary erosion and sediment control measures shall be installed and maintained in accordance with the NYSSESC.

F. Storm drain inlet protection shall be constructed around all stormwater drains and maintained throughout construction.

3.02 SWPPP INSPECTIONS

A. The Contractor's personnel, as designated in the Erosion and Sediment Control Plan, shall inspect erosion and sediment control measures weekly and following precipitation, and in accordance with NYSSSESC requirements.

B. Summarize inspection results in weekly inspection reports and submit weekly to the Construction Manager for review. Inspection reports shall include, at a minimum, the following information:
   1. Date and time of each inspection.
   2. Name and title of person(s) performing each inspection.
   3. Weather and surface conditions (e.g., dry, wet, saturated, etc.) at the time of each inspection.
   4. Condition of the stormwater runoff at all points of discharge from the construction site, including discharges from conveyance systems (e.g., pipes, culverts, ditches, etc.) and overland flow.
   5. Identification of any erosion and sediment control measures that require repair or maintenance.
   6. Identification of any erosion and sediment control measures that were not properly installed or are not functioning as designed.
   7. Description and sketch of areas that are disturbed at the time of inspection and any areas that have been stabilized (temporary and/or final) since the last inspection.
   8. Corrective action(s) to be taken to install, repair, replace or maintain erosion and sediment control measures.

3.03 STABILIZED CONSTRUCTION ENTRANCES

A. Clear the entrance/exit area of all vegetation, roots, and other objectionable material.

B. Grade the subgrade surface so that the entrance/exit will have a cross slope.

C. Place stone to the dimensions, grade, and locations shown on the Drawings.

3.04 STRAW BALE DIKES

A. Straw bale dikes shall be installed as shown on the Drawings. Additional straw bales shall be installed to delineate the limit of the disturbance (installed on the down slope side), around the perimeter of any stockpile areas as well as in strategic locations based on visual observation of flow patterns and topography of work areas to control sediment entrained storm water from entering and exiting work areas.

B. Straw bales installed on soil surfaces shall be embedded at least four inches beneath the ground surface and shall be securely anchored in place by either 2 stakes or rebars driven through the bale. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together. Stakes shall be driven flush with the bale.

3.05 STOCKPILES

A. Stockpiles shall be located within the Limit of Work and at locations approved by Construction Manager and Design Engineer.

B. Filter socks shall be placed around stockpile areas and access to the stockpile area shall be from the upgrade locations.

C. Stockpiles shall be covered with polyethylene liner (minimum thickness 10 mil plastic sheeting, or approved equivalent) and secured when active loading or unloading is not being performed.

3.06 CATCH BASIN INLET PROTECTION (IF USED)

A. Remove debris from around storm drains prior to construction of inlet protection.

B. Storm drain inlet protection shall be installed as shown on the Drawings.

C. The dimensions of the storm drain inlet protection near the City of Watertown Department of Public Works Building (DPW Building) should be adjusted as approved by Construction Manager and Design Engineer if the temporary sediment pool appears to encroach towards the DPW Building

3.07 PROVISIONS FOR EROSION CONTROL DURING WORK

A. Implement and maintain erosion and sediment control (ESC) measures around all areas to be disturbed prior to disturbing ground, in accordance with the Drawings and Specifications, and to the complete satisfaction of Construction Manager and Design Engineer. Construction Manager and Design Engineer will periodically observe erosion and sediment control structures to confirm that the Contractor is maintaining these features.

B. Take sufficient precautions during Work to prevent the erosion/transport of materials such as soil, non-aqueous phase liquids (NAPL), wastes, fuels, and oils into the surface

waters of New York. Storm water catch basins or drains, and outlets to drainage channels and the Black River shall be protected from sediment laden run-off. Use all ESC measures necessary to protect inlets from sediment and debris.

C. Care shall be taken to prevent the discharge of sediment laden stormwater runoff to surface waters.

D. Accumulated soil, silt and debris shall be removed by the Contractor from behind the face of the ESC measures as needed to maintain effectiveness. At a minimum, soil and silt will be removed when it accumulates to a depth 6 inches behind the ESC measure. Clogged or damaged ESC measures shall be replaced immediately. The Contractor shall notify Construction Manager and Design Engineer of such checks and repairs so that the Work can be inspected and documented.

E. Soil and silt which accumulates from any area subject to remediation and prior to that area being remediated (e.g., originates from the excavation area prior to removal of all designated soil) shall be treated as waste material. Accumulated soil and silt shall be managed and disposed off-site in accordance with Section 31 70 00.

F. Erosion and sediment control measures will be maintained at all times by the Contractor. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented.

G. Maintain stabilized construction entrances in a condition to prevent mud or soil from leaving the Site. This may require periodic turning over of coarse aggregate and/or topdressing with new coarse aggregate. Immediately remove soil, mud and all objectionable materials spilled, washed, or tracked onto any road. Collected materials will be treated as waste materials and managed and disposed off-Site disposal per Section 31 70 00.

H. Removed erosion and sediment control measures will be properly disposed off-site by the Contractor.

3.08 REMOVAL OF EROSION AND SEDIMENT CONTROLS

F. Erosion and sediment control measures may be removed from the Site following establishment of site cover as specified in Section 31 50 00 and following written approval from Construction Manager.

G. Minor disturbances caused by removal of erosion and sediment controls (e.g., disturbance of established vegetation caused by removal of silt fencing) shall be graded to match surrounding grade and seeded (as applicable).

END OF SECTION

SECTION 31 32 00

IN SITU SOLIDIFICATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. ISS Start-Up Phase.
   2. Full-Scale ISS implementation.
   3. Performance monitoring, sampling, testing, corrective action, and reporting.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 33 00 – Submittal Requirements.
   4. Section 01 40 10 – Protection of Work and Property.
   5. Section 01 52 20 – Equipment and Vehicle Decontamination.
   6. Section 31 23 16 – Excavation.
   7. Section 31 23 23 – Backfilling, Filling, and Compaction.
   8. Section 31 41 16 – Excavation Support and Protection.
   9. Section 31 70 00 – Waste Management, Transportation and Disposal.
   10. Section 33 05 17 – Utility Cup and Cap.
   11. Section 33 20 00 – Utility Support and Protection.

1.02 REFERENCES

A. Occupational Safety and Health Administration (OSHA) Regulations.

B. Following is a list of standards, which will be referenced in this Section. Such referenced standards shall be considered part of this Section as if fully repeated herein.
   1. API RP 13B-1 for Viscosity and Density.
   2. API 13A: Specification for Oil-Well Drilling Fluid Materials (i.e., specification for Bentonite).
   3. ASTM C143: Standard Test Method for Slump of Hydraulic-Cement Concrete;
   4. ASTM C150: Standard Specification for Portland Cement.
   5. ASTM C192: Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.
   6. ASTM D422: Particle-Size Analysis of Soils.
   7. ASTM C684: Standard Test Method for Making, Accelerated Curing, and Testing Concrete Compression Test Specimens.
   8. ASTM C989: Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.

9. ASTM D1632: Standard Practice for Making and Curing Soil-Cement Compression and Flexure Test Specimens in the Laboratory.
10. ASTM D1633: Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders.
11. ASTM D2166: Standard Specification for Unconfined Compressive Strength of Cohesive Soil.
12. ASTM D4380: Standard Test Method for Density of Bentonitic Slurries.
13. ASTM D4972: Standard Test Method for pH of Soils.
14. ASTM D4832: Preparation and Testing of Controlled Low Strength Material Test Cylinders.
15. ASTM D5084: Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

1.03 ABBREVIATIONS AND DEFINITIONS

A. API – American Petroleum Institute.

B. ASTM – American Society for Testing and Materials.

C. Grout – A stable colloidal suspension of powdered cement, bentonite, additives and/or other similar materials in water.

D. Water Addition Ratio – A weight-based ratio of water to dry grout reagents (e.g., a 1:1 ratio = 1 lb. water to 1 lb. dry grout reagents) used to produce the grout. The water addition rates shall be proposed by the Contractor and tested and evaluated as part of the start-up phase.

E. Reagent Addition Ratio – A weight-based ratio of dry grout reagents to in situ soil total wet weight (e.g., 10% addition rate = 10 lb. dry grout reagents/100 lb. wet soil) to be mixed in an ISS cell. The reagent addition ratio shall be tested and evaluated as part of the start-up phase. The reagent addition ratio may be evaluated and determined for each cell based on soil density and characteristics, water table elevation, pattern of treatment, and other site conditions. Reagent addition ratios used during full-scale implementation shall be tested and evaluated as part of start-up phase.
   1. The Contractor shall assume a wet soil weight of 130 pounds per cubic foot, unless otherwise approved by the Design Engineer.

F. ISS Cell – An area of the Site that has received the addition of grout and has been thoroughly mixed to create a homogenous unit of solidified soil extending from the top surface down to the target depth.

G. Working Platform - The working platform is the leveled surface of stable soils from which the SM equipment operates.

H. Overlap – The portion of the cell being mixed that is cut into an adjacent and previously installed cell or cells (i.e., after that cell as set-up).

I. Sampler – A tool and ancillary equipment capable of obtaining samples of the freshly mixed soil and grout from discrete depth intervals. The sampler should be capable of retrieving a 2-gallon sample or as approved by the Design Engineer.

J. Swell – The excess material resulting from adding grout to the in situ soils. The swell is typically a mixture of soil and grout similar to the materials in the ISS cell.

K. Soil Mixing (SM) – The process of mixing soil with grout and other reagents to solidify the soil.

L. In Situ Solidification (ISS) – The process of soil mixing in situ (as opposed to ex situ).

M. ISS Treatment Area – A discrete area to receive ISS treatment. A site may contain several ISS treatment areas.

1.04 QUALIFICATIONS

A. ISS Contractor shall meet the following experience criteria:
   1. Project Experience: Demonstrated ISS experience on multiple projects with comparable scope and scale to this Project.
   2. Personnel Experience: ISS Contractor's Supervisor shall have at least 3 years on-site experience managing field operations of similar size and scope, and shall have supervised at least two projects within the past 5 years employing the technique proposed for this project. The Supervisor shall have experience and knowledge of all aspects of ISS as required for the project and shall be present at the work Site at all times during ISS operations.
   3. The Contractor's other Personnel shall have a minimum of 2 years of experience with projects of similar scope. Other personnel include equipment operators, batch plant operator, ISS equipment operator, supervisory engineering staff, and technical staff involved with the ISS system operation.
   4. Provide project staff resumes and project-specific ISS experience over the last 5 years. At a minimum, the project staff shall include a project manager, site supervisor, grout plant operator, ISS equipment operator, and other associated key staff. Project descriptions shall include Site description, size of the stabilization areas, type of grout and equipment used.
   5. Submit the qualifications of the Contractor's proposed laboratory for QC testing. The laboratory shall have previous experience with soil mixed materials, experienced laboratory technicians, and modern laboratory testing equipment.

1.05 SUBMITTALS

A. ISS Work Plan as part of the Construction Management Plan (CMP) as specified in Section 01 10 00.
   1. Name and experience of the various persons, their role and primary responsibilities.
   2. Equipment set-up and Site use layout, including storage areas, grout mixing plant location, haul roads, and work platform, and proposed methods to minimize the Limit of Work area.
   3. Storage, handling, mixing, odor control, and precautionary procedures for the grout mix materials and additives.
   4. Soil Mixing (SM) equipment specifications (including all equipment manufacturer specification and rating information), including maximum depth capability of SM machine, dimensions of the SM equipment, and capacity of grout mixing plant.

5. Construction means and methods: Listing of equipment and capabilities, construction steps, anticipated production rates, handling of excess grout and swell, cell layout and control of mixing between adjacent cells), control of drainage, spills, wastes, etc.
6. Description of how additives will be mixed with the soil and how the desired mix design will be achieved.
7. Proposed grout mix and addition ratio for the start-up phase.
8. Calculations of quantity of components needed for each batch, number of cells, mix ratio, and volume of soil to be mixed per cell.
9. A layout drawing showing the geometry, dimensions, and volume of each cell of the proposed ISS cell layout.
    a. The proposed ISS cell layout shall take into account daily anticipated production rates and overall cell mixing time to minimize re-molding of grout-soil mixing during initial curing.
    b. The proposed ISS cell layout shall show the corner of each cell including the overlap between adjacent cells. The proposed ISS cell layout shall include a table with coordinates of the corner of each cell.
10. Verification (i.e., quality control) sampling equipment, methods and locations, sample naming and storage procedures, and field and laboratory tests to be performed.
11. Schedule: A Gantt chart schedule showing all major activities and durations.
12. Methods to protect existing Site features including, but not limited to, underground utilities and existing structures.
13. Safety Data Sheets for mix materials.

B. ISS Construction Quality Control (CQC) Plan (to be incorporated into the overall ISS Plan): Prepare and submit a plan that describes the methods for ensuring the requirements established in this Section are achieved, including but not limited to:
    1. Method for collection of representative samples from a single mixed cell or area at discrete depths in accordance with these specifications and NYSDEC Guidance for Quality Control Coring on In Situ Solidification Projects.
    2. Method(s) for controlling and measuring mix depth.
    3. Method(s) for controlling and monitoring horizontal mixing limits to confirm mixing between adjacent cells.
    4. Method(s) for controlling and monitoring reagent quality.
    5. Method(s) for controlling, monitoring and mixing the reagent quantities according to the approved grout mix design.
    6. Method(s) for controlling and monitoring addition rates.
    7. On-Site QC monitoring, sampling methods, sample curing methods and off-Site testing requirements.
    8. Methods for tracking and recording horizontal and vertical limits of ISS cells.
    9. Approach to re-work for areas failing performance criteria.

C. ISS Daily Records: Provide (electronically, on a form acceptable to the Construction Manager and Design Engineer) a daily report summarizing the work activities including daily totals and running totals for volume of soil mixed and grout components used. Contractor shall attach daily grout mixing forms. ISS daily reports shall be submitted daily

no later than 10:00 am the following day to the Construction Manager and Design Engineer, and shall include at a minimum the following information:

1. Description of the work completed with a sketch identifying which cells were completed on each of the previous days.
2. Cell Identification Number.
3. Date and time of beginning and completion of each cell, including interruptions to the mixing process or material supply.
4. Grout batch mix records.
5. Daily totals and running totals for volume of soil mixed and grout components used.
6. Summary of quality control and quality assurance testing (including sample locations, depths, observations, and results).
7. Issues identified and how they have been resolved.

D. ISS Completion Report: Prepare and submit a report documenting the ISS implementation.

1. Grout Quantities: Quantities of grout constituents delivered to the Site and used during the project with backup in the form of weigh receipts, bills of lading, flow meter records, or equivalent.
2. ISS Volumes: Total volume of solidified soils and volume of swell material produced.
3. Certificates of Analysis: Certificates of Analysis for each load of the grout components imported to the Site. If the grout is delivered pre-blended, then a certificate of analysis shall be required for each component (e.g., Portland cement) of the grout blend. All testing conducted for the Certificates of Analysis shall be performed by a laboratory that has been accredited by the American Association of State Highway and Transportation Officials (AASHTO). Provide one certificate of analysis for each type of material and one for each and every source. This shall be required once during the project, prior to delivery of materials to the Site. The analysis shall ensure compliance with ASTM C150 for Portland Cement, ASTM C989 for Ground Granulated Blast Furnace Slag, and API 13A for bentonite.
4. Results of all quality control and quality assurance testing.
5. Description of any corrective actions taken to address non-conformance with the performance standards.
6. Project Modifications: Any modification to the project schedule and any modifications or deviations from the Contract Documents.
7. Spoil Disposal/Handling Methods: Description of spoil disposal and handling methods, as well as quantities managed.
8. Unforeseen Issues: Any unforeseen Site conditions (e.g., obstructions) or equipment problems that affected solidification efforts and how they were resolved.
9. Record Survey Drawings: Record survey drawings of the as-built lateral extent and top and bottom elevations of the ISS and QC sampling locations including any cells relocated during construction.

1.06 PERFORMANCE CRITERIA

A. ISS shall be implemented using the bucket-mixing method, which consists of mixing the subsurface materials with a prepared grout using an excavator bucket to create a homogenous unit of solidified soil extending from the top surface down to the target depth, as determined by the Design Engineer through visual observations during mixing

and core sampling. The treated soil matrix for the soil mix wall must meet the performance standards specified, including but not limited to the following:

1. Unconfined compressive strength (UCS) of the treated soil matrix must be greater than 50 pounds per square inch (psi) (3.6 tsf) after 14 days of curing. Excavation next to the ISS shall not begin until the treated soil has attained a UCS of at least 25 psi (1.8 tsf). For soil mixing near sensitive structures/features, a UCS of at least 25 psi (1.8 tsf) shall be attained before proceeding with the installation of secondary or tertiary panels. If the UCS approaches or exceeds 400 psi, the mix ratio or design shall be adjusted to reduce the UCS as approved by the Design Engineer.
2. Hydraulic Conductivity: Achieve average hydraulic conductivity values of 1×10^{-6} cm/sec or less and maximum hydraulic conductivity values for individual samples of 1×10^{-5} cm/sec. This criterion shall be used in evaluating the candidate grout mix designs during the start-up test.
    a. Soil mixing performed to construct a soil mix wall (groundwater cutoff and excavation support) during the Phase I and Phase IIA remediation projects used a 60%-40% mix of portland cement and ground-granulated blast furnace slag with an addition rate of 10% (assumed wet weight of 130 pounds per cubic foot) and a water addition rate of 1:1. The hydraulic conductivity achieved with this mix ranged between approximately 1×10^{-6} and 4×10^{-7} cm/sec.

PART 2 PRODUCTS

2.01 GROUT

A. Grout shall consist of a stable colloidal suspension of cement, bentonite and/or other additives in water. The purpose of the grout is to assist in loosening the soils for mixing and to modify the soils for increased stability for use as an excavation support system and for decreased permeability to minimize inflow of groundwater into the excavation area. The grout shall be pumpable and workable with the soil mixing equipment.

B. The grout shall be prepared using a blend of 60% Portland Cement (PC) and 40% of ground granulated blast-furnace slag (BFS) by weight. Other grout formulations shall only be used if approved by the Design Engineer.

2.02 CEMENT

A. Portland cement used in preparing grout shall conform to ASTM C150, Type 1 or 2.

B. Ground granulated blast furnace slag (BFS) used in preparing grout shall conform to ASTM C989, Grade 100 or 120.

C. The cement shall be adequately protected from moisture and contamination in storage on the job site. Reclaimed cement or cement containing lumps or deleterious matter shall not be used.

2.03 BENTONITE (IF USED)

A. Bentonite used in preparing the grout mixture shall meet API Specification 13A.

2.04 WATER

A. Provide fresh potable water, free of excessive amounts of deleterious substances that adversely affect the properties of the grout shall be used to manufacturer grout. It is the responsibility of the Contractor that the grout resulting from the water shall always meet the standards of this Section.

2.05 ADDITIVES

A. Ad-mixtures used to enhance the workability or final properties of the treated soil shall be proposed to the Design Engineer in a submittal with supporting information. Admixtures shall only be used if approved by the Design Engineer. Additives may be added to the water or the grout.

PART 3 EXECUTION

3.01 PREPARATION

A. The ISS limits, as shown on the Design Drawings, shall be surveyed and staked out by a NY licensed surveyor prior to commencing ISS activities.

B. Sensitive features (e.g., sanitary sewer utility) shall be protected during remedial action construction using the special procedures for ISS near sensitive features as shown on the Design Drawings. Refer to Section 01 40 10 for protection of work and property.

C. Pre-ISS excavation will be conducted, in accordance with Section 31 23 16, as needed to remove soil to accommodate "swell" resulting from the process and to provide room for placement of the cover system. Excavated soil shall be managed in accordance with Sections 31 23 16 and 31 70 00.

D. Cells shall be laid-out in the field with the overlap on the ISS layout plan along the perimeter of adjacent completed cells.

3.02 GROUT MIXTURE PREPARATION

A. The grout mix shall be produced on-site in the area pre-approved by the Construction Manager.

B. Complete and submit a form calculating the required quantities of the grout materials (water and specified reagent quantities) for the batch mix design.

C. For each grout batch, the following information shall be documented:
   1. Volume of water added
   2. Quantity of each reagent added.
   3. Soil mix panel ID.

D. The grout mixture shall be thoroughly mixed in the batch plant to achieve a homogeneous mixture. Refer to the approved reagent mixture for the grout mixture composition.

E. The batch plant equipment must provide adequate pressure and flow rate and a means of measuring pressure and flow such that grout is delivered at a constant rate throughout the soil mix area.

F. Grout mixture must not be allowed to stand for a period of greater than 90 minutes.

G. Processed grout that reaches a temperature of 90 degrees F or greater shall be discarded.

3.03 ISS START-UP PHASE

A. Prior to full-scale implementation, an ISS start-up phase shall be conducted to confirm the ISS equipment, procedures and grout mixture will meet the requirements of this Section.
   1. A minimum of two ISS cells totaling approximately 120 cubic yards each shall be mixed.
   2. Mix the start-up phase cells at the locations designated by Design Engineer.

B. At a minimum, the Contractor shall test two mixes using a grout composed of a 60:40 blend of PC:BFS, or as approved by the Design Engineer. The grout-soil mixes shall be composed from water addition ratios of 1:1 and 1.2:1 and reagent addition ratios of 8 and 10 percent (weight-based ratio of dry grout reagents added to in situ soil wet weight of 130 lbs per cubic foot), or as approved by the Design Engineer. The Contractor may propose testing of additional mixes.

C. The cell construction shall conform to the requirements of Part 3.04 of this Section.

D. Performance monitoring samples shall be collected from the start-up phase cells and evaluated in accordance with Part 3.07.

E. Upon receipt of the results from performance monitoring samples, The Design Engineer shall select a grout mixture for use during full scale ISS implementation.

F. Full scale ISS implementation may proceed upon the approval of National Grid, Construction Manager, and Design Engineer after the QC test results adequately demonstrate compliance with the performance standards.

3.04 FULL-SCALE IMPLEMENTATION

A. Top of the ISS interval shall be the surface of soil following pre-ISS excavation. Excavation shall be as specified in Section 31 23 16.

B. The bottom of the ISS interval shall be top of bedrock as shown on the Design Drawings.

C. ISS near sensitive features (e.g., sanitary sewer pipe) shall be sequenced and performed first (i.e., before the remainder of the ISS treatment area). The initially installed ISS cells (primary cells) shall be allowed to set up to the strength required in Part 1.06 before the secondary cells are installed. Similarly, the secondary cells shall be allowed to set up before the tertiary cells are installed, and the tertiary cells shall be allowed to set up before performing ISS in the remainder of the treatment area.

D. Each ISS cell shall be mixed while continuously adding grout and continually mixing with an excavator bucket until the target depth is achieved and a homogenous mixture is observed by the Design Engineer. The grout/soil mixture shall be maintained at most 1 foot below original grade. Temporary berms shall be constructed around the perimeter of the cell before soil mixing to contain swell, and temporary berms

E. The grout addition rate shall be monitored and recorded for each cell and adjusted as necessary to create suitably mixable soils and accommodate the design mix. The minimum addition rate shall be calculated based on the weight of unmixed in situ soil in the cell, the density of the soil, and the weight of dry grout reagents required to achieve the design mix proportions. The flow of grout shall be verified periodically by observing the flow into the cell. Any blockage shall be cleared prior to grout addition and mixing.

F. Over-sized material created from ISS/demolition of remaining former MGP structures encountered during ISS implementation will be removed from the mix, to the extent practicable, until the target depth has been reached.

G. Over-sized material shall be resized to a maximum dimension of approximately 1 foot and re-introduced into the mix after a relatively uniform soil-grout slurry has been achieved.

H. Objects greater than 1 foot in maximum dimension that cannot be resized shall be removed from the cell. This material shall be managed in accordance with Section 31 70 00.

I. The ISS cell layout shall be finalized in the ISS Plan taking into account the proposed ISS equipment, ISS cell construction sequence, results of the ISS Start-Up Phase and the requirements for ISS near sensitive structures/features. To the extent practicable, full-scale implementation of the treatment of the ISS area shall begin with the cells at the interior of a particular location and proceed outward.

J. After completion of ISS or performed concurrently with the ISS implementation, the ISS treatment zone shall be graded/excavated (if necessary) such that the depth of the ISS treated material is a minimum 4 feet below the proposed final grades. ISS treated material from one area may be placed in an adjacent area containing ISS treated material.

K. Swell material that cannot be managed within the ISS footprint and below the Site Cover shall be excavated (i.e., post-ISS excavation) and managed in accordance with Section 31 70 00.

L. Contractor shall retain a NY licensed surveyor to survey the final ISS limits. Surveyor shall monitor and confirm the location and vertical depth of each ISS cell. Surveyor shall monitor and confirm the overlap between adjacent ISS cells and depth of each ISS cell. Land Surveyor shall utilize both global positioning system (GPS) and conventional surveying methods to document the extent of ISS. Refer to Section 01 30 20.

M. Backfilling shall be performed in accordance with Section 31 23 16.

N. Restoration shall be performed in accordance with the Design Drawings and Specifications.

O. Protect the ISS area until backfilling and restoration is completed.

3.05 OBSTRUCTIONS

A. If obstructions, including boulders or other potentially damaging materials, are encountered the Contractor shall promptly notify the Construction Manager, halt mixing, and investigate the nature of the obstruction.

B. Obstructions, which cannot be penetrated, may be remediated by removal, grouting, encapsulation or other acceptable means as approved by Design Engineer.

C. Obstructions which prohibit the continued downward advancement of the SM equipment may be accepted as refusal upon approval of Construction Manager, Design Engineer, and NYSDEC.

3.06 TOLERANCES

A. The following tolerances shall apply to the ISS dimensions and construction:
   1. The bottom elevation of the cells shall be the top of the bedrock surface, as confirmed by the Design Engineer, unless an alternate bottom elevation is approved in accordance with Part 3.06.
   2. The horizontal and vertical limits of each ISS cell shall be surveyed to ensure mixing between adjacent cells.
   3. Soil mixing when the air temperature is below 20 deg. F shall be in accordance with the Construction Management Plan.
   4. Soil mixing shall not be permitted when severe weather conditions may compromise the quality of the Work.
   5. The water and reagent addition ratios shall be calculated and checked for each cell.

3.07 PERFORMANCE MONITORING

A. Conduct performance monitoring to document that the ISS implementation achieves the established performance criteria specified in this Section.

B. ISS Mix Samples: ISS Mix Samples shall be collected from the ISS mass at depths determined by Design Engineer immediately after the mixing of reagents into the subsurface and before the ISS cell sets. Sampling frequency shall consist of the following:
   1. Visual Inspection Samples: Samples for visual inspection shall be collected from each day's ISS cells at a rate of one location per 100 cubic yards of mixed soil, to be selected by Design Engineer. At each location, two depths selected by Design Engineer shall be sampled. Additional samples may be required based on observations of the cell construction and the visual inspection samples.
   2. UCS and Hydraulic Conductivity Samples: Samples shall be collected in sets for UCS and hydraulic conductivity testing, as follows:
      a. A set of samples shall consist of two samples obtained from different locations within the day's cells, one primary sample and one secondary sample (to be saved for additional testing, if necessary). From each sample in the set, six cylinders shall be formed and cured according to ASTM D1632 and D1633,

Method B. No cylinders shall be formed from the visual inspection samples unless the Contractor is directed to do so by Design Engineer.

b. A set of samples shall be collected from the cells at the following rate:
   1) One set per day (first 500 cubic yards).
   2) Additional sets shall be collected throughout each week, as needed, to provide one set per 500 cubic yards on a weekly average.
   3) Additional sets shall be collected if significant changes to the solidified/stabilized material are observed.

c. Samples shall be taken from the cells and at the depths selected by Design Engineer.

d. After curing for 14 days, submit the primary samples to the laboratory, where they will be tested for hydraulic conductivity (ASTM D5084) and UCS (ASTM D1633).

e. If results of the hydraulic conductivity and UCS tests do not comply with the performance standards, the Contractor shall take corrective actions, as directed by Design Engineer (refer to Part 3.09 of this Section).

C. Core Samples: Core samples shall be collected from the ISS mass for quality control purposes, in accordance with the NYSDEC Guidance for Quality Control Coring on In Situ Solidification Projects:

1. The NYSDEC shall be notified a minimum of 48 hours prior to the ISS confirmation activities.
2. Cores shall be completed using direct push sampling methods, HQ wireline coring methods, or an equivalent method approved by Design Engineer. Rotosonic or compressed air-drilling methods will not be allowed.
3. One core borehole shall be completed for every 5,000 square feet of ISS treatment area, but not less than two bore holes per ISS treatment area.
4. Cores runs must be no longer than 5 feet.
5. If less than 60% of the core material is recovered from any of the cores, one new core hole must be drilled adjacent to the previous location. If the recovery from the adjacent core hole continues to be less than 60%, the Contractor shall await further direction from Construction Manager and Design Engineer in consultation with the NYSDEC.
6. **The first coring location shall be completed when the ISS treatment project area is no more than 10% complete.**
7. As applicable, core borehole locations shall be biased towards areas with the greatest soil contamination, areas where contamination is in direct contact with the bedrock surface, and/or locations where difficulties in the ISS process were encountered (e.g., difficult soil conditions, excessive grout loss). Core borehole locations shall be biased to locations where individual treatment cells overlap. The core locations shall be proposed by the Contractor and approved by the Design Engineer prior to conducting corning.
8. The Contractor shall survey the location of each core.
9. Cores shall be archived following coring activities and staged at a location approved by Construction Manager and Design Engineer.

10. Core samples and related equipment used during sampling activities will be visually inspected by Construction Manager and Design Engineer for the following criteria, and results recorded:
    a. Visible NAPL
    b. Non-mechanically induced cracking within the core
    c. Percent of core sample recovered
    d. NAPL coating on drilling tools
    e. NAPL in drill wash tub
11. If one or more of the above conditions is noted:
    a. Construction Manager or Design Engineer will notify National Grid and NYSDEC.
    b. Implement corrective actions (refer to Part 3.09 of this Section) if deemed necessary by Construction Manager and Design Engineer, in consultation with the NYSDEC.
12. When a core has been drilled from the top to the bottom elevation of the targeted ISS treatment zone, and samples collected, it will be considered complete. When the ISS treatment zone extends to bedrock, the core should be advanced at least 3 feet into bedrock.
13. Following completion of each coring location, the borings will be filled with grout.

3.08 CORRECTIVE ACTION

A. If performance monitoring indicates that the performance standards are not met for an area, the Contractor shall implement corrective actions at the Contractor's expense. Corrective actions may include:
    1. For ISS Mix Samples:
        a. Reanalyzing another cylinder from the same sample after further of curing.
        b. Analyzing the secondary sample from the sample set to determine if the failing sample is considered anomalous and isolated.
    2. For Core Samples:
        a. Complete additional cores borings around the area of concern to determine if the identified NAPL within the ISS mass is encapsulated.
    3. If subsequent sampling and testing indicate performance standards are still not met for an area, the Contractor shall implement one or more of the following, as approved by Construction Manager and Design Engineer:
        a. Re-work (e.g., re-mix) the cell(s) represented by the failing sample. Collect additional samples and cores for performance monitoring.
        b. Install new cells to surround the cell(s) represented by the failing sample. Collect additional samples and cores for performance monitoring.
        c. Repair the cell(s) represented by the failing sample using alternative methods approved by Construction Manager and Design Engineer. Collect additional samples and cores for performance monitoring.
        d. Excavate and dispose of the cell(s) represented by the failing sample in accordance with Section 31 23 16, Section 31 70 00, and other applicable sections.

END OF SECTION

SECTION 31 41 16

EXCAVATION SUPPORT AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Installation and maintenance of excavation support and protection systems.
   2. Performance requirements.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 40 10 – Protection of Work and Property.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 31 23 16 – Excavation.
   7. Section 31 23 23 – Backfilling, Filling, and Compaction.
   8. Section 31 50 00 – Site Cover and Surface Restoration.
   9. Section 31 32 00 – In Situ Solidification.
   10. Section 33 20 00 – Utility Support and Protection.

1.02 PERFORMANCE REQUIREMENTS

A. Furnish, install, monitor, and maintain excavation support and protection systems, capable of supporting the excavation sidewalls, and able to resist soil and hydrostatic pressure and superimposed/construction loads.
   1. Provide detail on the method of support for the excavation areas.
   2. Prevent surface water from entering excavations by grading, dikes, or other means.

B. Install excavation support and protection systems without damaging existing work, structures and utilities.

C. Dewater excavations as necessary to maintain stability of excavation support and protection systems.

1.03 SUBMITTALS

A. Submit plan for excavation support and protection as part of the Construction Management Plan (CMP) identified in Section 01 10 00. The plan shall include at a minimum:
   1. Identification of the Contractor's Competent Person.
   2. Detail the proposed excavation sequence and excavation support methods to protect excavation slopes, active utilities, and existing structures.

3. Detail the proposed excavation sequence and ISS soil mixing sequence.
4. Identify dewatering requirements, and means and methods for monitoring groundwater level in and around excavations.
5. Provide or reference drawings that identify the excavation support methods, materials, dimensions, and elevations.
6. Identify procedures for removal of excavation support system(s).

1.04 QUALIFICATIONS

A. Contractor's Competent Person shall be as defined by 29 CFS 1926.32(f) "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them".

1.05 PROJECT CONDITIONS

A. The Contractor shall not interrupt utilities unless permitted in writing by the Construction Manager and utility owner and then only after arranging for temporary utility services, if required.

B. Implement vibration and settlement monitoring as required by Section 01 40 10.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PREPARATION

A. Protect structures, utilities, pavements, and other features from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation activities.
   1. Shore, support, and protect utilities encountered.
   2. Support and protect all structures designated to remain.

B. Promptly correct bulges, surface cracks, sloughing, or other evidence of movement or damage.

3.02 GENERAL REQUIREMENTS

A. Install excavation support and protection systems in accordance with this section and as required to facilitate the Work.

B. Contractor's Competent Person shall routinely inspect excavations for as long as the excavation remains open.

3.03 SLOPING AND/OR BENCHING

A. Excavation laybacks shall be sloped and/or benched as determined appropriate by the Contractor's Competent Person.

3.04 BRACING (IF UTILIZED)

A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.
   1. Install internal bracing, if required, to prevent spreading or distortion of braced frames.
   2. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.05 TRENCH BOXES (IF UTILIZED)

A. Trench boxes:
   1. The excavation area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench box and the excavation side must be backfilled to prevent lateral movement of the box. Trench boxes may not be subjected to loads exceeding those which the system was designed to withstand.
   2. The box must extend at least 18 inches above the surrounding area.
   3. Any modification to the box must be approved by the manufacturer.
   4. Trench boxes may ride two feet above the bottom of an excavation, provided they are rated to support the full depth of the excavation and there is no caving under or behind the box.
   5. Workers must enter and leave the trench box in a protected manner, such as by a ladder or ramp as required by OSHA regulations.
   6. Workers may not remain in the shield while it is being moved.

3.06 SLIDE RAIL EXCAVATION SUPPORT SYSTEM (IF UTILIZED)

A. Slide Rail System: The slide rail system shall be installed in accordance with the manufacturer's recommendations and installation guidelines as applicable.
   1. The design of the slide rail system shall be submitted to and approved by the Design Engineer 2 weeks prior to mobilization of materials and equipment.
   2. Slide rail systems shall be installed in a manner to prevent voids between the outside of the excavation and the slide rail panels and in such a manner to protect adjacent building, structures, and Work.
   3. The slide rail system must extend at least 12 inches above the surrounding area.
   4. Any modification to the slide rail system must be approved by the manufacturer.
   5. Slide rail systems shall be installed to the full depth of the excavation it supports, and shall not ride above the bottom of the excavation.
   6. Workers must enter and leave the slide rail system in a protected manner, such as by a ladder or ramp as required by OSHA regulations.
   7. Workers may not remain within the footprint of the slide rail system while it is being installed or removed.

3.07 REMOVAL AND REPAIRS

A. Remove and decontaminate excavation support and protection systems when excavation is complete and backfilling has progressed sufficiently to support excavation and bear soil and hydrostatic pressures as approved by the Contractor's Competent Person.

B. Remove excavation support systems in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

C. Repair or replace adjacent work damaged or displaced by removing excavation support and protection systems at no additional cost to National Grid.

END OF SECTION

SECTION 31 50 00

SITE COVER AND SURFACE RESTORATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Asphalt pavement cover and restoration.
   2. Crushed stone restoration.
   3. Surface restoration.
   4. Close-out submittals.
   5. Protection of installed work.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 20 – Survey Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 31 05 13 – Soils and Aggregates for Earthwork.
   6. Section 31 23 23 – Backfilling, Filling, and Compaction.
   7. Section 32 12 16 – Asphalt Paving.
   8. Section 32 31 13 – Chain Link Fences and Gates.

1.02 REFERENCES

A. 6 NYCRR Part 375-6.7(d) (latest version).

B. New York State Department of Transportation (NYSDOT) Standard Specifications (latest version).

C. New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation, Technical Guidance for Site Investigation and Remediation (DER-10) (latest version).

D. New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC, September 2016).

1.03 SUBMITTALS

A. As part of the Construction Management Plan (Section 01 10 00), describe implementation of site cover and surface restoration activities.

B. Product and/or material submittals as specified in related Sections.

C. Record Survey of site cover and surface restoration as specified in Section 01 30 20.

PART 2 PRODUCTS

2.01 MATERIALS

A. Geotextile demarcation layer as specified on Drawings.

B. Backfill and Site Cover Materials: Section 31 05 13.

C. Asphalt Pavement: Section 32 12 16.

PART 3 EXECUTION

3.01 PREPARATION AND INSPECTION

A. Prepare site restoration areas to subgrades as indicated on the Drawings, including excavation, backfilling, filling and compaction.

B. Excavate and/or grade top of ISS in accordance with Section 31 32 00.

C. Grade and smooth subgrade surface in preparation for the placement of surface restoration (e.g., crushed stone, asphalt pavement). Graded areas at the edge and outside of the excavation and ISS areas shall match the surrounding grades. Final grades shall be free of standing water.

D. Following preparation of the subgrade, request inspection by Design Engineer.

E. Survey subgrade (i.e., base grades) in accordance with Section 01 30 20 before installation of site cover and surface restoration.

F. Remove and replace products which differ from the products reviewed as specified in these Specifications.

3.02 SITE COVER AND SURFACE RESTORATION

A. Install the Site cover to the limits and grades depicted on the Drawings. Site cover shall be asphalt pavement as specified on the Drawings.

B. Restore work areas outside the limits of the Site cover as indicated on the Drawings. Surface restoration shall include grading to match the surrounding area and proof-rolling with a minimum of two back and forth passes with compaction equipment.

C. Sequence Site cover installation activities following major earthwork, mobilization/ demobilization, or other Work activities which may disturb and/or damage the installed Site cover.

D. Install geotextile demarcation layer as indicated on the Drawings.
   1. Geotextile demarcation layer shall be unrolled and laid smooth without wrinkles or folds on the prepared and compacted subgrade. Adjacent geotextile rolls shall be overlapped a minimum of 6 inches.
   2. On curves, the demarcation layer may be folded or cut to conform to the curves. The fold or overlap shall be in the direction of construction and held in place by pins, staples, or piles of fill or rock.

3. Prior to covering, the demarcation layer shall be inspected by Construction Manager to ensure that the geotextile has not been damaged during installation. Damaged material, as identified by Construction Manager, shall be repaired immediately. Cover the damaged area with a demarcation layer patch which extends an amount equal to the required overlap beyond the damaged area.

E. Place and compact backfill and fill materials as indicated on the Drawings and as specified in Section 31 05 13 and Section 31 23 23.

F. Install asphalt pavement as indicated on the Drawings and as specified in Section 32 12 16.

3.03 SITE FEATURE RESTORATION

A. Remove utility protections and restore utilities, as appropriate (Section 33 20 00).

B. Reinstall fencing using the removed and staged materials. If the existing fence was damaged during the work or is otherwise unsuitable for re-use as determined solely by the Construction Manager, Contractor shall furnish and install new fence to match existing.

3.04 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection as necessary to protect installed work.

B. Provide temporary and removable protection, as appropriate, for installed products. Control activity in work areas to prevent damage.

END OF SECTION

SECTION 31 70 00

WASTE MANAGEMENT, TRANSPORTATION, AND DISPOSAL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Management of cleared vegetation excavated soil/sediment, wastewater, NAPL, and miscellaneous construction debris.
   2. Waste characterization.
   3. Waste transportation and disposal.

B. Related Sections and Documents:
   1. Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. NYSDEC document "Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment" (DER-4).
   3. Section 01 10 00 – Summary of Work.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 01 52 20 – Decontamination Requirements.
   7. Section 02 41 19 – Selective Demolition.
   8. Section 31 05 13 – Soils and Aggregates for Earthwork.
   9. Section 31 10 00 – Site Clearing Preparation.
   10. Section 31 23 16 – Excavation.

C. References:
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Submit a Contractor Waste Management Plan as a component of the Construction Management Plan (CMP) identified in Section 01 10 00. The plan shall include an identification and description of the following:
   1. Each waste stream (e.g., vegetation, excavated soils, wastewater, NAPL) that has the potential to be generated as a result of construction activities.
   2. The National Grid pre-approved treatment facilities, disposal facilities and waste haulers to be used (name, address, contact person, hours of operation, and USEPA/NYSDEC permit/registration numbers, and copies of permits).
   3. For each facility, identification of the acceptance/waste characterization criteria and any restrictions for acceptance of waste streams.
   4. Product data and manufacturer specifications on materials used to construct the Temporary Waste Containment Areas (TWCA).
   5. Measures to prevent freezing of collected wastewater during cold weather.

6. Sampling and analysis activities for waste characterization (including characterization for treatment/recycling).
7. Waste stream preparation prior to transporting.
8. Proposed waste stream characterization and profiling procedures (including a copy of the waste profile form).
9. Manifesting and packing/shipping requirements for waste streams.
10. Identifying NYSDEC-permitted (Part 364 Permit) and National Grid-approved transporters and treatment/recycling facilities for the wastes. Provide permit/registration numbers, type and number of vehicles, copies of permits, and provide safety records, including any incidents reported in the past 5 years.

B. Submit information for the proposed laboratory to be used for waste characterization analysis. Laboratory shall be a certified New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) laboratory.

C. Soil conditioning (soil amendments) product sheets shall be submitted to Design Engineer and NYSDEC for review and approval before delivery to the site.

D. Waste characterization laboratory analytical data.

E. Prior to waste shipment, submit written communication from the treatment/disposal facilities confirming that the waste is acceptable for at their facility, treatment/disposal capacity is available, and the treatment/disposal method.

F. Manifests and Bill of Lading
   1. Provide and complete all required manifest forms and Bill of Lading forms for National Grid for proper transportation and disposal of materials off-site. The Contractor shall be responsible and will be held accountable for assuring that all sampling, analysis, transportation, and disposal requirements of the applicable agencies (e.g., POTW, Federal, State, and local governments, etc.) are complied with and properly documented. All manifests and/or Bills of Lading must be signed by National Grid (or its authorized representative), and the truck driver. **The Contractor shall not sign any manifests or Bills of Lading on behalf of National Grid.**
   2. Manifests and/or Bills of Lading shall be organized by load number and delivered to Construction Manager and/or Design Engineer within 24 hours.
   3. Prepare and submit a summary sheet daily that provides at a minimum, the following information regarding each truck load:
      a. Date
      b. Load Number
      c. Uniform Hazardous Waste Number or Bill of Lading Number
      d. Truck License Plate Number
      e. Estimated gross weight
      f. Estimated tare weight
      g. Estimated net load weight
      h. Actual load weight
      i. Material type (vegetation, non-hazardous soil/sediment, MGP coal tar, wastewater, etc.)
      j. Disposal/recycling method

k. Disposal/recycling facility

G. Completed weight tickets and/or certificates of disposal/destruction.

H. As counter-signed manifests are received from off-site facilities, organize manifests by number, tabulate number of loads and weights of each waste stream in a Microsoft Excel™ file, and submit to Construction Manager and Design Engineer on a weekly basis.

1.03 PERMITS AND REGULATIONS

A. Comply with all Federal, State, and local regulations regarding transportation and disposal of non-hazardous special wastes. These include, but are not limited to:
   1. Trucks used for transportation of non-hazardous special wastes shall be permitted for such use.
   2. Vehicle operator possession of a commercial driver's license with non-hazardous special waste materials endorsement (if applicable).
   3. Registration of vehicle as a special non-hazardous waste carrier (if applicable).
   4. Utilization of shipping papers and/or special non-hazardous waste manifest.
   5. Proper marking and placarding of vehicles.
   6. Placement of emergency response procedures and emergency telephone numbers in vehicle, and operator familiarity with emergency response procedures.
   7. Compliance with load height and weight regulations.

1.04 REFERENCES

A. State of New York Rules and Regulations, including Title 6 of the Official Compilation of Codes, Rules, and Regulations (6 NYCRR) Parts 360, 364, and 370 regarding treatment/disposal, transportation, and management of hazardous waste.

B. New York State Department of Environmental Conservation (NYSDEC) Technical Administrative Guidance Memorandum (TAGM) 4061 – Management of Coal Tar Wastes and Coal Tar Contaminated Soil and Sediment from Former Manufactured Gas Plants (MGPs).

C. Transportation regulations, including U.S. Department of Transportation (USDOT) regulations, including Title 29 Part 171 and 172 and New York Department of Transportation (NYDOT) rules and regulations.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide waste containers (e.g., roll-offs, holding tanks, drums, etc.), as appropriate, meet applicable regulations.

B. All equipment delivered to the site shall be in good working conditions. Equipment and machinery including haul trucks that have visible oil or hydraulic fluid leaks will not be allowed on site until satisfactorily repaired. The Contractor is responsible for the cleanup of any hydraulic fluid spill at the Contractor's expense.

C. Trucks used for transportation of material for off-site disposal shall be watertight. The transport containers shall be equipped with impermeable liners and covers that shall be used during the transportation of wastes from the Site to the disposal facility. All truck beds shall be covered prior to leaving the Site.

D. Construct TWCAs in accordance with the Design Drawings and Specifications.

PART 3 EXECUTION

3.01 PREPARATION

A. Temporary Waste Containment Area (TWCA):
   1. Construct a separate TWCA for each waste type, for the handling and staging of excavated soils/sediments and waste prior to off-site disposal.
   2. Locations of the TWCAs shall be as shown on the Drawings or as pre-approved by Construction Manager.

B. Furnish and install temporary construction fencing surrounding the waste staging areas in accordance with Section 01 50 00.

C. Refer to Sections 31 05 13 for soil/sediment handing and segregation.

3.02 MANAGEMENT OF WASTE MATERIALS

A. Sequence and perform Work to minimize cross-contamination of different Soil Categories identified in this Section.

B. Perform Work such that no waste material is spilled during the transfer of materials to a TWCA and loading into disposal trucks. If spills occur, the waste shall be immediately collected, and the spill area shall be appropriately cleaned. Place polyethylene sheeting on the ground surface to catch potential droppings in active waste loading areas (excluding within TWCAs).

C. In the event that materials are encountered that are unsuitable for stockpiling (based on appearance, contents, etc.), as determined by the Construction Manager or Design Engineer, the Contractor shall include provisions/measures to be able to appropriately direct-load those materials into vehicles for direct transport to the National Grid-approved treatment/disposal facilities.

D. Soil designated for off-site treatment/disposal shall be disposed in accordance with NYSDEC's document "Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment" (DER-4). The guidance outlines the criteria wherein coal tar waste and soils and sediment that have been contaminated with coal tar waste from former MGPs only exhibiting the toxicity characteristic for benzene (D018) may be conditionally excluded from the requirements of 6 NYCRR Parts 370, 374, and 376 (Hazardous Waste Management and Land Disposal Restriction Regulations) when they are destined for permanent thermal treatment.

E. Excavated Soils:
   1. During excavation (remediation excavation, pre-ISS excavation, and pre-excavation test pitting if utilized, refer to Section 31 23 16), excavated soils shall be segregated and managed in accordance with Section 31 05 13 and 31 23 16:
      a. Category 1 Soil - Soil with visible tar or NAPL or substantial odors. Category 1 soil shall be disposed off-site in accordance with this section.
      b. Category 2 Soil – Soil without visible tar or NAPL that exhibits odor or sheens. Category 2 soil shall be disposed off-site in accordance with this section.
      c. Category 3 Soil – Soil with significant quantities of purifier waste. Soil containing significant quantities of purifier waste, as determined solely by the Design Engineer in consultation with NYSDEC, shall be segregated and staged separately for characterization and off-site disposal (refer to Section 31 70 00). Per DER-4, a significant quantity of purifier waste is defined as any quantity that would cause the MGP site remediation waste mixture, sent for thermal treatment, to contain in excess of 3.5% sulfur by weight. Category 3 soil shall be disposed off-site in accordance with this section.
      d. Category 4 Soil – Soil without visible tar or NAPL, odors, or evidence of purifier waste. Category 4 Soil shall be disposed off-Site in accordance with this section.
   2. Minimizing and controlling vapors and odors is a primary objective for this project. Contractor shall employ odor mitigation measures when handling and loading soils.

F. Wastewater generated from remedial activities (including dewatering, decontamination, and other sources) shall be collected and managed. Wastewater may be managed by one of the following methods:
   1. Containerized and sent off-site to an approved treatment/disposal facility, as approved by National Grid, Construction Manager, and Design Engineer.
   2. Other means as approved by National Grid, Construction Manager, and Design Engineer.

G. Non-Aqueous Phase Liquids (NAPL): NAPL will generally be managed as a commingled waste along with the media it is associated with, such as soil, sludge, or debris. NAPL that is segregated into a separate waste stream shall be containerized separately in DOT-approved containers (such as drums) for separate waste characterization and management.

H. Miscellaneous Debris/Waste:
   1. Miscellaneous construction debris such as industrial piping, structural materials, wood, etc. shall be segregated within stockpiles or roll-off containers for off-site recycling or disposal. The debris shall be decontaminated, as necessary, to meet the selected disposal or recycling facility's acceptance criteria.
   2. Miscellaneous debris, such as personal protective equipment (PPE), sampling supplies, or other materials, which come in contact with tar or NAPL will be containerized in DOT-approved drums for subsequent waste characterization and off-site disposal.
   3. Miscellaneous debris or other miscellaneous trash, which does not contain visible tar or NAPL, will be managed as municipal waste and will be stored and containerized in DOT-approved waste containers.

I. Hazardous materials shall be staged separately and managed in accordance with applicable regulations.

J. If waste materials are encountered that are unsuitable for stockpiling (based on appearance, contents, etc.), as determined by Construction Manager or Design Engineer, include provisions/measures to be able to appropriately direct-load those materials into vehicles for direct transport to the National Grid-approved treatment/disposal facility.

K. Cover and secure stockpiled waste materials with plastic sheeting (minimum 10-mil) or implement odor control measures (e.g., long duration Rusmar® Foam) during inactive periods.

L. Direct surface water away from waste staging areas.

M. Apply odor suppressing measures, as needed, or directed by the Construction Manager, and in accordance with 01 52 00.

N. Stockpiled materials shall be removed from the Site within 7 days of placement unless a longer duration is approved by Construction Manager and/or National Grid.

3.03 WASTE DEWATERING AND CONDITIONING

A. Use appropriate means and methods to remove water/free liquids from materials following excavation/removal and prior to off-site transportation. This includes excavation dewatering, gravity draining, mixing drier soils that are designated for off-site disposal with wet soils, or application of conditioning agents.

B. The use of conditioning agents (soil amendments), such as lime or cement kiln dust may be used to reduce moisture content of excavated soils, as approved by the Construction Manager and Design Engineer and approved by the selected disposal facility. **The use of quick lime, lime kiln dust or other lime-based materials containing greater than 50% available Calcium/Magnesium Oxide as an amendment is prohibited.**

C. Ensure that soil/waste material to be managed at the low temperature thermal desorption (LTTD) facility meets soil moisture content acceptance criteria. The Contractor shall test and confirm the material meets acceptance criteria prior to shipment. Clean Earth in Fort Edward, New York (formerly ESMI of NY) has indicated that soil moisture contents up to 18 percent (Contractor shall confirm this threshold value with Clean Earth during proposal development) are included in base rates at their LTTD facility. For material sent to Clean Earth, the soil moisture content shall be below this threshold. Any surcharges for material that does not meet acceptance criteria shall be borne by the Contractor.

D. Conditioning agents (if used) shall be transported and stored at the Site in maximum 1-ton bags. No transportation or storage of bulk quantities will be permitted.

3.04 WASTE CHARACTERIZATION

A. Perform all waste characterization sampling of waste materials indicated for off-site disposal. Perform sampling in conformance with the applicable regulatory requirements (e.g., RCRA regulations) and the requirements of National Grid and the approved off-site treatment/disposal facilities.

B. Waste characterization requirements shall be outlined in the Contractor Management Plan.

C. Excavated Sediment for Off-Site Disposal: Unless otherwise approved by the disposal facility and National Grid, at a minimum, waste characterization sampling shall consist of the following:
   1. One composite sample (3-5 grab samples composited) analyzed for RCRA hazardous characteristics (EPA SW-846 analytical methods) and total PCBs.
   2. Additional composite samples (3-5 grab samples composited) analyzed for TPH (EPA Method 8015 GRO/DRO), Total VOCs (EPA Method 8260B), Total SVOCs (EPA Method 8270C), PCBs (EPA Method 8082), Total Metals (EPA Method 6010 B), Total Cyanide (EPA Method 9010), percent Sulfur (EPA Method D129-64), and BTU (ASTM Method D 240-87) at the following frequency:
      a. First Composite Sample for the first 150 Tons.
      b. Second Composite Sample for the first 300 Tons.
      c. Third Composite Sample for the first 750 Tons.
      d. One Additional Composite per every additional 750 Tons.

D. Tar/NAPL-Impacted Debris (if encountered): Shall consist of sampling and analysis of the debris as required by the disposal facility and/or National Grid. Debris may be characterized using results from the media in contact with the debris, as approved by National Grid.

3.05 WASTE TRANSPORTATION AND DISPOSAL

A. Waste materials shall be transported only at the times and by the routes indicated in the Waste Management Plan and Traffic Control Plan, unless approved by National Grid and/or Construction Manager.

B. The Contractor shall not be permitted to transport waste off-site prior to receipt of characterization sample results for review/acknowledgement by National Grid, Construction Manager, and Design Engineer.

C. Trucks used for off-site transport of waste materials shall have watertight boxes and solid covers. The box shall be lined with polyethylene sheeting (minimum thickness 6-mil) prior to loading and the gate shall be equipped with turnbuckles.

D. The Contractor shall not allow soil to be tracked off-site at any time during the project. Visible soil tracks on streets will not be allowed. Take sufficient precautions to prevent loose soils from adhering to tired treads, wheel wells, etc. Any loose soil spread shall be cleaned up.

E. Maintain daily log of each truck's weight and all waste transported off-site.

F. Waste Transportation:
   1. Contract NYSDEC-permitted (Part 364 Permit) and National Grid-approved waste transportation companies to transport waste materials to approved disposal facilities.
   2. Ensure that transportation vehicles are properly loaded and securely covered with solid linings/covers, equipped with tailgate locks, and do not exceed permitted

weights. All vehicles shall be properly covered, secured, and decontaminated prior to leaving the Site.

3. Prepare and supply waste manifests which will be signed by National Grid, Construction Manager, or Design Engineer.
4. Manage all disposal documentation including, but not limited to manifests, bills-of lading, weigh tickets, and Certificates of Destruction/Disposal.

G. National Grid, Construction Manager, and Design Engineer will not be held responsible for delays or stoppages associated with the transportation of waste materials from the Site.

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Subbase course.
   2. Asphalt paving base course and top course.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 33 00 – Submittal Requirements.
   3. Section 01 40 10 – Protection of Work and Property.
   4. Section 31 05 13 – Soils and Aggregates for Earthwork.
   5. Section 31 23 16 – Backfilling, Filling, and Compaction.
   6. Section 31 50 00 – Site Cover and Restoration.

1.02 REFERENCE STANDARDS

A. ASTM International:
   1. ASTM D2950 - Density of Bituminous Concrete by Nuclear Method.
   2. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.

B. New York State Department of Transportation (NYSDOT):
   1. Standard Specifications (May 1, 2023), including updates.
   2. Materials Method NY5.16 (Superpave Hot Mix Asphalt Mixture Design and Mixture Verification Procedures).

1.03 SUBMITTALS

A. Product Data: Submit product information and asphalt mix design to the Design Engineer a minimum of 5 business days before use of the material at the Site.

B. Test Reports: Results of asphalt thickness and density testing, performed in accordance with Part 3, by 10 AM the following day. Provide draft test results to Construction Manager during the tests.

1.04 QUALITY ASSURANCE

A. Mixing Plant: Conform to NYSDOT specifications.

B. Obtain materials from same source throughout the Work.

C. Perform Work in accordance with NYSDOT specifications.

1.05 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this Section with minimum of 10 years of experience.

1.06 AMBIENT CONDITIONS

A. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees Fahrenheit, or surface is wet or frozen, unless approved by the Construction Manager.

B. Do not place asphalt mixture when asphalt temperature in the delivery truck is more than 20 degrees Fahrenheit below initial mixing temperature.

PART 2 PRODUCTS

2.01 MATERIALS

A. Subbase course shall conform to NYSDOT § 304, Type 2 Subbase Course as specified in Section 31 05 13.

B. Base course shall be plant mix bituminous concrete conforming to NYSDOT § 400 specification and as follows:
   1. Thickness: 4 inches
   2. Item: 25 F9 Base Course, 80 Series Compaction
   3. PG Binder Type: PG 64-22

C. Surface course shall be plant mix bituminous concrete conforming to NYSDOT § 400 specifications and as follows:
   1. Thickness: 2 inches
   2. Item: 12.5 F3 Top Course, 80 Series Compaction
   3. PG Binder Type: PG 64-22

D. All materials shall be as specified in NYSDOT § 402-2 and Materials Method 5.16. Aggregate shall conform to § 401-2.02. Mixture shall conform to § 402.

E. Prime Coat: Material and application shall conform to the requirements set forth in NYSDOT § 407 and 702-6.

F. Tack Coat: Material and application shall conform to the requirements set forth in NYSDOT § 407 and 702-6.

2.02 SOURCE QUALITY CONTROL

A. At least 2 weeks prior to the aggregate material being needed at the Site, provide documentation of the source of the aggregate including:
   1. The name of the person providing the documentation and the relationship to the source of the aggregate materials.
   2. The location where the aggregate was obtained.

3. A brief history of the use of the property which is the source of the aggregate (if no prior approval is available for the source).
4. Certificate stating that the aggregate is virgin material from a permitted mine or quarry and documented to not exceed the lower of the protection of public health soil cleanup objectives for "protection of groundwater" or "residential use" in 6 NYCRR 375.6.

B. Bills of lading to document the source of the material and the imported quantity.

C. No aggregate material shall be imported to the Site until NYSDEC approval is obtained for the source and the Contractor is authorized by the Construction Manager.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is dry and ready to support paving and imposed loads. Request inspection by Design Engineer.

B. Verify gradients and elevations of base are correct.

3.02 PREPARATION

A. Prepare subbase in accordance with NYSDOT Standard Specifications §304-3.

B. Where cold joints are necessary, sawcut back the existing asphalt so that the full vertical face of the pavement is exposed. Treat the surface with tack coat before proceeding with placement of new asphalt course.

3.03 INSTALLATION

A. Subbase:
1. Place and compact subbase as indicated on Design Drawings and as specified in Section 31 05 13.
2. Prepare subbase in accordance with NYSDOT Standard Specifications §304-3.

B. Primer:
1. Apply primer in accordance with NYSDOT Standard Specifications.
2. Use clean sand to blot excess primer.

C. Asphalt Base Course:
1. Place asphalt base course within 12 hours of applying primer or tack coat.
2. Install 4 inches of compacted asphalt base course as indicated on Design Drawings.
3. Place and compact asphalt base course within a temperature range of 250-325°F.

D. Asphalt Top Course:
   1. Place asphalt top course within 24 hours of placing and compacting asphalt base course. When base course is placed more than 24 hours before placing top course, clean surface and apply tack coat before placing wearing course.
   2. Install 2 inches of compacted asphalt top course as indicated on Design Drawings.
   3. Place and compact asphalt base course within a temperature range of 250-325°F.

E. Perform compaction in accordance with NYSDOT Standard Specification Table 404-3 (partially reproduced below). Do not displace or extrude paving from position.

NYSDOT Standard Specifications Table 404-3 Number of Machine Passes

Pavement Courses and Lift Thicknesses 2 inch	Static Compaction		Vibratory Compaction	
	Steel Wheel Rollers	Pneumatic Rollers	Vibratory Passes	Static Passes
≥3”	8	4	4	4
>1” to < 3”	6	3	3	3

F. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from Indicated Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

A. A. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

B. B. Remove and replace all defective areas, as directed by Construction Manager.

3.06 PROTECTION AND WARRANTY

A. Immediately after placement, protect paving from mechanical injury for 24 hours or until surface temperature is less than 140 degrees F.

B. Provide a 1-year warranty on the asphalt pavement installation. Warranty shall cover materials and workmanship.

END OF SECTION

SECTION 33 05 17

PERIMETER UTILITY CUT AND CAP

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Qualifications.
   3. Quality Assurance.
   4. References.
   5. Preparation.
   6. Trenching.
   7. Utility cutting and capping.
   8. Soil and waste management.
   9. Backfilling.
   10. Field Quality Control.
   11. Protection.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 01 52 20 – Work Zone and Community Air Monitoring and Controls.
   7. Section 31 05 13 – Soils and Aggregates for Earthwork.
   8. Section 31 23 16 – Excavation.
   9. Section 31 23 23 – Backfilling, Filling, and Compaction.

C. References:
   1. All applicable federal, state and local regulations.
   2. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Submit information and statement of qualifications of proposed Asbestos Contractor, if needed.

B. Provide description of perimeter utility cut and cap means and methods as part of the Construction Management Plan (Section 01 10 00).

1.03 QUALIFICATIONS

A. Asbestos Contractor: Company specializing in performing work of this Section with a minimum experience of 5 years.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 PREPARATION

A. Locations of existing Site conditions indicated on the Design Drawings are approximate. The Contractor shall examine and confirm existing Site conditions prior to the start of Work.

B. Notify Dig Safely New York in accordance with Section 01 40 10.

C. Coordinate with the utility companies during the work to determine which utilities, presented on the Design Drawings, reference drawings, and utility mark-outs and encountered in the field, are active or inactive and which may be abandoned.

D. Protect Site structures and features indicated to remain.

E. Protect bench marks, survey control points, existing structures, fences. Benchmarks and survey marks that are missing or damaged shall be replaced by the Contractor's Surveyor.

F. Furnish and install temporary construction fencing surrounding the trenching and work areas in accordance with Section 01 50 00, as needed for worker safety.

3.02 UTILITY TRENCH EXCAVATION

A. All excavation work shall be performed in compliance with all appropriate Federal, State, and OSHA regulations.

B. Excavation shall be as specified herein and in Section 31 23 16.

C. Excavate a trench along the perimeter of the ISS areas. Trench shall be wide enough to manually probe soils and shall be widened as appropriate to facilitate further investigation, and cutting and capping of encountered utilities.

D. The final depth of the trench shall be 6 feet below ground surface, or limited to the deepest anticipated utility/piping as directed by the Construction Manager or National Grid.

E. Soft dig techniques (i.e., soil vacuum equipment) may be used to excavate the trench and expose subsurface utilities. Upon discovery of subsurface features, hand excavation methods or soft dig techniques shall be employed to identify the feature.

F. In order to minimize the risk to potential buried piping/lines, the amount of soil excavated from the trench with the construction equipment shall not exceed the depth of the previous manual probe. After completion of manual probing, the soils may be excavated with construction equipment.

G. Excavation shall be benched and/or sloped as required per OSHA regulations. Excavation stability and actual sloping and benching shall be determined by a Competent Person as defined in OSHA 1926.650(b) and in accordance with 1926 Subpart P (Excavations).

3.03 BACKFILLING

A. Sequence trenching and backfilling so that the trench is backfilled at end of working day.

B. Trenches shall be backfilled using excavated soil or with certified clean imported fill, in accordance with Section 31 05 13 and Section 31 23 23.

3.04 UTILITY CUTTING AND CAPPING

A. When a utility line or piping is located, the Contractor, in consultation with Construction Manager and utility owners, shall identify the utility/line. A representative from the pertinent utility company will be contacted to evaluate the line and terminate the service, if required.

B. For utilities/lines that are determined to be inactive by the owner of the utility in question, initial penetration of the utility/pipe will involve use of spark-proof drilling tools to create a small hole in the utility/pipe. Access to the interior of the line will allow initial screening of the internal atmosphere with field screening instruments to determine the potential for explosion. Once screening has identified acceptable conditions within the line, a non-sparking saw, such as a “Nibbler”, or similar, shall be utilized to cut and remove a section of pipe to the existing property line, or as close as is practical.

C. Utility/piping sections that will be cut and removed for purposes of line breaking and capping shall be visually examined for presence of asbestos or asbestos containing material. If asbestos is encountered and the Contractor is not licensed in asbestos abatement, Contractor shall subcontract an asbestos Subcontractor meeting Federal and New York State asbestos licensing and permitting requirements to address the utility/pipe. The asbestos abatement shall be performed in accordance with local, state, and federal regulations.

D. Any residual material which drains from the line shall be collected and segregated for characterization and off-Site transportation and disposal in accordance with Section 31 70 00.

E. Plugging of the line will require the mixing and placing of grout (hydraulic cement) into the open end of the cut line. Bentonite will be mixed with the soils being placed as backfill adjacent to the plugged lines.

3.05 SOIL AND WASTE MANAGEMENT

A. Excavated soil not used as backfill and other generated wastes shall be managed, transported and disposed of in accordance with Section 31 70 00.

3.06 FIELD QUALITY CONTROL

A. Request visual inspection of excavated soils by Design Engineer prior to staging.

3.07 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain excavation stability.

B. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 33 20 00

UTILITY SUPPORT AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Submittals.
   2. Project Conditions and Coordination.
   3. Materials.
   4. Preparation.
   5. Utility Support and Protection.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 50 00 – Temporary Facilities and Controls.
   6. Section 02 41 19 – Selective Demolition.
   7. Section 31 23 16 – Excavation.
   8. Section 31 23 23 – Backfilling, Filling, and Compaction.
   9. Section 31 70 00 – Waste Management, Transportation, and Disposal.
   10. Section 33 05 17 – Utility Cut and Cap.

1.02 SUBMITTALS

A. Utility Support and Protection Plan, as part of the Construction Management Plan (Section 01 10 00), describing the means and methods proposed for the support and protection of active utilities during the Work. The Plan shall detail the proposed methods for investigating location of subsurface utilities, the plan for identifying utility owner and if the utility is active, and protecting and supporting the existing utilities during excavation, ISS, and backfilling.

B. Provide copies of permits/approvals or written acknowledgement of the work from local authorities for working around utilities and within utility easements.

1.03 PROJECT CONDITIONS AND COORDINATION

A. Perform Work in accordance with the City of Watertown, Jefferson County , and other applicable codes, standards, and regulations.

B. Underground utilities are defined to be, but are not limited to: sanitary sewer, water, stormwater, gas, telecommunication, cable, and other piping, electrical conduits, etc. Underground structures known to National Grid and Design Engineer are shown on the

Design Drawings. This information is shown to assist the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall field verify all underground utilities and structures indicated on Design Drawings. The Contractor shall verify the location of underground utilities with the appropriate agencies.

C. Perform perimeter utility cut and cap as specified in Section 33 05 17.

D. At-grade (i.e., surface) structures are defined as all existing structures and other facilities at or above the ground surface. Surface structures include, but are not limited to, monitoring wells, piezometers, utility poles (including anchors and support cables), fire hydrants, electrical panels, curbs, piles, fencing, foundations, former MGP-related structures, and all other facilities that are visible above the ground surface.

E. Use due care to avoid damage to existing utilities identified, not identified, or inaccurately depicted on the Drawings.

F. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, National Grid or Construction Manager will direct the Contractor in writing to perform the necessary work.

G. Do not interrupt utilities unless permitted in writing by National Grid and/or Construction Manager and utility owner, and then only after arranging for temporary utility services, if required.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials and construction methods used for the capping and re-routing or reconnecting of the utilities shall comply with the respective utility company's requirements.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate with the utility company who owns the utility during the performance of the work to determine which utilities, presented on the Design Drawings, reference drawings, and utility mark-ups and encountered in the field, are active and which may be abandoned.

B. Coordinate work and schedules with utility owners and shall provide the utility owners, National Grid and/or Construction Manager written notice at least 48 hours before utility shutdowns.

C. Before proceeding with the work, provide written permit/approval from the utility owner to National Grid and Construction Manager indicating that the methods and procedures to be used have been reviewed and approved by the utility owner. Contractor shall be responsible for all damage and expense for direct or indirect damage caused during the remedial construction activities. The Contractor shall immediately repair all damage caused by their work to the satisfaction of National Grid, Construction Manager and/or Design Engineer.

3.02 UTILITY PROTECTION AND REROUTING

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop as a result of the Work including excavation, ISS, backfilling, or restoration.
   1. Shore, support, and protect active utilities encountered.
   2. Support and protect all structures to remain.

B. Underground utilities (active or inactive) within or adjacent to the areas where remedial activities will be performed shall be sustained in place and protected from direct or indirect damage. Such sustaining and supporting shall be done carefully and as directed by the party owning the structure or utility.

C. Perform utility locating and cut and cap in accordance with Section 33 05 17.

D. Perform hand excavation to expose all utilities. If it is an active utility, support and protect the utility to prevent damage and to prevent interruption to the services that the utility provides. The Contractor shall be liable for damages to an active utility and is responsible to have it repaired promptly.

E. Perform construction necessary to complete rerouting connections or reconnections to existing utilities, including test pits to locate existing utilities and structures that may be encountered.

F. Place demarcation flags on all on-Site and off-Site overhead wire poles (utility poles) and post signage stating “OVERHEAD WIRES ABOVE”.

G. Keep existing active utilities in operation, unless otherwise specifically permitted, in writing, by National Grid and/or Construction Manager, and utility company, if applicable.

H. Perform all rerouting and capping activities so as to avoid interference with other construction activities.

I. Complete all necessary preparatory work and shall keep shutdown periods to a minimum. Obtain approval of shutdown periods, in writing, prior to starting work.

J. Contractor is responsible for the design of the rerouted active utilities, if proposed. Any damage resulting from the failure of the rerouted utilities shall be repaired or replaced, to the satisfaction of the National Grid and the utility company.

K. Protect and support existing utilities and on-Site utility poles that are to remain in place during the performance of the work in accordance with the requirements of the utility company.

L. Any residual material which drains from utility lines/pipes removed as part of the Work shall be collected and segregated for characterization and off-Site transportation and disposal in accordance with Section 31 70 00.

END OF SECTION

SECTION 33 20 10

RECOVERY WELL INSTALLATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Preparation.
   2. Non-aqueous phase liquid (NAPL) recovery well installation.
   3. Alignment.
   4. Abandonment and decommissioning of well location.
   5. NAPL recovery well development.
   6. Decontamination.
   7. Waste Management.

B. Related Sections and Documents:
   1. Design Drawings and general provisions of the Contract Documents, including Technical Specification Sections and National Grid's Standard General Conditions, apply to this Section.
   2. Section 01 10 00 – Summary of Work.
   3. Section 01 30 65 – Health and Safety Requirements.
   4. Section 01 33 00 – Submittal Requirements.
   5. Section 01 40 10 – Protection of Work and Property.
   6. Section 01 52 00 – Work Zone and Community Air Monitoring and Control.
   7. Section 02 61 00 – Monitoring Well Decommissioning
   8. Section 31 70 00 – Waste Management, Transportation, and Disposal

C. References
   1. Occupational Safety and Health Administration (OSHA) Regulations.

1.02 SUBMITTALS

A. Drilling Contractor information, including:
   1. Name and address of the drilling company.
   2. Name of proposed Project Driller.
   3. Copy of Driller's Certification and Company's Registration.
   4. Certificate of Insurance naming National Grid as additionally insured. Waste management.

B. Driller's daily drilling logs and records of NAPL recovery well installation including:
   1. Accurate survey of locations, ground surface elevations and elevations of top of well casings at reference points to be identified by Design Engineer at completion of well installation.
   2. Accurate survey of ground surface elevation used for depth reference at time of drilling.

3. Measurements of depth from existing ground surface at time of drilling at well locations.
4. Accurate record of depth and drilling difficulties encountered.
5. Signed copy of driller's log book statements.
6. Log of drilling and log of well construction including:
    a. Accurate geologic records; recorded depth of top and bottom of each stratum.
    b. Subsurface materials encountered; depth drilled, casings, screens and sumps placed; filter pack installed; grouting completed; water level in well and other pertinent data as requested by the Design Engineer.
7. Measurement of each size of hole and type of well construction completed.

1.03 REFERENCES

A. All applicable federal, state and local regulations.

B. Occupational Safety and Health Administration (OSHA) Regulations.

C. ASTM 5092 – Standard Practice for Design and Installation of Groundwater Monitoring Wells.

D. ASTM D1586 – Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.

E. TAGM 4032- Disposal of Drill Cuttings.

F. CP-43: Groundwater Monitoring Well Decommissioning Policy" (New York State Department of Environmental Conservation [NYSDEC], latest edition).

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with applicable local, state, and federal regulations and standards.

1.05 QUALIFICATIONS

A. Drilling company and proposed Project Driller: specializing in performing the work of this section with a minimum of 5 years of documented experience.

PART 2 PRODUCTS

2.01 WELL CASING

A. Final lengths and elevations to be established by Design Engineer.

B. Casing pipe: new, 6-inch diameter, schedule 40 black carbon steel pipe (ASTM A 53).

C. Centralizers: at 2 feet above bottom of casing, then placed every 15 feet.

D. Casing pipe may be welded or coupled to produce water-tight connections.

E. Welded joints: Bevel ends of pipe for welding; provide brace for proper alignment; weld in accordance with American Welding Society (AWS) standards.

F. Coupled joints: Pipe threaded and coupling taper tapped with API threads; recessed couplings; ship with thread protectors and check tightness of factory placed couplings.

G. Place casing plumb; use centering guides to center casing in borehole.

2.02 SUMP

A. Final lengths and elevations to be established by Design Engineer.

B. 4-inch diameter, 3 feet long, Schedule 40 PVC sump with water-tight bottom end cap.

C. Centralizers of centering guides to center sump in the borehole.

D. A rubber packer shall be positioned around the outside diameter of the sump at the top of the sump (e.g., a K-packer or shale trap) to extend across the annulus between the sump and the borehole wall.

2.03 GROUT MIXTURE

A. A cement-bentonite slurry in the ratio of 7.8 gallons of water to 3.9 pounds of dry powdered bentonite to 94 pounds of dry Portland cement (Type I).

2.04 WATER

A. Water used in drilling process, to prepare grout mixtures, and to decontaminate materials and equipment used for well installation shall be potable water, free of constituents that can compromise the well installation or well use.

B. Secure access to nearby source of potable water to be used in all phases of drilling and well installation.

2.05 DRILLING FLUID ADDITIVES

A. If a drilling fluid additive is required during drilling, only a natural organic polymer type of additive (Revert® or equivalent) shall be used. Use of additives shall be in accordance with manufacturer's specifications.

2.06 SURFACE COMPLETION

A. Flush-mounted, 12-inch diameter, traffic-rated, steel surface protective cover (e.g., roadbox) with a water-tight lid.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that site conditions will support equipment for performing drilling and well installation operations.

B. Protect structures near each recovery well from damage. Damage to existing structures shall be repaired and/or damaged structures shall be replaced at no cost to National Grid.

C. Call Dig Safely New York and local utilities not less than 3 working days before initiating work and request underground utilities to be located and marked within and surrounding construction areas.

D. Protect utilities from damage.

3.02 NAPL RECOVERY WELL INSTALLATION

A. For recovery well locations that are positioned in areas where overburden soils have not previously been characterized and the depth to the top of bedrock has not been previously determined, a soil boring shall be advanced with continuous sampling in accordance with ASTM D1586 (SPT split-barrel sampling) from ground surface to refusal on bedrock.

B. At locations where sufficient stratigraphic data, including the top of bedrock have previously been obtained from nearby borings, continuous sampling of overburden soils is not required, and the boring may be advanced directly to the top of bedrock.

C. The samples shall be described in the field to characterize soil type, including grain size, texture, and apparent moisture content. Soil samples will be logged in accordance with the Burmister Soil Classification System and classified using the Unified Soil Classification System (USCS). The samples shall also be field screened for indications of MGP-related, or other, impacts based on appearance, odors or organic vapor concentration measurements using a photoionization detector (PID).

D. A 10-inch diameter borehole shall be drilled through the overburden and approximately 1 to 3 feet into competent bedrock. The depth of penetration into competent bedrock will be determined by the Design Engineer. Depending on the subsurface conditions, a temporary well casing may be installed to keep the borehole form collapsing and facilitate drilling.

E. A 6-inch diameter carbon steel casing shall then be placed in the borehole, extending from the bottom of the borehole (seated 1 to 3 feet into competent bedrock, as determined by the Design Engineer) to the ground surface. Centralizers shall be used to center the casing in the borehole. The casing shall then be grouted in place by filling the annular space between the casing and the borehole, from the bottom of the borehole to a few feet below ground surface, with a cement-bentonite grout by means of the tremie method or pressure grouting. The cement-bentonite grout in the annular space shall be allowed to set for a minimum period of 24 hours before resuming drilling activities at the borehole location.

F. Bedrock drilling shall resume by means of conventional or wire-line coring techniques. Cores will be collected in 5-foot depth intervals. Core samples shall be described in the field to characterize rock type; bedding thicknesses; texture; fracture type, orientation and spacing; structural features in addition to fractures; and other descriptors used to identify the composition of the bedrock. The samples shall also be field screened for indications of MGP-related, or other, impacts based on appearance, odors or organic vapor concentration measurements using a PID.

G. The driller shall record observations regarding the presence or absence of potential NAPL indicators in the water or cuttings returned from the borehole during drilling, such as sheens, odors, elevated PID readings or NAPL on or in the drilling return water, and the depth of drilling at the time of the observations.

H. Coring shall continue in 5-foot depth intervals until a potential NAPL producing zone is identified or until a depth of approximately 30 feet below the top of the Lowville Limestone has been reached. If a potential NAPL producing zone has been identified, an attempt to identify the bottom of this zone via continued coring shall be made and to provide data for the depth interval where the well sump is to be installed; however, if there is uncertainty as to whether NAPL indicators in deeper intervals are the result of NAPL in the deeper intervals, or a result of the indicators from shallower intervals being introduced deeper into the borehole, the drilling may be terminated at the discretion of the Design Engineer. If the location is to be abandoned and decommissioned, those activities will be conducted in accordance with 02 61 00.

I. If after coring is completed there are no indications that NAPL has been encountered in bedrock at a location, additional assessments may be conducted on the corehole such as bailing, surging and or pumping from the corehole, followed by NAPL gauging, to evaluate the potential for NAPL to be produced at the location. Based on this assessment, a decision shall be made to complete a recovery well at the location, or to abandon and decommission the location before completing the well.

J. Once coring is completed, borehole geophysical logging shall be conducted in the corehole. Specific geophysical parameters that shall be recorded during the logging will include natural gamma, fluid temperature, spontaneous potential, single-point resistance, and caliper. The geophysical data shall be used to further evaluate the bedrock conditions and the vertical position of potentially open fractures that may correspond to NAPL producing zones. Prior to geophysical logging, the Design Engineer shall assess the amount of NAPL in the borehole based on observations from drilling and core samples, NAPL gauging, use of a bailer, or other methods. If the assessment indicates there is a substantial amount of NAPL in the borehole such that the geophysical logging probes could be damaged or covered by NAPL to such a degree that they could not be readily decontaminated in the field, the decision may be made to not run the geophysical probes in the borehole.

K. A nominal 6-inch diameter bit shall be used to enlarge the borehole diameter though the planned intake interval to a depth approximately 3 ft below this interval to allow for sump installation. The volume of the annular space between the borehole and the sump shall then be calculated. A volume of cement-bentonite grout equal to this volume plus approximately 10 percent shall be placed at the bottom of the borehole by the tremie method. A 4-inch diameter PVC sump shall then be installed in the bottom of the borehole. Typical sump length shall be 3-feet, but the actual length at each location shall be determined by the Design Engineer based on subsurface conditions encountered.

The sump shall be fitted with centralizers or centralizing guides to keep it centered and parallel with the borehole. The sump shall be fitted with a rubber packer positioned around the outside diameter at the top of the sump (e.g., a K-packer or shale trap) to extend across the annulus between the sump and the borehole wall. The sump shall be pushed downward into the grout at the bottom of the borehole such that the grout is displaced into the annular space between the sump and the borehole wall and the bottom of the sump contacts the bottom of the borehole. The cement-bentonite grout in the annular space shall be allowed to set for a minimum period of 24 hours before resuming well installation activities at the borehole location.

L. A flush-mounted, 12-inch diameter, steel surface protective cover (e.g., roadbox) with a water-tight lid shall be installed as shown in Drawing C-120. Depending on the location an above-grade surface protective casing may be installed instead of the flush-mounted cover at the discretion of the Design Engineer. The protective cover will be set in place with a concrete pad, and configured to allow for surface water that may enter the cover and the well casing to drain to the soil surrounding the well.

3.03 ALIGNMENT

A. Construct borehole and set well casings plumb and true to line.

B. Check plumbness and alignment in presence of Design Engineer; remeasure after completion of each well.

C. Plumbness: maximum deviation is 2/3 of the I.D. of the PVC casing per 100 feet of well depth.

D. Alignment: Check well casing alignment during construction; correct misalignment of coupled joints prior to installation.

E. If Design Engineer determines that plumbness or alignment fail to meet specifications, the Contractor shall correct any and all deficiencies at no additional cost to Owner.

3.04 ABANDONMENT AND DECOMMISIONING OF WELL LOCATION

A. If the Design Engineer determines that a borehole or well fails to conform to specifications for plumbness and/or alignment or, in the event the Contractor is unable to construct a borehole or well to the specified settings, such well shall be abandoned and decommissioned in accordance with procedures described in Section 02 61 00.

B. The Contractor shall construct a replacement borehole or well at the location designated by the Design Engineer; no payment will be made for abandoned wells.

3.05 NAPL RECOVERY WELL DEVELOPMENT

A. NAPL recovery wells will not be developed until a minimum of 1 week has passed after installation. During this period, the wells will be gauged for the presence of DNAPL. Based on the rate/volume of DNAPL entry into the well, the Design Engineer will determine if the well will be developed. Wells with substantial DNAPL entry may be excluded from development.

B. Wells selected for NAPL recovery shall be developed to remove sediment in the well and from fractures that may have been filled to some degree with cuttings or other sediment during the drilling and well installation process. Development shall be conducted by surging using a surge block to loosen or remove sediment in fractures, accompanied by water and sediment removal via pumping and/or bailing. Development shall continue until well bottom soundings indicate there is no sediment in the bottom of the sump and there is no further decrease in the turbidity of the produced water as measured using a field turbidity meter that measures turbidity in nephelometric turbidity units (NTU). If substantial DNAPL is observed in the produced water during development, development activities may be halted at the discretion of the Design Engineer.

C. Water and materials produced during development will be contained; the initial containment will allow for observation of the produced water/materials to be made during the course of development.

D. Water and materials produced from well development will be contained and managed in accordance with procedures in described in Section 31 70 00.

3.06 DECONTAMINATION

A. All equipment used for well installation shall be steam cleaned prior to mobilizing to the site and prior to demobilizing from the site.

B. Well installation equipment that comes in contact with subsurface materials shall be decontaminated by steam cleaning prior to use at each location.

C. Equipment decontamination shall be conducted in accordance with the Specification Section 01 52 20 – Equipment and Vehicle Decontamination.

3.07 WASTE MANAGEMENT

A. Solids derived from well decommissioning activities shall be contained and disposed of in accordance with Specification Section 31 70 00.

B. Water or liquids derived from well decommissioning activates shall be contained and disposed in accordance with Specification Section 31 70 00.

3.08 FIELD QUALITY CONTROL

A. At the beginning and end of each work phase, request inspection of work activities from Construction Manager and/or Design Engineer.

END OF SECTION