From: Marvin Hull <Marvin.Hull@obg.com>
Sent: Tuesday, May 29, 2018 1:30 PM
To: Spellman, John (DEC)
Cc: Steve Anagnost; Dilella, Steven
Subject: Nation Grid - Goal Gas Plant - Construction Completion Report
Attachments: PAH - Impacted Soil Removal - Coal Gas Plant CCR text 5-25-18.pdf

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

John,

Please find attached the finalized Construction Completion Report text, for the OU-1 Remediation Action - PAH Impacted Soil Removal – Coal Gas Plant Project for your final review and approval. The rest of the report, Appendices, Exhibits, Figures and Flysheets, has been uploaded to our FTP site. The instructions to access the FTP site are as follows:

[redacted]

Please feel free to contact me at your convenience if you have any trouble accessing these files.

Marvin

Marvin Hull Jr
OBG | Sr Project Designer

333 West Washington Street | PO Box 4873
Syracuse, NY 13221-4873
p 315-956-6100 | ***f*** 315-463-7554
d 315-956-6290 | ***c*** 315-264-1381
Marvin.Hull@obg.com | www.obg.com

Like Us | Connect with Us | Follow Us

Harbor Point Former MGP Site

UTICA, NEW YORK

Construction Completion Report

For the

Polycyclic Aromatic Hydrocarbons (PAH) – Impacted Soil Removal Coal Gas Plant

Operable Unit No. 1 - Peninsula

NYSDEC Site Number: 6-33-021

Prepared for:

National Grid

300 Erie Boulevard West

Syracuse, NY 13202

Prepared by:

O'Brien & Gere

333 West Washington Street

P.O. Box 4873

Syracuse, NY 13221-4873

315-956-6100

OCTOBER 2017

REVISED MAY 2018

CERTIFICATIONS

I, Stephen W. Anagnost, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Remedial Design construction was implemented and that all construction activities were completed in substantial conformance with the Department-approved documents:

- Project Specifications, Harbor Point Site, Site 6-33-021, OU-1 Remedial Action – PAH-Impacted Soil Removal – Coal Gas Plant (O'Brien & Gere, June 2014)
- Contract Drawings, Harbor Point Site, Site 6-33-021, OU-1 Remedial Action – PAH-Impacted Soil Removal – Coal Gas Plant (O'Brien & Gere, June 2014)
- Approved modifications developed during construction

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Stephen W. Anagnost, of O'Brien & Gere Engineers, Inc., have been authorized and designated by the site owner to sign this certification for the site.

O'BRIEN & GERE ENGINEERS, INC.

Stephen W. Anagnost, P.E.
Senior Managing Engineer

068269	10/20/17	Stephen W. Anagnost
NYS Professional Engineer No.	**Date**	**Signature**



TABLE OF CONTENTS

Certifications ii
List of Figures v
List of Appendices v
List of Exhibits vi
List of Acronyms vii
1. Construction Completion Report Introduction 1
1.1 Background and Site Description 1
2. Summary of Site Remedy 2
2.1 Remedial Action Objectives 2
2.2 Description of Site Remedy 2
3. Description of Remedial Actions Performed 4
3.1 Contractors and Consultants 4
3.2 Governing Documents 4
3.2.1 Health and safety plan 5
3.2.2 Community air monitoring plan 5
3.2.3 Construction Quality Assurance Project Plan (CQAPP) 5
3.2.4 Contractor's staging plan 6
3.2.5 Particulate emission and odor control plan 6
3.2.6 Erosion and sediment control plan 6
3.2.7 Construction water management plan 6
3.2.8 Waste transportation and disposal plan 6
3.2.9 Traffic control plan 6
3.2.10 Vibration minimization and monitoring plan 6
3.2.11 Excavation support plan 6
3.3 remedial Program Elements 7
3.3.1 Site preparation 7
3.3.2 General site controls 7
3.3.3 Nuisance controls 8
3.3.4 CAMP results 8
3.3.5 Reporting 8
3.3.6 Temporary Wastewater Treatment System 9
4. Contaminated Material Removal 10
4.1. Material Removal 10
4.2 Off-Site Transportation and Disposal 10
4.3 Abandonment of Monitoring Wells 11
4.4 Restoration of Non-Wetland Excavations 11

4.5 Restoration of Wetland Excavations 11
4.6 CGP Bank Stabilization and Restoration 11
4.7 Backfill Sampling and Analysis 12
4.8 Contamination Remaining at the Site 12
4.9 Access Control 12
4.10 Institutional Controls 13
4.11 Deviations from the Contract Documents 13
References 14

LIST OF FIGURES

1 Project Location Map

2 Existing Site Plan

3 Remedial Action Location Plan

LIST OF APPENDICES

A Electronic Copy of Construction Completion Report (CCR)

B Health and Safety Plan (HASP)

- Weekly HASP Summary

C Community Air Monitoring Plan (CAMP)

- Weekly CAMP Reports

D Construction Quality Assurance Project Plan (CQAPP)

E Contractor's Staging Plan (CSP)

F Particulate Emission and Odor Control Plan

G Stormwater Pollution Prevention Plan (SWPPP)

- SWPPP Weekly Maintenance Inspection Forms

H Erosion & Sediment Control Plan (ESCP)

I Construction Water Management Plan

J Waste Transportation and Disposal Plan

- Transportation and Disposal Plan
- Coal Gas Plant - Waste Disposal Manifest
- ESMI – Disposal and Returned Soil
- Landfill Waste Soil Disposal Tracking Sheet
- Soil/Waste Characterization Documentation

K Traffic Control Plan

L Vibration Minimization and Monitoring Plan

M Excavation Support Plan

N Contract Changes - Directives

O Weekly Construction Meeting Minutes

P Monitoring Well Abandonment Logs

Q Record Drawings

R Wastewater Treatment System Sampling and Analysis Results

S Imported Materials Documentation

T Seed Tags

U Site-Wide Vegetative Restoration Plan 2014

V Project Photographic Log

LIST OF EXHIBITS

1 NYSDEC Record of Decision 2002

2 NYSDEC OU 1 ROD Modifications 2010

3 O'Brien & Gere Contract Documents 2014

4 O'Brien & Gere Contract Drawings 2014

5 USACE Authorization No. 2008-00854 Under Nation Wide Permit No.38 (USACE 2015)

LIST OF ACRONYMS

Acronym	Definition
ACM	asbestos-containing material
bgs	below ground surface
BTEX	benzene, toluene, ethyl-benzene, and xylenes
C&D	construction and demolition
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
CDM	Camp Dresser & McKee, Inc.
CGP	Coal Gas Plant
CQAPP	Construction Quality Assurance Project Plan
CSP	Contractor's Staging Plan
CY	cubic yards
DBH	diameter breast height
DSA	Dredge Spoil Area
E&S	Erosion and Sediment
ESCP	Erosion and Sediment Control Plan
ESD	Explanation of Significant Difference
FER	Final Engineering Report
ft	foot or feet
GCL	geocomposite clay liner
HASP	Health and Safety Plan
LRI	Land Remediation, Inc.
LTTD	low-temperature thermal desorption
MGP	Manufactured Gas Plant
MHF	Material Handling Facility
MVO	Mohawk Valley Oil
NAPL	non-aqueous phase liquid
NMPC	Niagara Mohawk Power Corporation
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSDOH	New York State Department of Health
NYTEP	New York Tar Emulsion Products
OBG	O'Brien & Gere Engineers, Inc.
OHSWA	Oneida-Herkimer Solid Waste Authority
OCL	Ontario County Landfill
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCBs	polychlorinated biphenyls
PAH	polycyclic aromatic hydrocarbons
PPM	parts per million
RA	Remedial Action
ROD	Record of Decision
SML	Seneca Meadows Landfill

SVOCs	Semi-Volatile Organic Compounds
SPDES	State Pollution Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
TAL	Target Analyte List
VOCs	volatile organic compounds
WWTP	Wastewater Treatment Plant
WWTS	Wastewater Treatment System

1. CONSTRUCTION COMPLETION REPORT INTRODUCTION

1.1 BACKGROUND AND SITE DESCRIPTION

Niagara Mohawk Power Corporation (NMPC) entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) in March 2002, to investigate and remediate certain portions of the Harbor Point Former Manufactured Gas Plant (MGP) Site (the Site) located in the City of Utica, Oneida County, New York (Figure 1). Administratively, the NYSDEC has divided the Site into three Operable Units (OUs).

Operable Unit 1 (OU-1) – Peninsula, New York Tar Emulsion Products (NYTEP) and Mohawk Valley Oil (MVO) Sites

OU-1 is, in total, approximately 140 acres of land located on a peninsula formed by the intersection of the New York State Barge Canal, Utica Harbor, and the Mohawk River (Figure 2). The site consists of approximately 100 acres owned by National Grid (formerly NMPC), and other contiguous parcels including the New York Tar Emulsions Products (NYTEP)/Beazer/Suit-Kote parcel and the Mohawk Valley Oil (MVO) site. Adjacent to the Harbor Point Site (but not included within the Site) to the south is a mainline railroad right-of-way operated by the CSX Corporation. The former Monarch Chemical property abuts the Harbor Point Site to the east. Remediation and restoration of the NYTEP and Monarch Chemicals sites is being undertaken by those respective responsible parties.

Operable Unit 2 (OU-2) – Mohawk River

OU-2 consists of approximately a one-mile stretch of the Mohawk River that borders the Site along the western and northern boundaries (Figure 2).

Operable Unit 3 (OU-3) – Utica Harbor

OU-3 consists of the Utica Harbor and three Dredge Spoil Areas (DSAs) not on the Harbor Point Site (Figure 2). The New York State Canal Corporation (NYSCC) is the Owner and primary user of Utica Harbor. The NYSCC operates a canal maintenance facility on the southern and eastern sides of the harbor on property which is owned by New York State. Across from the Barge Canal and canal locks are two of the three former dredged spoil areas. DSA-1 and DSA-2 are east and north of the Barge Canal, respectively. DSA-3 is on the west side of the Mohawk River, to the west of the tip of the Harbor Point peninsula.

2. SUMMARY OF SITE REMEDY

2.1 REMEDIAL ACTION OBJECTIVES

The Record of Decision (ROD) issued by NYSDEC on March 2002 for the Harbor Point Property OU-1 – Peninsula (Site No. 6-33-021), as modified by the July 2011 Explanation of Significant Difference (ESD) required the excavation and removal of subsurface soils containing visual tar, non-aqueous phase liquid (NAPL), or polycyclic aromatic hydrocarbons (PAHs) greater than 1,000 mg/kg in the top 6 feet and treatment using a low temperature thermal desorption (LTTD) unit.

In addition, the ROD as modified by the ESD required that all subsurface soils containing visual tar, non-aqueous phase liquid (NAPL), or polycyclic aromatic hydrocarbons (PAHs) greater than 1,000 mg/kg associated with the sludge sump, scale, underground gasoline tank and water gas tar tank be removed and treated.

Visual tar or NAPL, as defined by the ROD, is soil found to be saturated with NAPL, or to have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens will not be considered for removal as visual tar or NAPL unless these soils are found to exceed the 1,000 ppm PAH criteria. The limits of excavation were defined during pre-design investigation.

Soil with no visual indication of NAPL or tar and containing less than 1,000 ppm PAHs, located above or between areas meeting the removal criteria, may be stockpiled and reused as backfill (re-use material) within the excavations resulting from the removal. Also, not subject to the removal requirements are the locations of active gas and electrical infrastructure, vital to the City of Utica, which remain on the Peninsula.

2.2 DESCRIPTION OF SITE REMEDY

This project was divided into three separate phases for descriptive purposes of identifying the work.

The first phase of this project included the excavation of the former Coal Gas Plant (CGP) (Figure 3). Excavation of the CGP Area was required by the March 2002 Record of Decision for NIMO-Harbor Point Property Operable Unit No. 1 – Peninsula (Site No. 6-33-021) (NYSDEC, 2002). All NAPL contaminated soil and tar associated with the sludge sump, scale, underground gasoline tank and water gas tar tank shall be removed and treated. A copy of the record drawings, which include the limits of excavations, is included in Appendix Q.

The second phase of this project included excavations DC-1, DC-2 and DC-3, outside the limits of the former MVO (Figure 3). During construction of the MVO project, a 6 foot (ft.) wide by 6 ft. deep trench was excavated outside the entire perimeter of the steel sheet pile containment wall. At certain locations along the trench, tar, NAPL, or heavily MGP-impacted soil was observed on the outer sidewall of the trench. A copy of the record drawings, which include the limits of excavations, is included in Appendix Q.

Once the excavations of the first two phases were completed to the depths specified or as directed, a geo-composite clay liner (GCL) was placed on the excavation floor where residual MGP impact (if any) was observed 6 ft. below ground surface (bgs) or deeper. The excavations were backfilled to a depth of 1 ft bgs with excavated material exhibiting less than 1,000 mg/kg, treated soil brought back to the site (provided it met the specified criteria), or clean fill from an approved off-site source. A geotextile demarcation layer was then placed and covered by 1 ft of clean fill and/or topsoil from approved off-site sources.

The third phase of this project included the excavation of select wetlands that were identified during the Remedial Investigation (Figure 3). The ROD, as modified on November 15, 2010 by the NYSDEC, required that surface soil on the peninsula exceeding the 6 NYCRR Part 375-6.4(b)(3) soil cleanup objectives (SCOs) for the protection of public health for commercial use be covered with 1 ft of clean soil that meets the SCOs. The ROD, as modified on November 15, 2010 by the NYSDEC, also required that a minimum 2-ft soil cover placed along riverbanks adjacent to the Mohawk River and the Barge Canal and the Federally-designated wetland areas

where shallow soils exceed the SCOs. A copy of the record drawings, which include the limits of excavations, is included in Appendix Q.

Vegetation and soil in the disturbed areas was restored in accordance with the Site-Wide Vegetative Restoration Plan, Harbor Point Former MGP Site for Operable Unit 1 and Unit 3, NYSDEC Site Number 6-33-021 presented to the NYSDEC August 15, 2014 and approved by the NYSDEC on August 22, 2014. A copy of the Site-Wide Vegetative Restoration Plan is provided in Appendix U.

Approximately 72,900 tons of wetland and non-wetland soils were excavated and removed. Of the total 72,900 tons of soil that was excavated, 69,600 tons of soil was shipped off-site and 3,300 tons of soil was stockpiled and used as re-use backfill material.

Construction was generally completed between February 12, 2015 and December 23, 2015, with the exception of the CGP bank stabilization and restoration work, described in Section 4.1.6, which was completed in June of 2017. All Excavations were completed to the depths specified on the Contract Drawings. A geocomposite clay liner (GCL) was placed on the excavation floor in areas where residual NAPL was observed and the excavations were backfilled to an elevation of 1 ft bgs with excavated material exhibiting less than 1,000 mg/kg, or clean fill from an approved off-site source approved. A geotextile demarcation layer was then placed and covered by 1 ft of clean fill and/or topsoil from an approved off-site source. Excavations in non-wetland areas were backfilled with 6 inches of common fill and 6 inches of topsoil. Excavations within the limits of the wetlands were backfilled with 24 inches of wetland topsoil. Excavations along the Harbor bank were backfilled with 12 inches of common fill and 12 inches of wetland topsoil, with the exception of the CGP bank area, which is described below in Section 4.1.6 CGP Bank Excavation and Restoration.

Common fill and topsoil not associated with the bank restoration was compliant with the commercial use standards listed in NYCRR PART 375 and satisfied the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b). Common fill and topsoil, used for bank and wetland restoration satisfied the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

3. DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

3.1 CONTRACTORS AND CONSULTANTS

National Grid retained multiple contractors and consultants to implement the Remedial Action (RA).

- Camp Dresser & McKee, Inc. (CDM) conducted the Pre-design Investigation.
- O'Brien & Gere Engineers, Inc. (OBG) prepared the PAH-Impacted Soil Removal – Coal Gas Plan Specifications, Contract Drawings, provided engineering during construction and on-site construction observation.
- Synapse Engineering, PLLC served as National Grid's representative that conducted the weekly construction meetings and provided directive, change order and invoice review.
- OBG was retained to implement the Community Air Monitoring Plan (CAMP)
- Land Remediation, Inc. (LRI) was retained by National Grid to implement the Site RA construction activities. In performing the Site RA construction, LRI itself retained several subcontractors for various tasks, as follows:
  - Colden Corporation was retained to prepare and implement the Health and Safety Plan (HASP);
  - Price Trucking, Galusha Trucking, MTN Unlimited LLC., Cason Inc., Longhorn Trucking Company, Inc., Cedar Hill Trucking, and Ron Allen Trucking, Inc. provided transport of contaminated soil to the off-site disposal facility;
  - Ron Allen Trucking, Inc. provided transport of treated soil from ESMI back to the site;
  - Controlled Waste Systems provided transport of Construction and Demolition (C&D) waste to the off-site disposal facility;
  - Atlantic Testing Labs conducted analysis of imported fill and topsoil;
  - Lietz Trucking Corporation provided transport of imported fill and topsoil;
  - NMB Land Surveying provided survey information and as-built drawings;
  - Brady Fence Co. provided fence and gate installation services;
  - Parratt Wolff, Inc. was retained to abandon 43 monitoring wells; and
  - Clover-Leaf Nurseries, Inc. provided seed mix and plantings

3.2 GOVERNING DOCUMENTS

The following documents constituted integral parts of the Agreement executed between National Grid and LRI for construction of the Site RA, the whole collectively known and referred to as the Contract Documents or the Contract:

- Record of Decision (NYSDEC, 2002);
- OU 1 ROD modifications (NYSDEC, 2010);
- Project Specifications (O'Brien & Gere, 2014);
- Contract Drawings (O'Brien & Gere, 2014); and
- United States Army Corps of Engineers (USACE) Authorization No. 2008-00854 Under Nation Wide Permit No.38 (USACE 2015)

In accordance with the Contract, LRI prepared and submitted certain required work plans for review and approval, including:

- Health and safety plan (HASP);

- Community air monitoring plan (CAMP);
- Construction Quality Assurance Project Plan (CQAPP);
- Contractor's staging plan (CSP);
- Particulate emission and odor control plan;
- Stormwater Pollution Prevention Plan (SWPPP);
- Erosion and sediment control plan (ESCP);
- Construction water management plan;
- Waste transportation and disposal plan;
- Traffic control plan;
- Vibration minimization and monitoring plan; and
- Excavation support plan

Summaries of the various work plans are provided in the following sections.

3.2.1 Health and safety plan

LRI prepared and implemented a site-specific Health and Safety Plan (HASP) as required by the Project Specifications. Construction complied with governmental requirements, including Site and worker safety requirements mandated by the Federal Occupational Safety and Health Administration (OSHA) and the HASP.

LRI identified the nature of the wastes to be encountered to include coal tar soils; NAPL contaminated groundwater; concrete, brick, wood and, steel piping with possible asbestos containing material (ACM).

Soils and groundwater are impacted by coal tar that contains various concentrations of semi-volatile organic compounds (SVOCs) such as PAHs, volatile organic compounds (VOCs) such as benzene, toluene, ethyl benzene, and xylenes (BTEX), and metals such as cyanide. ACM related waste was identified as being potentially encountered on piping (LRI 2015).

The primary route of exposure for the contaminants would be ingestion or inhalation. Based upon the contaminants, the reported concentrations, and the potential for worker exposure above occupational limits, work space monitoring was conducted to provide for the safety of the workers and monitor their exposure to dust and organic vapors (if any). A copy of the HASP is provided in Appendix B.

3.2.2 Community air monitoring plan

OBG was hired by National Grid to conduct the community air monitoring at the Site during construction from March 3, 2015 through November 6, 2015 completion of intrusive work summarized in this report. The Community Air Monitoring Plan (CAMP) included sampling and analyses for particulates (PM-10) and VOCs using sample equipment staged upwind and downwind of the work area. A total of four community air monitoring stations, each including monitors for PM-10 and VOCs, were established around the perimeter of the Harbor Point Site.

The CAMP and weekly data summaries generated during the remedial activities are provided in Appendix C.

3.2.3 Construction Quality Assurance Project Plan (CQAPP)

LRI prepared a CQAPP plan which identified the project quality controls. This plan provided an overview of the organization and of those authorized, responsibilities for observations, submittal review process, testing protocol and laboratory procedures. A copy of the CQAPP is provided in Appendix D.

3.2.4 Contractor's staging plan

LRI prepared a CSP to outline the means and methods LRI intended to utilize to implement and manage the RA construction activities. The CSP describes the approach for site preparation tasks, excavation and management of soil, waste handling and disposal, and backfill and restoration of the site. A copy of the CSP is provided in Appendix E.

3.2.5 Particulate emission and odor control plan

LRI prepared and implemented a Particulate Emission, Odor and Vapor Control Plan that identified the Site RA construction tasks having the potential to generate dust, and presented various control methods to prevent conditions conducive to dust generation. LRI routinely covered the exposed stockpiles to minimize the potential for dust and odor. Particulates were monitored as part of the CAMP, and when applicable sources of dust were identified, corrective actions were taken as necessary based on the readings made by the CAMP instruments. A copy of the Particulate Emission, Odor and Vapor Control Plan is provided in Appendix F.

3.2.6 Erosion and sediment control plan

The erosion and sediment (E&S) controls for the remedial construction were performed in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control (NYSDEC, 2005) and the site-specific Stormwater Pollution Prevention Plan (SWPPP) (O'Brien & Gere, 2012) (Permit #GP-0-10-001) amended in July 2014 to address the Coal Gas Plant project phase of the OU-1. Inspection of the E&S controls was performed once every seven days. Inspections were also performed the first working day after a significant rain event (i.e. 1-inch rain or more over a 24-hour period). A copy of the SWPPP is provided as Appendix G. A copy of the ESCP is provided as Appendix H.

3.2.7 Construction water management plan

LRI prepared and implemented a construction water management plan that provided a description of LRI's proposed operation for dewatering that was utilized to complete the soil excavation, backfill, and restoration requirements for the Coal Gas Plant Project. The plan identified the types of equipment to be utilized, the daily operations for the system, anticipated flow rates, treatment system technology, and implementation of the proposed system during the remedial action. A copy of the Construction Water Management Plan is included in Appendix I.

3.2.8 Waste transportation and disposal plan

LRI prepared a Waste Transportation and Disposal Plan that described the type of contaminated material transport vehicles, routes for transport vehicles accessing the site, procedures for loading the transport vehicles, decontamination procedures, and the transport vehicles route leaving the site and progressing to the approved disposal facilities. A copy of the Waste Transportation and Disposal Plan is provided as Appendix J.

3.2.9 Traffic control plan

LRI provided a Traffic Control Plan that described how LRI would implement procedures to transport waste and approved fill materials to and from the site. LRI's Traffic Plan is included as Appendix K.

3.2.10 Vibration minimization and monitoring plan

LRI conducted several activities with the potential to generate vibrations. These activities included demolition, hydraulic breaking of concrete, steel sheet pile installation, excavation and backfilling. LRI provided a Vibration Minimization and Monitoring plan to monitor and protect adjacent pipes (utilities), structures, property and work. LRI's Vibration Minimization and Monitoring Plan is included as Appendix L.

3.2.11 Excavation support plan

Steel sheet piling was used to provide excavation support and groundwater control for remedial excavation of Cells 1, 2, and 3 within the Coal Gas Plant area. Cells 1 and 2 used a cantilever sheet piling, with lateral support provided by an internal soil berm/buttress. Cell 3 used an internal bracing to provide lateral support. The cells were precut to elevation 402' prior to excavating within the sheeted cells to reduce lateral load on the sheet

piling. Groundwater levels inside the sheeted cells were maintained below the bottom of excavation to maintain stability of the soil berm during excavation and backfill activities. LRI's Excavation Support Plan is included as Appendix M.

3.3 REMEDIAL PROGRAM ELEMENTS

3.3.1 Site preparation

After mobilization to the site, LRI completed site preparation tasks before initiating the Site RA construction. In summary, the site preparation tasks included:

- Establishment and maintenance of horizontal and vertical control points on site;
- Topographic survey of the excavation areas shown on the Contract Drawings to document existing topography prior to initiation of construction;
- Constructing temporary access roads and staging pads, and establishing traffic control measures including signage, cones and fencing;
- Establishing construction field offices and an equipment decontamination facility within the support area;
- Provision of temporary power to the trailer complex for heating, cooling and lighting;
- Setting up the temporary wastewater treatment system;
- Installing erosion and environmental controls;
- Establishing dust and odor control measures, including setting up the CAMP monitors;
- Setting up work zones (including staging and decontamination areas) and other health and safety measures;
- Protection of monitoring wells outside the limits of excavations but inside the limits of work;
- Conduct clearing and grubbing;
- Identification of wetland areas on the Site;
- Setting up of crane mats over gas main pipelines; and
- Installing temporary excavation support system.

3.3.2 General site controls

The following general site controls were utilized over the course of the project:

- CQAPP – This plan identifies the project quality control and provides the overview organization of those authorized, responsibilities for observations, submittal review process, testing protocol and laboratory procedures;
- Site security - Gates were locked following completion of construction daily;
- Job site record keeping - A field book was used by the on-site OBG full-time resident engineer to record specific dates and activities that took place during construction;
- Waste manifests – Accompanied all material leaving site;
- Temporary wastewater treatment system – System was monitored to include periodic testing of effluent to verify compliance with the site State Pollution Discharge Elimination System (SPDES) permit;
- CAMP - Community air monitoring was performed while intrusive activities were underway at the site;

- HASP – Health and safety tool box meetings were held daily;
- E&S controls – Inspected and documented as scheduled, adjustments made as needed; and
- Weekly meetings – A formal meeting was conducted and recorded, generally on a weekly basis, with the Owner, Engineer, Contractor, NYSDEC and NYSCC invited to attend either in-person or by conference call. Weekly meetings included review of health and safety, administrative items, work performed, quantities and schedule.

3.3.3 Nuisance controls

LRI prepared plans for traffic, odor, and noise nuisances. The previously discussed Traffic Plan also outlines how LRI minimized road blockage and allowed worksite trucks to enter and exit the Site safely by designating traffic patterns.

LRI adhered to local ordinances as they related to hours of operation and noise generation. LRI made efforts to minimize noises caused by construction equipment operation without eliminating any safety features. All equipment was equipped with factory mufflers.

The Particulate Emission, Odor and Vapor Control Plan prepared by LRI were implemented in conjunction with the HASP and the CAMP. The primary odor control methods used were the application of RUSMAR Odor Foam (AC-645) and Bio-Solve, in combination with water spray and covering excavations and stockpiles with polyethylene sheeting. A copy of daily CAMP records is included in Appendix C. The Particulate Emission, Odor and Vapor Control Plan also included a process to respond to complaints, involving the New York State Department of Health (NYSDOH) and/or the NYSDEC to confirm, track, and resolve.

3.3.4 CAMP results

OBG conducted the community air monitoring for National Grid during the construction of the RA while intrusive activities were underway. Each week OBG prepared a summary report of the community air monitoring that occurred and provided the report electronically to LRI, Synapse, National Grid and NYSDEC.

OBG conducted community air monitoring at the Site during remediation using a total of four air monitoring stations, each station containing monitors for PM-10 and VOCs. Monitoring locations were established around the perimeter of the work area (*i.e.* one upwind and three downwind). Sampling was conducted continuously during ground intrusive activities. Downwind concentrations of the particulates and VOCs were compared to the upwind (background) concentration to evaluate if control levels and work perimeter level established by the CAMP (*i.e.* control level of 5 part per million (ppm) and work perimeter level of 25 part per million (ppm) for VOCs, and control level of 100 micrograms per cubic meter and work perimeter level of 150 micrograms per cubic meter for PM-10 for a 15-minute average for particulates) were exceeded. OBG reviewed air monitoring data daily and briefed representatives of LRI and OBG so that corrective actions, when necessary, could be taken to address the condition causing the action level(s) to be exceeded.

Based on air sampling data collected and summarized in Appendix C, there was no exceedance of VOC control levels during intrusive activities. There were two instances of a particulate control level being exceeded during intrusive activities. The first occurred when a semi-truck blew its air brake near a station causing an instantaneous dust spike. The second occurred due to smoke from off-site trash being burned near a station (non-site activity). To control any further dust emissions from occurring due to site activities all the site roads were watered. VOC or particulate work perimeter levels were not exceeded during intrusive work activities. Copies of field data sheets relating to the CAMP are provided in Appendix C.

3.3.5 Reporting

Weekly construction meetings were conducted by Synapse during the RA with representatives of LRI, OBG, National Grid, NYSDEC and various other parties affected by the project invited to attend either in person or via conference call. The purpose of the weekly construction meetings was to review the RA construction progress, site safety, community air monitoring, site security, stormwater pollution prevention and to identify any RA

problems. The meeting also reviewed the performance of the temporary wastewater treatment system, work areas and estimated progress and proposed work schedule. Weekly meeting minutes were distributed electronically to all parties involved prior to the next meeting. When applicable, the progress meeting minutes documented difficulties encountered, corrective actions made, modifications to the work plans (if any) and directives provided to LRI. Copies of the weekly construction meeting minutes are provided in Appendix O.

LRI was responsible for documenting and distributing weekly HASP Summaries. Weekly HASP Summaries are included in Appendix B.

OBG was responsible for observing the daily work to later certify that the work was completed consistent with the contract documents and approved modifications.

3.3.6 Temporary Wastewater Treatment System

A temporary wastewater treatment system (WWTS) to treat groundwater collected during excavation activities was mobilized to the site. The WWTS was in the material handling facility (MHF) and was designed for flows ranging from 250 to500 gpm. The WWTS was used to treat groundwater pumped from the excavation areas, decontamination areas, groundwater pumped from the former Water Gas Plant landfill, water from the staging area, and water that encountered impacted soil. Six 12-inch diameter production wells were installed around the perimeter of the CGP and used to dewater the excavations. Once the CGP remediation activities were complete, these wells were abandoned in place in accordance with the Contract Documents. During excavation, west of Cell #1, a pipe containing approximately 1,300 gallons of a green liquid was encountered. The green liquid was staged in poly tanks in Staging Area #2 pending analysis and later pumped into Staging Area #3 North.

Water was collected for treatment in Staging Area 3 North, allowing solids to settle out, prior to being pumped to the large on-site lagoon. Water was then pumped from the lagoon to the WWTS. The WWTS was designed to treat and/or remove site contaminants including VOCs, SVOCs, cyanide, inorganics, oil and grease, NAPL, and total suspended solids.

The WWTS consisted of oil/water separation, air stripping, bag filters, green sand, carbon filtration, and cyanide resin vessels. Effluent from the WWTS was pumped into a lagoon and held for sampling and analysis prior to discharge. Treated effluent was sampled at an initial frequency of one batch sample per day for 10 days and subsequently on a weekly basis. Analytical results of the treated effluent were compared to the Effluent Limitations and Monitoring Requirements established for Site No. 6-33-021. A total of 2,604,483 gallons of treated effluent was discharged to the Mohawk River, via SPDES Outfall 01A. All sample results were provided to the NYSDEC. The WWTS sampling and analysis results are included in Appendix R.

4. CONTAMINATED MATERIAL REMOVAL

4.1. MATERIAL REMOVAL

Prior to remedial activities, NMB Land Surveying performed a site survey to document the existing topography prior to construction. Prior to remediation, surface soil, generally up to a depth of 1.5-feet, was removed from the non-wetland areas and stockpiled for re-use backfill material. No impacted soil was observed during the excavation of the re-use material.

LRI utilized a combination of pumps, sumps and vertical wells to remove water and lower the groundwater to a depth below the excavation limits.

The Record Drawings provided in Appendix Q, present the actual limits of excavations made to remove, surface soils exceeding the 6NYCRR Part 375-6.4(b)(3) soil cleanup objective (SCOs) in the wetland areas and area S30, and soils containing tar, non-aqueous phase liquid (NAPL), or greater than 1,000 mg/kg of PAHs found in wetland area W7, the CGP and outside the limits of the Former MVO area (Figure 3).

Across the entire limits of the former CGP, approximately the upper 6 ft of soil was removed. Additional sheeted excavations, Cell 1, 2 and 3, were installed and material was removed up to a depth of 32 feet (bgs). The sludge sump, scale, underground gasoline tank and water gas tar tank described in the ROD were not encountered. The excavation support plan is included in Appendix M.

Debris piles located north of the CGP area, consisting of, but not limited to, miscellaneous asphalt, brick, concrete, soil, tires and metal was removed and disposed of off-site.

Excavations DC-1, DC-2 and DC-3 outside the former MVO, were designated to be excavated to a maximum depth of 9 feet or until visually clean material was encountered. Excavation areas DC-1 and DC-2 were excavated to a depth of approximately 6 feet at which point visually clean material was encountered. Excavation area DC-3 was excavated to a depth of approximately 8 feet at which point visually clean material was encountered. Excavation area DC-2 required sheeting on the east side of Harbor Point Road. In addition to the excavation, a former 30-inch reinforced concrete pipe storm sewer and headwall were removed.

Wetland areas W4, W5 and W6 were excavated to a depth of 2 ft. While performing excavation activities in W7, NAPL was found to be present. Portions of W7 were excavated to a depth of 6 feet (bgs) to remove visibly impacted material.

Following excavation, material was staged and shipped off-site for disposal. All excavated areas were backfilled in accordance with the contract documents.

Based on the final waste tracking data sheet, approximately 18,400 tons of soil was removed from the wetland areas and area S30, 46,200 tons of soil was removed from the CGP and 5,000 tons of soil was removed from outside the Former MVO area. The total weight of soil disposed off-site is equal to approximately 69,600 tons.

4.2 OFF-SITE TRANSPORTATION AND DISPOSAL

Approximately 69,600 tons of material was generated for off-site disposal. Of this quantity, 542 tons was sent to ESMI of NY for thermal treatment and then returned to the site to be used as backfill. However, due to the high metal content remaining in the soil, the soil was not suitable to be used as backfill. The material was then sent to ESMI of New Hampshire for disposal. Prior to disposal, soil samples were collected and waste profiles were completed for approval by the disposal facilities. Soil Waste Characterization Documentation is included in Appendix J. Based on the waste characterization of the soil, all excavated soil or debris was shipped and disposed of at either the Ontario County Landfill (OCL), the Oneida Herkimer Solid Waste Authority (OHSWA), Seneca Meadows Landfill (SML) ESMI of NY or ESMI of NH. Manifesting and transportation of materials was performed in accordance with Technical Specification 02302, 6 NYCRR Part 372, and 40 CFR Part 263. Shipments of non-hazardous regulated materials were transported using standard non-hazardous manifests.

Completed manifests accompanied all shipments. Manifests and waste tracking data are summarized in Appendix J.

4.3 ABANDONMENT OF MONITORING WELLS

A total of 27 monitoring wells located within the limits of excavation were abandoned in accordance with the Contract Documents. The monitoring well abandonment logs are provided in Appendix P.

4.4 RESTORATION OF NON-WETLAND EXCAVATIONS

Once the excavations were complete to the prescribed depths, a GCL was placed on the excavation floor in areas where residual NAPL was observed. The excavation was backfilled with re-use and/or common fill material and then covered with an orange demarcation fabric. Above the demarcation fabric, areas of gravel access or asphalt pavement was restored in kind. Areas outside the limits of gravel access or asphalt pavement was restored with 6 inches of imported common fill, 6 inches of topsoil and then seeded in accordance with the approved Contract Documents. The common fill and topsoil was obtained from Lietz Trucking Corporation.

All non-wetland areas of excavation were restored to the pre-construction topography. Thus, the post-construction conveyance of stormwater will be similar to the pre-construction conveyance of stormwater.

4.5 RESTORATION OF WETLAND EXCAVATIONS

Once wetland areas W4, W5 and W6 (Figure 3) were completed to the prescribed depths, the excavations were covered with an orange demarcation fabric. 2 feet of wetland topsoil was placed on top of the demarcation fabric. The wetland topsoil was obtained from Lietz Trucking Corporation.

Once wetland area W7 excavation was completed, the excavation was backfilled with 4 feet of common fill and then covered with an orange demarcation fabric. 2 feet of wetland topsoil was placed on top of the demarcation fabric. The wetland topsoil was obtained from Lietz Trucking Corporation.

All wetland areas of excavation were restored to the pre-construction topography. Thus, the post-construction conveyance of stormwater will be similar to the pre-construction conveyance of stormwater. Various types of wetland zones were planted to restore the areas to pre-construction conditions. The wetland zones consisted of emergent wetlands, wet meadow, scrub shrub, and floodplain forest. Wetland plantings were supplied by Clover-Leaf Nurseries, Inc. All wetland restoration was performed in accordance with the approved Contract Documents. Seed Tags are provided in Appendix T.

4.6 CGP BANK STABILIZATION AND RESTORATION

Subsequent, to completion of the CGP remediation, the bank restored adjacent to Utica Harbor sloughed toward the Harbor due to saturation by water from the CGP remediation area. National Grid notified the NYSDEC of the bank instability. An emergency repair was performed in April 2016 to stabilize areas of the bank immediately adjacent to a large utility pole. National Grid provided a proposed solution to stabilize the remainder of the bank to the NYSDEC via an e-mail dated April 21, 2016. In December, 2016 the remedy agreed upon with the NYSDEC was initiated. Unstable material was removed from along the bank area. Mirafi 1100N filter fabric was placed along the bank, filled with Number 2 New York State Department of Transportation (NYSDOT) Stone and then wrapped and sewn to create a stone filled wrap. The stone filled wrap provided the needed bank stabilization while allowing water to pass through it.

In June, 2017 the final bank restoration began. NYSDEC requested that the 1inch diameter breast height (dbh) trees specified to be planted be provided with the ability to root within native soil. To accomplish this, a 3-foot diameter hole was core drilled through the stone filled wrap, the stone fill was removed, a filter fabric sock was installed and the hole was filled with common fill to within 1 ft. of final grade and marked for future location. One foot of common fill and 1 ft of topsoil was then placed along the bank above the stone filled wrap. A brush mattress and series of core logs were installed and staked along the base of the bank. The bank was then seeded and the 1 inch dbh trees were installed at the previously marked locations. All restoration was conducted in

accordance with the approved Contract Documents. The gravel and topsoil was obtained from Lietz Trucking Corporation. Restoration of the bank was completed in June 2017.

4.7 BACKFILL SAMPLING AND ANALYSIS

A total of nine grab and nine composite common fill samples were taken and analyzed in accordance with NYSDEC guidance document DER-10, Table 5.4(e) 10. Each sample was analyzed for Target Analyte List (TAL) VOCs, TAL SVOCs, TAL metals, cyanide (total and amenable), and polychlorinated biphenyls (PCB)/Pesticides in accordance with NYSDEC guidance document DER-10, Table 5.4(e)10. Laboratory data was submitted to the Engineer for review, on the Owner's behalf, immediately upon receipt and prior to use of the material on-site. The analytical results were compared to the cleanup objectives set forth in 6 NYCRR Part 375. The analytic results for the common fill met the cleanup objectives and are included in Appendix S.

The first three grab samples represent the first 3,000 cubic yards (CY). Two grab samples were required for every 1,000 CY after that. A request to reduce the sampling frequency to 1 sample/5,000 CY for grab samples and 1 sample/5,000 CY for composite samples was presented to NYSDEC during the April 9 , 2016 Weekly Construction Meeting and approved. The next 30,000 CY (33,000 total) is represented by grab samples G4-G9 (six samples).

The first three composite samples of common fill represent the first 3000 CY. Samples C4-C9 represent the next 30,000 CY (33,000 total)

A total of 19 grab and 8 composite topsoil samples were taken and analyzed in accordance with NYSDEC guidance document DER-10, Table 5.4(e) 10. Each sample was analyzed for TAL VOCs, TAL SVOCs, TAL metals, cyanide (total and amenable), and PCBs/Pesticides in accordance with NYSDEC guidance document DER-10, Table 5.4(e)10. Laboratory data was submitted to the Engineer for review, on the Owner's behalf, immediately upon receipt and prior to use of the material on-site. The analytical results were compared to the cleanup objectives set forth in 6 NYCRR Part 375. The analytic results for the topsoil met the cleanup objectives and are included in Appendix S.

The first seven grab samples represent the first 1,000 CY. One grab sample was required for every 500 CY after that. A request to reduce the sampling frequency to 1 sample/2,500 CY was presented to NYSDEC during the August 13th Weekly Construction Meeting and verbal approval was received on that same date. Grab samples G16-G19 (4 samples) represent the next 10,000 CY (15,000 total).

Composite samples 1 and 2 of topsoil represent the first 1,000 CY. Samples C3-C8 represent the next 14,000 CY (15,000 total).

4.8 CONTAMINATION REMAINING AT THE SITE

In accordance with the ROD, material encountered during the PAH-Impacted Soil Removal – Coal Gas Plant Project containing observable NAPL below a depth of 6 ft. was left in place and covered with a GCL. Active gas and electrical infrastructure, vital to the City of Utica, which remain on the Peninsula were not subject to remediation. Active gas mains run along the eastern side of Harbor Point Road and the northern side of Lee Street. In accordance with National Grid's requirements, limits of excavations were off-set by 5 feet to either side of these active utilities.

A final recitation of Contamination Remaining at the Site will be detailed in the Final Engineering Report (FER) prepared after all RAs have been completed. Similarly, all Engineering and Institutional Controls and long term operation and maintenance associated with or required by the complete remediation of the Harbor Point Site will be identified and detailed in the FER.

4.9 ACCESS CONTROL

OU-1 of the Harbor Point Site is enclosed by a chain link security fence with gate access locations on Harbor Point Road and on Washington Street. During construction security measures implemented by LRI consisted of

setting up temporary fencing, signage, and maintenance of sign in / sign out sheets, and practicing safe work procedures. During non-working hours, the perimeter safety fence was secured.

4.10 INSTITUTIONAL CONTROLS

No Institutional Controls specific to the PAH-Impacted Soil Removal – Coal Gas Plant project were implemented as part of this phase of the overall Harbor Point remediation project. Future Institutional Controls will be discussed in the FER.

4.11 DEVIATIONS FROM THE CONTRACT DOCUMENTS

There were several contractor directives identified over the course of the project resulting from unanticipated field conditions:

- Directive #1 – Staging and off-site treatment of water collected from a pipe within the CGP excavation
- Directive #2 - Use of an alternate LTTD facility to treat approximately 1,800 cy of excavated material due to inability of ESMI of NY, the originally proposed LTTD, to handle the material due to a high metal content (approximately 1,500 cy) or too high a BTU content (approximately 300 cy)
- Directive #3 - Use of additional RUSMAR foam beyond the contract quantity.
- Directive #4 - Excavation of soil beneath the laboratory trailer following removal of the trailer.
- Directive #5 - Excavation, grading and restoration of approximately 2,500 ft. of the Harbor Bank
- Directive #6 – Repair of Harbor Bank adjacent to the CGP remediation.
- Directive #7 – Restoration of Harbor Bank adjacent to the CGP remediation.
- Directive #8 – Repair of Harbor Bank erosion.

Copies of the Contractor Directives are included as Appendix N.

REFERENCES

Camp Dresser & McKee, Inc., July 2007, Preliminary Engineering Design Report, OU-1, the Upland Portions of the Harbor Point Site – Utica, New York.

NYSDEC, 2002. Record of Decision, NIMO-Harbor Point Property Operable Unit No. 1 – Peninsula (Site No. 6-33-021), New York Tar Emulsion Product Site (Site No. 6-33-031), and the Mohawk Valley Oil Site (Site No. 6-33-02), New York State Department of Environmental Conservation, March 2002.

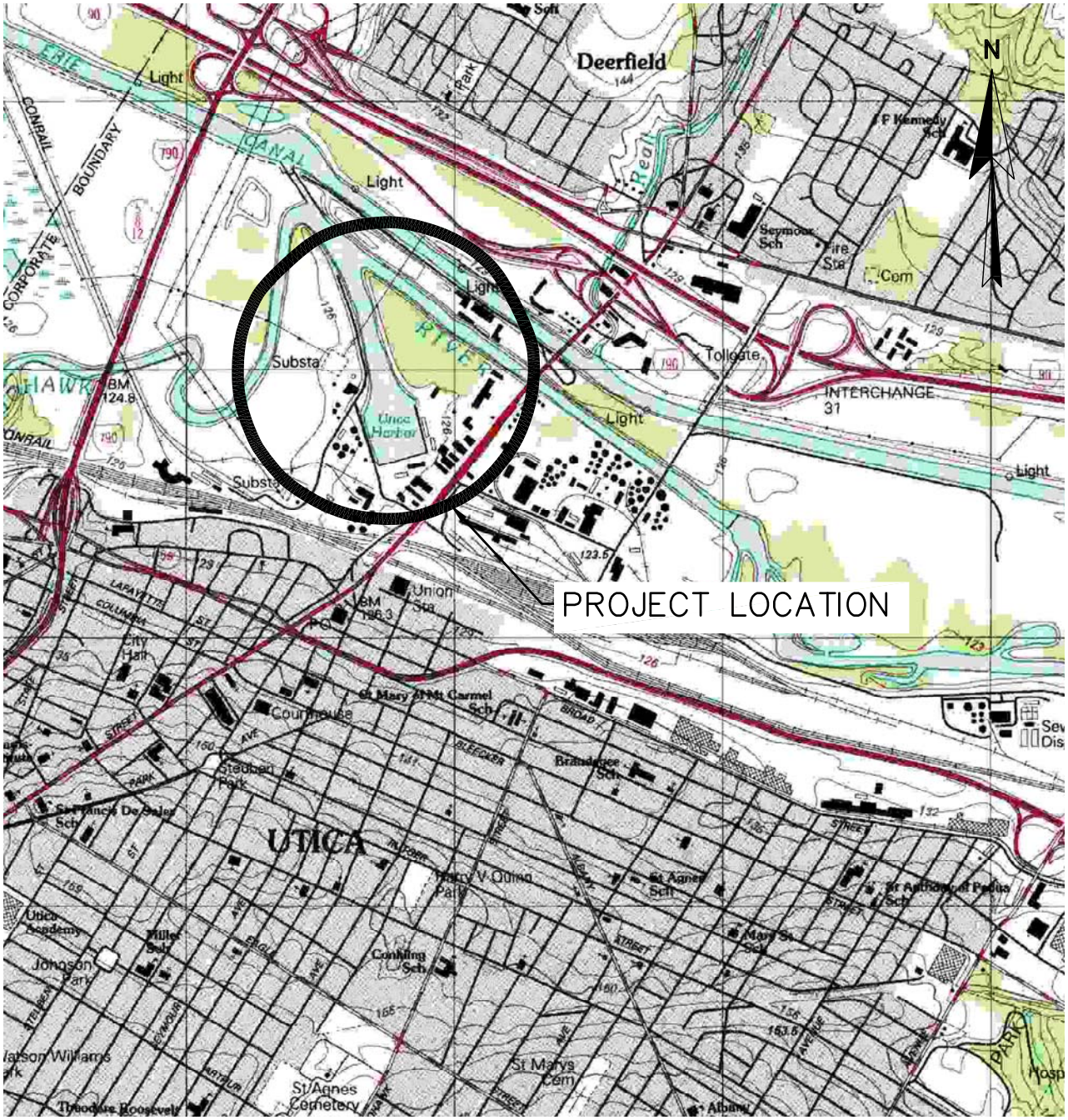
NYSDEC, 2010. Harbor Point Site, Site 6-33-021, Utica, Oneida Co. OU 1 ROD modifications, New York State Department of Environmental Conservation, 18 November, 2010.

Project Specifications, Harbor Point Site, Site 6-33-021, OU-1 Remedial Action – PAH-Impacted Soil Removal – Coal Gas Plant (O'Brien & Gere, June 2014)

Contract Drawings, Harbor Point Site, Site 6-33-021, OU-1 Remedial Action – PAH-Impacted Soil Removal – Coal Gas Plant (O'Brien & Gere, June 2014)

O'Brien & Gere, November 2012, Stormwater Pollution Prevention Plan (SWPPP) (Permit #GP-0-10-001) amended in July 2014 to address the Coal Gas Plant project phase of the OU-1.

Site-Wide Vegetative Restoration Plan, Harbor Point Former MGP Site for Operable Unit 1 and Unit 3, NYSDEC Site Number 633021 Utica, New York (O'Brien & Gere, Revised: August 2014)



ADAPTED FROM: UTICA EAST QUADRANGLE, STATE OF NY U.S.G.S. 7.5 MIN. QUAD



QUADRANGLE LOCATION

NATIONAL GRID - HARBOR POINT SITE
PAH-IMPACTED SOIL REMOVAL - COAL GAS PLANT
UTICA, NEW YORK

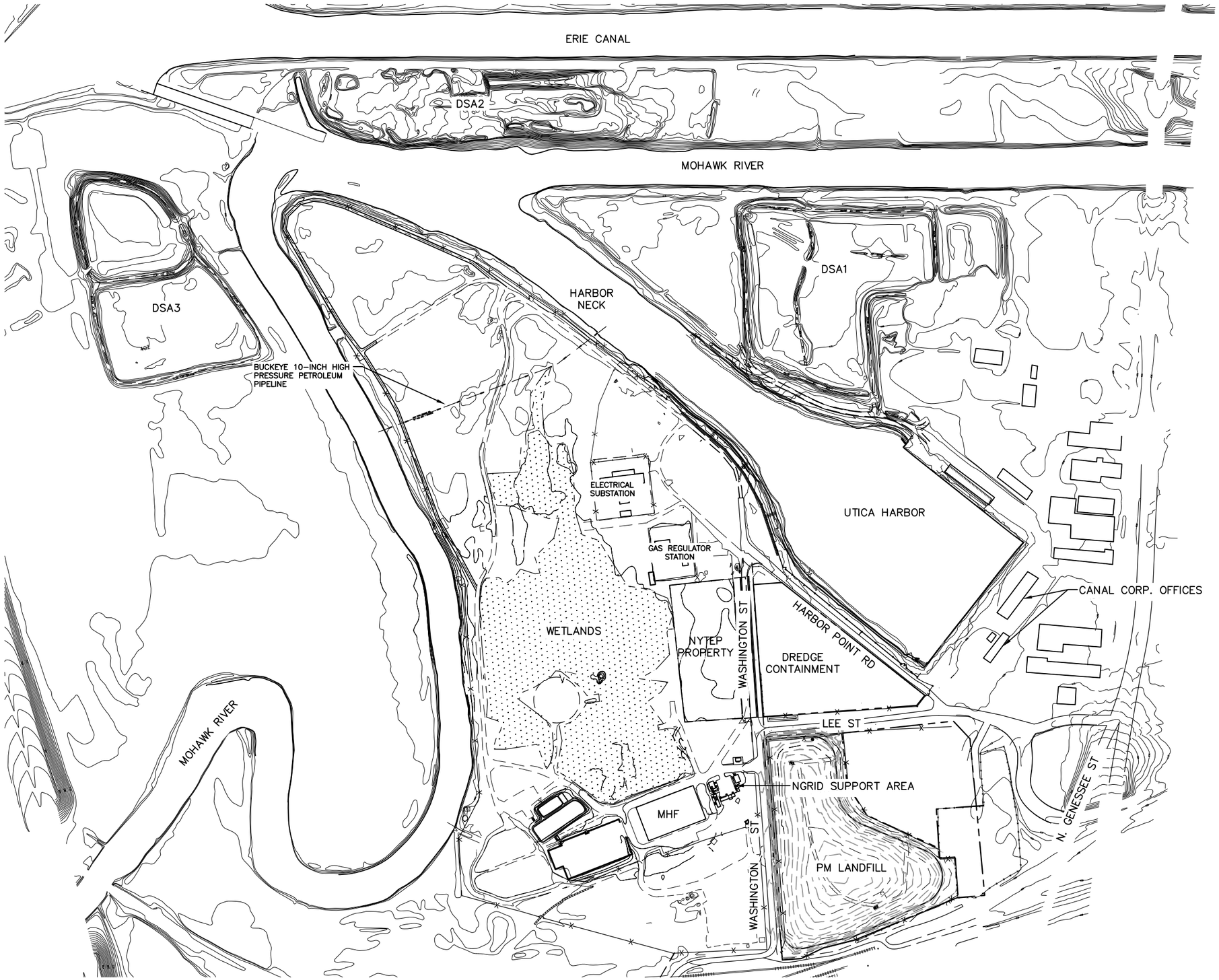
PROJECT LOCATION MAP

NOT TO SCALE

FILE NO. 1118.43175
JUNE 2017

O'BRIEN & GERE ENGINEERS, INC.

I:\National-Grid.1118\43175.Harbor-Point-Co\Docs\dwg\Coal Gas Plant\Figures\43175-CGP-FIG1.dwg



N

NATIONAL GRID
HARBOR POINT SITE

OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL
COAL GAS PLANT
UTICA, NEW YORK

EXISTING SITE PLAN

400' 0 400'

FILE NO. 1118.43175
JUNE 2017

O'BRIEN & GERE ENGINEERS, INC.

I:\National-Grid.1118\43175.Harbor-Point-Co\Docs\dwg\Coal Gas Plant\Figures\43175-FIG2 Project Location Plan.dwg



N

LEGEND

- COAL GAS PLANT (CGP)/ DREDGE CONTAINMENT (DC) EXCAVATION AREAS
- WETLAND (W) EXCAVATION AREAS
- WETLANDS
- DELINEATED WETLANDS

NATIONAL GRID
HARBOR POINT SITE

OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL
COAL GAS PLANT
UTICA, NEW YORK

REMEDIAL ACTION LOCATION PLAN

150' 0 150'

FILE NO. 1118.43175
JUNE 2017

O'BRIEN & GERE ENGINEERS, INC.

I:\National-Grid.1118\43175.Harbor-Point-Col\Docs\dwg\Coal Gas Plant\Figures\43175-FIG2 Project Location Plan.dwg

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

NIMO - HARBOR POINT PROPERTY
OPERABLE UNIT No. 1 - Peninsula
Site No. 6-33-021
NEW YORK TAR EMULSION PRODUCTS SITE
Site No. 6-33-031
MOHAWK VALLEY OIL SITE
Site No. 6-33-032

March 2002

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

NIMO - HARBOR POINT PROPERTY
OPERABLE UNIT No. 1
Site No. 6-33-021
NEW YORK TAR EMULSION PRODUCTS SITE
Site No. 6-33-031
MOHAWK VALLEY OIL SITE
Site No. 6-33-032

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the following three class 2 inactive hazardous waste disposal sites:

- NIMO - Harbor Point Property, Operable Unit No. 1
- New York Tar Emulsion Products Site
- Mohawk Valley Oil Site

The ROD was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the three inactive hazardous waste sites and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from these sites, if not addressed by implementing the response action selected in this ROD, present a current or potential significant threat to public health and the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the three inactive hazardous wastes and the criteria identified for evaluation of alternatives, the NYSDEC has selected several actions in combination to address contamination. The components of the remedy are as follows:

- excavation and on-site low temperature thermal treatment of approximately 115,000 cubic yards of contaminated soil;

- containment of the highly contaminated Water Gas Plant area of the Niagara Mohawk site, with a barrier wall and cap, along with groundwater extraction and treatment;
- consolidation and capping of purifier wastes in the Water Gas Plant area from the Niagara Mohawk site;
- a two foot thick soil cover over approximately 40 acres of the peninsula area;
- soil vapor extraction and air sparging of groundwater in areas of higher volatile organic compound contamination;
- installation of NAPL recovery wells or trenches; and,
- institutional controls to limit development to nonresidential uses, prohibit groundwater use and ensure the integrity of the remedy, including a long-term monitoring program.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for these sites as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/30/2002
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

TABLE OF CONTENTS

SECTION **PAGE**

1: Summary of the Record of Decision 1

2: Site Location and Description 2

3: Site History 4

3.1 Operational/Disposal History 4
3.2 Remedial History 4

4: Site Contamination 5

4.1 Summary of Remedial Investigation 5
4.2 Interim Remedial Measures 11
4.3 Summary of Human Exposure Pathways 12
4.4 Summary of Environmental Exposure Pathways 13

5: Enforcement Status 13

6: Summary of the Remediation Goals 14

7: Summary of the Evaluation of Alternatives 15

7.1 Description of Remedial Alternatives 15
7.2 Evaluation of Remedial Alternatives 22

8: Summary of the Selected Remedy 27

9: Highlights of Community Participation 32

Tables

- Table 1: Harbor Point Peninsula Study Areas 34
- Table 2: Chronology of Significant Investigations 35
- Table 3: Nature and Extent of Contamination 37
- Table 4: Areas and Approximate Volumes 38
- Table 5: Remedial Alternative Costs 39

Figures

- Figure 1: Site Location Map 40
- Figure 2: Site Map 41
- Figure 3: Floodway Area 42
- Figure 4: Location of Purifier Waste and NAPL 43
- Figure 5: Wells Containing NAPL 44
- Figure 6: Area Delineations 45

- Figure 7: IRM Locations 46
- Figure 8 Sub Surface Soil Samples Exceeding 1000 ppm tPAHs . 47
- Figure 9: Northern Area - Remedy Summary 48
- Figure 10: Central Area - Remedy Summary 49
- Figure 11: Southern Area- Remedy Summary 50
- Figure 12: Central Area - Remedy Summary Details 51
- Figure 13: Locations of Operable Units 52

Appendix
- Appendix A: Responsiveness Summary 53
- Appendix B: Administrative Record 90

RECORD OF DECISION

NIMO - Harbor Point Property, Operable Unit No. 1
Site No. 6-33-021
New York Tar Emulsion Products Site
Site No. 6-33-31
Mohawk Valley Oil Site
Site No. 6-33-032
Utica (C), Oneida County

March 2002

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and the environment created by the presence of hazardous waste at the following class 2 inactive hazardous waste disposal sites:

- NIMO - Harbor Point Property - Operable Unit No. 1
- New York Tar Emulsion Products Site
- Mohawk Valley Oil Site.

As more fully described in Sections 3 and 4 of this document, operation of a former manufactured gas plant and other industrial operations at these sites have resulted in the disposal of hazardous waste which is toxicity characteristic for benzene, some of which was released or has migrated from the sites to the Mohawk River and Utica Harbor. These disposal activities have resulted in the following significant threats to the public health and the environment:

- a significant threat to human health associated with the potential for exposure to contaminated surface and subsurface soils and groundwater.

- a significant threat to the environment associated with contaminant levels in soil and groundwater at the site that result in potential significant adverse acute or chronic effects to benthic organisms and other wildlife.

- a significant threat to the environment associated with the migration of contaminants from the groundwater and subsurface soil at the three sites into the Mohawk River, harbor neck and Utica Harbor.

- a significant threat to the environment associated with the potential for migration or release of contaminants to the Mohawk River and Utica Harbor under flood conditions due to the presence of contamination at the surface of the sites within the regulatory floodway and floodplain on the Harbor Point peninsula. The regulatory floodway is the river and the adjacent land area which serves to drain water resulting from a flood.

- a significant threat to the environment associated with the contamination of the groundwater resource resulting from the presence of petroleum, coal tar, non-aqueous phase liquid (NAPL) and other contaminants in the subsurface.

In order to eliminate or mitigate the significant threats to the public health and the environment that the hazardous waste disposed at the sites has caused, the following remedy was selected:

- excavation and on-site low temperature thermal treatment of approximately 115,000 cubic yards of contaminated soil;

- containment of the highly contaminated Water Gas Plant area of the Niagara Mohawk site, with a barrier wall and cap, along with groundwater extraction and treatment;

- consolidation and capping of purifier wastes in the Water Gas Plant area;

- a two foot thick soil cover over approximately 40 acres of the peninsula area;

- soil vapor extraction and air sparging of groundwater in areas of higher volatile organic compound contamination;

- installation of NAPL recovery wells or trenches; and,

- institutional controls to limit development to nonresidential uses, prohibit groundwater use and ensure the integrity of the remedy including a long-term monitoring program.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site, in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: LOCATION AND DESCRIPTION

The NIMO - Harbor Point Property, Mohawk Valley Oil and New York Tar Emulsion Products Sites are all situated on the Harbor Point peninsula in Utica, New York (see Figures 1 and 2). The 100-acre, roughly triangular, peninsula is surrounded on two sides by water, via the

intersection of the Utica Harbor to the east and the Mohawk River to the west. The third (southern) side is bounded by an active railroad. Area topography is flat, with the entire peninsula lying within the 100-year floodplain. Approximately one-half of the peninsula also lies within the regulated floodway (see Figure 3). The majority of the peninsula has not been used within the last 30 years and plant life succession is occurring in many areas, although surface wastes have inhibited growth in some locations. Only two buildings remain from the gas-plant era; these are located on the Mohawk Valley Oil Site. A motor vehicle repair shop conducts business in one of these buildings while the other is vacant. Although few aboveground structures exist, numerous foundations and inactive pipelines lie below the surface. The nearest residential area is a multi-family public housing complex located across the railroad tracks, about 500 feet beyond the southern-most site boundary.

The NIMO - Harbor Point Property Site is adjacent to a forth Class 2 inactive hazardous waste disposal site, the Monarch Chemical Company Site. In March 2001, the NYSDEC issued a Record of Decision for the Monarch Chemical site requiring, among other items, soil vapor extraction of the groundwater contaminant source, hydraulic control and treatment of the groundwater contaminant plume, a soil cover and institutional controls. Contaminants of concern at the Monarch Chemical site are certain chlorinated and nonchlorinated volatile organic compounds and polycyclic aromatic hydrocarbons in soil and groundwater.

The New York State Canal Corporation is the primary user of Utica Harbor, which defines the eastern side of the peninsula. The Canal Corporation operates a canal maintenance facility on the southern and eastern sides of the harbor on property which is owned by New York State. On the other side of the Mohawk River, to the north and west of the peninsula are the Utica Marsh and three former dredged sediment disposal areas. Contamination attributable to the sites has been identified in the harbor, river and dredge spoil areas.

To facilitate the development of a remedy for the peninsula, Utica Harbor, the Mohawk River, and the dredge spoil areas, the NIMO Harbor Point Site was divided into three subareas, called operable units (See Figure 13). Operable Unit 1 consists of the Niagara Mohawk site. The affected Mohawk River is considered Operable Unit 2. Operable Unit 3 of the Niagara Mohawk site consists of the Utica Harbor and harbor neck, three dredge spoils disposal areas, the Washington Street storm sewer and several storm sewer lines located on Niagara Mohawk property. The NYSDEC's ROD (March 2001) for Operable Unit 3 calls for, among other items, placement of a sediment cap in the harbor, contaminated soil removal in dredge spoil area 1, soil covers at dredge spoil areas 1 and 2, and institutional controls. There are certain elements of the Operable Unit 3 ROD which will have to be incorporated into Operable Unit 1, these are discussed in Section 8.

No operable units have been designated for the Mohawk Valley Oil and New York Tar Emulsion Products Sites.

SECTION 3: HISTORY

3.1: Operational/Disposal History

In the 1920s, the Harbor Point peninsula was the location of the largest energy-producing complex in North America. Today, four inactive hazardous waste disposal sites and several other contaminated parcels, are situated on the peninsula. These sites are identified in Table 1 and shown on Figure 2. The following sites are addressed by this PRAP:

1. NIMO - HARBOR POINT PROPERTY : On this 72 acre parcel gas was manufactured from coal from approximately 1848 to the early 1950s. Gas was produced utilizing both the coal carbonization and the water gas processes. Wastes generated in the gas production were often used as raw materials by other chemical processors, also located on the peninsula. This site is the largest property on the peninsula and since 1950 has been owned by Niagara Mohawk, a National Grid Company, with the exception of a fringe area along the water bodies owned by the New York State Canal Corporation. Prior to 1950, the Utica Gas and Electric Company owned and operated the site.

2. MOHAWK VALLEY OIL (MVO): From 1926 to 1951 a plant located on the east side of this site refined the light oils generated during the NIMO Harbor Point gas production into gasoline and toluene. Tanks containing Number 6 oil were also present at the light oil plant. Located in the middle of the MVO site, during approximately the same time period, the Rosselli Tar Asphalt Services reportedly received tar from the Koppers Company. Petroleum bulk storage terminal operations existed at the western end of the Mohawk Valley Oil Site. Texaco, or other companies stored gasoline, number 2 fuel oil and other fuels here. All MVO site storage tanks were removed by the mid-1980s. This site is comprised of three parcels: the former Niagara Flats Terminal, the former Rosselli Associates Tar Asphalt Services and the former Texaco Terminal.

3. NEW YORK TAR EMULSION PRODUCTS SITE (NYTEP): Starting in 1926, the American Tar Products Company and later the Koppers Company used raw coal tar obtained from the NIMO Harbor Point gas production to produce road tars at this location. After 1955 raw coal tar was delivered to the NYTEP site from other locations, by barge via the Utica Harbor. Operations at NYTEP ceased in 1983.

Waste disposal is believed to have occurred at these sites as part of the typical industrial operations which required the wastes to be removed from the system. In addition, contaminants were also likely released to the environment through breaks or leaks in plant containment structures or piping.

3.2: Remedial History

Investigation of environmental conditions at the peninsula were initiated by Niagara Mohawk beginning in 1983 initially focusing on the Niagara Mohawk site, the Utica Harbor and Mohawk River. In 1985 the Niagara Mohawk site was classified by the NYSDEC as a Class 2 inactive

hazardous waste disposal site, meaning a significant environmental or public health threat existed and therefore action is required. The Niagara Mohawk site investigations continued through the 1990s, looking at additional contaminated or potentially contaminated areas. See Table 2 for a summary of the studies conducted at all three sites.

In addition to the investigations of the site, pilot-scale remedial demonstrations to evaluate potential innovative remedial technologies, including the Thermal Desorption Demonstration, ABC Demonstration, Hot and Cold Mix Asphalt Demonstrations, Granular Activated Carbon-Fluidized Bed Reactor Demostration, Tank-Based Bioslurry Demonstration, and NAPL Recovery Demonstration were undertaken at the site, during the late-1990's. In addition, in the fall of 2001, the sanitary sewer force main, which was aligned through a purifier waste disposal area, was realigned due to the significant corrosion of the pipe as a result of contact with purifier waste. A emergency repair of a section of this force main which failed due to this corrosion occurred in 1995.

The NYSDEC conducted Phase I and Phase II investigations on the NYTEP Site from 1987 to 1992. Based on these investigations, the site was listed as a Class 2 site in 1997. Beazer East Inc., a successor to the Koppers Company, and Suit-Kote, the current owner of the New York Tar Emulsion Products Site (NYTEP) initiated a remedial investigation of that site in 1998. The investigation concluded in July 2001.

The NYSDEC conducted Phase I and Phase II investigations at MVO from 1987 to 1992. This site was also listed as a Class 2 site in 1997. Niagara Mohawk conducted a remedial investigation and feasibility study at the MVO site from 1994 to 1999.

SECTION 4: SITE CONTAMINATION

As highlighted in the previous section, several investigations were conducted to evaluate the contamination present and to evaluate alternatives to address the significant threat to human health and the environment posed by the presence of hazardous waste at the three inactive hazardous waste disposal sites which are the subject of this document.

4.1: Summary of the Remedial Investigations

The purpose of the investigations was to define the nature and extent of any contamination resulting from previous activities at the sites.

The investigations included the following activities:

Collection of over 100 surface soil samples;

Installation of over 200 soil borings and over 120 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions;

Excavation of test pits to locate underground structures, and characterize shallow soils;

Collection and analysis of surface water;

Collection and analysis of sewer water and sediment;

Collection and analysis of NAPL.

To determine which media, such as soil and groundwater, are contaminated at levels of concern, the RI analytical data were compared to environmental standards, criteria, and guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the Harbor Point peninsula are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants. Guidance values for evaluating contamination in sediments are provided by the NYSDEC "Technical Guidance for Screening Contaminated Sediments".

Based on the investigative findings, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the peninsula require remediation. These are summarized below. More complete information can be found in the reports identified in Table 2.

Chemical concentrations are reported in parts per billion (ppb) for water, and parts per million (ppm) for soil. For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

The Harbor Point peninsula is covered by a fill layer ranging from less than two feet to 15 feet thick. Among the materials within the fill are cinders, ash, coarse sand, gravel, brick and wood. The fill layer is underlain by glacial-era river (fluvial) sediments which can be divided into upper and lower units; these vary laterally and vertically in composition across the site. The upper river deposits consist of organic silts interbedded with clay and peat. A coarser grained lower river unit consisting of fine to coarse sand with some gravel is present below the upper zone. In the central and northern portions of the peninsula the river sediments are underlain by glacial lake (lacustrine) deposits consisting of silts and sands with discontinuous thin clay and gravel layers. The glacial deposits are underlain by a till layer and the shale bedrock. The till unit dips to the north; depth to the till layer ranges from approximately 27 feet in the south end of the peninsula to over 130 feet in the north end.

The units consist of many thin beds of varying grain size and clay content which change laterally. There are no massive, distinct confining units across the peninsula. The dense till below the

sediments, however, is distinct where encountered, and represents a lower boundary to the unconsolidated deposits.

Three hydrogeologic units were identified on the peninsula, primarily by variations in grain size and clay content, as well as permeabilities derived from slug tests. A shallow aquifer exists within the fill and upper river deposits; an intermediate aquifer exists within the lower river sands and gravel. Where the glacial lacustrine deposit is present, a third, deep aquifer exists. The water table varies from the ground surface to 12 feet below grade. There is a strong interconnection between the intermediate aquifer and the surface water bodies. Both the shallow and intermediate aquifers discharge to the surrounding surface water bodies. The intermediate aquifer was observed to be the most permeable unit.

The significance of the peninsula geologic features for remedy selection are: 1. Thin and discontinuous upper river deposits and the presence of sand seams in the upper deposits has allowed contamination of the intermediate aquifer, particularly in the southeast corner. 2. The low permeability of the glacial lacustrine unit, where present, has prevented contamination of the deep aquifer. 3. A shallower depth to the till in the south supports a containment remedy for that area. 4. A shallow water table and a lower aquifer with hydraulic connection to the surrounding river and harbor would require significant dewatering for large excavations below the groundwater table. 5. The presence of weak, compressible and organic soils from the ground surface to significant depths, when combined with the shallow groundwater table, may limit the depth of excavation.

4.1.2: Nature of Contamination

Two major types of waste materials are present on the peninsula: coal tars and purifier waste. Coal tars are reddish brown, oily liquids which do not readily dissolve in water. Materials such as this are commonly referred to as a non-aqueous phase liquid, or NAPL. Although most tars are slightly more dense than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water. Tars were disposed, or spilled or leaked from tanks, gas holders, and other structures at several locations throughout the peninsula, and have moved laterally away from these locations through the subsurface. This lateral migration allowed tar to contaminate large areas of the three sites. The NAPL was found to saturate the unconsolidated deposits and/or exist in scattered, discontinuous globules.

Near the ground surface, some of the tars have weathered and partially solidified. In these areas (for example, on much of the NYTEP site and some portions of the Niagara Mohawk site) tar is found in thin crusts on the ground surface, and fresh seeps of tar can be readily seen breaking through the crust when the weather is warm enough to allow the tar to liquify. Elsewhere, the tars retain their original, oily fluid properties and may still be capable of moving slowly through the subsurface.

Purifier waste is a mixture of wood chips and iron filings which was used to remove sulfur and other compounds from the manufactured gas before the gas was distributed to the public. Purifier waste which no longer was capable of removing the impurities was often disposed on-

site. It contains high concentrations of sulfur and cyanide and has a characteristic blue color from ferri/ferrocyanides.

As well as being present by themselves, these waste materials are found mixed with peninsula soils and groundwater. As described in the reports, many waste materials, soil and groundwater samples were collected at the sites to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are volatile organic compounds and semivolatile organic compounds. Specific volatile organic compounds of concern in soil and groundwater are benzene, toluene, ethylbenzene and xylenes. These are referred to collectively as BETX in this document.

The specific semivolatile organic compounds of concern in soil and groundwater are the following polycyclic aromatic hydrocarbons (PAHs):

acenaphthene
acenaphthylene
anthracene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(g,h,i)perylene
benzo(k)fluoranthene
dibenzo(a,h)anthracene
chrysene
fluoranthene
fluorene
indeno(1,2,3-cd) pyrene
2-methylnaphthalene
naphthalene
phenanthrene
pyrene

PAH concentrations referred to in this plan are the summation of the individual PAHs listed above (i.e. total PAHs). The italicized PAHs are probable human carcinogens. The summation of the italicized PAHs is referred to in this document as cPAHs.

Tars contain high levels of PAH compounds, often greater than 100,000 parts per million. Tars also exceed SCGs for BTEX by several orders of magnitude. In certain tar samples, enough benzene may be present to require that the material be managed as a hazardous waste.
As indicated in Table 3, peninsula soil (both surface and subsurface) and groundwater also exceeded SCGs for PAH and BTEX compounds.

There are certain other compounds and analytes which exceed SCGs, specifically certain chlorinated volatile organic compounds found at the Monarch Chemical Site and at the southern edge of MVO. The presence of these compounds is being addressed by the remedy selected in the Record of Decision for the Monarch Chemical site.

Higher levels of lead and arsenic were also found in the surface soils covering approximately one acre near the former coal gas plant (CGP). This area has been addressed by the surface soil IRM described in Section 4.2.

A few, (less than 10%), surface and subsurface soil samples contained phenol in excess of the SCG. The locations where the samples exceeded the SCG are also areas of elevated PAHs.

4.1.3: Extent of Contamination

Table 3 summarizes the extent of contamination for the contaminants of concern in soil and groundwater and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

Tar on the ground surface is apparent at the NYTEP and Niagara Mohawk sites. The surface area of the tar at these two sites is estimated to be 2.3 acres.

The areal extent of NAPL in subsurface soils is approximately 17 acres, with depths varying from the surface to as great as 40 feet, across all three sites as shown on Figure 4. The NAPL is contiguous across the three sites that are the subject of this PRAP.

NAPL was found as a measurable separate phase in monitoring wells located at the water gas plant and along the southern, western and eastern boundaries of the NYTEP site (see Figure 5). Generally measurable NAPL, (NAPL of sufficient volume present in a monitoring well such that its vertical thickness in the well can be measured), was more evident in the intermediate aquifer. Of the wells measured at Niagara Mohawk and MVO, well MW-505I, on Niagara Mohawk property adjacent to the NYTEP southern boundary, had the greatest thickness of NAPL, measuring 5.5 feet. This well also had the most rapid recovery of NAPL; 4.1 feet of NAPL was measured in the well following the removal of NAPL from the well the previous day.

Purifier waste was found in the surface and subsurface over an area of approximately six acres on the Niagara Mohawk site. As shown in Figures 3 and 4, a majority of purifier waste lies within the regulatory floodway. The purifier waste is present in the surface to shallow subsurface, generally less than seven feet below grade.

Soils

Surface (0-6" depth) Soils: Areas of greater PAH concentrations ranging from the hundreds of ppm to greater than one hundred thousand ppm were found in the surface soils generally in the central portion of the peninsula and in areas of surface tar and NAPL on all three sites (see Subtable 3.1).

BTEX in surface soils at all three sites was generally below TAGM 4046 guidance values. It is worth noting, however, that the surface soil samples analyzed to draw this conclusion were collected separate and distinct from visibly contaminated coal tar and NAPL areas on the surface.

Cyanide was found in concentrations as high as 101,000 ppm. Higher cyanide concentrations were co-located with purifier waste disposed on the Niagara Mohawk site.

Subsurface (>6" depth) Soils: Benzene was found as high as 810 ppm. (See Subtable 3.2). PAHs were found in concentrations up to 77,000 ppm. Higher concentrations were generally found above the first aquitard. In addition, BTEX was found in subsurface soils as high as 4,750 ppm.

Areas of high concentrations of BTEX and PAH corresponded to areas containing tar and NAPL, such as certain former industrial structures or by-product management areas. These areas are the:

- Niagara Mohawk Central Area
- Niagara Mohawk Coal Gas Plant (CGP) area
- Niagara Mohawk Water Gas Plant (WGP) area
- NYTEP
- MVO

See Figure 6 for the location of these areas.

As shown in Figure 4, NAPL-contaminated soils were identified within 100 feet of the Mohawk River or Utica Harbor at three locations. These are: the northeast side of MVO, the CGP area and in the Niagara Mohawk Lee Street Extension Outfall area. Flowable NAPL in monitoring wells located within 100 feet of the river or harbor was only observed at the Niagara Mohawk Lee Street Extension Outfall. NAPL-contaminated soils also extend from the WGP onto the Monarch Chemical Site.

Methylene chloride was detected up to 200 ppm in an area limited to the northern portion of the Mohawk Valley Oil Site. The compound was generally found within eight feet of the surface in an area also marked with high BTEX concentrations.

Groundwater

With the exception of the northern tip, groundwater in all areas of the peninsula exceeded groundwater quality standards for individual BTEX compounds (See Subtable 3.3). The areal extent of the three sites where groundwater exceeds standards for the contaminants of concern is approximately 60 acres.

The highest concentrations of benzene in the groundwater were identified at:

- Niagara Mohawk WGP area
- NYTEP
- Niagara Mohawk Central Gas Holder area
- Niagara Mohawk CGP area
- MVO, western-half

Benzene was detected in shallow aquifer monitoring wells in the aqueous phase at concentrations up to 7,600 ppb. Benzene in the intermediate aquifer was found in concentrations up to 21,000 ppb. Higher concentrations of benzene in the intermediate aquifer generally mirrored the benzene contamination in the shallow aquifer, except in the Niagara Mohawk CGP area. Total PAH concentrations in groundwater ranged from not detected to 215,000 ppb; naphthalene concentrations ranged from not detected to 54,000 ppb. Higher concentrations of PAHs in both the shallow and intermediate aquifers typically coincided with the higher concentrations of benzene and the presence of NAPL. Benzene was detected in the deep aquifer at a concentration of 3 ppb in the northern

portion of the Mohawk Valley Oil Site. No other exceedences of groundwater standards and guidance were found in the deep aquifer on any of the sites.

There are three areas on the peninsula where groundwater contaminants exceeding the SCGs discharge to the adjacent water bodies. These areas are the Lee Street Extension Sewer outfall, the CGP area, and the MVO Site.

Total cyanide was found in the groundwater at concentrations as high as 11,000 ppb in the shallow aquifer and 5,500 ppb in the intermediate aquifer, exceeding the class GA groundwater standard of 200 ppb. Higher concentrations of cyanide correlated with areas of purifier waste on the Niagara Mohawk site.

Surface Water

Because of the flat topography and limited outlets to the surface water bodies, pools of standing water form over a substantial portion of the central and southwest areas of the peninsula on the Niagara Mohawk site. To a lesser extent, ponding also occurs at MVO and NYTEP. The Mohawk River at Harbor Point is a Class C water quality classification. Class C SCGs of 10 ppb for benzene and 0.0012 ppb for benzo(a)pyrene were exceeded in a ponded area in the southwest corner of the peninsula, on the Niagara Mohawk site.

Storm Sewers

Investigation of the Mohawk River identified NAPL and higher concentrations of PAHs in the sediment in the vicinity of the Lee Street Extension sewer outfall. NAPL was also found in the soil in the vicinity of the Lee Street Extension sewer outfall adjacent to the river. Except for this outfall area, no NAPL was found adjacent to the river, nor was NAPL observed in borings along the bank of the harbor neck and Utica Harbor except in the vicinity of monitoring well MW-22 in the CGP area. NAPL was found, however, in the Washington Street storm sewer and in the sediments of Utica Harbor at the sewer outfall. The sewer is aligned through NAPL-laden soils along the western edge of the MVO site, before passing through the northern tip of MVO on the way to the Harbor, and intercepts a portion of the contaminated groundwater flow downgradient from all three sites. Although the Washington Street sewer will be remediated as part of the NIMO Harbor Point OU3 Record of Decision (March 2001), critical to the success of that remediation will be the prevention of recontamination of the new drainage system.

4.2: Interim Remedial Measures

An Interim Remedial Measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Niagara Mohawk has conducted the following IRMs at the NIMO Harbor Point Site (see Figure 7 for locations within the site):

1. Fire Training Area IRM: Several drums, tanks, transformer shells, as well as 28 tons of contaminated soil and other debris were removed in 1990 from the former fire training area, located in the west-central portion of the peninsula.

2. Lee Street Extension Sewer IRM: This storm sewer, which extended west from the NYTEP parcel to an outfall at the Mohawk River, was found to contain dissolved phase contaminants. In 1991 the sewer was plugged at the outfall and a cutoff wall was constructed in the fill surrounding the pipe.

3. Surface Soil IRM: To reduce potential worker exposure to contaminants in the surface soil, Niagara Mohawk fenced specific areas within their property in 1994. In addition, gravel was placed in the Niagara Mohawk equipment laydown area where elevated levels of lead and arsenic were found.

4. Site Security IRM: In 1992, to restrict access to their property and the Utica Harbor, construction of additional chain-link fencing and mending of existing fencing was completed.

5. Southwest Corner IRM: In 1994, purifier waste deposits existing on former Genesee Valley Transportation/Conrail property were consolidated with an adjacent purifier waste deposit on Niagara Mohawk property. Swales were constructed to divert surface water and a temporary cover was placed over the purifier waste deposit to minimize surface water and wildlife contact. Subsequent rupture and repair of a sanitary sewer force main running beneath the IRM area disturbed the integrity of this measure.

No IRMs have been conducted at the MVO or NYTEP sites.

4.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 6 of the 1993 Supplemental Remedial Investigation, Harbor Point Site; Section 6 of the Remedial Investigation Report for the Expanded (Off-Site) RI at the Mohawk Valley Site and Section 5 of the Remedial Investigation/Risk Assessment Report, New York Tar Emulsion Products Site.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Considering the contaminated soil and groundwater at the surface and in the subsurface, the following pathways are known to, or may exist, at the peninsula:

- Exposure through direct contact and ingestion, of contaminated surface soil including coal tar/NAPL and purifier waste;

- Exposure through direct contact and ingestion of contaminated groundwater;

- Exposure through direct contact and/or ingestion of excavated subsurface NAPL, soil or groundwater; and,

- Exposure via the inhalation of contaminated fugitive dusts and volatile organic compounds.

The NYSDOH considers all of these pathways to be complete, with the exception of the exposure through ingestion of groundwater. This is considered a potential pathway and action will be required to prevent it from becoming a complete exposure pathway.

4.4: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. The Fish and Wildlife Impact Assessment included in the 1993 Supplemental Remedial Investigation, Harbor Point Site and the Remedial Investigation Report for the Expanded (Off-Site) RI at the Mohawk Valley Site, present a more detailed discussion of the potential impacts from the site to fish and wildlife resources. The following pathways for environmental exposure and/or ecological risks have been identified:

- Migration of contaminants to the Mohawk River and Utica Harbor through the discharge of NAPL and contaminated groundwater.

- Migration of contaminants to the Mohawk River and Utica Harbor through the erosion of contaminated site soils, from the regulatory floodway/floodplain that may be transported during a flood event.

- Direct contact by terrestrial flora and fauna to contaminated surface and subsurface soils including coal tar/NAPL and purifier waste, and surface water.

- Direct contact by benthic life to contaminated sediments resulting from the migration of NAPL and NAPL-contaminated soil to the surface water bodies.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. The NYSDEC has identified Niagara Mohawk as a PRP for the NIMO Harbor Point Site and two of the three parcels comprising the Mohawk Valley Oil Site. As the investigations progressed, Niagara Mohawk and the NYSDEC entered into several Orders on Consent as identified below:

Date	Index No.	Subject of Order
9/89	A6-0201-89-05	RI/FS
7/90	A6-020889-09	IRMs
6/91	A6-0260-91-04	IRMs
12/92	D6-0001-9210	RI/FS/RD/RA

The 1992 Order on Consent obligates Niagara Mohawk to implement a full remedial program at the Harbor Point Property and all off-site areas attributable to Utica Gas and Electric Company waste. Niagara Mohawk has acknowledged responsibility for the MVO Site except for the former Texaco Terminal parcel.

The NYSDEC also identified Beazer East Inc., and Suit-Kote Corporation as PRPs for the NYTEP site. The NYSDEC and Beazer East/Suit-Kote entered into a Consent Order on July 10, 1998. The Order obligates the responsible parties to implement, at a minimum, a RI/FS remedial program.

Niagara Mohawk has completed the RI/FS for the entire MVO site; however, Niagara Mohawk has only acknowledged responsibility for two of the three parcels comprising the site. The NYSDEC is currently in discussion with other past owners, operators, as well as owners and operators of adjacent properties regarding contribution to the remedial program at the site. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for these sites are:

Eliminate, to the extent practicable, the environmental threat associated with the migration of contaminated soil including coal tar/NAPL, purifier waste, contaminated groundwater, and contaminated surface water into adjacent Class C surface water bodies.

Eliminate, to the extent practicable, the potential human health and environmental impacts associated with contamination of the groundwater resource from the leaching of contaminants in soil and NAPL and the migration of NAPL. Return groundwater to NYSDEC Class GA Water Quality Criteria to the extent practicable.

Eliminate the potential human health and environmental impacts associated with human and terrestrial biota exposure to contaminated surface and subsurface soil, including NAPL, to the extent practicable.

Eliminate, to the extent practicable, ingestion of groundwater, which does not attain Part 5, public drinking water standards, of New York State Sanitary Code.

Eliminate, to the extent practicable, the threat to the environment posed by the presence of contaminants within the regulatory floodway.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the NIMO Harbor Point Site and the Mohawk Valley Oil Site were identified, screened and evaluated in the report entitled Revised Feasibility Study for the Harbor Point Site, November 1999. Investigation of the New York Tar Emulsion Products Site, revealed the same hazardous wastes released to and migrating through similar geologic and hydrogeologic conditions. This site also is completely surrounded by the NIMO Harbor Point site. Therefore, alternatives presented in the November 1999 Feasibility Study were evaluated for this site as well. The remedial objectives, particularly those objectives relating to the protection of the groundwater resource, can only be achieved efficiently through a holistic remedy applied to all three sites.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the waste materials present, contaminated soils and groundwater at the sites.

Alternative 1: No Further Action

Capital Cost:	$ 0
Annual O&M:	$ 30,000
Present Worth:	$ 540,000
No Time needed to Implement	

This alternative recognizes remediation of the Niagara Mohawk site conducted under previously completed IRMs. Only continued monitoring would be necessary to evaluate the effectiveness of the remediation completed under the IRMs and no action would be required at MVO or NYTEP other than monitoring of current conditions. Groundwater quality would be monitored annually. For cost estimating purposes a 30 year time span is assumed.

This alternative would leave the sites in their present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Limited Consolidation/ Provide Soil Cover, Cap Purifier Waste

Capital Cost:	$ 14 million
Annual O&M:	$ 58,000
Present Worth:	$ 15 million
Time to Implement	2 years

Under this alternative purifier waste located outside of the Niagara Mohawk Central Area would be consolidated to within the Niagara Mohawk Central Area. In addition, a soil cover would be placed over all three sites. Specifically, Alternative 2 would consist of the following actions:

1. Purifier waste from all areas of the Niagara Mohawk site, with the exception of the WGP area, would be excavated and consolidated within the Central Area beyond the regulatory floodway. Purifier waste in the Central Area, that is within the floodway, would also be consolidated in this area outside of the floodway (see Figures 4 and 6). The amount of purifier waste to be consolidated is estimated at 80,000 cubic yards (cyds).

2. Upon completion of the purifier waste consolidation, the consolidation area would be graded to appropriate design slopes and a low permeability cap would be constructed. The cap would satisfy the requirements of a final cover system specified in Part 360-2.15.d. The need for a gas collection system, however, would be evaluated during the remedial design.

3. A minimum two-foot thick soil cover would be placed over the Niagara Mohawk Central Area, the WGP, MVO and NYTEP. Approximately 45 acres would be covered in this manner. The soil cover would consist of clean imported fill and/or site soils or sediment treated to TAGM 4046 recommended soil cleanup objectives for individual BTEX and PAH compounds. Beneath the two-foot soil cover a commercial grade filter fabric would be installed to serve as a demarcation layer. The upper six inches of the soil cover would have to be of sufficient quality to support vegetation. The remedial design would evaluate the need for armoring or other stabilization of areas of the cover subject to possible erosion adjacent to the floodway. Acceptable alternatives to the soil cover would be sidewalks, parking lots, building footprints, or other approved strategies that provide a barrier to contact with the contaminated subsurface soils.

4. In the Niagara Mohawk Northern and Niagara Mohawk Southern Areas, surface soil beyond the area of the soil cover exceeding 10 ppm cPAHs would either be removed (approximately 6,000 cyds) or would be covered with two feet of clean fill (see Figures 9 and 11). A more complete characterization of the surface soil would be conducted during the remedial design process.

5. Groundwater quality would be monitored annually. For cost estimating purposes a 30 year time span is assumed.

6. At all three sites, institutional controls would be established. The institutional controls would include: deed restrictions to protect remedial features and restrict on-site groundwater use; a deed restriction to prohibit the site from being used for purposes other than appropriate recreational, industrial or commercial uses, as explained below, without the express written waiver of such prohibition by the NYSDEC and the NYSDOH; long term monitoring of site conditions; and routine maintenance operations, such as, fence repairs and lawn mowing. Appropriate industrial or commercial uses of the property would have to be consistent with

any applicable zoning ordinances, but would not include any enterprises that draw susceptible portions of the community to the properties for activities that may lead to exposures to residual site contamination (e.g. day care, child care, medical treatment facilities). Site monitoring would include a periodic survey of groundwater use in the area and efforts for early identification of any future threats to drinking water wells. An annual certification would be required to ensure the effectiveness of the engineering controls.

Alternative 3A: Source Removal (1,000 ppm PAHs), Barrier Wall, SVE/Air Sparge, Cover, On-site Soil Treatment

Capital Cost:	$ 38 million
Annual O&M:	$ 240,000
Present Worth:	$ 42 million
Time to Implement	3 years

This alternative would:

- contain all the NAPL at the former water gas plant;
- treat or remove all NAPL-contaminated areas at MVO;
- remove all NAPL within the Lee Street extension sewer outfall area of the floodway;
- treat all NAPL within 100 feet minimum of Utica Harbor and the harbor neck;
- remove approximately 20% of the remaining NAPL through excavation, and an additional amount of NAPL via recovery wells or trenches.

Alternative 3A would expand upon Alternative 2 to include additional active measures to address damage to the groundwater resource. Alternative 3A would include the following actions in addition to those detailed in Alternative 2:

1. Areas of both the Niagara Mohawk and NYTEP sites where the subsurface soil contains PAHs greater than 1,000 ppm or visual tar or NAPL in the top six feet of the site would be removed (see Figure 8). Soil piles, including but not limited to, those existing near the central gas holder and on the NYTEP site are not included in the depth measurement. Approximately 64,000 cyds of contaminated material consisting of all soil containing PAHs greater than 1,000 ppm, or visual tar or NAPL contaminated soil from the areas identified in Table 4 would be removed to a depth of six feet and treated. The 1,000 ppm PAHs threshold and six-foot excavation depth were determined through an analysis of which excavation scenario would achieve the greatest hazardous substance mass removal per amount of soil volume excavated, and consideration of the groundwater table. These areas do not include: the Lee Street extension sewer outfall area, the MVO Site or the WGP, which are discussed below. Soil with no visual indication of NAPL or tar and containing less than 1,000 ppm PAHs, located above areas meeting the removal criteria, may be stripped, stockpiled and backfilled within the excavations resulting from the removal.

2. In the area of the former Lee Street extension sewer outfall, all visual tar or NAPL contaminated soil or soil containing greater than 1,000 ppm PAHs, approximately 20,000 cyds, would be removed and treated regardless of depth.

3. In the former CGP Area, all visual NAPL contaminated soil and tar (approximately 5,000 cyds) associated with the sludge sump, scale, underground gasoline tank and water gas tar tank would be removed and treated.

4. At the Mohawk Valley Oil Site, all soil containing greater than 1,000 ppm PAHs or visual tar or NAPL contaminated soil, to a 9 foot depth would be removed and treated (approximately 11,000 cyds - see Figure 10). Given the proximity of MVO to Utica Harbor, in areas where soil would not be removed, yet the groundwater contains greater than 1 ppb benzene, an in-situ air sparging and soil vapor extraction (AS/SVE) system would be installed. The system would inject air into the groundwater in any of the aquifers where benzene is greater than 1 ppb, to promote the volatilization of BTEX and, to a limited extent, certain PAHs. The introduction of air would also enhance biodegradation of the BTEX and PAHs. The volatilized compounds would be recovered from the treatment by using a vacuum applied to the unsaturated soil zone. This vapor phase contaminant air stream will be treated to acceptable levels defined by NYSDEC Air Guide 1 prior to discharge to the atmosphere. A series of wellheads optimally spaced would be used for both injection and extraction. The treatment system would be operated until groundwater contaminant concentrations achieve groundwater standards, or until vapor concentrations reach asymptotic levels for a sustained period of time and continued operation of the treatment unit would not result in additional significant mass removal of contaminants.

5. The materials removed from the above areas would be treated on-site by a low temperature thermal desorption unit. The thermal desorption unit operating parameters would be determined, based on trial burns of representative site related contaminated media.. These parameters would be set so that the treated soil would be expected to achieve TAGM 4046 limits, with the exception of benzene, which would be 0.1 ppm. Once the operating parameters are determined, the system would be operated at these parameters at all times. During actual operation if treated soil does not achieve these limits, but is below 10 ppm total cPAHs and 0.1 ppm benzene, it could be utilized for backfill in areas which would be covered with the two foot soil cover.

   Treated soils which achieve TAGM 4046 levels or 0.1 ppm benzene could be used as backfill and as cover material in the two foot soil cover. The upper six inches of the soil cover would have to be of sufficient quality to support vegetation. Material imported for use as a backfill or as soil cover material would also satisfy the above criteria.

6. A series of NAPL recovery wells or trenches would be provided in the area of monitoring well MW-505I (see Figure 5 for location). The remedial design would determine the areal extent of NAPL recovery.

7. An AS/SVE system would be required in the area surrounding monitoring well MW-22 cluster, adjacent to the Utica Harbor, to address the contaminated groundwater discharging to the harbor. The primary objective of the system would be to reduce groundwater contaminant migration to the harbor. The area treated would not be required to extend more than 100 feet westward of the top of the harbor bank. Northern and southern limits would be near sample locations ESSB-066 and ESSB-064, where no coal tar or NAPL was observed. These limits would be verified during the design. The treatment system would be operated until groundwater contaminant concentrations achieve groundwater standards, or until vapor concentrations reach asymptotic levels for a sustained period of time and continued operation of the treatment unit would not result in significant mass removal of contaminants.

8. A barrier wall would be installed around the former WGP and a portion of the Monarch Chemical Site where PAH concentrations in soil are greater than 1,000 ppm (see Figure 11). This wall would extend into the underlying dense till present approximately 20 to 50 feet below ground surface in this area. Approximately 9,000 cyds of surface tar and NAPL-laden soils at the dripbox and tarwell would also be removed and thermally treated. This containment system would also include a low permeability cap that would satisfy the requirements of a final cover system specified in Part 360-2.15.d. The need for a gas collection system, however, would be evaluated during the remedial design. Groundwater from within the wall would be extracted and treated to maintain an inward hydraulic gradient within the wall. The remedial design would establish performance standards for this treatment and the design would also evaluate whether the existing NIMO Harbor Point Site treatment system would be sufficient for meeting these standards.

   It is worth noting that Niagara Mohawk is proceeding with a barrier wall IRM at the WGP, with a portion of the wall on the Monarch Chemical Site. This IRM is currently in the design phase; the final specifications for the wall have not been approved by the NYSDEC as of the issuance of this ROD.

9. Purifier waste from all areas of the peninsula to a depth of six feet would be excavated and consolidated to within the WGP barrier wall. The remedial design would determine the maximum limit of purifier material that could be placed within the wall. Any areas of purifier waste which could not be consolidated at the WGP would be consolidated within the Niagara Mohawk Central Area outside of the regulatory floodway. The purifier waste consolidated at the WGP would be capped with a low permeability cap as described in Alternative 2. The purifier waste consolidated in the Central Area, if any, would also be capped. The cap would satisfy the requirements of a final cover system specified in Part 360-2.15.d. The need for a gas collection system, however, would be evaluated during the remedial design.

   A two foot thick soil cover would be provided over the areas where purifier waste was removed, as detailed in item 4 of Alternative 2.

The remedial design would evaluate whether areas that contain co-mingled purifier waste and NAPL contaminated soil or soil containing PAHs greater than 1,000 ppm could be thermally treated.

- A mitigation plan would be developed and implemented for wetlands adversely impacted by the remedy.

- Flowable tar within the existing abandoned and plugged Lee Street Extension Sewer would be removed.

Unlike Alternative 2, Alternative 3 would remove highly contaminated soil to a depth of at least six feet below the soil cover. Thus, although compliance with the Operation and Maintenance Plan would be required for site excavations, this alternative would be more conducive than Alternative 2 to the placement of foundations and subsurface structures in certain areas, such as those needed for nonresidential development.

Thermal treatment is highly effective in reducing contaminant levels for the particular hazardous substances found in former MGP Site soils and sediments such BTEX and PAHs. During a 1993 technology demonstration at the NIMO Harbor Point Site, approximately 10,000 cubic yards of coal tar contaminated soil was successfully treated by low temperature thermal desorption (LTTD). Comparison of the feed and treated soil showed an average destruction and removal efficiency of 99.7 % for BTEX and 98.6 % for PAHs.

Soils would be treated by LTTD in the following manner:

- Contaminated soil would first be screened of debris (eg. pipes, reinforced concrete) and large objects (eg. cobbles, brick) and homogenized. Other soil may be blended in to optimize moisture content and prevent clumps.

- Soil would be fed by a conveyor with a weigh scale into a rotating drum or kiln (about the size of a tractor-trailer) heated to 600 - 1,100 F. The heating causes contaminants to be released from the soil. The feed rate and kiln temperature are monitored continuously.

- The contaminants, now in the gas phase, pass into a afterburner which are destroyed through combustion at 1,400 to 2,000 F.

- The gas is cooled and particulates are removed prior to exit out the stack. Water vapor from the cooling process comprises a large percentage of the exit gas. During the operation, stack gases would be continuously monitored for nitrogen oxides, sulfur dioxide, total petroleum hydrocarbons and other parameters.

- The soil exiting the unit would be analyzed in batches to determine if established treatment levels have been achieved. If the soil exceeds the treatment level(s), it would be reintroduced into the unit for additional treatment.

Alternative 3B: Source Removal (500 ppm PAHs), Barrier Wall, SVE/Air Sparge, Cover, On-site Soil Treatment

Capital Cost:	$ 55 million
Annual O&M:	$ 240,000
Present Worth:	$ 59 million
Time to Implement	4 years

Alternative 3B would modify Alternative 3A by requiring excavations to be delineated by 500 ppm PAHs rather than 1000 ppm PAHs. The 500 ppm PAHs concentration is consistent with the TAGM 4046 guidance value of 500 ppm total semivolatile organic compounds. Specifically, Alternative 3B would modify Alternative 3A in the following areas:

1. For the Niagara Mohawk and NYTEP sites approximately 109,000 cyds of contaminated material consisting of all tar, NAPL contaminated soil and soil containing PAHs greater than 500 ppm would be removed to a depth of six feet and treated.

2. Within the area defined as the regulatory floodway, including the area of the former Lee Street extension sewer outfall, approximately 20,000 cyds of all tar, NAPL contaminated soil and soil containing greater than 500 ppm PAHs would be removed and treated regardless of depth.

3. At the Mohawk Valley Oil Site, approximately 25,000 cyds would be removed and treated to a 9 foot depth.

Thus, this alternative would require excavation of about 174,000 cyds, an additional 59,000 cyds as compared to Alternative 3A.

Alternative 4: Remove All Soil Containing Contaminants Greater Than TAGM 4046 Values, On-site Soil Treatment

Capital Cost:	$ 260 million
Annual O&M:	$ 46,000
Present Worth:	$ 260 million
Time to Implement:	8+ years

Under this alternative an estimated 1.2 million cyds of soil containing BTEX or PAH concentrations in excess of individual TAGM 4046 values would be removed at all three sites. Removal would occur over approximately 70 acres to depths of 40 feet. Removal would also include all purifier waste, coal tar or NAPL deposits. Removed soil would be thermally treated on-site. Purifier waste would be appropriately disposed of off-site.

No actions would be taken under this alternative to treat the groundwater in excess of drinking water quality standards. A long-term groundwater monitoring program would be included with this

alternative, until monitoring data shows compliance with groundwater standards. An institutional control would be required prohibiting the use of groundwater.

This alternative would have no restriction on future land use of the sites.

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study. The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

By removing all soil at the sites above individual compound TAGM 4046 recommended soil clean-up objectives, Alternative 4 would comply with soil SCGs. This same alternative would leave groundwater initially exceeding SCGs, however, with all contaminated soil removed, the groundwater contaminants would be expected to attenuate through time to concentration levels satisfying the SCGs. Alternatives 1, 2 and 3A would not satisfy soil or groundwater SCGs at the sites, but would likely satisfy groundwater SCGs at the downgradient perimeter, over time. Contaminated soil and groundwater would remain at the sites with concentrations of hazardous substances exceeding SCG levels. Alternative 3B would satisfy soil SCGs for total semivolatile compounds, but not groundwater SCGs. Thus, a hierarchy is evident among alternatives 1, 2, 3A and 3B. Alternative 3B would be closest to achieving the soil SCGs, followed by Alternative 3A, then Alternative 2, and lastly Alternative 1. Alternative 1 would include no effort to achieve SCGs, since the completed IRMs on the Niagara Mohawk property did not achieve the SCGs. Regarding groundwater compliance with SCGs, Alternative 2 would improve upon Alternative 1 by removing cyanide-leaching purifier waste from the floodway and capping, thus some amelioration of the groundwater would be expected. Alternatives 3A and 3B would further improve upon Alternative 2 by removing, to the extent practicable, those materials containing the highest concentrations of contaminants. Contamination of the groundwater originates or is exacerbated at these soil and NAPL hot spots. In Alternatives 3A and 3B, the removal of an estimated 115,000 cyds (3A) or 174,000 cyds (3B) of the highest concentrations of hazardous substances, the removal of recoverable NAPL and air sparging/SVE in critical areas would reduce the contaminant leaching to groundwater currently occurring at the sites. Thus, Alternatives 3A and 3B, as compared to Alternatives 1 and 2, would improve the groundwater quality to a point of closer compliance with groundwater standards by the removal of soils containing the highest concentrations of contaminants, resulting in the removal of a greater mass of contaminants. Alternative 3B would provide marginally greater groundwater protection as compared to Alternative 3A by removing an additional 59,000 cyds of soil containing from 500 ppm PAHs to 1,000 ppm PAHs. Any remediation in the floodway and

floodplain, for all Alternatives would have to comply with the requirements of Executive Order 11988 (Flood Management).

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment. In New York State, environmental protection encompasses groundwater quality protection since groundwater is a statutorily-defined component of the State's environment.

Alternative 1 would not be protective of public health and the environment, since with no additional remedial measures, the significant threat to human health and the environment would continue to exist. The current exposure pathways threatening human health, such as the ability to contact tar on the surface, would continue to exist under this alternative. By providing a cover, and restricting land and groundwater use, Alternatives 2, 3A and 3B would be protective of the public health. Alternative 2, however would not be as protective of public health and would not be protective of the groundwater resource, as compared to Alternatives 3A and 3B. The provision of source removal, barrier wall, air sparging/SVE and NAPL recovery measures in Alternatives 3A and 3B would provide significantly greater environmental protection in addition to eliminating public health exposure. By removing all contaminated soil above TAGM recommended soil cleanup objectives, Alternative 4 would be the most protective of public health and the environment.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Potential adverse impacts would likely be greater with increasing contaminated soil movement and disturbance, where the soil could become airborne as fugitive dust or could become suspended in run-off and be transported to water bodies. The adverse impacts would be considered potential, as remedial construction requires measures to prevent fugitive emissions and run-off. Thus, the potential for short-term construction-related impacts would be minimal with Alternative 1 and greatest with Alternative 4, with Alternatives 2, 3A and 3B falling between these extremes. The contaminated soil consolidation and excavation components proposed in Alternatives 3A and 3B may result in a greater potential adverse impact as compared to Alternative 2. The on-site thermal desorption of contaminated soil as a component of Alternatives 3A, 3B and 4 would be expected to minimize potential short-term adverse impacts that would otherwise be created by the hauling of contaminated soil via thousands of truck trips from the site onto public roadways. The treatment unit would be required to have emission control devices which would minimize air emissions. The expanse of land available on the Niagara Mohawk property would attenuate the noise generated by the unit and supporting construction equipment. The use of partially or fully enclosed structures during treatment would further minimize the migration of contaminants.

With no further action, Alternative 1 would never achieve the remedial action objectives: leaching of hazardous substances into the groundwater resource and migration of contaminants into the surface water bodies would continue unabated; potential human exposure to probable carcinogenic PAHs and other contaminants would continue to exist. As a consequence, no development could occur with Alternative 1. Alternative 4 would achieve those remedial objectives relating to groundwater protection sooner than Alternatives 2, 3A and 3B since Alternative 4 would remove all sources of groundwater contamination. Alternatives 2, 3A and 3B would be more effective than Alternative 4 in the short-term with regard to eliminating exposure pathways and allowing redevelopment, because of the long remedial construction period anticipated (more than eight years) with Alternative 4. Alternative 3 would achieve the remedial objectives sooner than Alternative 2. While Alternatives 2, 3A and 3B would eliminate exposure pathways, Alternatives 3A and 3B would achieve the objectives relating to groundwater protection much sooner through the use of contaminated soil and NAPL removal, a barrier wall and in-situ groundwater treatment.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

The remedial alternatives in this PRAP are presented in ascending order of long-term effectiveness and permanence. Alternative 1 would not be effective in the long-term; the significant threat to human health and the environment would remain as no active mitigation measures would be undertaken to address the contaminated soil and groundwater as well as the human and environmental exposure routes. Alternative 2 would improve upon Alternative 1 by preventing public health and terrestrial exposures through the use of a soil cover. The long-term effectiveness of Alternative 2 is limited, however, as NAPL and higher concentrations of BTEX and PAHs, which would be removed under Alternatives 3A, 3B and 4, would remain at the sites contributing to the groundwater resource contamination. Alternatives 3A and 3B would provide greater long-term effectiveness and permanence than Alternative 2. In addition to eliminating public health and terrestrial exposure pathways to site contamination, Alternatives 3A and 3B would permanently reduce the mass of material acting as a source of groundwater contamination. By removing approximately 59,000 additional cyds of contaminated soil, Alternative 3B would provide a slightly higher degree of permanance than Alternative 3A. Also, this alternative's destruction by thermal desorption of a significant mass of toxic contaminants to harmless substances ensures permanence to the remedy. By removing and destroying via LTTD, all soil exceeding TAGM 4046 guidance values, Alternative 4 would be the most effective in achieving the remedial goals and would most ensure the permanence of the remedy.

Federal regulations also require that, "when restoration of groundwater to beneficial uses [such as a potable water supply] is not practicable, [expectations of the remedy are to] prevent further migration of the contaminant plume, prevent exposure to contaminated groundwater, and evaluate further risk reduction". Alternatives 3A, 3B and 4 would satisfy this requirement whereas Alternatives 1 and 2 would not. The provision of a barrier wall at the WGP, use of air sparging/SVE, and the use of NAPL recovery wells as components of Alternatives 3A and 3B would

prevent further migration of the plume. The removal or treatment of NAPL from key areas such as the shallow subsurface, the floodway area at the Lee Street extension sewer outfall, and vicinity of the Barge Canal/Utica Harbor would reduce the migration of NAPL into surface water bodies by 1) providing a greater distance between the NAPL that would remain at the site and the water body and 2) reducing pressure on the NAPL (NAPL head) remaining in the subsurface. The removal of NAPL would also provide greater risk reduction by providing a greater clean buffer zone between environmental and human receptors and NAPL remaining in the subsurface during post-remedial development.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Similar to criteria 4 above, the remedial alternatives in this PRAP are presented in ascending order of their ability to reduce the toxicity, mobility and volume of the wastes at the sites. There would be no measures in Alternative 1 to reduce the toxicity, mobility and volume of the waste, beyond the completed IRMs. Alternative 2 would provide some reduction in the mobility of the waste by consolidating purifier waste out of the floodway. In addition, Alternative 2 would provide a cover over the waste thus reducing the mobility of the waste via wind, leaching and/or erosion. Alternatives 3A and 3B would include the limited mobility reductions of Alternative 2, plus more significant measures to isolate, extract and treat the contaminated groundwater at the WGP via the barrier wall. In addition, the volume and toxicity of a significant portion of the contaminant mass would be reduced in Alternatives 3A and 3B through the thermal treatment of approximately 115,000 and 174,000 cyds of contaminated soil and NAPL respectively. Although Alternative 3B removes a substantially greater volume as compared to Alternative 3A, the additional volume proposed in Alternative 3B contains a comparatively lower concentration of contaminants; that is, the additional volume would consist of soil concentrations less than 1,000 ppm PAHs. The additional volume that would be removed under Alternative 3B would remove less than 10% additional contaminant mass being removed under Alternative 3A. Also, Alternative 3B would not remove any additional NAPL as compared to Alternative 3A. The installation and maintenance of NAPL recovery wells under this alternative would also permanently reduce the volume in the subsurface over time. Alternative 4 would provide the greatest and nearly complete reduction in toxicity, mobility and volume of the waste. Under this alternative, the entire volume of waste exceeding TAGM 4046 requirements would be removed and thermally treated except for purifier waste which would be disposed of off-site. Only contaminated groundwater would remain, which would be expected to attenuate in toxicity and volume over time.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternatives 1 thru 4 are presented in increasing difficulty to implement. Alternative 1 would be the most technically feasible of the alternatives as no construction would occur with this alternative. Alternative 2 would be more difficult to implement than Alternative 1. Alternative 2 would,

however, be considered a technically feasible earth-moving remedy, capable of being completed with conventional construction equipment and techniques. Alternatives 3A and 3B would include some technical challenges in addition to Alternative 2, but these alternatives would still be implementable. The installation of a barrier wall requires designers and contractors experienced in this particular type of construction. The AS/SVE operations may require a pilot test for optimal effectiveness. Alternative 4 would be the most difficult to implement. The vast area requiring excavations to depths of 20 to 40 feet would require extensive shoring. To dewater the excavation, a sustained pumping rate of 300 gpm for over 300 weeks (6 years) would be required. This water would require subsequent treatment. Dewatering rates, excavation rates and thermal desorption rates would require synchronization to prevent costly construction delays.

There would be several administrative aspects to consider in the evaluation of alternatives. These include: the establishment of deed restrictions, including restrictions on property not owned by any of the PRPs; coordination of the project among the various PRPs; communication with the U.S. Army Corps of Engineers regarding the mitigation of federal wetlands and communication with various agencies regarding cut and fill activities within the regulatory floodway. With these considerations, Alternative 1 would be the most administratively feasible alternative. The other alternatives would not be precluded by this criteria, however.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. A remedy is cost effective if its costs are proportional to its overall effectiveness. The costs for each alternative are presented in Table 5.

Alternative 1 would be the least costly alternative. However, Alternative 1 provides no additional environment or human health benefit beyond the completed IRMs and thus would not be considered cost effective. Alternative 4 would also not be cost effective as the cost to remove and treat all soil contaminated above TAGM 4046 guidance would not be proportional to the benefit gained by the additional removal. Alternative 3A would be cost effective. In alternative 3A, the 1,000 ppm PAH soil concentration, which triggers soil removal over most of the peninsula was developed from an evaluation of the lowest soil concentration which could be removed without a disproportionate increase in cost. Thus, not only would Alternative 3A maximize the practical extent of groundwater source removal, it also would target removal of the most concentrated waste, that is, the NAPL and soils which have the most hazardous substances present per volume. It is the waste with the highest concentrations which provides the greatest hazardous substance loading to the groundwater. Although Alternative 3B would achieve the SCG of 500 ppm PAHs for at least the upper six feet of soil for all three sites (except for the WGP where it would be contained), the alternative would be one and one-half times more costly than Alternative 3A without a proportional gain in environmental and public health protectiveness. Alternative 3B would remove about one and one-half times more soil than Alternative 3A, but would not remove any additional soil containing NAPL and would remove less than 10% additional contaminant mass. As the NAPL-laden soil and soil with higher concentrations contribute the bulk of contaminant groundwater loading, only marginal restoration of the groundwater would occur with Alternative 3B as compared to Alternative 3A. Also,

Alternative 3B would not provide any additional reduction in public health exposure as compared to Alternative 3A. Thus, Alternative 3A would be the most cost effective of the alternatives.

The following final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised.

In general the public comments received were supportive of the selected remedy. Several comments were received from PRPs for the sites, however, pertaining to: details of the remedy for which they were seeking clarification or modification; clarification of statements made or inaccuracies; and, challenges to the basis/support for statements made by the PRAP.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the Remedial Investigations and Feasibility Study, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 3A as the remedy for these sites.

This proposal is based on the evaluation of the alternatives to the criteria presented in Section 7.2. In addition, according to USEPA's *Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites*, EPA views dense NAPLs as a principle threat because they are sources of toxic contaminants to groundwater. For this reason NYSDEC expects to remove or treat dense NAPLs to the extent practicable in accordance with the NCP expectation to use treatment to address the principle threats posed by a site, wherever practicable. Therefore, EPA generally expects that the long-term remedy will control further migration of contaminants from subsurface DNAPLs to the surrounding groundwater and reduce the quantity of DNAPL to the extent practicable.

As evaluated in Section 7.2, the alternatives considered for selection are presented in order (i.e., Alternative 1, Alternative 2, Alternative 3A, Alternative 3B, Alternative 4) of increasing satisfaction of the threshold and modifying criteria, except for the implementability criterion. Alternatives 3B and 4 however, were not proposed because the alternatives were not considered cost effective nor implementable as discussed in Section 7.2. Alternative 3A is thus selected as the remedy.

Alternative 3A will be protective of public health and the environment and will satisfy the remedial objectives. In addition, Alternative 3A controls further migration of contaminants from surface and subsurface NAPL to the extent practicable and reduces the quantity of NAPL to the extent practicable. Thus, Alternative 3A will also be the most consistent with federal and state guidance regarding sites with dense NAPL present.

The estimated present worth cost to implement the remedy is $42 million. The cost to construct the remedy is estimated to be $38 million and the estimated average annual operation and maintenance cost for 30 years is $240,000. The estimated total costs for each site are:

NIMO - Harbor Point Property, Operable Unit No. 1 . . . . . $ 34,000,000
New York Tar Emulsion Products Site . . . . . $ 5,300,000
Mohawk Valley Oil Site . . . . . $ 3,100,000

The elements of the selected remedy, applicable at all three sites except where a specific area is identified, are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, health and safety, operation maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved and appropriate removal area delineation, pilot testing or other evaluations undertaken. The remedial design will consider off-site disposal option(s) of a portion of the waste to be generated, if determined to be cost effective and facilitate construction of the remedy.

2. Areas of both the Niagara Mohawk and NYTEP sites where the subsurface soil contains visual tar, NAPL or PAHs greater than 1,000 ppm in the top six feet of the site will be removed. Soil piles, including but not limited to, those existing near the central gas holder and on the NYTEP site are not included in the depth measurement. Approximately 64,000 cyds of contaminated material consisting of all visual tar, NAPL contaminated soil and soil containing PAHs greater than 1,000 ppm, from the areas identified by Table 4, and as shown on Figure 8, will be removed to a depth of six feet and treated. Visual tar or NAPL, as defined for this ROD, is soil found to be saturated with NAPL, or have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens will not be considered for removal as visual tar or NAPL. Soils exhibiting odors, staining and/or sheens will however be removed if found to exceed the 1000 ppm PAH criteria. The limits of excavation will be defined during the pre-design investigation.

   These areas do not include: the Lee Street extension sewer outfall area , the MVO Site or the WGP, which are discussed below. Soil with no visual indication of NAPL or tar and containing less than 1,000 ppm PAHs, located above or between areas meeting the removal criteria, may be stockpiled and reused as backfilled within the excavations resulting from the removal. Also not subject to the removal requirements are the locations of active gas and electrical infrastructure, vital to the City of Utica, which remain on the Peninsula. The remedy will not require utility relocation, in areas otherwise meeting removal criteria, and recognizes that reasonable setbacks may be necessary.

3. Excavation in the area of the former Lee Street extension sewer outfall will remove all visual tar or NAPL or soil containing greater than 1,000 ppm PAHs, regardless of depth (see Figure 10). Approximately 20,000 cyds., are expected to be removed from this area.

4. In the former CGP Area, all NAPL contaminated soil and tar (approximately 5,000 cyds) associated with the sludge sump, scale, underground gasoline tank and water gas tar tank will be removed and treated (see Figure 8).

5. At the Mohawk Valley Oil Site, all soil containing greater than 1,000 ppm PAHs, or visual tar or NAPL contaminated soil, to a 9 foot depth will be removed and treated (approximately 11,000 cyds - see Figure 10). Given the proximity of MVO to Utica Harbor, in areas where soil will not be removed, yet the groundwater contains greater than 1 ppb benzene, an in-situ air sparging and soil vapor extraction (AS/SVE) system will be installed. The system will inject air into the groundwater in any of the aquifers where benzene is greater than 1 ppb. The area to be addressed by the system will be delineated during the design. The volatilized compounds will be recovered from the treatment by using a vacuum applied to the unsaturated soil zone. This vapor phase contaminant air stream will be treated to acceptable levels defined by NYSDEC Air Guide 1 prior to discharge to the atmosphere. A series of wellheads optimally spaced will be used for both injection and extraction. The treatment system will be operated until groundwater contaminant concentrations achieve groundwater standards, or until the Department determines vapor concentrations have reached asymptotic levels for a sustained period of time and continued operation of the treatment unit would not result in significant mass removal of contaminants The treatment system will be operated if it continues to provide treatment of groundwater before discharge to the surface water body.

6. The materials removed from the above areas will be treated on-site by a low temperature thermal desorption unit. The thermal desorption unit operating parameters will be determined, based on trial burns of representative site related contaminated media.. These parameters will be set so that the treated soil would be expected to achieve TAGM 4046 limits, with the exception of benzene, which will be 0.1 ppm. Once the operating parameters are determined, the system will be operated at these parameters at all times. During actual operation if treated soil does not achieve these limits, but is below 10 ppm total cPAHs and 0.1 ppm benzene, it could be utilized for backfill in areas which will be covered with the two foot soil cover.

   Treated soils which achieve TAGM 4046 levels or 0.1 ppm benzene can be used as backfill and as cover material in the two foot soil cover. The upper six inches of the soil cover will have to be of sufficient quality to support vegetation. Material imported for use as a backfill or as soil cover material will also satisfy the above criteria.

7. A series of NAPL recovery wells or trenches will be provided in the area of monitoring well MW-505I (see Figure 5 for location). The remedial design will determine the areal extent of NAPL recovery along with criteria for determining when recovery efforts can be terminated. This will be a passive system, with the ability to upgrade the system to an active or partially active system should tar production by individual collection wells or trenches warrant such an upgrade during the recovery period.

8. An AS/SVE system will be required in the former CGP area adjacent to the Utica Harbor, surrounding the monitoring well MW-22 cluster, to address the contaminated groundwater

discharging immediately to the harbor (see Figure 10). The primary objective of the system will be to reduce groundwater contaminant migration to the harbor. As such, the area treated will not be required to extend more than 100 feet westward of the top of the bank to the harbor. Northern and southern limits will be near sample locations ESSB-066 and ESSB-064, where no coal tar or NAPL was observed. These limits will be verified during the design. The treatment system will be operated, consistent with 5 above, until groundwater contaminant concentrations achieve groundwater standards, or until vapor concentrations reach asymptotic levels for a sustained period of time and continued operation of the treatment unit will not result in significant mass removal of contaminants.

9. A barrier wall will be installed around the former WGP and a portion of the Monarch Chemical Site where PAH concentrations in soil are greater than 1,000 ppm. (See Figure 11) This wall will extend into the underlying dense till present approximately 20 to 50 feet below ground surface in this area. Approximately 9,000 cyds of surface tar and NAPL-laden soils at the drip box and tar well will also be removed and thermally treated. This containment system will also include a low permeability cap that will satisfy the requirements of a final cover system specified in Part 360-2.15.d. The need for a gas collection system, however, will be evaluated during the remedial design. Groundwater from within the wall will be extracted and treated to maintain an inward hydraulic gradient within the wall. The remedial design will establish performance standards for this treatment and the design will also evaluate whether the existing NIMO Harbor Point Site water treatment system will be sufficient for meeting these standards.

10. Purifier waste from all areas of the peninsula will be excavated, to a depth of six feet bgs, and consolidated within the WGP barrier wall. The delineation of the limits of purifier waste removal will be visual, based upon the presence of wood chips or soils exhibiting a prussian blue coloration and/or shades of purple-to-black, typical of the Central Area deposits of purifier waste. The areas for removal will be delineated during the design.

    The remedial design will determine the maximum limit of purifier material that could be placed within the wall. Purifier waste in the southwest corner IRM area (approximately 30,000 cubic yards, see Figure 7) will be given priority to be consolidated at the WGP. If areas of purifier waste cannot be consolidated at the WGP, then it will be consolidated within the Niagara Mohawk Central Area outside of the regulatory floodway. The purifier waste consolidated at the WGP will be capped as indicated in item 9 above. The purifier waste consolidated in the Central Area, if any, will also be capped. The cap will satisfy the requirements of a final cover system specified in Part 360-2.15.d. The need for a gas collection system, however, will be evaluated during the remedial design.

    The remedial design will evaluate whether areas that contain co-mingled purifier waste and NAPL contaminated soil or soil containing PAHs greater than 1,000 ppm can be thermally treated. The remedial design will also allow for the for the thermal treatment of purifier waste, in lieu of consolidation, if the appropriate air discharge limits can be achieved by the LTTD unit.

A soil cover will be provided over the areas where purifier waste was removed, as detailed in item 11.

11. A minimum two-foot thick soil cover will be placed over the Niagara Mohawk Central Area, MVO and NYTEP (see Figure 12). Approximately 40 acres will be covered in this manner. The soil cover will consist of clean imported fill and/or site soils or sediment treated to the levels identified in item 6 above.

    Beneath the two-foot soil cover a commercial grade filter fabric will be installed to serve as a demarcation layer. The upper six inches of the soil cover will have to be of sufficient quality, to support vegetation. The remedial design will evaluate the need for armoring or other stabilization of areas of the cover subject to possible erosion adjacent to the floodway. Acceptable alternatives to the soil cover will be sidewalks, parking lots, building footprints, or other approved strategies that provide a barrier to contact with the contaminated subsurface soils.

12. In the Niagara Mohawk Northern and Niagara Mohawk Southern Areas, surface soil beyond the area of the soil cover exceeding 10 ppm cPAHs will either be removed (approximately 6,000 cyds) or will be covered with two feet of clean fill. (see Figures 9 and 11). A more complete characterization of the surface soil will be conducted during the remedial design process.

13. A mitigation plan will be developed and implemented for any wetlands adversely impacted by the remedy and the design of any remediation in the floodway and floodplain will be consistent with Executive Order 11988 (Flood Management), including but not limited to the performance during the remedial design of a hydraulic analysis and floodplain assessment in accordance with the executive order.

14. Flowable tar within the existing abandoned and plugged Lee Street Extension Sewer will be removed (see Figure 7).

15. At all three sites, institutional controls will be established. The institutional controls will include: deed restrictions to protect remedial features and restrict on-site groundwater use; a deed restriction to prohibit the site from being used for purposes other than appropriate recreational, industrial or commercial uses, as explained below, without the express written waiver of such prohibition by the NYSDEC and the NYSDOH; long term monitoring of site conditions; and routine maintenance operations, such as, fence repairs and lawn mowing. Appropriate industrial or commercial uses of the property will have to be consistent with any applicable zoning ordinances, but will not include any enterprises that draw susceptible portions of the community to the properties for activities that may lead to exposures to residual site contamination (e.g. day care, child care, medical treatment facilities,). Site monitoring will include a periodic survey of groundwater use in the area and efforts for early identification of any future threats to drinking water wells. An annual certification will be required to ensure the effectiveness of the engineering controls.

16. Since the remedy results in untreated hazardous waste remaining at the sites, a long term monitoring program will be established. This program will allow the effectiveness of the remedial measures, such as the soil cover, impermeable cover, barrier wall, NAPL collection wells and air sparging/SVE to be monitored, and will be a component of the operation and maintenance for the site.

17. There are certain elements of the Operable Unit 3 ROD which will have to be incorporated into Operable Unit 1. The installation of the sediment cap will require prior removal of harbor sediments in order to achieve sufficient depth of water to allow the continued navigational use of the harbor. Navigational dredging will also be required in the uncapped harbor neck. The ROD requires dredged sediment containing PAHs at concentrations greater than 35 ppm PAHs to be treated or disposed at a NYSDEC-authorized facility. Niagara Mohawk has the option of using the on-site low temperature thermal desorption unit called for by this OU1 ROD, to be sited at the NIMO Harbor Point Property, for treatment of dredged sediment and may use the Harbor Point property for storage of the dredged sediments prior to treatment. The sediment must be treated to the requirements identified in Section 8, item number 6 of this ROD. Once treated, the sediment could be used as identified in the same item. Approximately 60,000 cubic yards of harbor sediment would be generated by OU3. The ROD for Operable Unit 3 also calls for the excavation and treatment or disposal of soil containing greater than 1,000 ppm PAHs or greater than 0.2 ppm benzene from Dredge Spoil Area 1 (DSA1). The approximately 20,000 cubic yards of soil generated by this activity could also be treated at the Harbor Pont site, as described above.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of citizen participation activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the sites:

A repository for documents pertaining to the sites was established.

A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.

The NYSDEC and NYSDOH have participated in Niagara Mohawk's Citizens Advisory Committee meetings since 1993. During the meetings the NYSDEC and NYSDOH have disseminated information and answered questions about New York State's requirements for remediation of the sites.

In February 2002 the Proposed Remedial Action Plan (PRAP) was released for public comment and a fact sheet was sent to the site mailing list summarizing the PRAP, identifying the public comment period start and providing the date of a public meeting to present the PRAP

On February 26, 2002 the NYSDEC held a public meeting to solicit comments on the proposed remedy.

In March 2002 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

TABLE 1
HARBOR POINT PENINSULA STUDY AREAS

Parcels	**Acres**	**Former Operation Summary**	**Proposed Remedy to be announced in:**
Niagara Mohawk Harbor Point Site (NMHPS Operable Unit 1) (Site Number 6-33-021)	72	Coal Gasification	This PRAP
Mohawk Valley Oil (NMHPS Operable Unit 1) (Site Number 6-33-032)	4.7	Light Oil Production Bulk Petroleum Storage	This PRAP
New York Tar Emulsion Products Site (Site Number 6-33-031)	3	Road Tar Production	This PRAP
New York State Canal Corporation[1]	7		This PRAP
Monarch/ Jones Chemical (Site Number 6-33-030)	7	Chemical Distribution	Monarch ROD Remedy Selected
Dredge Spoil Area 1 (NMHPS Operable Unit 3)	9	Sediment Disposal	NMHPS O.U. 3 ROD Remedy Selected
Dredge Spoil Area 2 (NMHPS Operable Unit 3)	7	Sediment Disposal	NMHPS O.U. 3 ROD Remedy Selected
Dredge Spoil Area 3 (NMHPS Operable Unit 3)	7	Sediment Disposal	NMHPS O.U. 3 ROD Remedy Selected
Utica Harbor including Harbor Neck (NMHPS Operable Unit 3)	20	Shipping Terminal	NMHPS O.U. 3 ROD Remedy Selected
Mohawk River (NMHPS Operable Unit 2)	17	Receive discharges from sites	NMHPS OU 2 PRAP To Be Issued
City of Utica[2]	3	sewer easements	This PRAP

[1]Includes property bordering the Utica Harbor including the harbor neck

[2]Includes the 50-foot easement of Washington Street and the 80-foot easement for Lee Street.

TABLE 2
CHRONOLOGY OF SIGNIFICANT INVESTIGATION STUDIES AT HARBOR POINT

Description (Consultant)	Scope	Period
Land and River/ Harbor Investigation Steps I, II, III, IV (C&S)	Soil, sediment, water - (Borings, test pits, sediment cores, surface water, geophysics, wells/piezometers, modeling, risk assessment)	1983-86
Phases I & II at NYTEP/ MVO, Monarch/Jones Chemical, and Utica Terminal Harbor (URS Consultants)	Soils, sediment, water (Borings, sediment cores, wells)	1987-92
Supplemental RI (AES)	Soils, sediment, water - (Borings, soil gas survey, test pits, sediment cores, surface water, wells/piezometers)	1990-93
IRMs at Fire Training Area and Lee Street Sewer Extensions (AES)	Design based on investigation	1991-92
Surface Soil FS (RETEC)	FS Report	1991-92
Engineering and Evaluation Report (RETEC)	IRM Evaluation	1992-93
SW Corner IRM (RETEC)	Design based on investigation	1994-95
Remedial Technologies Demonstrations (AES, RETEC, BB&L, Stearns & Wheler)	Soil, sediment, water, NAPL	1993-ongoing
MVO Site (Expanded RI) (Parsons ES)	(Borings, wells, groundwater elevation, slug tests)	1994-95
NYTEP/Beazer/Suit-Kote Perimeter (Parsons ES)	(Borings, wells, groundwater elevation, slug tests)	1994-95

TABLE 2
CHRONOLOGY OF SIGNIFICANT INVESTIGATION STUDIES AT HARBOR POINT
(continued)

Description (Consultant)	Scope	Period
Dredge Spoils Areas (Expanded RI) (Parsons ES)	(Borings, sediment cores, surface water, wells, groundwater elevation, slug tests)	1994-95
Phase I & II Groundwater Investigations (Parsons ES)	Groundwater, NAPL - (Wells/piezometers, slug tests, modeling, groundwater elevation, DNAPL characterization)	1994-96
Sediments and Fish Study (Parsons ES) for Harbor, Canal, and Mohawk River	Sediment, fish & wildlife - (Bathymetric survey, sediment cores, fish & wildlife Tissue)	1994-96
Data Gap Investigation (Parsons ES)	Soil, sediment - (Borings, sediment cores, point source discharge/dye test evaluation, Sediment treatability study)	1994-96
Human Health and Ecological Risk (Parsons ES) Assessment for NMPC Property & WGP, MVO, DAS, Harbor, Canal, Mohawk River	Soil, sediment, water (included terrestrial and benthic studies)	1995-96
Wetlands Delineation Study (Parsons ES) for NMPC Property and DSAs	Wetlands (Included jurisdictional and human-induced)	1996
Remedial Inv./Risk Assessment Report, NYTEP (Key Env.)	Soil, groundwater	1998-99
Step III Fish and Wildlife Analysis (Parsons ES)	Fish and wildlife	1999
Floodway Analysis (Parsons ES)	Floodway	1999
Results from Additional FS Data Collection (Parsons ES)	Soil, sediment	1999
NMPC Harbor Point DSAs 2 and 3 Supplemental Risk Assessment (Parsons ES)	Soil	1999

TABLE 3
NATURE AND EXTENT OF CONTAMINATION
NIMO Harbor Point
Mohawk Valley Oil
New York Tar Emulsion Products

SUBTABLE 3.1: SURFACE SOIL (less than six inches below ground surface)

Contaminant of Concern	Concentration Range (ppm)	Frequency of Exceeding SCG	SCG (ppm)	Frequency of Exceeding Background	Background (ppm)
benzo (a) pyrene	ND to 5,700	94%	0.061 or MDL	60%	1.4
Total cPAHs	ND to >28,000	-	-	-	-
Total PAHs	ND to >149,000	50%	500	-	-
cyanide	ND to >101,000	-	-	-	-

SUBTABLE 3.2: SUBSURFACE SOIL

Contaminant of Concern	Concentration Range (ppm)	Frequency of Exceeding SCG	SCG (ppm)
benzene	ND to 810	26%	0.06
methylene chloride	ND to 200	10%	0.1
benzo (a) pyrene	ND to 3,900	65%	0.061 or MDL
naphthalene	ND to 30,000	26%	13
total PAHs	ND to 77,000	20%	500
cyanide	ND to 1,580	-	-

SUBTABLE 3.3: GROUNDWATER

Contaminant of Concern	Concentration Range (ppb)	Frequency of Exceeding SCG	SCG (ppb)
benzene	ND to 21,000	60%	1
naphthalene	ND to 54,000	30%	10
cyanide	ND to 11,000	26%	200

ND = Compound Not Detected

TABLE 4
AREAS AND APPROXIMATE VOLUMES OF CONTAMINATED SOIL REMOVAL ALTERNATIVE 3A

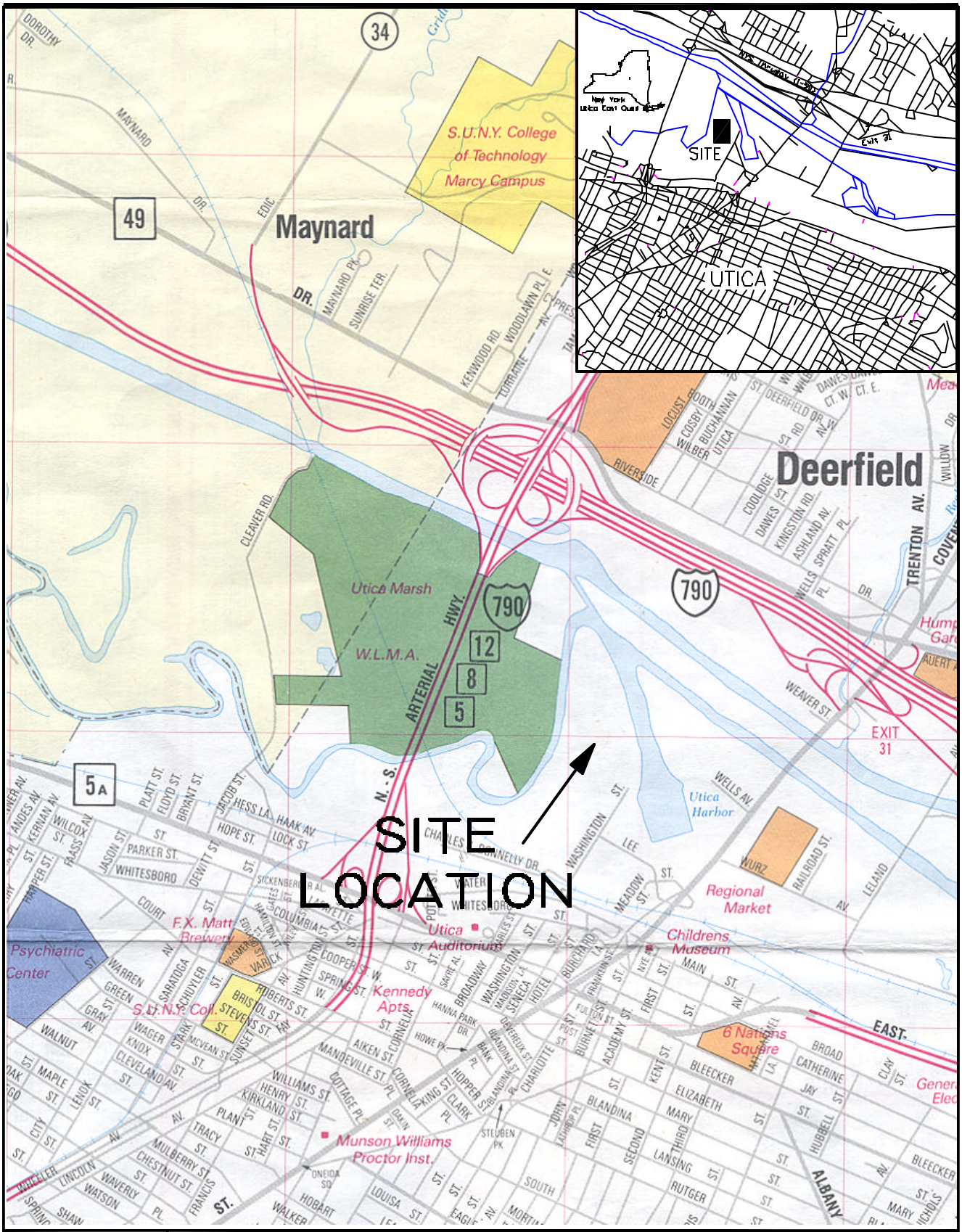
Area	Estimated Volume (cubic yards)
Item 1 Soil > 10 ppm cPAHs (0-2') (not including coal tar and NAPL-contaminated soil)	
a. NIMO Northern	5,000
b. NIMO Southern	1,000
Total, Item 1	6,000
Item 2 Soil with Greater than 1,000 ppm PAHs - NIMO, NYTEP	
NIMO Northern	7,000
NIMO Central (not including floodway)	28,000
NIMO Southern	2,000
NYTEP	27,000
Total, Item 2	64,000
Item 3 Floodway Removal	
Lee Street Extension Sewer	20,000
Item 4 CGP Structures	5,000
Item 5 Soil with Greater than 1,000 ppm PAHs - MVO	11,000
Item 6 WGP removal dripbox, tarwell and NAPL-laden soil in wall alignment	9,000
Total, All Items	115,000 cyds

TABLE 5

REMEDIAL ALTERNATIVE COSTS

NIMO - Harbor Point Property
Operable Unit No. 1 - Peninsula, Site No. 6-33-021
NEW YORK TAR EMULSION PRODUCTS SITE, Site No. 6-33-031
MOHAWK VALLEY OIL SITE, Site No. 6-33-032

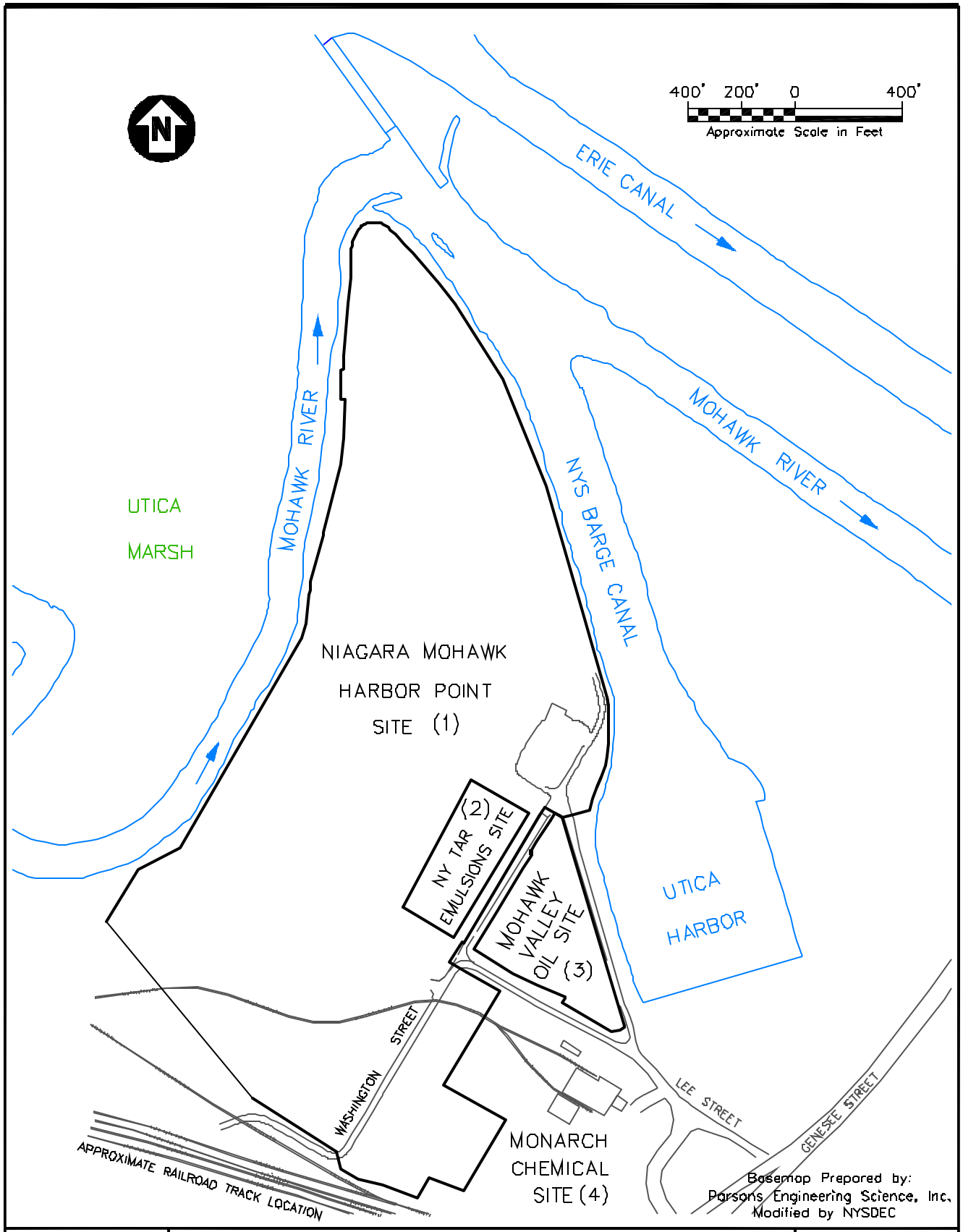
Alternative	Capital Cost	Annual O&M	Total Present Worth
1. No Further Action	$ 0	$ 30,000	$ 540,000
2. Consolidation and Cover	14 million	58,000	15 million
3A. Source Removal (1000 ppm PAHs), Wall, Cover	38 million	240,000	42 million
3B. Source Removal (500 ppm PAHs), Wall, Cover	55 million	240,000	59 million
4. Remove Soil > TAGM 4046	260 million	46,000	260 million



HARBOR POINT
UTICA, NEW YORK

SITE LOCATION MAP

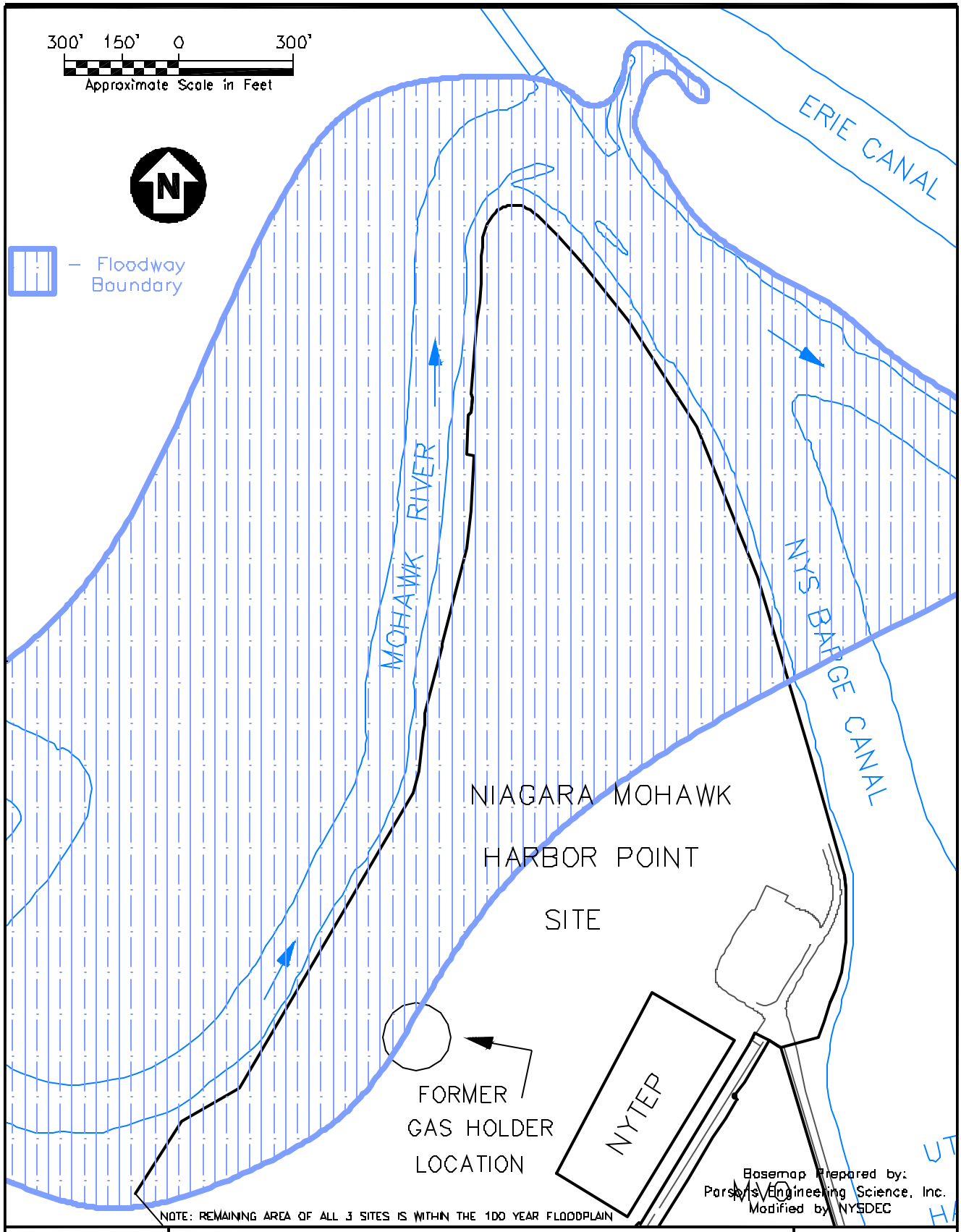
FIGURE 1



HARBOR POINT
UTICA, NEW YORK

INACTIVE HAZARDOUS WASTE DISPOSAL SITES (4)

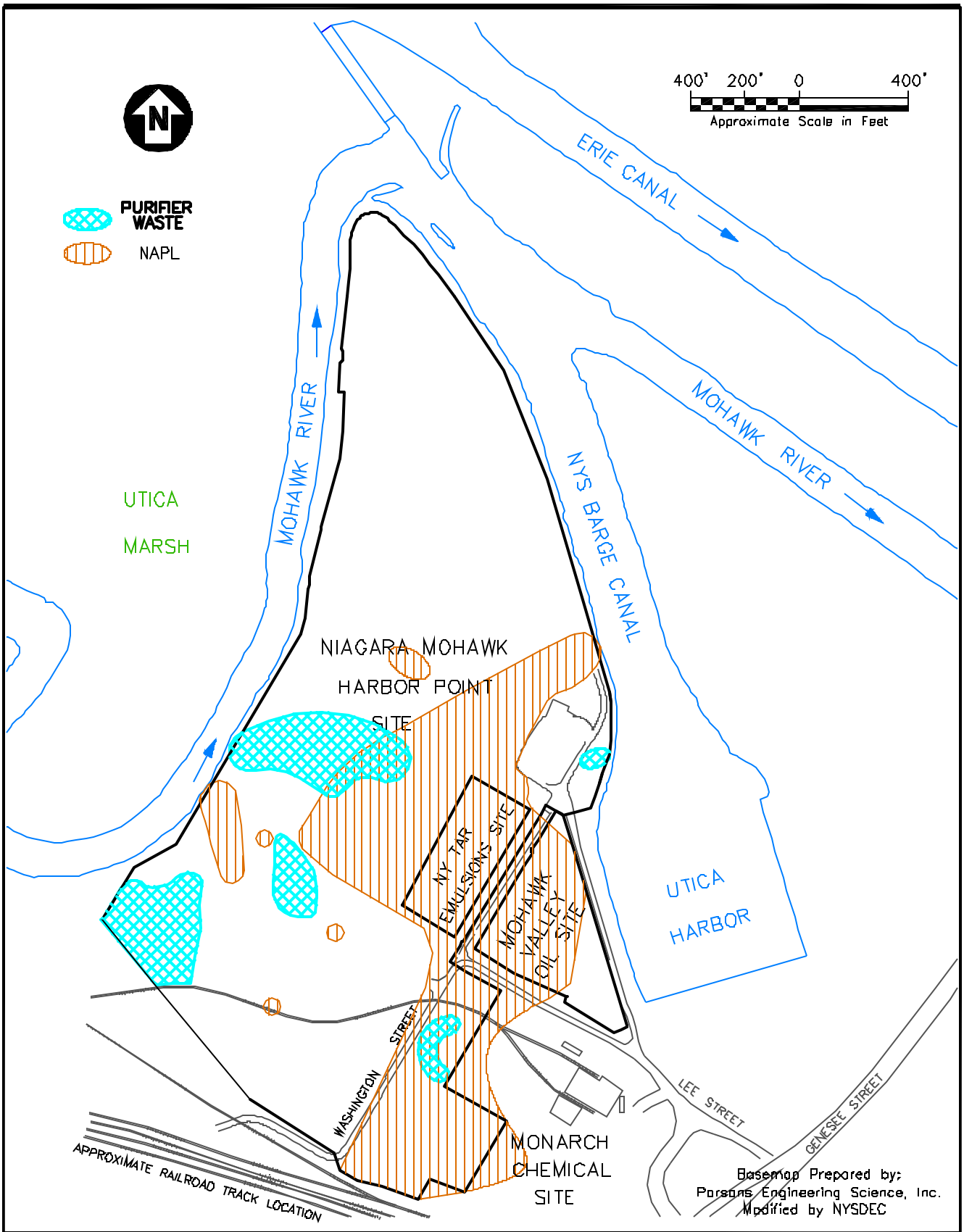
FIGURE 2



HARBOR POINT
UTICA, NEW YORK

APPROXIMATE REGULATORY FLOODWAY AREA

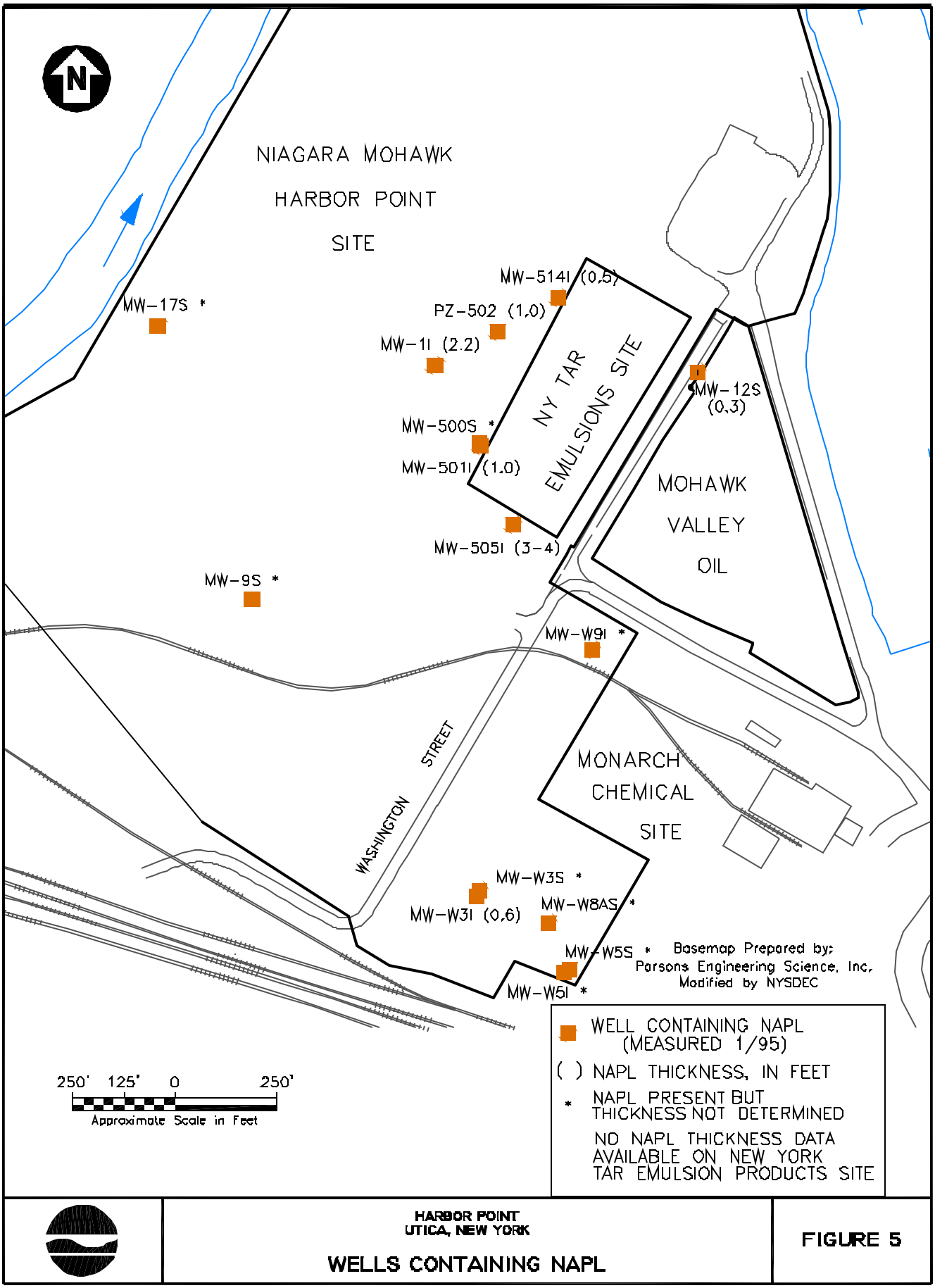
FIGURE 3



HARBOR POINT
UTICA, NEW YORK

LOCATION OF PURIFIER WASTE AND NAPL

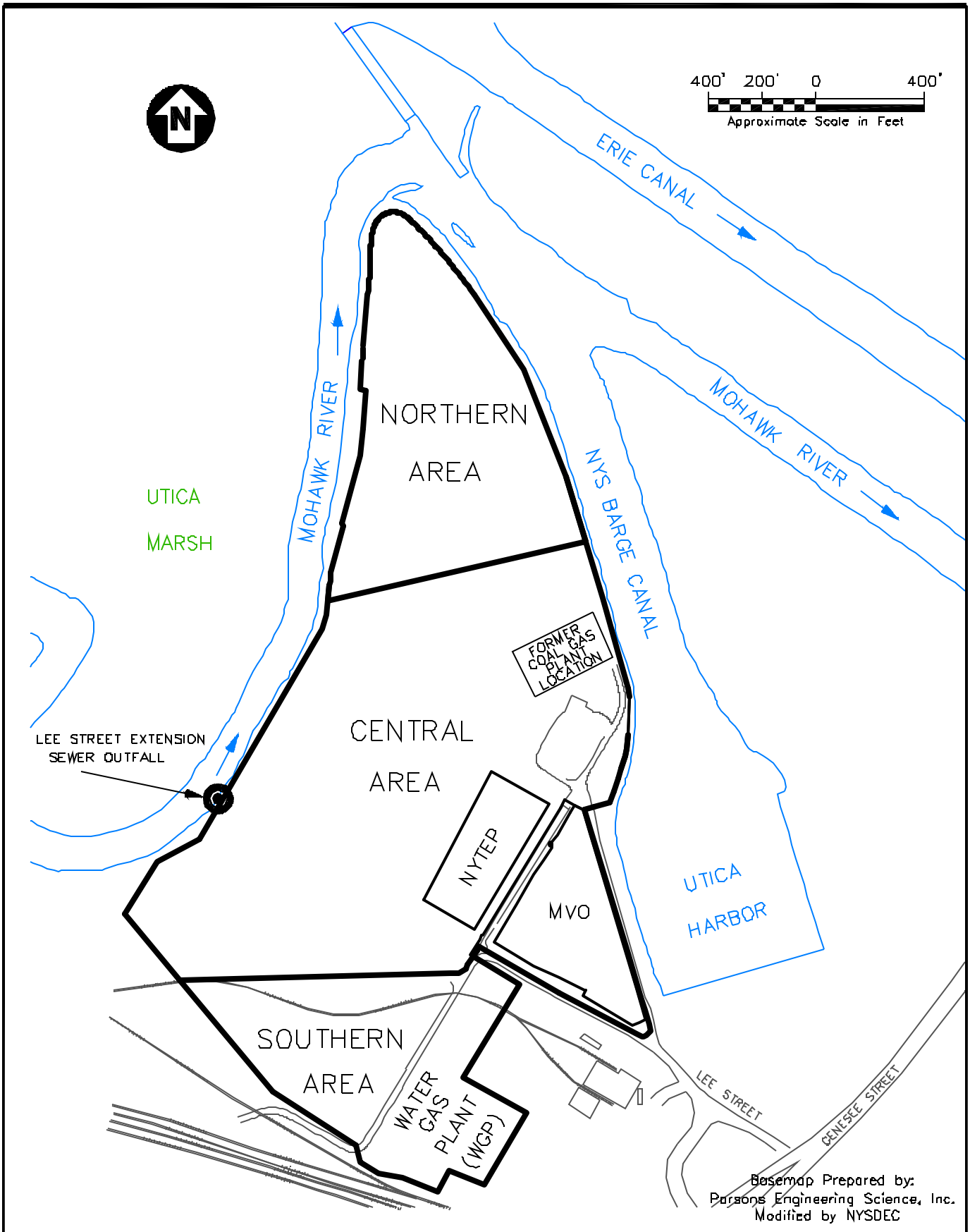
FIGURE 4



HARBOR POINT
UTICA, NEW YORK

WELLS CONTAINING NAPL

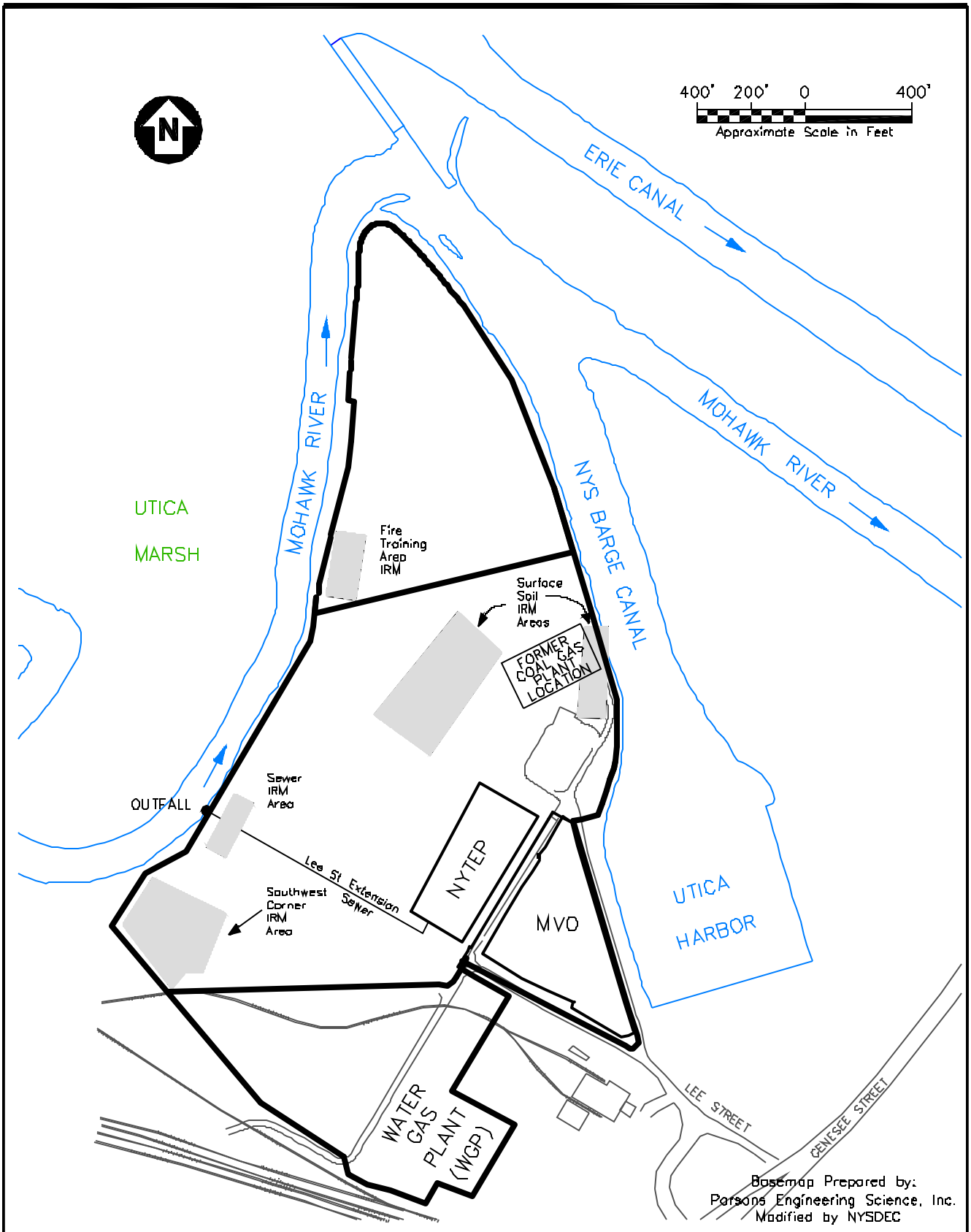
FIGURE 5



HARBOR POINT
UTICA, NEW YORK

AREA DELINEATIONS

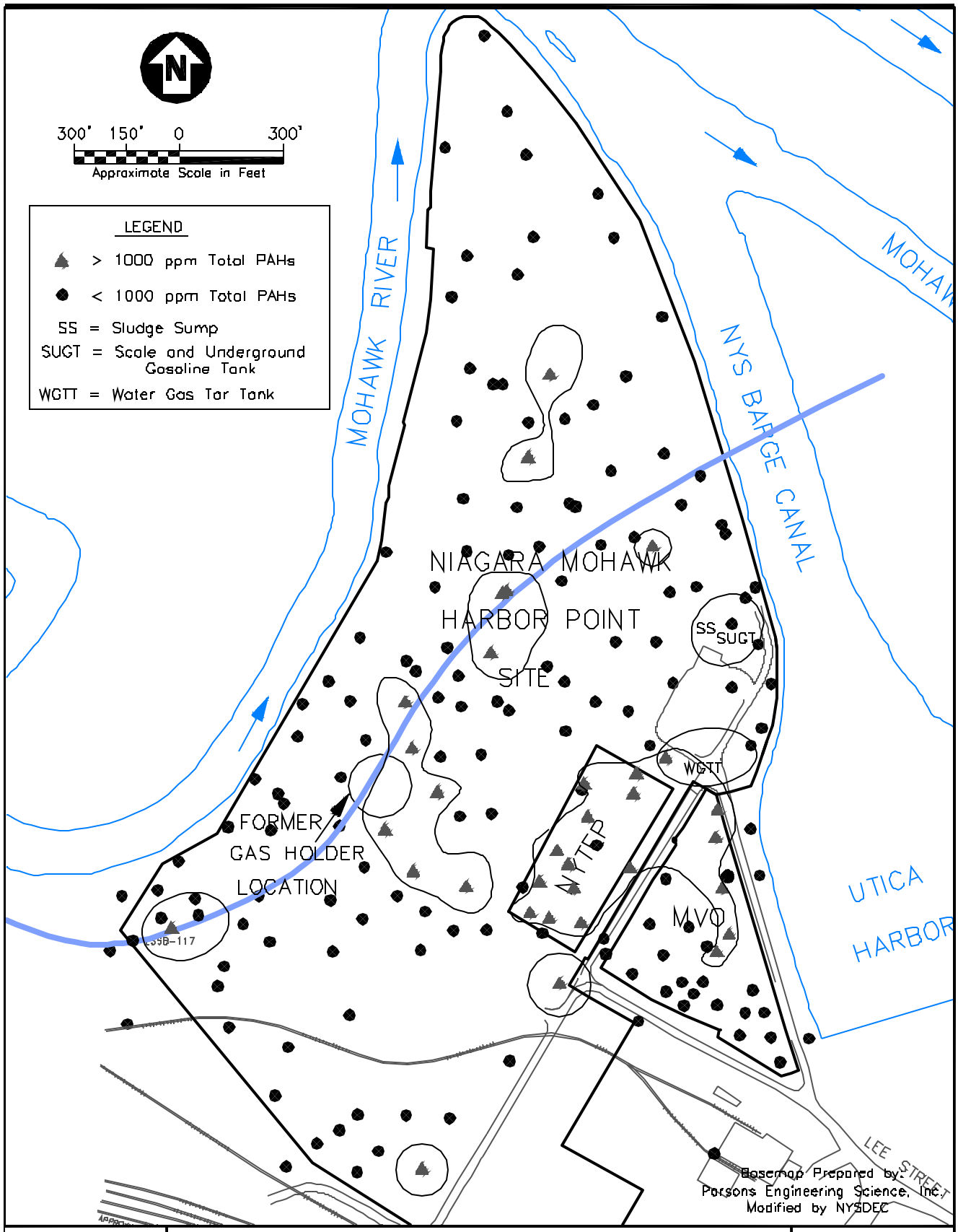
FIGURE 6



HARBOR POINT
UTICA, NEW YORK

IRM LOCATIONS

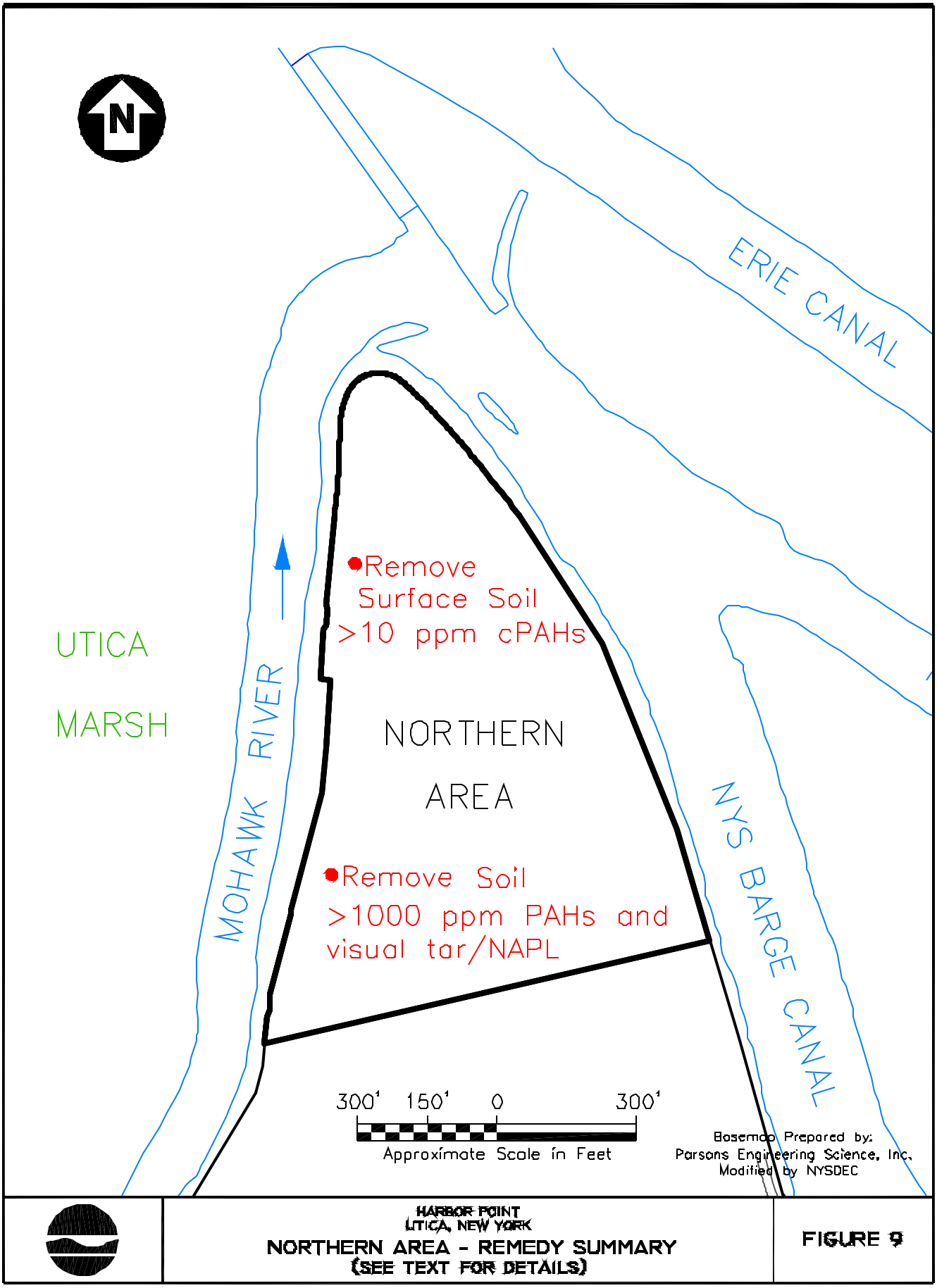
FIGURE 7



HARBOR POINT
UTICA, NEW YORK

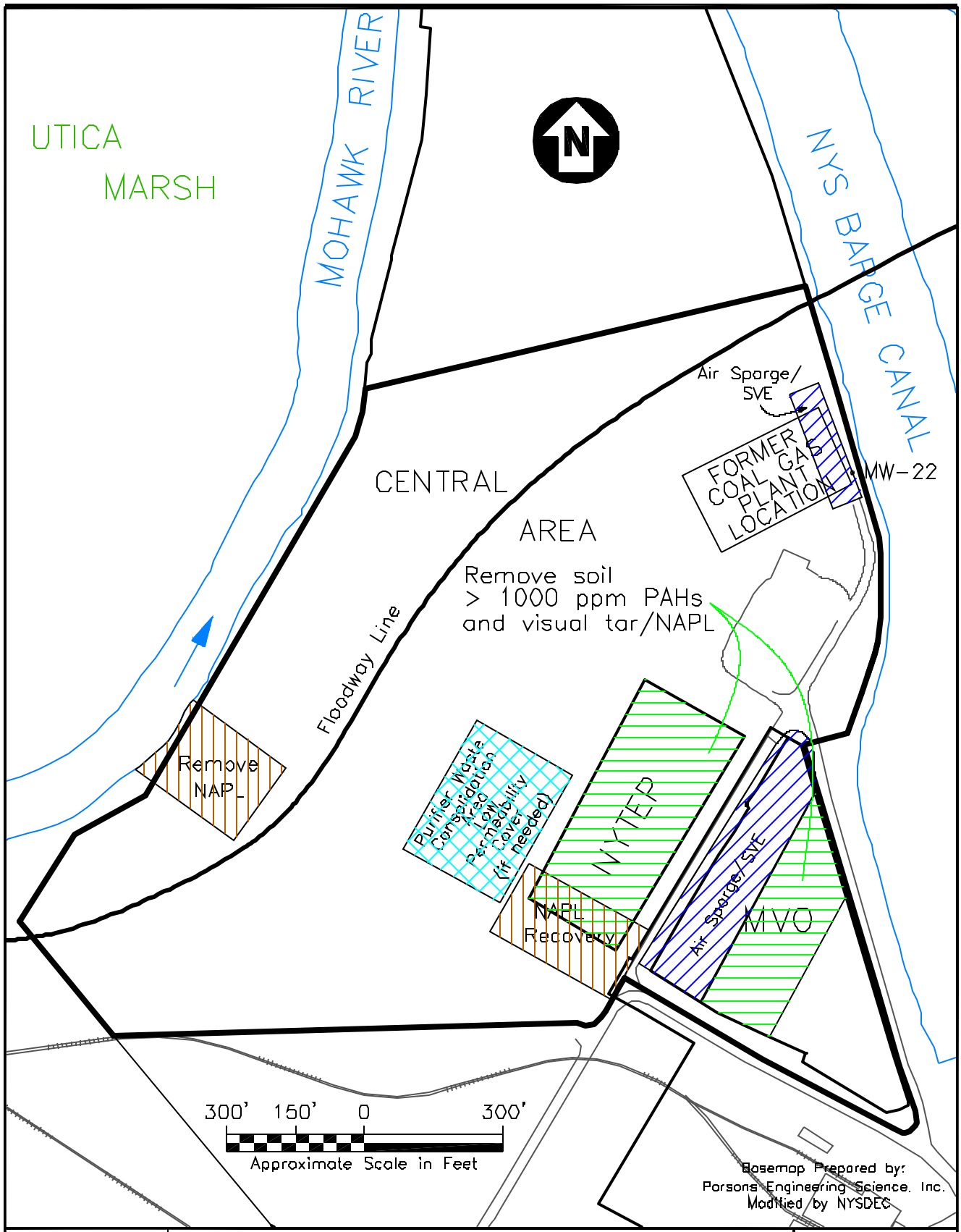
SUBSURFACE SOIL SAMPLES EXCEEDING 1000 PPM TOTAL PAHS (EXCLUDING WSP)

FIGURE 6



HARBOR POINT
UTICA, NEW YORK
NORTHERN AREA - REMEDY SUMMARY
(SEE TEXT FOR DETAILS)

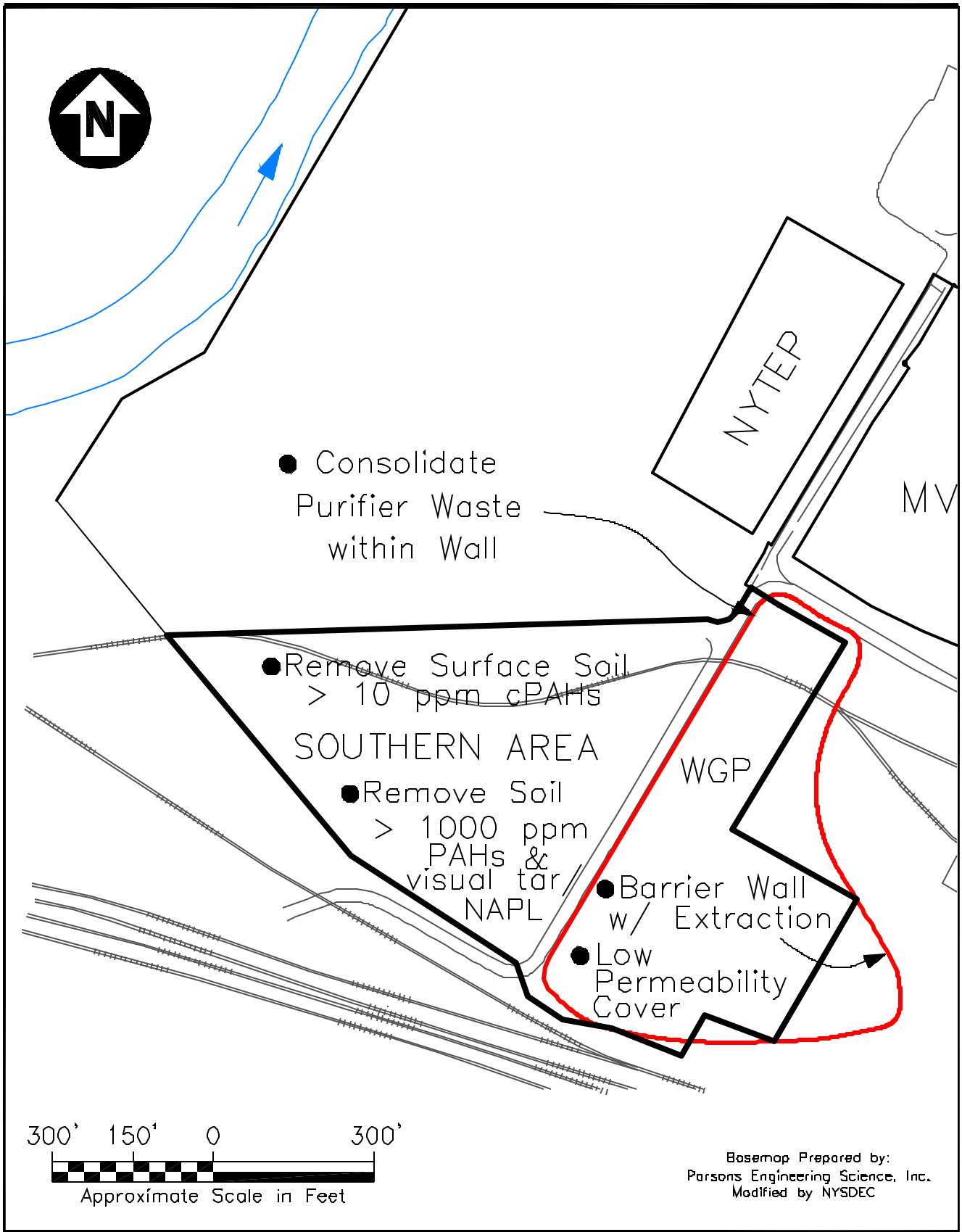
FIGURE 9



HARBOR POINT
UTICA, NEW YORK

CENTRAL AREA - REMEDY SUMMARY
(SEE TEXT FOR DETAILS)

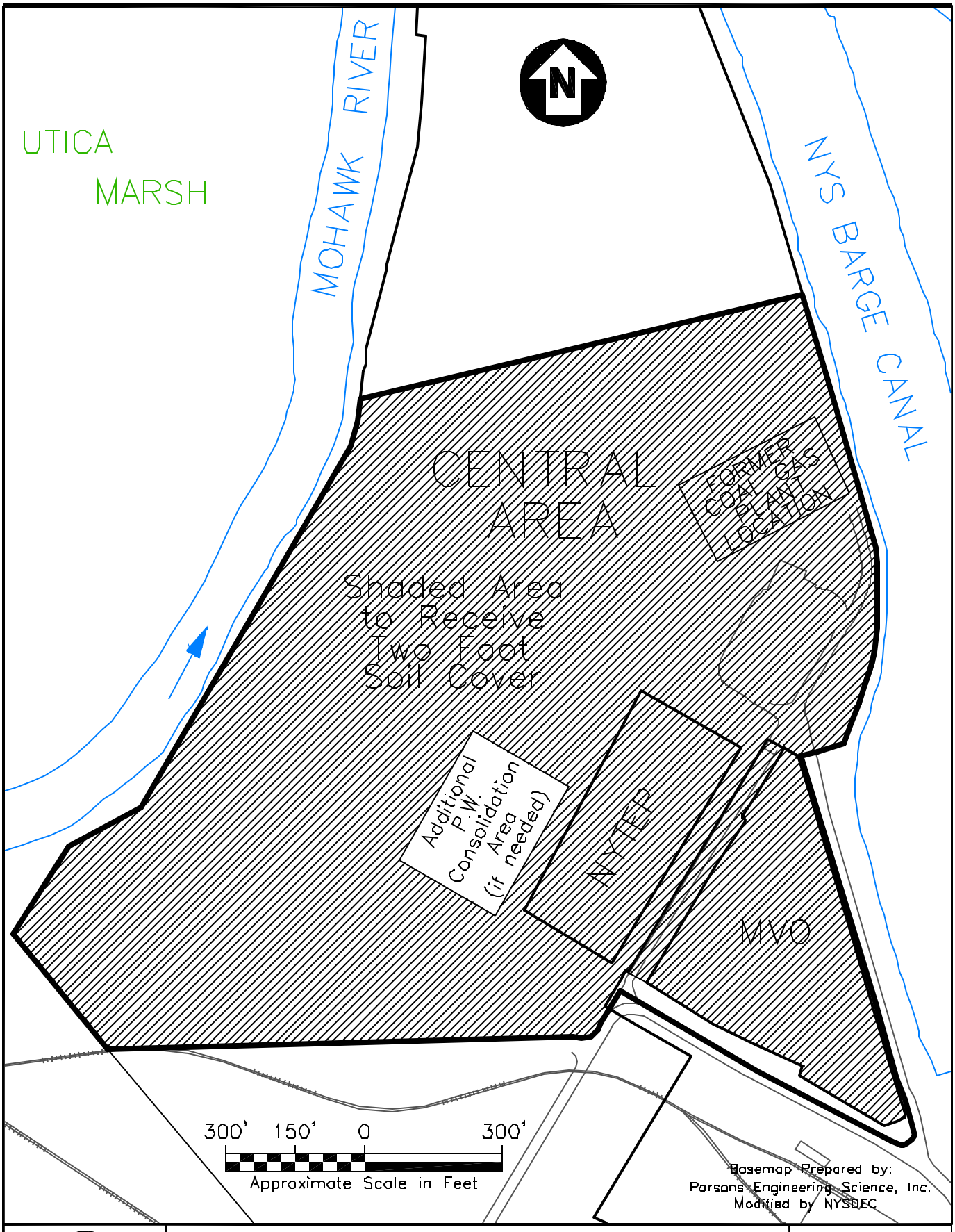
FIGURE 10



HARBOR POINT
UTICA, NEW YORK

SOUTHERN AREA - REMEDY SUMMARY
(SEE TEXT FOR DETAILS)

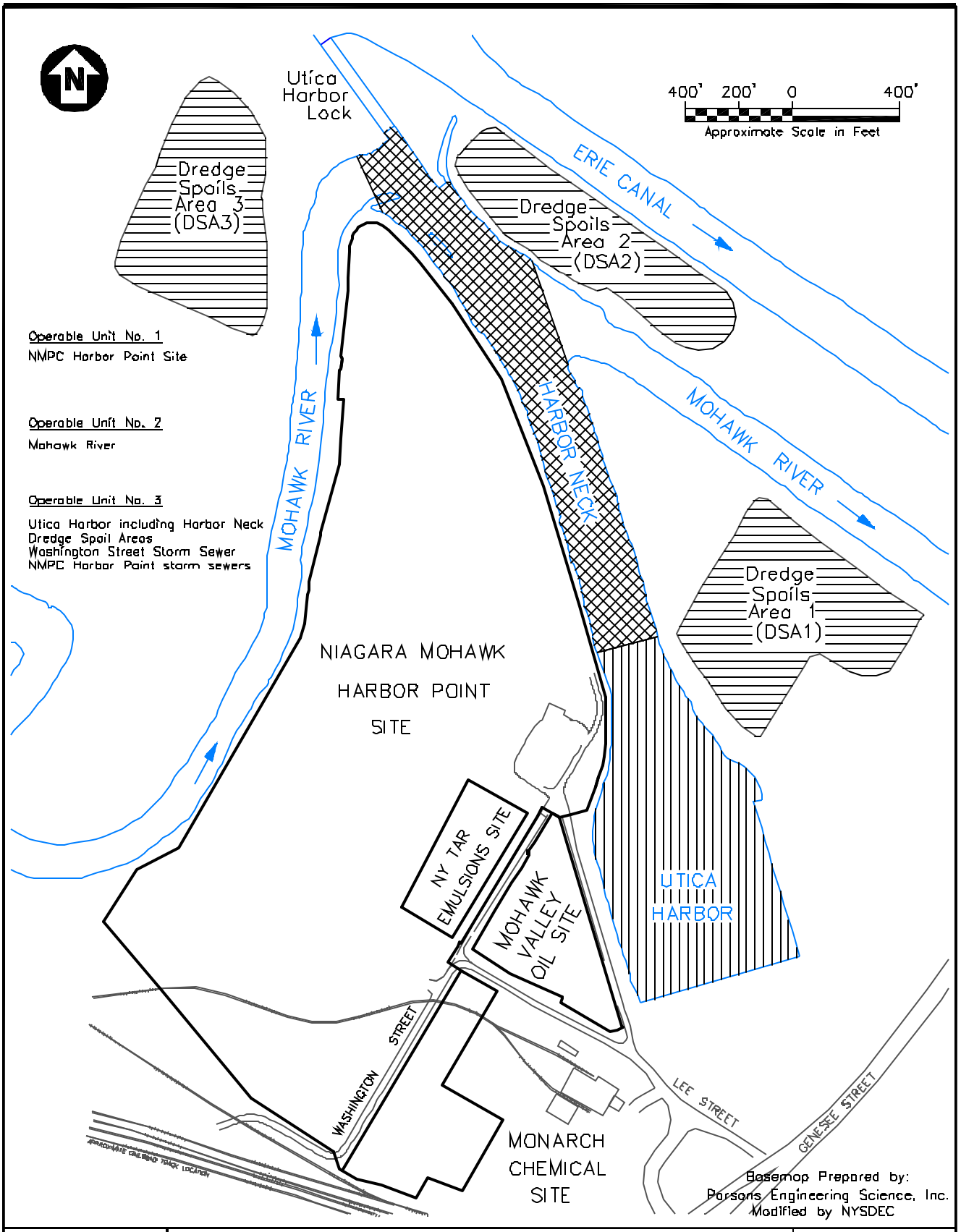
FIGURE 11



HARBOR POINT
UTICA, NEW YORK

CENTRAL AREA - REMEDY SUMMARY
(SEE TEXT FOR DETAILS)

FIGURE 12



HARBOR POINT
UTICA, NEW YORK

LOCATIONS OF OPERABLE UNITS - HARBOR POINT PROPERTY

FIGURE 13

APPENDIX A

RESPONSIVENESS SUMMARY

NIMO - Harbor Point Property, Operable Unit No. 1
Site No. 6-33-021
New York Tar Emulsion Products Site
Site No. 6-33-31
Mohawk Valley Oil Site
Site No. 6-33-032
Utica (C), Oneida County

March 2002

The Proposed Remedial Action Plan (PRAP) for the following sites was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 8, 2002:

- NIMO - Harbor Point Property, Operable Unit No. 1
- New York Tar Emulsion Products Site
- Mohawk Valley Oil Site

This PRAP outlined the preferred remedial measure proposed for the remediation of the contaminated soil and groundwater. The preferred remedy is Alternative 3A.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on February 26, 2002 which included a presentation of the Remedial Investigations and the Feasibility Study as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from Niagara Mohawk, a National Grid Company; Earth Tech; on behalf of ChevronTexaco Corporation and Beazer East, Inc..

The public comment period for the PRAP was extended from March 13, 2002, at the request of Niagara Mohawk and Beazer East Inc., and closed on March 25, 2002.

This Responsiveness Summary responds to all questions and comments raised at the public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: Given the long history of the Peninsula area as an industrial area, pollutants have accumulated over a period of 30 to 150 years. How do we know contaminants haven't already migrated off-site into the Mohawk River due to flooding and the general movement of surface water and groundwater?

RESPONSE 1: Heavy industry on the Harbor Point peninsula occurred from approximately 1848 to 1983 and the various investigations of the area have identified that waste materials have accumulated on the site from these operations. Investigations of the Mohawk River and Utica Harbor adjacent to the peninsula have also confirmed that contaminants have migrated or have been released from the peninsula into these water bodies. The pathways for impact to the River from the peninsula are identified in Sections 4 and 6 of the ROD and remedial actions to address these pathways are detailed in Section 8. Contaminants in the Utica Harbor sediments are being addressed through the *Record of Decision for the Niagara Mohawk Harbor Point Site Operable Unit 3, Utica Harbor Sediments and Dredge Disposal Areas, March 2001*. Contaminants in the Mohawk River are still under investigation with a PRAP to address river contamination expected to be issued by the NYSDEC in the future.

COMMENT 2: Have you detected contaminants currently leaching into the Mohawk River?

RESPONSE 2: Yes. The area where contaminants are moving into the Mohawk River is most evident near the former Lee Street Extension sewer outfall. The presence of contaminants in monitoring wells near the river in this area and a groundwater flow to the river lead the NYSDEC to conclude that contaminants are migrating into the river. More significantly, non-aqueous phase liquid, which contains high concentrations of contaminants, was found in soil borings adjacent to the river in this area. The selected remedy will address this impact by the excavation of the NAPL/tar/contaminated soils in the vicinity of the Lee Street Sewer which are the apparent source of the release. In addition to the Mohawk River, contaminants are also migrating to the NYS Barge Canal in the vicinity of the former coal gas plant (see Figures 4 and 6) and to the Utica Harbor adjacent to the Mohawk Valley Oil Site. The migration of contaminants to the waterbodies at these locations is addressed by this ROD through a combination of excavation of NAPL/tar/contaminated soil and air sparging/soil vapor extraction.

COMMENT 3: Can you outline how the three sites [that make up Operable Unit 1] relate to the previous operable units?

RESPONSE 3: The operable units of the Harbor Point peninsula and certain nearby areas are summarized in Figure 13 and described in Section 2 of the ROD. It should be noted that the three sites which are the subject of this ROD are not part of Operable Unit 1 of the Niagara Mohawk site but are separate class 2 sites. However due to similar contaminants, contaminated media and their close proximity they are addressed by a single ROD. Operable Unit 3 is defined as the Utica Harbor including the harbor neck, dredge spoil areas, the Washington Street storm sewer and Niagara Mohawk storm sewers. The ROD for Operable Unit 3 calls for, placement of a sediment cap in the

harbor, contaminated soil removal in dredge spoil area 1, soil covers at dredge spoil areas 1 and 2, and institutional controls. The only significant interaction that would occur among operable units would be the on-site low temperature thermal treatment of OU3 contaminated material by the on-site thermal desorption unit identified by this ROD.

COMMENT 4: Does the soil cover area overlap with those other areas as described in previous proposals?

RESPONSE 4: The dredge spoil areas are across the Mohawk River/Utica Harbor from the three sites presented in this ROD. Thus, the soil covers for dredge spoil areas 1 and 2 do not overlap the soil covers required by this ROD.

COMMENT 5: How is the purifier area defined for this proposed remedy?

RESPONSE 5: The purifier wastes are best delineated by their distinctive blue staining ,with shades of purple to black, and the areas to be consolidated will be defined by the visual presence of purifier waste in implementing the ROD.

COMMENT 6: Are there other changes in this PRAP from the proposed Feasibility Study?

RESPONSE 6: The NYSDEC assumes this comment is asking for differences between the recommended remedy presented in Niagara Mohawk's Feasibility Study and the remedy selected in this ROD. The salient differences are:

- the Feasibility Study recommended an impermeable soil cap in the central area whereas the ROD requires a soil cover in the central area;
- excavation limits are expressed in the Feasibility Study in terms of the water table whereas excavation limits in the ROD are generally to a specified depth;
- the Feasibility Study recommended the consolidation of purifier waste in the Central Area outside the floodway whereas the ROD requires the preferential placement of purifier waste inside the Water Gas Plant barrier wall;
- the ROD has a lower concentration threshold for the removal of contaminated surface soil in the Northern and Southern Areas;
- the ROD requires NAPL recovery in the central area and NYTEP, areal extent to be determined during remedial design;
- the ROD requires air sparging/soil vapor extraction near the monitoring well MW-22 cluster.

COMMENT 7: What about the two areas of NAPL closest to open water? How much will be moved to the consolidation area?

RESPONSE 7: NAPL will not be consolidated, but will either be removed or treated. Figure 4 of the ROD shows three areas where NAPL is close to open water. At the Lee Street Extension sewer outfall, the NAPL, along with visible tar and soil over 1000ppm PAHs will be excavated and thermally treated as defined in Section 8, item number 3 and any NAPL in the plugged sewer will be addressed as defined in Section 8, item number 14. At the former coal gas plant location an air

sparge/soil vapor extraction system will be implemented as defined in Section 8, item number 8. At the Mohawk Valley Oil Site, NAPL will be excavated and thermally treated up to nine feet below ground surface. At depths greater than nine feet, this contamination will be addressed through an air sparge/soil vapor extraction system, as defined in Section 8, item number 5 of the ROD.

Approximately 80,000 cubic yards of purifier waste near the surface water bodies will be consolidated at either the water gas plant area or in the Central Area.

COMMENT 8: What kind of barrier wall is proposed?

RESPONSE 8: The ROD does not specify the type of barrier wall to be provided. However it is currently proposed to utilize a clay bentonite slurry wall, subject to successful compatibility testing.

COMMENT 9: What about NAPL in the neck of the peninsula?

RESPONSE 9: The NYSDEC is not clear on what is being considered as the "neck" in this comment, since the term "neck" has typically been applied to the harbor neck. As indicated in the ROD, the selected remedy will:

- contain all the NAPL at the former water gas plant;
- treat or remove all NAPL-contaminated areas at MVO;
- remove all NAPL within the Lee Street extension sewer outfall area of the floodway;
- treat all NAPL within 100 feet minimum of Utica Harbor and the harbor neck;
- remove approximately 20% of the remaining NAPL through excavation, and an additional amount of NAPL via recovery wells or trenches.

As explained in Section 7, it has been demonstrated that it is not feasible to remove, treat or contain all of the NAPL present in the subsurface on the peninsula. However, the selected remedy does actively remediate sources of groundwater contamination on the peninsula to the extent practicable. The selected remedy is aggressive at removing NAPL near the surface water bodies and at the surface. However, NAPL will remain untreated and not contained in the center of the peninsula at depths greater than six feet.

COMMENT 10: If you use a vacuum treatment technique for NAPLs, how will a significant flood affect the containment area?

RESPONSE 10: NAPL at all three sites will either be:

- removed by excavation; or
- removed through recovery wells; or
- contained within the barrier wall; or
- treated by AS/SVE; or
- remain under a minimum of six-foot depth of backfill

Because these are sub-surface activities, a flood is not expected to have a significant effect on the removal or containment of NAPL. The presence of floodwaters on these areas is not expected to prevent the ROD's requirements from being carried out. Recovery and removal would continue after the floodwaters recede. Large excavations will not be allowed to remain open for extensive periods or if a flood is predicted. Floodwaters could scour soil caps and soil covers, however the design will take this into account and seek to eliminate or control any impact from flooding. Finally, a monitoring and maintenance program will be required to look for such damage and make any necessary repairs.

COMMENT 11: I have a more generalized response [to the proposed remedial action plan]. Alternatives 1 and 2 would be an insult to the people of New York and Utica. Alternatives 3 and 4 have to be closely looked at to make sure they do the job. I understand some of the constraints, but I would prefer Alternatives 3B or 4.

RESPONSE 11: As detailed in Section 7.2, the remedy presented in the ROD was selected only after careful evaluation of all the alternatives, in accordance with state and federal regulations and guidance. This evaluation includes all public comments received.

COMMENT 12: What factors lead to the differences in allowable levels of soil contamination between taking out just surface soil and removing all contaminated soils?

RESPONSE 12: The selected remedy must be protective of both public health and the environment. Public health exposure was a more critical factor in the determination of surface soil remediation. Surface soil remediation is determined by assessing risks from exposure to contaminants present in surface soils. On the other hand, the remediation of subsurface soils is driven by restoration of the groundwater resource. These determinations resulted in different action levels for surface and subsurface soil.

COMMENT 13: If alternative 3A is implemented, what future uses would be possible at this site?

RESPONSE 13: Future use will be restricted to nonresidential development. A master plan exists for the redevelopment of the Peninsula and this remedy should allow the redevelopment identified in this plan to proceed, with the institutional controls detailed in Section 8, item 15 of the ROD.

COMMENT 14: If a person were to develop this area after remediation, would a permit from the Department of Health be required?

RESPONSE 14: As with any site on the inactive hazardous waste disposal site registry, notice must be given to the NYSDEC prior to the start of any physical alteration or construction constituting a substantial change in use. The NYSDEC would coordinate its review with the NYSDOH. Restrictions on the development of the sites are discussed in Section 8, item 15 of the ROD.

COMMENT 15: If a catastrophic event such as a major flood exposed the soil under the cap, who would be responsible for remedying that?

RESPONSE 15: The parties responsible for the site would have the responsibility for long term monitoring and maintenance at the time of any such event. We contemplate that the parties would include; Niagara Mohawk, a National Grid Company, whose consent order includes responsibity for long term monitoring and maintenance of the NIMO Harbor Point Property and two parcels of the Mohawk Valley Oil Site; and, Beazer East, Inc. and Suit Kote Corporation for the New York Tar Emulsion Products Site. The responsibility for the third MVO parcel will be determined by future negotiations.

COMMENT 16: If sewage is piped through the site and there is a problem, what happens if pipes break?

RESPONSE 16: The existing sewer force main was realigned in December 2001 though a less contaminated area of the NIMO Harbor Point Site, which should mitigate any adverse environmental impacts that may be caused by a break in the sewer pipe. The Operations and Maintenance Plan will address infrastructure repairs at the sites.

COMMENT 17: In the materials [concerning this project] available for review at the library, it indicates a large sewer line was sealed off at Lee Street. What will happen to that line in this proposed remedy? Is there any danger of underground water damage?

RESPONSE 17: The Lee Street extension sewer was abandoned and plugged as described in Section 4.2 of the ROD. Flowable tar within the sewer will be removed (see Section 8, item 14). Any water existing in the pipe would be from infiltration which would be managed during the removal of the tar. The remedial design will account for any water in the pipe which could damage remedial components.

COMMENT 18: On a positive note, I want to congratulate Mr. Moreau for the work Niagara Mohawk did in relocating the sewer line. That was significant work and that's why Alternative 3B should be considered [instead of 3A].

RESPONSE 18: Comment noted respecting Niagara Mohawk. As to the selection of the proposed alternative, see RESPONSE 11.

COMMENT 19: A separate document specifying how each operable unit fits into the overall remediation would be helpful. It would also be helpful to have a schedule for all the activities for each operable unit since some of the work overlaps significantly.

RESPONSE 19: A description of the interaction of this operable unit (OU 1) with the remediation of OUs 2 and 3 has been added as Section 8, item number 17 in the ROD. The NYSDEC will include information regarding ongoing and anticipated remedial activities including a schedule in future mailings to the public at appropriate time intervals. This is best accomplished through the citizen participation program, which will continue through design, construction and maintenance of the sites. Also, a document repository exists in the Utica Public Library which will be maintained and continue to be available to the public through the completion of the construction at the site. The

efficacy of the existing citizen participation plans (Niagara Mohawk and Beazer/Suit-Kote) will be evaluated in the remedial design. Also see RESPONSE 3.

COMMENT 20: At every opportunity the public should be given information that summarizes activities planned and underway so that it is more clear how all the separate parts of the remedial program fits together.

RESPONSE 20: See RESPONSE 19.

COMMENT 21: At what point would someone be able to comment on the various alternatives as they interact? For example, the thermal treatment schedules for OU1 and OU3 have to be coordinated. The total amount of material being thermally treated is the combination of OU1 and OU3. This should be detailed more specifically.

RESPONSE 21: At this time, it has not yet been determined whether OU3 sediments and soil will be thermally treated on-site. However, if Niagara Mohawk elects to treat contaminated DSA1 soil and harbor sediment on-site, then the total amount of material that would be thermally treated is the sum of OU1 and OU3. The ROD does include provision for the OU 3 sediment and soil treatment on-site as part of the overall OU 1 project. The NYSDEC agrees that if both OU1 and OU3 materials are thermally treated on-site, coordination would be required to minimize idling of treatment equipment and prevent delays. On-site thermal treatment or other disposal options for dredge spoil area 1 soil and/or harbor sediment will be determined during the remedial design for OU3. Citizen participation will continue through the remedial designs for both OU3 and OU1. Also see RESPONSES 3 and 19.

COMMENT 22: Who would be responsible if property is sold?

RESPONSE 22: As described in RESPONSE 13, Niagara Mohawk and Beazer, Inc. are ultimately responsible for long term remedial monitoring and maintenance of the sites NIMO-Harbor Point Property and New York Tar Emulsions Products site, respectively, regardless of property ownership. This holds true even if these parties pursue an agreement with a property owner for some or all of the monitoring or maintenance requirements. Responsibility for the MVO parcel is subject to continued negotiations.

A letter dated March 25, 2002 was received from Mr. Charles Willard of Niagara Mohawk, a National Grid Company, providing the following comments on the PRAP:

COMMENT 23: Our primary concern is that we believe the preferred remedy described in the PRAP is more extensive than required to protect human health and the environment and does so at a significantly greater cost than other remedies that achieve the goal of protecting human health and the environment. The 1997 Draft Harbor Point Feasibility Study (FS) addressed all elements required to protect health and the environment. Removal beyond that required to protect human health and the environment was added at the direction of the Department following comments on

the 1997 Draft FS. The additional removal was incorporated into the Department-approved 1999 FS

RESPONSE 23: The NYSDEC and NYSDOH consider the selected remedy to provide the greatest protection of human health and the environment while best satisfying the other evaluation criteria and meeting the remedial goals identified in Section 6.

COMMENT 24: Niagara Mohawk Power Corporation was recently acquired by National Grid. The current owner of the NIMO OU-1 Site should be referred to as Niagara Mohawk, A National Grid Company or Niagara Mohawk rather than NIMO or Niagara Mohawk Power Corporation.

RESPONSE 24: The ROD reflects this comment.

COMMENT 25: Page 1, 2nd column, and Section 4.4, page 12: A significant threat to the environment based on contaminant levels in groundwater was not demonstrated and, thus, should be eliminated from consideration. The impact of potentially contaminated groundwater on benthic organisms or other wildlife was not evaluated in the Department-approved site investigation or feasibility study reports. The contribution of contaminated groundwater from OU-1 to the sediment was not measured. The concentration of constituents in groundwater was measured in monitoring wells located on land at a distance from the waterbodies. This did not account for attenuation of the constituents prior to reaching the waterbodies. Additionally, groundwater migrating from the site flows through impacted material located beneath the waterbodies. This deep impacted material will remain in the harbor neck and Utica Harbor after remediation and it is likely that impacted material will remain in the Mohawk River at depth.

RESPONSE 25: Contaminant levels in groundwater *do* present a significant threat to the environment. Because of the presence of non-aqueous phase liquid, (NAPL), the NYSDEC must consider the contaminant levels in the NAPL as well as the aqueous phase contaminants. A significant threat to the environment is one in which the hazardous waste disposed at a site(s) results in, or is reasonably foreseeable to result in (among others) a significant adverse impact upon protected streams and/or significant adverse acute or chronic effects to fish and wildlife. The Utica Harbor, Barge Canal and Mohawk River are protected streams. Benthic organisms are considered wildlife. As food for fish and other aquatic life, an effect on benthic organisms is also an effect on fish and other aquatic life. In making a determination of significant threat (6 NYCRR 375-1.4), the NYSDEC may take into account (and these examples are not exhaustive):

- *the duration, areal extent, or magnitude of severity of the environmental damage the levels of contaminants present*: NAPL in the surface and subsurface soils on the peninsula extends over approximately 17 acres, encompassing all or part of the three sites. When migration of the NAPL to the surface water bodies is accounted for, tens of acres of sediment are also contaminated with NAPL or the hazardous constituents of NAPL. Contaminants on the peninsula have damaged the groundwater aquifer(s) over approximately 60 acres over all three sites. If the contamination were not present, the aquifers would be usable.

- *type, mobility, toxicity, quantity, bioaccumulation and persistence of hazardous waste present*: The NAPL at the site is mobile, as evidenced by: 1. its ability to enter monitoring wells that, when constructed, were devoid of any NAPL; 2. the presence of NAPL 40 feet into the ground surface; 3. the presence of NAPL in native, undisturbed soil below the fill; 4. the presence of NAPL on the surface after the area has been covered with clean fill; and 5. the finding of NAPL in at least one well several years after its construction, a well that, when constructed, showed no signs of NAPL in the soil around it. Persistence of the NAPL is evident by realizing that coal gasification operations have not occurred in the last 40 years, and other operations have not occurred in the last 20 years. NAPL was found in certain peninsula storm sewers including along the pipe walls and at the outfalls to those storm sewers. A NYSDEC guidance value for toxic effects on aquatic life toxic is 4 ppm PAHs in sediment. NAPL at the site has been found to contain over 100,000 ppm PAHs.
- *the location, nature and size of surface waters at and near the site:* As a peninsula, the majority of the Harbor Point area is bounded by surface water. All aquifers on the peninsula eventually discharge to the surrounding surface water. Surface water flow is generally laminar. These conditions exacerbate contamination of the waterbodies given the presence of upland hazardous waste disposal. The size is substantial: a portion of the surface water is the navigable watercourse for the New York State Barge Canal System.
- *levels of contaminants in groundwater, surface water, air and soils at and near the site and areas known to be directly affected or contaminated by waste at the site, including, but not limited to, contravention of ... ambient groundwater standards ...*: Aqueous phase groundwater concentrations at each site were found to be thousands of times greater than the respective groundwater standard for certain chemical contaminants. When NAPL is considered, the contravention is greater: analysis of site NAPL showed 25,000 times the standard for benzene.
- *the proximity of the site to areas of critical environmental concern (as wetlands or aquifers):* The peninsula has an estimated 13 acres of wetlands. Additional wetland exists across the Mohawk River in the Utica Marsh Management Area. Aquifers at the site prior to their contamination were usable.

The impact of potentially contaminated groundwater on benthic organisms or other wildlife was evaluated in the Department-approved site investigation and/or feasibility study reports. As noted above, potentially contaminated groundwater also includes NAPL. Aqueous phase groundwater contamination was shown adjacent and directed into the surface water bodies as reported in the Phase II Groundwater Investigation Report. NAPL and contaminated soil were reported adjacent to the waterbodies in the Data Gap Investigation Report. The Storm Sewer Evaluation Report and Study of Interim Remedial Measures for Harbor Point Site Storm Sewers found NAPL and contaminated sediments in the Washington Street and Lee Street Extension Storm Sewers. The Investigation of the Utica Terminal Harbor Report identified the extent of NAPL and contaminated sediments in the surface waterbodies. The 1997 Feasibility Study for the Harbor Point Site identified the need to address aquatic life exposure to contaminated sediment in the Mohawk River and Utica

Harbor including the harbor neck. The same study identified the prevention of Washington Street Storm sewer sediment from significantly impacting the Utica Harbor.

The NYSDEC agrees that the contribution of contaminated groundwater from OU-1 to the sediment was not measured. Critical to this measurement, however, would be measurement of the amount of NAPL which migrates and discharges to the waterbodies, such as that NAPL through or in the vicinity of certain storm sewers and in certain areas along the bank, partitioning to both the water column and sediment. Unlike aqueous phase groundwater which may have a relatively uniform concentration and a relatively uniform flow, NAPL migration and discharge rate are affected by small perturbations such as the groundwater table fluctuations and storm discharges through the Washington Street sewer. NAPL was found: in the Washington Street sewer which actively discharges to the Utica Harbor, at the Lee Street extension sewer outfall adjacent to the Mohawk River, and adjacent to the harbor in the former Coal Gas Plant area. The presence of NAPL in these areas coupled with the presence of NAPL in the sediments in the surface waterbodies adjacent to these areas makes it is foreseeable to result in continued discharge of NAPL into the sediments. The NYSDEC does not see a need to quantify this discharge.

There are several important considerations which are not accounted for in Niagara Mohawk's comment that "the concentration of constituents in groundwater was measured in monitoring wells located on land at a distance from the waterbodies. This did not account for attenuation of the constituents prior to reaching the waterbodies." First, groundwater concentrations were measured in groundwater samples both inland and on the perimeter, adjacent to the waterbodies. The groundwater standard for benzene was exceeded several hundred fold at monitoring wells MW-15I and 17S, approximately 50 feet and 100 feet, respectively, from the waterbodies. Well MW-17S contained NAPL. In addition, groundwater in monitoring well MW-22S, approximately 50 feet from the harbor, was found to contain benzene 98 times the groundwater standard. Secondly, natural attenuation can only occur at a distance from a continuing source of groundwater contamination. The presence of NAPL adjacent to the waterbodies provides a continuing source of groundwater contamination which would offset any possible reduction in concentration through microbial activity. Thirdly, natural attenuation can only occur in the aqueous phase; natural attenuation has no effect of the concentrations of contaminants present in the NAPL. Fourthly, sediments contaminated from a NAPL source being flushed through the Washington Street sewer do not have the residence time necessary for contaminant reduction by natural attenuation.

The presence of contamination elsewhere does not obviate the need to address the significant threat posed by the presence of hazardous waste constituents at the three sites. In addition, the majority of NAPL being discharged to the waterbodies is occurring above the plane of the sediment cap to be constructed as a component of the NIMO - Harbor Point OU-3 remedy and is thus occurring above any residual contamination that will remain following the completion of the OU-3 remedy. As a remedy has not been selected for the Mohawk River, it is not known at this time how much, if any, contaminated material will remain in the river.

Thus, for the three sites which are the subject of this ROD, there is an ongoing or potential for discharge of contaminants from the site(s) through: the migration of contaminated groundwater; subsurface NAPL migration; subsurface utilities or their bedding; and/or, erosion of contaminated

soil or waste from the site which is located in the floodplain/floodway. The NYSDEC considers all of these exposure pathways which exist under current conditions present at the site(s) to represent a significant threat to public heath and/or the environment.

COMMENT 26: Page 2, 1st column, 1st bullet: Petroleum was stored on the MVO site and should be referenced as a source. This paragraph should be expanded to include "... resulting from the presence of petroleum,..."

RESPONSE 26: The ROD reflects this comment

COMMENT 27: Page 4, 2nd column: NIMO did not exist prior to 1950. The Utica Gas and Electric Company operated the site prior to 1950.

RESPONSE 27: The ROD reflects this comment.

COMMENT 28: Page 7, 1st Column, last paragraph: Other relevant information regarding the site geology should be included. This information has bearing on the cost for site remediation and the impracticability of excavations below the water table at this site. The description in the PRAP should include, at a minimum, the presence of very weak, compressible and organic soils from the ground surface to some significant depths. This, when combined with the shallow groundwater table, will limit the depth of excavation using conventional construction equipment and will require the remediation contractor to institute substantial storm water runoff and groundwater collection and treatment facilities for any excavations, particularly those at any significant depth. An additional concern will include the bearing capacity of the bottom of any significant excavations carried out, particularly in the regulatory floodway.

RESPONSE 28: The ROD reflects the description of the soils present on the Peninsula "as weak, compressible and organic soils." It should be noted however that the recent force main sewer repair opened an excavation 10 feet deep in the middle of the purifier waste bed, an area very typical of the low bearing soil noted. This excavation remained open and dewatered (in March) for several days without the use of any extraordinary construction techniques, shoring or extensive dewatering.

COMMENT 29: Page 9, 1st Column, Waste Materials: The volume estimates provided in Table 4 of the PRAP are not correct if "or" rather than"and" visual contamination is used as a criteria for soil removal. It is assumed that the volume estimates in Table 4 of the PRAP were used to produce the cost estimates shown for Alternative 3A. If the "or visual tar or NAPL contaminated soil" criteria is included, the volume estimates presented by the Department are significantly less than what would be experienced during remediation.

RESPONSE 29: In preparing Table 4, the volumes estimates presented in the FS were reviewed to determine the impact of the use of visual tar or NAPL or 1000 ppm of PAHs as removal criteria. Where justified by the data, the volume estimates were revised to reflect this the removal criteria. NYSDEC feels these estimates are reasonable and reflect volumes to be anticipated given the level of data available at this time.

COMMENT 30: Page 11, Interim Remedial Measures: The Force Main Sewer Relocation Project should be included in the IRM listing. Pilot-scale remedial demonstrations, including the Thermal Desorption Demonstration, ABC Demonstration, Hot and Cold Mix Asphalt Demonstrations have also significantly reduced the volume of impacted media at the site and should be included in this discussion. The reduction in impacted materials that resulted from these activities and cost should be considered when evaluating additional future reductions in contaminant mass to be achieved by the proposed site remedy.

RESPONSE 30: The Force Main Sewer IRM responded to an impact attributable to the purifier waste in the environment, but was not conducted to address a source of contamination or exposure pathway which could be effectively addressed before completion of the RI/FS. Likewise, the wastes which have been treated by the various technology demonstrations conducted at the site were not targeted for removal to address a specific exposure, but rather to provide representative site material for treatability testing. Since we do not consider these projects to be IRMs, as defined in Section 4.2, these projects are discussed under Section 3.2, Remedial History, of the ROD.

COMMENT 31: Page 13, Section 5, last paragraph: Although, pursuant to the applicable Consent Order, Niagara Mohawk will implement the remedy at two of the three parcels comprising the MVO site, Niagara Mohawk has not "acknowledged responsibility." Moreover, the Department should note that Niagara Mohawk never owned or operated the Texaco portion (i.e., the third parcel) of the MVO site.

RESPONSE 31: The ROD has clarified this statement.

COMMENT 32: Page 14, 1st Column, 5th bullet.: The inclusion of the "Maintain the hydraulic capacity of the floodway" as a remediation goal is inconsistent with the rest of the remediation goals and, thus, should be eliminated from the site goals. While carrying out the remedial design, Niagara Mohawk and the design engineer need to comply with applicable SCGs and while the hydraulic capacity of the floodway will need to be considered in the design, the reason for including this requirement in the PRAP as a remediation goal is unclear. The NYSDEC should clarify this goal in terms of how it would impact the recommended alternative.

RESPONSE 32: Agreed, "Maintain the hydraulic capacity of the floodway", is not a goal of the remediation but rather an SCG to be complied with by the design of the remedy selected. This has been eliminated and instead the ROD includes a requirement that any remediation in the floodway and floodplain be consistent with Executive Order 11988 (Flood Management), including, but not limited to, the performance during the remedial design of a hydraulic analysis and floodplain assessment in accordance with the executive order.

COMMENT 33: The selected alternative in the PRAP requires the consolidation of all purifier material (estimated at 80,000 CY) and placement beneath an impermeable cap to be installed at the former Water Gas Plant area. The selected alternative in the Department-approved 1999 FS included the consolidation of purifier material from within the floodway. The goal of the consolidation was to address groundwater quality at the western site perimeter and eliminate the potential for scour

during flooding events. Niagara Mohawk expressed concern about air emissions associated with such a large consolidation in a letter dated December 26, 2001. Although Niagara Mohawk agrees that the emissions can be managed at a smaller scale the greater the purifier material removal volume, the greater the exposed surface area will be during the construction, and, thus, the greater the emission rate. The enhanced emission rates will pose a greater short-term exposure threat to the surrounding community.

RESPONSE 33: Air emissions will be an issue regardless of the volume or time to implement the remedy. Comparable appropriate air emission controls will have to be have to be in place to address this short term impact regardless of the volume of material handled or manner of consolidation. The only difference between the selected remedy and that cited for the Niagara Mohawk FS will be an increased duration during which the controls will be applicable, but there will be comparable controls and level of effort required for any purifier waste excavation.

COMMENT 34: Construction-related concerns were also documented in our December 26, 2001 letter. As explained in this letter, excavations below 6-7 feet are substantially more difficult and very expensive. In addition, the removal of purifier material below this depth does not provide any benefit with respect to the goal of removal within the floodway. Purifier material at this depth would not be subject to future scour. An excavation limit of 6 to 7 feet would remove a majority of the purifier material. As stated in the PRAP (page 7) purifier material is generally present to 7 feet below grade.

RESPONSE 34: As noted by this comment, the majority of the purifier waste is located within 6-7 of the surface, with only isolated areas of purifier waste disposal at greater depth. This distribution of purifier waste was recognized by DEC in preparing the PRAP and we also concur in the comment that this depth is reasonable for the limits of the purifier waste removal. Removal to this depth can be accomplished without extraordinary construction techniques, see RESPONSE 28. The PRAP did not contemplate removal of the purifier waste below 6-7 feet, and this is clarified in the ROD.

COMMENT 35: The removal of the additional purifier material targeted by the PRAP will not reduce human exposure, as the purifier material will be covered with a minimum 2-foot soil cap. The removal within the floodway will provide a 250 to 500-foot buffer between the purifier material and the western site boundary.

RESPONSE 35: The purifier waste represents improper disposal of a waste material. This waste is reactive and corrosive to subsurface structures; has a particularly pungent odor, resulting in nuisance conditions when encountered, and contains toxic constituents, namely cyanide. As such it must be handled as a solid, if not hazardous waste, and properly managed. Of additional concern, as evidenced by the degradation of the sanitary sewer force main, is the impact of this waste on underground utilities or structures, which can be significant. These concerns are what lead the NYSDEC to require this material be consolidated within the WGP containment system.

COMMENT 36: Page 15, #1 and Page 19, #9: The consolidation of purifier material should be limited to the following parameters:

- purifier material within the floodway;
- the maximum excavation depth should limited to the shallower of a six-foot depth or the water table; and
- purifier material should be defined by wood chips exhibiting a prussian blue coloration.

RESPONSE 36: As discussed in RESPONSE 35, the purifier waste is an odoriferous, reactive, and toxic material, which can adversely impact the integrity of subsurface structures and must be properly managed for the long term. NYSDEC will approach limitations on the consolidation of purifier waste as follows:

- Limiting the removal to the floodway is not justified, particularly as the majority of the purifier waste outside the floodway is located in areas also targeted for removal due to the impacts from PAHs and NAPL/coal tar. Also, even though out of the floodway this material is still located within the flood plain. Therefore, purifier waste removal will not be limited to the floodway.
- The purifier waste removal be limited to a six to seven foot excavation depth, as discussed in RESPONSE 34.
- The proposal to utilize visual delineation of purifier waste is reasonable. The remedial design will utilize a description similar to that included in RESPONSE 5.

COMMENT 37: Niagara Mohawk is also concerned regarding the definition of purifier material. The term "purifier waste" refers to a generic classification of materials that are not regulated. "Purifier waste" is typically identified by the presence of wood chips and odor and is thus, very subjective. As any potential threat to the environment is associated with purifier material containing cyanide, Niagara Mohawk proposes defining purifier material by its characteristic prussian blue color. This definition is consistent with our recently submitted comments on the Rome (Kingsley Ave.) site PRAP. To prepare biddable quality documents in accordance with the Order, the area subject to removal should be defined prior to construction. As discussed with the Department, Niagara Mohawk requests that the vertical and lateral extent of the purifier material to be relocated be established in the field during a pre-design investigation. The details of this investigation would be established in a work plan.

RESPONSE 37: The ROD reflects the use of visual delineation of purifier waste, as defined in RESPONSE 5.

COMMENT 38: Page 16, Alt 2, #4: The 10 ppm cPAH concentration value should be an average value rather than a "not to exceed" value. It is assumed that the 10 ppm cPAH value is based on human health exposure. Average concentration values are used in the preparation of health risk assessments. An average concentration value is consistent with USEPA remedies and the remedy for the Harbor Point OU-3 Site.

RESPONSE 38: The NYSDEC and NYSDOH do not utilize averaging or other "geostatistical" methods of assessing sampling data for determining the limits of remedial actions.

COMMENT 39: Page 16, Alt 2, #4: The basis for the removal or covering of soils containing greater than 10 ppm cPAHs should be provided. Assuming that this value is health-based, the exposure assumptions should be provided.

RESPONSE 39: The exposure assumption was based on a evaluation of what the benzo-a-pyrene (BAP) equivalents would be for a 10 ppm cPAH limit. After reviewing over twenty surface soil samples from the areas of the site where this value would be applied, the BAP equivalents of these samples were found consistently to be in the 30% range, meaning a 10 ppm sample could reasonably be expected to contain about 30% BAP equivalent cPAHs. With a BAP equivalent of 0.6 ppm equating to a roughly 1x10-6 risk factor, 3 ppm would equate to about 5x10-6 risk. With this understanding of what a 10 ppm cPAH level approximated, in this case, 10 ppm of cPAHs was deemed an acceptable level for surface soils, given the intended future use of the site.

COMMENT 40: Page 16, Alt 3A, Cost: The cost to implement Alternative 3A is substantially greater than that presented in the PRAP. The description of the remedy should be modified so that the cost provided in the PRAP is within an acceptable range. The capital cost presented by the Department appears to be based on the volumes contained in Table 4 of the PRAP. It is assumed that Table 4 is based on the volume estimates presented in the 1999 FS. The present worth cost of Alternate 3A was estimated to be as high as $115 million as compared to the estimate in the PRAP of $36 million (Niagara Mohawk property alone).

RESPONSE 40: As discussed in RESPONSE 29, Table 4 reflects the visual or 1000 PAH criteria. The cost estimates, and indirectly volume estimates, utilized to determine remedial costs in a FS are considered accurate within -50% to +30% range. Given the large areas of the site exhibiting impacts, regardless of the criteria utilized significant changes in volume can be anticipated once a more detailed delineation is undertaken to design a remedy. As was recently under taken for the Niagara Mohawk Oneida - Sconondoa Street MGP site, when pre-design sampling indicated a significantly greater volume of material to be addressed, Niagara Mohawk requested a reevaluation of the remedy by NYSDEC. This reevaluation resulted in a ROD amendment to address the greater volume to be treated. Should this be the case for this site, a ROD amendment could be considered. The Division of Environmental Remediation TAGM-4059, recognizes significant increases in cost and/or volume as a fundamental change in the ROD where a ROD amendment may be appropriate.

COMMENT 41: The PRAP should contain a break-out of costs relative to each of the sites.

RESPONSE 41: Agreed, a breakdown of the estimated total cost of the selected remedy for each site is included in Section 8 of the ROD.

COMMENT 42: Page 16, Alternative 3A, Time to Implement: The time to implement the remedy does not account for the stringent 4046 levels proposed as a treatment standard or project delays due to other Harbor Point sites. Based on the volume estimates that CDM presented in Table 1 (attached) and making some assumptions about the volume of material that can be treated through a 75 ton per hour treatment unit, the efficiency of the unit, etc, CDM estimates that the minimum time for treatment of the entire volume of material could be 15 months. If the material has to be

treated twice due to the requirement to achieve TAGM 4046 levels, this time could double to 30 months. Treatment to TAGM 4046 levels, rather than the levels presented in Comment # 18 (below) does not provide any additional benefits to human health or the environment and will result in increased costs, difficulties in implementation and potentially, additional site fill.

RESPONSE 42: A one hundred percent retreatment rate, and associated increased in time, contemplated by this comment is unrealistic, provided a throughly designed trial burn program has been undertaken, as will be the case for this site. Treatment to these levels does result in additional benefits to public health and the environment by the more complete destruction of contaminants. This will have a impact on future use and development of the site.

COMMENT 43: Page 16, Alternative 3A, Time to Implement: The implementation time should be fully described to allow the reader to understand the complexities of the project exclusive of the work required by the selected remedy. The time to implement this project is dependent on remedial actions in the Utica Harbor Canal (OU-3), the Monarch Chemical Site, and potential remedial action in the Mohawk River (OU-2). The impact of these projects on the OU-1 schedule should be noted within the remedy and fully described elsewhere in the PRAP. Based on CDM's experiences with similar sites, the complexities involved and the current proposed remediation approach at OU-1 alone, implementation time will more likely be 4 to 5 years.

RESPONSE 43: The time to implement as defined in the introduction to Section 7, "reflects only the time required to implement the remedy, and does not include the time required to design the remedy or procure contracts for design and construction." Time to implement is an estimate of how long a given alternative will take to implement and is intended to provide a baseline on which to evaluate each alternative's implementation schedule. The additional remedial actions for the other operable units and sites on the Peninsula are not part of this "time to implement", but rather are part of the overall site scheduling effort, which is addressed in RESPONSES 3, 19 and 21.

COMMENT 44: Page 17& 18, #1 & #2: The term "visual tar or NAPL" is too subjective without further definition The criteria for removal should include the following:

- visual tar or NAPL **and** (rather than or) concentrations greater than 1,000 ppm PAHs
- Visual tar or NAPL should be defined based on a 3-inch thick seam extending at least 10 feet beyond the excavation and exceeding a volume of 10 cubic yards.
- The limits of the excavation will be defined during the pre-design investigation.
- Excavation should be limited to the shallower of a six-foot depth or the water table.

RESPONSE 44: The NYSDEC will consider the following criteria for removal of visual material:

- "Visual tar or NAPL" will be defined, similar to the manner suggested by Niagara Mohawk for the Rome Kingsley Avenue MGP OU 1 ROD. "Visual tar or NAPL", as defined for this ROD, is soil found to be saturated with NAPL, or have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens will not to be considered for removal as " visual tar or NAPL". Soils exhibiting odors, staining and/or sheens will however be removed if found to exceed the 1000 ppm PAH criteria.

- No qualification of the extent of visible tar or NAPL, such as a "3-inch thick seam extending at least 10 feet beyond the excavation and exceeding a volume of 10 cubic yards", will be considered.
- The limits of the excavation will be defined during the pre-design investigation
- Excavation will be limited to a six foot depth. Only those impacted soils meeting the visual or 1000 ppm PAH criteria will have to be treated, material located above or between contaminated areas, within the areal limits defined for removal, can be stockpiled and reused as backfill without further treatment.

The ROD reflects these criteria.

COMMENT 45: An upper limit to the excavation volume must be included. If the soil removal volume estimated by the pre-design investigation greatly exceeds the volume estimated in Table 4 (beyond the "plus 30 percent" range), the mass removal analysis performed in the FS or PRAP is not valid. If this volume is exceeded, the removal would focus on the most concentrated materials up to the volume estimated by the mass removal analysis.

RESPONSE 45: The NYSDEC recognizes Niagara Mohawk's concern that volumes to be excavated could increase significantly as a result of the pre-design investigation; however, the setting of an upper limit in the absence of data to determine how this will be accomplished or the resulting impact on the protectiveness of the remedy is not possible. Should the pre-design investigation result in significant increases in volume, the remedy can be reevaluated. Also see RESPONSE 40.

COMMENT 46: Page16 &17, #1 and #4: Removal beyond the structural sources and surface tar proposed in the 1997 Draft FS is not warranted and, at a minimum, should not exceed that volume provided in the 1999 Department-approved FS. Any measure of additional removal beyond that proposed in the 1997 FS will not substantially improve groundwater quality.

The FS consultant evaluated years of previous water level data in response to DEC comments and had determined that this figure roughly corresponded to the average site water table elevation.

RESPONSE 46: The Department selected remedy acknowledges the difficulty of excavation "significantly below the water table", but considers the water table on a site wide basis as opposed to the perched situation apparent in the middle of the site. A six foot excavation does not represent a significant excavation below the water table. Recent excavations undertaken as part of the force main relocation were completed well below this depth with no extraordinary efforts. See RESPONSE 28.

COMMENT 47: The site contains underground utilities, a gas regulator station and a substation vital to the City of Utica. The removal or relocation of these facilities was not contemplated during the feasibility studies and is not addressed by the PRAP. The cost to relocate these pipes has not been addressed in the PRAP and, if evaluated with respect to the volume of material immediately around these pipes/conduit, it would be considered infeasible. Therefore, the preferred remedy should allow for a reasonable offset from the pipes/conduit.

RESPONSE 47: The NYSDEC is aware of the presence of some active gas and electrical infrastructure and the ROD recognizes that utility relocation will not be required and that reasonable setbacks may be necessary.

COMMENT 48: Page 17, #2: The removal of soil in the floodway should be limited to 1,000 ppm within a reasonable depth for excavation (6 feet) or the water table. To increase the depth of the excavation beyond this would result in substantial cost increases beyond that estimated in the PRAP. If flowable NAPL is present below 6 feet, Niagara Mohawk proposes removal via a passive recovery system similar to that described in #6 (PRAP, page 18). Alternatively, the Department could consider requiring additional engineering controls be proposed and approved of during the design for residuals left below this depth. We assume the remediation goal the Department is attempting to achieve is primarily the elimination, to the extent practicable, of the environmental threat associated with the potential migration of contaminated soil and contaminated surface water into the adjacent surface water bodies. Secondary goals might also include issues associated with the groundwater. We believe removal of 6 feet of material in the floodway and subsequent replacement of these areas with clean fill will accomplish this goal without the need to extend the excavation below this level.

RESPONSE 48: The ROD has been revised to clarify that this removal is limited to the Lee Street sewer extension vicinity. Should the problem be determined to be more extensive during the pre-design delineation, alternatives such as those outlined above could be considered.

COMMENT 49: Page 17, #4: Requiring activated carbon be used prior to discharge without proper evaluation is not appropriate and may not be cost effective. Discharge limits should be provided so that a remediation system can be properly designed. Treatment systems using a thermal oxidizer or catalytic oxidizer can be less than 1/3 the cost while affording the same level of treatment.

RESPONSE 49: Agreed, the reference to activated carbon has been removed from the ROD. A decision on an air stream treatment technology will be reserved for the design. Discharge limits will be determined in accordance with Air Guide 1, as stated Section 8, item number 5 of the PRAP and now the ROD.

COMMENT 50: Page 18, #5: Treatment of site materials to individual TAGM 4046 recommended soil cleanup objectives is not appropriate, will be difficult to achieve and will add excessive cost to the project. The concentrations presented in TAGM 4046 are intended for unrestricted future site use. Future use restrictions will be implemented as described on page 16, item #6 of the PRAP. It is assumed that the Department feels that 10 ppm cPAHs in surface soil is protective of human health. This is substantially less restrictive than individual TAGM 4046 constituents.

RESPONSE 50: The NYSDEC does not consider that achieving TAGM 4046 levels in the treatment of soils to be inappropriate for this, or any other site, where thermal desorption will be utilized to treat MGP related contaminants in soils or sediments. Trial burns and operation of commercial units have shown that these levels can be routinely achieved with properly designed, operated, and maintained thermal desorption units. These levels are utilized for the permit at the commercial unit in operation NYS which has treated significant quantities of MGP related waste

successfully and, given the competitive prices quoted for treatment and disposal, economically. However, it has come to our attention that during the treatment process, benzene related compounds can be created during the PAH destruction reaction which result in difficulty attaining the TAGM objective for benzene of 0.06 ppm in soil, for the protection of groundwater. Therefore, in lieu of the TAGM objective, we agree that 0.1 ppm can be utilized for benzene, with the levels for the other volatile and semivolatile compounds remaining the TAGM levels.

COMMENT 51: As the soil will be placed back on the site and potentially below the soil cover, the effort to treat the soil to TAGM 4046 concentrations is not appropriate. An appropriate treatment standard for material placed within the upper 2 feet would be that required for the site surface soil or a $1x10^{-6}$ risk factor. Soil placed below the 2-foot cover should be performance based.

RESPONSE 51: The NYSDEC and NYSDOH have considered such a two tiered approach and the ROD reflects the following concept. The thermal desorption unit operating parameters will be determined, based on trial burns of representative site related contaminated media. These parameters will be set so that the treated soil will be expected to achieve the TAGM objectives, with exception of benzene, which will be 0.1 ppm (see RESPONSE 50). Once the operating parameters are determined, the system will be operated at these parameters at all times. During actual operation if treated soil does not achieve these objectives, but is below 10 ppm total cPAHs and 0.1 ppm benzene, it could be utilized for fill in areas which will be under the two foot soil cover. The 10 ppm total cPAH represents the level reached by all confirmatory sampling during the Field Test of MGP Remediation Technologies - Thermal Desorption at the NIMO-Harbor Point Site.

COMMENT 52: Page 18, #6: Please clarify that a passive system will be required for NAPL recovery in accordance with the findings of the NAPL Extraction Demonstration.

RESPONSE 52: A passive system is what was contemplated by the PRAP and this has been clarified in the ROD, along with the ability to upgrade the system to an active or partially active system should tar production by individual wells warrant.

COMMENT 53: Page 18, #8: The need to remove approximately 9,000 cubic yards of soil should be provided. The barrier wall at the former WGP will provide an effective barrier to contaminant migration.

RESPONSE 53: The removal of the MGP structures (tar well and drip box) and associated NAPL laden materials, as well as the surface tars, which the 9000 cubic yards represents are significant source areas. Source areas of this kind are consistently removed when identified at superfund sites in NYS. For example, when remediating a former industrial landfill, when drums or other significant sources of contamination are identified they are routinely removed prior to undertaking closure activities, such as capping and containment walls. This is also consistent with what has been required at MGP sites in Rome, Saratoga Springs and Troy.

COMMENT 54: Figure 10: Although property boundaries are not shown on Figure 10, it appears that the air sparge/SVE and soil removal boundaries on the former Texaco MVO site are not consistent with past studies.

RESPONSE 54: Figure 10 is intended to show in general the areas which will be the focus of the variety of remedial actions to be undertaken as part of the overall remedy for these three sites. Due to the large scale necessitated the limits depicted may be not be as well refined as other more focused figures or studies. As identified previously, predesign investigation will determine delineation of these areas for implementation of the remedy, consistent with the basis provided in Section 8, number 5.

COMMENT 55: We have evaluated the remedy selected by the PRAP and offer an alternative remedy. We believe that this alternative remedy is as protective of human health and the environment as Alternative 3A, yet is cost effective. Elements of this alternative remedy are as described below:

1. Elements of Alternative 2, #1 and #2 and Alternative 3a, #9
   Purifier Waste within the floodway that contains the characteristic prussian blue staining to a maximum depth of 6 feet or the water table will be consolidated beneath the WGP area cap. The purifier waste consolidated at the WGP would be capped with a low permeability cap. The remedial design would determine the maximum limit of purifier material that could be placed within the wall. The cap would satisfy the requirements of a final cover system specified in Part 360-2.15.d. The need for gas a collection system, however, would be evaluated during the remedial design or after operating data is available and indicates that a collection system is not required.

2. Elements of Alternative 2, #3
   A two foot-thick soil cover will be placed over the ANIMO@ Central Area, the WGP and non-Texaco MVO site. The cover would consist of clean imported fill and/or site soil or sediment treated to the site surface soil standard established in element 3 (below). Beneath the two-foot soil cover, a commercial grade filter fabric would be installed to serve as a demarcation layer. The upper six inches of the soil cover would have to be of sufficient quality to support vegetation. The remedial design would evaluate the need for armoring or other stabilization of areas of the cover subject to possible erosion adjacent to the floodway. Acceptable alternatives to the soil cover would be sidewalks, parking lots, building footprints, or other approved strategies that provide a barrier to contact with the contaminated subsurface material.

3. Elements of Alternative 2, #4
   In the NIMO Northern and NIMO Southern Areas, surface soil (defined as the upper 2 feet) beyond the area of the soil cover exceeding an average 10 ppm cPAHs would either be removed or be covered with two feet of clean fill. A more complete characterization of the surface soil would be conducted during the remedial design process.

4. Alternative 2, #5 and #6 (As described in the PRAP)

5. Elements of Alternatives 3A, #1 - #4
Source material associated with former structures (Niagara Mohawk property, not including the WGP) near water bodies will be excavated to a depth of six to eight feet and within an area five feet around the perimeter of each structure. This will include approximately 8,930 cubic yards at the central gasholder and approximately 4,740 cubic yards at the former coal gas plant. Up to 5,000 cubic yards of viscous surface tars outside of the former WGP will be excavated where the potential for upward migration through the soil cover exists. Contaminated material consisting of soil containing PAHs greater than 1,000 ppm and visual tar or NAPL contaminated soil from the areas identified in Table 4 would be removed to the shallower of a six-foot depth or the water table and treated. Visual tar or NAPL will be defined based on a 3-inch thick seam extending at least 10 feet beyond the excavation and exceeding a volume of 10 cubic yards. The limits of the excavation will be defined during the pre-design investigation. If the soil removal volume estimated by the pre-design investigation greatly exceeds the volume estimated in Table 4 (beyond the Aplus 30 percent@ range), the removal will focus on the most concentrated materials up to the volume estimated by the mass removal analysis.

6. Elements of Alternative 3A, #4
At the Mohawk Valley Oil Site, all soil containing greater than 1,000 ppm PAHs and visual tar or NAPL contaminated soil, to the shallower of a six-foot depth or the water table and treated. Visual tar or NAPL will be defined based on a 3-inch thick seam extending at least 10 feet beyond the excavation and exceeding a volume of 10 cubic yards. The limits of the excavation will be defined during the pre-design investigation. If the soil removal volume estimated by the pre-design investigation greatly exceeds the volume estimated in Table 4 (beyond the Aplus 30 percent@ range), the removal will focus on the most concentrated materials up to the volume estimated by the mass removal analysis.

An in-situ air sparging and soil vapor extraction (AS/SVE) system would be installed at the Mohawk Valley Oil site. The system would inject air into the groundwater in any area of the aquifers where benzene is greater than 1 ppb, to promote the volatilization of BTEX and, to a limited extent, certain PAHs. The introduction of air would also enhance biodegradation of the BTEX and PAHs. The volatilized compounds would be recovered from the treatment by using a vacuum applied to the unsaturated zone. This vapor phase air stream discharge would comply with applicable regulatory standards. A series of wellheads optimally spaced would be used for both injection and extraction. The treatment system would be operated until groundwater contaminant concentrations achieved groundwater standards or until vapor concentrations reach asymptotic levels for six months.

7. Elements of Alternative 3A, #5
The source material associated with former structures would be treated by a low temperature thermal desorption unit. If the soil is placed onsite at the surface, the upper two feet will comply with the surface soil standard established in Niagara Mohawk element #3 above.

The upper six inches of the soil cover would have to be of sufficient quality to support vegetation.

8. Elements of Alternative 3A, #6 and #2
Within the regulated floodway, including the area of the former Lee Street extension sewer outfall and the area of monitoring well MW-505I, a series of NAPL recovery wells or trenches will be installed. The remedial design would determine the aerial extent of the NAPL recovery.

9. Alternative 3A, #7 (As described in the PRAP)

10. Alternative 3A, #8 As described in the PRAP with the exception of soil removal.

11. Alternative 3A, #10 and #11 (As described in the PRAP)

RESPONSE 55: NYSDEC has revised Section 8 of the ROD to take into account, in whole or in part, some the elements of the Niagara Mohawk alternative remedy identified by this comment. The NYSDEC's evaluation of the elements of the Niagara Mohawk alternative are discussed in RESPONSES 29, 33-40 and 44-53.

A letter dated March 23, 2002 was received from Mr. Frank J. Williams of Earth Tech Inc., on behalf of ChevronTexaco Corporation , providing the following comments on the PRAP:

COMMENT 56: Operable Unit 1 has historically referred to only to the NIMO portion of the peninsula, as indicated on the cover of the PRAP and in the last paragraph of [Section 2]. If Operable Unit is now defined as including the MVO Site, it should include the NYTEP Site as well.

RESPONSE 56: The ROD has been revised to remove this reference to the MVO site as part of Operable Unit 1 of the Harbor Point site. Also see RESPONSE 3.

COMMENT 57: [Section 3.1.] The description of the MVO Site contains some inaccuracies. The NIMO Light Oil Plant reportedly occupied the entire northern portion of the MVO Site, including the parcel later occupied by Rosselli Tar Asphalt Services. NIMO refined benzene and light oil from the oils condensed from the raw gas generated by the coal gasification plant. The northern portion of the Light Oil Plant, which became known as the Niagara Flats Terminal, was acquired by Mohawk Valley Oil Company in 1961 and utilized for storage and distribution of Number 2 and Number 4 Fuel Oils. The 1.9 acre parcel in the southern portion of the MVO Site was purchased by Texaco in approximately 1917 and, by 1938, five large vertical tanks were erected at different locations on this southern portion. Texaco marketed kerosene and straight distillate gasolines from its terminal, not fuel oil. In 1965 Texaco sold the terminal to Mohawk Valley Oil Company, which used the terminal for storage of Number 2 and Number 4 Fuel Oils.

RESPONSE 57: The NYSDEC modified Section 3.1 to account for the comment. The NYSDEC notes the additional detail, but does not believe it is necessary to revise the ROD, inclusion of this comment in the responsiveness summary incorporates this for the record.

COMMENT 58: Page 5, column 2, paragraph 3, line 3. No hazardous wastes were generated or released by the petroleum terminal operators. As noted in the DEC's Registry of Inactive Hazardous Waste Disposal Sites (April, 2001), the hazardous wastes identified at the MVO Site are MGP wastes (hazardous waste code D018) and chlorinated solvents from the nearby Monarch Chemical Site.

RESPONSE 58: The NYSDEC acknowledges that petroleum contaminated media and debris are not regulated as hazardous wastes. However, consistent with the Registry, there are hazardous wastes and hazardous substances at the MVO Site of both on-site and upgradient origins. Remediation of petroleum related contamination, if mixed or co-mingled with hazardous waste, is required at Registry sites, as is petroleum related contamination unrelated to hazardous waste pursuant to Article 12 of Navigation Law.

COMMENT 59: Page 11, column 1, 7 lines from bottom. The statement that the Washington Street storm sewer "is aligned through NAPL-laden soils at MVO" is misleading. The NAPL-laden soils through which the sewer is aligned are along the western, upgradient edge of the MVO Site. The storm sewer is not on the MVO Site except for a small portion that cuts across the northern tip of the site. Furthermore, the data indicate that the NAPL found along Washington Street did not originate on the MVO Site. For example, the boring logs for monitoring wells MW-13S and MW-131, located on Washington Street next to the MVO Site, describe the soils as "coal tar saturated."

RESPONSE 59: The NYSDEC is not aware of data which would support a conclusion that all or a portion of the NAPL found along Washington Street could not have been of MVO origin. Since former operations at the MVO Site included the refining of coal gasification byproducts, it would not be unreasonable to find coal tar on or adjacent to the site. Also, NAPLs have been demonstrated to migrate independent of the groundwater flow direction. Thus, while a portion of the Washington Street sewer is hydraulically upgradient of the MVO Site, this would not preclude the migration of NAPL to the sewer from the MVO Site. The description of the storm sewer alignment, from this comment, is reflected in the ROD.

COMMENT 60: Page 13, column 2, paragraph 2, line 2. Niagara Mohawk has not acknowledged any responsibility for contamination present on the former Texaco parcel of the MVO Site. However, as discussed below and during Texaco's meeting with the DEC in late 1999, there is abundant evidence that the soil and groundwater at the former Texaco terminal are contaminated by MGP wastes, including NAPL, benzene and PAHs that migrated to the parcel from adjacent areas.

RESPONSE 60: The remedy selected by the ROD does not discriminate between former Texaco and non-Texaco owned property. The MVO Site includes, the Niagara Flats Terminal (parcel 1), the Rosselli Associates Tar Asphalt Services Parcel (parcel 2) and the former Texaco Terminal

(parcel 3). Contamination at the site is identified in Section 4 of the ROD. The NYSDEC will pursue all potentially responsible parties for the remediation of the site.

COMMENT 61: Page 28, column 1, paragraph 5. Reference is made to Figure 10, which indicates that soil in excess of 1,000 ppm total PAHs will be removed from the former Texaco parcel. However, the subsurface soil analytical data indicate that there are no areas on the Texaco parcel that exceed 1,000 ppm total PAHs (Figure 8). The PRAP provides no justification for excavating soils on the MVO Site to a depth of 9 feet instead of the 6-foot depth required on the NIMO property.

RESPONSE 61: The NYSDEC agrees the data to date has not indicated PAHs in excess of 1,000 ppm on the former Texaco parcel. As noted in RESPONSES 44, and 54, predesign investigations will confirm the limits of excavation for PAHs, coal tar and NAPL, and for the MVO site, the limits of the AS/SVE system. The PRAP followed the Niagara Mohawk FS recommendation to excavate to nine feet below ground surface at this site, since the greater depth to the water table in this area made the deeper excavation feasible, allowing a significant percentage of the waste in the impacted soils in this area to be removed. Because of its large scale, Figure 10 is intended to be a summary and is not intended to fully delineate every removal area. This delineation will be made based on the pre-design investigation.

COMMENT 62: Page 28, column 2, paragraph 5, 10 lines from bottom. The sparge/SVE system installed on the Texaco parcel may not achieve groundwater standards or asymptotic levels for benzene unless the upgradient sources of the benzene are addressed first. Investigations conducted by NIMO indicate that benzene in the shallow aquifer beneath the Texaco parcel has been migrating from coal tar source areas located west of the Texaco parcel. Benzene in the intermediate aquifer has been migrating to the Texaco parcel from source areas on the former Water Gas Plant.

RESPONSE 62: The sources of benzene upgradient of MVO will be addressed to the extent feasible through contaminated soil/ NAPL/tar removal and provision of a barrier wall. However, a reduced volume of the benzene source will remain following the completion of the remedy. Although sources of benzene will remain, particularly in the core of the peninsula, the AS/SVE system will reduce contaminants in the groundwater prior to its discharge to the Utica Harbor by treating contamination in the soil of the MVO site, as well as treating groundwater passing through the site before discharge to the Harbor. This is in keeping with the ROD's goal of eliminating, to the extent practicable, contaminants discharging into adjacent surface water bodies.

COMMENT 63: Page 29, column 1, paragraph 9. The PRAP does not adequately explain the purpose of the WGP barrier wall or the basis for installing it around "a portion of the Monarch Chemical Site where PAH concentrations in soil are greater than 1,000 ppm." If the intended purpose of the barrier wall is the containment of NAPL and groundwater contaminated by the NAPL, consideration should be given to revising the alignment of the wall to encompass these wastes where they have been found north of the Water Gas Plant parcel.

Boring and test pit logs from a number of studies, including the Pre-Design Investigation by Camp Dresser & McKee, provide abundant evidence that MGP wastes are present in the northern end of

the Water Gas Plant (WGP) panhandle. The same data show that these wastes have migrated to the north and east, beyond the proposed barrier wall alignment. The MGP wastes include coal tar and possibly oil from a former NIMO-owned above ground tank located in the northern portion of the WGP panhandle; Coal tar is present at considerable distances from the WGP panhandle along the south side of Lee Street and the MGP wastes, including coal tar and possibly oil, migrated to the north, as evidenced by direct observations in subsurface soils on the Texaco parcel.

If the intended purpose of the barrier wall is to contain NAPL and groundwater contaminated by the NAPL, consideration should be given to revising the alignment of the wall to encompass these wastes where they have been found north of the Water Gas Plant parcel.

RESPONSE 63: The intended purpose of the barrier wall is to contain NAPL and contaminated groundwater where feasible on the peninsula. Although the NYSDEC has approved a preliminary alignment of the wall, a final alignment has not been approved at this time. The majority of the NAPL impacted areas of the Water Gas Plant area and the Monarch Chemical site will be contained within the wall using the 1,000 ppm PAH critieria. The wall cannot be feasibly extended north of the water gas plant because of the increasingly greater depth to a suitable confining layer to key the wall into. NAPL and groundwater contamination on the MVO site north of the water gas plant will be addressed either through removal or groundwater treatment components of the selected remedy.

A letter dated March 25, 2002 was received from Michael Slenska of Beazer East, Inc. (Beazer), which conveyed an attached comment document containing the following comments on the PRAP.

COMMENT 64: The Department did not follow its own guidance document (TAGM 4022) or Department regulations (6 NYCRR 375-1.10) relating to remedy selection; nor did it follow the terms of the Order on Consent covering the investigation of the NYTEP site; and so, its proposed remedy was developed in an arbitrary and capricious manner.

RESPONSE 64: This comment comes from respondents under a Department Order on Consent committing them, among other things, to undertake the investigation of the NYTEP property and to recommend a remedy for that property.

In short, the Department disagrees with the commenter: the Department followed its own guidance and regulations in proposing the remedy for the Harbor Point peninsula, which includes the NYTEP property.

As to the assertion that the Department failed to follow the terms of the Consent Order issued to the commenter, it first must be understood that the obligations under the investigatory portions of a State Superfund consent order are to generate information sufficient to enable the Department to evaluate various remedial approaches and then to propose one to have implemented. The Department, therefore, may waive the necessity of a respondent to honor certain obligations identified in the consent order when it concludes that it has enough information to make its own remedial evaluations and decisions, and did so here. The Department met with the commenter on June 25, 2001 and told

it of the Department's conclusion, based upon information contained in the commenter's Remedial Investigation/Risk Assessment Report dated September 10, 1999 and upon other information within its possession, that prevention of further groundwater resource degradation and groundwater quality restoration would serve as key remedial objectives. The Department's decision to waive the commenter's obligation to submit a Feasibility Study also was based upon the Report's failure to interpret data correctly and to conclude that the contaminant sources found at the site constitute threats to the groundwater resource, despite repeated Department attempts to have the commenter correct the Report; and the Department's conclusion that any remedial proposal in a Feasibility Study the commenter would have generated from the Report would fail to protect the groundwater resource, thereby making it a futile exercise to demand something of the commenter that would not adequately address a key Department concern. This conclusion essentially meant that honoring these remedial objectives would result in cleanup goals more stringent than those that would pertain had groundwater protection and restoration not been an issue and the key concern was to ensure that current and future uses could proceed safely. Accordingly, by letter dated July 16, 2001, the Department notified the commenter that it did not have to undertake a Feasibility Study, the document in which the consent order authorized the commenter to submit a site-specific assessment (at Subparagraph I.A.1[1]). Instead of challenging this notification, the commenter elected, as its July 30, 2001 letter to the Department states, to work with the Department to develop a "mutually acceptable remediation approach for the Site" but ultimately failed to do so. The Department believes, therefore, that it did not violate the consent order issued to the commenter and that in fact, the commenter did violate it. It also believes that it tried to save the commenter the expense and effort of developing a study that would have generated cleanup objectives inadequate for groundwater protection and restoration and that therefore the Department would have rejected.

---

[1]The full text of the provision is as follows: "Respondents may include as part of the focused Feasibility Study's evaluation of on-Site remedial actions to eliminate or mitigate, to the maximum extent practicable, all health and environmental hazards and potential hazards attributable to disposal or release of hazardous substances, remediation cleanup levels based upon a site-specific risk assessment that shall consider a range of exposure scenarios and assumptions...[and] which may include appropriate institutional controls. The site-specific risk assessment shall be consistent with guidance and regulations for exposure assessment developed by the United States Environmental Protection Agency pursuant to CERCLA and other statutory authorities as applicable; and any proposed remediation cleanup level based upon a Site-specific risk assessment shall be protective of the public health and safety and of the environment....Unless the Department determines that such risk assessment is not consistent with the expected future uses of the Site, and or not consistent with peer-reviewed scientific evidence or methodologies, or appropriate guidance and regulations--in which case, the Department shall provide Respondents with a written explanation of the basis for such a determination--the Site-specific risk-based remediation cleanup level determined by application of the risk assessment shall be approved by the Department and shall be used for purposes of selecting the remedial alternative for the Site and other areas covered by the focused Remedial Investigation."

The commenter makes a number of other statements in sections 1 and 2 of its remarks relating to the adequacy of its Remedial Investigation/Risk Assessment Report. Essentially, the commenter believes that it is adequate; and the Department believes that only the data are adequate and they are enough to enable the Department, in conjunction with other information it has, to develop remedial alternatives and to propose a remedy.[2]

The commenter also asserts that a single ROD covering multiple sites is arbitrary and capricious. The Department disagrees. What the Department has done here reflects past Department practice when dealing with a number of sites in close proximity to each other having similar hazardous substance constituents, geology, and receptors and potential receptors. Witness, for example, the ROD for ALCOA, March 1991; ROD for ALCOA, January 1992; ROD for Former Autoline Automotive Site, 89 Frost Street Site and Former Applied Fluidics Site, March 2000; ROD for Northrop Grumman and Naval Weapons Industrial Reserve Plant Sites March 2001. Nothing in the commenter's order expressly precludes the Department from combining this site with others for remedy determination purposes.

COMMENT 65: Section 3.1. Neither the Harbor Point RI nor the Mohawk Valley RI analyzed conditions at the NYTEP Site, and thus neither present any details concerning the health risks that may be presented by the conditions at the NYTEP Site.

RESPONSE 65: While the NIMO - Harbor Point Supplemental RI and the MVO RI do not specifically discuss the NYTEP Site, data collected from the NYTEP RI showed that NYTEP, like NIMO Harbor Point and MVO, has the same contaminants in concentrations in excess of the SCGs and the same exposure pathways, not only for human health exposure but also for environmental exposure. The NIMO Harbor Point, MVO and NYTEP risk assessments were each used in the remedy selection process to identify potential exposure pathways which need to be addressed. It is important to note that these risk assessments do not discuss the groundwater as an environmental resource, that, if damaged, must be actively corrected. Often, and this is the case at NIMO Harbor Point, MVO, and NYTEP, the remedial actions to correct the damage to the groundwater, an environmental resource is the driver of the remedy, overshadowing the remedial actions needed to address the human health risk or exposure.

COMMENT 66: The PRAP neglects to indicate that a Human Health and ecological risk assessment of the NYTEP Site was conducted. The PRAP should include reference to the risk assessments for NIMO Harbor Point and MVO.

---

[2] More fully explained: "While the data gathered during the investigation ... is satisfactory, the Department found the report unsatisfactory in its interpretation of that data, and does not accept certain conclusions drawn in the narrative report ... For purposes of proceeding with this project, the Department will use the data and identified human health exposure pathways in developing remedial objectives for the combined site PRAP. Beazer is thus relieved of its obligation to undertake further work on the Remedial Investigation/Risk Assessment Report to the satisfaction of the Department." Spellman to Slenska letter dated July 16, 2001.

RESPONSE 66: Section 4.3 of the ROD references the NYTEP risk assessment. The NYSDOH reviewed the RA and, although there were some differences regarding assumptions made and methods used, the differences would not have affected the selection of a remedy, therefore NYSDOH did not pursue this with the PRP's consultant.

COMMENT 67: The PRAP does not indicate whether the potential exposure pathways identified in Section 4.3 are complete or hypothetical.

RESPONSE 67: The language from the PRAP, already reflects this comment since it states that " ...the following pathways are know to, or may exist, at the peninsula:" To clarify this issue, the ROD states, "The NYSDOH considers all of these pathways to be complete, with the exception of the exposure through ingestion of groundwater. This is considered a potential pathway and action will be required to prevent it from becoming a complete exposure pathway."

COMMENT 68: Because this area is currently supplied with municipal drinking water and because the anticipated future land use is commercial/industrial, ingestion of groundwater as a source of drinking water by an on-site resident should not be considered a potentially completed pathway; the PRAP should be revised accordingly.

RESPONSE 68: Neither the ability to supply the area with municipal drinking water nor the anticipated future land use as being commercial/industrial preclude one from providing a well(s) at the sites from which there could be ingestion of groundwater contaminants. Ingestion of groundwater whether in a residential or commercial/industrial scenario is still a potential exposure.

COMMENT 69: The mere existence of a completed exposure pathway does not connote that an unacceptable risk exists that requires remediation. The PRAP further does not indicate what criteria are used to determine whether the risk from a potential exposure pathway is considered unacceptable. The PRAP should be revised to describe in more detail the potential receptors and the portions of the peninsula for which an unacceptable potential risk may exist as a result of these potential exposures. Further, the PRAP should be clarified to state whether such exposures are "known to exist" or "may exist," and whether risk management and remediation decisions will be made on the basis of risk associated with potential exposure pathways that are "known to exist" or "may exist."

RESPONSE 69: As indicated in Section 4 of the PRAP, NYSDEC standards, criteria and guidance values are used in conjunction with 6 NYCRR 375-1.4 to determine whether a significant threat to the environment exists. The NYSDEC standards, criteria and guidance values have risk based origins which are protective of both public health and the environment. In some cases environmental SCGs are more conservative and thus environmental concerns must be taken into consideration as well as human health. The determination of the threat to public health is made by the NYSDOH considering a combination of quantitative risk assessment and a qualitative assessment of ongoing and potential exposures. Risk management decisions are made on the basis of numerical risks for any ongoing and potential exposures, in conjunction with the NYSDOH policy of eliminating or minimizing exposures where feasible. The NYSDEC and NYSDOH believe the PRAP sufficiently describes these exposures and receptors in Section 4.

COMMENT 70: Certain of the potential exposure pathways evaluated in the NYTEP, NIMO and MVO risk assessments indicated that potential risks exceeding EPA's target risk range of 1x[10]-6 to [1x]10-4 or EPA's target hazard index of 1 may be associated with potential exposures to surface soil. The PRAP proposes to excavate surface soil with "[concentrations of total] PAHs exceeding 1000 ppm [mg/kg] or visual indication of tar or NAPL " and replace the soil with clean fill as a means of reducing constituent concentrations in surface soil. However, such potential exposures and subsequent potential risks can be reduced by simply eliminating potential exposure to surface soil containing such concentrations, rather than by removing the soil containing the concentrations. Reduction in potential risk associated with constituents in surface soil can be achieved by placing clean fill over the existing surface soil such that potential receptors contact the fill material instead of the underlying soil. For the purposes of reducing potential exposures of the receptors evaluated in the risk assessments, excavating the existing surface soil and replacing with clean fill accomplishes no more risk reduction than clean fill alone, while adding considerable cost.

RESPONSE 70: This comment fails to recognize that below the contaminated surface soil lies more hazardous substance contamination which, in addition to the surface soil, contaminates the groundwater resource. Also, contamination in the subsurface is able to move laterally into adjacent properties and to more environmentally sensitive areas such as the Utica Harbor and Mohawk River. Where exposure to surface soil is the sole threat, a soil cover may be determined to be sufficient to eliminate that exposure; there are areas on the peninsula where this is the case and the ROD reflects this. However, where there is surface and/or subsurface contamination which contaminates the groundwater, a mere covering of the surface must be rejected as a potential remedy because:

- a soil cover alone does not satisfy the remedial action objective of restoring the aquifer(s) to Class GA Water Quality Criteria to the extent practicable;
- a soil cover alone does not satisfy the NCP requirement of active response measures to address groundwater contamination;
- a soil cover alone does not satisfy the "protective of the environment" requirement unless all removal or treatment options have been determined to not be cost effective;
- a soil cover alone does not give preference to reducing the toxicity, mobility or volume of the hazardous waste constituents as required by regulation; and
- a soil cover alone would not reduce exposure should excavation be desired or required under the cover.

As described in Section 4, the majority of the peninsula, including all three sites, has both surface and subsurface contamination which contaminates the aquifer and migrates to the surface water bodies. Reduction in potential risk is a factor to be considered in remedy selection. However, other factors, which often overshadow reducing the potential risk, must also be considered in remedy selection.

COMMENT 71: The PRAP indicates that the preferred remedy for the three Sites includes excavation of soil containing "visual indication of NAPL or tar or containing concentrations of total PAH exceeding 1000 mg/kg." The PRAP provides no basis for the selection of this performance

standard. The PRAP does not indicate whether the concentration is based on potential risk associated with certain potential human exposures, ecological exposures, or other considerations.

RESPONSE 71: The basis for the visual criteria is described in Section 7 of the PRAP and in RESPONSE 44.

COMMENT 72: The conclusions presented in Section 4.4 do not represent potential ecological risks, if any, posed by the NYTEP Site.

RESPONSE 72: The NYSDEC believes that the following NYTEP contaminants result in or contribute to the degradation of the environmental resources of the Peninsula and Utica Harbor. NAPL and/or tar and/or contaminated soil was found at the surface and in the subsurface at the NYTEP Site. In addition NAPL, as well as tar and contaminated soil, was found adjacent to the NYTEP Site. NAPL was found in the Washington Street sewer which is aligned adjacent to the NYTEP Site and discharges to the Utica Harbor. Sediments in the harbor at the outfall contained NAPL and were contaminated with the same constituents as those constituents present at NYTEP. The Lee Street extension sewer similarly runs adjacent to the NYTEP Site. NAPL was found in the Lee Street extension sewer. Sediments in the river at the outfall contained NAPL and were contaminated with the same constituents as those constituents present at NYTEP. Sediments in the harbor and river exceed sediment SCGs. It is an appropriate remedial objective to eliminate to the extent practicable the environmental exposure pathways presented in Section 4.4.

COMMENT 73: Similarly, Section 4.4 indicates that another potential exposure pathway is migration of site-related constituents from the site to the Mohawk River and Utica Harbor via erosion of soils during a flood event. Because no evidence exists to demonstrate that erosion will cause constituents from the NYTEP Site to reach either of these surface water bodies at concentrations that would pose a potential risk to fish and wildlife resources, there is no need for remediation of the NYTEP Site to prevent these potential exposures.

RESPONSE 73: Tar and contaminated soil were found on the surface of the NYTEP Site, which is located in the floodplain. It is reasonable to assume a flood event could transport the tar and/or contaminants. Drainage of the flood waters would occur through the floodway, which includes the Mohawk River and Utica Harbor at this location. Flood waters would likely not dissolve the tar and thus contaminants in the tar would remain at concentrations above the SCGs. Dissolution of the tar would also be a detriment to water quality. For the protection of the environment, it is an appropriate remedial goal to prevent the transport of tar and/or contaminants into the surface water bodies to the extent feasible.

COMMENT 74: Section 4.4 of the PRAP also indicates that direct contact of ecological receptors to constituents in surface and subsurface soils and surface water may result in potential risks. As described above, no evidence exists to suggest that concentrations of NYTEP Site-related constituents in surface water could result in potential risks. Because the NYTEP Site is a small (3 Acres), highly disturbed, industrial property, surrounded by industrial properties, it does not represent important ecological habitat and, thus, is not likely to pose a potential risk to valued fish

and wildlife resources. In any case, a detailed baseline ecological risk assessment has not been conducted for the NYTEP Site, so the PRAP has no basis on which to conclude that direct contact risks to terrestrial receptors exist. Further, if such potential risks were to exist, they could be eliminated by simply covering portions of the Site. Excavation of on-Site soils is not required to eliminate the terrestrial direct contact exposure pathway.

RESPONSE 74: Surface tar and contaminated surface soil exist at all three sites. Along with the toxic effects of the contaminants, the sticky-physical nature of the tar allows the tar to adhere to wildlife where the tar could be transported off-site and brought to burrowing or nesting areas or contact other wildlife. Tar, contaminated soil and NAPL also exist in the subsurface at all three sites. Burrowing animals and root systems could be exposed to contaminants. Birds may be particularly sensitive to the toxicity of MGP wastes being transported to nesting areas. Quantities of 7,12 dimethylbenz(a)anthracene as low as 0.002 microgram on the surface of an egg can produce mortality and reduction in embryonic growth. For a more complete discussion of the toxicity of PAHs see *Polycyclic Aromatic Hydrocarbon Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review* Eisler, R Biological Report 85(1.11) Contaminant Reviews US Fish and Wildlife Service. There is evidence, at the NYTEP Site in particular, that tar in the subsurface is able to move upward and breakthrough to the surface; the effects of erosion would also cause subsurface contaminants to become surface contaminants. Contaminated surface water also exists on the peninsula which could spread to other areas of the peninsula through a flood event. Eliminating wildlife (as well as human) exposure to the tar and contaminants is an appropriate remedial goal to be protective of the environment.

COMMENT 75: The fourth environmental exposure pathway listed in Section 4.4 of the PRAP that could result in potential risk is direct contact by benthic invertebrates to sediments containing Site-related constituents that migrated to the sediments either via runoff or groundwater. As indicated above, no evidence exists to demonstrate that constituents from the NYTEP Site have or will reach surface waters at concentrations that would pose a potential risk to benthic life.

RESPONSE 75: As detailed in RESPONSES 25 and 72, the NYTEP site contributes to sediment contamination of the adjacent surface water bodies. Sediment concentrations exceed the NYSDEC sediment SCGs; the NYSDEC has determined that the sediment conditions in these waterbodies pose a significant environmental threat.

COMMENT 76: Moreover, on December 4, 2000 Beazer provided to NYSDEC comments on the total PAH (tPAH) sediment cleanup levels of 4 and 10 ppm contained in the Proposed Remedial Action Plan for the Niagara Mohawk Harbor Point Site Operable Unit 3 – Utica Harbor for the top two feet of sediment in Utica Harbor (Beazer, December 2000). Those comments provide two lines of evidence that question the basis of, and the need for, the proposed cleanup levels... Thus, the site-specific biological data provide no basis to suggest that remediation of Utica Harbor sediments is required and contradict the conclusion in Section 4.4 of the PRAP that potential risks to benthic life are large enough to warrant the upland remedy presented in the PRAP.

RESPONSE 76: This comment is not relevant to the remedy addressed by this ROD.

COMMENT 77: NYSDEC inaccurately states that there are no massive distinct confining units across the peninsula, however, a confining unit for the shallow water bearing zone was identified underlying the entire NYTEP Site... The presence of this confining unit is a significant site-specific factor to be considered for developing and evaluating potential remedial alternatives for the NYTEP Site. The PRAP ignores this unit in developing alternatives for the NYTEP Site.

RESPONSE 77: Boring logs for the NYTEP site investigations indicate vertical fractures, vert[ical] root systems, wood fragments and sand seams in the upper river deposits which Beazer refers to as a confining unit. These fractures, roots, wood fragments and seams lead to localized areas of higher permeability. The majority of the drilling logs for soil borings through these deposits recorded the presence of tar and NAPL. Regardless of what the hydraulic conductivity tests may average, NAPL and tar is present in the deposits and thus has not been "confined". Also, NAPL and contaminated groundwater is present below the upper river deposits and thus, even if the unit was confining, it would be of little use in developing a remedial alternative.

COMMENT 78: The text in Section 4.1.3 of the PRAP references Figure 5, which purportedly depicts measurable nonaqueous phase liquid (NAPL) thickness. In the legend of Figure 5, NYSDEC incorrectly states that no NAPL thickness data was available on the NYTEP Site. ... ... As part of the NYTEP RI/RA field investigation, eight shallow monitoring wells and five intermediate zone monitoring wells were inspected, monitored, and sampled. Of these thirteen wells, only MW-507, an off-Site intermediate zone groundwater monitoring well located southeast and hydraulically and geologically upgradient of the Site, contained NAPL. Figure 5 in the PRAP should be revised to provide an accurate description of NYTEP Site conditions, which utilizes all of the available NAPL information. Accordingly, the text of the PRAP should be revised to state that no separate phase NAPL was observed in monitoring wells located on the NYTEP Site.

RESPONSE 78: Because a delayed entry effect can occur, in which it can take several months for NAPL to enter a monitoring well (which has been observed by the NYSDEC repeatedly at MGP sites), measuring for NAPL in monitoring wells should occur over a period of several months. This was not done at NYTEP and therefore the NYTEP data is inconclusive regarding measurable NAPL in NYTEP wells. Section 8, number 7 of the ROD reflects that additional data will be collected during the design phase.

COMMENT 79: The text inaccurately states that surface soils were collected distinct from visibly contaminated areas of the Site. As part of the RI field investigation Beazer collected surface soil samples and surface road tar samples. As discussed in the NYTEP Site RI/RA Report, Section 2.1.2, numerous soil samples were located, collected and analyzed specifically because of the presence of Site-related constituents. As concluded in Section 6.1 of the NYTEP RI/RA Report, no VOCs were present in the Site surficial soils at the NYTEP Site, however, VOCs were detected in the surface road tar samples.

RESPONSE 79: The PRAP text was correct and remains in the ROD. As pointed out by the comment, surface soil and surface tar samples were collected separately and their corresponding analyses reported separately.

COMMENT 80: The text states that "There are three areas on the peninsula where groundwater contaminants exceeding the SCGs discharge to the adjacent water bodies. These areas are the Lee Street Extension Sewer outfall, the CGP area, and the MVO Site." Note that the NYTEP Site is not adjacent to any of these potential discharge locations and that there is no evidence to demonstrate that constituents from the NYTEP Site have, or will, migrate(d) to these potential discharge locations. In addition, current and future discharges from the Lee Street Sewer Extension outfall were remediated by NIMO as part of the interim measure for this area.

Beazer requests that NYSDEC provide the basis for this statement. Furthermore, Beazer requests that NYSDEC identify whether or not this discharge is being attributed to the NYTEP Site.

RESPONSE 80: The statement quoted above is concluded from the NIMO-Harbor Point RI reports, including the Phase II Groundwater Investigation report. (Beazer's investigation was limited to the NYTEP Site.) NAPL, tar and contaminated soil on the NYTEP Site contribute to peninsula-wide groundwater contamination, which discharges to the surface water bodies. In addition, migration of NAPL, a groundwater contaminant source, occurs to the surface water bodies as described in RESPONSES 25 and 72.

COMMENT 81: The NYSDEC inaccurately states that the NYTEP Site wastes and conditions are the same as the surrounding NIMO site, therefore, NYSDEC evaluated NYTEP in accordance with the NIMO FS. As discussed above, important differences exist between the NIMO Sites and the NYTEP Site. Appropriate alternatives must be developed and evaluated for the NYTEP Site. Furthermore, as discussed in Sections 1 and 2 above, the NYTEP Site Consent Order requires that a separate FS be conducted for the NYTEP Site.

RESPONSE 81: Since the comment did not specify what the perceived differences are, a specific response cannot be given. As indicated in the ROD, the remedial objectives, particularly those objectives relating to the protection of the groundwater resource, can only be achieved efficiently through a holistic remedy applied to all three sites. This is in consideration of:

- Figure 2-1 of the NYTEP RI report which shows surface tar bounded by the property line. While Beazer was only required to investigate Suit-Kote property, this is not accurate; in reality the tar extends beyond the property line onto adjacent property.
- Figure 2.1 of the Data Gap Investigation Report which shows NAPL bounded by Niagara Mohawk's property line and indicates "No NMPC Testing Data" on the NYTEP Site. In reality NAPL exists on NYTEP as well, thus straddling the property line in the subsurface.
- Niagara Mohawk drilled 23 borings within 20 feet of the NYTEP Site. 8 borings were drilled on the NYTEP Site within 40 feet of the property line. The borings on both sides of the property line show NAPL or tar present in the soil at depths ranging from the ground surface to approximately 27 feet. 36 monitoring wells exist within 100 feet of the NYTEP Site; eight monitoring wells exist on the NYTEP Site. Groundwater contamination exceeding the SCGs for many of the same chemical compounds was found on both sides of the property line. The stratigraphy reported for the NYTEP Site (Figure 3-3, NYTEP RI

report) is consistent with the stratigraphy for the NIMO Harbor Point Site (Plate 3.2, Phase II Investigation Report) and the MVO Site (Figure 3.5, MVO RI Report). Upon evaluation of the data presented to the NYSDEC, the NYSDEC concludes there are no differences in the stratigraphy, nor differences in contaminant distribution within those soils to warrant significant separate remedial evaluation of the two sites.

- Monitoring well MW505I lies within 20 feet of the NYTEP Site boundary. This well has the highest recovery rate of NAPL on the peninsula. The NYTEP Site has not been investigated for NAPL recovery (see RESPONSE 78).
- A trespasser would likely not be able to distinguish the NYTEP Site from the NIMO Harbor Point Site. Although fencing exists, neither site is completely fenced and it is not known whether the fence coincides with the property line.

See RESPONSE 64, regarding the NYSDEC's adherence to the consent order.

COMMENT 82: The PRAP should address the inter-relationship between the remedial activities selected in this PRAP and the recently issued Record of Decision for the Utica Harbor (Harbor ROD, March 2001). Certainly, if an ongoing groundwater discharge were continuing into the Utica Harbor, this discharge would need to be addressed before implementation of any Utica Harbor remedial activities.

RESPONSE 82: The ROD reflects the inter-relationship between the remedial activities selected by this ROD and the March 2001 Record of Decision for the Utica Harbor. Assuming coordination among all parties involved, the discharge will be addressed concurrently with Utica Harbor remedial activities.

COMMENT 83: The NYSDEC PRAP proposes a two-fold soil clean-up criteria – visual indication of NAPL or tar or 1,000ppm TPAH. Beazer believes that visual criteria should be eliminated such that remediation areas can be identified and finalized by an appropriate pre-design study. Thus providing certainty to the final design and remedy implementation.

RESPONSE 83: See RESPONSE 44.

COMMENT 84: Beazer believes that a geostatistical analysis of Site data is appropriate for determining final Site soil remediation boundaries...

RESPONSE 84: See RESPONSE 38.

COMMENT 85: The NYSDEC states that excavation and removal of soils is required to depths of up to 6 feet below ground surface, which would be from 2.5 to 5.5 feet below the water table at the NYTEP Site, based on the shallow aquifer well data collected during the RI/ field work (RI/RA Report). The Draft Feasibility Study (Draft FS) for the Harbor Point Site (Draft NIMO FS, October 1997) Section 3.4.1, determined that soil excavation below the water table was not a viable technology. NYSDEC's evaluation presented in this PRAP does not explain how excavation below the water table is now a viable technology.

RESPONSE 85: See RESPONSES 28 and 46.

COMMENT 86: The PRAP [does not] discuss issues associated with treatment of groundwater generated during excavation dewatering.

RESPONSE 86: The method of treatment of the groundwater generated during excavation dewatering is a detail appropriate for the design, the ROD does not need to proscribe a specific method.

COMMENT 87: NYSDEC's Comment No. 34 on the Draft [Niagara Mohawk] FS states that an evaluation should be completed regarding the benefit of going slightly deeper than the water table for soil excavation verses disadvantages due to dewatering. The PRAP claims that this evaluation was completed, Alternative 3A - Item 1, but does not provide or cite a report/reference with the necessary details.

RESPONSE 87: See RESPONSES 7, 9 and 46.

COMMENT 88: NYSDEC has structured the alternatives to require saturated soil excavation (i.e., groundwater excavation) as a groundwater treatment remedy. Beazer believes that other approaches are more applicable to address groundwater impacts, such as product recovery, solidification and/or physical containment, if determined necessary.

RESPONSE 88: Soil excavation is only one of several remedial components. Product recovery and physical containment are also components of the ROD. Solidification was evaluated in the Niagara Mohawk Feasibility Study and was eliminated through the application of 6 NYCRR 375-1.10.

COMMENT 89: Low temperature thermal desorption (LTTD) is presented as the only soil treatment option in the PRAP. Beazer provided NYSDEC with a cost evaluation for alternate soil management approaches, including off-site disposal and in-situ stabilization, which would provide equal or better protection at a lower cost (Beazer, July 2001). What is the basis for NYSDEC's selection of LTTD? The PRAP should be revised to indicate that a range of soil options will be evaluated during the remedial design process.

Furthermore, specifically for soils excavated from the NYTEP Site, the PRAP should be revised to allow offsite soil disposal, without LTTD treatment, at an appropriately permitted soil disposal facility. Requiring LTTD for excavated soil from the NYTEP Site seemingly links Beazer's remedy implementation at the NYTEP Site to NIMO's remedy implementation for other surrounding areas. This creates a potentially insurmountable logistical hurdle regarding soil handling, timing, and water management. Therefore, the PRAP should be revised to allow off-site soil disposal.

RESPONSE 89: State regulation, specifically 6 NYCRR 375-1.10(c)(5), identifies that a preference be given to on-site or off-site destruction of the hazardous constituents, over other remedial technologies. Thus, low temperature thermal desorption is the preferred method of treatment since

it is the most preferable in the hierarchy of remedial technologies. However, off-site disposal options will be considered during the remedial design, if the option is considered cost effective and facilitates construction of the remedy. The ROD reflects this consideration.

COMMENT 90: NYSDEC's proposed remedy relies upon natural attenuation of dissolved-phase constituents in groundwater to achieve the groundwater-related objective of returning groundwater to NYSDEC Class GA criteria. The NYSDEC fails to fully discuss and evaluate natural attenuation as an alternative for groundwater remediation at the Sites. In fact, groundwater remedial alternatives are not even discussed for the NYTEP Site.

RESPONSE 90: Class GA groundwater standards are exceeded at the NYTEP perimeter, contributing to a significant threat to the use of that environmental resource without treatment, a condition which extends across all three sites. Since the source areas also extend across all three sites, groundwater remedial alternatives must be evaluated peninsula-wide. Thus, remedial alternatives developed specific to the NYTEP Site would not satisfy the remedial goal of restoring the groundwater to Class GA standards. The selected remedy does in part rely upon natural attenuation, but also requires active groundwater remedies including source removal, containment with hydraulic control, and air sparging/soil vapor extraction. Because some source areas will remain, groundwater standards in all areas may never be achieved through natural attenuation. However, the NYSDEC considers the remedy to be consistent with the federal and state guidance which require active response measures to the extent feasible.

COMMENT 91: NYSDEC should clarify within the PRAP that any DNAPL recovery efforts are intended to be passive in nature. Any product recovery instituted at the NYTEP Site should be implemented in a fashion that minimizes the generation of groundwater requiring handling and/or treatment. Additionally, the PRAP should indicate that appropriate shut-off criteria will be established prior to the initiation of product recovery efforts at the Site.

RESPONSE 91: Regarding a passive system, see RESPONSE 49. Termination criteria is a detail appropriate for the remedial design, as the ROD reflects, where the preliminary operation, maintenance and monitoring manual will be developed.

COMMENT 92: The risk assessment prepared by Beazer that NYSDEC failed to review did not establish that there was a "significant threat to public health and the environment posed by the NYTEP site.

RESPONSE 92: First, see RESPONSE 66 regarding the review of the risk assessment. Second, in 1997, the NYTEP site was listed on the registry of inactive hazardous waste disposal sites as a Class 2 site, meaning that the site is a significant threat to the public health or environment - action required. The significant threat was established prior to the development of the risk assessment, submitted in 1999. The additional data presented in the 1999 RI/RA Report supported the 1997 determination.

COMMENT 93: NYSDEC [believes they are] justified in prescribing the same remedy for all sites based on studies done on one of the sites because the "fire" damaging them all is the same. There are a number of problems with this analogy in the real world, and especially in the context of the Harbor Point sites.

RESPONSE 93: The NYSDEC used data collected from all three sites and studies regarding each site in the development of the PRAP. See also RESPONSES 64, 81 and 90.

COMMENT 94: The NAPL from the MVO Site would be petroleum-based and largely would be an LNAPL that would float on the surface of the groundwater, while the NAPL from the NIMO and NYTEP Sites would be coal tar-based and largely would be a DNAPL that would sink to the bottom of the groundwater zone. To date it appears that the DNAPL has not affected the NYTEP and NIMO Sites equally in that free phase NAPL has been identified in certain groundwater wells at the NIMO Site, but NAPL has not been located in any on-site shallow or intermediate zone monitoring well at the NYTEP Site, though there is evidence of DNAPL in soils at the NYTEP Site.

RESPONSE 94: These generalizations are not supported by the data. The MVO Site handled both petroleum and coal-tar. Both DNAPL and LNAPL are reported in monitoring well MW-12S located between MVO and NYTEP. The NYTEP data is inconclusive regarding measurable NAPL in NYTEP wells (see RESPONSE 78), however, the NYTEP RI/RA reported that the NAPL recovered during certain site boring operations floated on the drilling fluid.

COMMENT 95: The NYSDEC should not prescribe the same remedy for the NYTEP Site and the NIMO Harbor Point Site without completing the RI, RA, and FS for both sites first to determine how bad the problem is at each site and what needs to be done to remedy it.

RESPONSE 95: As described in Section 8 of the ROD, the remedy selected consists of many components. Some of the components apply only to the NIMO-Harbor Point Site while other components apply to both sites. The selected remedy is consistent across the peninsula, but is not identical for both sites. See also RESPONSE 93.

APPENDIX B

ADMINISTRATIVE RECORD

1. In the Matter of the Development and Implementation of a Supplemental Remedial Investigation/Feasibility Study, Order on Consent Index # A6-0201-89-05 September 28, 1989

2. Study of Interim Remedial Measures for Harbor Point Site Storm Sewers, Atlantic Environmental Services, September 14, 1990

3. Phase I Investigation, New York Emulsions Tar Products, URS Consultants, Inc., February 1990

4. Phase I Investigation, Mohawk Valley Oil, URS Consultants, Inc., March 1990

5. Phase II Investigation, Mohawk Valley Oil, URS Consultants, Inc., January 1992

6. Phase II Investigation, New York Emulsions Tar Products, URS Consultants, Inc., February 1992

7. In the Matter of the Development and Implementation of the NMPC Harbor Point Former MGP Site Investigation and Remediation Program. Order on Consent Index # D6-0001-9210, December 7, 1992

8. Final Harbor Point Southwestern Purifier Waste Area Interim Remedial Measure Work Plan, RETEC, October 1993

9. Final Report, Supplemental Remedial Investigation, Harbor Point Site, Utica, New York, Atlantic Environmental Services, October 1993

10. Interim Remediation of Surface Soils, Harbor Point Site, Atlantic Environmental Services, March 16, 1994

11. Perimeter Investigation Report for the New York Tar Emulsion Products Site, Engineering Science, January 1995

12. Phase I Groundwater Study Report, Conceptual Model Development for the Harbor Point Site, January 1995

13. Field Test of MGP Remediation Technologies, Thermal Desorption, Atlantic Environmental Services, March 24, 1995

14. Dense Non-Aqueous Phase Liquid Extraction Demonstration Report, Harbor Point Former Manufactured Gas Plant Site, Blasland, Bouck & Lee, Inc., January 1996

15. Data Gap Investigation Report for the Harbor Point Site, Parsons Engineering Science, May 1996

16. Phase II Groundwater Investigation, Harbor Point Site, Parsons Engineering Science, July 1996

17. Remedial Investigation Report of the Expanded (Offsite) RI at the Mohawk Valley Oil Site, Parsons Engineering Science, August 1996

18. Investigation of the Utica Terminal Harbor, Barge Canal, and Mohawk River, Parsons Engineering Science, Inc., October 1996

19. Final Investigation/Feasibility Study Work Plan, New York Tar Emulsion Products Site, Key Environmental, May 11, 1998

20. In the Matter of the Implementation of a Response Program for New York Tar Emulsion Products Site, Order Index Number D6-0001-97-11, July 10, 1998

21. Feasibility Study Submittal for the Harbor Point Site, Parsons Engineering Science, November 1999

22. Letter, James Van Hoesen, NYSDEC to Michael Slenska, Beazer East, Inc., March 10, 1999 regarding NYSDEC remedial program

23. Remedial Investigation Report, Former Monarch Chemicals, Inc. Site, LFR Levine-Fricke, March 16, 1999

24. Results from Additional Feasibility Study Data Collection, Harbor Point Site, Parsons Engineering Science, July 1999.

25. Remedial Investigation/Risk Assessment Report, New York Tar Emulsion Products Site, Key Environmental, Inc., September 10, 1999.

26. Revised Feasibility Study Submittal for the Harbor Point Site, Parsons Engineering Science, November 1999

27. Letter, John Spellman, NYSDEC to Michael Slenska, Beazer East, Inc., November 10, 1999 , regarding NYTEP RI/RA Report

28. Letter , John Spellman, NYSDEC to Charles Willard, Niagara Mohawk Power Corporation, January 21, 2000 regarding FS

29. Storm Sewer Evaluation Report for the Niagara Mohawk Power Corporation, Harbor Point Site, Camp Dresser & McKee, May 2000.

30. Letter, Charles E. Sullivan, Jr., NYSDEC to Paul Anderson, Ogden Environmental and Energy Services, 28 August 2000 regarding protection from contaminated groundwater

31. Harbor Point Site, IRM [Water Gas Plant] Work Plan, Camp Dresser & McKee, September 2000

32. Letter, John Sheehan, NYSDOH to John Spellman, NYSDEC, November 6, 2000 regarding Phase II RI/RA Work Plan

33. Letter, John Spellman, NYSDEC to Michael Slenska, Beazer East, Inc., November 27, 2000 regarding Phase II RI/RA Work Plan

34. Letter, Charles E. Sullivan, Jr., NYSDEC to Doreen A. Simmons, Hancock and Estabrook, LLP, 29 March 2001, regarding issue of groundwater contamination

35. NYSDEC's Draft Proposed Remedy Outline, June 22, 2001, discussed with Beazer June 25, 2001.

36. Letter, John Spellman, NYSDEC to Michael Slenska, Beazer East, Inc. July 16, 2001 regarding FS

37. Letter, Michael Slenska, Beazer East, Inc. to John Spellman, NYSDEC July 30, 2001 regarding remedial alternatives

38. Fax, John Spellman, NYSDEC to Michael Slenska, Beazer East, Inc. August 15, 2001 regarding averaging concentrations

39. Harbor Point Site, Monitoring Well 505I Area Sampling and Analysis Report, Camp Dresser & McKee, August 15, 2001

40. Letter, Michael Slenska, Beazer East, Inc. to John Spellman, NYSDEC August 23, 2001regarding remedial alternatives

41. Fax, John Spellman, NYSDEC to Robert Markwell, Beazer East, Inc. September 12, 2001 regarding figure for teleconference discussion

42. Letters, Charles Willard, Niagara Mohawk Power Corporation to J. Spellman, NYSDEC, October 30, 2001 and December 26, 2001 regarding purifier material consolidation

43. NiMo - Harbor Point Property, Operable Unit No. 1, New York Tar Emulsion Products Site, Mohawk Valley Oil Site, Proposed Remedial Action Plan, NYSDEC, February 2002

44. Letter, Gary A. Litwin, NYSDOH to Michael J. O'Toole, NYSDEC, February 8, 2002 re: PRAP

45. Letter, M. Ann Howard to John Spellman, NYSDEC, March 4, 2002 regarding public meeting comments

46. Letter, Frank Williams, Earth Tech, Inc. to John Spellman, NYSDEC, March 23, 2002 regarding PRAP

47. Letter, Charles Willard, Niagara Mohawk Power Corporation to John Spellman, NYSDEC, March 25, 2002 regarding PRAP

48. Letter, Michael Slenska, Beazer East, Inc. to John Spellman, NYSDEC March 26, 2002 with attachment: Beazer East Inc. Comments on the NYSDEC February 2002 PRAP

49. Letter, Gary A. Litwin, NYSDOH to Michael J. O'Toole, NYSDEC, March 29, 2002 regarding ROD

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway, Albany, New York 12233-7014
Phone: (518) 402-9662 • **Fax:** (518) 402-9679
Website: www.dec.ny.gov

Peter M. Iwanowicz
Acting Commissioner

November 18, 2010

William R. Jones, P.E.
Lead Engineer
Environmental Department C-1
National Grid
300 Erie Boulevard West
Syracuse, NY 13202

RE: Harbor Point Site, Site 6-33-021, Utica, Oneida Co.
OU 1 ROD modifications

Dear Mr. Jones:

Enclosed is a summary of modifications made to the Record of Decision for the Harbor Point and Mohawk Valley Oil Sites. The New York State Department of Environmental Conservation considers these changes to be minor, as defined in its program policy DER-2: "Making Changes to Selected Remedies". These changes have been communicated previously to National Grid through letter, email or meeting.

I am available to discuss these modifications if you have any questions. Please contact me at (518) 402-9648.

Sincerely,

John Spellman

John Spellman, P.E.
Project Manager
Division of Environmental Remediation

Peter M. Iwanowicz
Acting Commissioner

Harbor Point (633021) and Mohawk Valley Oil (633032) Sites

Record of Decision Modifications

November 15, 2010

1. Disposal of Utica Harbor Sediment at the Mohawk Valley Oil (MVO) Site.

Existing ROD

The ROD identifies off-site disposal of excavated soil containing visible NAPL or total PAH levels greater than 1000 ppm. Excavated soils that do not exceed these criteria may be stockpiled and used as backfill beneath the surface soil cover. All soil imported to the site to construct the site cover and/or to be used for backfill or contouring fill below the soil cover at the MVO site must satisfy the SCOs for the protection of public health for commercial use and the protection of groundwater. (See also ROD modification number 5 below). The same requirement applies for soil thermally treated on-site, except that up to 10 ppm total carcinogenic PAHs is allowed.

Modification

Sediment dredged from Utica Harbor adjacent to the MVO site will be used as subsurface backfill at the MVO Site. To contain and treat the water associated with the hydraulic dredging of the harbor, a fully enclosed sealed water-tight sheetpile wall will be constructed at the MVO Site, driven into the shallow silty-clay aquitard. Prior to sediment placement, soil within the wall will be removed and appropriately disposed, consistent with the ROD excavated soil disposal requirement. A geosynthetic clay liner will be installed on the floor within the sheetpiled area to enhance water collection by further reducing percolation through the aquitard. Excess water will be pumped from the cell and treated. Upon removal of the excess water the sheetpiling may be removed. While the sediment is consolidating the dewatering area will be monitored and covered if necessary to prevent dust and odors. Once the sediments have consolidated, a minimum one-foot thick soil cover will be provided which satisfies the cover requirements identified in the October 2008 ROD modification.

Basis

Sediment that would be emplaced at MVO is not expected to exceed the ROD criteria for removal for soil as applied to the MVO site.

After sediment dewatering, the sediment remaining would be sampled to confirm levels meet the site reuse requirements, and the MVO Site would be covered consistent with the ROD requirements as proposed under Modification 3 below for a soil cover. Also, institutional controls would be placed consistent with the existing ROD, which would prohibit the MVO Site from being used for purposes other than appropriate passive recreational uses [as defined in DER 10], industrial or commercial uses, and groundwater use would be restricted. Long-term monitoring of the sediment disposal area would be required by the consent order for the MVO site and the adjacent Niagara Mohawk Harbor Point Site.

2. Variance to the Water Gas Plant (WGP) cap thickness.

Existing ROD

The ROD requires construction of a low permeability cap at the WGP that meets the requirements of a final cover system specified in Part 360-2.15.d. The need for a gas collection system, however, will be evaluated during the remedial design."

Modification

This ROD modification relates to the low permeability layer requirement. Part 360 allows the use of synthetic geomembranes, namely HDPE with a minimum thickness of 60 mils and LLDPE 40 mils thick. A 30 mil HDPE geomembrane was installed at the WGP as an interim cover. National Grid has requested that this be approved as the final cover.

Basis

The remedial design ("Final Cap System Design, Former Water Gas Plant, Harbor Point Site", February 2009) evaluated both a 30 mil HDPE and a 40 mil LLDPE. The design recommended installation of 30 mil HDPE, based on the Hydrologic Evaluation of Landfill Performance (HELP) model results, the ability to meet remediation goals, and ease of construction. In addition, other provisions of the ROD will accommodate the use of the thinner HDPE, which include a) the requirement to maintain an inward hydraulic gradient at the WGP containment cell, meaning that any additional infiltration that may result from a thinner geomembrane must be removed and treated, b) a Site Management Plan, which will specifically require monitoring the effectiveness of the low permeability cover and barrier wall and c) an annual certification attesting that the containment system is effective.

3. Reducing the minimum soil cover thickness over the Harbor Point and MVO sites to one foot.

Existing ROD

The existing ROD calls for a minimum two-foot thick soil cover to be placed over the Niagara Mohawk Central Area and MVO sites. Beneath the cover a commercial grade filter fabric will be installed to serve as a demarcation layer. This area is estimated to comprise 37

acres. Also, in the Niagara Mohawk Northern and Niagara Mohawk Southern Areas, surface soil beyond the area of the soil cover exceeding 10 ppm cPAHs must either be removed (approximately 6,000 cyds) or covered with two feet of clean fill. A more complete characterization of these areas was to be conducted during the remedial design process.

Modification

The soil cover thickness for the Niagara Mohawk Central Area and MVO Site is changed to a minimum of one-foot thick, consistent with the soil cover requirements of DER-10 subdivision 4.1(f) for commercial and passive recreational use. A demarcation layer will be provided at the Central Area and MVO Site. The surface soil remedy for the Niagara Mohawk Northern and Southern Areas is modified as follows:

> In the Niagara Mohawk Northern and Southern Areas, surface soil exceeding the 6 NYCRR Part 375-6.4(b)(3) soil cleanup objectives for the protection of public health for commercial use will be removed. Removed soil will be backfilled with a minimum of one foot of soil that satisfies the SCOs for the protection of public health for commercial use or the protection of groundwater, whichever is lower. Backfilled soil will be underlain by a demarcation layer. The allowance for up to 0.1 ppm benzene in the backfill will remain. This will apply to both LTTD treated soils and imported material. The remedial design will include sufficient investigation to delineate the extent of surface soil requiring removal from the Northern and Southern Areas to the satisfaction of the Department.

This modification will not apply to the Mohawk River and Barge Canal riverbanks or the Federally-designated wetland. The soil cover will be a minimum two feet thick in these areas.

Basis

The ROD-specified land use on the Harbor Point peninsula will be restricted to appropriate recreational, industrial or commercial uses. Since the issuance of the ROD the Department has determined (and included in 6 NYCRR Part 375) that a one-foot thick soil cover is suitable for sites restricted to commercial or industrial use and that this cover depth is also suitable for passive recreational uses, such as the open space or walking paths currently contemplated for Harbor Point. Should “active” recreational use be proposed for areas of the site, e.g. picnic areas or play grounds, these areas would require a soil cover of either two feet or a pavement or other engineered surface. A two-foot soil cover is also necessary for ecological protection, such as in, or adjacent to, the wetland or riverbank areas.

4. Change deed restriction to an environmental easement.

Existing ROD

The existing ROD states: “At all three sites, institutional controls will be established. The institutional controls will include: deed restrictions to protect remedial features and restrict on-site groundwater use; a deed restriction to prohibit the site from being used for purposes other than appropriate recreational, industrial or commercial uses, as explained below,

without express written waiver of such prohibition by the NYSDEC and NYSDOH; long term monitoring of site conditions and routine maintenance operations, such as fence repairs and lawn mowing."

Modification

"Environmental easement" will be substituted for "deed restriction" for the NiMo Harbor Point Property and Mohawk Valley Oil Sites.

Basis

Environmental easements were introduced in the revised Part 375 regulations as a mechanism to enforce a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls. The regulations, which became effective in 2006, supersede the ROD.

Harbor Point (633021) and Mohawk Valley Oil (633032) Sites

Record of Decision Modification

October 3, 2008

Backfill and Soil Cover Requirements

Existing ROD

The existing ROD calls for:

1. A soil cover that satisfied TAGM 4046 with an allowance for up to 0.1 ppm benzene. The applies for both low temperature thermal desorption (LTTD) site soils (includes Utica Harbor sediments and spoils) and imported soil.

2a. Backfill originating from LTTD treated site soils: must satisfy TAGM 4046, but up to 10 ppm cPAHs (total carcinogenic PAHs) and 0.1 ppm benzene is allowed. A two-foot thick cover must be provided.

2b. Backfill originating from imported soil: must satisfy TAGM 4046, but up to 0.1 ppm benzene is allowed.

Modification

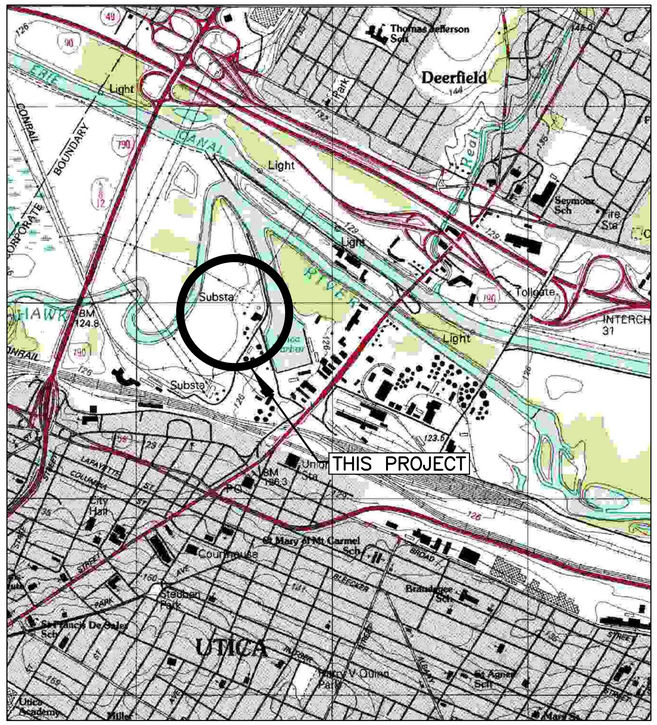
1. Require the soil cover to satisfy the lower of Protection of Public Health – Commercial or Protection of Groundwater Soil Cleanup Objectives (SCOs). The allowance for up to 0.1 ppm benzene remains. This applies to both LTTD treated site soils and imported material.

2. Require backfill that satisfied the lower of Protection of Public Health – Commercial or Protection of Groundwater SCOs, with up to 0.1 ppm benzene. For LTTD treated site soils the allowance for up to 10 ppm cPAHs remains.

These modifications do not apply to the wetland areas. The criteria for the wetland areas will be defined in the wetland mitigation plan that is required by the ROD.

Basis

The changes satisfy promulgated Subpart 375-6.



PROJECT LOCATION PLAN

NOT TO SCALE

Contract Drawings

HARBOR POINT SITE
SITE 6-33-021

OU-1 REMEDIAL ACTION -

PAH-IMPACTED SOIL REMOVAL-
COAL GAS PLANT

nationalgrid

UTICA, NEW YORK

JUNE 2014

O'BRIEN & GERE

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068259
LICENSED PROFESSIONAL ENGINEER

I STEPHEN W. ANAGNOST CERTIFY THAT I AM CURRENTLY A NY'S REGISTERED PROFESSIONAL ENGINEER OR QUALIFIED ENVIRONMENTAL PROFESSIONAL AS DEFINED IN 6 NYCRR PART 375 AND THAT THIS REMEDIAL DESIGN WAS PREPARED IN ACCORDANCE WITH ALL APPLICABLE STATUES AND REGULATIONS AND IN SUBSTANTIAL CONFORMANCE WITH THE DER TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION (DER-10).

IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

1118.43175.400

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-400-TSG1.DWG

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION
PAH–IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

INDEX TO DRAWINGS

GENERAL

TITLE SHEET
INDEX TO DRAWINGS

G–1 GENERAL NOTES AND LEGEND
G–2 EXISTING SITE PLAN
G–3 EXISTING UTILITIES PLAN
G–4 EROSION AND SEDIMENT CONTROL PLAN

COAL GAS PLANT

G–5 COAL GAS PLANT – EXCAVATION PLAN
G–6 COAL GAS PLANT – EXCAVATION GRADING PLAN
G–7 COAL GAS PLANT – CROSS SECTIONS
G–8 COAL GAS PLANT – TYPICAL SHEETING EXCAVATION PLAN, SECTION AND NOTES
G–9 DEBRIS PILE REMOVAL PLAN

DREDGE CONTAINMENT (FORMER MVO)

G–10 DREDGE CONTAINMENT – ADDITIONAL EXCAVATIONS PLAN

WETLAND AND BANK

G–11 WETLANDS EXCAVATION PLAN AND NOTES
G–12 WETLANDS RESTORATION PLAN
G–13 BANK RESTORATION PLANS

GENERAL

G–14 PARTIAL SITE RESTORATION PLAN SHEET 1 OF 2
G–15 PARTIAL SITE RESTORATION PLAN SHEET 2 OF 2
G–16 MISCELLANEOUS DETAILS
G–17 MISCELLANEOUS DETAILS
G–18 MISCELLANEOUS DETAILS

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.



O'BRIEN & GERE

FILE NO. 1118.43175.368

I:\NATIONAL–GRID.1118\43175.HARBOR–POINT–CO\DOCS\DWG\COAL GAS PLANT\43175–400–TSG1.DWG

GENERAL NOTES – ALL DRAWINGS:

1. EXISTING SITE AND SUBSURFACE INFORMATION PRESENTED SHOULD BE CONSIDERED APPROXIMATE ONLY.
2. EXACT DIMENSIONS AND LOCATIONS OF ALL STRUCTURES AND UTILITIES ARE CONSIDERED APPROXIMATE ONLY AND SHALL BE VERIFIED AS REQUIRED IN THE FIELD BY THE CONTRACTOR.
3. OTHER UNDERGROUND UTILITIES MAY EXIST, THE LOCATIONS, DEPTHS AND EXTENT OF WHICH ARE UNKNOWN. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND ELEVATION OF ALL UTILITIES IN THE FIELD AS IT MAY PERTAIN TO THE CONTRACTORS WORK PRIOR TO CONSTRUCTION.
4. DURING CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND SUPPORT OF ALL UNDER AND ABOVE GROUND UTILITIES AFFECTED BY THE CONTRACTOR'S WORK.
5. THE CONTRACTOR SHALL CONTACT "DIG SAFELY NY" WITHIN 72 HOURS PRIOR TO THE COMMENCEMENT OF THE WORK. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES AND IF NECESSARY NOTIFY THE AFFECTED UTILITY DEPARTMENTS ONE WEEK PRIOR TO DIGGING IN ANY PORTION OF THE SITE. DIG SAFELY NEW YORK PHONE NUMBER: 1–800–962–7962. WEBSITE: WWW.DIGSAFELYNEWYORK.COM
6. ALL INTRUSIVE GROUND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND NATIONAL GRID'S "PART 753 PROTECTION OF UNDERGROUND FACILITIES".
7. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY DE–ENERGIZING, OR INTERRUPTION OF SERVICE, REMOVAL, RELOCATION, REPLACEMENT OF ANY UTILITIES POLES, GUY WIRES, UNDERGROUND UTILITIES AND/OR OVERHEAD WIRES WITHIN THE LIMITS OF WORK, OR THAT COULD OTHERWISE INTERFERE WITH THE REMEDIAL ACTIONS.
8. THE CONTRACTOR IN CONSULTATION WITH THE APPROPRIATE UTILITY COMPANY SHALL DETERMINE THE STATE OF ALL UTILITIES. ALL UTILITIES DETERMINED TO BE ABANDONED SHALL BE REMOVED BY THE CONTRACTOR WITHIN THE LIMITS OF WORK. ALL UTILITIES DETERMINED TO BE LIVE SHALL BE HANDLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS REQUIRED TO PERFORM THE WORK.
9. THE CONTRACTOR SHALL BE AWARE THAT PORTIONS OF THE INSTALLATION WILL BE PERFORMED PROXIMATE TO OVERHEAD POWER LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN APPROPRIATE MINIMUM REQUIRED CLEARANCE FROM OVERHEAD ELECTRICAL LINES AND UTILITY POLES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE UTILITY COMPANY TO HAVE OVERHEAD ELECTRICAL LINES SHIELDED/PROTECTED AND FLAGGED (AS APPROPRIATE) PRIOR TO THE INITIATION OF THE WORK EFFORTS. THE CONTRACTOR IS ALSO REQUIRED TO GROUND EQUIPMENT (AS NECESSARY) AND PERFORM ALL WORK EFFORTS IN ACCORDANCE WITH NATIONAL GRID PROTOCOLS FOR WORK PERFORMED PROXIMATE TO OVERHEAD ELECTRICAL HAZARDS.
10. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, PROVIDE ALL TRENCH SHORING, SCAFFOLDING, SHIELDING, DUST/FUME PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES REQUIRED.
11. ROADWAY ACCESS TO THE GAS REGULATOR STATION AND THE ELECTRICAL SUBSTATION SHALL BE OPEN AT ALL TIMES VIA HARBOR POINT ROAD AND/OR WASHINGTON STREET. AT NO TIME SHALL THE CONTRACTORS WORK JEOPARDIZE ACCESS TO THE GAS REGULATOR STATION OR THE ELECTRICAL SUBSTATION.
12. THE CONTRACTOR SHALL COORDINATE ANY NECESSARY TRAFFIC CONTROLS AND OBTAIN ANY NECESSARY PERMITS THAT MAY BE REQUIRED TO PERFORM THE WORK.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING SURVEY CONTROL DURING THE PERFORMANCE OF WORK AND TO VERIFY EXISTING GRADES. THE OWNER WILL PROVIDE THE CONTRACTOR WITH THE CONTRACT DRAWINGS IN ELECTRONIC FORMAT FOR THE CONTRACTOR'S USE.
14. PROPER EROSION CONTROL TECHNIQUES SHALL BE IMPLEMENTED AS REQUIRED IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED EROSION AND SEDIMENT CONTROL PLAN.
15. THE CONTRACTOR SHALL RESTORE TO PRECONSTRUCTION CONDITIONS OR BETTER ALL SUPPORT AREAS THAT ARE IMPACTED BY REMEDIAL ACTIVITIES, INCLUDING BUT NOT LIMITED TO, EQUIPMENT AND MATERIAL STORAGE AREAS, MATERIAL LOADING AND STAGING AREAS, PARKING AREAS, AND LOCATIONS OF OFFICE TRAILERS, UNLESS OTHERWISE NOTED.
16. ALL SURFACES DAMAGED OR DESTROYED AS A RESULT OF WORK PERFORMED BY THE CONTRACTOR SHALL BE RESTORED TO PRECONSTRUCTION CONDITIONS OR BETTER IN A TIMELY MANNER AND PRIOR TO CONTRACTOR DEMOBILIZATION.
17. ALL EQUIPMENT OPERATED WITHIN THE LIMITS OF WORK SHALL BE DECONTAMINATED PRIOR TO TRANSPORT OFF–SITE AND/OR TRANSPORTING/HANDLING CLEAN BACKFILL MATERIALS IN ACCORDANCE WITH SPECIFICATION 02302 "OFF–SITE TRANSPORTATION AND DISPOSAL". THE CONTRACTOR SHALL PROVIDE 6 MIL POLYETHYLENE SHEETING TO COVER THE GROUND IN ALL AREAS BEING USED TO LOAD EXCAVATED MATERIAL INTO TRUCKS WHETHER IN OR OUT OF THE LIMITS OF WORK.
18. WATER GENERATED DURING EXCAVATION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO, THE DEWATERING OF EXCAVATIONS AND DECONTAMINATION FLUIDS, SHALL BE COLLECTED AND TREATED IN ACCORDANCE WITH SPECIFICATION 02202 CONSTRUCTION WATER MANAGEMENT.
19. ALL BACKFILL MATERIAL, ASSOCIATED WITH BANK OR WETLAND RESTORATION, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375–6.7(d)(1)(ii)(d).
20. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH BANK RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375–6.7(d)(1)(ii)(b)) AND THE OCTOBER 3, 2008 RECORD OF DECISION MODIFICATION.
21. NO ON–SITE SOIL SHALL BE USED FOR WETLAND OR BANK RESTORATION.
22. ALL BACKFILL MATERIAL SHALL BE ANALYZED PRIOR TO IMPORT TO THE SITE IN ACCORDANCE WITH DER–10. BASED ON A EXCAVATION QUANTITY OF 38,000 CUBIC YARDS, DER–10 REQUIRES 81 GRAB SAMPLES FOR VOCs, AND 39 COMPOSITE SAMPLES (EACH MADE OF BETWEEN 3 AND 5 COMBINED GRAB SAMPLES) FOR SVOCs, INORGANICS, PCBs AND PESTICIDES. IF THE ACTUAL AMOUNT OF BACKFILL MATERIAL REQUIRED IS DIFFERENT FROM THAT STATED HERE, THE CONTRACTOR SHALL REFER TO DER–10, TABLE 5.4(e)10, FOR SAMPLING REQUIREMENTS. THE COST OF THESE ANALYSES SHALL BE INCLUDED IN THE UNIT PRICE FOR THE PROCUREMENT, TRANSPORTATION AND PLACEMENT OF THE SOIL.
23. ALL MATERIAL PLACED IN THE NORTHERN CONTAINMENT CELL OF STAGING AREA #3 SHALL BE COVERED DAILY WITH PLASTIC SHEETING AT A MINIMUM TO HELP CONTROL ODORS.
21. THE CONTRACTOR SHALL PREPARE AN ODOR CONTROL PLAN THAT DESCRIBES PROVISIONS THAT WILL BE IMPLEMENTED TO CONTROL ODOR EMANATING FROM EXCAVATIONS AND STOCKPILES OF SOIL. PRIMARY MEASURES SHALL BE IMPLEMENTED TO MINIMIZE GENERATION OF ODOR BY MINIMIZING, TO EXTENT PRACTICABLE, EXPOSED SURFACE OF WASTE MATERIAL AND CONTAMINATED SOIL. ALL STOCKPILES SHALL BE COVERED WHEN NOT IN USE. SECONDARY MEASURES SHALL INCLUDE USE OF PRODUCTS, APPROVED BY ENGINEER, TO MASK OBJECTIONABLE ODORS. THE ENGINEER SHALL BE SOLE JUDGE AS TO WHETHER OR NOT AN ODOR IS PERCEPTIBLE AND OBJECTIONABLE REQUIRING CONTROL MEASURES.

    THE FOLLOWING DUST AND ODOR CONTROL MEASURES MAY BE USED, DEPENDING UPON SPECIFIC CIRCUMSTANCES, FIELD OBSERVATIONS, AND AIR MONITORING RESULTS: ODOR SUPPRESSION FOAMS, BIO–SOLVE, WATER SPRAY, POLYETHYLENE SHEETING (FOR COVERING EXCAVATION FACES, MATERIAL STOCKPILES, ETC.)

MAPPING NOTES – ALL DRAWINGS:

1. ELEVATIONS ARE IN FEET AND ARE REFERRED TO THE PROJECT DATUM WHICH IS THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929.
2. THIS SURVEY IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983, 2007 ADJUSTMENT (NAD83/07) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE) AND VERTICALLY TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83/2007 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (CENTRAL ZONE).
3. MAPPING COMPILED FROM PREVIOUS DRAWINGS SUPPLIED BY NATIONAL GRID.
4. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS, BUT DO NOT PURPOSE TO BE ABSOLUTELY CORRECT. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH THE EXACT LOCATION OF EXISTING UTILITIES, AND SHALL BE RESPONSIBLE TO RELOCATE, PROTECT AND/OR MAINTAIN ALL ACTIVE UTILITIES WITHIN THE PROJECT SITE DURING AND FOR THE EXECUTION OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE REPAIR AND OR LOSS OF SERVICES SHOULD THE UTILITY SERVICES BE INTERRUPTED DUE TO THE CONTRACTOR ACTION.
5. TOPOGRAPHIC SURVEY WAS PERFORMED BY THE NATIONAL GRID SURVEYING DEPARTMENT.
6. SITE SURVEY BENCHMARK IS LOCATED AT THE SOUTHEAST CORNER OF THE MATERIAL HANDLING FACILITY (MHF). SURVEY BENCHMARK INFORMATION LOCATION WILL BE PROVIDED TO THE CONTRACTOR PRIOR TO CONSTRUCTION.

LEGEND:

MW–XX	MONITORING WELLS (ATLANTIC)	T T	TELEPHONE
CDM–XX	MONITORING WELLS (CDM)	-T- -T-	TELEPHONE ABANDONED
SB–XX	SOIL BORINGS (CDM)	E E	OVERHEAD ELECTRICAL
SB–XX	SOIL BORINGS (ATLANTIC)	U/E U/E	UNDERGROUND ELECTRICAL
ESSB–XX	GEO PROBE (PARSONS ES)	-U/E- -U/E-	UNDERGROUND ELECTRICAL ABANDONED
CDM–GP–XX	GEO PROBE (CDM)	G G	GAS
TP–XX	TEST PIT (ATLANTIC)	-G- -G-	GAS ABANDONED
TP–XX	TEST PIT (C&S)	S S	SANITARY SEWER
TP–XX	TEST PIT (CDM)	-S- -S-	SANITARY SEWER ABANDONED
	TEST PIT (CDM)	STM STM	STORM SEWER
MH	MANHOLE	STM STM	STORM SEWER ABANDONED
	UTILITY POLE	W W	WATER
	HYDRANT	-W- -W-	WATER ABANDONED
	CATCH BASIN	(M)	UTILITY MANHOLE
	ABANDONED OUTFALL		POWER (PHH)/SIGNAL (SHH) HAND HOLE
407	EXISTING CONTOUR		PM (PURIFIER MATERIAL) AREA PREVIOUSLY EXCAVATED (2009)
X 407.0	SPOT ELEVATION		COAL GAS PLANT (CGP)/ DREDGE CONTAINMENT (DC) EXCAVATION AREAS
	UNPAVED ROADWAY		WETLAND (W) EXCAVATION AREAS
	PAVED ROADWAY		
	EDGE OF WOODED AREA		
	TREE		
	BUSH		
	WETLANDS		
	FLOODWAY BOUNDARY		
	CHAIN LINK FENCE		
	RAILROAD TRACKS		
	DELINEATED WETLANDS		

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

NOT TO SCALE

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK · STEPHEN W. ANAGNOST · No. 068269 · LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION
PAH–IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

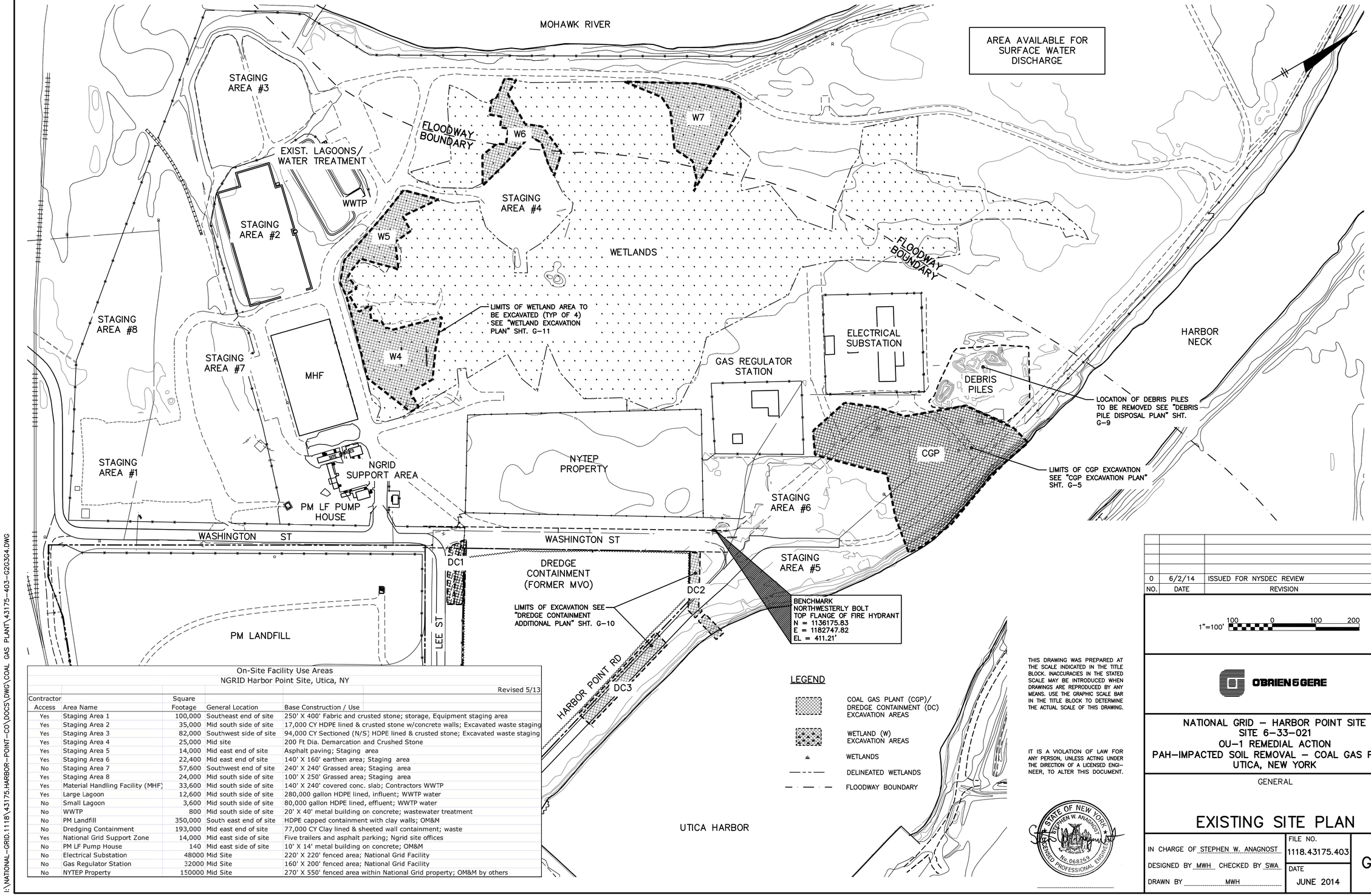
GENERAL NOTES AND LEGEND

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.401
DATE JUNE 2014

G–1

i:\NATIONAL–GRID.1118\43175.HARBOR–POINT–CO\DOCS\DWG\COAL GAS PLANT\43175–400–TSG1.DWG



On-Site Facility Use Areas
NGRID Harbor Point Site, Utica, NY

Revised 5/13

Contractor Access	Area Name	Square Footage	General Location	Base Construction / Use
Yes	Staging Area 1	100,000	Southeast end of site	250' X 400' Fabric and crusted stone; storage, Equipment staging area
Yes	Staging Area 2	35,000	Mid south side of site	17,000 CY HDPE lined & crusted stone w/concrete walls; Excavated waste staging
Yes	Staging Area 3	82,000	Southwest side of site	94,000 CY Sectioned (N/S) HDPE lined & crusted stone; Excavated waste staging
Yes	Staging Area 4	25,000	Mid site	200 Ft Dia. Demarcation and Crushed Stone
Yes	Staging Area 5	14,000	Mid east end of site	Asphalt paving; Staging area
Yes	Staging Area 6	22,400	Mid east end of site	140' X 160' earthen area; Staging area
No	Staging Area 7	57,600	Southwest end of site	240' X 240' Grassed area; Staging area
Yes	Staging Area 8	24,000	Mid south side of site	100' X 250' Grassed area; Staging area
Yes	Material Handling Facility (MHF)	33,600	Mid south side of site	140' X 240' covered conc. slab; Contractors WWTP
Yes	Large Lagoon	12,600	Mid south side of site	280,000 gallon HDPE lined, influent; WWTP water
No	Small Lagoon	3,600	Mid south side of site	80,000 gallon HDPE lined, effluent; WWTP water
No	WWTP	800	Mid south side of site	20' X 40' metal building on concrete; wastewater treatment
No	PM Landfill	350,000	South east end of site	HDPE capped containment with clay walls; OM&M
No	Dredging Containment	193,000	Mid east end of site	77,000 CY Clay lined & sheeted wall containment; waste
Yes	National Grid Support Zone	14,000	Mid east side of site	Five trailers and asphalt parking; Ngrid site offices
No	PM LF Pump House	140	Mid east side of site	10' X 14' metal building on concrete; OM&M
No	Electrical Substation	48000	Mid Site	220' X 220' fenced area; National Grid Facility
No	Gas Regulator Station	32000	Mid Site	160' X 200' fenced area; National Grid Facility
No	NYTEP Property	150000	Mid Site	270' X 550' fenced area within National Grid property; OM&M by others

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=100' 100 0 100 200

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK STEPHEN W. ANAGNOST No. 068269 LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

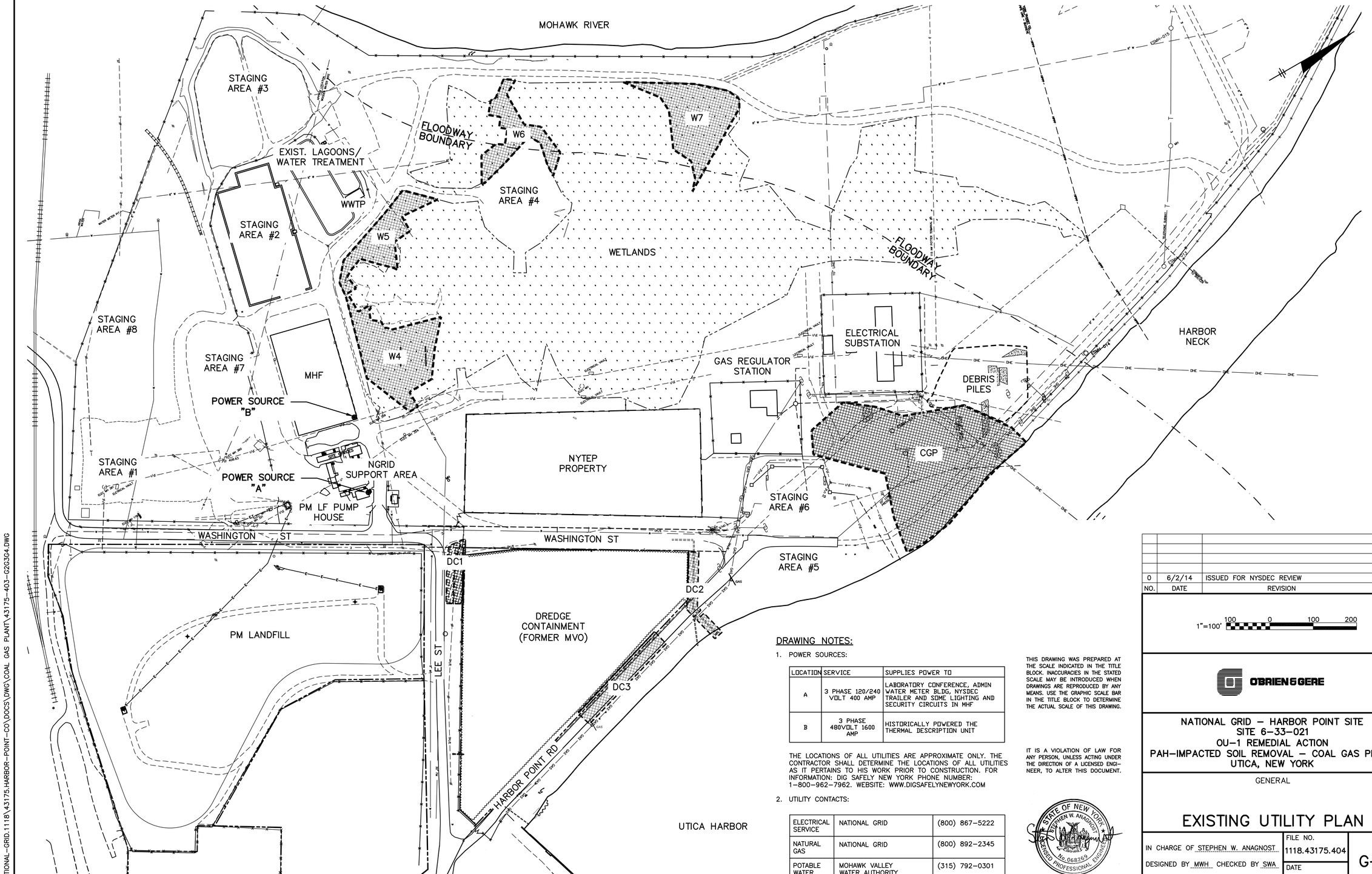
NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

EXISTING SITE PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH
FILE NO. 1118.43175.403
DATE JUNE 2014
G-2

I:\NATIONAL_GRID.1118\43175.HARBOR_POINT_GO\DOCS\DWG\COAL GAS PLANT\43175-403-G2G3G4.DWG



DRAWING NOTES:

1. POWER SOURCES:

LOCATION	SERVICE	SUPPLIES POWER TO
A	3 PHASE 120/240 VOLT 400 AMP	LABORATORY CONFERENCE, ADMIN WATER METER BLDG, NYSDEC TRAILER AND SOME LIGHTING AND SECURITY CIRCUITS IN MHF
B	3 PHASE 480VOLT 1600 AMP	HISTORICALLY POWERED THE THERMAL DESCRIPTION UNIT

THE LOCATIONS OF ALL UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL DETERMINE THE LOCATIONS OF ALL UTILITIES AS IT PERTAINS TO HIS WORK PRIOR TO CONSTRUCTION. FOR INFORMATION: DIG SAFELY NEW YORK PHONE NUMBER: 1-800-962-7962. WEBSITE: WWW.DIGSAFELYNEWYORK.COM

2. UTILITY CONTACTS:

ELECTRICAL SERVICE	NATIONAL GRID	(800) 867-5222
NATURAL GAS	NATIONAL GRID	(800) 892-2345
POTABLE WATER	MOHAWK VALLEY WATER AUTHORITY	(315) 792-0301

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK · STEPHEN W. ANAGNOST · No. 068269 · LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=100' 100 0 100 200

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

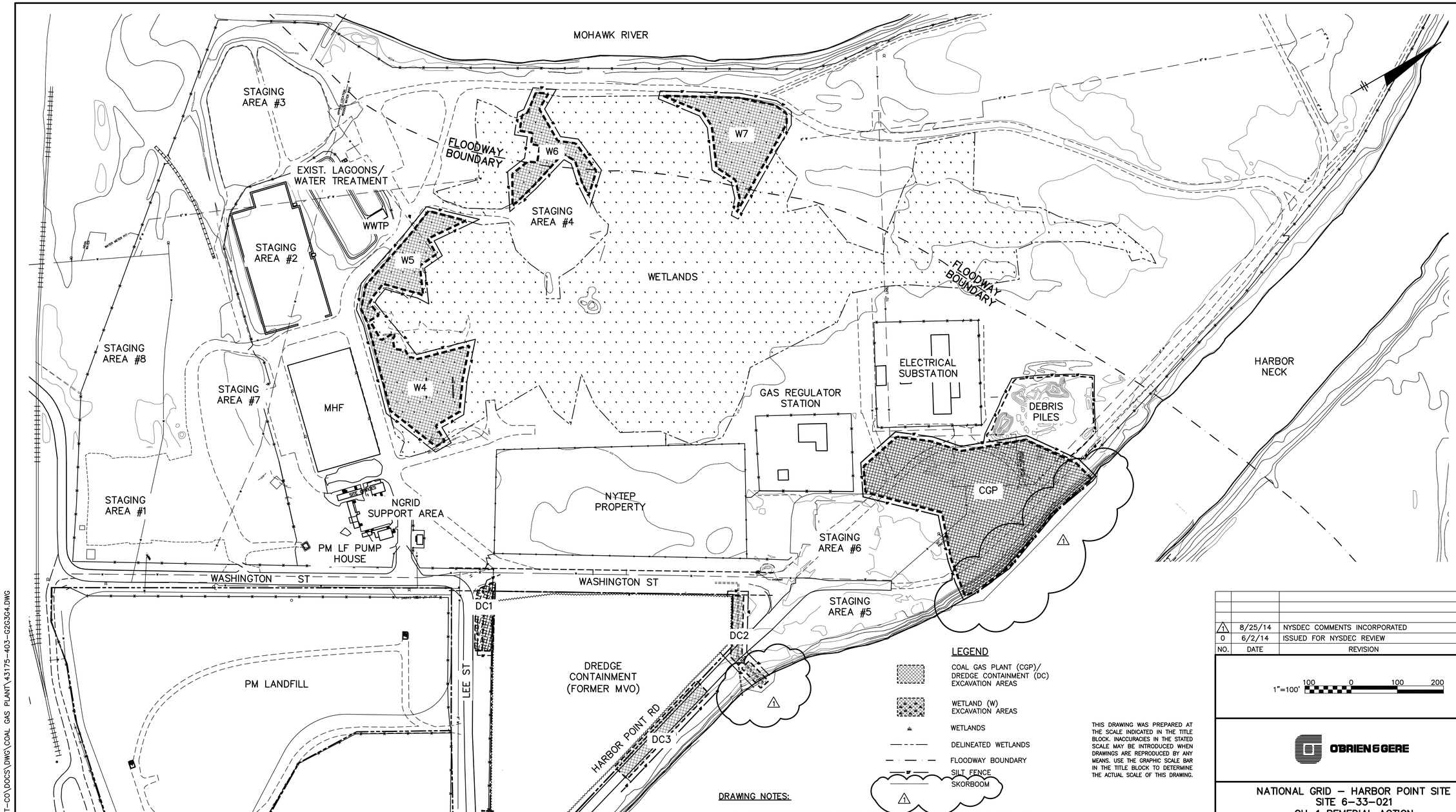
EXISTING UTILITY PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.404
DATE JUNE 2014

G-3

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-403-026304.DWG



LEGEND

- COAL GAS PLANT (CGP)/ DREDGE CONTAINMENT (DC) EXCAVATION AREAS
- WETLAND (W) EXCAVATION AREAS
- WETLANDS
- DELINEATED WETLANDS
- FLOODWAY BOUNDARY
- SILT FENCE
- SKORBOOM

DRAWING NOTES:

1. ALL SILT FENCE LOCATIONS SHOWN HERE ARE APPROXIMATE ONLY AND SHALL BE PROVIDED AT A MINIMUM.
2. THE CONTRACTOR SHALL MAINTAIN OR PROVIDE BYPASS OF FLOW FROM EXISTING DRAINAGE CHANNELS AT ALL TIMES. PROPER EROSION CONTROL TECHNIQUES SHALL BE IMPLEMENTED AS REQUIRED IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED EROSION AND SEDIMENT CONTROL PLAN, SPECIFICATION 02200 "EROSION AND SEDIMENT CONTROL", SPECIFICATION 02201 "STORMWATER POLLUTION PREVENTION" AND THE "STORMWATER POLLUTION PREVENTION PLAN".
3. THE CONTRACTOR SHALL INSTALL EROSION AND CONTROL MEASURES PRIOR TO DISTURBING EXISTING SITE SOILS AND VEGETATION.
4. REFER TO SHT. G-13 FOR EROSION AND SEDIMENT CONTROL DETAILS.
5. CLEARING AND GRUBBING SHALL BE PERFORMED AS REQUIRED IN ACCORDANCE WITH SPECIFICATION 02110 "CLEARING AND GRUBBING" PRIOR TO ANY EXCAVATION ACTIVITIES TAKING PLACE. CLEARING AND GRUBBING SHALL BE LIMITED TO THE EXCAVATION AND SUPPORT AREAS.

NO.	DATE	REVISION	INIT.
1	8/25/14	NYSDEC COMMENTS INCORPORATED	SWA
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=100' 100 0 100 200

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK — STEPHEN W. ANAGNOST — No. 068269 — LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

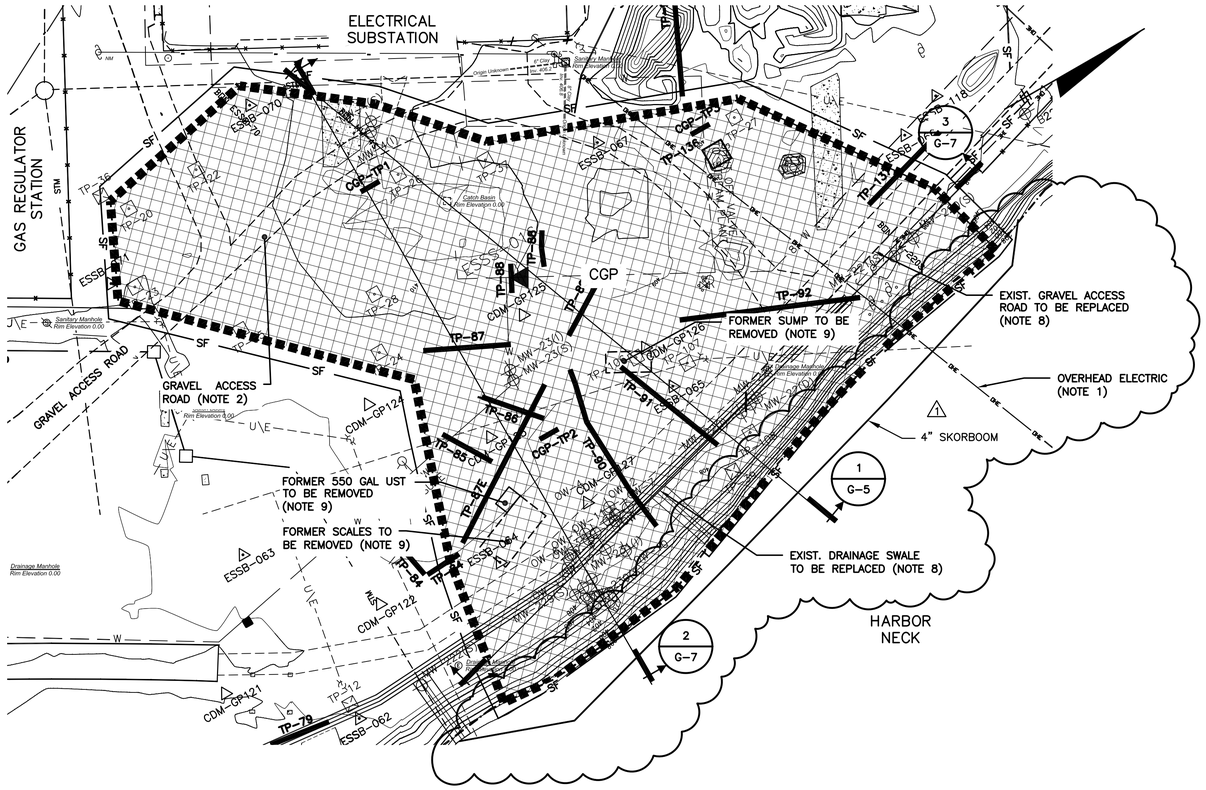
EROSION AND SEDIMENT CONTROL PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.405
DATE JUNE 2014

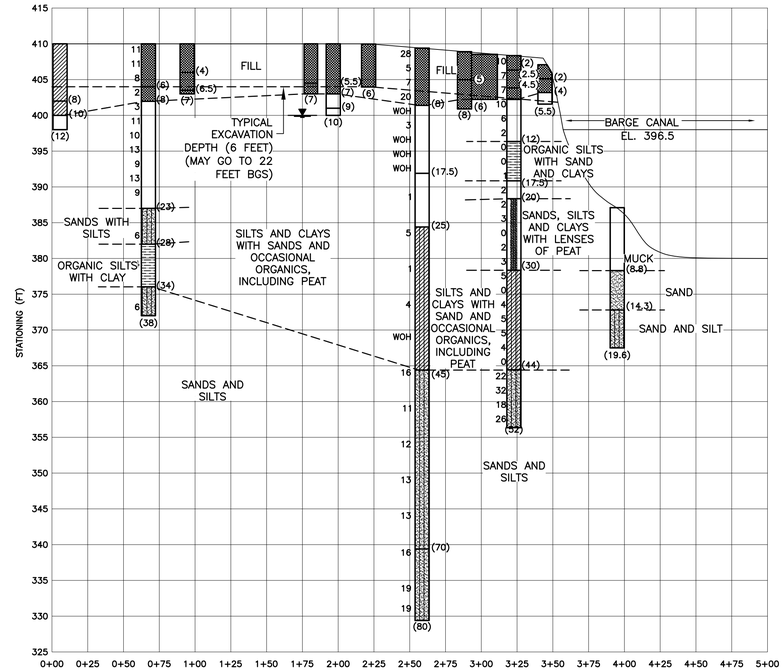
G-4

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-403-G2G3G4.DWG



COAL GAS PLANT EXCAVATION PLAN

SCALE: 1"=40'



GEOLOGIC CROSS SECTION

SCALE: HORIZ. 1"=50'
VERT. 1"=10'

1 / G-5

CROSS SECTION NOTES:

1. SUBSURFACE CONDITIONS SHOWN HERE REPRESENT THOSE AT HISTORICAL TEST BORING LOCATIONS, THE ACTUAL CONDITIONS ENCOUNTERED MAY VARY FROM THAT SHOWN.

DRAWING NOTES:

1. THE CONTRACTOR SHALL BE AWARE THAT PORTIONS OF THE INSTALLATION WILL BE PERFORMED PROXIMATE TO OVERHEAD POWER LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN APPROPRIATE MINIMUM REQUIRED CLEARANCE FROM OVERHEAD ELECTRICAL LINES AND UTILITY POLES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE UTILITY COMPANY TO HAVE OVERHEAD ELECTRICAL LINES SHIELDED/PROTECTED AND FLAGGED (AS APPROPRIATE) PRIOR TO THE INITIATION OF THE WORK EFFORTS. THE CONTRACTOR IS ALSO REQUIRED TO GROUND EQUIPMENT (AS NECESSARY) AND PERFORM ALL WORK EFFORTS IN ACCORDANCE WITH NATIONAL GRID PROTOCOLS FOR WORK PERFORMED PROXIMATE TO OVERHEAD ELECTRICAL HAZARDS.
2. THE CONTRACTOR SHALL MAINTAIN A GRAVEL ACCESS ROAD TO THE ELECTRICAL SUBSTATION FOR NATIONAL GRID'S PERSONAL USE AT ALL TIMES. AT NO TIME SHALL THE CONTRACTORS WORK RESTRICT OR HINDER NATIONAL GRID'S ACCESS TO THE ELECTRICAL SUBSTATION. SEE GRAVEL ACCESS ROAD DETAIL" SHT. G–17.
3. EXCAVATION SHOWN HERE SHALL EXTEND DOWN TO A MINIMUM DEPTH OF SIX FEET BELOW GRADE UNLESS OTHERWISE NOTED. REFER TO COAL GAS PLANT EXCAVATION GRADING PLAN SHT. G–6 FOR ADDITIONAL EXCAVATION DEPTHS.
4. EXCAVATED SOILS SHALL BE SEGREGATED AS THEY ARE BEING EXCAVATED TO SEPARATE THE IMPACTED SOIL EXHIBITING VISIBLE SIGNS OF CONTAMINATION OR OTHER FIELD INDICATORS (e.g. STRONG ODOR OR ELEVATED PHOTO–IONIZATION DETECTOR READINGS) FROM THE SOIL THAT DOES NOT. MATERIAL SHALL BE TESTED AND HANDLED IN ACCORDANCE WITH SPECIFICATION 02220 "EARTHWORK". EXCAVATED MATERIAL CONTAINING GROSS FREE PRODUCT CONTAMINATION (NON–AQUEOUS PHASE LIQUID OR TAR) SHALL BE SEGREGATED AND CHARACTERIZED SEPARATELY SINCE THIS MATERIAL MAY NOT BE ACCEPTABLE FOR TREATMENT AT ESMI. THE WASTE MATERIAL SHALL BE TESTED AND SUBSEQUENTLY DISPOSED OF IN ACCORDANCE WITH SPECIFICATION 02220 "EARTHWORK".
5. IMPACTED SOIL SHALL BE TRANSPORTED TO A THERMAL TREATMENT FACILITY IN ACCORDANCE WITH SPECIFICATION 02302 "OFF–SITE TRANSPORTATION AND DISPOSAL".
6. NON–IMPACTED MATERIAL SHALL BE RE–USED AS BACKFILL AND PLACED BELOW THE DEMARCATION LAYER (ONLY IN NON–WETLAND AREAS AND AREAS NOT ASSOCIATED WITH BANK RESTORATION) AS SHOWN ON SHEET G–17 "TYPICAL RESTORATION DETAIL".
7. THE FOLLOWING MONITORING WELLS LOCATED WITHIN THE LIMITS OF EXCAVATION SHALL BE ABANDONED IN ACCORDANCE WITH SPECIFICATION 02141 "GROUNDWATER MONITORING WELL ABANDONMENT":
8. CDM–MW–218(S) CDM–MW–219(I) CDM–MW–23(S) CDM–MW–23(I) CDM–MW–22(S) CDM–MW–22(D) CDM–MW–22(I) OW–1 THROUGH OW–13
9. EXCAVATIONS SHOWN HERE SHALL BE RESTORED IN KIND. RESTORATION INCLUDES BUT IS NOT LIMITED TO: RESTORATION OF ACCESS ROADS, DRAINAGE DITCHES, ETC. REFER TO "TYPICAL RESTORATION DETAIL" SHEET G–17, SPECIFICATION 02502 "RESTORATION OF SURFACES" AND "TYPICAL BANK RESTORATION DETAIL" SHT. G–18 FOR DETAILS.
10. APPROXIMATE HISTORIC LOCATIONS FOR THE 550 GAL UST, SCALES, AND SUMP ARE SHOWN. THE CONTRACTOR SHALL VERIFY IN THE FIELD THE EXISTENCE OF THE 550 GAL UST, THE SCALE, AND THE SUMP. IF DETERMINED TO EXIST, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE 550 GAL UST, SCALES, AND SUMP.
11. SILT FENCING SHOWN SHALL BE PROVIDED AT A MINIMUM. PROPER EROSION CONTROL TECHNIQUES SHALL BE IMPLEMENTED AS REQUIRED IN ACCORDANCE WITH SPECIFICATION SECTION 02200 "EROSION AND SEDIMENT CONTROL".
12. 4" SKORBOOM (SKIRTED SORBENT OIL BOOM) SHALL BE AS MANUFACTURED BY ELASTEC/AMERICAN MARINE, INC. OR APPROVED EQUAL. 4" SKORBOOM SHALL BE PLACED AS SHOWN AND/OR DIRECTED BY THE ENGINEER.

POINT TABLE COAL GAS PLANT		
POINT #	NORTHING	EASTING
P1	1136540.2791'	1183024.6414'
P2	1136555.0185'	1182935.5945'
P3	1136586.8959'	1182837.2449'
P4	1136465.9139'	1182715.6860'
P5	1136490.1012'	1182665.1659'
P6	1136584.8883'	1182646.2757'
P7	1136644.9418'	1182691.6457'
P8	1136689.0715'	1182741.6004'
P9	1136822.4765'	1182791.0089'
P10	1136892.3376'	1182889.2897'
P11	1136904.1492'	1182935.8408'

SURFACE AREA = 89,800 ft²
EXCAVATION DEPTH = 6 FT MIN
ESTIMATED EXCAVATION VOLUME = 26,500 CY

LEGEND:

- 8 — STANDARD PENETRATION RESISTANCE, N–VALUE (BLOWS PER FOOT)
- STRATA CHANGE
- OBSERVED GROUNDWATER LEVEL
- 24 — SPT N VALUE (pl/ft) (BLOW COUNTS)
- BOE — BOTTOM OF EXPLORATION (ft)

SOIL TYPES:

- FILL
- ORGANIC SILT
- SAND
- SILT AND CLAY
- SILT AND SAND

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK — STEPHEN W. ANAGNOST — No. 068269 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	INIT.
1	8/25/14	NYSDEC COMMENTS INCORPORATED	SWA
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=10' 10 0 10 20
1"=40' 40 0 40 80
1"=50' 50 0 50 100

O'BRIEN & GERE

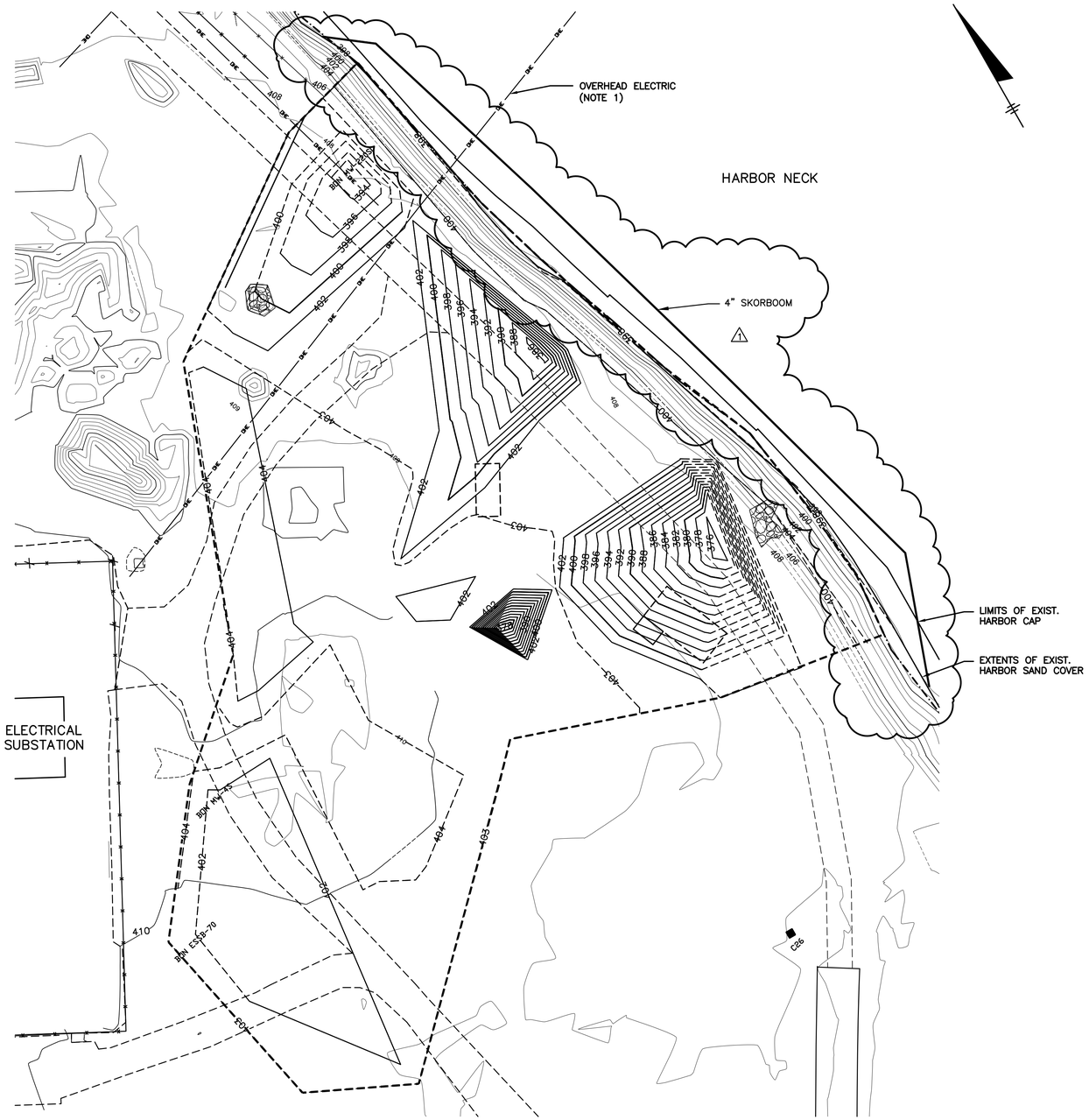
NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION
PAH–IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

COAL GAS PLANT EXCAVATION PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH
FILE NO. 1118.43175.406
DATE JUNE 2014
G–5

I:\NATIONAL–GRID.1118\43175.HARBOR–POINT–CO\DOCS\DWG\COAL GAS PLANT\43175–406–556617.DWG



COAL GAS PLANT EXCAVATION GRADING PLAN
SCALE: 1"=30'

DRAWING NOTES:

1. THE CONTRACTOR SHALL BE AWARE THAT PORTIONS OF THE INSTALLATION WILL BE PERFORMED PROXIMATE TO OVERHEAD POWER LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN APPROPRIATE MINIMUM REQUIRED CLEARANCE FROM OVERHEAD ELECTRICAL LINES AND UTILITY POLES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE UTILITY COMPANY TO HAVE OVERHEAD ELECTRICAL LINES SHIELDED/PROTECTED AND FLAGGED (AS APPROPRIATE) PRIOR TO THE INITIATION OF THE WORK EFFORTS. THE CONTRACTOR IS ALSO REQUIRED TO GROUND EQUIPMENT (AS NECESSARY) AND PERFORM ALL WORK EFFORTS IN ACCORDANCE WITH NATIONAL GRID PROTOCOLS FOR WORK PERFORMED PROXIMATE TO OVERHEAD ELECTRICAL HAZARDS.
2. REFER TO COAL GAS PLANT EXCAVATION PLAN SHEET G-5 FOR EXISTING UTILITIES, GROUND FEATURES, MATERIAL HANDLING INFORMATION.
3. DEPTH OF EXCAVATION CONTOURS HAVE BEEN DERIVED FROM PREVIOUS SOIL BORING AND TEST PIT DATA PERFORMED BY CDM.
4. IN AREAS THAT THE SOIL BORING AND TEXT PIT DATA WAS NOT AVAILABLE THE EXCAVATION CONTOURS HAVE BEEN INFERRED.
5. ALL EXCAVATION ACTIVITIES SHOWN HERE SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02220 "EARTHWORK", SPECIFICATION 02402 "STEEL SHEET PILING AND THE "COAL GAS PLANT SHEETING PLAN, SECTIONS AND DETAILS" SHOWN ON SHEETS G-8.

LEGEND:

- 409 — EXISTING SURFACE CONTOUR
- 402 — PROPOSED EXCAVATION CONTOUR
- 402 — PROPOSED INFERRED EXCAVATION CONTOUR
- LIMITS OF EXCAVATION

NO.	DATE	REVISION	INIT.
1	8/25/14	NYSDEC COMMENTS INCORPORATED	SWA
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=30' 30 0 30 60

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068269
LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

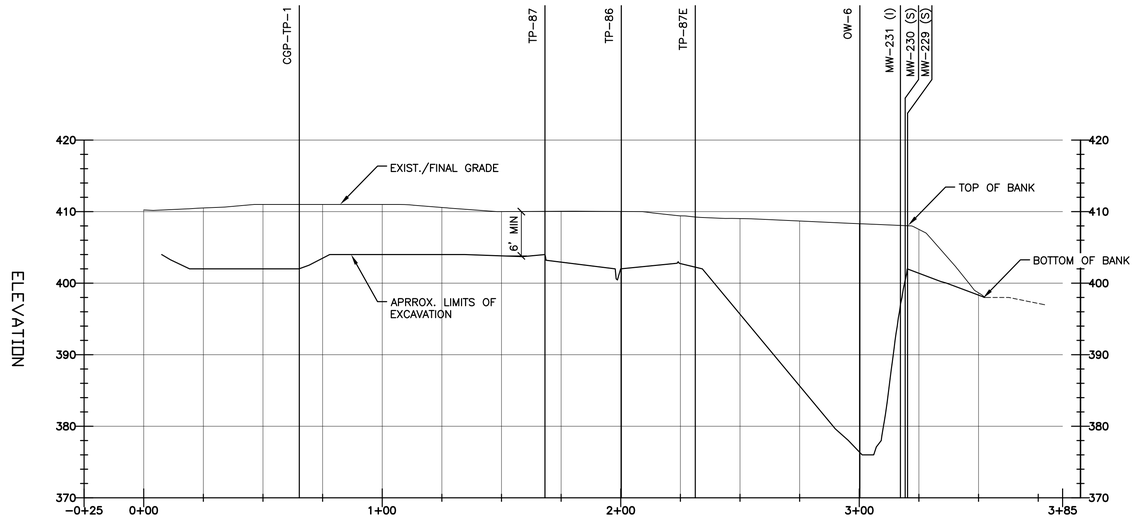
NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

COAL GAS PLANT EXCAVATION GRADING PLAN

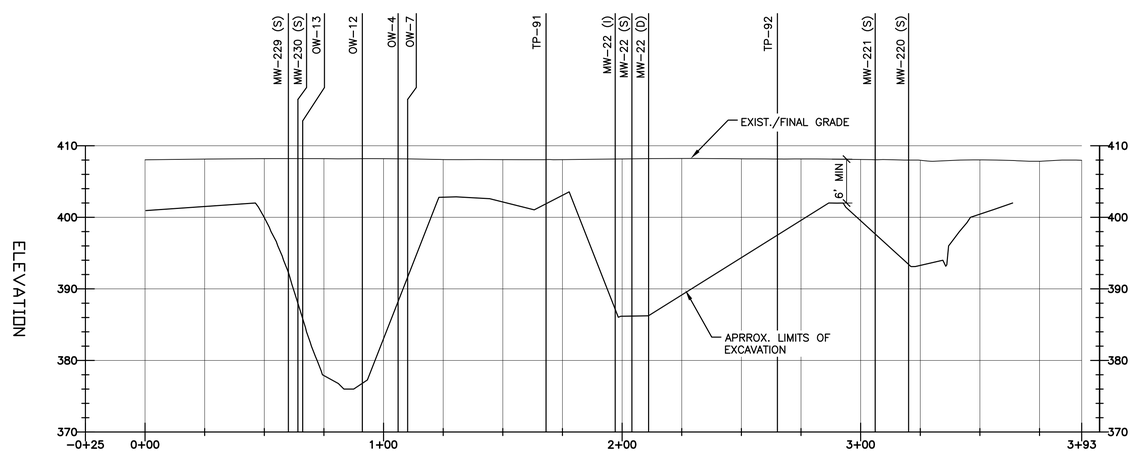
IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH
FILE NO. 1118.43175.407
DATE JUNE 2014
G-6

I:\NATIONAL-GRID.1118\43175.HARBOR_POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-406-GSG667.DWG



SECTION
SCALE: HORIZ. 1"=30'
VERT. 1"=10'

2
G-5



SECTION
SCALE: HORIZ. 1"=30'
VERT. 1"=10'

3
G-5

DRAWING NOTES:

1. LIMITS OF EXCAVATION SHOWN HERE ARE APPROXIMATE ONLY. EXACT LIMITS SHALL BE DETERMINED IN THE FIELD DURING CONSTRUCTION.

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=30' 30 0 30 60

1"=10' 10 0 10 20

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068269
LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

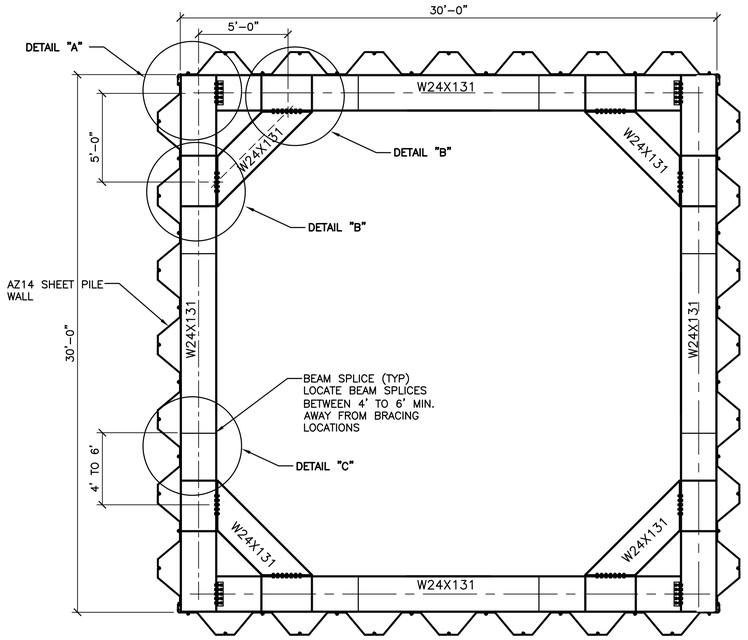
COAL GAS PLANT CROSS SECTIONS

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.408
DATE JUNE 2014

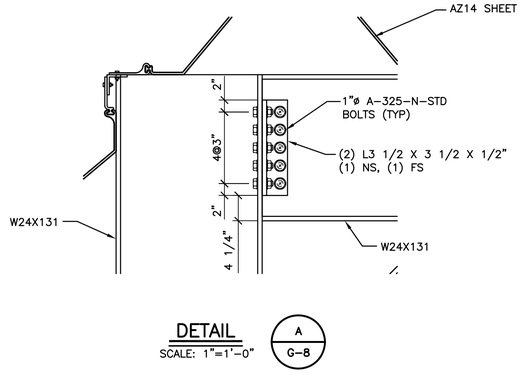
G-7

I:\NATIONAL_GRID.1118\43175.HARBOR_POINT_CO\DOCS\DWG\COAL GAS PLANT\43175-406-G5G667.DWG



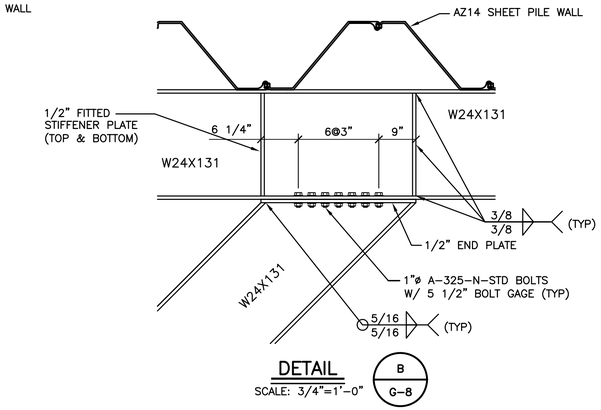
TYPICAL SHEET PILE EXCAVATION PLAN

SCALE: 1/4"=1'-0"



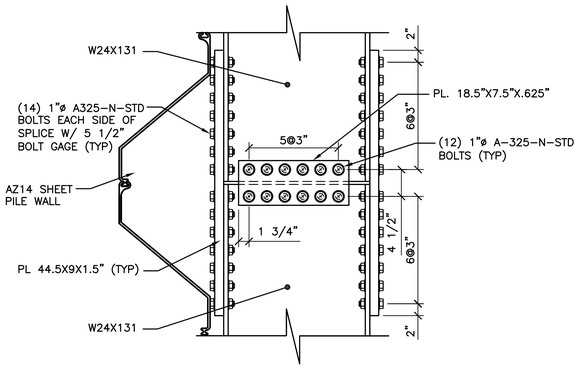
DETAIL A G-8

SCALE: 1"=1'-0"



DETAIL B G-8

SCALE: 3/4"=1'-0"



DETAIL NOTES:

1. BEAM SPLICE DESIGNED FOR SOIL LOADING:
   - A. 120 KIP SHEAR
   - B. 260 KIP AXIAL COMPRESSION
   - C. 330 KIP-FT MOMENT

DETAIL C G-8

SCALE: 3/4"=1'-0"

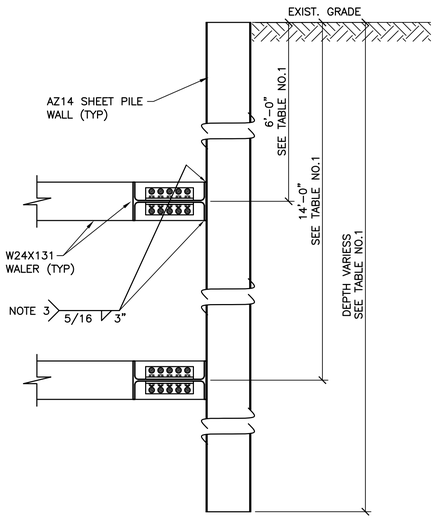


TABLE NO.1

Excavation Depth (ft)	Minimum Toe of Sheeting Depth (ft)	Walers Required	Depth of Walers (ft)
0-7	26.0	0	-
8-15	26.0	1	6
16-22	43.0	2	6/14
23-29	46.0	3	6/14/21
30-32	46.0	4	6/14/21/28

DETAIL NOTES:

1. TYPICAL SHEET PILE SHOWN HERE SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATION 02400 "STEEL SHEET PILING".
2. THE TYPICAL SHEET PILE PILE WALL SECTION SHOWN HERE IS FOR MAXIMUM EXCAVATION DEPTH OF 32'-0".
3. PROVIDE WELD AT EACH LOCATION WHERE SHEETING COMES INTO CONTACT WITH WALER BEAM.
4. THE CONTRACTOR SHALL DEWATER INSIDE AND OUTSIDE THE SHEETED CELL TO A MINIMUM OF 2 FEET BELOW THE PLANNED EXCAVATION DEPTH.
5. ALL DEWATERING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH TECHNICAL SPECIFICATION 02220 "EARTHWORK".
6. ALL CONSTRUCTION WATER SHALL BE HANDLED IN ACCORDANCE WITH SPECIFICATION 02202 "CONSTRUCTION WATER MANAGEMENT".
7. THE CONTRACTOR SHALL INSTALL WALERS IMMEDIATELY AFTER THE EXCAVATION HAS ADVANCED TO AN ELEVATION THAT IS, NO MORE THAN 3 FT BELOW THE CENTERLINE OF WHERE THE WALER IS TO BE INSTALLED PER TABLE NO.1 THIS SHEET.
8. THE WALERS SHALL REMAIN IN PLACE UNTIL SUCH TIME THAT THE CONTRACTOR HAS BACKFILLED AND COMPACTED THE EXCAVATION, TO A POINT THAT IS NO MORE THAN 3 FT BELOW THE WALER.

TYPICAL SHEET PILE WALL SECTION

NOT TO SCALE

STRUCTURAL STEEL NOTES

1. FABRICATE AND ERECT STRUCTURAL STEEL SYSTEMS IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
2. STEEL MEMBERS HAVE BEEN PROPORTIONED UTILIZING ALLOWABLE STRESS DESIGN (ASD) METHODS AS PRESCRIBED BY A.I.S.C.
3. STRUCTURAL STEEL SHALL BE DETAILED IN ACCORDANCE WITH "DETAILING FOR STEEL CONSTRUCTION (A.I.S.C.)" AND WHERE REQUIRED, DESIGNED IN ACCORDANCE WITH CITED REFERENCES.
4. STRUCTURAL STEEL SHALL BE NEW AND CONFORM TO:
   - a. UNLESS OTHERWISE NOTED — A.S.T.M. A992 (Fy=50 K.S.I.)
   - b. MISC. STRUCTURAL SHAPES & CONNECTIONS — A.S.T.M. A36 (Fy=36 K.S.I.)
   - c. HIGH STRENGTH BOLTS — A.S.T.M. A325-N
5. WELDING SHALL CONFORM TO THE REQUIREMENTS OF A.W.S. D1.1, AND SHALL BE PERFORMED BY APPROVED, CERTIFIED PERSONS.
6. WELDED CONNECTIONS SHALL UTILIZE E70XX ELECTRODES.
7. WELDS SHALL DEVELOP THE FULL STRENGTH OF THE MATERIALS BEING WELDED, UNLESS NOTED OTHERWISE, EXCEPT THAT FILLET WELDS SHALL BE A MINIMUM OF 1/4" U.O.N.
8. PRINCIPAL STRUCTURAL BOLTED CONNECTIONS SHALL BE MADE USING 3/4" DIAMETER MINIMUM A.S.T.M. A325 BOLTS IN BEARING CONNECTIONS, UNLESS NOTED OTHERWISE.
9. A MINIMUM OF TWO (2) BOLTS SHALL BE UTILIZED AT CONNECTIONS.
10. PROVIDE STIFFENERS "FINISHED TO BEAR" UNDER LOAD CONCENTRATIONS ON SUPPORTING MEMBERS, AND WHERE SHOWN ON THE DRAWINGS.
11. THE CONTRACTOR SHALL FURNISH & INSTALL ALL PLATES, CLIP ANGLES, CONNECTION MATERIALS, ETC. AS REQUIRED FOR COMPLETION OF THE STRUCTURE, EVEN IF SUCH ITEMS ARE NOT SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS.

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

NO.	DATE	REVISION	INIT.
0	5/28/14	ISSUED FOR NYSDEC REVIEW	LWW

1"=1'-0" 1 0 1 2

3/4"=1'-0" 1 0 1 2 3

1/4"=1'-0" 2 0 2 4 6 8 10

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL
COAL GAS PLANT

TYPICAL SHEETING EXCAVATION PLAN, SECTION AND NOTES

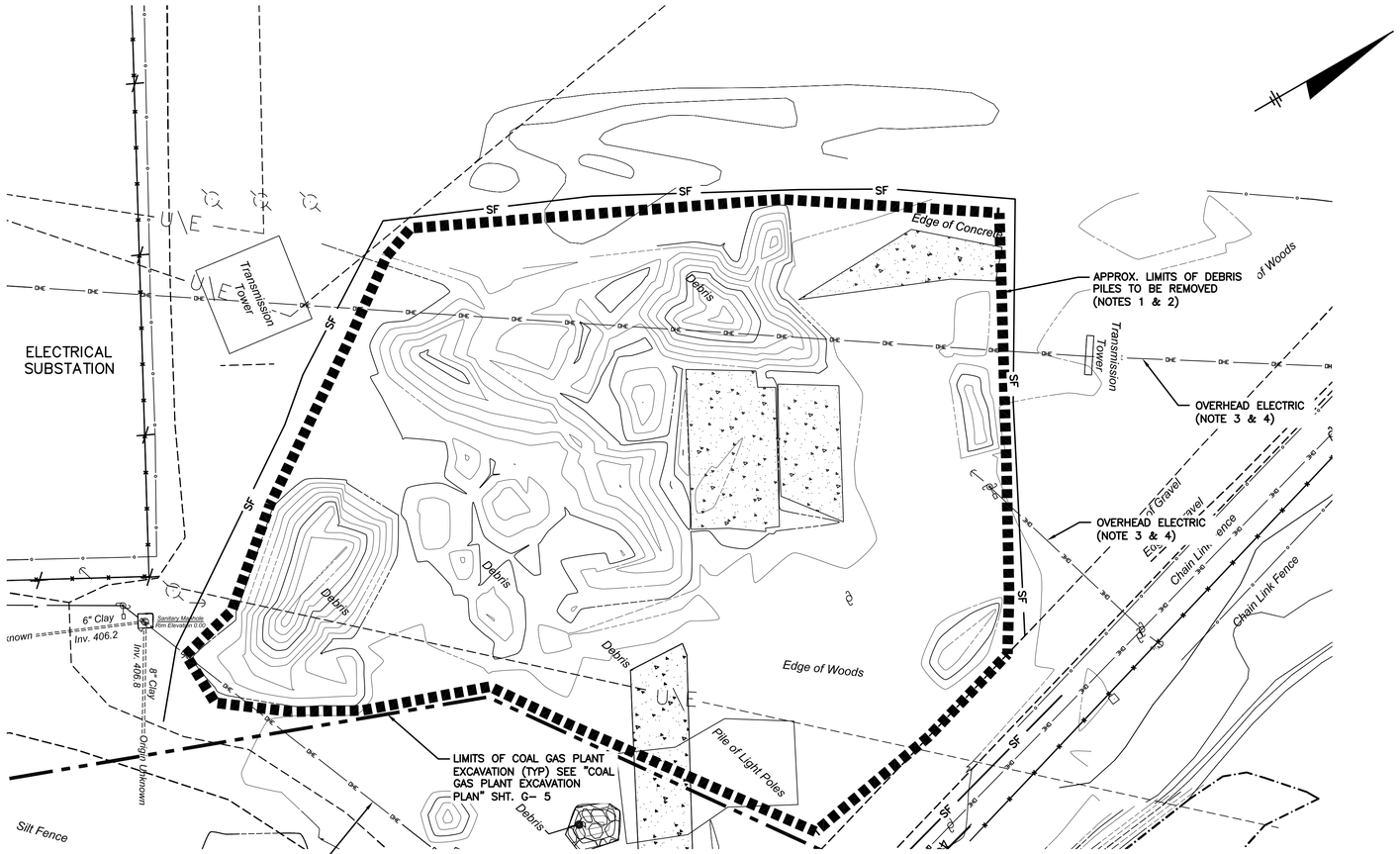
IN CHARGE OF LEONARD W. WOODS
DESIGNED BY CGC CHECKED BY LWW
DRAWN BY CGC

FILE NO. 1118.43175.409

DATE MAY 2014

G-8

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-409-G8.DWG



DEBRIS PILE REMOVAL PLAN

SCALE: 1"=40'

DRAWING NOTES:

1. DEBRIS PILES SHOWN HERE CONSIST OF, BUT MAY NOT BE LIMITED TO, ASPHALT, BRICK, CONCRETE, SOIL, TIRES, DRUMS AND METAL.
2. THE CONTRACTOR SHALL REMOVE ALL DEBRIS PILES TO THE LIMITS SHOWN AND DISPOSE OF THE MATERIAL OFF-SITE AT A OWNER APPROVED DISPOSAL FACILITY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY DE-ENERGIZING, OR INTERRUPTION OF SERVICE, REMOVAL, RELOCATION, REPLACEMENT OF ANY UTILITIES POLES, GUY WIRES, UNDERGROUND UTILITIES AND/OR OVERHEAD WIRES WITHIN THE LIMITS OF WORK, OR THAT COULD OTHERWISE INTERFERE WITH THE REMEDIAL ACTIONS.
4. THE CONTRACTOR SHALL BE AWARE THAT PORTIONS OF THE INSTALLATION WILL BE PERFORMED PROXIMATE TO OVERHEAD POWER LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN APPROPRIATE MINIMUM REQUIRED CLEARANCE FROM OVERHEAD ELECTRICAL LINES AND UTILITY POLES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE UTILITY COMPANY TO HAVE OVERHEAD ELECTRICAL LINES SHIELDED/PROTECTED AND FLAGGED (AS APPROPRIATE) PRIOR TO THE INITIATION OF THE WORK EFFORTS. THE CONTRACTOR IS ALSO REQUIRED TO GROUND EQUIPMENT (AS NECESSARY) AND PERFORM ALL WORK EFFORTS IN ACCORDANCE WITH NATIONAL GRID PROTOCOLS FOR WORK PERFORMED PROXIMATE TO OVERHEAD ELECTRICAL HAZARDS.

APPROX. SURFACE AREA = 43,500 ft²
ESTIMATED DISPOSAL VOLUME = 3,500 CY

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=40' 40 0 40 80

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

DEBRIS PILE DISPOSAL PLAN

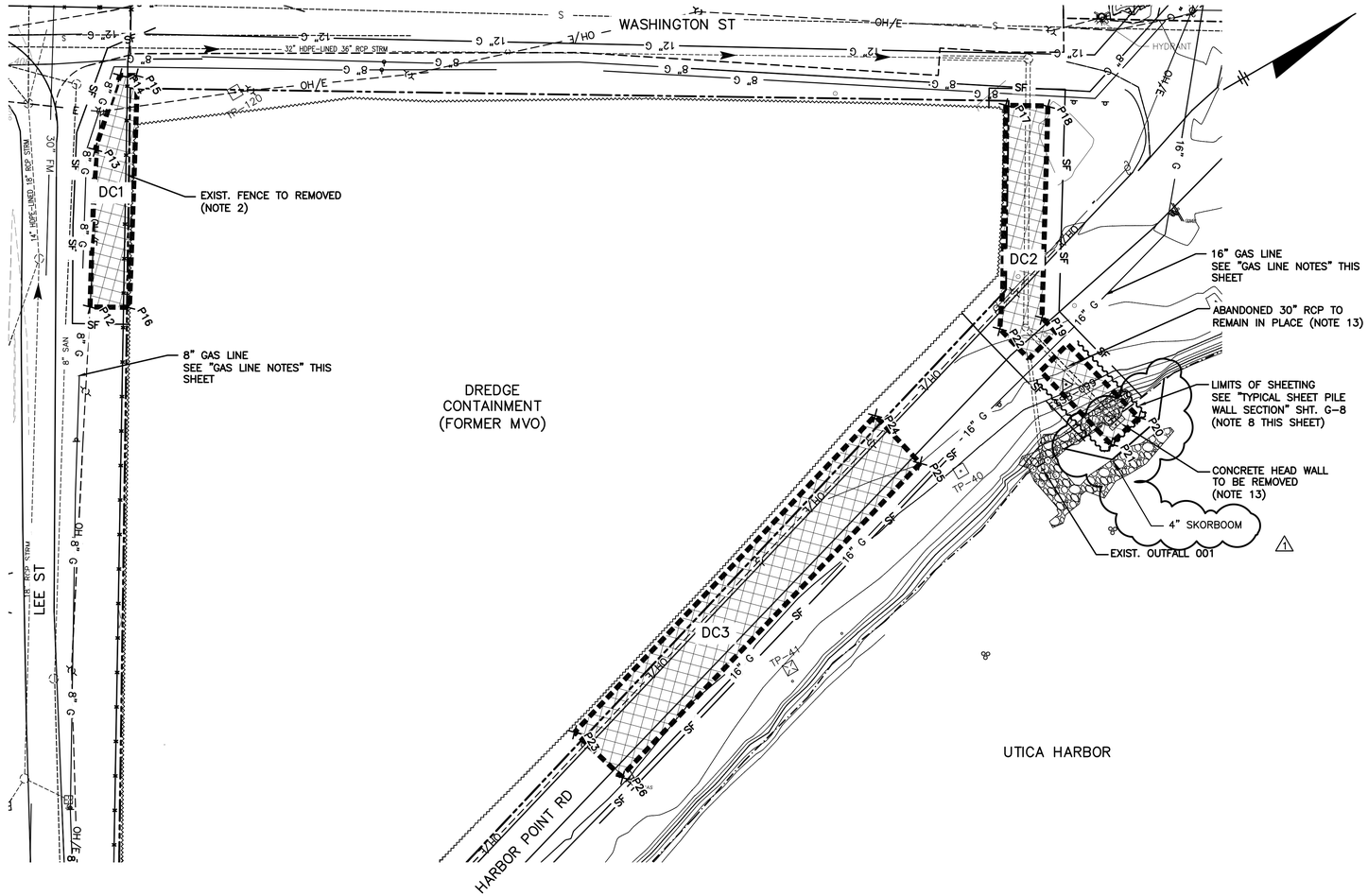
IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH
FILE NO. 1118.43175.410
DATE JUNE 2014
G-9

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK · STEPHEN W. ANAGNOST · No. 068269 · LICENSED PROFESSIONAL ENGINEER

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-410-09.DWG



DREDGE CONTAINMENT – ADDITIONAL EXCAVATION PLAN

SCALE: 1"=40'

POINT TABLE DC1		
POINT #	NORTHING	EASTING
P12	1135575.0058'	1182598.1918'
P13	1135624.1352'	1182519.1593'
P14	1135658.8806'	1182488.3918'
P15	1135667.1423'	1182493.3191'
P16	1135594.4064'	1182609.6890'

SURFACE AREA = 2,933 ft²
EXCAVATION DEPTH = 6 FT
ESTIMATED EXCAVATION VOLUME = 652 CY

POINT TABLE DC2		
POINT #	NORTHING	EASTING
P17	1136103.5664'	1182765.6239'
P18	1136124.7742'	1182778.6670'
P19	1136059.2542'	1182885.2007'
P20	1136079.3583'	1182964.9660'
P21	1136057.2202'	1182970.4225'
P22	1136034.3600'	1182878.4306'

SURFACE AREA = 5,125 ft²
EXCAVATION DEPTH = 6 FT
ESTIMATED EXCAVATION VOLUME = 1,140 CY

POINT TABLE DC3		
POINT #	NORTHING	EASTING
P23	1135697.3573'	1182959.3062'
P24	1135944.8609'	1182885.9447'
P25	1135953.8516'	1182923.6955'
P26	1135708.5153'	1182996.7683'

SURFACE AREA = 9,870 ft²
EXCAVATION DEPTH = 6 FT
ESTIMATED EXCAVATION VOLUME = 2,200 CY

DRAWING NOTES:

1. EXCAVATIONS SHOWN HERE SHALL EXTEND DOWN TO A DEPTH OF SIX FEET BELOW GRADE, UNLESS OTHERWISE NOTED.
2. EXISTING FENCE AND GATES SHALL BE TEMPORARILY REMOVED AND REPLACED AS REQUIRED TO PERFORM THE WORK. REFER TO "TYPICAL CHAIN LINK FENCE AND GATE DETAIL" SHT. G-17 FOR REPLACEMENT DETAILS.
3. EXCAVATED SOILS SHALL BE SEGREGATED AS THEY ARE BEING EXCAVATED TO SEPARATE THE IMPACTED SOIL EXHIBITING VISIBLE SIGNS OF CONTAMINATION OR OTHER FIELD INDICATORS (e.g. STRONG ODOR OR ELEVATED PHOTO-IONIZATION DETECTOR READINGS) FROM THE SOIL THAT DOES NOT. MATERIAL SHALL BE TESTED AND HANDLED IN ACCORDANCE WITH SPECIFICATION 02220 "EARTHWORK". EXCAVATED MATERIAL CONTAINING GROSS FREE PRODUCT CONTAMINATION (NON-AQUEOUS PHASE LIQUID OR TAR) SHALL BE SEGREGATED AND CHARACTERIZED SEPARATELY SINCE THIS MATERIAL MAY NOT BE ACCEPTABLE FOR TREATMENT AT ESMI. THE WASTE MATERIAL SHALL BE TESTED AND SUBSEQUENTLY DISPOSED OF IN ACCORDANCE WITH SPECIFICATION 02220 "EARTHWORK".
4. IMPACTED SOIL SHALL BE TRANSPORTED TO A THERMAL TREATMENT FACILITY IN ACCORDANCE WITH SPECIFICATION 02302 "OFF-SITE TRANSPORTATION AND DISPOSAL".
5. NON-IMPACTED MATERIAL SHALL BE RE-USED AS BACKFILL AND PLACED BELOW THE DEMARCATION LAYER (ONLY IN NON-WETLAND AREAS AND AREAS NOT ASSOCIATED WITH BANK RESTORATION) AS SHOWN ON SHEET G-17 "TYPICAL RESTORATION DETAIL".
6. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY DE-ENERGIZING, OR INTERRUPTION OF SERVICE, REMOVAL, RELOCATION, REPLACEMENT OF ANY UTILITIES POLES, GUY WIRES, UNDERGROUND UTILITIES AND/OR OVERHEAD WIRES WITHIN THE LIMITS OF WORK, OR THAT COULD OTHERWISE INTERFERE WITH THE REMEDIAL ACTIONS.
7. THE CONTRACTOR SHALL BE AWARE THAT PORTIONS OF THE INSTALLATION WILL BE PERFORMED PROXIMATE TO OVERHEAD POWER LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN APPROPRIATE MINIMUM REQUIRED CLEARANCE FROM OVERHEAD ELECTRICAL LINES AND UTILITY POLES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE UTILITY COMPANY TO HAVE OVERHEAD ELECTRICAL LINES SHIELDED/PROTECTED AND FLAGGED (AS APPROPRIATE) PRIOR TO THE INITIATION OF THE WORK EFFORTS. THE CONTRACTOR IS ALSO REQUIRED TO GROUND EQUIPMENT (AS NECESSARY) AND PERFORM ALL WORK EFFORTS IN ACCORDANCE WITH NATIONAL GRID PROTOCOLS FOR WORK PERFORMED PROXIMATE TO OVERHEAD ELECTRICAL HAZARDS.
8. ROADWAY ACCESS TO THE GAS REGULATOR STATION AND THE ELECTRICAL SUBSTATION SHALL BE OPEN AT ALL TIMES VIA HARBOR POINT ROAD AND/OR WASHINGTON STREET. AT NO TIME SHALL THE CONTRACTORS WORK JEOPARDIZE ACCESS TO THE GAS REGULATOR STATION OR THE ELECTRICAL SUBSTATION.
9. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND MATERIALS AS MAY BE REQUIRED TO GAIN ACCESS TO INSTALL SHEETED EXCAVATION.
10. ALL EXCAVATIONS SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION 02220 "EARTHWORK".
11. REFER TO SHEET G-16 FOR EXCAVATION WORK AROUND UTILITIES AND UTILITY POLES.
12. ALL EXCAVATIONS SHALL BE RESTORED IN KIND. REFER TO "TYPICAL RESTORATION DETAIL" SHEET G-17, SPECIFICATION 02502 "RESTORATION OF SURFACES" AND "BANK RESTORATION PLANS" SHT. G-18 FOR DETAILS.
13. THE CONTRACTOR SHALL REMOVE THE CONCRETE HEADWALL AND DISPOSE OF IT OFF-SITE AT A OWNER APPROVED FACILITY. THE CONTRACTOR SHALL LEAVE THE ABANDONED 30" RCP IN PLACE AND VERIFY THAT IT HAS BEEN ABANDONED. IF IT IS DETERMINED THAT THE 30" RCP HAS NOT PROPERLY BEEN ABANDONED, THE CONTRACTOR SHALL ABANDON IT IN PLACE BY FILLING IT WITH FLOWABLE FILL AND PLUGING THE END.
14. REFER TO SHEET G-18 FOR "ASPHALT ROAD RESTORATION" DETAILS

GAS LINE NOTES:

1. NO WORK SHALL BE DONE NEAR ANY GAS LINE WITHOUT PRIOR APPROVAL AND COORDINATION WITH NATIONAL GRID.
2. INSTALLATION OF STEEL SHEET PILING NEAR EXISTING UTILITIES SHALL BE COORDINATED WITH NATIONAL GRID PRIOR TO START OF DRIVING STEEL SHEET PILINGS.
3. NO SHEETING INSTALLATION EQUIPMENT SHALL BE PLACED OVER UNDERGROUND GAS UTILITIES WITHOUT PRIOR APPROVAL AND COORDINATION WITH NATIONAL GRID.
4. THE CONTRACTOR SHALL LOCATE ALL GAS UTILITIES PRIOR TO THE INSTALLATION OF THE STEEL SHEETING AND WITH THE APPROVAL AND COORDINATION WITH NATIONAL GRID SHALL UTILIZE CRANE MATS ABOVE GAS UTILITIES TO DISTRIBUTE LOADS FOR ALL EQUIPMENT.
5. THE CONTRACTOR SHALL INSTALL AND OPERATE VIBRATION MONITORING AND MINIMIZATION DEVICES IN ACCORDANCE WITH SPECIAL PROVISION SP-23 "VIBRATION MINIMIZATION AND MONITORING PLAN" DURING INSTALLATION OF TEMPORARY SHEETING.

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK · STEPHEN W. ANAGNOST · No. 068269 · LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	INIT.
1	8/25/14	NYSDEC COMMENTS INCORPORATED	SWA
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=40' (40 0 40 80)

O'BRIEN & GERE

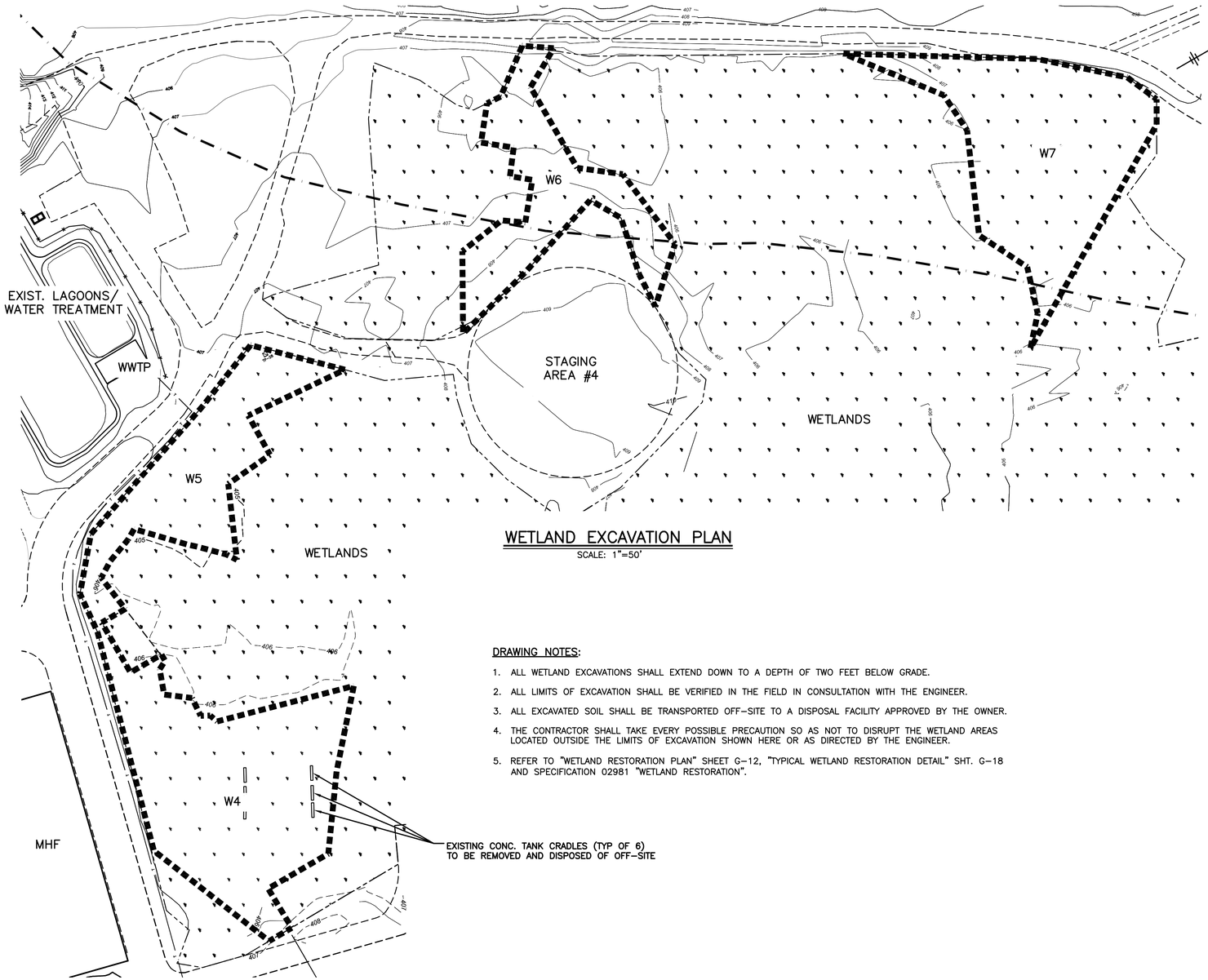
NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

DREDGE CONTAINMENT ADDITIONAL EXCAVATIONS PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH
FILE NO. 1118.43175.411
DATE JUNE 2014
G-10

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-411-G10.DWG



WETLAND EXCAVATION PLAN

SCALE: 1"=50'

DRAWING NOTES:

1. ALL WETLAND EXCAVATIONS SHALL EXTEND DOWN TO A DEPTH OF TWO FEET BELOW GRADE.
2. ALL LIMITS OF EXCAVATION SHALL BE VERIFIED IN THE FIELD IN CONSULTATION WITH THE ENGINEER.
3. ALL EXCAVATED SOIL SHALL BE TRANSPORTED OFF-SITE TO A DISPOSAL FACILITY APPROVED BY THE OWNER.
4. THE CONTRACTOR SHALL TAKE EVERY POSSIBLE PRECAUTION SO AS NOT TO DISRUPT THE WETLAND AREAS LOCATED OUTSIDE THE LIMITS OF EXCAVATION SHOWN HERE OR AS DIRECTED BY THE ENGINEER.
5. REFER TO "WETLAND RESTORATION PLAN" SHEET G-12, "TYPICAL WETLAND RESTORATION DETAIL" SHT. G-18 AND SPECIFICATION 02981 "WETLAND RESTORATION".

POINT TABLE W4		
POINT #	NORTHING	EASTING
P27	1135714.7528'	1181861.7272'
P28	1135721.8851'	1181856.5877'
P29	1135721.8851'	1181905.9118'
P30	1135752.5294'	1181905.9118'
P31	1135752.5294'	1181912.0185'
P32	1135744.9229'	1181916.0559'
P33	1135737.3535'	1181936.6777'
P34	1135756.6147'	1181951.2361'
P35	1135755.3408'	1181968.1068'
P36	1135762.5148'	1181971.9872'
P37	1135765.1248'	1181979.2982'
P38	1135881.6828'	1182011.4762'
P39	1135790.9068'	1182125.0052'
P40	1135731.3954'	1182125.1516'
P41	1135731.6624'	1182164.3317'
P42	1135709.6535'	1182164.4816'
P43	1135662.8774'	1182048.1044'

SURFACE AREA = 29,150 ft²
EXCAVATION DEPTH = 2 FT
ESTIMATED EXCAVATION VOLUME = 2,160 CY

POINT TABLE W5		
POINT #	NORTHING	EASTING
P44	1135718.1693'	1181825.8897'
P45	1135751.7679'	1181786.3224'
P46	1135951.0091'	1181714.5432'
P47	1136010.1351'	1181772.7226'
P48	1135919.1960'	1181765.7255'
P49	1135918.4841'	1181804.1436'
P50	1135875.0738'	1181807.9192'
P51	1135849.5039'	1181866.8070'
P52	1135787.6950'	1181802.8924'
P53	1135740.7118'	1181823.1802'
P54	1135745.1700'	1181856.5800'

SURFACE AREA = 15,000 ft²
EXCAVATION DEPTH = 2 FT
ESTIMATED EXCAVATION VOLUME = 1,120 CY

POINT TABLE W6		
POINT #	NORTHING	EASTING
P55	1136115.0233'	1181794.3110'
P56	1136148.3060'	1181735.4940'
P57	1136187.8626'	1181729.8739'
P58	1136207.2470'	1181741.1350'
P59	1136230.6394'	1181712.4549'
P60	1136215.7050'	1181700.2740'
P61	1136228.8540'	1181682.3232'
P62	1136208.6635'	1181662.9413'
P63	1136229.9424'	1181636.3910'
P64	1136242.8988'	1181637.2366'
P65	1136280.6416'	1181608.7661'
P66	1136303.0038'	1181624.0862'
P67	1136269.1058'	1181643.0672'
P68	1136269.1348'	1181722.9032'
P69	1136300.2288'	1181747.0542'
P70	1136309.0998'	1181821.1002'
P71	1136267.6248'	1181859.2489'
P72	1136269.4776'	1181828.4233'
P73	1136280.1808'	1181778.8150'
P74	1136264.9710'	1181752.3197'

SURFACE AREA = 14,250 ft²
EXCAVATION DEPTH = 2 FT
ESTIMATED EXCAVATION VOLUME = 1,060 CY

POINT TABLE W7		
POINT #	NORTHING	EASTING
P75	1136529.6776'	1182048.6769'
P76	1136548.1828'	1182027.9502'
P77	1136560.3068'	1181989.0072'
P78	1136538.1728'	1181944.9242'
P79	1136574.2378'	1181862.0532'
P80	1136572.1018'	1181825.9942'
P81	1136517.2033'	1181753.8603'
P82	1136657.5657'	1181839.7083'
P83	1136715.6823'	1181891.2200'
P84	1136728.0755'	1181919.9703'
P85	1136717.2646'	1181938.7741'

SURFACE AREA = 25,850 ft²
EXCAVATION DEPTH = 2 FT
ESTIMATED EXCAVATION VOLUME = 1,920 CY

LEGEND

- WETLAND (W) EXCAVATION AREAS
- WETLANDS
- DELINEATED WETLANDS
- FLOODWAY BOUNDARY

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=50' 50 0 50 100

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK · STEPHEN W. ANAGNOST · No. 068269 · LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

WETLANDS EXCAVATION PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.412
DATE JUNE 2014

G-11

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-412-G11G12G13.DWG



WETLAND RESTORATION PLAN

SCALE: 1"=50'

DRAWING NOTES:

1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" SHT. G-18 AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN SPECIFICATION 02981 "WETLAND RESTORATION".

LEGEND

- UNDISTURBED WETLAND
- ZONE B – WET MEADOW
- ZONE C – SCRUB SHRUB
- ZONE D – FLOODPLAIN FOREST

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=50' 50 0 50 100

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068269
LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

WETLANDS RESTORATION PLAN

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY KWB CHECKED BY SWA
DRAWN BY MWH

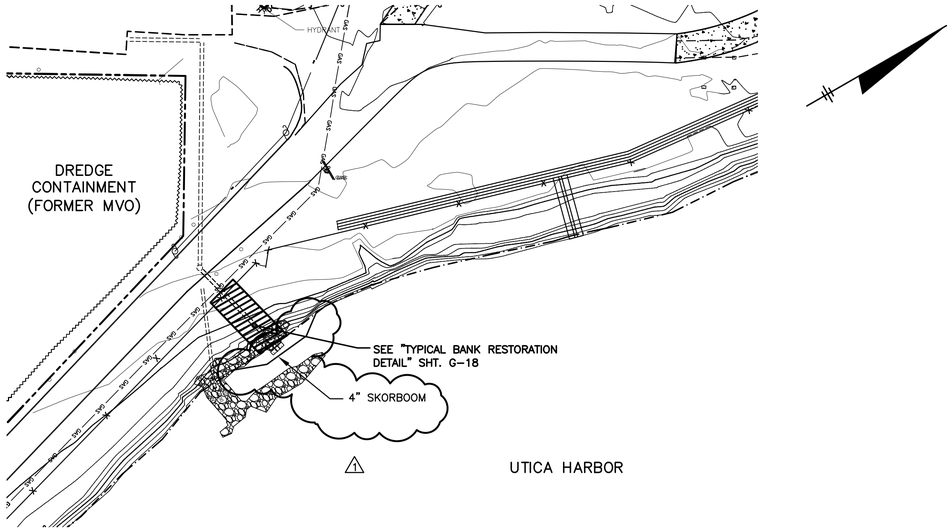
FILE NO. 1118.43175.413
DATE JUNE 2014

G-12

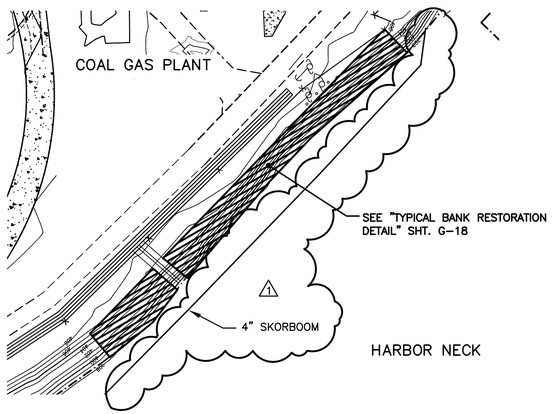
I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-412-G11G12G13.DWG

DRAWING NOTES:

1. AREAS REQUIRING BANK RESTORATION SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL BANK RESTORATION DETAIL" SHEET G–18 AND SPECIFICATION 02982 "FLOODPLAIN FOREST AND MEADOW RESTORATION".
2. NO ON–SITE SOILS SHALL BE USED FOR BANK RESTORATION.



PARTIAL BANK RESTORATION PLAN – DREDGE CONTAINMENT AREA
SCALE: 1"=50'



PARTIAL BANK RESTORATION PLAN – COAL GAS PLANT AREA
SCALE: 1"=50'

NO.	DATE	REVISION	INIT.
1	8/25/14	NYSDEC COMMENTS INCORPORATED	SWA
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=50' 50 0 50 100

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068269
LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION
PAH–IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

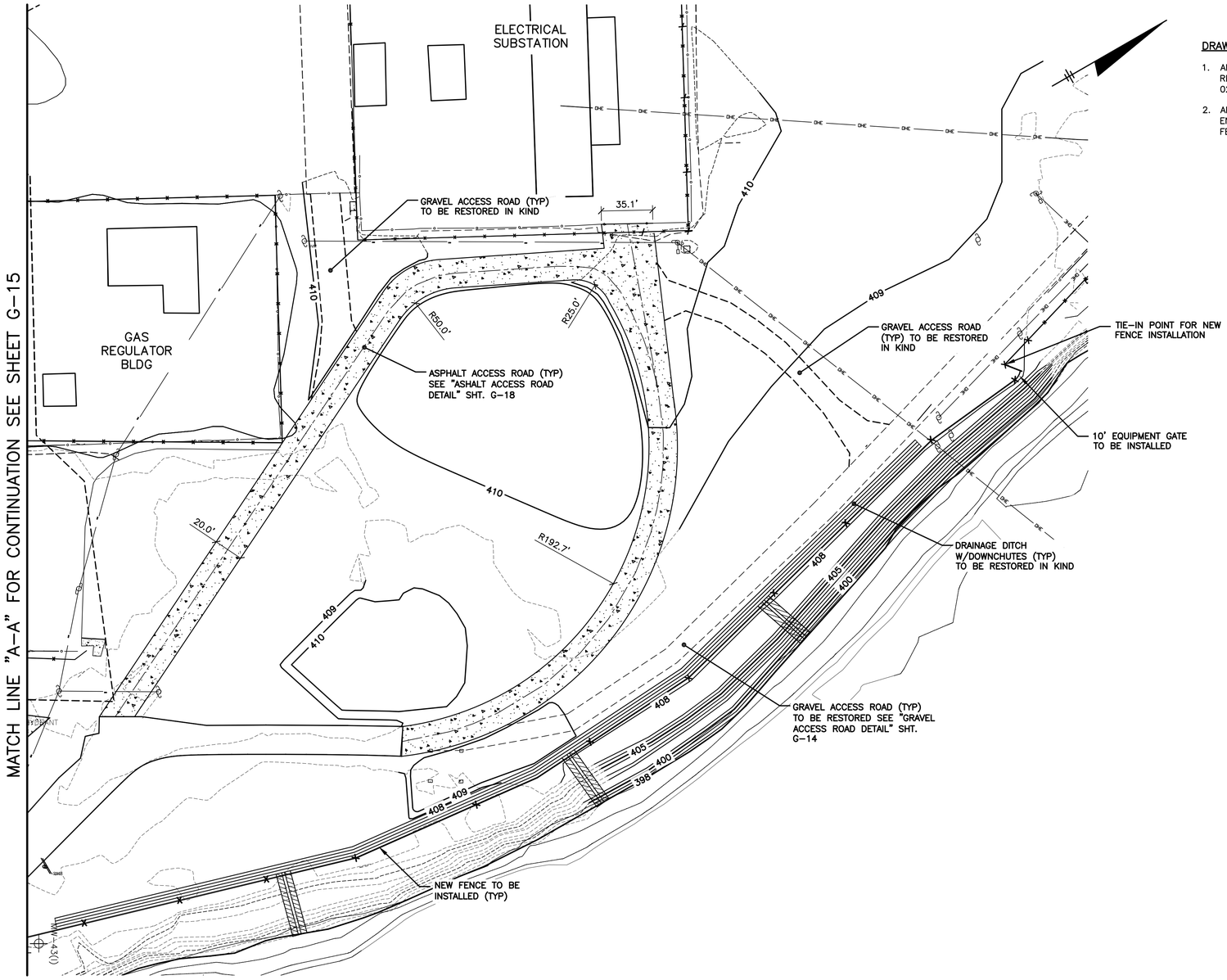
BANK RESTORATION PLANS

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.414
DATE JUNE 2014

G–13

I:\NATIONAL–GRID.1118\43175.HARBOR–POINT–CO\DOCS\DWG\COAL GAS PLANT\43175–412–G11012G13.DWG



COAL GAS PLANT GRADING PLAN

SCALE: 1"=40'

DRAWING NOTES:

1. ALL DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE "TYPICAL RESTORATION DETAIL" SHT. G-17, THE "TYPICAL BANK RESTORATION DETAIL" SHT. G-18 AND SPECIFICATION 02982 "FLOODPLAIN FOREST AND MEADOW RESTORATION" UNLESS OTHERWISE DIRECTED.
2. ALL FENCING AND GATES SHALL BE INSTALLED AT THE LOCATIONS SHOWN AND/OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SPECIFICATION 02831 "CHAIN LINK FENCE AND GATES" AND "CHAIN LINK FENCE AND GATE DETAIL" SHT. G-17.

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=40' 40 0 40 80

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068269
LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

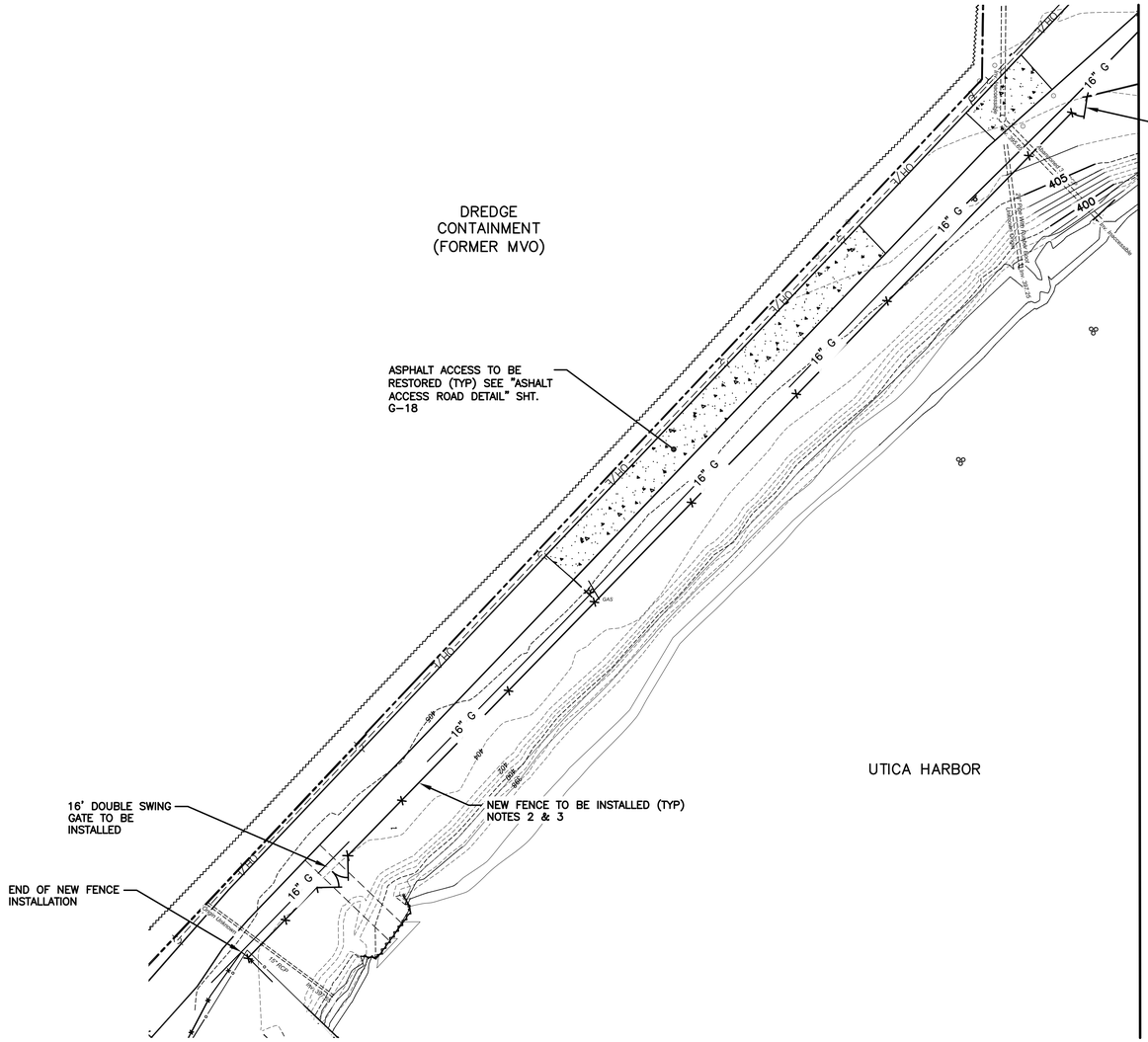
NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

PARTIAL SITE RESTORATION PLAN SHEET 1 OF 2

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH
FILE NO. 1118.43175.415
DATE JUNE 2014
G-14

I:\NATIONAL_GRID.1118\43175.HARBOR_POINT_CO\DOCS\DWG\COAL GAS PLANT\43175-415-G14G15.DWG



COAL GAS PLANT GRADING PLAN

SCALE: 1"=40'

MATCH LINE "A-A" FOR CONTINUATION SEE SHEET G-14

DRAWING NOTES:

1. ALL DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE "TYPICAL RESTORATION DETAIL" SHT. G-17 AND THE "TYPICAL BANK RESTORATION DETAIL" SHT. G-18, UNLESS OTHERWISE DIRECTED.
2. ALL FENCING AND GATES SHALL BE INSTALLED AT THE LOCATIONS SHOWN AND/OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH SPECIFICATION 02831 "CHAIN LINK FENCE AND GATES" AND "CHAIN LINK FENCE AND GATE DETAIL" SHT. G-17.
3. NEW FENCING SHALL BE INSTALLED A MINIMUM OF 5'-0" FROM THE 16"ø GAS LINE AS SHOWN. THE CONTRACTOR SHALL LOCATE THE 16"ø GAS LINE PRIOR TO INSTALLATION OF THE NEW FENCE AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

1"=40' 40 0 40 80

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK · STEPHEN W. ANAGNOST · No. 068269 · LICENSED PROFESSIONAL ENGINEER

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

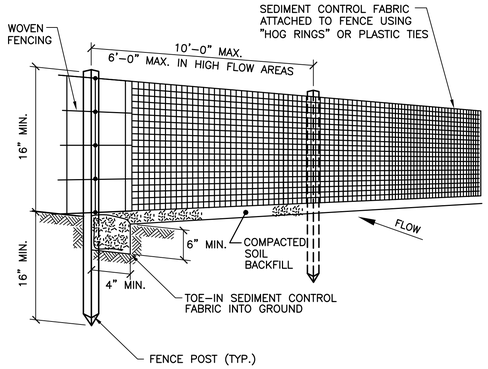
PARTIAL SITE RESTORATION PLAN SHEET 2 OF 2

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.416
DATE JUNE 2014

G-15

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-415-G14G15.DWG



DETAIL NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. SEDIMENT CONTROL FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. EMBED SEDIMENT CONTROL FABRIC MIN. 6" INTO GROUND.
3. WHEN TWO SECTIONS OF SEDIMENT CONTROL FABRIC ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY MIN. SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. FENCE TO BE ALIGNED ALONG CONTOUR AS CLOSELY AS POSSIBLE.

POSTS : STEEL (EITHER "T" OR "U" TYPE) OR 2" HARDWOOD ALL MIN. 36" LENGTH.

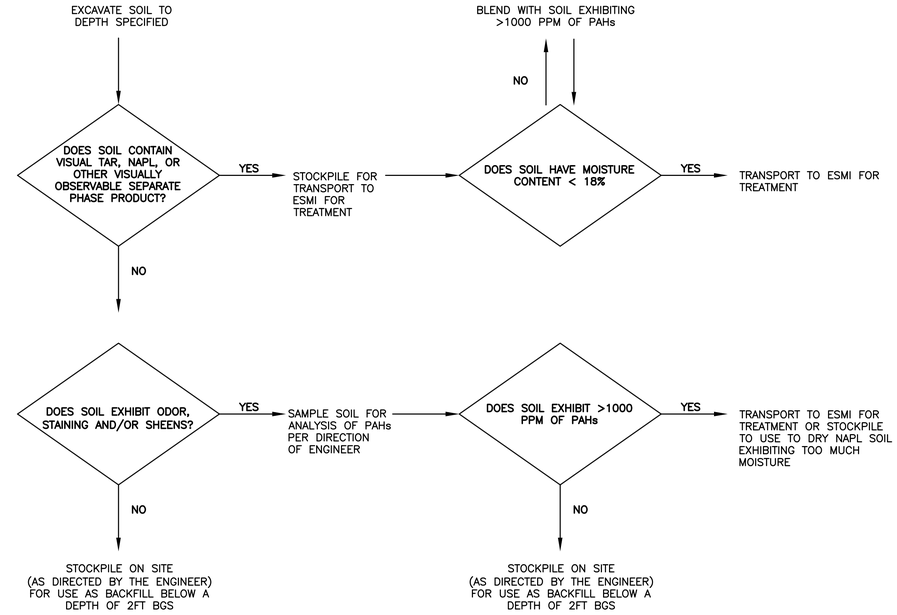
FENCE : WOVEN WIRE; MIN. 14.5 GAUGE 6" MAX. MESH OPENING

SEDIMENT CONTROL FABRIC : MINIMUM TENSILE STRENGTH OF 120 LBS/100 LBS (MD/CD) (ASTM D4632)

PREFABRICATED UNIT : MIRAFI ENVIROFENCE, OR APPROVED EQUAL

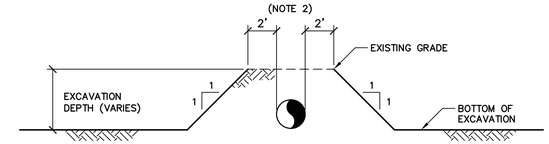
SILT FENCE DETAIL

NOT TO SCALE



EXCAVATED SOILS MANAGEMENT REQUIREMENTS

NOT TO SCALE

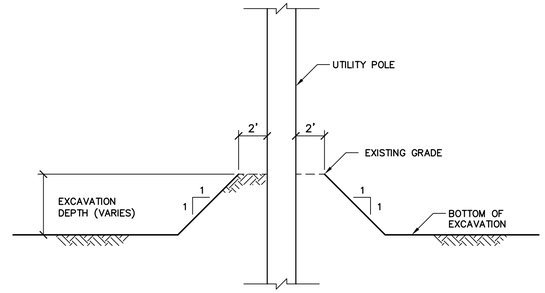


DETAIL NOTES:

1. DETAIL SHOWN HERE APPLIES TO ALL ACTIVE UTILITIES.
2. EXCAVATION OFF-SET SHOWN HERE SHALL BE 5'-0" FOR ALL GAS UTILITIES.
3. ALL ABANDONED PIPES AND THE ADJACENT SOILS SHALL BE REMOVED.
4. ABANDONED PIPES WITHIN THE LIMITS OF EXCAVATION CONTAINING FLOWABLE NAPL SHALL BE DRAINED OF NAPL AND THEN REMOVED.
5. ABANDONED PIPING REMAINING BEYOND THE LIMITS OF EXCAVATIONS SHALL BE FILLED WITH CELLULAR CONCRETE FILL AND PLUGGED.

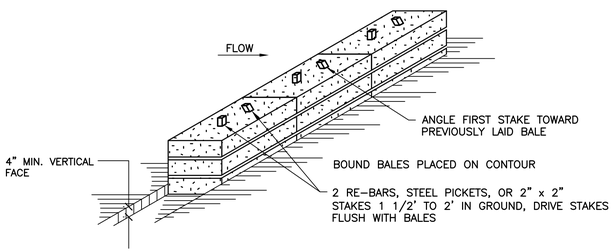
TYPICAL EXCAVATION AROUND UTILITIES

NOT TO SCALE



TYPICAL EXCAVATION AROUND UTILITY POLES

NOT TO SCALE

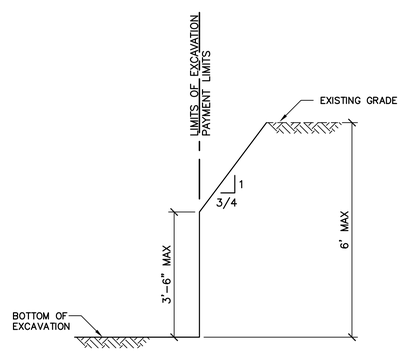


DETAIL NOTES:

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4 INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS 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.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STRAW BALE DIKE DETAIL

NOT TO SCALE



TYPICAL OPEN CUT EXCAVATION

NOT TO SCALE

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK
STEPHEN W. ANAGNOST
No. 068269
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

NOT TO SCALE

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

MISCELLANEOUS DETAILS

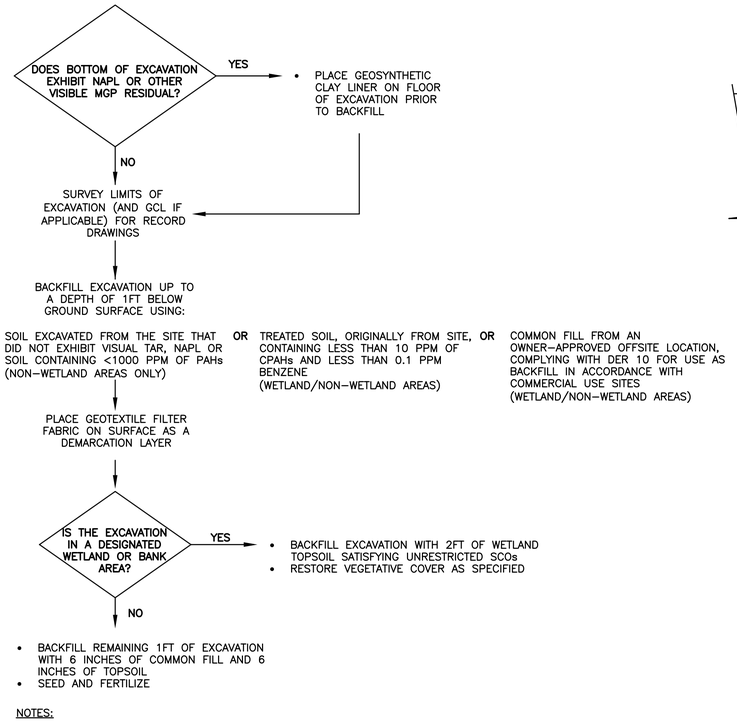
IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.417

DATE JUNE 2014

G-16

I:\NATIONAL-GRID.1118\43175-HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-417-G16617G18.DWG

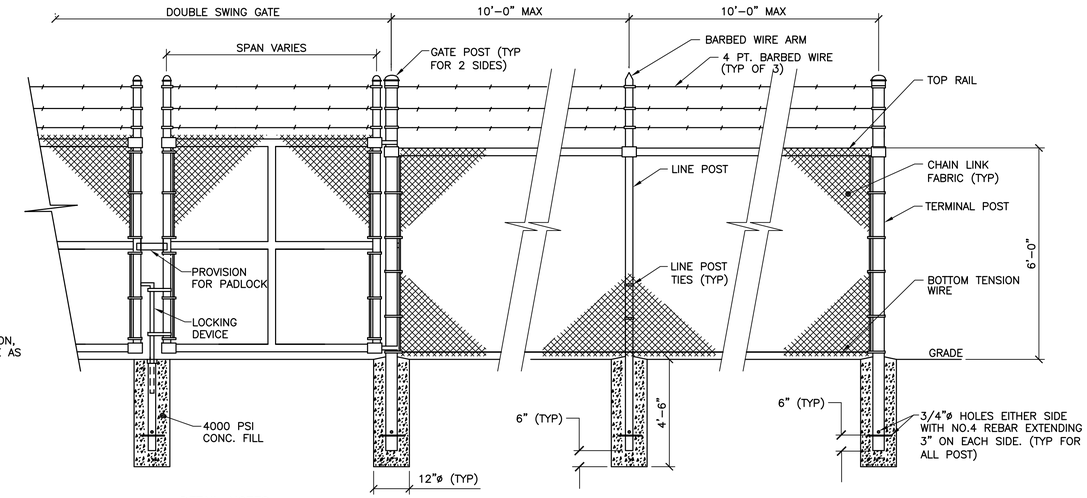


NOTES:

1. COMMON FILL USED CAN BE TREATED SOIL ORIGINALLY FROM THE SITE, OR SOIL FROM AN OWNER-APPROVED OFF-SITE LOCATION, PROVIDED THAT IT CONTAINS LESS THAN 0.1 PPM BENZENE AND IT SATISFIES THE COMMERCIAL SCO AND PROTECTION OF GROUNDWATER STANDARDS.
2. THE UPPER SIX INCHES MUST BE OF SUFFICIENT QUALITY TO SUPPORT VEGETATION (SEE SPEC. 02981).
3. NO ON-SITE SOIL SHALL BE USED FOR WETLAND OR BANK RESTORATION.

BACKFILL AND RESTORATION REQUIREMENTS

NOT TO SCALE

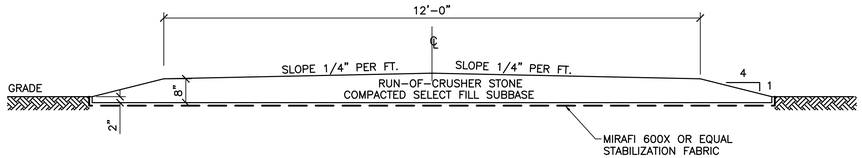


DETAIL NOTES:

1. PROVIDE TERMINAL POST AT EACH TERMINATION AND CHANGE IN HORIZONTAL OR VERTICAL DIRECTION 30° OR MORE. TERMINAL POST SHALL BE PLUMB WITH TOPS PROPERLY ALIGNED.
2. ALL CHAIN LINK FENCING AND GATES TO BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

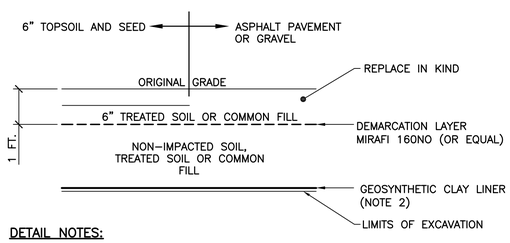
CHAIN LINK FENCE AND GATE DETAIL

NOT TO SCALE



GRAVEL ACCESS ROAD DETAIL

NOT TO SCALE



DETAIL NOTES:

1. REFER TO "BACKFILL AND RESTORATION REQUIREMENTS" THIS SHEET FOR FILL MATERIAL REQUIREMENTS.
2. GEOSYNTHETIC CLAY LAYER SHOWN HERE SHALL ONLY BE INSTALLED IN AREAS THAT NAPL IS OBSERVED AT THE 6' EXCAVATION DEPTH.
3. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH BANK OR WETLAND RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375-6.7(d)(1)(ii)(b)) AND THE OCTOBER 3, 2008 RECORD OF DECISION MODIFICATION.

TYPICAL RESTORATION DETAIL

NOT TO SCALE

NO.	DATE	REVISION	INIT.
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

NOT TO SCALE

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

MISCELLANEOUS DETAILS

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.418
DATE JUNE 2014

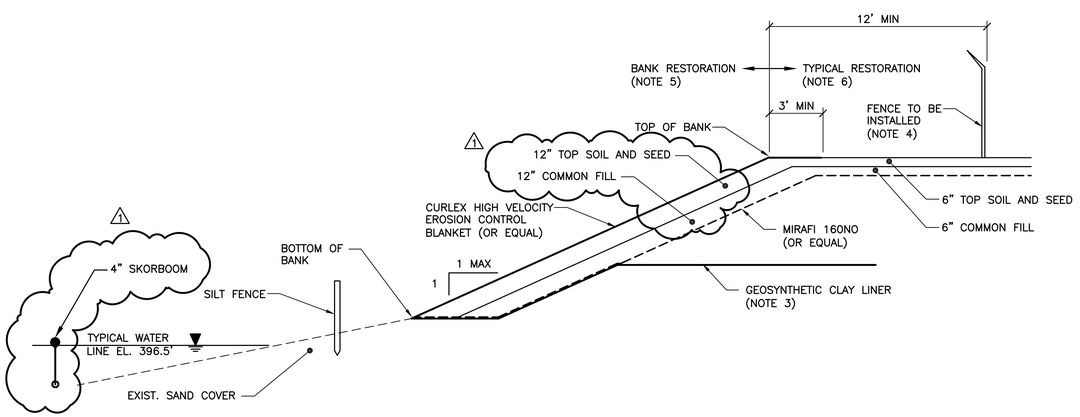
G-17

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.



I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-417-G16617G18.DWG

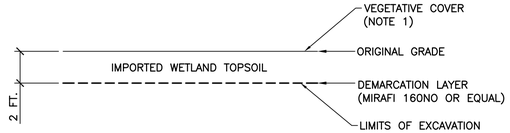


DETAIL NOTES:

1. ALL DISTURBED AREAS ALONG THE BANK SHALL BE COVERED WITH CURLEX HIGH VELOCITY EROSION CONTROL BLANKET. CURLEX HIGH VELOCITY EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
2. SILT FENCE AND SKORBOOM SHALL REMAIN IN PLACE UNTIL ALL RESTORATION ACTIVITIES HAVE BEEN PERFORMED AND ACCEPTED BY THE ENGINEER.
3. GEOSYNTHETIC CLAY LAYER SHOWN HERE SHALL ONLY BE INSTALLED IN AREAS THAT NAPL IS OBSERVED AT THE 6' EXCAVATION DEPTH.
4. EXISTING FENCE PREVIOUSLY REMOVED TO PERFORM THE WORK SHALL BE REPLACED IN KIND. REFER TO "TYPICAL CHAIN LINK FENCE AND GATE DETAIL" SHEET G-14 FOR REPLACEMENT DETAILS.
5. ALL BACKFILL MATERIAL, ASSOCIATED WITH BANK RESTORATION, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375-6.7(d)(1)(ii)(d). NO ON-SITE SOIL SHALL BE USED FOR BANK RESTORATION.
6. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH BANK RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375-6.7(d)(1)(ii)(b)) AND THE OCTOBER 3, 2008 RECORD OF DECISION MODIFICATION.
7. ALL VEGETATIVE BANK RESTORATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 02982 "FLOODPLAIN FOREST AND MEADOW RESTORATION".

1 **TYPICAL BANK RESTORATION DETAIL**

NOT TO SCALE

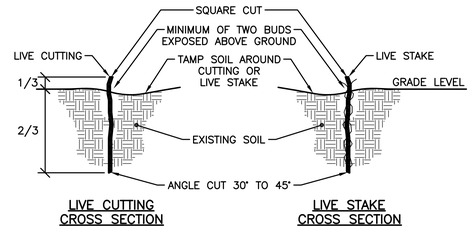


DETAIL NOTES:

1. WETLAND RESTORATION VEGETATIVE COVER SHALL BE IN ACCORDANCE WITH THE "WETLAND RESTORATION PLAN" SHEET G-12 AND SPECIFICATION 02981 "WETLAND RESTORATION".
2. ALL BACKFILL MATERIAL, ASSOCIATED WITH WETLAND RESTORATION, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375-6.7(d)(1)(ii)(d). NO ON-SITE SOIL SHALL BE USED FOR WETLAND OR BANK RESTORATION.

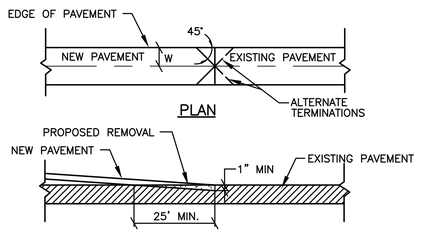
TYPICAL WETLAND RESTORATION DETAIL

NOT TO SCALE



LIVE CUTTINGS/LIVE STAKES PLANTING CROSS SECTIONS

NOT TO SCALE



PLAN

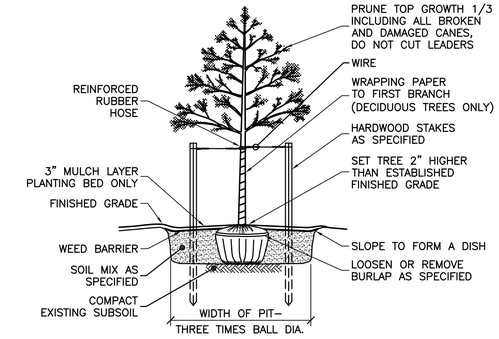
SECTION

DETAIL NOTE:

1. BUTT JOINTS ARE REQUIRED ON ALL PAVEMENTS AT THE JUNCTION OF THE NEW AND EXISTING PAVEMENTS. DEPTH OF NEW ASPHALT COURSES AND AS ORDERED BY THE ENGINEER AREAS THAT ARE OVER EXCAVATED OR ROUGH CUT SHALL BE BROUGHT UP TO PROPOSED REMOVAL LIMITS WITH AN ACCEPTABLE LEVELING COURSE. ALL SURFACES OF THE TRANSITION SHALL BE TACK COATED PRIOR TO PLACING THE ASPHALT COURSE. TACK COAT SHALL MEET THE REQUIREMENTS OF SECTION 702-34.01 OF THE NYSDOT STANDARD SPECIFICATIONS.

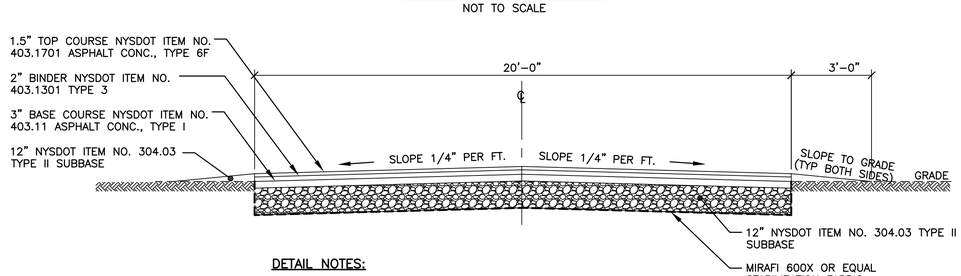
BUTT SPLICE DETAIL

NOT TO SCALE



DECIDUOUS TREE PLANTING

NOT TO SCALE



DETAIL NOTES:

1. MIRAFI 600X OR EQUAL GEOTEXTILE STABILIZATION FABRIC TO BE INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS.

ASPHALT ROAD DETAIL

NOT TO SCALE

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

STATE OF NEW YORK — STEPHEN W. ANAGNOST — No. 068269 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	INIT.
1	8/25/14	NYSDEC COMMENTS INCORPORATED	SWA
0	6/2/14	ISSUED FOR NYSDEC REVIEW	SWA

NOT TO SCALE

O'BRIEN & GERE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION
PAH-IMPACTED SOIL REMOVAL – COAL GAS PLANT
UTICA, NEW YORK

GENERAL

MISCELLANEOUS DETAILS

IN CHARGE OF STEPHEN W. ANAGNOST
DESIGNED BY MWH CHECKED BY SWA
DRAWN BY MWH

FILE NO. 1118.43175.419
DATE JUNE 2014

G-18

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\43175-417-G16G17G18.DWG

CONTRACT DOCUMENTS

PROJECT SPECIFICATIONS
Harbor Point Site
Site 6-33-021
OU-1 Remedial Action
PAH-Impacted Soil Removal
Coal Gas Plant
Utica, New York

nationalgrid

June 2014

1118 | 43175

PROJECT SPECIFICATIONS
Harbor Point Site
Site 6-33-021
OU-1 Remedial Action
PAH- Impacted Soil Removal
Coal Gas Plant

Utica, New York

Prepared for:

nationalgrid



STEPHEN W. ANAGNOST, P.E.
O'BRIEN & GERE ENGINEERS, INC.
JUNE 2014

I, Stephen W. Anagnost, certify that I am currently a NYS registered professional engineer or Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Remedial Design was prepared in accordance with all applicable statues and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

TABLE OF CONTENTS

SPECIAL PROVISIONS

SP-1 General Construction Sequence
SP-2 Work Schedule
SP-3 Notices
SP-4 Site Security
SP-5 Emergency Calls
SP-6 Progress and Coordination Meetings
SP-7 NYSDEC Review
SP-8 Staging Plan
SP-9 Odor Control
SP-10 Dust Monitoring and Control Program
SP-11 Contractor's Construction Quality Control
SP-12 Borrow Materials
SP-13 Materials Acceptability Testing
SP-14 Utilization of On-Site Materials
SP-15 Existing Monitoring Wells
SP-16 Existing Utilities
SP-17 Supplemental Information
SP-18 Emergency Response
SP-19 Reporting Requirements
SP-20 Traffic Control Plan
SP-21 Shop Drawings and Samples
SP-22 Retention of Records
SP-23 Vibration Minimization and Monitoring Plan
SP-24 Contractors Insurance

TECHNICAL SPECIFICATIONS

01300 Surveys
01700 Health and Safety
02110 Clearing and Grubbing
02141 Groundwater Monitoring Well Abandonment
02200 Erosion and Sediment Control
02201 Stormwater Pollution Prevention
02202 Construction Water Management Plan
02220 Earthwork
02224 Common Fill
02230 Select Fill
02272 Erosion Control Blanket
02274 Geotextile Stabilization Fabric
02275 Geotextile Demarcation Fabric
02276 Geosynthetic Clay Liner (GCL)
02280 Drum Removal and Disposal
02302 Off-Site Transportation and Disposal
02402 Steel Sheet Piling
02502 Restoration of Surfaces
02830 Chain Link Fence
02980 Topsoil and Seeding
02981 Wetland Restoration
02982 Floodplain Forest and Meadow Restoration

CONTRACT DRAWINGS

Title Sheet
Index to Drawings

G-1 General Notes and Legend
G-2 Existing Site Plan
G-3 Existing Utilities Plan
G-4 Erosion & Sediment Control Plan
G-5 Coal Gas Plant - Excavation Plan
G-6 Coal Gas Plant – Excavation Grading Plan
G-7 Coal Gas Plant – Cross Sections
G-8 Coal Gas Plant – Typical Sheeting Excavation Plan, Section and Notes
G-9 Debris Pile Removal Plan
G-10 Dredge Containment – Additional Excavations Plan
G-11 Wetlands Excavation Plan
G-12 Wetlands Restoration Plan
G-13 Bank Restoration Plans
G-14 Partial Site Restoration Plan Sheet 1 of 2
G-15 Partial Site Restoration Plan Sheet 2 of 2
G-16 Miscellaneous Details
G-17 Miscellaneous Details
G-18 Miscellaneous Details

SPECIAL PROVISIONS

SP-1 GENERAL CONSTRUCTION SEQUENCE

A. The Contractor will be solely responsible for scheduling and coordinating completion of the work in an effective and efficient manner, and for protecting the work completed during earlier project phases, in accordance with the requirements of the Contract Documents. However, in general it is anticipated that construction of the work will be completed in the following sequence:

B. The Contractor shall set up temporary office facilities, soil stockpile, equipment staging areas, erosion and sediment controls, construction water treatment system, decontamination pad, remove existing fencing and gates, perform clearing and grubbing, and install temporary access roads as may be required for the execution of the work.

C. The Contractor shall install sheeting as specified and/or as required, perform excavation activities, transport and dispose of all excavated materials, install demarcation fabric, backfill, topsoil, seed mixes, plants and erosion control blanket in the areas of work, as shown on the Contract Drawings and/or as directed by the Engineer.

D. The Contractor shall remove and replace existing fencing and gates and perform all restoration of surfaces at the locations shown on the Contract Drawings or as directed by the engineer.

E. On completing all the work required to be performed under the Contract, the Contractor shall demobilize their equipment and facilities from the Site. At the Contractor's own expense, the areas outside the excavations altered or damaged as a consequence of their actions shall be restored to a condition equivalent to those existing prior to the work.

SP-2 WORK SCHEDULE

The work of this Contract shall be scheduled in a manner mutually acceptable to the Owner, Owner's Representative, Engineer, and the Contractor. Unless otherwise especially permitted, no work shall be done between the hours of 8:00 p.m. and 7:00 a.m., nor 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. The Contractor will be allowed to work on Saturdays only with approval from the Owner and Engineer. If it shall become absolutely necessary to perform work at night, the Engineer shall be informed a reasonable time in advance of the beginning of performance of such work. Only such work shall be done at night as can be done satisfactorily and in a safe manner. 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. All Contractor requests to perform night, Saturday, Sunday or Holiday work shall be made in writing to the Engineer.

SP-3 NOTICES

Whenever, under the terms of this Contract, written notice is required to be given by the Contractor to the Owner, it shall be directed to:

National Grid Corporation
Environmental Dept. C-1
300 Erie Boulevard West
Syracuse, New York 13202
Attention: Mr. Brian Stearns

A copy shall be provided as well to the Owner's Representative and Engineer.

SP-4 SITE SECURITY

A. The Contractor is not required to provide a security guard but may choose to do so at their own discretion for the care and protection of the work, equipment, and material. However, no additional payment for a security guard shall be made by the Owner, the cost for security being included in the Contractor's cost for mobilization.

SP-5 EMERGENCY CALLS

The Contractor shall provide the Owner with the phone numbers of at least three responsible persons, to be used during non-working hours and weekends, who shall be in a position to dispatch personnel and equipment to the project site in the event of an emergency.

SP-6 PROGRESS AND COORDINATION MEETINGS

In addition to the Pre-Construction Meeting required by National Grid, progress and coordination meetings will be held weekly or as directed by the Owner's Representative with the Contractor's supervisory representatives, with decision-making authority, in attendance.

SP-7 NYSDEC REVIEW

The following items, at a minimum, shall be submitted to the NYSDEC for review. The Contractor shall be aware that additional items, at the request of NYSDEC, may be required to be submitted.

A. The Contractor's Staging Plan, Particulate Emission Response Plan (PERP), Health and Safety Plan (HASP), Erosion and Sediment Control Plan (ESCP), Community Air Monitoring Plan (CAMP), Construction Water Management Plan (CWMP), Odor Control Plan, and Construction Quality Assurance Project Plan (CQAPP) may be subject to the review of the NYSDEC prior to acceptance by the Engineer. The Contractor is advised that they should allow up to 10 business days for review and comment on each draft of the Staging Plan, PERP, HASP, ESCP, CAMP, Construction Water Management Plan, Odor Control Plan, and QAPP submitted for review. No additional payment or extension of time shall be provided to the Contractor for failure by the Contractor to satisfactorily address specified requirements.

B. Each document (Staging Plan, Particulate Emission Response Plan, HASP, ESCP, Construction Water and Storm Water Management Plan, Odor Control Plan, CAMP, and

QAPP) shall be provided to the Engineer in electronic format.

C. No work shall be started until the Staging Plan, Particulate Emission Response Plan, HASP, ESCP, Construction Water and Storm Water Management Plan, Odor Control Plan, CAMP, and QAPP have been reviewed and accepted by the Engineer. If conditions change during construction, the Contractor may be required to submit a revised document for review as directed by the Engineer.

SP-8 STAGING PLAN

Prior to commencement of work, the Contractor shall develop and submit methods and sequencing of all intended operations hereinafter referred to as the Staging Plan. The Staging Plan shall include, but not be limited to, methods, plans, and drawings necessary for staging trailers and equipment, stockpiling materials, designating work zones and requirements for other construction activities. Construction activities shall not be initiated until the methods and sequencing of all operations have been reviewed and approved by the Engineer.

SP-9 ODOR CONTROL

A. The Contractor shall prepare an Odor Control Plan that describes provisions that will be implemented to control odor emanating from excavations and stockpiles of MGP waste material and contaminated soil. Primary measures to be implemented to minimize generation of odor shall be minimizing, to extent practicable, exposed surface of waste material and contaminated soil. Secondary measures shall include use of products, approved by the Engineer, to mask objectionable odors. The Engineer shall be sole judge as to whether or not an odor is perceptible and objectionable requiring control measures. No additional payment shall be made to the Contractor to control odors from the excavations or waste material stockpiles.

B. The following dust and odor control measures may be used, depending upon specific circumstances, field observations, and air monitoring results:

- odor suppression foams
- Bio-Solve
- Water Spray
- Polyethylene sheeting (for covering excavation faces, material stockpiles, etc.)

SP-10 DUST MONITORING AND CONTROL PROGRAM

A. Control of fugitive dust created as a result of this project shall be the obligation of the Contractor. Notwithstanding the requirements of the Contract Documents, the Contractor shall also comply with the requirements of OSHA 29 CFR 1910.1000. A Dust Monitoring and Control Program shall be prepared and implemented by the Contractor and shall include, but not be limited to, the following:

(1) Preparation of a Dust Monitoring and Control Plan including mitigation measures, control of operations, emergency measures to be used, monitoring requirements, action levels, etc.

(2) Required particulate monitoring.

(3) Implementation of mitigation efforts, including reasonable suppression techniques.

(4) Proposed remedial actions when particulate action levels are breached.

(5) Quality assurance/quality control (QA/QC) to assure accuracy of monitoring program.

B. Dust monitoring and control program shall meet all the requirements of the ECAMP and the NYSDOH.

C. The Plan may be subject to review by the NYSDEC prior to acceptance by the Engineer or Owner.

D. The Contractor shall perform dust suppression activities in active work areas, staging areas, and travel ways utilized during each working day.

E. The results of monitoring for dust shall be provided to the Engineer on a daily basis.

SP-11 CONTRACTOR'S CONSTRUCTION QUALITY CONTROL

A. The Contractor shall prepare and implement a Construction Quality Assurance Project Plan (CQAPP) for the work of this Contract. The plan shall include, as a minimum, the following:

(1) Description of the CQC organization, including chart showing lines of authority and acknowledgment that the CQC staff shall be in addition to the job supervisory staff.

(1) Names, qualifications, duties, responsibilities and authorities of each person assigned a CQC function.

B. The CQC staff shall include a CQC Manager. The CQC Manager shall have demonstrated experience with earthwork projects, geosynthetic materials, concrete, and drainage structures. The CQC Manager shall have a minimum of five years experience in materials and construction testing including a minimum of two years of soils testing experience and two years of geosynthetic testing experience.

C. The CQC staff shall also include CQC inspectors with a minimum of two years of experience in performing soils testing including nuclear density meters, scales, and ovens. The CQC inspectors shall have valid certificates for operation of nuclear density gauges. The CQC staff shall include an Inspector with experience in inspecting sheet pile installations. The CQC Plan shall include, at a minimum, the following:

(1) A copy of a letter to the CQC Manager signed by an authorized official of the Contractor's firm that describes the responsibilities and authorities of the CQC Manager.

(2) Description of proposed field observations, tests, equipment, and calibration procedures for field testing equipment including:

a. Sampling strategies

b. Sampling protocols
c. Sample size
d. Sampling locations
e. Frequency of sampling
f. Laboratory procedures

(3) Procedures for scheduling and managing submittals, including those of subcontractors, off-site fabricators, suppliers and purchasing agents.

(4) Proposed testing laboratories, including, but not limited to:

a. Geotechnical Laboratory
b. Geosynthetic Laboratory
c. Analytical Laboratory

(5) Documentation and reporting procedures including proposed reporting formats.

D. The Contractor's CQC Geotechnical Laboratory shall be an independent laboratory not owned by the Contractor and/or subcontractors or owned by a subsidiary or affiliate of the Contractor and/or his subcontractors. The Geotechnical Laboratory shall have an internal QC plan to confirm that laboratory procedures conform to applicable standards. The laboratory shall follow the internal QC procedures. The laboratory shall allow the Owner, NYSDEC, Engineer, and Installer to observe sample preparation, testing procedures, record-keeping procedures, and some or all tests at any time, either announced or unannounced.

E. The CQC Geotechnical Laboratory shall have a minimum of five years of experiences in testing soils properties required for the project. The laboratory shall submit references from three other similar projects. Soil testing technicians shall have a minimum of two years of soils testing experience and be certified by the National Institute of Certified Engineering Technicians. All laboratory test results shall be certified by a Laboratory Manager with a minimum of two years of soils testing experience.

F. The Contractor's CQC Geosynthetic Laboratory shall be an independent laboratory not owned by the Contractor or owned by a subsidiary or affiliate of the Contractor, or owned by the Installer or a subsidiary of the Installer. The Geosynthetic laboratory shall have an internal QC plan to confirm that the laboratory procedures conform to applicable standards. The laboratory shall follow the internal QC procedures. The laboratory shall allow National Grid, NYSDEC, Engineer, and Installer to observe sample preparation, testing procedures, record-keeping procedures, and some or all tests at any time, either announced or unannounced.

G. The CQC Geosynthetic Laboratory shall have a minimum of two years experience in testing geosynthetics. The laboratory shall submit qualifications for review by the Engineer. The CQC Geosynthetic Laboratory Manager shall have a minimum of five years of geosynthetics testing experience. All laboratory test results shall be certified by the Laboratory Manager.

H. The Contractor's CQC Analytical Laboratory shall be an independent laboratory not owned by the Contractor and/or subcontractors or owned by a subsidiary or affiliate of the Contractor and/or subcontractors. The Analytical Laboratory shall have an internal QC plan to confirm that laboratory procedures conform to applicable standards. The laboratory shall follow the

internal QC procedures. The laboratory shall allow National Grid, NYSDEC, Engineer, and Owners Representative to observe sample preparation, testing procedures, record-keeping procedures, and some or all tests at any time, either announced or unannounced.

I. The CQC Analytical Laboratory shall submit references from three other similar projects. All laboratory test results shall be certified by a Laboratory Manager with a minimum of five years of testing experience.

J. The Contractor's CQC Plan shall be subject to acceptance by the Engineer prior to commencement of construction activities. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Engineer shall reserve the right to require the Contractor to make changes to his CQC Plan and operations as necessary to obtain the quality specified.

K. Following acceptance of the CQC Plan, the Contractor shall notify the Engineer in writing of any proposed changes. Proposed changes are subject to acceptance by the Engineer.

SP-12 BORROW MATERIALS

A. Contractor shall submit an affidavit from the owner of the source of each type of borrow material stating that to the best of their knowledge, the site of the source material was never used as a dump site for chemical, toxic, hazardous or radioactive materials and it is not now nor ever has been listed as a suspected depository for chemical, toxic, hazardous or radioactive materials by any Federal, State or governmental agency, department, or bureau.

B. The Contractor shall provide documentation of the source of fill to the Engineer for approval by NYSDEC's *DER-10 Technical Guidance for Site Investigation and Remediation* dated May 2010 (DER-10), which should include the following:

(1) The name of the person providing the documentation and relationship to the source of the fill;
(2) The location where the fill was obtained
(3) Identification of any state or local approvals as a fill source; and
(4) If no prior approval is available for the source, a brief history of the use of the property which is the source of the fill.
(5) Bills of lading shall be provided to the Engineer to document that the fill delivered was from a DER-approved source(s).

C. The Contractor shall sample each different type of off-site material incorporated into the work at the location or locations identified by the Engineer as identified herein and in Section 5 of *DER-10*. The Contractor shall perform analyses for Target Compound List (TCL) volatile organic compounds (VOCs) on 2 grab samples, TCL semi volatile organic compounds (SVOCs), Target Analyte List (TAL) metals, cyanide (total and amenable), poly chlorinated biphenyls (PCBs), herbicides, and pesticides for one composite sample of the first 100 cubic yards from each source identified as a virgin mine or borrow pit. If the source is not 'virgin', then additional analyses will be required based on volume at the frequency identified in Table 5.4(e) of DER-10. Laboratory data shall be submitted to the Engineer for review, on the Owner's behalf, immediately upon receipt and prior to use of the material on-site. The Engineer shall be the sole judge as to what constitutes each different type of material; however the definition of "different" shall include, but not necessarily be limited to, variances

in the physical properties of the same material, as well as the same material derived from separate borrow sources or separate areas in the same borrow pit. The analytical results for borrow material to be used outside the limits of wetland and bank restoration areas will be compared to the cleanup objectives set forth in 6 NYCRR Part 375 and must satisfy the restricted use soil cleanup objectives for the protection of public health – commercial as approved by NYSDEC. The analytical results for borrow material to be used within the limits of wetlands and bank restoration areas shall satisfy the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

D. If the materials are found to be unacceptable by the Engineer, the Contractor shall remove and properly dispose of the materials in accordance with all applicable Federal, State and local laws and regulations at the Contractor's expense and liability.

SP-13 MATERIALS ACCEPTABILITY TESTING

A. The Contractor shall be responsible for the performance and cost of all conformance testing required by the Technical Specifications including, but not limited to, physical and chemical characterization of material being imported to the site, gradation and compaction properties of soil utilized as backfill, in-place compaction tests, and health and safety monitoring. The Contractor shall include provision for the costs of these tests in the various payment items established for the particular tasks.

SP-14 UTILIZATION OF ON-SITE MATERIALS

The Contractor is not permitted to utilize on-site material for purposes of meeting Contractor's material requirements, unless shown, specified or otherwise directed by the Engineer in writing.

SP-15 EXISTING MONITORING WELLS

The approximate locations of existing monitoring wells at or near the site are shown on the Contract Drawings. Monitoring wells noted to be abandoned shall be abandoned in accordance with the Contract Documents. All other monitoring wells shall be protected from damage. Any wells not designated to be abandoned, that are damaged by the Contractor shall be repaired or replaced at no additional cost, as directed by and to the satisfaction of the Engineer who will oversee rehabilitation or replacement as specified. The Owner's cost associated with bringing the Engineer on-site for oversight of rehabilitation or replacement work will be deducted from payments due the Contractor.

SP-16 EXISTING UTILITIES

A. Special precautions shall be observed to not cause interference or damage to any existing utilities.

B. The Contractor shall notify the proper utility companies at least seventy-two (72) hours before construction is started adjacent to such utilities. Proof of such notification shall be filed with the Owner's Representative and Engineer. Failure to provide such proof shall be cause for an automatic cessation of the work. Utilities shall be protected in the manner prescribed by the utility company. No additional compensation other than stated in the Payment Items will be made for coordination or requirements of others relative to existing utilities.

SP-17 SUPPLEMENTAL INFORMATION

A. Certain site and chemical information may be shown on separate sheets or made available by the Owner or Engineer to Bidders, Contractors, and other interested parties. Neither such information nor the documents on which it may be shown shall be considered a part of the Contract Documents or Contract Drawings, it being understood that such information is made available only as a convenience, without express or implied representation, assurance, or guarantee that the information is adequate, complete, or correct, that it represents a true picture of the site and chemical conditions to be encountered, or that all pertinent site and chemical data in the possession of the Owner or Engineer has been furnished.

B. It shall be the Contractor's responsibility to satisfy the Contractor as to the nature, character, quality and quantity of conditions likely to be encountered. Any reliance upon the site information and chemical data available shall be at the Contractor's risk. The Contractor agrees that he shall neither have nor assert against the Owner or Engineer any claim for damages for extra work or otherwise or for relief from any obligation for this Contract based upon the failure by the Owner or Engineer to obtain or to furnish all site or chemical information in the Owner's or Engineer's possession or based upon any inadequacy or inaccuracy of the information furnished; provided, however that the Contractor may be entitled to an adjustment in the contract price under the circumstances and to the extent provided in the Contract.

SP-18 EMERGENCY RESPONSE

In the event of any action or occurrence during the performance of the Work which causes or threatens a release of waste material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Contractor shall immediately take all appropriate action to prevent, abate, or minimize such release or threat of release and shall immediately notify the Engineer, Owner's Representative, Owner, and NYSDEC's Project Engineer. The term "waste material" as used in this section shall mean: (1) any "hazardous substance" under Section 101(14) of CERCLA. 42 U.S.C. §9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA. 42 U.S.C. §9601(33); and (3) any "solid waste" under Section 1004(27) of RCRA. 42 U.S.C. §6903(27).

SP-19 REPORTING REQUIREMENTS

A. Contractor shall submit to Owner's Representative, Engineer and Owner written progress reports, monthly or less frequently if less frequent submission is approved in writing by the Owner that: (a) describe the Work that has been performed during the previous month; (b) include a summary of all results of sampling and tests and all other data received or generated by Contractor or its subcontractors or agents in the previous month; (c) identify all work plans, plans and other deliverables completed and submitted during the previous month; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next six weeks and provide other information relating to the progress of construction, including but not limited to bar charts; (e) include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the work, and a description of efforts made to mitigate those delays or anticipated delays; and (f) include any modifications to the work

plans or other schedules that the Owner's Representative, Engineer, or the Owner has proposed to NYSDEC or that have been approved by NYSDEC. Contractor shall submit these progress reports to the Owner by the fifth day of every month following the commencement of the work.

B. Contractor shall notify the Owner's Representative, Engineer and the Owner of any change in the schedule described in the monthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than twelve days prior to the performance of the activity.

SP-20 TRAFFIC CONTROL PLAN

A. Traffic Control Plan - The Contractor will be required to prepare a Traffic Control Plan including, but not limited to, the designation of haul roads to and from the Site, developed in consultation with the City of Utica.

B. The Contractor is required to keep main public roads to the Site open at all times unless prior arrangements for temporary closing are made with the appropriate authorities. The cost of such traffic control is to be borne solely by the Contractor.

C. Prior to the start of any construction activities, the Contractor and the Engineer shall make a joint condition survey of road at the entrance(s) to the Site to be utilized by the Contractor. The condition survey shall be performed using a video camera. During the video survey, the Engineer and Contractor will verbally document any pre-existing damage to the roadways and the location of the damage.

SP-21 SHOP DRAWINGS AND SAMPLES

A. LISTING OF ITEMS

Following execution of the Contract by the Contractor, the Engineer will submit to the Contractor a list of equipment, materials, and other items for which shop drawings, layouts, samples, will be required. This listing shall not be construed to be all-inclusive and may be added to, or deleted from, as may be required in the opinion of the Engineer.

B. ACCEPTANCE OF MANUFACTURERS OR VENDORS

The Contractor, with such promptness and in such sequence as to cause no delay in the Work, shall submit to the Engineer the name of the manufacturer or vendor for each item on the list or addition to the list submitted. No awards shall be made by the Contractor, and no work under any item shall proceed, until acceptance of the manufacturer or vendor has been given by the Engineer. Such acceptance will be only on the basis of the manufacturers or vendor's experience and reputation and will not imply that the shop drawings or samples for the item will be acceptable. Review of shop drawings for an item will depend upon full compliance with the Contract Documents as demonstrated by material submitted.

C. ELECTRICAL INTERCONNECTIONS

Where the Project includes electrical equipment and electrical control systems and where the

Work of the Project involves the Contractor and Subcontractor(s), it shall be the responsibility of the Contractor and Electrical Subcontractor, if applicable, to coordinate and complete power, control, and electrical signal interconnections for all equipment included in the Project.

D. SHOP DRAWING SUBMITTAL REQUIREMENTS

Shop drawings and data shall be submitted to the Engineer for each item on the latest revised list determined from Section A. above. Submittals shall be made sufficiently in advance of the time when items included therein are to be incorporated into the Work to permit proper review, necessary revisions, and re-submittals without causing a delay in the performance of the Work.

Shop drawings shall present complete and accurate information relative to all working dimensions, equipment weights, assembly, and section views, and all necessary details pertaining to coordinating the Work of the Contract, lists of materials and finishes, parts lists and the description thereof, lists of spare parts and tools where such parts or tools are required, and any other items of information that are required to demonstrate detailed compliance with the Contract Documents. Drawings for electrical equipment shall include elementary and interconnection diagrams.

Except as otherwise specified or directed by the Owner and Engineer, Contractor's submittal of Shop Drawings shall constitute Contractor's representation that submitted Shop Drawings and the specifications pertaining thereto have been thoroughly reviewed by Contractor for consistency with the Specifications and that submitted Shop Drawings strictly comply with the requirements of the Contract Documents; that the Contractor has determined and verified all quantities, dimensions, field construction criteria, materials catalog numbers, and similar data, and that Contractor has reviewed or coordinated each shop drawing with the requirements of the Work and the Contract Documents. The return to Contractor of Shop Drawings stamped "Reviewed" shall in no way relieve Contractor from sole responsibility for strictly complying with the specifications in the Contract Documents. Contractor shall reimburse Owner for the costs (including labor costs) and expenses of Engineer incurred in the review of Shop Drawings which have been twice before returned marked as "Rejected" or "Resubmit".

1. Unless otherwise permitted in specific cases, all data shall be transmitted to the Engineer by the Contractor. Each shop drawing submitted shall indicate the following:

   (a) Project name and contract number
   (b) Manufacturer of the equipment
   (c) Notation as to whether original submittal or re-submittal
   (d) Date received by Contractor from manufacturer or vendor
   (e) Date submitted to Engineer

2. Each shop drawing submittal shall be accompanied by a transmittal letter indicating the item or items submitted, with particular reference to latest revised list of equipment, materials, and other items described above and the appropriate section of the Contract Documents to which the items apply. The transmittal letter shall also indicate whether the submittal constitutes a complete set of drawings for the item, a

partial set of drawings for which additional submittals are to be expected by the Engineer, or a partial set of drawings to complete a previous submittal. In any case, the Contractor shall indicate by the transmittal letters when the submittals for an item are intended to be complete.

Unless otherwise stated in the Special Provisions, the Contractor shall submit a copy of drawings, catalog data, and similar items for review. The submittals shall be transmitted to the Engineer for review in electronic format and will be returned to the Contractor in the same format.

If the Engineer requires hard copies, it will so inform the Contractor upon return of the material noted as "Reviewed". Additional copies of "Reviewed" shop drawings will be requested in the cases where the subject matter shown thereon requires coordination of two or more Contracts. Copies of such drawings, when received, will be retransmitted by the Engineer.

A current file of "Reviewed" shop drawings will be maintained by the Engineer and, where so stated in the Special Provisions, said current file of "Reviewed" shop drawings will be at the job site. The Contractor may have access to said "Reviewed" shop drawing file during normal office hours. It shall be the responsibility of the Contractor to avail itself of information in said "Reviewed" shop drawing file and to be aware of coordination requirements involving its work in the event it does not receive appropriate shop drawings from the Engineer.

E. ENGINEER'S REVIEW OF SHOP DRAWINGS

The Engineer’s review of shop drawings is for general compliance with the Contract Documents only and is not a complete check of the method of assembly, erection, construction or detailed review of the specifications. Such review shall in no way be construed as permitting any departure whatsoever from the Contract Documents, except where the Contractor has previously requested and received written approval of the Engineer for such departure. When requested by Contractor, proposed departures from the Contract Documents will be considered by the Owner and Engineer at Contractor’s expense, whether or not accepted. The cost of Engineer’s conflict review and any revisions made as a result of Contractor’s requested departure shall be at the expense of the Contractor. The Contractor shall reimburse Owner for the referenced costs and expenses of Engineer upon demand.

Review of shop drawings by the Engineer will be limited to complete submittals except where review of a partial submittal is specifically requested by the Contractor and where such review of a partial submittal is necessary for timely completion of the Work of the Contract. Where shop drawings of related items are necessary for review of a particular submittal, the Engineer will so inform the Contractor, who will promptly submit such shop drawing of said related items.

1. Drawings and similar data will be reviewed and stamped by the Engineer as follows:

   (a) "Reviewed," if no change or rejection is made.
   (b) "Reviewed and Noted," if minor changes or additions are made but resubmittal is not considered necessary. Submittal will bear the corrective marks.
   (c) "Resubmit," if the changes requested are extensive or if retransmittal of the

submittal to another Contractor, after correction, is required. In this case, the Contractor shall resubmit the items after correction.

(d) "Rejected," if it is considered that the data submitted cannot, with reasonable revision, meet the requirements of the Contract Drawings and Specifications.

F. RESUBMITTALS

Any changes, other than those indicated as requested, made in drawings or other data shall be specifically brought to the attention of the Engineer upon resubmittal. Changes or additions shall not be made in, or to, "Reviewed" data without specific notice to the Engineer.

If, after reasonable correction and resubmittal of the shop drawings for an item of equipment, acceptance is not given, the Contractor shall submit the name of another manufacturer or vendor to supply the item required in accordance with Section B. Should progress of the Work be delayed by the changing of the manufacturer or vendor, such a cause will not be considered an extenuating circumstance beyond the control of the Contractor, and charges for delay if otherwise applicable, will be levied and shall be born solely by the Contractor.

G. SAMPLES

Samples shall be submitted to the Engineer as required on the latest revised list determined from Section A. The samples shall be properly identified by tags and shall be submitted sufficiently in advance of the time when they are to be incorporated into the Work, so that rejections thereof will not cause delay. A letter of transmittal from the Contractor requesting review shall accompany such samples.

The procedures set forth in Sections E and F above for shop drawings shall be used for processing samples.

SP-22 RETENTION OF RECORDS

Contractor and its agents and subcontractors shall preserve all documents, records, and information of whatever kind, nature or description relating to the performance of the Work for ten (10) years after Substantial Completion, as defined by the Contract Documents.

SP-23 VIBRATION MINIMIZATION AND MONITORING PLAN

A. In addition to the requirements of Specification Section 2400, it shall be the responsibility of the Contractor to provide a Vibration Minimization and Monitoring Plan describing the means and methods to be utilized for minimizing and monitoring of vibrations to adjacent utilities and structures. The plan shall include, but not be limited to, the sequencing of construction activities that may cause vibrations, and the type of equipment to be used to perform these activities. The plan shall also include methods, plans, drawings showing the type and location of each vibration monitoring device, and requirements for vibration action limits (peak particle velocities). The construction activities associated with any activity that may induce vibrations to the soils shall not be initiated until the Vibration Minimization and Monitoring Plan is reviewed and accepted by National Grid and the Engineer.

B. The Contractor shall continuously record peak particle velocities during the duration of steel sheeting installation. The records should be provided to the Engineer on adaily basis following the installation of steel sheeting.

C. Prior to the initiation of vibration inducing construction activities, National Grid's Engineer, the Contractor, and the Contractor's professional Engineer responsible for the preparation of the Vibration Minimization and Monitoring Plan shall perform a joint inspection of each nearby structure. The purpose of the joint inspection shall be to evaluate and document the pre-construction conditions of the structures. During the inspection the contractor shall take video and still photographs of the structure to document pre-construction conditions. Sketches shall be made and photographs shall be taken of any pre-existing conditions.

Following the completion of vibration inducing construction activities, National Grid's Engineer, the Contractor, and the Contractor's professional Engineer responsible for the preparation of the Vibration Minimization and Monitoring Plan shall perform a joint inspection of each nearby structure. The purpose of the joint inspection shall be to evaluate and document the post-construction conditions of the structures. During the inspection the contractor shall take video and still photographs of the structures to document post-construction conditions. Sketches shall be made and photographs shall be taken at the location of any pre-existing conditions identified during the pre-construction inspection and at the location of any damage identified during the post-construction inspection.

SP-24 CONTRACTORS INSURANCE

The following organizations are to be included on the indicated policies as additional insured:

1. National Grid USA and Its Subsidiaries & Affiliates
2. O'Brien & Gere Engineers, Inc.
3. Synapse Engineering, PLLC
4. New York State Canal Corporation
5. The City of Utica

The following are the mailing addresses for the respective additional insured:

National Grid Risk Management, B-3 300 Erie Blvd. West Syracuse, NY 13202	O'Brien & Gere 333 West Washington St. PO Box 4873 Syracuse, NY 13221-4873	Synapse Engineering, PLLC Attention: Paul M. Fisher, PE 2426 County Route 12 Central Square, NY 13036
New York State Canal Corporation 105 N. Genesee Street Utica, NY 13502	City of Utica, NY Attention: Department of Engineering 1 Kennedy Plaza Utica, NY 13502	

SP-25 REMOVAL, HANDLING, AND DISPOSAL OF COAL TAR WRAP PIPE

A. The Contractor shall remove, handle, and dispose of all abandoned coal tar wrap pipe encountered during completion of this work as required by the Contract Documents, or as ordered by the Owner and Engineer to complete the work.

B. The Contractor will perform the work in accordance with the following requirements:

1. National Grid Environmental Guidance EG-114NY: Gas Pipeline Condensate, Drip Water and Debris
2. National Grid Environmental Guidance EG-122NY: Asbestos Management – New York
3. National Grid Environmental Guidance EG-132NY: Coal Tar Pipe Wrap and Debris
4. National Grid Environmental Guidance EG-140: Used Gap Pipe Management
5. National Grid Safety Procedure F-601: Asbestos Hazard Management Program
6. National Grid Safety Procedure F-615: Utility-Related Asbestos Work
7. National Grid Safety Procedure F-616: Asbestos Abatement General Specification
8. National Grid Safety Procedure F-617: Handling Coal Tar Wrap
9. National Grid Safety Procedure F-618: NY State Asbestos Project Notification and instruction

*****

SECTION 01300

SURVEYS

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes furnishing all labor, material, and equipment required to perform and provide complete surveys, as specified herein or as specified by the Engineer.

1.2 SUBMITTALS

A. The following items shall be submitted:

1. Surveyor Qualifications: Prior to the start of any survey work, submit the name, address, State registration number, and telephone number of the surveyor and other persons proposed for survey-related duties to the Engineer for approval.

2. All survey submittals shall be signed by a surveyor licensed in New York State.

3. Provide periodic survey calculations required to support requests for payments and verification of volumes and areas.

4. Record Drawings

A. Topographic maps – prepare and submit:

1. Existing conditions prior to disturbance of site.

2. After excavation showing excavation depths (elevation data) and horizontal limits of each excavation.

3. After backfill and replacement of topsoil, asphalt and site features, and prior to final inspection.

5. Submit the following with each record drawing submittal.

A. Records

1. AutoCad 2000 (or newer) electronic files

2. Field Data

3. Coordinate List

1.3 QUALITY ASSURANCE

A. All work in this section shall be performed by a surveyor licensed in New York State.

B. Mapping shall conform to the National Map Accuracy Specifications and shall bear the seal of a licensed land surveyor registered in New York State. The surveyor shall also have a minimum of two years experience in construction surveying, and layout and maintenance of record construction drawings, with a record of performing horizontal and vertical control requirements as stated in this section.

PART 2 PRODUCTS

2.1 SUPPLEMENTAL RECORD DRAWINGS

A. Contractor shall provide a reproducible base map at a scale of 1:1 and with decimal units upon which the Contractor shall plot the required survey information for each required submittal.

B. Map shall contain a title block with the name and address of the Contractor and the signature of the registered surveyor.

C. Drawings shall include:

1. Labeled contour lines
2. Property line locations
3. Horizontal grid systems
4. Cross sections and details modified to show “as-built” conditions
5. Utility pipe invert elevations and locations
6. Details and cross sections not on original drawings
7. Field changes of elevations, dimensions, and details

D. Indicate on drawings locations of all physical features on site, including utilities, buildings, roadways, catch basins, manholes, utility poles, fences, gates, drainage ditches, monitoring wells, light poles, trees, and bench marks.

E. Indicate excavation limits on drawings for both the proposed limits (based on Contract Drawings) and completed limits.

2.2 FIELD DATA

A. Field survey notes

1. Copy of field notes, notations, and descriptions or total station electronic files used and compiled during the field survey

2.3 COORDINATE LIST

A. Final coordinate list of all survey points with specific coordinates and elevations.

PART 3 EXECUTION

3.1 INSPECTION

A. The surveyor/Contractor shall verify site conditions within the project area and locations of site reference and survey control points prior to starting work. The surveyor/Contractor shall promptly notify the Engineer of any discrepancies discovered.

B. The surveyor/Contractor shall locate all utilities in the work area. The surveyor/Contractor shall verify the elevations of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated or discovered during work.

3.2 HORIZONTAL AND VERTICAL CONTROL

A. The Contractor shall take all reasonable measures to protect site reference points prior to starting and during site work.

B. Immediately notify the Engineer of loss, damage, or destruction of any reference point, or any relocation required because of changes in grade or other reasons.

C. X, Y, and Z coordinates of bench marks and control points shall be determined and recorded with a maximum permissible error of 0.01 ft vertical and 0.001 ft horizontal.

D. The Contractor shall provide control points at each location of work using closed traverse and leveling loops.

E. The Contractor shall provide grade and offset stakes to control the location and depth of excavation and backfill.

F. The Contractor shall survey the location and elevation of all excavation and backfill limits to document the areas remediated.

G. The Contractor shall provide survey control as required to properly complete and document the work.

H. Lack of adequate survey control or improperly maintained “as-builts” will be the basis for rejection of the Contractor’s application for payment until corrected.

3.3 COORDINATE LIST

A. The Contractor shall compute the coordinates of each surveyed point on the New York State Plane Coordinate System using the 1983 North American Datum (NAD).

B. The elevations shall be on the National Geodetic Vertical Datum (NGVD) 1927.

3.4 SURVEY NOTES

A. The Contractor shall record all fieldwork in a clear, legible, and complete manner.

B. The Field Survey Book(s) shall contain a complete description of the nature and location of the new and existing points. The record shall also include a sketch of the point locations, and the monument witness points.

C. The Contractor shall maintain survey notes on-site for review and use by Engineer.

3.5 UTILITIES

A. The Contractor shall locate all utilities in the work area.

B. The Contractor shall verify the elevations of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated or discovered during work.

C. The Contractor shall record elevations of all encountered buried piping and utilities exposed, and all structures left in place during the course of the project for incorporation in the project record documents.

* * * * *

SECTION 01700

HEALTH AND SAFETY

PART 1 GENERAL

1.1 SUMMARY

A. Contractor shall be solely responsible for the protection of the personnel working on the site and the residents living in the vicinity of the site from exposure to on-site contaminants generated or released as a result of the Contractor's work on site.

B. Contractor shall prepare, submit to Engineer, and implement a site specific health and safety plan (HASP) to protect the personnel working on the site and the residents living in the vicinity of the site from exposure to on-site contaminants encountered, generated, or released as a result of the Contractor's work on site.

C. Contractor shall retain an independent, third-party firm to provide health and safety monitoring at the Site and enforcement of the HASP.

D. An independent, third-party firm hired directly by National Grid will conduct Community Air Monitoring required in accordance with this specification and the New York State Department of Health Generic Community Air Monitoring Plan.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. National Institute for Occupational Safety and Health (NIOSH), United States Department of Health and Human Services

a. 85-115 - Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

b. NIOSH Manual of Analytical Methods – analysis for total particulate (ug/m^3) method 0500

2. Code of Federal Regulations (CFR)

a. 29 CFR 1910 and 1926 - OSHA Safety and Health Standards, and citations adopted by reference

b. OSHA Analytical Methods Manual, Part I, Volume 3, Methods 55-80 for Polynuclear Aromatic Hydrocarbons

b. 49 CFR Parts 171-178 - Department of Transportation (DOT) Hazardous Materials Regulations

3. Unites States Environmental Protection Agency (USEPA)

   a. Standard Operating Safety Guides

   b. EPA Analytical Method TO-15 (mini cans)

4. American Conference of Governmental Industrial Hygienists (ACGIH)

   a. ACGIH Threshold Limit Values and Biological Exposure Indices

1.3 SUBMITTALS

A. The following items shall be submitted:

1. Site Specific Health and Safety Plan including, but not limited to:

   a. Contractor Organizational Chart

   b. Results of Health and Safety Risk Analysis performed by the Contractor

   c. Employee and Community Protection Plan

   d. Employee Air Monitoring Plan

   e. Community Air Monitoring Plan

   f. Employee Training and Experience

   g. Summary of Medical Surveillance Program

   h. List of Standard Operating Procedures incorporated into the HASP

   i. A method to monitor entry and exit from the work site

   j. Personnel and Equipment Decontamination Procedures

   k. A Spill Containment Program

   l. Emergency Response Plan and Emergency Reporting Procedures

   m. Fire Emergency Protection Plan

   n. Confined Space Entry Procedures

2. Certificates of completion of Health and Safety Training as required by 29 CFR 1910.120(e).

3. Resumes of the Contractor's Project Manager, Field Supervisor, and of the health and safety staff expected to work at this site.

4. Evidence of coordination for emergency response with local police, fire, medical, and hazardous materials responders.

5. Air monitoring results.

6. Name and location of proposed permitted off-site disposal facility for used personal protective equipment (PPE).

PART 2 PRODUCTS

2.1 GENERAL

A. The responsibility for development, implementation, and enforcement of the Health and Safety Plan (HASP) lies with the Contractor and his health and safety personnel.

B. Prior to commencement of on-site activities, the Contractor shall prepare a site-specific HASP, which shall be implemented during performance of the work. The HASP shall be prepared and administered by a Certified Industrial Hygienist (C.I.H.). All pertinent aspects of applicable regulations shall be addressed. The protective measures in the HASP shall be consistent with applicable protocols and provisions of the OSHA regulations and other applicable regulations. The HASP developed by the Contractor shall include, but not be limited to, employee air monitoring, programs for accident prevention, personnel protection, and emergency response/contingency planning. A corporate safety and health manual may be furnished along with the HASP but this shall not satisfy the site-specific HASP requirement.

C. At least one copy of the HASP shall be present at the site at all times.

PART 3 EXECUTION

3.1 ORGANIZATIONAL RESPONSIBILITIES

A. Key Personnel and Organizational Chart. The lines of authority, responsibility and communication shall be presented in the HASP. The Contractor must provide an organization chart and resumes of the Contractor's key personnel involved in all phases of the Site construction activities. This chart must include Senior-Level Management, Project Manager, CIH, Site Health and Safety Officer (HSO), Field Supervisor, and Foreman Personnel. Resumes are required for the Project Manager, Field Supervisor, Health and Safety Officer, and Health and Safety Staff.

B. Site Health and Safety Officer (HSO). The Contractor’s C.I.H. must identify and assign a Site Health and Safety Officer (HSO) for the project. The HSO shall have no other project responsibilities and be dedicated solely to health and safety monitoring and HASP enforcement. That individual must be responsible to the Contractor's C.I.H. and have the authority and knowledge necessary to implement the site Health and Safety Plan (HASP) and verify compliance with applicable safety and health requirements.

1. The HSO shall have the following responsibilities and authority to perform the following functions:

    a. Be present during site operations.

    b. Have the authority to enforce the HASP and stop operations if personnel safety and health may be jeopardized.

    c. Evaluate health monitoring data and make necessary field decisions regarding safety and health.

    d. Initiate evacuation of the site if necessary.

2. The HSO shall meet the following minimum qualifications:

    a. HSO shall possess a sound working knowledge of State and Federal occupational safety and health regulations and shall have formal educational training in occupational safety and health. Documentation shall be provided that the HSO has completed the 40 hr. OSHA Training Course, the 8 hr. OSHA Supervisor's Training Course and met the field experience requirements.

    b. Have documented experience that the HSO has worked on two (2) projects similar in nature to this one.

3.2 RISK ANALYSIS

A. Health and Safety Evaluation. The Contractor shall perform and provide in the HASP the results of a health and safety risk analysis for each location and operation to be performed.

B. The risk analysis shall be based upon the best information available regarding the contaminants and conditions present at the site as well as the practices and tools to be applied in the operation and shall include but not be limited to the following:

1. Overview of the following information:

    a. Location, site topography, accessibility, and size of the site.

    b. Description of the site operation and tasks to be performed.

    c. Approximate duration of the operation and of each task.

    d. Chemical and physical properties of the known or suspected hazardous substances and health hazards.

    e. Known or potential safety hazards associated with each task.

    f. Known or suspected pathways of hazardous substance dispersion pertinent to the operation and tasks performed.

2. An evaluation of the known or suspected contaminants and conditions that may pose inhalation, skin absorption/contact or ingestion hazards. A copy of the Material Safety Data Sheet (MSDS), chemical fact sheet, or other relevant information shall be included in the Site-specific HASP prepared by the Contractor.

3. An evaluation of known or potential safety and health hazards associated with each task on the site.

4. An evaluation of engineering and work practice controls to be applied to minimize potential harm to the community and employees on site from hazardous substances and activities during completion of the task.

   a. Engineering and Work Practice Controls. The Contractor must consider the need to apply engineering and/or work practice controls as a means of protecting the community and personnel in the performance of site specific tasks.

      1) When practicable, engineering controls shall be implemented to reduce and maintain community and employee exposures to or below acceptable levels for those tasks with known or suspected hazards.

      2) Work practice controls shall be applied when engineering controls are deemed impractical and shall be incorporated as site-specific standard operating procedures (SOP) for personal precautions and routine operations.

5. An evaluation of the status and capabilities of emergency response teams.

3.3 MEANS TO CONTROL EMPLOYEE AND COMMUNITY EXPOSURE

A. Employee and Community Protection Plan

1. The Contractor shall prepare and implement an Employee and Community Protection Plan (ECPP) in accordance with 29 CFR 1910.120(h). The ECPP shall be developed to specify and evaluate the engineering and work practice controls to be implemented to minimize exposure of employees working on the site, residents living in the vicinity of the site, and the environment to contaminants generated or released as a result of work on the site. The ECPP shall be incorporated into the site HASP as a separate section of that document.

B. Employee Air Monitoring Plan

1. The Contractor shall prepare and implement an Employee Air Monitoring Plan (EAMP) to identify times of elevated airborne contaminant concentrations, to determine the level of the concentrations relative to background, and to respond to elevated levels. The Contractor shall provide the personnel, instruments, and materials necessary to perform such

air monitoring and to implement the response. The identity of the individual responsible for administering the program shall be included in the site organization chart. In addition to the odor control requirements specified in the Special Provisions, the Contractor shall define specific air monitoring methods, sampling media, and sample analyses to be implemented during construction of the remedial action at the Site to protect Employees and others on site. The EAMP shall include proposed responses to levels above the Contractor's action levels. The EAMP shall be incorporated into the site HASP as a separate section of that document.

C. Community Air Monitoring and Response

1. The National Grid shall hire an independent, third-party firm to prepare, submit and implement a Community Air Monitoring Plan (CAMP) using a photo-ionization detector (PID) for total VOCs and PM-10 meter for particulates during the Construction Contractor's invasive work. Also, observation of odor at the site perimeter and in the direction of off-site receptors will be documented and reported to the NYSDEC representative. Although not responsible to perform the community air monitoring, the Construction Contractor shall be responsible for conducting the construction work so that the level of particulate matter less than 10 micrometers in diameter (PM-10) leaving the downwind side of the site (if any) shall be maintained below 150 $\mu g/m^3$ above the upwind particulate level, based on a 15 minute averaging period. Also, the Construction Contractor shall be responsible for conducting the construction work so that the level of volatile organic compounds (VOCs) leaving the downwind side of the site shall be maintained below 5 ppm above background. The Contractor shall provide means to minimize odor and implement additional odor controls to reduce objectionable odors, if observed and deemed to be objectionable by the Engineer, when necessary.

2. Vapor Emission Response

a. VOC levels exceeding 5 ppm above background at the perimeter of the work area will require that work activities be halted by the Contractor, and actions initiated by them to reduce the VOC emissions from the work area. At that time, air monitoring shall be implemented by the independent third-party firm hired by National Grid to measure the vapor emission levels in the work zone and at 200 feet downwind of the work area or at half the distance to the nearest residential or commercial structure. If VOC levels in the work zone or downwind location are below or decrease to below 5 ppm over background, work activities can resume with continued monitoring.

b. If the VOC level at the perimeter of the work area is above 25 ppm, activities must be shutdown and actions taken by the Contractor to reduce VOC levels at the perimeter of the work zone to below 5 ppm above background.

c. If efforts to abate the emission source do not lower the VOC levels below 5 ppm at the downwind sampling location or if elevated levels persist for more than 30 minutes within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone), the Major Vapor Emission Response Plan prepared by the independent third-party firm shall be implemented.

3. Particulate Emission Response

a. Actions shall be initiated by the Contractor to reduce the particulate emissions from the work area whenever the particulate levels exceed 100 $\mu g/m^3$ above the upwind particulate level (*e.g.* background) at the perimeter of the work area, as measured by the independent third-party firm hired by National Grid. Particulate levels exceeding 150 $\mu g/m^3$ above the upwind particulate level at the perimeter of the work area will require that work activities be halted by the Contractor. At that time, air monitoring shall be implemented by the independent third-party firm to measure the particulate emission levels in the work zone and at 200 feet downwind of the work area or at half the distance to the nearest residential or commercial structure. If particulate levels in the work zone or downwind location are below or decrease to below 150 $\mu g/m^3$ over background, work activities can resume with continued monitoring.

b. If efforts to abate the emission source do not lower the particulate levels below 150 $\mu g/m^3$ 200 feet downwind of the work area, or if elevated levels persist for more than 30 minutes within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone), a Major Particulate Emission Response Plan prepared by the independent third-party firm shall be implemented.

3.4 TRAINING

A. Training Requirements for On-Site Personnel

1. The Contractor will ensure that all employees engaged in on-site activities which expose or potentially expose them to hazardous substances and/or health hazards have satisfied the general and site specific training requirements of 29 CFR 1910.120 prior to the start of the employee's activities at the site.

2. Employees who have not received the required training prior to the start of the employee's site operations are not to engage in site operations until such training has been completed.

3. The Contractor shall provide written certification of completed training and acquired experience for all employees requiring training and/or experience. Such certification shall be supplied prior to the start of the employee's site operations.

B Personal Protective Equipment and Levels of Protection

1. The Contractor shall provide and use, under each item of work requiring such protection, personal protective equipment (PPE) under the provisions of 29 CFR 1910.132 and 29 CFR 1910.120.

2. The Contractor shall include in the HASP a list of components for each protective ensemble, the LOP selected for each task, the rationale for each task-specific selection, any contaminant action levels to be followed in LOP decision making.

3. All used PPE shall be properly disposed of by the Contractor at a permitted off-site facility approved by Owner. Used PPE shall not be disposed of on Site nor shall it be burned. The Contractor shall be responsible for characterizing used PPE, decontamination (as necessary), temporary storage, transportation, and disposal of used PPE in accordance with applicable Federal, State, and local regulations.

3.5 MEDICAL SURVEILLANCE

A. Medical Surveillance Program. The Contractor shall show evidence of a medical surveillance program (MSP) for employees engaged in on-site operations, consistent with 29 CFR 1910.120(f).

1. The MSP shall include physical examinations supervised or administered by a board certified physician familiar with occupational medicine. The Contractor shall include the name and business address of the certified physician in the HASP.

2. The Contractor shall address the need for personal exposure monitoring and post exposure medical screening in the HASP and include a summary of applicable monitoring and screening.

B. Personnel Certification

1. The Contractor shall provide written approval by a certified physician of the medical fitness for work of all employees designated to engage in on-site operations, prior to the employee's start of those operations.

C. Employee Heat and Cold Stress Prevention

1. As dictated by seasonal conditions, the Contractor shall implement an employee heat or cold stress prevention program during site operations and shall incorporate the program into the site HASP.

3.6 SITE STANDARD OPERATING PROCEDURES

A. The Contractor shall be responsible for developing and implementing necessary standard operating procedures (SOP) for site operations.

3.7 SITE CONTROL

A. Work Zones

1. The Contractor shall be responsible for conducting operations at the site in such a controlled fashion as to minimize the possibility of employee and community contact with contaminants present on the site and to prevent the removal of contaminants generated on the site by personnel or equipment leaving the site.

2. The Contractor shall delineate work zones in which specific operations or tasks will occur and shall institute specific site entry, and decontamination procedures at Contractor designated control points in accordance with provisions set forth in 29 CFR 1910.120 and HWR 89-4031. At a minimum, three (3) work zones will be established to perform this work - an exclusion/contamination zone, a contamination reduction zone, and a support/clean zone. A map or diagram showing the work zones and a description of the site control plan shall be included in the HASP.

B. Routine and Emergency Communications

1. The Contractor shall incorporate plans for routine and emergency communications appropriate for the site and project in the HASP.

C. Daily Visitor Log

1. The Contractor, in accordance with his security plan shall keep a daily visitor log, copies to be provided to Owner/Engineer upon request. A time clock shall be used to record the arrival and departure times. This log shall include:

   a. Person visiting the site
   b. Affiliation
   c. Date
   d. Arrival time
   e. Departure time
   f. Purpose of visit

D. Personnel

1. The Contractor shall provide Owner and Engineer a list of all Contractor and subcontractor personnel who are authorized to enter the site prior to the start of operations, updating the list as necessary. No unauthorized persons shall be permitted to enter the site.

E. Other

1 The Contractor shall be responsible for conducting operations in accordance with Federal, State and local regulations and requirements for storage of the Contractor's hazardous materials (*i.e*. gasoline, lube oils, etc.) on-site, including locating staging areas, labeling/signage, etc.

2. The Contractor shall use a "buddy system" as required.

3. The Contractor shall make appropriate PPE available for all individuals present on the site during implementation of the project.

3.8 DECONTAMINATION

A. The Contractor shall develop and implement personnel and equipment decontamination procedures appropriate for site specific locations and activities and include those procedures in the HASP. The procedures shall include, but not necessarily be limited to, the necessary equipment and personnel and the steps to achieve contractor's specified level of decontamination, provisions for any personnel protection, and a discussion or diagram outlining the steps or stations in the procedures. The procedures must include containment and removal of any decontamination solutions and spent disposable protective apparel.

B. Decontamination shall be conducted in accordance with 29 CFR 1910.120 (k) and shall minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances as well as minimize off-site transport of contamination. The Contractor shall clean roadways as necessary to prevent contamination being transported from the work areas into other parts of the Site or off-site by construction or plant traffic.

C. The Contractor shall provide provisions to facilitate personal hygiene at breaks and following daily operations.

3.9 SPILL CONTAINMENT

A. The Contractor shall incorporate a spill containment program prepared in accordance with 29 CFR 1910.120 in the HASP.

3.10 CONTINGENCY PLANNING

A. Emergency Response Plan. Prior to the start of site operations, the Contractor shall develop and implement an emergency response plan (ERP) to handle potential on-site emergencies. The ERP shall be incorporated into the site HASP as a separate section of that document and shall be periodically reviewed and, as necessary, amended to keep it current with new or changing site conditions or information.

1. The Contractor shall address the following requirements:

a. Prior to the start of site operations, the Contractor shall attend any and all meetings necessary with local officials and/or those

responsible for local emergency management and public safety (to include fire, police, hazardous material response teams, hospitals, and local health officials) for the purpose of coordinating the site-specific ERP with any emergency response efforts that would be performed by such agencies.

b. The Contractor shall contact the local medical facility selected for inclusion into the HASP and the ERP to ensure that said facility is willing and is capable of providing that medical support necessary to satisfy those anticipated hazards and emergencies detailed in the HASP and the ERP. Written verification of such contact, including the name of the individual contacted, shall be furnished to Owner and Engineer prior to the start of site operations.

B. Accident and Exposure Reports

1. The Contractor shall notify the Engineer and Owner's Representative of all on-site accidents at the time of occurrence and follow up in writing within 24 hours. This notification shall include, but not be limited to, the date, time and identity of individual(s) involved in the accident, witnesses to the accident, the nature of the accident, the actions taken to treat the victim(s), and the steps taken to prevent recurrence.

2. The Contractor shall notify the Engineer and Owner's Representative of all person(s) exposed at levels exceeding OSHA standards at the time of occurrence or determination and follow up in writing within 24 hours. This notification shall include, but not be limited to, the date, time, and identity of individual(s) involved in the exposure, witnesses to the exposure, the nature of the exposure episode, what the individual(s) were exposed to, the personal protective equipment worn during the exposure, and the steps taken to prevent recurrence.

3. The Contractor shall notify the Engineer and Owner's Representative of all environmental air measurements exceeding NYSDEC standards. This notification shall include, but not be limited to, the date, time, and identity of individual(s) involved in the exposure, witnesses to the exposure, the nature of the exposure episode, what the individual(s) were exposed to, the personal protective equipment worn during the exposure, and the steps taken to prevent recurrence.

3.11 FIRE PREVENTION AND PROTECTION

A. The Contractor shall develop procedures for handling and responding to small and large fires. This Fire Protection Plan (FPP) shall be included in the HASP as a separate document. The FPP shall include procedures for requesting emergency assistance and notifying Owner and Engineer of the incident. The Contractor shall insure that fire traffic lanes are available (not blocked) and all fire exits are properly marked.

3.12 CONFINED SPACE OPERATIONS

A. Standard Operating Procedures

1. Should site operations include activities within confined spaces, the Contractor shall develop and implement SOPs in accordance with 29 CFR 1910.146 and shall incorporate them in the HASP as a separate section of that document.

3.13 DRUM AND CONTAINER HANDLING OPERATIONS

A. Standard Operating Procedures

1. Should site operations include activities requiring the handling of drums and containers, (both encountered on-site and brought on-site), the Contractor shall develop and implement SOP's in accordance with 29 CFR 1910.120(j) and incorporate them in the HASP.

3.14 OPERATIONS WITHIN AND ADJACENT TO POWER LINES

A. Standard Operating Procedures

1. Should site operations include activities requiring the operation of cranes or derricks within or adjacent to power lines, the Contractor shall develop and implement SOP's in accordance with 29 CFR 1926.550(a) - Cranes and Derricks and incorporate them in the HASP.

3.15 OPERATIONS NEAR EXISTING UTILITIES

A. Standard Operating Procedures

1. In advance of the work, the Contractor shall identify and locate buried utilities in the area of work.

2. Special precautions shall be observed to not cause interference or damage to any existing utilities.

3. The Contractor shall notify the proper utility companies at least seventy-two (72) hours before construction is started adjacent to such utilities. Utilities shall be protected in the manner prescribed by the utility company.

* * * * *

SECTION 02110

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes clearing and grubbing by removal or destruction of trees, underbrush, logs, stumps, decayed or growing organic matter above the surface of the ground. This section also includes the removal of snow and ice which interfere with construction or landscaping.

1.2. RELATED WORK SPECIFIED ELSEWHERE

A. 02220 – Earthwork

B. 02302 – Off-site Transportation and Disposal

PART 2 PRODUCTS

2.1 GENERAL

A. Contractor shall protect existing trees outside of the excavation limits with suitable stakes or protective measures.

PART 3 EXECUTION

3.1 GENERAL

A. Only those portions of the site necessary and essential to be cleared for work shall be cleared.

B. Tree protection

1. No trees located outside of the excavation limits shall be disturbed unless necessary to complete the excavations required as part of the remedial actions.

2. Any tree, which will not, in the opinion of the Engineer, hinder construction or landscaping, shall be protected.

3. Special care shall be exercised to minimize injury to trees that will not be removed. Careful digging will be performed to minimize root damage. Roots may be cut and removed up to 25 percent of the estimated root area. If more than 25 percent is required to be cut, the Engineer shall decide whether the tree shall be removed. Straggling roots shall be pruned.

4. Any tree that is trimmed during construction shall be cut cleanly outside of the branch collar.

5. Trees outside of the excavation area that are greater than 6 inches DBH should be protected by placing a barrier around the tree at the tree drip-line. This applies to trees that are near the movement of construction equipment, with the intention of the barrier to prevent damage through inadvertent driving, bucket swings and lifts, etc.

C. Removal of brush, trees and spoil

1. Contractor may chip brush and tree limbs. The Contractor shall dispose of all brush, trees, wood chips, logs, cut limbs and similar material on the Harbor Point Site at a location identified by the Owner's Representative.

2. The cutting of trees and shrubs shall be six inches above the ground surface for clearing in the known contaminated areas. Anything below this height should be considered grubbing, and associated soils shall be handled as contaminated soils and handled in accordance with the Sections titled "Earthwork" and "Off-site Transportation and Disposal."

3. No brush, trees, peat or other organic material shall be placed on site or used as backfill in any excavations.

* * * * *

SECTION 02141

GROUNDWATER MONITORING WELL ABANDONMENT

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the furnishing of all labor, material, equipment and performing all operations required to abandon groundwater monitoring wells, as specified herein, shown on the Contract Drawings or as specified by the Engineer.

Monitoring Well Identification – Wells to be Abandoned		
Excavation Area	Monitoring Well	Approx. Depth
CGP	CDM-MW-218 (S)	10 ft
	CDM-MW-219 (I)	32 ft
	MW-23 (S)	17 ft
	MW-23 (I)	52 ft
	MW-22 (S)	18 ft
	MW-22 (D)	134 ft
	MW-22 (I)	52 ft
	OW-1	***32 ft***
	OW-2	***32 ft***
	OW-3	32 ft
	OW-4	32 ft
	OW-5	32 ft
	OW-6	32 ft
	OW-7	32 ft
	OW-8	30 ft
	OW-9	30 ft
	OW-10	30 ft
	OW-11	32 ft
	OW-12	30 ft
	OW-13	32 ft

Note: The depths of wells were taken from monitoring well logs presented in the reference documents. Due to previous remediation activities, some of the wells shown may already have been abandoned/removed. Also, there may be additional monitoring wells present within the CGP area that are not listed above. The well depths that are shown in ***bold italics*** are estimated depths since the boring logs could not be found.

B. Abandonment of any groundwater monitoring wells damaged during the work as directed by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02202 - Construction Water Management

B. 02200 – Earthwork

1.3 APPLICABLE CODES, STANDARDS AND SPECIFICATIONS

The publications listed below form a part of the specifications to the extent referenced. The publications are referred to in the text by basis designation only.

A. American Society of Testing and Materials (ASTM)

ASTM C150 Type 1 Portland cement

ASTM D5299 Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and other Devices for Environmental Activities

B. New York State Department of Environmental Conservation (NYSDEC)

NYSDEC CP-43 Groundwater Monitoring Well Decommissioning Policy (November 3, 2009)

NYSDEC Groundwater Monitoring Well Decommissioning Procedures (June 2009), or more recent version.

1.4 SUBMITTALS

A. The following items shall be submitted:

1. Proposed grouting materials and methods.

2. Well abandonment logs shall be submitted.

PART 2 PRODUCTS

2.1 GROUT

A. There are two types of grout mixes that may be used to seal wells: a standard mix and a special mix. Both mixes use Type 1 Portland cement and four percent bentonite by weight. However, the special mix uses a smaller volume of water and is used in situations where excessive loss of the standard grout mix is possible (e.g. highly-fractured bedrock or coarse gravels).

B. Standard Grout Mixture

1. Unless otherwise necessary, the following standard mixture shall be used:

a. One 94-lb bag Type I Portland Cement
b. 3.9 lbs powdered bentonite
c. 7.8 gals potable water

2. This mixture results in a grout with a bentonite content of four percent by weight, and shall be used in all cases except in boreholes where excessive use of grout is anticipated. In these cases, a special mixture shall be used.

C. Special Mixture

1. In cases where excessive use of grout is anticipated, such as high permeability formations and highly fractured or cavernous bedrock formations, the following special mixture shall be used:

   a. One 94-lb bag type I Portland Cement
   b. 3.9 lbs powdered bentonite
   c. 1 lb calcium chloride
   d. 6.0 – 7.8 gallons potable water (depending on desired thickness)

2. The special mixture results in a grout with a bentonite content of four percent by weight. It is thicker than the standard mixture because it contains less water. This grout is expected to set faster than the Standard Grout Mixture. The least amount of water that can be added for the mixture to be readily pumpable is six gallons per 94-lb bag of cement.

3. In cases where the penetration of the sandpack is critical, such as bedrock wells with screens that transect multiple water-bearing zones, the following alternate mixture shall be used:

   a. One 94-lb bag Type III Portland Cement
   b. 3.9 lbs powdered bentonite
   c. 7.8 gals potable water

2.2 BENTONITE

A. Baroid - Ben Seal

B. Equal

PART 3 EXECUTION

3.1 GENERAL

A. No monitoring well abandonment, repair or replacement activities shall commence without acceptance of the Engineer. Prior to abandoning monitoring wells, the wells shall be bailed and the volume of accumulated non-aqueous phase liquid (NAPL) (if any) shall be quantified. If NAPL is observed, the quantity removed shall be reported to the Engineer for inclusion in the Construction Completion Report.

B. All monitoring well abandonment shall be performed in accordance with the requirements of the NYSDEC Groundwater Monitoring Well Decommissioning Procedures (June 2009), or more recent version.

C. Water generated and/or encountered during well abandonment activities shall be handled in accordance with the Section "Construction Water Management."

D. Soil cuttings shall be disposed of as “spoil” in accordance with the Section “Earthwork.” All other material shall be disposed of off-site in accordance with applicable Federal, State and local regulations.

E. The Contractor shall restore the area in the vicinity of each well location as directed by the Engineer.

F. Following drilling activities, the Contractor shall decontaminate equipment as specified in Section 3.3.

G. If the well to be abandoned is constructed within a bedrock formation, the screened or the open hole portion of the well shall be grouted to the top of the bedrock. Prior to initiating any grouting procedure, the depth of the well shall be measured to determine if any silt or debris infilling has plugged the well. If plugging has occurred, the well shall be flushed with an appropriately sized roller bit or drill rods to remove or suspend the obstruction in the water column. The borehole shall then be tremie grouted from the bottom of the well to the top of bedrock to insure a continuous grout column. Note that if the bedrock well is cased, the screen should be perforated to the top of the rock if the inside diameter of the casing is 4-inches or larger. Furthermore, if the screened interval transects multiple water bearing zones, the special grout mix discussed in Part 2 shall be used to ensure penetration of the sand pack. After the rock hole is grouted, the overburden portion of the well shall be decommissioned in accordance with the following sections.

3.2 ABANDONMENT

A. Removing the Protective Casing

1. Removal of the protective casing of a well must not interfere with or compromise the integrity of decommissioning activities performed at the well.

2. Prior to Sealing the Well Bore

a. The protective casing must be removed unless the drilling tools have an inside diameter larger than the protective casing. An acceptable protective casing removal method involves breaking up the concrete seal surrounding the casing and jacking or hoisting the casing out of the ground. A check should be made during pulling to insure that the inner well casing is not being hoisted with the protective casing. If this occurs, the well casing shall be cut off after the base of the protective casing is lifted above the land surface.

B. Overdrilling

1. An overdrilling method of well abandonment shall be used to prevent cross-contamination. The overdrilling method used shall:

a. Follow the original well bore.
b. Create a borehole of the same or greater diameter than the original boring.
c. Remove of all the well construction materials.

2. Acceptable methods for overdrilling include the following:

   a. Using conventional augering (i.e., a hollow stem auger fitted with a plug). The plug cutter shall grind the well construction materials, which shall be brought to the well surface by the auger.

   b. Using a conventional cable tool rig to advance casing having a larger diameter than the original boring. The cable tool kit shall be advanced within the casing to grind the well construction materials and soils, which are periodically removed with large diameter bailer. This method is not applicable to bedrock wells.

   c. Using an over-reaming tool with a pilot bit nearly the same size as the inside diameter of the casing and a reaming bit slightly larger than the original borehole diameter. This method can be used for wells with steel casings. Using a hollow-stem auger with outward facing carbide cutting teeth having a diameter two to four inches larger than the casing. Outward-facing cutting teeth should prevent severing the casing and drifting off center.

   d. Using a hollow-stem auger with a steel guide pipe inside. The casing guides the cutter head and remains inside the auger. The guide pipe should be firmly attached to the inside of the casing by use of a packer or other type of expansion or friction device.

3. Prior to overdrilling, an expandable J-plug or other suitable well cap shall be used to prevent the introduction of soil or cuttings into the well, thereby ensuring a continuous grout column for wells that are grouted in place.

4. In all cases above, overdrilling shall advance through the original bore depth by a distance of 0.5 feet to ensure complete removal of the construction materials. When the overdrilling is complete, the casing and screen should be retrieved from the center of the auger (American Society for Testing and Materials, Standard D 5299), if one of the hollow stem auger methods described above is employed.

5. Subsequent to overdrilling at flush mount well locations where it may be impractical to remove well materials from inside the augers, a 1-2 foot deep area shall be excavated by hand around the flush-mount well to facilitate a conventional well removal while tremie-grouting inside the well. Alternatively, the soil within the annular space may be removed by raising the augers to allow the soil to fall out and re-advance the augers to the original target depth. Grout shall then be tremied within the annular space between the augers and well casings. The grout level in the borehole shall be maintained as the drilling equipment and well materials are sequentially removed.

6. After overdrilling is completed, the borehole shall be grouted and the upper five feet of borehole shall be restored.

C. Grout Placement

1. Grout shall be placed in the borehole from the bottom to the top using a tremie pipe of not less than 1-inch diameter. Grout shall then be pumped into the borehole until the grout appears at the land surface (when grouting open holes in bedrock, the grout level only needs to reach above the bedrock surface).

2. When the grout level stabilizes, casing or augers shall be removed from the hole. As each section is removed, grout shall be added to keep the level between 0-feet and 5-feet below land surface. If the grout level drops below the land surface to an excessive degree, an alternate grouting method must be used.

3. Upon completion of grouting, the Contractor shall insure that the final grout level is approximately five feet below land surface. A ferrous metal marker shall be embedded in the top of the grout to indicate the location of the former monitoring well.

D. Backfilling

1. The uppermost five feet of the borehole at the land surface shall be filled with a material physically similar to the natural soils.

3.3 EQUIPMENT DECONTAMINATION REQUIREMENTS

A. To avoid cross-contamination, equipment shall be decontaminated after operations at each well location are complete.

B. The drilling and excavation equipment (i.e., drill rigs, cutting bits, and associated equipment) shall be cleaned at a constructed decontamination facility.

C. The drilling and excavation equipment shall be prepared before it is brought to the decontamination facility and then cleaned at the facility. Preparation includes removing gross soil/rock from the equipment to minimize losses during movement to the decon pad. At the decontamination facility, the equipment shall be steam cleaned or washed using phosphate-free detergent then rinsed. The equipment shall be inspected by the Engineer's field representative after cleaning.

D. All solid waste materials generated during the decommissioning process shall be disposed of properly.

* * * * *

SECTION 02200

EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes erosion and sediment control performed to minimize erosion of soils and sediments into drainage channels, and lands adjacent to or affected by the Work, and to prevent stormwater run-on onto work areas and to prevent potentially contaminated stormwater run-off (including soils and sediment) from leaving the site without appropriate treatment.

B. Erosion and sediment control measures to be implemented shall be in accordance with this specification, and as may be required by the New York State Department of Environmental Conservation (NYSDEC). In the event of discrepancies between this Specification and the NYSDEC requirements, the NYSDEC requirements shall govern.

C. Erosion and sediment controls shall be installed and maintained at additional locations as ordered by the Engineer and without additional cost when the Engineer is of the opinion that additional measures may be required to provide adequate erosion and sediment control.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the project stormwater pollution prevention plan (SWPPP) and the latest revisions of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:

1. 40 CFR 122 U.S. Environmental Protection Agency (USEPA) Administered Permit Programs: The National Pollutant Discharge Elimination System

2. 40 CFR 123 State Program Requirements

3. 40 CFR 124 Procedures for Decision Making

4. NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-10-001.

5. NYSDEC Standards and Specifications for Erosion and Sediment Control. (NYSDEC 2005).

6. New York State Stormwater Management Design Manual (the design Manual) prepared by the Center for Watershed Protection for the NYSDEC (2010).

1.3 SPECIAL REQUIREMENTS

A. In addition to appropriate permit and Erosion and Sediment Control (ESC) Plan requirements, construction procedures shall include protection of the environment in accordance with all pertinent Federal, State and local regulations. Construction procedures that are prohibited in the undertaking of work associated with this project include, but are not limited to:

1. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, wetlands, or within the 100-year floodplain of any surface waters.

2. Pumping of silt-laden water from trenches or other excavations into any surface waters, or any stream corridors, or wetlands.

3. Damaging vegetation beyond the extent necessary for the work of this project.

4. Disposal of trees, brush, and other debris in any stream corridors, wetlands, or within the 100-year floodplain of any surface waters.

5. Dumping of spoil material into any stream corridor, surface waters, or at any unspecified or unapproved locations.

6. Open burning of any debris.

B. Prior to initiating site disturbance, the Contractor shall install ESC facilities in accordance with the ESC Plan. In addition, the Contractor shall place silt fence along the downgradient perimeter of the work areas and spoil piles and as directed by the Engineer. The ESC facilities shall be maintained throughout construction until the site is stabilized pursuant to GP-0-10-001.

C. The Engineer shall have the authority to limit the surface area exposed by clearing, grubbing and excavation, and to direct the Contractor to implement additional erosion, run-off and run-on control measures as he deems necessary with no additional consideration for payment being made to the Contractor in this regard.

PART 2 PRODUCTS

Section not used

PART 3 EXECUTION

3.1 GENERAL

A. Clearing schedules shall be formulated to provide minimum practical exposure of soils. Local run-on/run-off control measures shall be implemented as conditions

warrant. The Contractor shall make every reasonable effort so as to not unduly disturb the ecological or environmental quality of the area.

3.2 EROSION AND SEDIMENT CONTROL

A. During the land disturbance life of this project, the following sequence shall be adhered to:

1. Install stabilized construction entrances at access and egress locations.

2. Clearing and grubbing for those areas necessary for installation of perimeter controls.

3. Construction of perimeter controls including, but not necessarily limited to the installation and maintenance of silt fencing along the entire downgradient perimeter beyond the outer limits of potential set-up and work areas.

4. Remaining clearing and grubbing.

5. Trenching and excavation, providing temporary stabilization/erosion/run-off/run-on controls as required.

6. Final grading and permanent stabilization.

7. Removal of ESC facilities.

B. Erosion and sediment control measures may include straw bale dikes, silt fences, earth dikes, stone check dams, stone outlet sediment traps, stabilized construction entrances, rip rap, seeding/sodding, properly anchored mulch, and/or other measures as required.

C. Erosion and sediment control measures shall be properly maintained and adequately functioning. Any existing measures that are damaged shall be immediately repaired.

D. Excavated material shall be protected from erosion by using appropriate devices or stabilization.

E. Trapped sediment shall be removed from the area of deposition and disposed of in accordance with the Section “Earthwork.”

F. As soon as possible after disturbance of a graded area, slope stabilization through the use of seeding, mulches (wood chips or straw anchored appropriately) or matting shall be provided.

G. Stormwater that has come into contact with potentially contaminated sources shall be treated in accordance with the Section "Construction Water Management."

* * * * *

SECTION 02201

STORMWATER POLLUTION PREVENTION

PART 1 GENERAL

1.1 SUMMARY

A. Implementation of the Stormwater Pollution Prevention Plan (SWPPP) prepared by the Engineer and approved by the NYSDEC, as specified herein and in accordance with all provisions of the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02110 – Clearing and Grubbing

B. 02200 – Erosion and Sediment Control

C. 02220 – Earthwork

D. 02202 - Construction Water Management

1.3 SPECIAL REQUIREMENTS

A. Erosion control shall consist of operations performed to minimize erosion of soils and sedimentation of drainage channels and lands adjacent to or affected by the Work, to prevent stormwater run-on onto work areas, and to prevent potentially contaminated stormwater run-off (including soils and sediment) from leaving the site without appropriate treatment.

B. Erosion control measures to be implemented shall be in accordance with this specification and as may be required by the NYSDEC or local agency having jurisdiction. In the event of discrepancies between requirements of this specification or government agency, the more stringent requirements shall govern.

C. Construction procedures shall include protection of the environment in accordance with all pertinent Federal, State and local regulations. Construction procedures that are prohibited in the undertaking of work associated with this project include, but are not limited to:

1. Pumping of silt-laden water from excavations into any surface waters, any stream corridors, stormwater conveyances, or sanitary sewers.

2. Damaging vegetation beyond the extent necessary for the work of this project.

3. Dumping of spoil material into any unspecified or unapproved locations.

D. The Engineer shall have the authority to limit the surface area exposed by clearing, grubbing and excavation, and to direct the Contractor, at no additional cost to the Owner, to implement additional erosion, run-off and run-on control measures as the Engineer deems necessary.

E. The Contractor shall provide all means, methods, equipment, facilities, and personnel required to implement and maintain the SWPPP and Erosion and Sediment Control (ESC) Plan.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

A. Clearing and Site Preparation

1. Only those portions of the site necessary and essential to be cleared for work shall be cleared. Clearing schedules shall be formulated to provide minimum practical exposure of soils. Local run-on/run-off control measures shall be implemented as conditions warrant. The Contractor shall make every reasonable effort so as to not unduly disturb the ecological or environmental quality of the area.

B. Erosion and Sediment Control

1. During the land disturbance period of this project, the following construction schedule shall be adhered to:

a. Clearing and grubbing for those areas necessary for installation of perimeter controls.

b. Construction of perimeter controls including, but not necessarily limited to, the installation and maintenance of silt fencing along the entire downgradient perimeter beyond the outer limits of potential set-up and work areas.

c. Remaining clearing and grubbing.

d. Excavation, providing temporary stabilization/erosion/run-off/run-on controls as required.

e. Final grading and permanent stabilization.

f. Removal of perimeter controls.

2. Erosion and sediment control measures may include straw bale dikes, silt fences, earth dikes, stone check dams, stone outlet sediment traps, stabilized construction entrances, rip rap, seeding/sodding, properly anchored mulch, and/or other measures as required.

3. Erosion and sediment control measures shall be properly maintained and adequately functioning. Erosion control devices shall be inspected at a minimum of at least once per week. Any existing measures that are damaged shall be immediately repaired.

4. Excavated material shall be protected from erosion by using appropriate devices or stabilization.

5. Trapped sediment shall be removed from the area of deposition and disposed of in accordance with the Section “Earthwork”.

6. Silt fencing shall be placed along the down gradient perimeter of the site at the approximate limit of the work or as directed by the Engineer.

7. Stormwater removed from the excavations shall be managed in accordance with the section entitled "Construction Water Management."

C. Maintenance of Site Drainage during Construction

1. The Contractor shall provide and maintain slopes, crowns and ditches in or around all excavations to insure satisfactory surface drainage at all times. Ditches and other drainage facilities necessary to remove ponded water shall be constructed as soon as practical to have the work area dry during the progression of work. All existing culverts and drainage systems shall be maintained in satisfactory operating condition throughout the course of the work unless otherwise directed by the Engineer. If it is necessary to interrupt existing surface drainage, then temporary drainage facilities shall be provided until the permanent drainage work is complete.

2. The maintenance of the drainage facilities is to include removal of silt build up, removal of mulch damming and removal of all drainage facility obstructions as determined by the Engineer.

* * * * *

SECTION 02202

CONSTRUCTION WATER MANAGEMENT PLAN

PART 1 GENERAL

1.1 WORK INCLUDED

A. The Contractor shall develop an acceptable Construction Water Management Plan detailing the handling, storage, treatment, and disposal of all construction water and associated residuals (*e.g.* spent GAC, filter bags, etc) generated during construction in accordance with all applicable Federal, State, and local regulations.

B. The Contractor is to design, construct, and operate a construction water treatment plant(CWTP) as necessary to comply with the discharge limits of the State Pollution Discharge Elimination System (SPDES) Permit (copy attached following this Technical Specification) obtained by National Grid for discharge to the Mohawk River. Any and all civil, criminal, and monetary penalties associated with non-compliance in any regard shall be the sole responsibility of the Contractor.

C. The Contractor shall provide all labor, materials, and equipment required for handling, storage, treatment, and disposal of construction water in accordance with the approved Construction Water Management Plan.

D. The Contractor shall perform all specified and necessary sampling and analyses to insure compliance with the SPDES permit and applicable laws and regulations or as directed by Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02201 - Storm Water Pollution Prevention Plan

B. 02220 - Earthwork

C. 02302 - Off-Site Transportation and Disposal

1.3 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. The Contractor shall comply with applicable Federal, State and local codes, ordinances, regulations, statutes and standards.

1.4 SUBMITTALS

The following items shall be submitted:

1. Construction Water Management Plan

2. Shop drawings and test results used in design of the method of handling construction water.

3. Process and instrumentation drawings (P&IDs) and schematic of proposed construction water handling, storage, and treatment process.

4. Implementation schedule for the dewatering operation and the proposed construction water treatment and discharge.

5. Results of all analyses conducted as required to demonstrate compliance with the SPDES discharge limits, and final report of dewatering activities completed.

1.5 DEFINITIONS

A. Construction Water. Construction water shall be defined as the following:

1. Groundwater or surface water entering the excavations.

2. Surface water resulting from precipitation during construction which has come in contact with potentially contaminated soils, fill, or debris.

3. Water or other liquids drained from or which have come into contact with potentially contaminated soils or debris, in addition to that resulting from precipitation.

4. Equipment decontamination liquid.

PART 2 PRODUCTS

2.1 GENERAL

A. Construction Water Management Plan

1. The Contractor shall submit to the Engineer a plan for managing construction water. The plan shall include, but not be limited to, the Contractor's proposed method of handling, sampling, analyses, storage (if necessary), treatment, and disposal of construction water generated during construction. In developing plans to treat construction water, the following information is provided for use by the Contractor in designing a method to appropriately treat the construction water to comply with the SPDES discharge limits for the project:

a. Shallow groundwater in the vicinity of the excavations is impacted by constituents related to the PAH areas, as well as constituents associated with the previously remediated purifier material areas co-located with PAH areas. The Contractor shall review historic groundwater laboratory data that will be available to them, but not a part of the Contract.

b. Shallow groundwater is impacted primarily by two different classes of organic compounds: BTEX and PAHs. BTEX was detected in most of the shallow wells within or adjacent to the excavation areas. Benzene is considered representative of this group of compounds, and was detected at concentrations that ranged from 3,000 ug/L in MW-13(S) located near purifier material area PM-6, to less than 5 ug/L in 6 of the 11 shallow wells.

c. PAHs were detected in the majority of the shallow wells in the vicinity of the excavations. Naphthalene is the most prevalent and considered

representative of this group of compounds. Naphthalene concentrations ranged from 7,800 ug/L [MW-17(S)] and 3,100 ug/L [MW-13(S)] to less than 10 ug/L in 5 of the 11 shallow wells. The highest naphthalene concentrations were detected in monitoring wells located within or near PAH areas.

d. Inorganics were also detected in groundwater, several but not all of which are identified as follows. Purifier material area PM-1 groundwater included concentrations of antimony (139 ug/L), arsenic (956 ug/L), lead (992 ug/L), mercury (4.7 ug/L), and nickel (3,000 ug/L). Purifier material area PM-2 groundwater included concentrations of cadmium (47.9 ug/L), chromium (2,650 ug/L), iron (736,000 ug/L), and manganese (50,100 ug/L).

e. Cyanide, typically associated with purifier material from MGP operations, may also be detected in groundwater on site.

2. The Contractor shall be responsible for the design, installation, and operation of the CWTP, recognizing that construction water quality may differ significantly from historic groundwater quality. Past experience on this site has shown that the CWTP required the components listed below; however, this list is provided only for the Contractor's convenience and does not relieve the Contractor of the obligation to achieve the specified performance requirements:

a. An influent or flow equalization tank for receiving and temporarily holding construction water pending treatment by the Contractor.

b. Clarifier for removing solids, and connected processes for pre-treatment of waste stream to promote precipitation of dissolved metals and coagulation/flocculation of the suspended solids.

c. Multi-media and/or bag filters for removing fine suspended solids.

d. Ion-exchange filter for removal of cyanide.

e. Granular activated carbon filters for removal of volatile and semi-volatile organic compounds.

f. Sludge conditioning tank and filter press to process settled solids for disposal as solid waste.

g. An effluent tank for receiving and temporarily holding treated water.

h. Flow meter with totalizing meter for documenting volume discharged in accordance with the SPDES permit.

i. pH probe for effluent and elsewhere where needed for operation of the Contractor's CWTP process.

3. The sludge and sediments generated by the Contractor's management of construction water shall be managed in accordance with the Section "Earthwork."

B. Facilities

1. The Contractor shall provide methods, means, equipment and facilities required to manage construction water and residuals generated during construction water management.

PART 3 EXECUTION

3.1 GENERAL

A. It shall be the responsibility of the Contractor to comply with all applicable Federal, State, and local laws and regulations governing the handling, storage and disposal of construction water. All construction water shall be disposed of in a manner which meets applicable permit requirements, laws, and regulations.

B. The Contractor shall obtain all required permits (*e.g.* chemical bulk storage permits, local building permits, and others that may be necessary), manifests, and approvals required for the handling, storage, transport, treatment and disposal of construction water and residuals generated during construction water management. A SPDES permit has been obtained by National Grid (copy following specification).

C. Any sampling and analyses necessary to protect the health and welfare of the Contractor's employees and/or agents and/or to characterize collected water, treated water, or residuals shall remain the sole responsibility of the Contractor.

D. Construction water shall be handled using equipment compatible with anticipated contaminants that may be present.

3.2 DISCHARGE TO MOHAWK RIVER

A. No construction water shall be discharged to the Outfall designated by the SPDES permit 2.until it meets the discharge limits established by the SPDES permit.

B. All testing required for monitoring the effluent in compliance with the SPDES permit, or otherwise necessary to monitor GWTP performance, shall be the responsibility of the Contractor.

3.3 MINIMIZATION OF CONSTRUCTION WATER

A. The Contractor shall make effort to minimize the generation of construction water and associated sediments and sludges. Methods to minimize generation of construction water include, but are not limited to:

1. Erection of temporary berms.

2. Use of low permeability tarpaulin or suitable means to cover exposed contaminated areas and materials.

3. Limiting the amount of exposed contaminated areas.

4. Grading to control run-on and run-off.

5. Engineering controls on construction activities to minimize contact of personnel and equipment with contaminated areas thus minimizing the amount of decontamination required and other appropriate methods.

3.4 VERIFICATION TESTING

A. The Contractor shall collect samples of the treated water for analyses on the frequency required by the SPDES permit to document that the criteria for discharge are met. If these criteria are not met, the Contractor shall perform necessary adjustments or modifications to achieve the discharge requirements.

B. The analyses of the samples shall be performed by an independent laboratory certified by the State of New York, retained by the Contractor, with a 48-hour turnaround. If discharge criteria of the SPDES permit are not met, the Contractor shall perform the necessary adjustment or modifications to achieve the discharge requirements. The Contractor will be responsible for all costs associated with system modifications, penalties and fines, or work delays related with the failure of the treatment system to meet discharge requirements.

* * * * *

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning March 1, 2014 and lasting until 11:59pm February 29, 2016, the discharges from the treatment facility to water index number 240,Class C, Mohawk River shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Daily Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall **01A** - Treatment Plant Discharge to Mohawk River					
Flow	Monitor	500	GPM	Continuous	Recorder
pH (range)	6.0 to	9.0	SU	weekly (condition 5)	Grab
Solids, Total Suspended	Monitor	50	mg/l	weekly (condition 5)	Grab
Solids, Total Suspended	Monitor	300	lbs/d	weekly (condition 5)	Grab
Benzene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Ethylbenzene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Toluene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Toluene	Monitor	0.06	lbs/d	weekly (condition 5)	Grab
Trichloroethylene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
1.1- Dichloroethane	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Xylenes, Total	Monitor	0.01	mg/l	weekly (condition 5)	Grab
1,2-(trans)-Dichloroethylene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
1,2-(cis)-Dichloroethylene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
1,1,1-Trichloroethane	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Phenolics, Total	Monitor	0.04	mg/l	weekly (condition 5)	Grab
Phenolics, Total	Monitor	0.24	lb/d	weekly (condition 5)	Grab
Naphthalene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Cadmium, Total	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Cadmium, Total	Monitor	0.06	lbs/d	weekly (condition 5)	Grab
Cyanide, Amenable	Monitor	0.2	mg/l	weekly (condition 5)	Grab
Cyanide, Amenable	Monitor	1.2	lbs/d	weekly (condition 5)	Grab
Iron, Total	Monitor	0.5	mg/l	weekly (condition 5)	Grab
Iron, Total	Monitor	3.0	lbs/d	weekly (condition 5)	Grab
Lead, Total	Monitor	0.04	mg/l	weekly (condition 5)	Grab
Lead, Total	Monitor	0.24	lbs/d	weekly (condition 5)	Grab
Zinc, Total	Monitor	0.1	mg/l	weekly (condition 5)	Grab
Acenapthene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Fluorene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
2-Methylnaphthalene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Phenanthrene	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Aluminum, Total	Monitor	2	mg/l	weekly (condition 5)	Grab
Arsenic, Total	Monitor	0.15	mg/l	weekly (condition 5)	Grab
Barium, Total	Monitor	0.3	mg/l	weekly (condition 5)	Grab
Beryllium, Total	Monitor	0.01	mg/l	weekly (condition 5)	Grab
Chromium, Total	Monitor	0.3	mg/l	weekly (condition 5)	Grab
Copper, Total	Monitor	0.04	mg/l	weekly (condition 5)	Grab
Manganese, Total	Monitor	4	mg/l	weekly (condition 5)	Grab
Nickel, Total	Monitor	0.2	mg/l	weekly (condition 5)	Grab

Additional Conditions:

(1) The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

John Spellman
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, N.Y. 12233-7014

(2) Only NiMo Harbor Point Site and Mohawk Valley Oil Site (site 633032) generated wastewater is authorized for treatment and discharge.

(3) Any use of corrosion/scale inhibitors or biocidal-type compounds used in the treatment process must be approved by the department prior to use.

(4) This discharge and administration of this discharge must comply with the attached General Conditions.

(5) For a discharge rate of greater than 50 gpm, prior to a weekly sampling frequency the treatment system must demonstrate its effectiveness through initial daily sampling for all parameters. Once compliance has been achieved for ten (10) consecutive daily sampling results, then the sampling frequency may be reduced to weekly. Exceedances of the discharge limit will require corrective actions to the satisfaction of the Department.

SECTION 02220

EARTHWORK

PART 1 GENERAL

1.1 SUMMARY - WORK INCLUDED

A. Excavation of soils from the former Harbor Point Manufactured Gas Plant (MGP) site to the limits shown including the loosening, removing, segregating, transporting, and storage on-site of all materials classified as "earth" or "spoil" necessary to be removed for the construction and completion of all work under the Contract.

B. Excavation of "earth" or "spoil" containing visible tar or non-aqueous phase liquid (NAPL) at the former MGP site to the depth shown on the Contract Drawings or directed by the Engineer, and transportation of the material containing visible tar or NAPL to the ESMI facility located in Fort Edward, NY for low-temperature thermal destruction (LTTD) treatment.

C. Excavation of "earth" or "spoil" exhibiting sheen, staining, or other indication of MGP impact, but not containing tar or NAPL, and transportation and disposal of the material off-site for treatment and/or disposal dependant on if exhibiting greater than 1,000 mg/kg of polynuclear aromatic hydrocarbons (PAHs).

D. Excavation of "earth", temporary stockpiling, and use of excavated material and/or treated material as backfill for the excavation, below a depth of 1 ft below ground surface (bgs), provided that it does not exhibit visible tar, NAPL, staining, and sheen, and exhibits less than 1,000 mg/kg of PAHs .

E. All necessary sampling and analyses for the purpose of characterizing the material for off-site disposal at ESMI, or other owner approved facility, or for use of the material as backfill. Material being transported to ESMI must have a moisture content of 18% or less, otherwise a surcharge is imposed by the LTTD facility. The Construction Contractor shall provide measures to dewater the material to achieve the 18% or less moisture content requirement without augmentation of soil not otherwise requiring disposal off-site or use of drying agents (e.g. cement kiln dust). Utilization of drying agents and/or on-site soil not otherwise requiring off-site disposal might be allowed only if specifically permitted by the Engineer. If after reasonable effort the material to be sent to ESMI does not exhibit 18% or less of moisture content, the Engineer may allow the Contractor to send the material to ESMI provided that it does not exceed 25% moisture content.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02202 - Construction Water Management

B. 02200 – Erosion ad Sediment Control

C. 02302 - Off-site Transportation and Disposal

D. 02981 – Wetland Restoration

1.3 DEFINITIONS

A. Excavation (or trenching)

1. Grubbing, stripping, removing, storing and rehandling of all materials of every name and nature necessary to be removed for all purposes incidental to the construction and completion of all the work under construction.

2. All sheeting, sheetpiling, bracing and shoring, and the placing, driving, cutting off and removing of the same.

3. All diking, ditching, pumping, bailing, draining, well pointing, or otherwise disposing of water.

4. The removing and disposing of all surplus materials from the excavations in the manner specified.

5. The maintenance, accommodation and protection of travel and the temporary paving of roads and driveways.

6. The supporting and protecting of all structures, utilities or property in the vicinity of the work, whether over- or underground or which appear within or adjacent to the excavations, and the restoration of the same in case of settlement or other injury.

7. All temporary bridging and fencing and the removing of same.

B. Earth

1. All materials such as sand, gravel, clay, loam, ashes, cinders, pavements, muck, roots or pieces of timber, soft or disintegrated rock or till, not requiring blasting, barring, or wedging from their original beds, and specifically excluding all ledge or bedrock and individual boulders or masonry larger than one-half cubic yard in volume.

C. Backfill

1. The backfilling of excavation to the line of filling indicated on the Contract Drawings or as directed using materials suitable for backfilling, and the compacting of all materials used in filling or backfilling by rolling, ramming, or tamping as may be required.

D. Spoil

1. Surplus excavated materials not required or not suitable for backfill.

1.4 APPLICABLE CODES, STANDADS AND SPECIFICATIONS

The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basis designation only.

A. American Society for Testing and Materials (ASTM)

ASTM D698-91	Test Method for Laboratory Compaction Characteristics of Soil using Standard Effort
ASTM D1556-90	Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557-91	Test Method for Laboratory Compaction Characteristics of Soil using Modified Effort
ASTM D2922-91	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

B. Method 9095 (Paint Filter Test), "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA pub. No. SW-846)

1.5 SUBMITTALS

A. The following items shall be submitted:

1. A description, submitted for Engineer review, of the manner in which the excavation earth or spoils will be segregated and stockpiled pending results of characterizations to determine if the material should used as backfill on site below a depth of 1 ft bgs or sent off-site to a low temperature thermal destruction (LLTD) facility operated by others. The Contractor work plan shall also describe the manner in which the former structure remnants will be handled by them.

2. Description of the Contractor's proposed means to dewater and process the MGP-impacted soil to achieve a moisture content of 18% or less prior to shipment of the material to ESMI in Fort Edward, NY.

3. Copies of all laboratory test reports within one business day of receipt by the Contractor.

4. Copies of all waste characterization profile sheets and/or applications for disposal submitted to off-site disposal facilities to receive excavation earth or spoils from the site.

5. Written copies of all acceptances/approvals provided by the LTTD treatment facility and other disposal facilities receiving waste from the site including the name, title, and signature of a disposal facility official authorized to approve acceptance of the excavation spoils or structure remnants.

6. Certified weight tickets, provided not later than the following business day, documenting the quantity of excavation spoils or structure remnants removed from the site with each load, and indicating the location off-site (by name and address) at which each load was disposed, and including the name, title and signature of the disposal facility representative accepting the waste.

PART 2 PRODUCTS

2.1 DEWATERED SOIL

A. The spoils, prior to hauling off-site, shall be absent of free liquids as defined by the Paint Filter Test and have a moisture content of less than 18%, unless the Engineer allows the material to be shipped by the Contractor after reasonable effort to dewater the soil. In no circumstance shall the material being sent off-site exhibit greater than 25% moisture.

PART 3 EXECUTION

3.1 UNAUTHORIZED EXCAVATION

A. Whenever excavations are carried beyond or below the lines and grades shown on the Contract Drawings, or as given or directed by the Engineer, all such excavated space shall be refilled with special granular materials, concrete or other materials as the Engineer may direct. All refilling of unauthorized excavations shall be at the Contractor's expense.

B. All material which slides, falls or caves into the established limits of excavations due to any cause 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.

3.2 REMOVAL OF WATER

A. General

1. The Contractor shall at all times provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work. All such water shall be handled in accordance with the Technical Specification Section 02202 - “Construction Water Management”.

2. Unless otherwise specified, all excavations which extend down to or below the static groundwater elevations shall be dewatered by lowering and maintaining the groundwater beneath such excavations at all times when work thereon is in progress.

3. Where the presence of fine grained subsurface materials and a high groundwater table may cause the upward flow of water into the excavation with a resulting quick or unstable condition, the Contractor shall install and operate a well point system to prevent the upward flow of water during construction.

4. Water pumped or drained from excavations, or any sewers, drains or water courses encountered in the work, shall be handled and disposed of in accordance with the Technical Specification Section 02202 - “Construction Water Management.” No water shall be discharged to storm water conveyances or sanitary sewers without prior written approval by the Engineer.

5. Any damage caused by or resulting from dewatering operations shall be the sole responsibility of the Contractor.

B. Work Included

1. The furnishing and operation of pumps, well points, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

2. Management and disposal of all water entering the excavation.

C. Well Point Systems

1. Installation

a. The well point system shall be designed and installed by or under the supervision of an organization whose principal business is well pointing and which has at least five consecutive years of similar experience and can furnish a representative list of satisfactory similar operations.

b. Well point headers, points and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation and construction of other structures.

c. Detached observation wells of similar construction to the well points shall be installed at intervals of not less than 50 feet along the opposite side of the excavation from the header pipe and line of well points, to a depth of at least 5 feet below the proposed excavation. In addition, one well point in every 50 feet shall be fitted with a tee, plug and valve so that the well point can be converted for use as an observation well. Observation wells shall be not less than 1/2 inches in diameter.

d. Standby gasoline or diesel powered equipment shall be provided so that in the event of failure of the operating equipment, the standby equipment can be readily connected to the system. The standby equipment shall be maintained in good order and actuated regularly not less than twice a week.

2. Operation

a. Where well points are used, the groundwater shall be lowered and maintained continuously (day and night) at a level not less than 2 feet below the bottom of the excavation. Excavation will not be permitted at a level lower than 2 feet above the water level as indicated by the observation wells.

b. The effluent pumped from the well points shall be handled in accordance with the Technical Specification Section 02202 – Construction Water Management Plan.

c. The water level shall not be permitted to rise until construction in the immediate area is completed and the excavation backfilled.

3.3 EARTH OR SPOILS EXCAVATION

A. Excavation of contaminated earth or spoils shall be to the limits specified or shown on the Contract Drawings, or as directed by the Engineer. The Contractor shall be solely responsible for methods of excavating and dewatering the excavation spoils.

B. All material which slides, falls or caves into the established limits of excavations due to any cause 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 backfilling the void areas left by the slide, fall or cave-in.

C. Access into and around the excavation shall be the sole responsibility of the Contractor. The Contractor shall maintain access, as required for the safe, efficient, and timely execution of the work.

3.4 EARTH OR SPOILS DEWATERING

A. The Contractor shall provide and maintain appropriate and satisfactory means and devices for containing and conveying all water removed from soil, as required for safe and effective execution of the work and to prevent release of potentially contaminated water to the ground surface. The Contractor shall be responsible for treating and properly disposing any liquids.

3.5 STOCKPILING

A. Excavation spoils may not be stockpiled outside the footprint of the excavation itself or outside Staging Area #3 constructed on the Harbor Point Site, as shown on the Contract Drawings.

B. All excavated materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public travel or to adjoining property owners.

3.6 SOIL SAMPLING AND TESTING

A. The Contractor shall be responsible for collecting and analyzing samples of the excavation earth or spoils that contain visible tar or NAPL as required by ESMI, or other disposal facility if applicable, as a condition for waste acceptance. Minimally, the following analyses shall be performed at the frequency identified below:

1. Percent moisture: Testing of each truck load to be sent to ESMI.

2. Waste characterization sampling and analyses for total petroleum hydrocarbons (USEPA method 8015), volatile organic compounds (USEPA method 8260B), semi-volatile organic compounds (USEPA method 8270C), polychlorinated biphenyls (USEPA method 8082), metals (including As, Ba, Cd, Cr, Pb, Hg, Se, Ag, An, Be, Ni, Th, Va, Zn) (USEPA method 6010B), cyanide (USEPA

method 9010), percent sulfur (USEPA method D129-64), and British Thermal Units (BTU) by ASTM D240-87. Frequency of sampling and analyses as follows:

a. 1st composite sample for the first 150 tons
b. 2nd composite sample for the first 300 tons
c. 3rd composite sample for the first 750 tons
d. 1 additional composite sample for every additional 750 tons

B. The Contractor shall be instructed by the Engineer when it is necessary to collect and analyze samples for analyses of the excavation spoils that do not contain visible tar or NAPL, but which exhibits a sheen, odor, or staining. Excavation spoils that do not contain visible tar or NAPL, but which exhibits a sheen, odor, or staining will be sampled and analyzed by the Contractor for PAHs using USEPA method 8270. The Construction Contractor will include provision in their bid price and schedule for the collection of samples, receipt of results 72-hours following arrival of the samples in the laboratory, and for up to two business days after providing the data to the Resident Engineer for subsequent instruction from the Resident Engineer regarding whether or not the stockpiled soil can remain on-site to be used as backfill below a depth of 2 ft below ground surface (bgs) (*i.e*. exhibits < 1,000 mg/kg total PAHs) or must be disposed of off-site based on the analyses. If disposal off-site is necessary, the Contractor shall conduct the additional sampling and analyses as required by Item 3.6A above.

C. All samples collected for characterization shall be composite samples, each being made of 5 grab samples from various locations of the stockpile, representative of the material in the stockpile.

3.7 DISPOSAL

A. Excavation spoils exhibiting tar, NAPL, or greater than 1,000 mg/kg total PAHs shall be transported to the LTTD facility operated by ESMI in Fort Edward, New York for treatment, unless it exhibits greater than 3.5% sulfur or other hazardous waste (except benzene) exhibiting toxicity in accordance with DER-4 (TAGM-4061). Material containing an excess of 3.5% sulfur or hazardous waste (except benzene) must be disposed of at an appropriate hazardous waste facility.

B. Material to be sent to ESMI shall exhibit 18% or less of moisture content, unless the Engineer allows the Contractor to transport the material to ESMI after reasonable effort by the Contractor to dewater the material has been made in the judgement of the Engineer. Under no circumstance shall material being sent to ESMI exhibit more than 25% moisture.

C. Excavation spoils exhibiting less than 1,000 mg/kg total PAHs and no NAPL or visible tar, which are in excess of the volume of material that can be used as backfill below a depth of 1 ft bgs, shall be disposed at the Oneida and Herkimer Counties Landfill in the Town of Ava, New York or other off-site disposal facility approved by National Grid.

3.8 BACKFILLING

A. General

1. All excavations shall be backfilled to the original surface of the ground or to such other grades as may be shown, specified or directed.

2. The excavations shall be backfilled by the Contractor as follows:

   a. Within non-wetland areas, backfill placed deeper than 1 ft bgs must be:

      i. Suitable excavated material from the site that does not exhibit visible tar or non-aqueous phase liquid, and does not contain greater than 1,000 ppm of PAHs, or

      ii. Treated soil originally from the Site which achieves 6 NYCRR Part 375 soil cleanup objectives for the lower of the protection of groundwater and the protection of public health – commercial levels, or

      iii. Common or ordinary clean borrow material from a National Grid and Engineer-approved off-site source. The ordinary clean borrow shall meet the criteria as presented in Section "Common Fill."

   b. Once backfill material is placed, compacted, and graded by the Contractor in the excavations up to a depth of 1 ft bgs, the areas shall be covered with a geotextile filter fabric to serve as a demarcation layer. Once the demarcation fabric is placed, the remaining 1 ft of soil cover shall be placed and areas restored by the Contractor as shown on the Contract Drawings and specified. Requirements for topsoil, seed, fertilizer, mulch and plantings shall be as specified for non-wetland areas.

   c. Backfill placed between the final ground surface and 1 ft bgs must be:

      i. Treated soil originally from the Site which achieves 6 NYCRR Part 375 soil cleanup objectives for the lower of the protection of groundwater and the protection of public health – commercial levels (as replacement to the former TAGM 4046 levels), except benzene which must be less than 0.1 ppm (allowed for use in non-wetland areas only between 6 inches and 1 ft bgs), or

      ii. Common or ordinary clean borrow material from a National Grid and Engineer-approved off-site source (allowed for use in non-wetland areas only between 6 inches and 1 ft bgs). The ordinary clean borrow shall meet the criteria as presented in Section "Common Fill", and

      iii. Topsoil shall be used to backfill the final 6 inches of the excavation in accordance with Specification Section 02980 – Topsoil and Seeding.

3. Any settlement occurring in the backfilled excavations shall be refilled and compacted by the Contractor at no additional cost to the Owner.

4. All off-site sources for clean fill materials shall have an appropriate mining permit.

5. The excavations shall not be backfilled by the Contractor until written approval to do so is provided by the Engineer based on the results of visual inspection of the excavation floor conducted by the Engineer.

B. Unsuitable Materials

1. Treated soil originally from the Site that exhibits more than 0.1 ppm of benzene or total carcinogenic PAHs (cPAHs) greater than 10 ppm,

2. Stones, pieces of rock, pieces of foundation or pieces of pavement greater than one cubic foot in volume or greater than 1.5 feet in any single dimension shall not be used in any portion of the backfill.

3 All stones, pieces of rock, pieces of foundations or pieces of pavement shall be distributed through the backfill and alternated with earth backfill in such a manner that all interstices between them shall be filled with earth.

4. Soils rich in organics, or classified as ASTM D2487 Group Symbol CH, ML, MH, OH, or OL shall not be used.

C. Compaction and Density Control (except placed topsoil)

1. Where structures, driveways, sidewalks or other features are to be constructed or restored on the backfilled area the entire backfill shall be compacted to obtain 95% maximum density. Other non-wetland areas shall be compacted to obtain 90% maximum density. In wetland areas, the backfill shall be placed and compacted as specified in Section 02981 – Wetland Restoration.

   a. Maximum dry density in non-wetland areas shall be determined by the density tests designated in ASTM D 698, Method D.

   b. Compaction curves for the full range of soil materials to be used for backfill shall be developed by an approved independent testing laboratory.

2. A minimum of one (1) in-place density test shall be made for every (10,000) square feet of compacted area per lift for non-wetland areas.

   a. In-place density of soils shall be determined by the methods described in ASTM D1556 or ASTM D2922 and expressed as a percentage of the maximum dry density.

3. Where required, to obtain the optimum moisture content, the Contractor shall add, at his expense, sufficient water during compaction to assure the specified maximum density of the backfill. If, due to rain or other causes, the material exceeds the optimum moisture content, it shall be allowed to dry, assisted if necessary, before resuming compaction or filling efforts.

4. The Contractor shall be responsible for all damage or injury done to pipes, structures, property or persons due to improper placing or compacting of backfill.

3.9 OTHER REQUIREMENTS

A. Unfinished Work

1. When, for any reason, the work is to be left unfinished, all trenches and excavations shall be filled and all roadways, sidewalks and watercourses left unobstructed with their surfaces in a safe and satisfactory condition. The surface of all roadways and sidewalks shall have a temporary pavement.

B. Hauling Material on Streets

1. When it is necessary to haul material over the streets or pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements or adjoining areas. In all cases where any materials are dropped from the vehicles, the Contractor shall immediately clean up the same in accordance with all applicable Federal, State, and local laws, rules, regulations, orders and requirements and shall keep the streets and pavements and adjoining areas clean and free from dirt, mud, stone, hazardous substances, hazardous wastes, and other hauled material.

C. Dust Control

1. It shall be the sole responsibility of the Contractor to control the dust created by any and all of his operations to such a degree that it will not endanger the safety and welfare of the general public. Dust Control shall be in accordance with Special Provision SP-10.

* * * * *

SECTION 02224

COMMON FILL

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the furnishing of all labor, material, and equipment required in the backfill of excavations with common fill.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 Earthwork

1.3 SUBMITTALS

A. The following items shall be submitted:

1. Proposed testing laboratory
2. Source of off-site materials
3. Compaction curves for all materials to be used
4. Particle size distribution curves for all materials to be used
5. Certification from borrow source Owner of source testing
6. Location of samples collected within borrow areas for laboratory testing
7. Results of field tests
8. All mining and borrow permits required by local, state and federal agencies

1.4 TESTING

A. All testing, including field and laboratory services, shall be at the Contractor's expense without additional compensation, except where separate payment is specified.

PART 2 PRODUCTS

2.1 GENERAL

A. Common fill shall be soil free from frost, stumps, trees, roots, sods, muck, marl, vegetable matter or other unsuitable material.

B. All common fill, not associated with the bank restoration, shall be compliant with the commercial use standards listed in NYCRR PART 375 and shall satisfy the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b).

C. All common fill used for bank restoration shall satisfy the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

2.2 UNSUITABLE MATERIALS

A. Soils rich in organics, or classified as ASTM D2487 Group Symbol CH, ML, MH, OH, or OL shall not be used.

PART 3 EXECUTION

3.1 INSTALLATION

A. Material shall be placed in lifts not greater than 8 inches of thickness, unless greater thicknesses are allowed by the Engineer.

B. Material shall be placed in a uniform lift and compacted in accordance with the specification section “Earthwork.”

* * * * *

SECTION 02230

SELECT FILL

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes select fill materials used in either embedment or special backfill, as specified or as directed by the Engineer.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:

1. American Society for Testing and Materials (ASTM)

a. D422 - Method for Particle-Size Analysis of Soil

1.3 SUBMITTALS

A. The following items shall be submitted:

1. The name and location of the source of the material.

2. Samples and test reports of the material.

1.4 DEFINITIONS

A. Embedment or Lining

1. Any type granular material specified or directed placed below an imaginary line drawn one foot above the inside diameter of the pipe and within the trench limits.

B. Special Backfill

1. Pipelines

a. Any select fill material specified or directed placed above an imaginary line drawn one foot above the inside diameter of the pipe and within the trench limits.

2. Structures

a. Any select fill material specified or directed placed within the excavation limits, either in, under or adjacent to the structure.

C. Special Granular Material

1. Special granular material shall mean any of the granular materials listed below or other materials ordered by the Engineer.

PART 2 PRODUCTS

2.1 MATERIALS

A. Type A

1. Crushed Gravel

a. Thoroughly washed crushed, durable, sharp angled fragments of gravel free from coatings. Crushed particles shall be a minimum of 85% by weight of the particles with at least two fractured faces. The total area of each fractional face shall exceed 25% of the maximum cross-sectional area of the particle.

b. Crushed gravel shall have the following gradation by weight:

% Passing	Sieve
100%	1½-inch
0-25%	¾-inch
0-5%	½-inch

B. Type B

1. Crushed Stone

a. Thoroughly washed clean, sound, tough, hard crushed limestone or approved equal free from coatings. Gradation for crushed stone shall be the same as specified for Type A material.

C. Type C

1. Crushed Stone

a. Thoroughly washed, clean, sound, tough, hard, crushed limestone or approved equal free from coatings. It shall have a gradation by weight of 100% passing a 1-inch square opening and 0 - 15% passing a ¼-inch square opening.

D. Type D

1. Washed Sand

a. Washed coarse sand having the following gradation by weight:

% Passing	Sieve
100	3/8 inch
95 – 100	No. 4
80 – 100	No. 8
50-85	No. 16
25 – 60	No. 30
10 – 30	No. 50
2 – 10	No. 100

b. The D10 shall be equal to or greater than 0.65 mm

E. Type E

1. Run-of-Bank Gravel

a. Run-of-bank gravel or other acceptable granular material free from organic matter with a gradation by weight of 100% passing a 1½-inch square opening, 30 to 65% passing a ¼-inch square opening and not more than 10% passing a No. 200 mesh sieve as determined by washing through the sieve in accordance with ASTM D422.

F. Type F

1. Run-of-crusher Stone

a. Run-of-crusher hard durable limestone or approved equal having the following gradation by weight:

% Passing	Sieve
100	1½- inch
95 – 100	1
65 – 80	½
40 – 60	¼
0 – 10	#200 Sieve

G. Type G

1. A mixture of Type E material and Portland cement mixed in a ratio of 15:1 and placed and compacted in a dry state.

H. Type H

1. Graded Aggregate

a. Use graded aggregate base material of uniform quality throughout, substantially free from vegetable matter, shale, lumps and clay balls, and having a Limerock Bearing Ratio value of not less than 100. Use material retained on the No. 10 [2.00 mm] sieve composed of aggregate meeting the following requirements:

Soundness Loss, Sodium, Sulfate: AASHTO T 104 .....15%
Percent Wear: AASHTO T 96 (Grading A)
Group 1 Aggregates 45%
Group 2 Aggregates 65%
Group 1: This group of aggregates is composed of limestone, marble, or dolomite.
Group 2: This group of aggregates is composed of granite, gneiss, or quartzite.
Use graded aggregate base material meeting the following gradation:

% Passing	Sieve
100	2-inch
95 – 100	1 1/2
65 – 90	3/4
45 – 75	3/8
35 – 60	#4 Sieve
25 - 45	#10 Sieve
5 - 25	#50 Sieve
0 - 10	#200 Sieve

PART 3 EXECUTION

3.1 INSTALLATION

A. Special backfill where specified or directed shall be placed in accordance with the backfilling provisions of the Section entitled "Earthwork".

3.2 DISPOSAL OF DISPLACED MATERIALS

A. Materials displaced through the use of Select Fill shall be wasted or disposed of by the Contractor and the cost of such disposal shall be included in the unit price bid for each of the materials.

3.3 SETTLEMENTS

A. Any settlements in the finished work shall be made good by the Contractor.

* * * * *

SECTION 02272

EROSION CONTROL BLANKET

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the furnishing of all labor, material, equipment and performing all operations required for testing, furnishing, hauling, and placing Erosion Control Blanket (ECB), as specified herein, shown on the Contract Drawings or as specified by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02982 – Floodplain Forest and Meadow Restoration

1.3 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. American Standard for Testing Materials (ASTM)

a. ASTM D 1777 Test Method to determine the Thickness of Textile Materials

b. ASTM D 4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)

c. ASTM D 5261 Test Methods for Measuring Mass per Unit Area of Geotextiles

d. ASTM D 570 Test Method for Water Absorption of Plastics

e. ASTM D 5035 Test Method for Breaking Strength and Elongation of Textile Fabrics

1.4 SUBMITTALS

1. The following items shall be submitted:

1. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.

2. Details related to the ECB manufacturers installation guidelines and procedures including the anchor and overlap details as required in Part 3.1 A.

3. At least 3 samples of the ECB shall be submitted to the Engineer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The following manufacturer is named to establish a standard of quality necessary for the Project:

1. American Excelsior Company CURLEX HV
2. Or equal.

2.2 MATERIALS

A. Erosion Control Blanket

1. The ECB shall consist of aspen or other natural fiber positioned between two polypropylene nettings and bound together by overlapping netting and stapling the netting to the slope. The blanket shall possess strength and elongation properties to limit stretching. Every component of the blanket shall be stabilized against ultraviolet degradation and inert to chemicals normally encountered in a natural soil environment. The blanket shall be documented to resist a sustained channel flow velocity rate of at least 8 feet per second and/or a tractive force of 2 pounds per square foot during a 40 hour period in a non-vegetated condition. The erosion control blanket shall also conform to the following physical properties after a 24 hour saturation period.

2. The ECB shall conform to the following requirements:

Unit Weight	881 g/m^2	(26 oz/sy)
Tensile Strength (MD x TD)	169 N x 136 N (per 10 cm)	(29 lb/3 in x 23.4 lb/3 in)
Roll Dimensions	2.4 m x 15.2 m	(8 ft x 50 ft)
Roll Area	37.2 m^2	(44.4 sy)

3. During all periods of shipment and storage, the ECB shall be protected from adverse weather, heavy winds or precipitation, direct sunlight, ultraviolet light, temperatures greater than 140°F, mud, dirt, dust, debris, and vandals. To the extent possible, the geotextile shall be maintained wrapped in a heavy duty protective covering. In the event of damage, the Contractor shall immediately make all repair and replacements at no additional cost to the Owner.

4. All testing including laboratory and field services required during installation of the ECB shall be provided by the Contractor.

PART 3 EXECUTION

3.1 INSTALLATION

A. The ECB shall be installed in accordance with the manufacturers recommendations reviewed by the Engineer prior to installation. The standard manufacturers installation criteria shall include the following details:

- Longitudinal anchor trench
- Initial channel anchor trench
- Intermittent check slot
- Terminal channel anchor trench
- All anchor patterns

B. Prior to the installation of the ECB all topsoil and seeding will be completed in accordance with Section titled "Floodplain Forest and Meadow Restoration" or as shown on the Contract Drawings.

C. Prior to installation of the ECB, the surface on which the ECB is to be installed will be free of irregularities, protrusions, and any abrupt changes in grade that could damage the ECB. The supporting layer will be maintained in a smooth, uniform, and compacted condition during installation of the ECB. The subgrade shall be inspected and accepted by the Engineer prior to placement of the ECB.

D. The ECB shall be placed in manner and at the locations shown on the drawings. At the time of the installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation or storage.

E. The ECB shall be protected at all times during construction from damage by surface runoff and any ECB so damaged shall be removed and replaced with undamaged ECB.

F. The ECB shall be placed tightly against the soil such that no void spaces occur.

* * * * *

SECTION 02274

GEOTEXTILE STABILIZATION FABRIC

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the furnishing of all labor, material, equipment and performing all operations required for testing, furnishing, hauling, and placing geotextile stabilization fabric, as specified herein, shown on the Contract Drawings or as specified by the Engineer.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. American Society for Testing and Materials (ASTM)

a. ASTM D3786 Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method

b. ASTM D4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)

c. ASTM D4491 Test Methods for Water Permeability of Geotextiles by Permittivity

d. ASTM D4533 Test Method for Trapezoid Tearing Strength of Geotextiles

e. ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles

f. ASTM D4751 Test Method for Determining the Apparent Opening Size of a Geotextile

g. ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products

h. ASTM D5261 Test Method for Mass per Unit of Geotextiles

1.3 SUBMITTALS

A. The following items shall be submitted:

1. Manufacturer’s technical data, including material specifications.

2. Manufacturer’s installation requirements.

3. Samples of any material shall be submitted at the Engineer’s request.

4. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The following manufacturers are named to establish a standard of quality necessary for the project:

1. TC Mirafi
2. Or approved equal

2.2 GEOTEXTILE STABILZATION FABRIC

A. Geotextile stabilization fabric shall be Mirafi 600X or approved equal.

B. The geotextile stabilization fabric shall consist of a long-chain geosynthetic polymer composed of at least 85 percent by weight of propylene, ethylene, ester, amids, or vinylidene-chloride, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultra-violet and heat exposure. The geotextile shall also be mildew and rot resistant, insect and rodent resistant, and inert to chemicals and hydrocarbons.

C. The geotextile stabilization fabric shall be a woven geotextile.

D. The geotextile stabilization fabric shall conform to the following minimum average roll physical strength requirements:

Mechanical Properties	**Test Method**	**Unit**	**Minimum Average Roll Value**	
			MD	**CD**
Grab Tensile Strength	ASTM D4632	lbs (N)	315 (1402)	315 (1402)
Grab Tensile Elongation	ASTM D4632	%	12	12
Trapezoid Tear Strength	ASTM D4533	lbs (N)	113 (503)	113 (503)
CBR Puncture Strength	ASTM D6241	Lbs (N)	900 (4005)	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	40 (0.43)	
Permittivity	ASTM D4491	sec^{-1}	0.05	
Flow Rate	ASTM D4491	gal/min/ft^2 (l/min/m^2)	4.0 (163)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Weight	ASTM D5261	oz/yd^2 (g/m^2)	6.0 (203)	
Thickness	ASTM D5199	mils (mm)	25 (0.6)	

E. During all periods of shipment and storage, the geotextile shall be protected from adverse weather, heavy winds or precipitation, direct sunlight, ultraviolet light, temperatures greater than 140°F, mud, dirt, dust, debris, and vandals. To the extent possible, the geotextile shall be maintained wrapped in a heavy duty protective covering. In the event of damage, the Contractor shall immediately make all repair and replacements at no additional cost to the Owner.

F. The Contractor shall provide testing services specified herein as necessary for the geotextile material and thread. Also, the Contractor shall provide testing and field services required during installation of the geotextile.

PART 3 EXECUTION

3.1 INSTALLATION

A. Prior to installation of the geotextile stabilization fabric, the surface material on which the stabilization fabric is to be installed will be free of organic matter, irregularities, protrusions, and any abrupt changes in grade that could damage the stabilization fabric. The surface will be maintained in a smooth and uniform condition during installation of the stabilization fabric. The surface on which the geotextile is to be placed shall be inspected and accepted by the Engineer prior to placement of the geotextile stabilization fabric.

B. The geotextile shall be placed at the locations shown on the Contract Drawings. At the time of the installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

C. The geotextile shall be placed to provide minimum overlaps of 1.5 feet. Overlaps shall be made with uphill or upstream fabric lapped over downhill or downstream fabric.

D. The geotextile shall be protected at all times during construction from damage by surface runoff and construction activities, and any geotextile so damaged shall be removed and replaced with undamaged geotextile. Any damage to the geotextile during its installation or during placement of soil layers or other activities shall be replaced by the Contractor at the Contractor's expense.

E. The Work shall be scheduled so that the covering of the geotextile (*i.e.* backfilling) with the specified material is accomplished within 5 days after placement of the geotextile. Failure to comply shall require replacement of geotextile.

F. The geotextile shall be protected from damage due to the placement of materials by limiting the height of drop of the material to less than 1 foot unless otherwise accepted by Engineer.

* * * * *

SECTION 02275

GEOTEXTILE DEMARCATION FABRIC

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the furnishing of all labor, material, equipment and performing all operations required for testing, furnishing, hauling, and placing geotextile demarcation fabric as specified herein, shown on the Contract Drawings, or as specified by the Engineer.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. American Society for Testing and Materials (ASTM)

a. ASTM D4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)

b. ASTM D4491 Test Methods for Water Permeability of Geotextiles by Permittivity

c. ASTM D4533 Test Method for Trapezoid Tearing Strength of Geotextiles

d. ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles

e. ASTM D4751 Test Method for Determining the Apparent Opening Size of a Geotextile

f. ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products

g. ASTM D5101 Test Method for Measuring Soil-Geotextile System Clogging Potential (By the Gradient Ratio)

h. ASTM D5261 Test Method for Mass per Unit of Geotextiles

1.3 SUBMITTALS

A. The following items shall be submitted:

1. Manufacturer’s technical data, including material specifications.

2. Manufacturer's installation requirements.

3. Samples of any material shall be submitted at the Engineer's request.

4. Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The following manufacturers are named to establish a standard of quality necessary for the project:

1. TC Mirafi

2. Or approved equal

2.2 GEOTEXTILE DEMARCATION FABRIC

A. The geotextile demarcation fabric shall be Mirafi 160N/O or approved equal.

B. The geotextile demarcation fabric shall be a orange nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain relative position.

C. The geotextile demarcation fabric shall conform to the following minimum average roll physical strength requirements:

Mechanical Properties	**Test Method**	**Unit**	**Minimum Average Roll Value**	
			MD	**CD**
Grab Tensile Strength	ASTM D4632	lbs (N)	175 (779)	175 (779)
Grab Tensile Elongation	ASTM D4632	%	75	75
Trapezoid Tear Strength	ASTM D4533	lbs (N)	85 (378)	85 (378)
CBR Puncture Strength	ASTM D6241	lbs (N)	480 (2136)	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	100 (0.15)	
Permittivity	ASTM D4491	sec^{-1}	1.5	
Flow Rate	ASTM D4491	gal/min/ft^2 (l/min/$m^{2)}$	105 (4278)	
Physical Properties	**Test Method**	**Unit**	**Typical Value**	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	80	
Weight	ASTM D5261	oz/yd^{2} ($g/m^{2)}$	6.5 (220)	
Thickness	ASTM D5199	Mils (mm)	65 (1.790)	

E. During all periods of shipment and storage, the geotextile shall be protected from adverse weather, heavy winds or precipitation, direct sunlight, ultraviolet light, temperatures greater than 140°F, mud, dirt, dust, debris, and vandals. To the extent possible, the geotextile shall be maintained wrapped in a heavy duty protective covering.

In the event of damage, the Contractor shall immediately make all repair and replacements at no additional cost to the Owner.

F. The Contractor shall provide testing services specified herein as necessary for the geotextile material and thread. Also, the Contractor shall provide testing and field services required during installation of the geotextile.

PART 3 EXECUTION

3.1 INSTALLATION

A. Prior to installation of the geotextile demarcation fabric, the surface material on which the demarcation fabric is to be installed will be free of organic matter, irregularities, protrusions, and any abrupt changes in grade that could damage the demarcation fabric. The surface will be maintained in a smooth and uniform condition during installation of the demarcation fabric. The surface on which the geotextile is to be placed shall be inspected and accepted by the Engineer prior to placement of the geotextile demarcation fabric.

B. The geotextile shall be placed at the locations shown on the Contract Drawings. At the time of the installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

C. The geotextile shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. When geotextile is used in trenches, the geotextile shall be placed with the long dimension perpendicular to the centerline of the trench, unless otherwise approved by the Engineer. The geotextile shall be placed to provide minimum overlaps of 1.5 feet. Overlaps shall be made with uphill or upstream fabric lapped over downhill or downstream fabric.

D. The geotextile shall be protected at all times during construction from damage by surface runoff and construction activities, and any geotextile so damaged shall be removed and replaced with undamaged geotextile. Any damage to the geotextile during its installation or during placement of soil layers or other activities shall be replaced by the Contractor at the Contractor's expense.

E. The Work shall be scheduled so that the covering of the geotextile (*i.e.* backfilling) with the specified material is accomplished within 5 days after placement of the geotextile. Failure to comply shall require replacement of geotextile.

F. The geotextile shall be protected from damage due to the placement of materials by limiting the height of drop of the material to less than 1 foot unless otherwise accepted by Engineer.

* * * * *

SECTION 02276

GEOSYNTHETIC CLAY LINER (GCL)

PART 1 GENERAL

1.1 SUMMARY

A. Furnish all labor, materials, equipment, and incidentals required to install Geosynthetic Clay Liner (GCL) as shown on the Drawings and as specified herein. The work shall include unloading, storing, placement, and anchoring of the GCL, field quality control, and all other work as shown on the Drawings and as specified herein.

B. Sufficient material and accessory bentonite shall be furnished to cover all areas as shown on the Drawings, including overlaps at field seams.

1.2 SUBMITTALS

A. The following items shall be submitted:

1. Manufacturing information:

a. List of material properties and samples of liner with attached certified test results.
b. Manufacturer's quality control program and manual including description of laboratory facilities.
c. The origin of the bentonite and geotextiles to be used in the manufacturing of the GCL including the suppliers name and production plant, as well as brand name and number.
d. Manufacturer's literature including:

- Material samples;
- Technical data including Minimum Average Roll Values (MARVs)
- Material warranty covering materials and workmanship of the GCL, including batch identifications and associated roll numbers;
- Certificate of permeability and bentonite content per square foot of mat.

e. Copy of quality control certificates.

B. Submittals relating to installing contractor:

1. Background information

2. Installation capabilities:
a. Information on equipment and personnel

b. Anticipated average daily production

3. Shop drawings, including:

   a. A proposed plan detailing GCL storage location and methods.

   b. A proposed plan for placement and a proposed panel layout showing the installation layout identifying field seams as well as any variance or additional details which deviate from the Drawings.

4. Installation schedule

5. A quality control manual that specifically defines the quality control program during installation. The manual shall include daily procedures, installation techniques, field testing procedures, lab testing procedures, specific steps that are to be taken in the event of a failure or defect, personnel requirements, levels of authority and all other information necessary to ensure a high quality GCL installation.

1.3 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM D421 – Standard Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants.

2. ASTM D3786 – Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method.

3. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

4. ASTM D5261 – Standard Test Method for Measuring Mass per Unit Area of Geotextiles.

5. ASTM D2216 – Standard Test Method for Determination of Water (Moisture) Content of Soil by Direct Heating.

6. ASTM D5321 – Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by Direct Shear Method.

7. ASTM D1557 – Standard Test Method for Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft^3).

8. ASTM D413 – Standard Test Method for Rubber Property – Adhesion to Flexible Substrate.

9. ASTM D3776 – Standard Test Method for Mass Per Unit Area (Weight) of Fabric.

10. ASTM D5890 – Standard Test Method for Swell Index of Clay Mineral Component of Geosynthetic Clay Liners.

11. ASTM D5891 – Standard Test Method for Fluid Lost of Clay Component of Geosynthetic Clay Liners.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.4 QUALIFICATIONS

A. Manufacturer

1. The manufacturer of the GCL described hereunder shall have previously demonstrated ability to produce this GCL by having at least two years continuous experience in the manufacturing of GCLs and successfully manufactured a minimum of 10 million square feet of GCL material.

1.5 DELIVERY, STORAGE, AND HANDLING

A. The GCL rolls shall be packaged and shipped by appropriate means to prevent damage of the GCL rolls. The manufacturer shall ensure that proper methods of securing and fastening the rolls of GCL during shipping will be implemented. The Engineer will inspect the liner material as it arrives on site for any damage to the liner. Straps securing the liner during shipping shall not cut into the liner material. Any rolls that appear damaged as a result of tight fastening, or otherwise, may be rejected at the discretion of the Engineer. Off-loading, in accordance with manufacturer's recommendations, inspection and storage of the GCL is the responsibility of the Contractor, The Contractor shall be responsible for replacing any damaged or unacceptable material at no cost to the Owner.

Handling and storage of materials shall be in accordance with manufacturer's recommendations.

Materials shall be protected from rain during storage and shall be kept dry before or during periods of rain. The GCL shall not be installed in standing water.

B. GCL material that appears hydrated prior to or during installation will not be accepted by the Engineer. Hydrated GCL is defined as material which has become soft as determined by squeezing the material with finger pressure, material which has exhibited visible swelling, or material which has moisture content greater than 25 percent as determined by ASTM D2216. Exceptions to this requirement will be made at the discretion of the Engineer.

C. No off-loading shall be performed unless the Engineer is present. Damage during off-loading shall be documented by the Engineer. All damaged rolls must be separated from the undamaged rolls until the proper disposition of that material has been determined by the Engineer.

D. The GCL rolls shall be stored so as to be protected from puncture, dirt, grease, water, moisture, mud, mechanical abrasions and excessive het that may damage the GCL material. The rolls shall be stored on a prepared surface and shall not be stacked more than two rolls high.

E. The GCL shall be wound around a cardboard core 4 inches in diameter to facilitate handling. The core is not intended to support the roll for lifting but should be sufficiently strong to prevent collapse during transit.

PART 2: PRODUCTS

2.1 MATERIALS

A. General

1. The GCL shall be formulated and manufactured from polypropylene geotextiles and high swelling contaminant resistant sodium bentonite.

   The materials shall be manufactured by the mechanical bonding of the needle punch process to enhance the shear strength of the liner and to maintain the integrity of the liner under hydration. No glues or adhesives shall be used in lieu of the needle punch process so as to retain these characteristics.

   Needle punched bentonite geocomposites are those which, by the process of a needling board (similar to that used in the manufacture of standard non-woven geotextiles) have fibers of a non-woven geotextile pushed through the bentonite clay core and integrated into a woven or non-woven geotextile without the use of any chemical binders or adhesives.

2. No disassociation of geotextile components from the bentonite core shall occur under any conditions.

3. The GCL shall be manufactured utilizing a minimum of 0.75 lbs/sf (as per ASTM D5261) of high swelling sodium montmorillonite clay (also known as Wyoming bentonite) at a 12% moisture content (as per ASTM 2216). If the liner is manufactured at a higher moisture content, it shall have the minimum of one pound per square foot of bentonite when adjusted to a 12% moisture level. The bentonite shall have the following base mineralogical composition:

   Free Swell: minimum 24 cc per 2 grams (as per USP-NF-XVII)
   Chemical Composition:

Silica	63.02%
Alumina	21.08%
Iron (ferric)	3.25%
Iron (ferrous)	0.35%
Magnesium	2.67%
Sodium	2.57%
Calcium	0.65%
Crystal Water	5.64%
Trace Elements	0.72%

4. Rolls shall be manufactured a minimum of 15 feet wide and 150 feet long. All rolls shall be labeled and bagged in packaging that is resistant to photodegration by-ultraviolet (UV) light.

5. The reinforced bentonite geocomposite liner shall be BENTOMAT ST, as manufactured by Colloid Environmental Technologies Company (CETCO) of Arlington Heights, Illinois, or approved equal.

6. The accessory granular bentonite shall be similar to that used in the liner or as recommended by the manufacturer for site specific use.

B. Properties

1. The GCL shall meet the minimum properties listed below:

Table A1: *Reinforced GCL Liner Analytical Testing Frequency*

MATERIAL	TEST	METHOD[1,2]	MIN. ACCEPTABLE VALUE	TEST FREQUENCY	COMMENTS
Bentonite	Free Swell	ASTM D 5890	24 mL/2g	Every 100,000 lb	By Manufacturer
	Fluid Loss	ASTM D 5891	18 mL (max.)	Every 100,000 lb	By Manufacturer
	Particle type Distribution (Granular Bentonite)	ASTM D421	Submit Test Results	Every 100,000 lb	By Manufacturer
Woven[4] Geotextile	Mass per unit area	ASTM D5261	3.10 oz/sy	Every 200,000 sq. ft	By Manufacturer
Non-Woven Geotextile	Mass per unit area	ASTM D5261	6.0 oz/sy	Every 200,000 sq ft	By Manufacturer
GCL	Hydraulic Conductivity	ASTM 5887	5×10^{-9} cm/sec	Every week	By Manufacturer
	Grab Strength	ASTM D4632	95 lbs	Every 200,000 sq ft	By Manufacturer
	Peel Strength	ASTM D4632	15 lbs	Every 40,000 sq ft	By Manufacturer
	Mass per unit area	ASTM D5993	0.75 lb/sf	Every 40,000 sq ft	Field sample
	Index Flux	ASTM D5887	1×10^{-8} $m^3/m^{2/}sec$	Every Lot	Field sample

Explanatory Notes for Table A-1:

1. ASTM procedures modified as necessary to utilize three test specimens across the roll width. Results are reported as the average of these three values. Size of test specimens may also differ slightly from those indicated in ASTM methods.
2. All required values listed are minimum average roll values (MARVs) unless otherwise indicated.
3. All tensile testing on the geotextiles and on the GCL is performed with the test specimens oriented in the machine direction.
4. The values listed are minimum average roll values (MARVs) unless otherwise indicated.
5. These parameters are for the bentonite as delivered to the GCL Manufacturer, not for the bentonite in the finished product.
6. Bentonite mass/area is at 0 percent moisture.
7. Permeability testing is performed with a 5-psi confining pressure and a 2-psi head pressure.

2.2 QUALITY CONTROL DOCUMENTATION

A. Prior to installation commencement of any GCL material, the Contractor shall provide to the Engineer the following information certified by the manufacturer for the delivered GCL.

1. Origin, identification, and production of the bentonite (supplier's name, brand name and production plant).

2. Copies of quality control certificates issued by the bentonite supplier.

3. Each roll delivered to the Project site shall have the following identification information;

- Manufacturer's name
- Product identification
- GCL roll weight
- Roll number
- Lot number
- Roll dimensions

4. Quality control certificates, signed by the manufacturer's quality assurance manager. Each certificate shall have roll identification number, sampling procedures, frequency, and test results. At a minimum, the test results shall be in accordance with certified requirements specified in the table above.

PART 3: EXECUTION

3.1 GCL PLACEMENT

A. Weather Conditions

1. GCL placement shall not proceed during precipitation, excessive moisture, in an area of ponded water, or excessive winds.

B. Method of Placement

1. Placement of the GCL shall be conducted in accordance with the manufacturer's recommendations and directions provided herein. Any deviations from these procedures must be pre-approved by the Engineer.

2. Each panel of the GCL shall be rolled out and installed in accordance with the approved shop drawings prepared by the Contractor. The layout shall be designed to keep field joining of the GCL to a minimum and consistent with proper methods of GCL installation.

3. GCL rolls shall be placed using proper spreader and rolling bars with chain or cloth slings. If a sheet must be replaced a distance greater than its width, a slip or rub sheet shall be used.

4. The Engineer shall inspect each panel, after placement, for damage and/or defects. Defective or damaged panels shall be replaced or repaired, as approved by the Engineer.

5. The installer shall avoid dragging the GCL sheets on soil subgrades.

6. All GCL shall be anchored in accordance with the manufacturer's recommendations.

7. The GCL shall be properly weighted, if needed, to avoid uplift due to wind.

8. Vehicular traffic directly on the GCL shall not be allowed.

9. All damage shall be recorded and located in the record drawings.

10. The GCL shall be kept free of debris, unnecessary tools and materials. In general, the GCL area shall remain neat in appearance.

11. Equipment necessary to perform the installation (generators, compressors, etc) shall have a scrap GCL sheet placed underneath to protect the installed GCL from possible damage.

12. In the opinion of the Engineer, any seam, or edge of GCL material exposed for more than 24 hours or considered partially hydrated when seaming occurs shall receive a minimum 3-foot overlap (rainlap) from the adjoining GCL panel.

13. The Contractor shall only work on an area that can be completed in one working day. Completion shall be defined as the full installation and anchoring of the GCL.

14. The GCL shall not get wet before or during installation. The GCL shall not be installed during periods of any precipitation. If precipitation event occurs after the installation of a GCL panel, a thin film plastic sheeting may be used to cover and to temporarily protect the GCL from moisture, if approved by the Engineer.

15. GCL that is hydrated will be inspected by the Engineer. The Contractor may be required to send samples of the hydrated GCL to a laboratory GCL for testing of moisture content, internal shear strength, and peel. If there is evidence of direct flow over the GCL, the samples will also be tested for mass per unit area. Based on visual inspection of its condition and the results of the tests, the CQA Manager will determine if removal is necessary. At a minimum, the GCL should not be torn, separated or otherwise physically damaged. Indentations should not remain where walked upon nor should bentonite extrude through the fabric when subjected to any other stress. Overlapped seams should be intact.

16. For protection and proper performance, no machinery or equipment shall be allowed on the GCL, unless previously approved by the Engineer and Manufacturer. Abrupt stops, starts, or turns by vehicles, machinery, or equipment shall not be permitted.

17. GCL panels shall be placed with the non-woven geotextile side facing up. On sloped areas, the long dimension of all panels shall be oriented parallel to the slope. Panels should be placed from the highest elevation to the lowest within the area to be lined, to facilitate drainage in the event of precipitation. Panels shall be placed free of tension or stress yet without wrinkles or folds. It is not permissible to stretch the GCL in order to fit a designated area. Panels shall not be dragged across the subgrade into position except where necessary to obtain the correct overlap for adjacent panels. Panel ends shall not be closer than three feet from the top or toe of slopes.

18. Any leading edge of panels left uncovered shall be protected at the end of the working day with a waterproof sheet which is adequately secured with sandbags and other ballast.

B. Method of Placement

1. Placement of the GCL shall be conducted in accordance with the manufacturer's recommendations and directions provided herein. Any deviations from these procedures must be pre-approved by the Engineer.

2. Individual panels of GCL shall be laid out and overlapped by a minimum of 12-inches.

3.2 DISPOSAL OF WASTE MATERIAL

A. Upon completion of installation, the Contractor shall dispose of all trash, waste material and equipment used in connection with the performed work and shall leave the premises in a neat and acceptable condition.

3.3 FIELD QUALITYCONTROL

A. Repair Procedures

1. Any portion of the GCL exhibiting signs of defect shall be repaired. The following procedure should be used to repair these areas. The final decision as to the appropriate repair procedure shall be made by the Engineer.

a. Large rips or tears shall be repaired by completely exposing the affected area, removing all foreign objects or soil, and by then placing a patch over the damage, with a minimum overlap of 12 inches on all edges. Accessory bentonite shall be placed between the patch and the repaired material at a rate of ¼ pound per lineal foot of edge, spread in a 6-inch width. The above procedures shall also be implemented if a rip or tear occurs on a sloped surface. In this instance, the edges of the patch shall be fastened to the repaired liner with construction adhesive, in addition to the bentonite-enhanced seam.

* * * * *

SECTION 02280

DRUM REMOVAL AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the disposal of drums encountered during excavation at the site. Drums encountered during construction shall be handled and disposed of as specified and/or and directed by the engineer.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. Occupational Safety and Health Administration (OSHA)

a. 29CFR Part 1910 Occupational Safety and Health Standards for General Industry

b. 29CFR Part 1926 Occupational Safety and Health Standards for Construction

2. U.S. Department of Transportation (DOT)

a. 49CFR Part 173 DOT General Requirements for Shipments and Packaging

b. 49CFR Part 173.3 DOT Regulations for Packaging and Exceptions

1.3 SUBMITTALS

A. The following items shall be submitted:

1. Sampling and Waste Characterization (SAWC) Plan prior to initiating work at the site.

2. Name and location of CLP Analytical laboratory.

3. Design of Staging Area (Prior to Construction).

4. Completed Drum Inventory Log Sheets.

5. Results of all compatibility chemical testing.

6. Name and location of proposed disposal facility if disposed off-site.

PART 2 PRODUCTS

2.1 SAMPLING AND WASTE CHARACTERIZATION (SAWC) PLAN

The SAWC Plan shall detail all procedures to be undertaken by the Contractor to handle, sample, and characterize drum waste. All procedures to be conducted under the SAWC Plan shall be in strict accordance with the HASP. At a minimum, the SAWC Plan shall include the following provisions for drums:

A. Staging, Inventory, Sampling

1. Personnel

a. The Contractor shall provide adequate manpower to stage, inventory, and sample all breached drums containing liquids and intact drums in accordance with the approved Sampling and Waste Characterization (SAWC) Plan.

b. Personnel involved in handling and transporting drum waste shall work in teams containing no fewer than two people. Visual contact shall be maintained between members of the working team at all times.

c. Personnel shall at all times be equipped at the level of protection as specified by the Health and Safety Plan. At a minimum this shall include the use of grounding straps.

2. Equipment/Materials

a. The Contractor shall provide adequate and proper equipment to stage, inventory, open, and sample all breached drums containing liquid waste and intact drums which may potentially contain free liquids in accordance with the approved Sampling and Waste Characterization (SAWC) Plan.

b. Drums shall be handled with a grappler equipped backhoe, front end loader, forklift, or other approved equipment. Drums shall be grounded while being handled. Alternate methods of segregating or lifting drums may be used subject to prior acceptance from the Engineer.

c. All handling equipment shall be equipped with full frontal and side splash and explosion shields. Class ABC fire extinguishers shall be fitted to the body of each piece of equipment.

d. Any equipment used for handling, opening, and sampling drums must be of the non-sparking type.

3. Handling and Evidence Documentation

a. If, during excavation activities, an object which is suspected of being a drum is encountered, the Contractor shall notify the Engineer so that an appraisal of the object and its condition may be made. If the

Engineer determines that the object is not a drum, that it is empty, or that it does not contain liquids, the Contractor will be directed to crush the drum and handle the drum in accordance with the Section titled "Off-Site Transportation and Disposal". If the drum potentially contains free liquids, the Contractor will be directed to handle the drum in accordance with drum handling procedures in the reviewed SAWC Plan. If the drum is handled as impacted soil or debris, no additional payment will be made for drum removal.

b. Drums shall be staged and inventoried in a final staging and drum storage area, to be constructed by the Contractor or, at the Contractor's option, in an initial staging area, in accordance with paragraph 2.2 of this Section.

c. Before handling, the condition of each drum shall be determined and categorized as either open, leaking, bulging, empty, or a combination.

d. Drums that exhibit leakage of free liquid, or apparent deterioration such that movement may cause rupture and potential leakage of free liquid, shall immediately have the contents transferred to a secure container.

e. Inventory

After securing and opening a drum, if no free liquids are present, the Contractor shall crush the drum. The drum shall then be handled in accordance with the Section titled "Off-Site Transportation and Disposal", with no additional payment made for drum removal. After securing and opening a drum, if free liquids are noted, the Contractor shall record the following information onto a drum inspection log or data sheet that indicates:

(1) Drum number, with an individual number being permanently marked on each drum.

(2) Physical state of materials: i.e., liquid, semi-solid, sludge or powder and percentages thereof, including whether there are multiple layers of materials and approximate percentages thereof.

(3) Color of materials.

(4) Percent each drum is filled with materials, usually specified as 1/4,1/2, 3/4, or completely full.

(5) Condition of drum (intact, leaking, bulging, rusting, etc.)
(6) Size, type, and labeling of drum.

(7) Size and type of overpack necessary (if any).

(8) Inspection/sampling time and date.

(9) Weather at time of inspection.

Note: Odor description is not a recommended observation due to the potentially toxic nature of organic and inorganic substances.

4. Sampling

a. Drum sampling procedures for drums from which the bung can be removed, and for drums in which the bung is badly rusted or cannot be opened, and for drums which do not have bungs, shall be outlined in the SAWC plan. All openings shall be plugged except during sampling. Unanalyzed samples shall not be fixed with any preservative or preserved with ice or dry ice.

b. Empty drums (containing less than 1 in. solid residue waste) or drums containing trash (personal protective equipment, garbage and debris, etc.) and drums containing no free liquids will not be sampled or tested. The drums shall be crushed and handled in accordance with the Section titled "Impacted Soil or Debris Relocation".

c. Drums identified by the Engineer as containing water will not be tested. Water contained in the drum shall be handled in accordance with the Section titled “Construction Water Management Plan” as described in Part 3.2. The drums shall then be crushed and handled in accordance with the Section “Off-Site Transportation and Disposal”.

d. After completing drum staging and inventory, the Contractor will proceed with the compatibility testing at the Contractor's laboratory.

e. The Owner shall be given the opportunity to have split samples prepared by the Contractor for any and all samples obtained under this Contract. Not more than 25% of the samples will be split.

B. Sample Shipment

1. Unanalyzed samples shall be transported, in accordance with all applicable regulatory requirements. If a material specifically identified in the Department of Transportation (DOT) Hazardous Material Table (49 CFR 172.101) is known to be contained in a sample at or above the reportable quantity (RQ), that sample shall be transported as prescribed therein.

C. Compatibility Testing

1. The testing and analytical procedures to be used on wastes contained in the drums will be conducted in conformance with the Code of Federal Regulations, Methods for Chemical Analysis of Water and Waste, American Society for Testing and Materials, and Test Methods for Evaluating Solid Waste.

2. Compatibility testing of wastes shall include, at a minimum, the tests listed below:
   a. pH
   b. Acid Reactivity

D. Disposal

1. After the Contractor completes the compatibility testing, samples of compatible wastes may be bulked (composited) for waste characterization analyses for disposal.

2. Contractor shall provide for storage of the drums on-site in the final drum staging area until disposed at an off-site facility approved by the Owner. The Contractor shall be responsible for any additional sampling and analyses required by the off-site disposal facility.

2.2 STAGING AREAS

A. The Contractor shall provide drawings showing the location and design of the proposed drum staging area(s). As a minimum, the staging and drum storage areas shall include the following provisions.

1. The initial staging area shall be shaped to prevent run on and shall be surrounded by a containment berm with a minimum height of 1 foot.

2. The final drum staging area shall be constructed in a location accepted by the Engineer. The final staging and drum storage area shall be contained by constructing berms to a minimum height of 1 foot. The base and sides of the final staging and drum storage area shall be covered with a minimum of three inches of uniform, medium sand. A high density polyethylene (HDPE) geomembrane with a minimum nominal thickness of 60 mils shall be placed over the sand bedding layer in accordance with manufacturers recommendations. Drums shall not be stacked. Alternative, environmentally sound final drum staging areas will be considered, subject to prior review of the Engineer.

2.3 FILL MATERIAL

A. All excavations made for the purpose of removing drums shall be backfilled with common fill material, six inches of top soil and seeded, as directed by the Engineer. Compaction shall be in accordance with the Section "Earthwork" as directed by the Engineer.

2.4 OVERPACK DRUMS

A. Overpack drums shall conform to DOT 49 CFR 173.3 and shall be constructed of the same material as the drums to be overpacked.

PART 3 EXECUTION

3.1 GENERAL

A. The Contractor shall perform all excavations to the lines, grades, and elevations specified. Due to the unknown nature of the area substrata and waste material, the Health and Safety Officer or his designee shall be present during all drum removal activities and shall approve the rate and manner of drum removal to insure safety of all on-site personnel.

3.2 PROCEDURES

A. Excavation of Subsurface Drums

1. Subsurface drums encountered during excavation and other construction operations will be removed if directed by the Engineer. Should the Engineer determine that the drum will be handled under this specification, the Contractor shall take all necessary steps to remove the drums intact to preserve any evidence of ownership. Following inspection and testing of contents, drums will be overpacked and/or staged at suitable locations on site and then transferred to the drum staging area. The Contractor will then arrange for their removal and disposal under the applicable payment item for this work. All work shall be done in accordance with the approved SAWC Plan.

B. Dewatering

1. Dewatering as required shall be performed in accordance with the Section "Earthwork".

2. The Contractor shall collect surface and ground water entering excavations resulting from the removal of drums in accordance with the Section "Construction Water Management Plan".

C. Initial Staging

1. If utilized, the Contractor shall establish an initial staging and drum storage area in accordance with the requirements of paragraph 2.2 of this Section.

2. The Contractor shall utilize a front end loader or other approved equipment to transport inventoried drums to the drum processing portion of the staging area.

3. Prior to transport to the staging area, the Contractor shall either transfer the contents of unsound drums to DOT approved containers or overpack unsound drums.

4. Drummed liquids shall be transferred using hand-operated, non-sparking drum pumps. Any small containers (e.g. 5 gal. or less) shall be transferred by gently pouring the contents into drums using wide rim funnels.

5. If transferring the contents of unsound drums employing these methods is not feasible, a portable containment structure shall be placed immediately adjacent to the unsound drum. The unsound drum shall be placed in the containment structure where it will be maneuvered to a position where the contents can be transferred or the drum overpacked. Overpack drums shall be immediately available during the handling of any unsound containers. In the event of a drum rupture, the ruptured drum shall be overpacked immediately in an effort to minimize any release of contaminants.

D. Compatibility Testing

1. Unless otherwise directed in the field by the Engineer the Contractor shall perform a series of compatibility tests during the initial staging activities to determine the compatibility of contaminated materials for compositing purposes. All compatibility testing shall be performed in accordance with the approved SAWC plan.

E. Final Staging

1. Following the receipt of characterization and compatibility test results, the Owner will either elect to have the Contractor dispose of drums on-site, or will elect to have the Contractor move drums to the final staging area, for transport and disposal at an off-site facility approved by the Owner. Material which is improperly contained shall be transferred into appropriate containers prior to movement.

F. Decontamination liquids shall be handled in accordance with the Section "Construction Water Management Plan".

G. If off-site disposal or treatment is elected, the Contractor shall transport and dispose of drums at a facility approved by the Owner in accordance with all applicable federal, state, and local regulations and requirements.

H. The Contractor shall provide for on-site storage of drums as long as necessary for drum disposal to occur. Storage will be terminated prior to substantial completion.

3.3 TESTING

A. All testing required for drum removal shall be supplied by the Contractor.

* * * * *

SECTION 02302

OFF-SITE TRANSPORTATION AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

A. The Contractor shall properly transport and dispose of all items, including solid and liquid wastes removed from the site, to appropriate disposal facilities. This includes former manufactured gas plant (MGP) wastes as well as construction debris and other waste material (*e.g*. trees and brush removed from the areas of excavation) generated by the Contract work. The Contractor shall be responsible and will be held accountable for assuring that all sampling, analysis, transportation, and disposal requirements of the Treatment, Storage, and Disposal Facility (TSDF), Solid Waste Management Facility (SWMF), and Publicly Owned Treatment Works (POTW) are complied with as applicable, and that Federal, State, and local government requirements are complied with.

1.2. RELATED WORK SPECIFIED ELSEWHERE

A. 02220 – Earthwork

1.3 SUBMITTALS

A. The following items shall be submitted:

1. Transportation Plan: The Contractor shall submit a Transportation Plan to the Engineer prior to the start of work for review. This shall include:

   a. Type and number of vehicles used;
   b. Travel routes and times; and
   c. Copies of transportation permits.

2. Disposal Facilities: The Contractor shall submit to the Engineer information regarding proposed facilities for disposal of each type of waste. All proposed facilities must be a National Grid approved facility as presented in the attached table. Information submitted shall include, but not be limited to:

   a. Name;
   b. Owner;
   c. Type of facility/permit;
   d. Contact person, phone number;
   e. Location;
   f. Hours of operation; and
   g. Copies of permits.

1.4 PERMITS AND REGULATIONS

A. The Contractor shall 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; and

7. Compliance with load height and weight regulations.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. All equipment supplied shall be in good working condition. Equipment and machinery delivered to the site, 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 oil or hydraulic fluid spills at the Contractor's expense.

B. 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. The Contractor shall take sufficient precautions to prevent loose soils from adhering to tire treads, wheel wells, etc. Any loose soil spread shall be cleaned up.

C. Trucks used for transportation of material for off-site disposal shall be water tight. The trucks shall be equipped with solid covers (e.g. tightly woven fabric, no mesh covers) that shall be utilized during the transportation of wastes from the Site to the disposal facility. All trucks shall be covered prior to leaving the site.

PART 3 EXECUTION

3.1 DECONTAMINATION

A. Transport vehicles shall be decontaminated upon leaving the Exclusion Zone at the site and again at the disposal facility as required.

3.2 TRANSPORTATION AND DISPOSAL

A. Materials shall be transported only at the times and by the routes indicated in the approved Transportation Plan, unless permission is received by the Engineer to do otherwise. The Contractor shall observe the legal load limits.

Prior to shipment of non-hazardous special wastes off-site, the Contractor shall confirm by written communication from the designated TSDF that it is authorized, has the capacity, and will provide or assure that the ultimate disposal method is followed for the particular non-hazardous special waste on the manifest. Additionally, the Contractor shall confirm by written communication from the designated transporter(s) that they are authorized to deliver the manifested waste to the designated TSDF or SWMF.

B. Based on the results of the waste characterization activities performed by the Contractor, the excavated soil/debris deemed suitable shall be disposed at a National Grid approved landfill, following local flow control requirements (if applicable). If soil characterization results indicate the material exhibits hazardous waste toxicity characteristics for benzene (D018) only, then the material will be tested/disposed in a manner consistent with NYSDEC TAGM 4061 (Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants). The policy outlines criteria wherein materials that have been contaminated with coal tar waste from MGPs exhibiting only the hazardous waste toxicity characteristic for benzene (D018) may be excluded from the requirements of 6NYCRR Parts 370-374 and 376 when they are destined for permanent thermal treatment. Accordingly, the off-site Low Temperature Thermal Desorption (LTTD) facility identified by the Contractor shall be permitted to accept such waste material. Other materials generated during the remedial activities will be transported off-site for treatment/disposal based on the results of characterization sampling.

C. All waste transporters hauling waste materials shall submit a copy of their current Waste Transportation Permit (obtained in accordance with 6 NYCRR Part 364) and safety records (including any incidents reported since January 1, 2008 [i.e., the previous 5 years]).

D. All loads shall be lined, shall be securely covered with a solid lining/cover (i.e., non-mesh), and all tailgates shall be equipped with tailgate locks.

3.3 SAMPLING

A. The Contractor shall be responsible for all cost associated with sampling of wastes to be disposed of as may be required by the disposal facility.

3.4 MANIFESTING/ BILL OF LADING

A. The Contractor shall provide and complete all required manifest forms and Bill of Lading forms for the Owner 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 TSDF, SWMF,

POTW, Federal, State, and local governments are complied with and properly documented. All Manifests and/or Bills of Lading must be signed by the Owner (or an authorized representative) and the truck driver.

B. The Contractor shall prepare and submit a daily summary sheet that indicates the temporary staging area analytical data and at a minimum, the following information regarding each truck load

1. Load number (sequential)
2. Uniform Hazardous Waste Number or Bill of Lading Number
3. Truck ID Number (license plate number of truck and/or trailer used)
4. Estimated gross weight
5. Estimated tar weight
6. Estimated net load weight
7. Actual load weight
8. Material type (non hazardous, hazardous, debris, etc.)
9. Destination

* * * * *

SECTION 02402

STEEL SHEET PILING

PART 1 - GENERAL

1.1 SUMMARY

A. The work covered by this section consists of furnishing all labor, equipment, supplies and materials for the installation and removal of temporary steel sheet piling. The work shall also include all anchors, walers, struts, and miscellaneous hardware associated with the temporary steel sheet piling.

B. Steel sheet piling shall be installed, as necessary, to facilitate the excavation activities and to maintain stability of the existing foundation systems and utilities.

C. The Owner or the Engineer makes no warranty, expressed or implied, of the Site and subsurface conditions or the potential impact of subsurface conditions on the Contractor's performance or schedule.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 – Earthwork

1.3 REFERENCES

A. All work shall be performed in compliance with the Specifications unless otherwise approved in writing by the Owner and Engineer.

B. Tests performed on the specified materials shall conform to the American Society for Testing and Materials (ASTM) and the American Welding Society (AWS) latest edition standards referenced below:

1. American Society for Testing and Materials (ASTM) Standards (latest revisions):

A 328, Steel Sheet Piling.

2. American Welding Society (AWS)

D 1.1, Structural Welding Code.

1.4 SUBMITTALS

A. The following items shall be submitted:

1. The Contractor shall prepare and submit a Steel Sheet Pile Installation Plan to discuss the steel sheet piling alignment, installation and removal as required hereinafter. Steel sheet piling and shoring/bracing system calculations and design shall be signed and sealed by a Professional Engineer licensed to practice in the State of New York. The Contractor shall submit lists and descriptions of sheet piling material, alignment, depth, driving and removal equipment and

material, shop drawings, sheet piling driving records, and other required submittals to the Engineer for review and acceptance. Submittals and associated work not meeting the requirements of the Contract Documents shall be rejected.

As part of the Steel Sheet Pile Installation Plan, the Contractor shall submit a means of spanning the steel sheet piling where existing underground utilities cross the alignment of the steel sheet piling. This alternate means shall consist of wooden lagging or similar method that is also designed by the Professional Engineer responsible for the Steel Sheet Pile Installation Plan and submitted to the Engineer for review.

Equipment/Material List and Descriptions - Complete lists and descriptions of sheet pile driving and removal equipment (e.g., hammers, extractors); control methods to prevent agitation of sediments during driving and removal; interlock sealant, protection caps and other installation appurtenances shall be submitted for acceptance prior to delivery to site.

Shop Drawings - Shop drawings for sheet piling including fabricated sections shall show complete dimensions and details of piling and the driving sequence, location and depth of piling. Shop drawings shall include details and dimensions of templates and other temporary guide structures for installing the piling. Shop drawings shall provide details of the method of handling piling to prevent deflection, distortion or damage to piling interlocks.

Material Test Certificates - Material test certificates shall be submitted for each shipment and identified with specific lots prior to installing piling. Identification data shall include piling type, dimensions, chemical composition, mechanical properties, section properties, heat number and mill identification mark.

Records - Records of the sheet piling driving operations shall be submitted to the Engineer for review and acceptance after driving is completed as detailed in this specification. These records shall provide a system of identification which shows the disposition of accepted piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevations.

Tieback and/or shoring/bracing system - components as shown on the Contract Drawings shall be submitted to the Engineer for review and approval prior to installation.

Vibration Minimization and Monitoring Plan - The plan shall include all requirements as specified in the Special Provisions and shall be submitted to the Engineer for review and approval prior to installation.

1.5 QUALIFICATIONS

A. The Contractor shall submit with its bid evidence of experience and competence in steel sheet pile wall construction with its bid as described herein. The evidence shall demonstrate that the Contractor has a minimum of 10 years experience in steel sheet pile wall construction. The evidence shall also demonstrate that the Contractor has

experience and qualified personnel to complete the work using sufficient and appropriate equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Temporary steel sheet piling shall be supplied in lengths suitable for installation based on the depths indicated on the Contract Drawings. This information shall be submitted to the Engineer for review and approval prior to mobilization of the sheet piling. The temporary steel sheet piling shall consist of new, unused sheet piling as delivered to the site.

B. The interlocks of the steel sheet piling shall be free-sliding and maintain continuous interlocking when installed.

C. Contractor shall provide sealant to seal sheet pile wall interlocks. The material to be applied prior to installing the sheeting shall be “Adeka Ultra Seal A-30” or approved equal.

D. Steel sheet piling not meeting these requirements will not be utilized by the Contractor and will be rejected by the Engineer and Owner and replaced at no expense to the Owner.

2.2 DELIVERY, STORAGE AND HANDLING

A. Materials delivered to the Site shall be in an undamaged condition. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks. The sheet piling shall be managed to allow the proper application of the interlock sealant prior to installations

PART 3 - EXECUTION

3.1 SHEET PILE INSTALLATION

A. The Contractor shall handle the sheet pile in a manner that will not cause excessive bending stresses. The Contractor shall not damage the sheet piles in either handling or installing operations. Any damaged sheet piles will be rejected by the Engineer and the sheet piles shall be either repaired or replaced. Any repairs shall be inspected and accepted by the Engineer prior to installation.

B. Driving Hammers, proposed by the Contractor and accepted by the Engineer, may be steam, air, or diesel drop, single-acting, double-acting, differential-acting, or vibratory type. The Contractor shall select a driving method which minimizes the vibration of the surrounding foundations and structures. The driving energy of the hammers shall be as recommended by the manufacturer for the piling weight and subsurface materials to be encountered. The method and equipment selected shall install the piling to the required design depths to minimize damage to each end of piling and adjacent interlocks. Suitable procedures shall be employed to prevent damage to the pile tops and interlocks.

C. Sheet piles shall be carefully located and shall be placed plumb with out-of-plumbness not exceeding 1/8 inch per foot at length and as true to lines as possible. Deviation in horizontal alignment shall not exceed 10 degrees at each joint. Temporary wales, templates, or guide structures shall be provided to ensure that the pilings are placed and driven to the correct alignment. Pilings properly placed and driven shall be interlocked throughout their length with adjacent pilings to form a continuous surface throughout the length or run of piling wall.

D. Driving hammers shall be maintained in proper alignment during driving operations by use of leads or guides attached to the hammer. Piles damaged or driven outside the tolerances specified shall be replaced at no additional cost to National Grid. Piling damaged during driving, driven out of interlock, ruptured in the interlock, or otherwise damaged during installation shall be immediately removed and replaced. The damaged pile shall be spray painted with the letter "X" within three feet of both ends. Pilings shall be driven without the aid of a water jet. Adequate precautions shall be taken to ensure that pilings are driven plumb.

E. Should obstructions restrict driving a piling to the specified penetration the Contractor shall attempt to drive through the obstruction. If the Contractor demonstrates that it is impractical to drive through the obstruction, the Contractor shall make changes in the alignment of the piling structure and submit the same to the Engineer for review and acceptance. The use of pre-trenching and driving shoes may also be employed by the Contractor if deemed necessary and as submitted for review to the Engineer.

3.2 CUTTING AND SPLICING

A. The top of pile at elevation of cut-off shall allow for the safe and proper execution of the excavation activities. Where required, to meet the top of wall elevation, the sheet piling shall be cut to remove excess material. No reimbursement for scrap metal or any excess material is allowed to the Contractor.

Sheet piles damaged by driving and cut off to permit further driving shall be extended as required to reach the top elevation by splicing when directed by the Engineer. Pilings adjoining spliced pilings shall be full length unless otherwise accepted by the Engineer. Ends of pilings to be spliced shall be squared before splicing to eliminate dips or camber. Pilings shall be spliced together with concentric alignment of the interlocks so that there are no discontinuities, dips, or camber at the abutting interlocks. The splices shall be made using a full penetration weld.

Spliced pilings shall be freesliding and able to obtain the maximum swing with contiguous pilings. The Contractor shall not cut any holes in pilings. All cutting shall be done in a neat and workmanlike manner. A straight edge shall be used in cuts made by burning to avoid abrupt nicks.

3.3 INSPECTION OF DRIVEN PILING

A. The Contractor shall engage the sheet pile designer or his representative to be on site during the entire steel sheet piling installation, and to inspect the interlocks of the portion of driven pilings that extend above ground. Pilings found to be out of interlock shall be removed and replaced.

3.4 SHEET PILING REMOVAL

A. Temporary sheet piling shall be removed using proper equipment during/after backfilling activity in that excavation area. The Contractor is responsible for decontamination, transportation and proper disposal of removed sheet piling. Decontaminated sheet piles shall be inspected by the Engineer and approved for off-site transport. If decontaminated sheet piles are unacceptable to the Engineer, Contractor shall decontaminate again at no cost to National Grid.

3.5 RECORDS

A SHEET PILE INSTALLATION RECORDS

The Contractor shall document the following information and provide this information to the Engineer in report format upon completion of the sheet pile installation. Information shall include:

1. Date of driving;

2. Length of sheet pile in the ground when driving is complete;

3. Detailed remarks concerning alignment, obstructions, etc.; and

4. Plumbness records of each sheet pile installed.

3.6 QUALITY CONTROL

A. The Contractor shall utilize survey control or other means and methods acceptable to the Owner and Engineer, to install the temporary steel sheet piling to the limits and elevations shown on the Contract Documents.

B. The interlock sealant shall be installed in accordance with the manufacturer's recommendations. At a minimum, the Contractor shall clean off rust, dirt, and debris from the interlock sections before applying sealant. The interlocks shall also be dry when the sealant is applied. If precipitation is anticipated, the pilings shall be covered after the sealant is applied and before the temporary steel sheets are installed.

******

SECTION 02502

RESTORATION OF SURFACES

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes restoration and maintenance of all types of surfaces, sidewalks, curbs, gutters, culverts and other features disturbed, damaged or destroyed during the performance of the work under or as a result of the operations of the Contract.

B. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to the condition of each before the work began.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. American Society for Testing and Materials (ASTM)

a. D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3) (600 kN-m/m^3)

1.3 SUBMITTALS

A. The following items shall be submitted:

1. A schedule of restoration operations. After an accepted schedule has been agreed upon it shall be adhered to unless otherwise revised with the approval of the Engineer.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 GENERAL

A. In general, permanent restoration of paved surfaces will not be permitted until one months' time has elapsed after excavations have been completely backfilled as specified. A greater length of time, but not more than nine months may be allowed to elapse before permanent restoration of street surfaces is undertaken, if additional time is required for shrinkage and settlement of the backfill.

B. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.

3.2 TEMPORARY PAVEMENT

A. Immediately upon completion of refilling of the trench or excavation, the Contractor shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of his operations.

B. Unless otherwise specified or directed the temporary pavement shall consist of compacted run-of-crusher limestone to such a depth as required to withstand the traffic to which it will be subjected.

C. Where concrete pavements are removed, the temporary pavement shall be surfaced with "cold patch". The surface of the temporary pavement shall conform to the slope and grade of the area being restored.

D. For dust prevention, the Contractor shall treat all surfaces, not covered with cold patch, as frequently as may be required.

E. The temporary pavement shall be maintained by the Contractor in a safe and satisfactory condition until such time as the permanent paving is completed. The Contractor shall immediately remove and restore all pavement as shall become unsatisfactory.

3.3 PERMANENT PAVEMENT REPLACEMENT

A. The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or as a result of performance of the Contract shall be repaired and replaced by the Contractor, by a new and similar pavement.

1. The top surface shall conform with the grade of existing adjacent pavement and the entire replacement shall meet the current specifications of the local community for the particular types of pavement.

2. Where the local community has no specification for the type of pavement, the work shall be done in conformity with the State Department of Transportation Standard which conforms the closest to the type of surfacing being replaced, as determined by the Engineer.

3.4 PREPARATION FOR PERMANENT PAVEMENT

A. When scheduled and within the time specified, the temporary pavement shall be removed and a base prepared, at the depth required by the local community or Highway Permit, to receive the permanent pavement.

1. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.

2. Any base material which has become unstable for any reason shall be removed and replaced with compacted base materials.

B. Prior to placing the permanent pavement all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.

C. The edges of existing asphalt pavement shall be cut a minimum of 1 foot beyond the excavation or disturbed base whichever is greater.

1. All cuts shall be parallel or perpendicular to the centerline of the street.

3.5 ASPHALT PAVEMENT

A. The permanent asphalt pavement replacement for streets, driveways and parking area surfaces shall be replaced with bituminous materials of the same depth and kind as the existing unless otherwise specified.

B. Prior to placing of any bituminous pavement a sealer shall be applied to the edges of the existing pavement and other features.

C. The furnishing, handling and compaction of all bituminous materials shall be in accordance with the State Department of Transportation Standards.

3.6 CONCRETE PAVEMENT AND PAVEMENT BASE

A. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with Class "B" Concrete, air-entrained.

B. Paving slabs or concrete bases shall be constructed to extend 1 foot beyond each side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than 2 feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the original edge of the pavement or base unless otherwise indicated on the Contract Drawings.

C. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled with Special Backfill compacted to 95% maximum dry density as determined by ASTM D 698 up to the base of the concrete.

D. The new concrete shall be of the same thickness as the slab being replaced and shall contain reinforcement equal to the old pavement.

1. New concrete shall be placed and cured in accordance with the applicable provisions of the State Department of Transportation Standards.

3.7 STONE OR GRAVEL PAVEMENT

A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.

1. The depth of the stone or gravel shall be at least equal to the existing.

2. After compaction the surface shall conform to the slope and grade of the area being replaced.

3.8 CONCRETE WALKS, CURBS AND GUTTER REPLACEMENT

A. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.

1. The minimum replacement will be a flag or block of sidewalk and 5 feet of curb or gutter.

B. Walks shall be constructed of Class "B" concrete, air-entrained with NYSDOT #1 stone aggregate on a 4-inch base of compacted gravel or stone.

1. The walk shall be not less than 4 inches in thickness or the thickness of the replaced walk where greater than 4 inches, shall have construction joints spaced not more than 25 feet apart, shall have expansion joints spaced not more than 50 feet apart and shall be sloped at right angles to the longitudinal centerline approximately inch per foot of width.

C. ½ -inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, buildings and others.

D. Walks shall be hand-floated and broom-finished, edged and grooved at construction joints and at intermediate intervals matching those intervals of the walk being replaced.

1. The intermediate grooves shall be scored a minimum of 1/4 of the depth of the walk.

2. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.

E. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw-cut to provide a true edge.

1. The restored curb or gutter shall be the same shape, thickness and finish as being replaced and shall be built of the same concrete and have construction and expansion joints as stated above for sidewalks.

F. All concrete shall be placed and cured as specified in the Section for concrete.

3.9 LAWNS AND IMPROVED AREAS

A. The area to receive topsoil shall be graded to a depth of not less than 6 inches or as specified, below the proposed finished surface.

1. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.

B. The furnishing and placing of topsoil, seed and mulch shall be in accordance with the Section entitled "Topsoil and Seeding".

C. When required to obtain germination, the seeded areas shall be watered in such a manner as to prevent washing out of the seed.

D. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established.

E. The Contractor shall maintain the newly seeded areas, including regrading, reseeding, watering and mowing, in good condition.

3.10 OTHER TYPES OF RESTORATION

A. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade. When there is minor damage to a culvert and with the consent of the Engineer, a repair may be undertaken, if satisfactory results can be obtained.

* * * * *

SECTION 02830

CHAIN LINK FENCE

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes fence framework, fabric, and gates as shown on the Contract Drawings, complete with accessories.

1.2 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1 American Society for Testing and Materials (ASTM)

a. A90 - Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles2

b. A121 - Specification for Zinc-Coated (Galvanized) Steel Barbed Wire

c. A392 - Specification for Zinc-Coated Steel Chain-Link Fence Fabric

d. A428 - Test Method for Weight of Coating on Aluminum-Coated Iron or Steel Articles

e. A491 - Specification for Aluminum-Coated Steel Chain-Link Fence Fabric

f. A585 - Specification for Aluminum-Coated Steel Barbed Wire

g. A817 - Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric

h. A824 - Specification for Metallic-Coated Steel Marcelled Tension Wire for Use with Chain-Link Fence

i. A1011 - Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High Strength Low-Alloy and High Strength Low-Alloy with Improved Formability

j. B117 - Method of Salt Spray (Fog) Testing

k. C94 - Ready-Mixed Concrete

l. F567 - Standard Practice for Installation of Chain-Link Fence

m. F626 - Specification for Fence Fittings

n. F1043 - Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework

o. F1083 - Standard Specification for Pipe, Steel and Hot Dipped Zinc Coated, (Galvanized) Welded, for Fence Structures

1.3 SUBMITTALS

A. The following items shall be submitted:

Manufacturer's certification that all materials furnished are in compliance with the applicable requirements of the referenced standards and this specification.

B. Samples of any material shall be submitted at the Engineer's request.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The following manufacturers are named to establish a standard of quality necessary for the Project.

1. Allied Tube & Conduit Corp.
2. Anchor Fence, Inc.
3. Page Aluminized Steel Corp.
4. Or equal

2.2 GENERAL

A. Framework: Type I

1. Type I - Schedule 40 steel pipe with 1.8 ounces of zinc coating per square foot of surface area conforming to Standard Specification ASTM F1083; or

2. Pipe shall be straight, true to section and conform to the following weights:

Pipe Size Outside Diameter	Type I Weight Lbs./Ft.	Type II Weight Lbs./Ft.
1 5/8"	2.27	1.84
2"	2.72	2.28
2-1/2"	3.65	3.12
3"	5.79	4.64
3-1/2"	7.58	5.71
4"	9.11	6.56

B. Fabric: Zinc-Coated or Aluminum-Coated Steel.

1. Zinc-coated fabric shall be galvanized after weaving with a minimum 2.0 ounces of zinc per square foot of surface area and conform to ASTM A 392, Class 2.

C. Fittings:

1. Pressed steel or cast iron, galvanized with a minimum of 1.2 ounces of zinc per square foot of surface area, or cast aluminum alloy, all conforming to ASTM F 626.

2.3 CONCRETE MIX

A. ASTM C 94 Portland Cement concrete with maximum 3/4" aggregate having a minimum compressive strength of 4,000 PSI at 28 days.

2.4 MATERIALS AND CONSTRUCTION

A. Fence Posts

1. Fence posts shall be sized as follows:

Fabric Height	Line Post O.D. Type I	Terminal Post O.D. Type I
Under 6'	2"	3"
6' to 9'	2-1/2"	3"
9' to 12'	3"	4"

B. Gate Posts

1. Gate posts shall be sized as follows:

Single Gate Width	Double Gate Width	Post O.D. Type I
Up to 6'	Up to 12"	3"
7' to 12'	13' to 25'	4"
13' to 18'	25' to 36'	6 5/8"

C. Rails and Braces

1. Rails and braces shall be 1 5/8" O.D., Type I.

D. Fabric

1. Fabric shall be galvanized or aluminum-coated steel wire, 9 gage, woven in a 2-inch diamond mesh with top selvage twisted and barbed and bottom selvage knuckled. Fence heights up to 12 feet shall be one-piece widths.

E. Gates

1. Gates shall have frame assembly of 2" O.D., Type I or Type II pipe with welded joints. Weld areas repaired with zinc-rich coating applied per manufacturer's directions. Fabric shall match fence. Gate accessories, hinges, latches, center stops,

keepers and necessary hardware shall be of quality required for industrial and commercial application. Latches shall permit padlocking of gate. Barbed wire shall be installed at top of gates.

F. Fittings

1. Post caps shall be pressed steel, cast iron or cast aluminum alloy designed to fit snugly over posts to exclude moisture. Supply cone type caps for terminal posts and loop type for line posts.

2. Rail and brace ends shall be pressed steel, cast iron or cast aluminum alloy, cup-shaped to receive rail and brace ends.

3. Top rail sleeves shall be tubular steel, 0.051 thickness by 7" long, expansion type.

4. Tension bars shall be steel strip, 5/8" wide by 3/16" thick.

5. Tension bands shall be pressed steel, 14 gage thickness by ¾-inch wide.

6. Brace bands shall be pressed steel, 12 gage thickness by ¾" wide.

7. Truss rods shall be steel rod, 3/8" diameter merchant quality with turnbuckle.

8. Barbed wire arms shall be pressed steel, cast iron or cast aluminum alloy fitted with clips or slots for attaching three strands of barbed wire. Arms shall be set outward on a 45 degree angle and be capable of supporting a 250 pound load at outer barbed wire connecting point without causing permanent deflection.

G. Tension Wire

1. Tension wire shall be marcelled 7 gage steel wire with minimum coating of 0.80 ounces of zinc or 0.40 ounces of aluminum per square foot of wire surface and conforming to ASTM A 824.

H. Barbed Wire

1. Barbed wire shall be commercial quality steel, 12 gage, two strand twisted line wire with 4 point barbs at 5-inch spacing. Coating shall consist of a minimum of 0.80 ounces of zinc per square foot of wire surface conforming to ASTM A 121 or a minimum of 0.30 ounces of aluminum per square foot of wire surface conforming of ASTM A 585.

I. Tie Wires

1. Tie wires shall be aluminum 9 gage, alloy 1100-H4, A58 self locking fabric bands or equal.

J. Hog Rings

1. Hog rings shall be steel wire, 11 gage with a minimum zinc coating of 0.80 ounces per square foot of wire surface.

PART 3 EXECUTION

3.1 INSTALLATION

A. Fence installation shall conform to requirements of ASTM F 567.

B. Provide fence heights as shown on Contract Drawings.

C. Space line posts at intervals not exceeding ten feet.

D. Set terminal, gate and line posts plumb in concrete footings as shown on Contract Drawings. Top of footing shall be 2 inches above grade and sloped to direct water away from posts.

E. Brace gate and terminal posts back to adjacent line posts with horizontal brace rails and diagonal truss rods.

F. Install top rail through line post loop caps connecting sections with sleeves to form a continuous rail between terminal posts. Fasten top rail to terminal posts.

G. Stretch bottom tension wire between terminal posts 6 inches above grade and fasten to outside of line posts with tie wires.

H. Pull fabric taut to provide a smooth uniform appearance, free from sag, with bottom selvage 2 inches above grade. Fasten to terminal posts with tension bars threaded through mesh and secured with tension bands at maximum 15-in intervals. Tie to line posts and top rails with tie wires spaced at maximum 12 inches on posts and 24 inches on rails. Attach to bottom tension wire with hog rings at maximum 24-in intervals.

I. Anchor barbed wire to terminal extension arms, pull taut to remove all sag and firmly install in slots of line post extension arms.

J. Install gates plumb, level and secure for full opening without interference. Anchor center stops and keepers in concrete. Adjust and lubricate hardware for smooth operation.

K. Install nuts for fittings, bands and hardware bolts on inside of fence. Peen ends of bolts or score threads to prevent removal.

* * * * *

SECTION 02980

TOPSOIL AND SEEDING

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes topsoil, fertilizer, seed, mulch, anchorage, and associated work and maintenance required in non-wetland areas until acceptance.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 – Earthwork
B. 02981 – Wetland Restoration
C. 02502 – Restoration of Surfaces

1.3 REFERENCES

A. Materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. American Society of Testing and Materials (ASTM)

a. ASTM D422 Method for Particle-Size Analysis of Soils

b. ASTM D2974 Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Materials

c. ASTM D4972 Standard Test Method for pH of Soils

d. ASTM D5268 Specification for Topsoil used for Landscaping Purposes

1.4 SUBMITTALS

A. The following items shall be submitted:

1. Documentation giving location of properties from which the topsoil will be obtained, names and addresses of the owners, and depth to be stripped.

2. Documentation giving the seed vendor's certified statement for the grass seed mixture required, stating common name, scientific name, percentage by weight, and percentages of purity and germination.

3. Documentation giving data concerning hydroseeding equipment (if used), including all material application rates.

4. Documentation regarding test results for particle size, acidity, fertility, and texture performed on representative samples of soil.

5. Affidavit from owner of source and hazardous waste testing results in accordance with the Special Provisions.

PART 2 PRODUCTS

2.1 TOPSOIL

A. The topsoil shall be unfrozen, natural, fertile, friable, clayey loam soil characteristic of productive soils in the vicinity and shall comply with ASTM D5268. No admixtures of subsoil shall be allowed. Topsoil must be uniform in composition and texture, clean and free from clay lumps, stones, weeds, sticks, brush, stumps, roots, toxic substances, and debris or similar substances 2-inches or more in greatest dimension.

B. Prior to and during installation of the topsoil layer, material from the borrow source shall be tested in accordance with the following standards and frequencies:

Parameter	Standard	Minimum Frequency	Criteria
Topsoil Particle Size	ASTM D422	Once per 1500 cy	Monitoring consistency of borrow source
Topsoil pH	ASTM 4972	Once per 1500 cy	pH in the range of 5.5 and 7.6
Topsoil Organic Content	ASTM 2974	Once per 1500 cy	not less than 5% nor more than 20%

C. All topsoil, not associated with the bank or wetland restoration, shall be compliant with the commercial use standards listed in NYCRR PART 375 and shall satisfy the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b).

2.2 GRASS SEED

A. Seed mixtures shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.

B. Seed Mixture: Pounds Per Acre

Common Name	% By Weight	% Purity	% Germination
Timothy	30	90	90
Clover	20	90	90
Perennial Ryegrass	40	90	90
Annual Ryegrass	10	90	90

2.3 FERTILIZER

A. Fertilizer shall be a standard quality commercial carrier of available plant food elements. A complete prepared and packaged material containing a minimum of 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash.

B. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

2.4 MULCH

A. Mulch shall be unrotted stalks of oats, wheat, rye or other approved crops which are free from noxious weeds, salt, mold, or other objectionable material.

B. Other sources of mulch may be utilized if they are biodegradable and are approved by the Engineer.

PART 3 EXECUTION

3.1 INSTALLATION

A. All disturbed areas to be topsoiled shall receive a minimum of 6-inches of topsoil. The areas to receive topsoil shall be graded to a depth of not less than 6 inches or as specified below the proposed finished surface.

B. The topsoil shall not be placed until the subgrade is in suitable condition and shall be free of frost and excessive moisture. All debris and inorganic material shall be removed and the surface loosened for a depth of 2 inches prior to the placing of topsoil.

C. Topsoiled surfaces shall be seeded in accordance with this Section. All surfaces shall then be fertilized and mulched in accordance with this section.

3.2 APPLICATION PROCEDURES

A. The finished surface shall conform to the lines and grades of the area before disturbed or as shown on the Contract Drawings. Any irregularities shall be corrected before the placement of fertilizer and seed.

B. The Contractor shall proceed with the complete landscape work as rapidly as portions of the site become available, working within seasonal limitations of each type of work required.

C. The fertilizer shall be applied uniformly at the rate of 20 pounds per 1000 square feet.

1. Following the application of the fertilizer and prior to application of the seed, the topsoil shall be scarified to a depth of at least 2 inches with a disc or other suitable method traveling across the slope if possible.

D. When the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than 8 pounds per 1000 square feet.

1. The seed shall be raked lightly into the surface and rolled.

2. Seeding shall be suspended when wind velocities exceed 5 miles per hour or as directed by the Engineer.

E. Mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches uniform thickness at loose measurement. Excessive amounts of bunching of mulch will not be permitted.

1. Mulch shall be anchored by an acceptable method.

2. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

3. Any anchorage or mulch that has not disintegrated at time of first mowing, shall be removed. Anchors may be removed or driven flush with ground surface.

F. Seed bed shall be moistened following application of mulch. A muddy soil condition will not be acceptable.

G. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The Contractor must submit all data regarding materials and application rates to the Engineer for review.

H. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

I. The stand of grass resulting from the seeding shall not be considered satisfactory until accepted by the Engineer. An acceptable lawn shall have a minimum of 90% of the area covered with plants of the specified seed mix and no areas greater than one foot square of bare surface. If areas are determined to be unacceptable, the remaining mulch will be removed and all areas shall be reseeded, refertilized and remulched as per the above application procedures at the Contractor's expense.

3.3 MAINTENANCE

A. The Contractor shall begin maintenance period immediately after planting of landscape materials.

B. The Contractor shall maintain grass areas, for the periods required to establish an acceptable growth, but not less than 60 days after date of substantial completion. If seeded in the fall and not given a full 60 days of maintenance, or if not considered acceptable by the Engineer at that time, continue maintenance during following spring until acceptable, grass stand is established.

C. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

* * * * *

SECTION 02981

WETLAND RESTORATION

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes topsoil, fertilizer, seed, plantings, mulch, and associated work. The vegetative seed mixes and plantings provided in this specification are to be applied to the site based on the vegetative covertypes defined on the Contract Drawings or as directed by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 - Earthwork
B. 02502 – Restoration of Surfaces
C. 02980 – Topsoil and Seeding

1.3 REFERENCES

A. Restoration activities shall be performed in compliance with the following:

1. New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000
2. NYSDEC Record of Decision Operable Unit No. 1.
3. Sections 401 and 404 of the Clean Water Act.
4. Conditions of permits issued by the U.S. Army Corps of Engineers (USACE), NYSDEC, and others.

1.4 SUBMITTALS

A. The following items shall be submitted:

1. The location of source and data for off-site topsoil.

2. Source and content data for all seed mixes, plants, and trees. Data for each container of seed used shall be submitted; data submitted as representative of multiple containers will not be accepted.

3. Should hydroseeder be used, the Contractor shall submit all data including material and application rates.

4. Submit certificates from plant nursery stock supplier for each group of live plant stock required, stating botanical name, common name, origin, age, date of packaging, and name and address of supplier. Submit at least 4 weeks prior to planting.

5. Invoices for all plants and seed procured for the project shall be submitted.

6. Source and content data for organic mulch (*e.g.,* hay). If synthetic mulch is used, catalog data that includes the manufacturer, materials, and installation procedures, shall be submitted.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil shall be unfrozen friable silt loam free from clay lumps, stones, roots, sticks, stumps, brush or foreign objects.

1. Topsoil shall have moderate pH (5 to 6.5) and organic matter concentration between (6% - 20%).

2. Topsoil shall be comprised of the following particle sizes:

a. At least 50% silt (0.05 to 0.002 mm dia) and 12 to 27% clay (less than 0.002 mm dia) or

b. 50 to 80% silt and less than 12% clay.

3. All topsoil used for bank or wetland restoration shall satisfy the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

4. All topsoil, not associated with the bank or wetland restoration, shall be compliant with the commercial use standards listed in NYCRR PART 375 and shall satisfy the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b).

B. Fertilizer shall be a standard quality commercial carrier of available plant food elements and shall consist of a complete prepared and packaged material containing a minimum of 10% nitrogen, 10% phosphoric acid and 10 % potash.

1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

C. Seed mixtures shall be of commercial stock of the current or prior season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. Seed shall be labeled true to species and variety. The percent of pure live strain of the seed shall be submitted with the seed mixture.

D. The seed supplier shall provide a seed analysis report including certified analyses of percent viability, percent weed seeds, and percent of other crop seed. The certifying laboratory shall be indicated on the seed tag or on associated submittals.

E. The state of origin of the seed shall be indicated on the seed tag or on associated submittals.

F. The following weed seeds shall not be present in any seed mix:
1. Smooth brome (*Bromus inermis*)
2. Tall fescue (*Schedonorus phoenix*)
3. Purple loosestrife (*Lythrum salicaria*)
4. Common reed (*Phragmites australis*)
5. Cattail (*Typha angustifolia, T. x glauca*)
6. Reed canarygrass (*Phalaris arundinacea*)

G. All seed shall meet the standards of germination and purity set by New York State or the Association of Official Seed Certifying Agencies (AOSCA).

H. The following seed and plant mixtures shall be applied as to areas indicated below:

Zone A - Emergent Seed Mix

Content (%)	Common Name	Botanical Name
20	Virginia Wild Rye	*Elymus virginicus*
10	American Bur Reed	*Sparganium americanum*
10	Water Smartweed	*Polygonum amphibium*
5	Soft-stem Bulrush	*Scirpus validus*
5	Duck potato	*Sagitaria latifolia*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Fox Sedge	*Carex vulpinoidea*
5	Water Plantain	*Alisma subcordatum*
5	Soft Rush	*Juncus effusus*
5	Wool Grass	*Scirpus cyperinus*
5	Eastern Bur Reed	*Sparganium americanum*
5	Dark Green Bulrush	*Scirpus atrovirens*
5	Sensitive fern	*Onoclea sensibilis*
5	Rattlesnake Grass	*Glyceria canadensis*
5	Rice Cutgrass	*Leersia oryzoides*

Note: Apply seed at 40 lbs. per acre to Zone A areas indicated on sheet G-12 of the contract drawings.

Zone A – Emergent Plant Mix

Common Name	Botanical Name
American Bur Reed	*Sparganium americanum*
Duck potato	*Sagitaria latifolia*
Water Plantain	*Alisma subcordatum*
Sensitive Fern	*Onoclea sensibilis*

Notes: Individual 2 inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone A on sheet G-12 of the contract drawings.

Zone B - Wet meadow Seed Mix

Content (%)	Common Name	Botanical Name
15	Red Top Grass	*Agrostis alba*
12	Virginia Wild Rye	*Elymus virginicus*
5	Soft Rush	*Juncus effusus*
5	Spotted touch me not	*Impatiens capensis*
5	Pale touch me not	*Impatiens pallida*
5	Beggar Ticks	*Bidens frondosa*
5	Umbrella Sedge	*Cyperus strigosus*
5	Blue Vervain	*Verbena hastata*
5	Jerusalem Artichoke	*Helianthus tuberosus*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
5	Swamp Milkweed	*Asclepias incarnata*
5	Purple Stemmed Aster	*Aster puniceus*
5	Joe Pye Weed	*Eupatorium maculatum*
5	Boneset	*Eupatorium perfoliatum*
2	Fox Sedge	*Carex vulpinoidea*
2	Field Horsetail	*Equisetum arvense*
2	Rough Horsetail	*Equisetum hyemale*
2	Nodding Bur Marigold	*Bidens cernua*
1	Indian Hemp	*Apocynum cannabinum*
1	Water Horehound	*Lycopus americanus*
1	Monkey Flower	*Mimulus ringens*
1	Awl Sedge	*Carex stipata*
1	False Nettle	*Boehmaria cylindrica*

Note: Apply seed at 40 lbs. per acre to Zone B areas indicated on sheet G-12 of the contract drawings.

Zone B – Wet Meadow Plant Mix

Common Name	Botanical Name
Cinnamon Fern	*Osmunda cinnamomea*
Sensitive Fern	*Onoclea sensibilis*

Notes: Individual 2 inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone B on sheet G-12 of the contract drawings.

Zone C - Scrub-Shrub Seed Mix

Content (%)	Common Name	Botanical Name
25	Fox Sedge	*Carex vulpinoidea*
42	Virginia Wild Rye	*Elymus virginicus*
11	Soft rush	*Juncus effusus*
5	Hop Sedge	*Carex lupulina*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
3	Pennsylvania smartweed	*Polygonum pensylvanicum*
2	Awl Sedge	*Carex stipata*
1	Cosmos (Bristly) Sedge	*Carex comosa*
1	Nodding Bur Marigold	*Bidens cernua*
5	Umbrella Sedge	*Cyperus strigosus*

Note: Apply seed at 20 lbs. per acre to Zone C areas indicated on sheet G-12 of the contract drawings.

Zone C - Scrub-Shrub Live stakes

Live stakes shall range from 0.5" to 1.5" in diameter, with the following lengths:

a. Black willow (*Salix nigra*): 2'

b. Buttonbush (*Cephalanthus occidentalis*): 2'

c. Stiff-leaved dogwood (*Cornus foemina*): 2'-3'

d. Red osier dogwood (*Cornus stolonifera*): 2'-3'

e. Speckled alder (*Alnus rugosa*): 2'-3'

f. Arrow wood (*Viburnum dentatum*): 2'-3'

Live stakes shall be planted in Zone C areas indicated on sheet G-12 at a density of one stake per 16 square feet (i.e., approximately 4 foot spacing).

Zone D – Floodplain Forest Seed Mix

ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix

Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*

Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas indicated on the Contract Drawings.

Zone D – Floodplain Forest Plant Mix

Common Name	Botanical Name
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*
American Sycamore	*Platanus occidentalis*
Boxelder	*Acer negundo*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D restoration area shall include the following:

- Trees 3-4 inch DBH planted at a density of 50 per acre
- Trees 1-inch DBH planted at a density of 100 per acre
- Trees in 6 to 12-inch diameter pots planted as needed to achieve the required density

I. Plantings

1. All plant materials shall comply with state and federal laws with respect to inspection for plant diseases and insect infestations.

2. Plants shall be in accordance with the current edition of the *American Standard for Nursery Stock* (ANSI Z60.1-2004) unless otherwise specified.

3. Woody plants shall be of high quality and symmetrical. They shall be healthy, well branched and densely foliated when in leaf.

4. Plants shall be free of disease and insects, eggs, or larvae, and have healthy, well-developed root systems such that the root ball does not fall apart upon plant removal from the pot or tray.

5. Plants shall be tagged true to species name and variety and not contain weeds.

    a. For plugs, each tray shall be tagged

    b. For live stakes, each bundle shall be tagged

    c. For trees and shrubs in individual pots, each pot or stem shall be tagged.

6. Plants shall arrive at the job site free from physical damage.

7. Trays of grass and sedge plugs may be stacked during shipment. Forbs shall not be stacked.

8. Each species shall be handled and packed in a manner approved for that plant. All precautions that are customary in good trade practice shall be taken such that plants arrive at the Site in good condition. Plants that arrive dried out, exposed to excessive heat, or that have been in storage for protracted periods of time, will not be accepted. If, upon inspection, the plants or root stocks display mold or decay, the material will not be accepted.

9. All woody seedlings shall have a heavy fibrous root system that has been developed by proper horticultural treatment, transplanting, and root pruning.

J. Mulch shall be stalks of oats, wheat, rye or other approved crops which are free from noxious weeds. Mulch may also be EcoBlanket® or a hydromulch with tackifier that is made out of bio-degradable material. Photodegradable blankets or plastic blankets cannot be used.

PART 3 EXECUTION

3.1. GENERAL

Trees outside of the excavation area that are greater than 6 inches DBH should be protected by placing a barrier around the tree at the tree drip-line. This applies to trees that are near the movement of construction equipment, with the intention of the barrier to prevent damage through inadvertent driving, bucket swings and lifts, etc.

3.2. INSTALLATION

A. The Contractor shall verify that the exposed subgrade in Zones A, B, and C has a minimum clay content of 20%. If the clay content is less than 20%, the area shall be compacted to a minimum of 90% as determined with density tests designated in ASTM D698 Method D.

B. Place topsoil within wetland restoration areas (Zones A, B, and C) and rough grade to achieve an average depth of 24-inches. Finished grade may vary from the 24-inch depth proposed by up to 6-inches but shall average 24-inches. Topsoil depths may vary between a maximum depth of 30 inches and a minimum depth of 18 inches. The topsoil shall not be compacted or fine graded but shall be loose and non-uniform such that an irregular (*i.e.*, includes hummocks and hollows) surface results. Topsoil shall be placed within Zone D and meadow restoration areas to achieve finished grade as indicated on Contract Drawings.

C. Soil staging activities shall be coordinated with the Owner prior to placement. Excess soil shall be disposed of on-site in an approved location or off-site. Silt fence shall be installed around the perimeter of the disposal area(s) until disposal activities are completed, and the area(s) is graded, seeded, and mulched. Silt fence shall be removed after a minimum of 80% of vegetative coverage is achieved.

D. Seeding shall be performed during two seasonal windows: mid-April to early June or the month of November. If site soils require seeding and stabilization at times outside of these dates, they shall be temporarily seeded and mulched using 30 pounds per acre of oats (*Avena sativa*).

E. Alternative species and/or seed mixes may be used with Engineer approval only.

F. Procedures for planting woody potted stock:

1. Potted trees and shrubs shall be planted from mid-April to late May or from September through December.

2. The planting hole diameter shall be at least 1.5 times the diameter of the root ball and dug to a depth such that the root flare is even with the finished grade when the plant is placed in the hole.

3. If the planting hole is initially dug too deeply, soil shall be added back into the hole to attain the proper elevation.

4. Cut roots encircling the root ball with a sharp knife and install the plant as soon as possible once it has been removed from the pot.

5. Backfill the planting hole and firmly work soil into and around the root ball with care taken to fill in air spaces.

6. Tamp the backfill with foot pressure sufficient to prevent the root ball from shifting or leaning.

7. Leave the top of the root ball exposed in order to allow water to flow down into it.

8. Form earthen water-holding saucers (4 inches deep with a similar diameter as the planting hole) around each plant.

9. Water all plants immediately after planting. Apply water directly to the root ball and adjacent soil. Fill the water holding saucer with water.

10. Following installation, remove all tags, labels, strings, etc. from all plants.

11. Planting procedures for plugs shall follow those outlined above for woody species with the following exceptions:

    a. Planting of plugs shall occur from mid-April to early June.

    b. Plugs shall be installed such that the top of the root ball is even with the finished soil grade.

    c. The height of the water holding saucer shall be approximately 1 inch.

    d. Roots encircling the plug shall not be cut.

e. Following planting, individual plugs shall be watered in a similar fashion as woody plants or 1 inch of water may be evenly applied across areas where plugs were installed.

G. Live stakes shall be planted when materials are dormant, after leaf drop in the fall and before bud break in the spring. Live stakes shall be installed by:

1. Cutting a pilot hole with a bar of approximately similar diameter as the live stake.

2. A minimum of 2" to 4" and two live buds of the live stake shall be exposed above the soil.

3. Equal numbers of each species shall be planted.

4. Live stakes shall be cut to a point on the basal end for insertion on the ground.

5. Use a dead blow hammer to drive stakes into the ground. The hammer head should be filled with shot or sand. A dibble, iron bar, or similar tool shall be used to make a pilot hole to prevent damaging the material during installation.

6. After placement, tamp soil around live stakes.

7. Any live stake that is damaged shall be left in place and supplemented with a replacement live stake adjacent.

H. Nursery grown materials shall be stored under continuously cool, covered, and moist conditions prior to use.

I. Seed shall be applied to Zone C areas after placement of live stakes and to Zone D after placement of trees

J. Soak live branches for a minimum of 24 hours before planting. Soaking for 5-7 days is preferred.

K. Coarse woody debris (*i.e.*, individual logs, stumps) shall be placed randomly throughout each wetland restoration area (Zones A, B, and C). Debris shall consist of cleared site vegetation and shall be placed as ground cover over a minimum of 1% of each mitigation area. Material to be used shall be a minimum of 6-inch diameter breast height (dbh) throughout, obtained from materials cleared as part of on-site construction activities. Place stockpiled debris as directed prior to planting.

L. In Zone D, 100 grams of slow-release 10-10-10 fertilizer shall be placed in each planting hole prior to placing woody potted stock.

M. When the topsoil surface has been graded, the seed mixture shall be uniformly applied by a method approved by the Owner's Representative.

1. Tracking shall be performed over seeded areas using the tracks of a bulldozer (or equivalent), running perpendicular to the slope gradient where present. In areas receiving trees or shrubs, soil tracking shall occur before tree installation and seed broadcasting.

2. Seeding and mulching shall not be done during windy weather.

N. The mulch shall be hand or machine spread over restored areas to form a continuous blanket over the seed bed:

1. If straw mulch or similar is used, approximately 1 to 1.5 inches uniform thickness at loose measurement shall be applied. Excessive amounts or bunching of mulch will not be permitted.

2. If EcoBlanket® or hydromulch is used, these mulches shall be installed at a rate recommended by the manufacturer.

O. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

P. Watering of herbaceous species (*i.e.,* seed or plugs) shall occur from July to September of the planting year if soils are not moist and if plants are showing signs of moisture stress. Watering shall be in such a manner as to prevent washing out of seed or exposing plant roots. Sufficient water shall be applied to each plant to maintain plant health and vigor.

Q. Watering of woody species (live stakes and potted plants) shall occur if one inch of rain is not received during any seven-day window from June 1 through August 31 in the year of installation. Watering events may be avoided if the woody plants are not showing moisture stress and with written approval from the Engineer. Watering shall occur in the first July to September following planting (i.e., woody plants installed in the fall shall be watered the following year). Sufficient water shall be applied to each plant to maintain plant health and vigor.

R. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The Contractor shall submit all data regarding materials and application rates to the Engineer for review.

3.2 MONITORING AND MAINTENANCE

A. The Contractor shall warranty the plantings (potted stock, live stakes) and seed for a period of one year or until the end of the next growing season, whichever is later. The Contractor shall replace deceased planted stock or reseed areas based on the following criteria:

1. Minimum 95% survival of planted stock
2. Minimum 95% ground coverage of seeded areas
3. Plants and/or seeds shall be replaced during the optimal season for plant survival.

B. Replacements shall be of the same size originally planted and subject to the first year maintenance efforts prescribed herein.

C. Alternative species and/or seed mixes may be used during replacement with Engineer approval only.

D. National Grid will monitor the plantings (potted stock) and seed for an additional period of four years. This monitoring is not a part of this contract. Monitoring events will be performed during the growing season (*i.e.,* April through October) and the results summarized in annual reports that will be submitted to the NYSDEC and USACE. National Grid will replace deceased planted stock or reseed areas based on the following:

1. In Years 2 and 3 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

    a. Maintain the densities and species diversities. However, species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species.
    b. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.
    c. Plants and/or seeds shall be replaced during the optimal season for plant survival.

2. In Years 4 and 5 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

    a. Maintain the original prescribed densities and species diversities. Species that are observed to be successful (i.e., are

growing vigorously) may be substituted for less successful species.

b. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.

3. The following additional information will be recorded during monitoring events for the five year monitoring period:

   a. Date and time of data collection efforts, as well as recent weather information
   b. Comparison of site conditions to pre-disturbance conditions
   c. Species identification of what restoration plants are deceased and those that have survived
   d. Enumeration of deceased and surviving restoration plants
   e. Percent vegetative cover
   f. Identification of pioneer species
   g. Percent cover and identification of invasive species
   h. Surface water levels
   i. Photographs from fixed reference points of each restoration area showing representative portions of the restoration areas
   j. Observed fish and wildlife

4. If invasive species are observed during the vegetative surveys, actions will be taken within 30 -90 days to eliminate invasive species problems, including but not limited to:

   a. The species, location and size of the population will be recorded as well as the control method and date of control action
   b. If the population is of manageable size (e.g., less than approximately 500 stems or 0.1 acres):
      i. Invasive plants will be manually removed by excavating roots, pulling or clipping until the population is eliminated
      ii. The area that had the invasive species will be covered with a non-translucent tarp for a minimum of one growing season
      iii. Invasive plants which grow up around the tarp will be pulled or clipped
      iv. Invasive plant refuse will be appropriately disposed of, i.e., burned or landfilled in nontranslucent bags. Invasive plant refuse cannot be composted, added to stockpile soils

or handled in a way that would lead to reuse at this or any other site.

c. If the population is considered to be too large for manual control methods, a NYSDEC-approved herbicide will be used according to manufacturer's instructions

d. With agreement from NYSDEC, control methods can be adapted over time given outcomes of initial control efforts. The timing and methods for control measures will be specifically designed for each species observed

e. Efforts to eliminate invasive species will continue throughout the monitoring period within the restored areas. The presence of any invasive species identified in the current or future Revised Interim List of Invasive Plant Species in New York State, included herein as Exhibit B, will not be allowed. Any other invasive species not specified on the noted list may not occupy more than 5% of the restored areas.

* * * * *

SECTION 02982

FLOODPLAIN FOREST AND MEADOW RESTORATION

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes topsoil, fertilizer, seed, plantings, mulch, and associated work. The vegetative seed mixes and plantings provided in this specification are to be applied to the site based on the vegetative covertypes defined on the Contract Drawings or as directed by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 - Earthwork
B. 02502 – Restoration of Surfaces
C. 02980 – Topsoil and Seeding
D. 02272 – Erosion Control Blanket

1.3 REFERENCES

A. Restoration activities shall be performed in compliance with the following:

1. New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000
2. NYSDEC Record of Decision Operable Unit No. 1.
3. Sections 401 and 404 of the Clean Water Act.
4. Conditions of permits issued by the U.S. Army Corps of Engineers (USACE), NYSDEC, and others.

1.4 SUBMITTALS

A. The following items shall be submitted:

1. The location of source and data for off-site topsoil.

2. Source and content data for all seed mixes, plants, and trees. Data for each container of seed used shall be submitted; data submitted as representative of multiple containers will not be accepted.

3. Should hydroseeder be used, the Contractor shall submit all data including material and application rates.

4. Submit certificates from plant nursery stock supplier for each group of live plant stock required, stating botanical name, common name,

origin, age, date of packaging, and name and address of supplier. Submit at least 4 weeks prior to planting.

5. Invoices for all plants and seed procured for the project shall be submitted.

6. Source and content data for organic mulch (*e.g.,* hay). If synthetic mulch is used, catalog data that includes the manufacturer, materials, and installation procedures, shall be submitted.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil shall be unfrozen friable silt loam free from clay lumps, stones, roots, sticks, stumps, brush or foreign objects.

1. Topsoil shall have moderate pH (5 to 6.5) and organic matter concentration between (6% - 20%).

2. Topsoil shall be comprised of the following particle sizes:

a. At least 50% silt (0.05 to 0.002 mm dia) and 12 to 27% clay (less than 0.002 mm dia) or

b. 50 to 80% silt and less than 12% clay.

3. All topsoil used for bank restoration shall satisfy the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

4. All topsoil, not associated with the bank restoration, shall be compliant with the commercial use standards listed in NYCRR PART 375 and shall satisfy the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b).

B. Fertilizer shall be a standard quality commercial carrier of available plant food elements and shall consist of a complete prepared and packaged material containing a minimum of 10% nitrogen, 10% phosphoric acid and 10 % potash.

1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

C. Seed mixtures shall be of commercial stock of the current or prior season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. Seed shall be labeled true to species and variety. The

percent of pure live strain of the seed shall be submitted with the seed mixture.

D. The seed supplier shall provide a seed analysis report including certified analyses of percent viability, percent weed seeds, and percent of other crop seed. The certifying laboratory shall be indicated on the seed tag or on associated submittals.

E. The state of origin of the seed shall be indicated on the seed tag or on associated submittals.

F. The following weed seeds shall not be present in any seed mix:
1. Smooth brome (*Bromus inermis*)
2. Tall fescue (*Schedonorus phoenix*)
3. Purple loosestrife (*Lythrum salicaria*)
4. Common reed (*Phragmites australis*)
5. Cattail (*Typha angustifolia, T. x glauca*)
6. Reed canarygrass (*Phalaris arundinacea*)

G. All seed shall meet the standards of germination and purity set by New York State or the Association of Official Seed Certifying Agencies (AOSCA).

H. The following seed and plant mixtures shall be applied as to areas indicated below:

ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix

Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*

Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas indicated on the Contract Drawings.

Floodplain Forest Plant Mix

Common Name	Botanical Name
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*

American Sycamore	*Platanus occidentalis*
Boxelder	*Acer negundo*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D restoration area shall include the following:

- Trees 3-4 inch DBH planted at a density of 50 per acre
- Trees 1-inch DBH planted at a density of 100 per acre
- Trees in 6 to 12-inch diameter pots planted as needed to achieve the required density

I. Plantings

1. All plant materials shall comply with state and federal laws with respect to inspection for plant diseases and insect infestations.

2. Plants shall be in accordance with the current edition of the *American Standard for Nursery Stock* (ANSI Z60.1-2004) unless otherwise specified.

3. Woody plants shall be of high quality and symmetrical. They shall be healthy, well branched and densely foliated when in leaf.

4. Plants shall be free of disease and insects, eggs, or larvae, and have healthy, well-developed root systems such that the root ball does not fall apart upon plant removal from the pot or tray.

5. Plants shall be tagged true to species name and variety and not contain weeds.

   a. For trees and shrubs in individual pots, each pot or stem shall be tagged.

6. Plants shall arrive at the job site free from physical damage.

7. Each species shall be handled and packed in a manner approved for that plant. All precautions that are customary in good trade practice shall be taken such that plants arrive at the Site in good condition. Plants that arrive dried out, exposed to excessive heat, or that have been in storage for protracted periods of time, will not be accepted. If, upon inspection, the plants or root stocks display mold or decay, the material will not be accepted.

8. All woody seedlings shall have a heavy fibrous root system that has been developed by proper horticultural treatment, transplanting, and root pruning.

J. Mulch shall be stalks of oats, wheat, rye or other approved crops which are free from noxious weeds. Mulch may also be EcoBlanket® or a hydromulch with tackifier that is made out of bio-degradable material. Photodegradable blankets or plastic blankets cannot be used.

PART 3 EXECUTION

3.1. GENERAL

Trees outside of the excavation area that are greater than 6 inches DBH should be protected by placing a barrier around the tree at the tree drip-line. This applies to trees that are near the movement of construction equipment, with the intention of the barrier to prevent damage through inadvertent driving, bucket swings and lifts, etc.

3.2. INSTALLATION

A. Place topsoil within restoration areas and grade to achieve finished grade.

B. Soil staging activities shall be coordinated with the Owner prior to placement. Excess soil shall be disposed of on-site in an approved location or off-site. Silt fence shall be installed around the perimeter of the disposal area(s) until disposal activities are completed, and the area(s) is graded, seeded, and mulched. Silt fence shall be removed after a minimum of 80% of vegetative coverage is achieved.

C. Seeding shall be performed during two seasonal windows: mid-April to early June or the month of November. If site soils require seeding and stabilization at times outside of these dates, they shall be temporarily seeded and mulched using 30 pounds per acre of oats (*Avena sativa*).

D. Alternative species and/or seed mixes may be used with Engineer approval only.

E. Procedures for planting woody potted stock:

1. Potted trees and shrubs shall be planted from mid-April to late May or from September through December.

2. The planting hole diameter shall be at least 1.5 times the diameter of the root ball and dug to a depth such that the root flare is even with the finished grade when the plant is placed in the hole.

3. If the planting hole is initially dug too deeply, soil shall be added

back into the hole to attain the proper elevation.

4. Cut roots encircling the root ball with a sharp knife and install the plant as soon as possible once it has been removed from the pot.

5. Backfill the planting hole and firmly work soil into and around the root ball with care taken to fill in air spaces.

6. Tamp the backfill with foot pressure sufficient to prevent the root ball from shifting or leaning.

7. Leave the top of the root ball exposed in order to allow water to flow down into it.

8. Form earthen water-holding saucers (4 inches deep with a similar diameter as the planting hole) around each plant.

9. Water all plants immediately after planting. Apply water directly to the root ball and adjacent soil. Fill the water holding saucer with water.

9. Following installation, remove all tags, labels, strings, etc. from all plants.

H. Nursery grown materials shall be stored under continuously cool, covered, and moist conditions prior to use.

I. Seed shall be applied after placement of trees

J. In Floodplain Forest areas, 100 grams of slow-release 10-10-10 fertilizer shall be placed in each planting hole prior to placing woody potted stock.

K. When the topsoil surface has been graded, the seed mixture shall be uniformly applied by a method approved by the Owner's Representative.

1. Tracking shall be performed over seeded areas using the tracks of a bulldozer (or equivalent), running perpendicular to the slope gradient where present. In areas receiving trees or shrubs, soil tracking shall occur before tree installation and seed broadcasting.

2. Seeding and mulching shall not be done during windy weather.

L. The mulch shall be hand or machine spread over restored areas to form a continuous blanket over the seed bed:

1. If straw mulch or similar is used, approximately 1 to 1.5 inches uniform thickness at loose measurement shall be applied. Excessive amounts or bunching of mulch will not be permitted.

2. If EcoBlanket® or hydromulch is used, these mulches shall be installed at a rate recommended by the manufacturer.

M. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

N. Watering of herbaceous species (*i.e.,* seed) shall occur from July to September of the planting year if soils are not moist and if plants are showing signs of moisture stress. Watering shall be in such a manner as to prevent washing out of seed or exposing plant roots. Sufficient water shall be applied to each plant to maintain plant health and vigor.

O. Watering of woody species (potted plants) shall occur if one inch of rain is not received during any seven-day window from June 1 through August 31 in the year of installation. Watering events may be avoided if the woody plants are not showing moisture stress and with written approval from the Engineer. Watering shall occur in the first July to September following planting (i.e., woody plants installed in the fall shall be watered the following year). Sufficient water shall be applied to each plant to maintain plant health and vigor.

P. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The Contractor shall submit all data regarding materials and application rates to the Engineer for review.

3.2 MONITORING AND MAINTENANCE

A. The Contractor shall warranty the plantings (potted stock) and seed for a period of one year or until the end of the next growing season, whichever is later. The Contractor shall replace deceased planted stock or reseed areas based on the following criteria:

1. Minimum 95% survival of planted stock
2. Minimum 95% ground coverage of seeded areas
3. Plants and/or seeds shall be replaced during the optimal season for plant survival

B. Replacements shall be of the same size originally planted and subject to the first year maintenance efforts prescribed herein.

C. Alternative species and/or seed mixes may be used during replacement with Engineer approval only.

D. National Grid will monitor the plantings (potted stock) and seed for an additional period of four years. This monitoring is not a part of this contract. Monitoring events will be performed during the growing season (*i.e.,* April through October) and the results summarized in annual reports that will be submitted to the NYSDEC and USACE. National Grid will replace deceased planted stock or reseed areas based on the following:

1. In Years 2 and 3 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

    a. Maintain the densities and species diversities. However, species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species.
    b. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.
    c. Plants and/or seeds shall be replaced during the optimal season for plant survival.

2. In Years 4 and 5 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

    a. Maintain the original prescribed densities and species diversities. Species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species.

    b. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.

3. The following additional information will be recorded during monitoring events for the five year monitoring period:

    a. Date and time of data collection efforts, as well as recent weather information
    b. Comparison of site conditions to pre-disturbance conditions
    c. Species identification of what restoration plants are deceased and those that have survived
    d. Enumeration of deceased and surviving restoration plants
    e. Percent vegetative cover
    f. Identification of pioneer species
    g. Percent cover and identification of invasive species
    h. Surface water levels
    i. Photographs from fixed reference points of each restoration area showing representative portions of the restoration areas
    j. Observed fish and wildlife

4. If invasive species are observed during the vegetative surveys, actions will be taken within 30 -90 days to eliminate invasive species problems, including but not limited to:

   a. The species, location and size of the population will be recorded as well as the control method and date of control action
   b. If the population is of manageable size (e.g., less than approximately 500 stems or 0.1 acres):
      1. Invasive plants will be manually removed by excavating roots, pulling or clipping until the population is eliminated
      2. The area that had the invasive species will be covered with a non-translucent tarp for a minimum of one growing season
      3. Invasive plants which grow up around the tarp will be pulled or clipped
      4. Invasive plant refuse will be appropriately disposed of, i.e., burned or landfilled in nontranslucent bags. Invasive plant refuse cannot be composted, added to stockpile soils or handled in a way that would lead to reuse at this or any other site.
   c. If the population is considered to be too large for manual control methods, a NYSDEC-approved herbicide will be used according to manufacturer's instructions
   d. With agreement from NYSDEC, control methods can be adapted over time given outcomes of initial control efforts. The timing and methods for control measures will be specifically designed for each species observed
   e. Efforts to eliminate invasive species will continue throughout the monitoring period within the restored areas. The presence of any invasive species identified in the current or future Revised Interim List of Invasive Plant Species in New York State, included herein as Exhibit B, will not be allowed. Any other invasive species not specified on the noted list may not occupy more than 5% of the restored areas..

* * * * *

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

REPLY TO
ATTENTION OF:

March 6, 2015

Regulatory Branch

SUBJECT: Application No. 2008-00854, Nationwide Permit No. 38 as Published in the Federal Register, Volume 77, No. 34, on Tuesday, February 21, 2012, New York State Department of Environmental Conservation No. 6-3016-00219

Brian Stearns
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

Dear Mr. Stearns:

This pertains to your application for a Department of the Army permit to temporarily impact an additional 1.93 acres of wetland for the remediation of contaminated soils at the Harbor Point Hazardous Waste Remediation Site, located at 41 Washington Street, in the City of Utica, Oneida County, New York. The remedial action is required under a New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000 and NYSDEC Record of Decision Operable Unit No. 1. This is in addition to the 5.3 acres of prior temporary wetland impact affirmed under the same processing number on December 5, 2012.

I have evaluated the impacts associated with your proposal, and have concluded that they are authorized by the enclosed Nationwide Permit (NWP) provided that the attached conditions are satisfied. In addition, I have modified Special Condition Nos. 2 and 3 of your December 6, 2012 authorization as noted below in Special Condition Nos. 2 and 3. These conditions pertain to all wetland restoration and monitoring pursuant to Department of the Army Processing Nos. 2008-00854. Monitoring efforts on all temporarily impacted wetlands will be initiated once all remediation efforts are completed, but no later than December 2016.

Verification of the applicability of this NWP is valid until March 18, 2017 unless the NWP is modified, suspended, revoked, or the activity complies with any subsequent permit modification. Please note in accordance with 33 CFR part 330.6(b), that if you commence or are under contract to commence an activity in reliance of the permit prior to the date this NWP expires, is suspended or revoked, or is modified such that the activity no longer complies with the terms and conditions, you have twelve months from the date of permit modification, expiration, or revocation to complete the activity under the present terms and conditions of the permit, unless the permit has been subject to the provisions of discretionary authority.

It is your responsibility to remain informed of changes to the NWP program. A public notice announcing any changes will be issued when they occur and will be available for viewing at our website: http://www.lrb.usace.army.mil/Missions/Regulatory.aspx. Finally, note that if your activity is not undertaken within the defined period or the project specifications have changed, you must immediately notify this office to determine the need for further approval or reverification.

This affirmation is limited to the attached NWP and associated WQC, and does not obviate the need to obtain any other project specific Federal, state, or local authorization. Specifically, you may need to obtain Article 15 (Protection of Water), Article 24 (Freshwater Wetland), and/or Article 34 (Coastal Erosion Management) authorization from the New York State DEC.

In addition to the general conditions attached to the NWP, your attention is directed to the following Special Conditions which are also appended at the end of the NWP General Conditions:

1. All work will be conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000 and NYSDEC Record of Decision Operable Unit No. 1, and the NYSDEC Water Quality Certification dated March 2, 2015 (Appendix A).
2. If any tree clearing (dead or alive) greater than three inches Diameter at Breast Height (DBH) associated with this authorization or work authorized by the permit will be conducted after April 2, 2015, the permittee must stop tree cutting activities and work authorized with the permit and contact this office immediately to determine if any coordination is required with the U.S. Fish and Wildlife Service for potential impacts to the Northern long-eared bat (*Myotis septentrionalis*), a currently Proposed Endangered species under the Endangered Species Act (ESA). Failure to refrain from cutting trees after this date may result in "take" of a listed species under the ESA, which may result in violation of the ESA. This condition is assuming the final decision on listing is the proposed date of April 2, 2015. For more information on the species and the decision on listing, please contact either this office or the USFWS.
3. Restoration and monitoring of wetlands to be impacted will be accomplished through the implementation of the drawings referred to as Sheets 1 – 10 of the December 5, 2012 affirmation and Sheets 1-12 of this affirmation; and the Site-Wide Vegetative Plan dated August 2014, which is hereby incorporated into this permit as Appendix B.
4. Monitoring the restored wetlands shall meet the success criteria outlined in the Site-Wide Vegetative Plan (Appendix B). In addition:
    a. No more than five (5) percent (%) areal cover of the restored area will be vegetated at the end of the 5-year monitoring period with the following species: Purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), narrow-leaf cattail (*Typha angustifolia*) or hybrid cattail (*Typha* x *glauca*). If this threshold is exceeded during or at the end

of each monitored year, corrective measures must be implemented to preclude the growth of the above listed species within the mitigation areas. Corrective measures, such as but not limited to, herbicide application, mechanical/manual removal, etc. shall be implemented. Any corrective measures proposed must be coordinated and approved, in writing, with this office prior to implementation. Additional yearly monitoring of the site, above the 5-year required monitoring, may be required at the discretion of the District Engineer.

b. The restored wetland must meet the vegetative and hydrology requirements specified in the 1987 Corps of Engineers Wetland Delineation Manual, including the appropriate Regional Supplement.

5. The permittee is required to submit annual monitoring and/or compliance reports for the wetland remediation project to this office for the first five (5) years following completion of the construction based upon data collected during each monitored year between June and October. The reports must follow the requirements outlined in Regulatory Guidance Letter No. 08-03 (Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources). The first annual report is due by December 31 in the year following completion of all wetland restoration activities affirmed by NWP 38, or by an approved extension date. For purposes of this special condition, "completion" means all activities associated with site grading and seeding and/or planting. All reports must be submitted to Mr. Harold Keppner, Chief, Monitoring & Enforcement Section by December 31 of the year due, or by a Corps-approved extension date. This requirement may be waived for years 3 and 4 if, after the first two growing seasons, the wetland is shown to meet performance criteria listed in the permit. These reports must include:

a. Wetland Delineation, including a map of wetland boundary.
b. Photographs (minimum 5) from fixed locations with a photo location reference map.
c. Plant species list with the following information:
    1. Wetland Indicator Status and strata.
    2. Dominant plants and percent cover.
d. A list of plants introduced through seeding or planting.
e. Water depth and date of measurement from representative locations within the mitigation area during the growing season. The sample points will be fixed locations and shall be plotted on a map.
f. Fish and wildlife observations at the mitigation site.
g. Summary statement regarding the perceived success of the wetland restoration project. The report will evaluate the goals/performance standards as set forth in the permit or mitigation and monitoring plan as well as current wetland functions. These reports must also address any potential problem areas and include suggestions and timetable for correction if it is anticipated that projected goals may not be met.
h. Date(s) of field inspection(s).

Regulatory Branch
SUBJECT: Application No. 2008-00854, Nationwide Permit No. 38 as Published in the Federal Register, Volume 77, No. 34, on Tuesday, February 21, 2012, New York State Department of Environmental Conservation No. 6-3016-00219

Questions pertaining to this matter should be directed to me at (315) 704-0256, by writing to the following address: U.S. Army Corps of Engineers, 7413 County House Road, Auburn, New York 13021, or by e-mail at: margaret.a.crawford@usace.army.mil

Sincerely,

SIGNED

Margaret Crawford
Biologist

Enclosures

COMPLETION FORM / COMPLIANCE CERTIFICATION

Each permittee who receives a Nationwide Permit (NWP) verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any compensatory mitigation.

APPLICANT:
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, New York 13202

POINT of CONTACT:
Kyle Buelow
O'Brien and Gere
333 West Washington Street
P.O. Box 4873
Syracuse, New York 13221

File Number: 2008-00854
File Closed: 3/6/2015

Upon completion of the activity authorized by this permit and any required compensatory mitigation sign this certification and return it to the address listed below within 30 days of project completion.

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, revocation, and/or assessment of administrative penalties.

The permittee shall certify the completion of the authorized work and mitigation:

a. The authorized work was done in accordance with the NWP authorization, including any general, regional, or activity specific conditions.

b. The implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, this certification must include the documentation required by 33 CFR 332.3(1)(3) to confirm that the permittee secured the appropriate number and resource type of credits.

_____ _____

APPLICANTS NAME Date

Permittee Telephone Number: _____

Project Location: at the Harbor Point Hazardous Waste Remediation Site, located at 41 Washington Street, in the City of Utica, Oneida County, New York

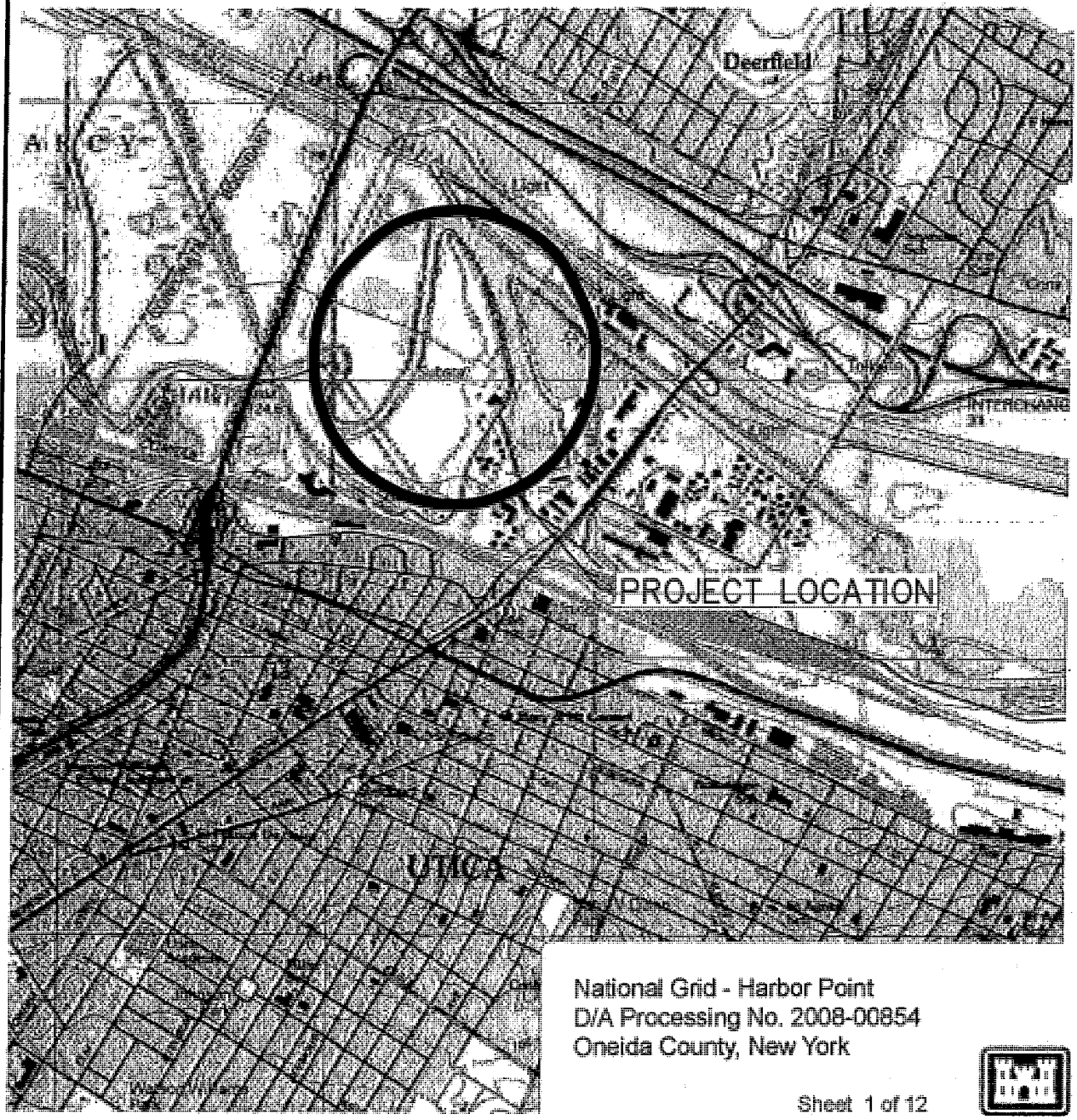
Project Description: to temporarily impact an additional 1.93 acres of wetland for the remediation of contaminated soils at the Harbor Point Hazardous Waste Remediation Site

Authorized Impacts (Waters of U.S. Impacted by Project): temporary impacts to 1.93 acres

Waterway and/or Project Setting: in wetlands adjacent to the Mohawk River

Return completed form to:
Mr. David Leput
Regulatory Branch
U.S. Army Corps of Engineers
1776 Niagara Street
Buffalo, NY 14207

FIGURE 1



National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

Sheet 1 of 12

ADAPTED FROM: UTICA EAST QUADRANGLE, STATE OF NY U.S.G.S. 7.5 MIN. QUAD



QUADRANGLE LOCATION

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION –
PAH–IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

FILE NO. 1118.43175.
OCTOBER 2014

PROJECT LOCATION MAP

NOT TO SCALE

O'BRIEN & GERE

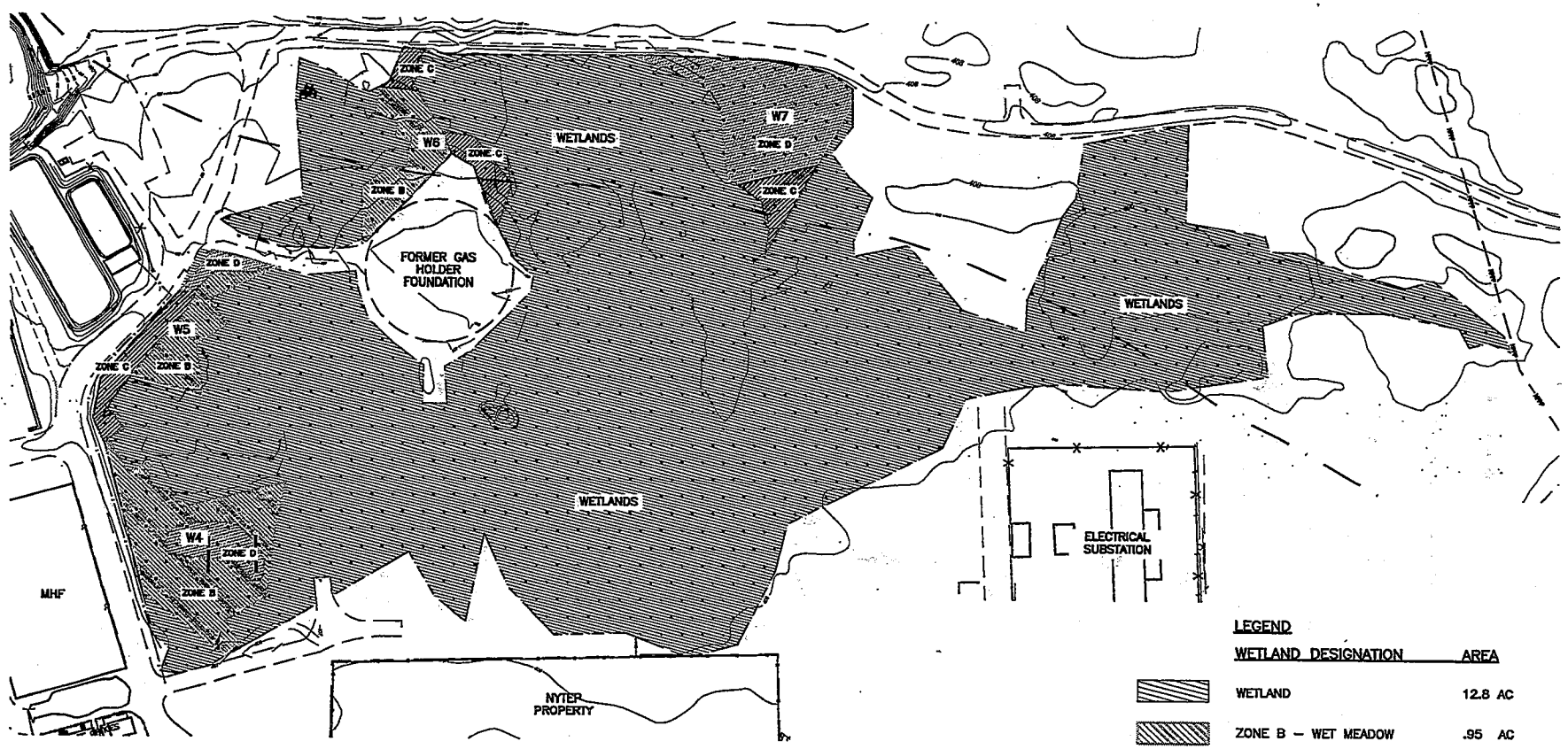
E:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG1.DWG

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG2.DWG

FILE NO. 1118.43175.
OCTOBER 2014

1"=200'

200 0 200



LEGEND

WETLAND DESIGNATION	AREA
WETLAND	12.8 AC
ZONE B – WET MEADOW	.95 AC
ZONE C – SCRUB SHRUB	.31 AC
ZONE D – FLOODPLAIN FOREST	.67 AC

NOTES:

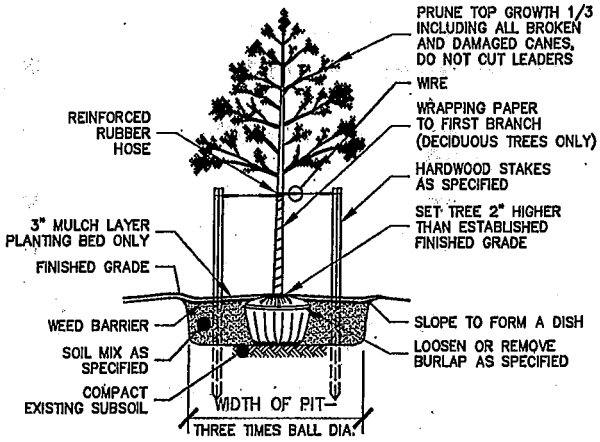
1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" FIGURE 3 AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN 02981 "WETLAND RESTORATION".

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK
WETLAND RESTORATION PLAN

O'BRIEN & GERE

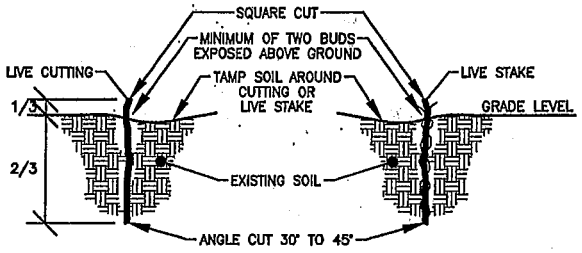
FIGURE 2

FIGURE 3



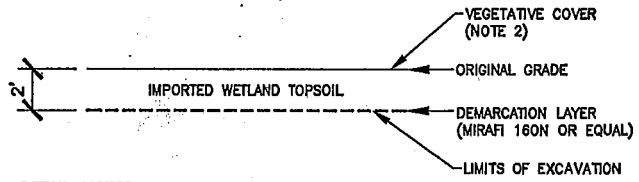
DECIDUOUS TREE PLANTING

NOT TO SCALE



LIVE CUTTINGS/LIVE STAKES PLANTING CROSS SECTIONS

NOT TO SCALE



DETAIL NOTES:

1. REFER TO "BACKFILL AND RESTORATION REQUIREMENTS" FIGURE 4 FOR FILL MATERIAL REQUIREMENTS.
2. WETLAND RESTORATION VEGETATIVE COVER SHALL BE IN ACCORDANCE WITH THE "WETLAND RESTORATION PLAN" FIGURE 2 AND SPECIFICATION 02981 "WETLAND RESTORATION".

TYPICAL WETLAND RESTORATION DETAIL

NOT TO SCALE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

RESTORATION DETAILS

NOT TO SCALE

FILE NO. 1118.43175.
OCTOBER 2014

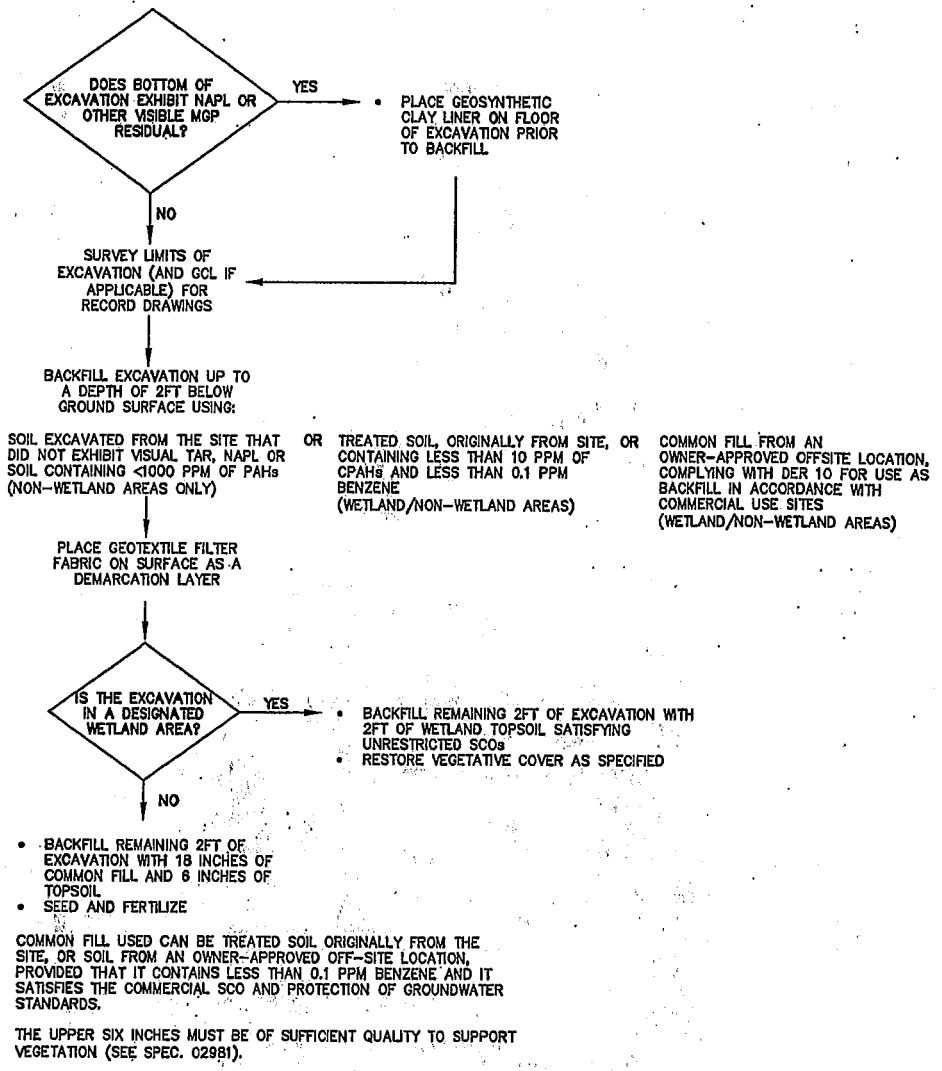
O'BRIEN & GERE

National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

Sheet 3 of 12

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG34.DWG

FIGURE 4



BACKFILL AND RESTORATION REQUIREMENTS

NOT TO SCALE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

RESTORATION DETAILS

NOT TO SCALE

FILE NO. 1118.43175.
OCTOBER 2014

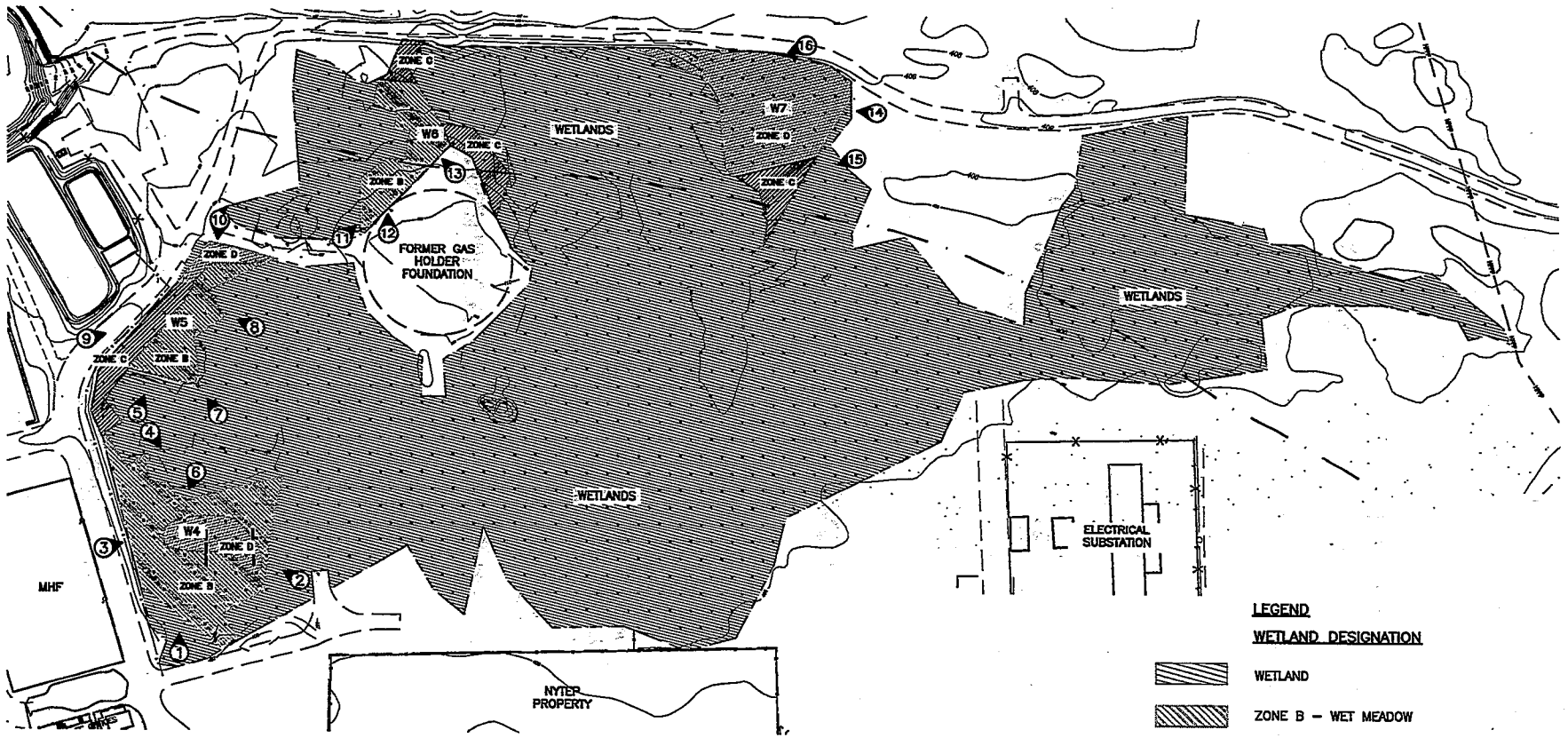
O'BRIEN & GERE

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG34.DWG

FILE NO. 1118.43175.
OCTOBER 2014

1"=200'

200 0 200



NOTES:

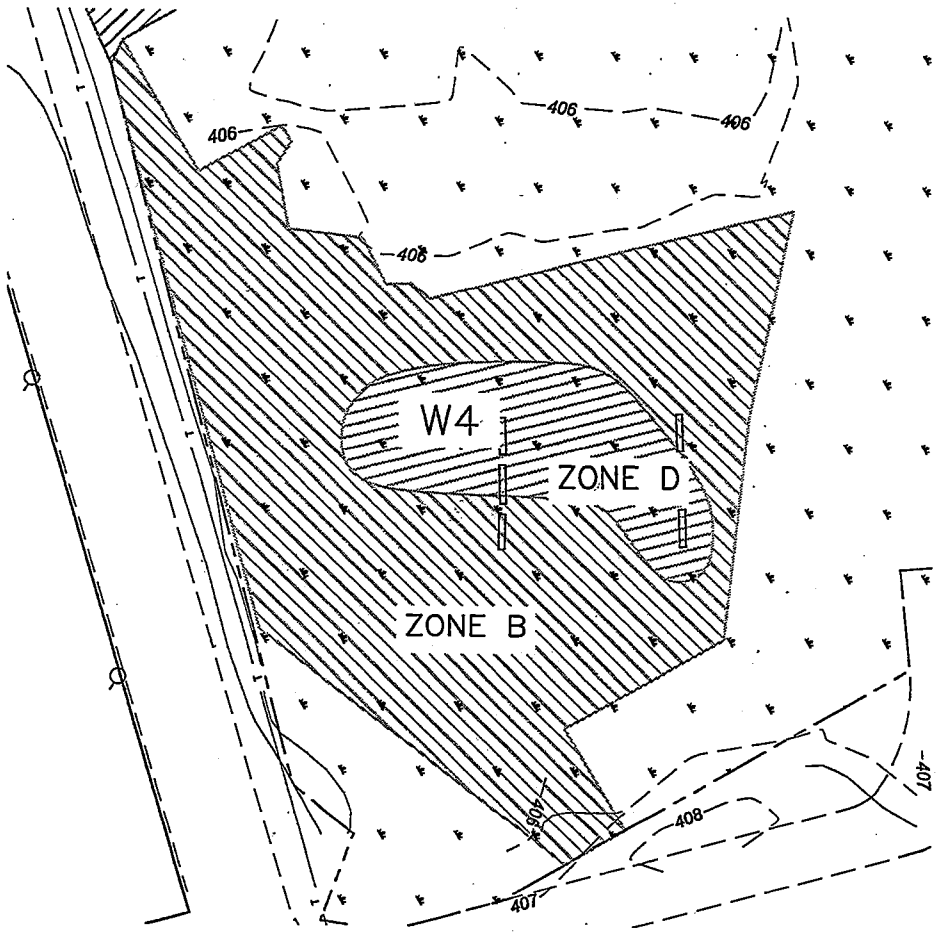
1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" FIGURE 3 AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN 02981 "WETLAND RESTORATION".

NATIONAL GRID - HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION -
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK
PHOTOGRAPH LOCATION PLAN

O'BRIEN & GERE

FIGURE 5

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG2.DWG



NOTES:

1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" FIGURE 3 AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN 02981 "WETLAND RESTORATION".

LEGEND

WETLAND DESIGNATION

- WETLAND
- ZONE B – WET MEADOW
- ZONE C – SCRUB SHRUB
- ZONE D – FLOODPLAIN FOREST

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK
W4 RESTORATION PLAN

FIGURE 6

1"=60' 60 0 60

FILE NO. 1118.43175.
OCTOBER 2014

National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

Sheet 6 of 12

O'BRIEN & GERE

FIGURE 7

NOTES:

1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" FIGURE 3, AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN 02981 "WETLAND RESTORATION".

LEGEND
WETLAND DESIGNATION

- WETLAND
- ZONE B - WET MEADOW
- ZONE C - SCRUB SHRUB
- ZONE D - FLOODPLAIN FOREST

NATIONAL GRID - HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION -
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK
W5 RESTORATION PLAN

National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

Sheet 7 of 12

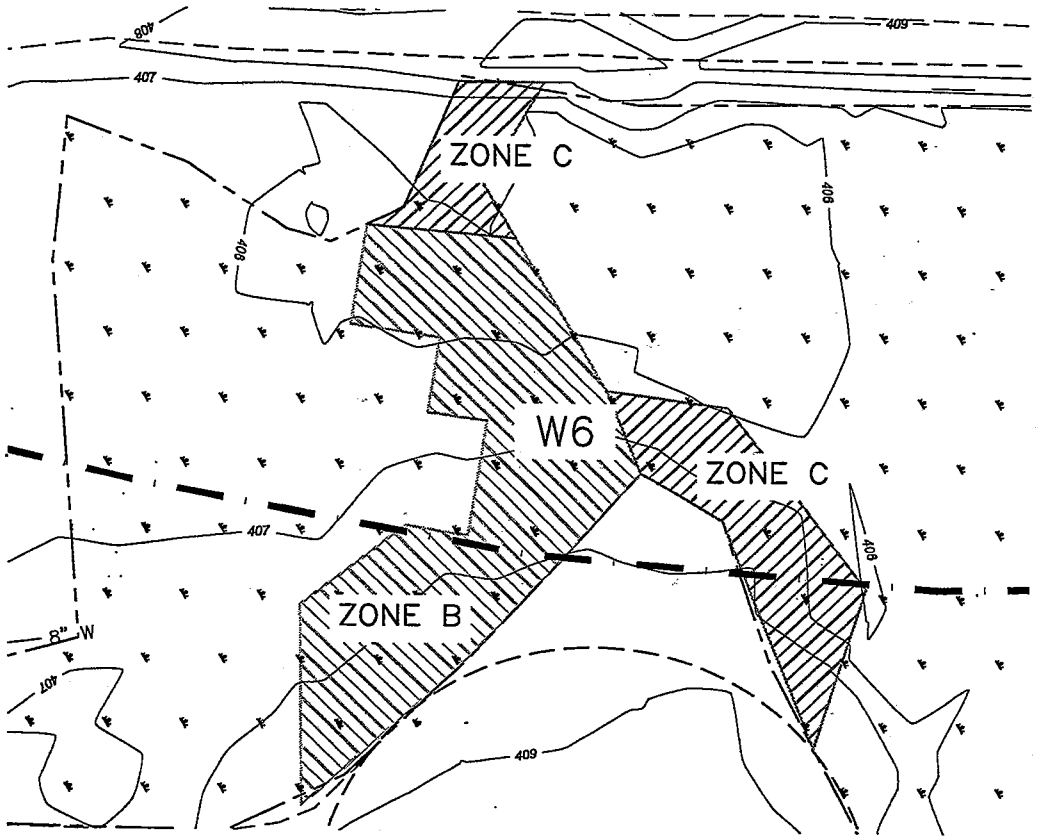
FILE NO. 1118.43175.
OCTOBER 2014

1"=60' 60 0 60

O'BRIEN & GERE

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG2.DWG

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG2.DWG



NOTES:

1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" FIGURE 3 AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN 02981 "WETLAND RESTORATION".

LEGEND

WETLAND DESIGNATION

- WETLAND
- ZONE B – WET MEADOW
- ZONE C – SCRUB SHRUB
- ZONE D – FLOODPLAIN FOREST

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK
W6 RESTORATION PLAN

FIGURE 8

1"=60' 60 0 60

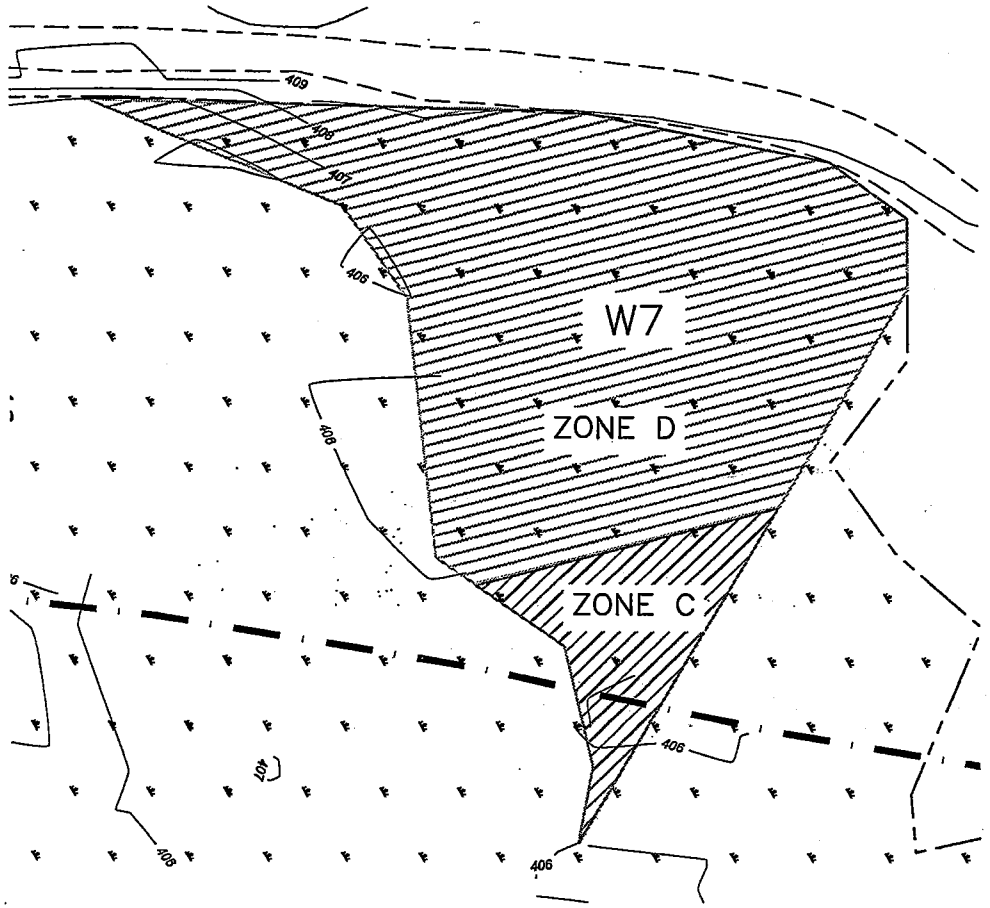
FILE NO. 1118.43175.
OCTOBER 2014

National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

Sheet 8 of 12

O'BRIEN & GERE

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\DOCS\DWG\COAL GAS PLANT\ACOE\43175-ACOE-FIG2.DWG



NOTES:

1. VEGETATIVE COVER TYPES SHOWN HERE REFLECT EXISTING (PRE-CONSTRUCTION) CONDITIONS OBSERVED BY O'BRIEN & GERE ON SEPTEMBER 26, 2013. DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL WETLAND RESTORATION DETAIL" FIGURE 3 AND THE VEGETATIVE SPECIES IDENTIFIED FOR THE RESPECTIVE RESTORATION ZONES SPECIFIED IN 02981 "WETLAND RESTORATION".

LEGEND

WETLAND DESIGNATION

- WETLAND
- ZONE B – WET MEADOW
- ZONE C – SCRUB SHRUB
- ZONE D – FLOODPLAIN FOREST

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK
W7 RESTORATION PLAN

FIGURE 9

FILE NO. 1118.43175.
OCTOBER 2014

1"=60'

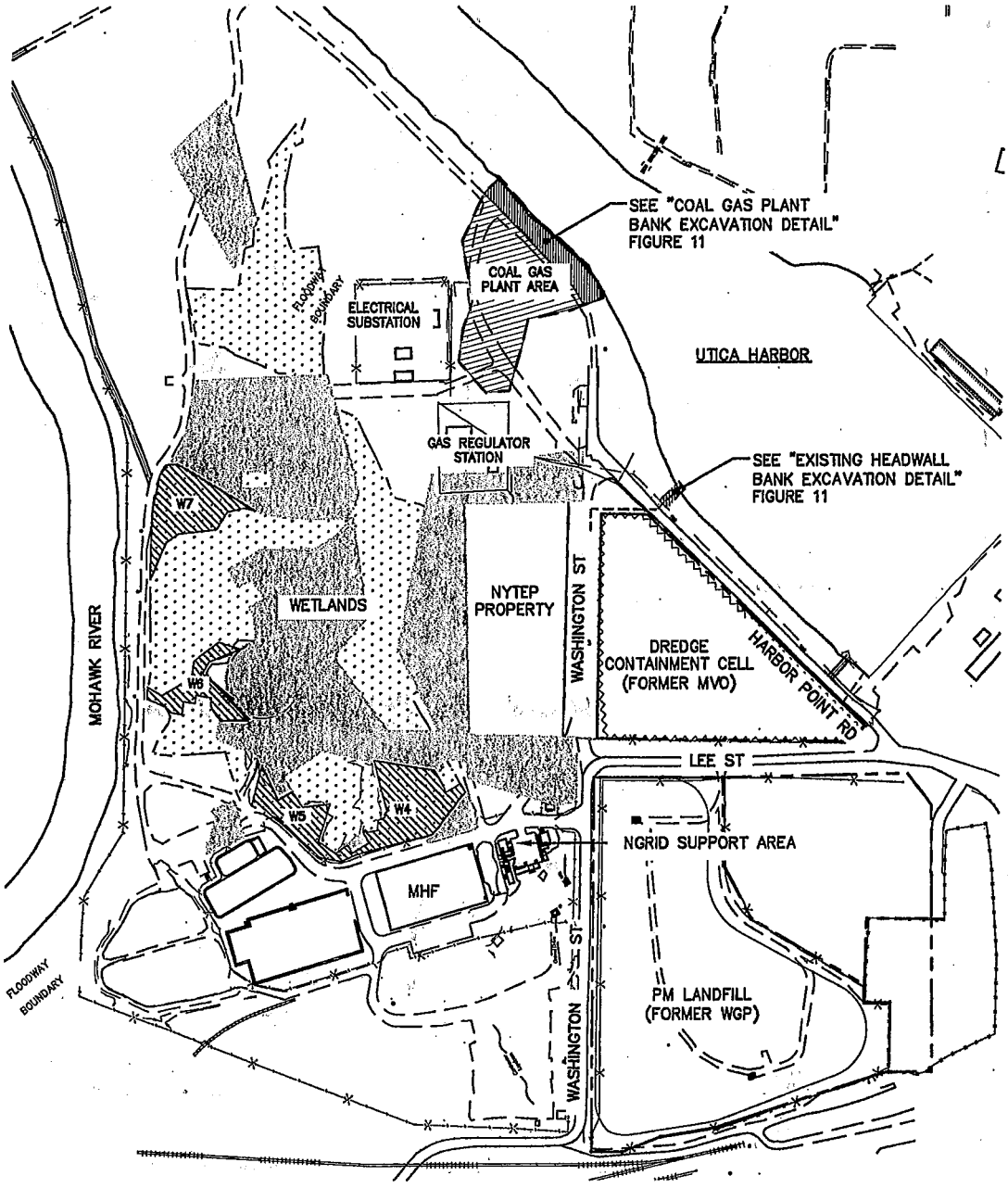
60 0 60

National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

Sheet 9 of 12

O'BRIEN & GERE

FIGURE 10



LEGEND

- PAH RESTORATION AREAS (COMPLETED EARLY 2014) PER 12/5/12 USACE AUTHORIZATION
- COAL GAS PLANT (SCHEDULED FOR 2015) PENDING USACE AUTHORIZATION
- COAL GAS PLANT (SCHEDULED FOR 2015) PER 12/5/12 USACE AUTHORIZATION
- ADDITIONAL WORK COAL GAS PLANT (SCHEDULED FOR 2015) PENDING USACE AUTHORIZATION

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

ADDITIONAL LIMITS OF WORK

FILE NO. 1118.43175.
DECEMBER 2014

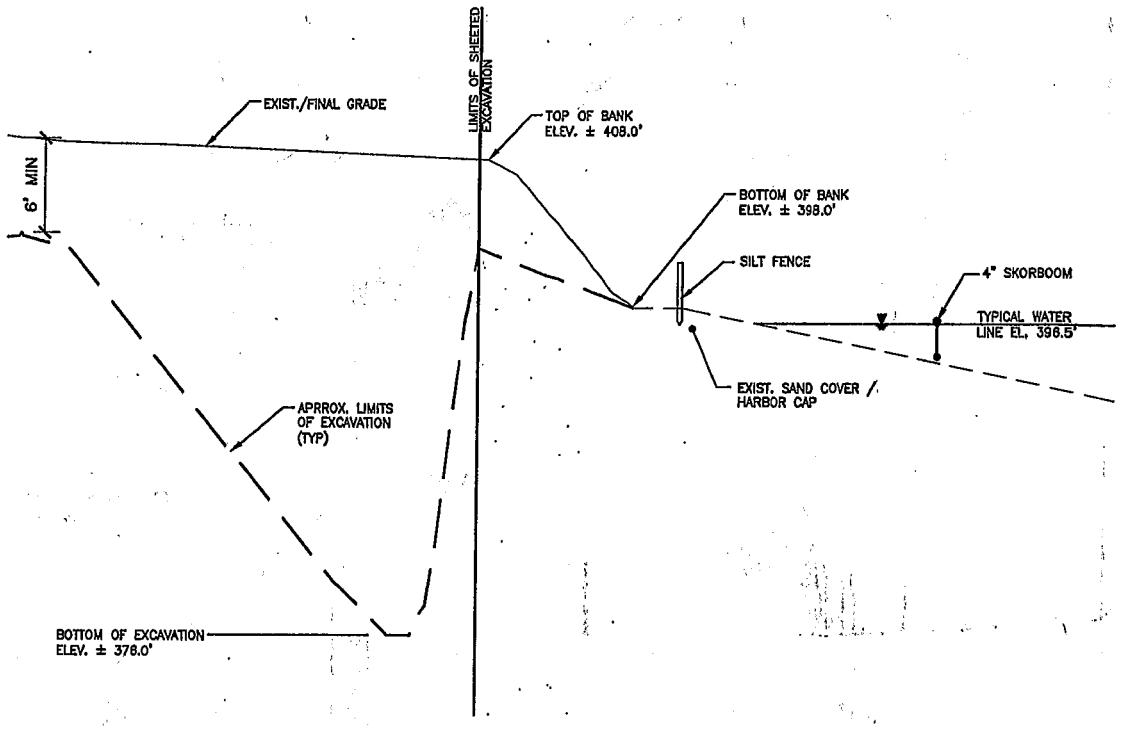
NOT TO SCALE

OBRIEN&GERE

Sheet 10 of 12

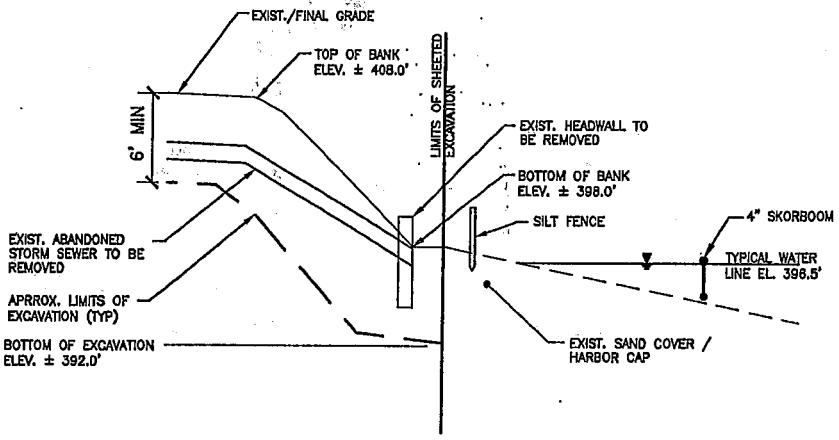
National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

FIGURE 11



COAL GAS PLANT BANK EXCAVATION DETAIL

NOT TO SCALE



EXISTING HEADWALL BANK EXCAVATION DETAIL

NOT TO SCALE

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION –
PAH–IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

DETAILS

NOT TO SCALE

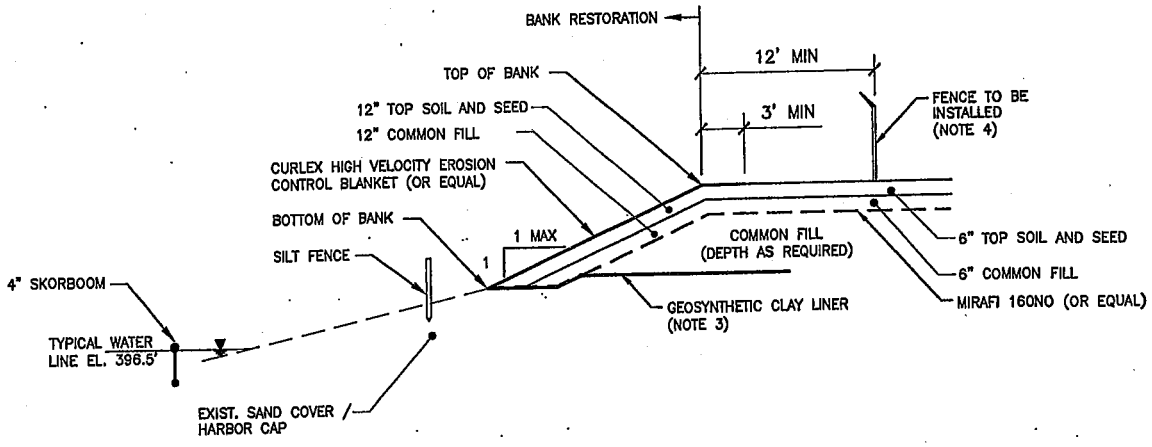
FILE NO. 1118.43175.
DECEMBER 2014

O'BRIEN & GERE

National Grid - Harbor Point
D/A Processing No. 2008-00854
Oneida County, New York

I:\NATIONAL–GRID.1118\43175.HARBOR–POINT–CO\CORRES\USACE\43175–FIG11–12.DWG

FIGURE 12



DETAIL NOTES:

1. ALL DISTURBED AREAS ALONG THE BANK SHALL BE COVERED WITH CURLEX HIGH VELOCITY EROSION CONTROL BLANKET. CURLEX HIGH VELOCITY EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
2. SILT FENCE AND SKORBOOM SHALL REMAIN IN PLACE UNTIL ALL RESTORATION ACTIVITIES HAVE BEEN PERFORMED AND ACCEPTED BY THE ENGINEER.
3. GEOSYNTHETIC CLAY LAYER SHOWN HERE SHALL ONLY BE INSTALLED IN AREAS THAT NAPL IS OBSERVED AT THE 6' EXCAVATION DEPTH.
4. EXISTING FENCE PREVIOUSLY REMOVED TO PERFORM THE WORK SHALL BE REPLACED IN KIND.
5. ALL BACKFILL MATERIAL, ASSOCIATED WITH BANK RESTORATION, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375-6.7(d)(1)(ii)(d). NO ON-SITE SOIL SHALL BE USED FOR BANK RESTORATION.
6. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH BANK RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375-6.7(d)(1)(ii)(b)) AND THE OCTOBER 3, 2008 RECORD OF DECISION MODIFICATION.
7. ALL VEGETATIVE BANK RESTORATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 02982 "FLOODPLAIN FOREST AND MEADOW RESTORATION".

TYPICAL BANK RESTORATION DETAIL
NOT TO SCALE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

DETAILS

FILE NO. 1118.43175.
DECEMBER 2014

NOT TO SCALE

O'BRIEN&GERE

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\CORRES\USACE\43175-FIG11-12.DWG

ACTIVITIES AUTHORIZED BY 2012 NATIONWIDE PERMIT WITHIN THE STATE OF NEW YORK

Expiration March 18, 2017

B. Nationwide Permits

38. Cleanup of Hazardous and Toxic Waste. Specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Court ordered remedial action plans or related settlements are also authorized by this NWP. This NWP does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 31.) (Sections 10 and 404)

Note: Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA as approved or required by EPA, are not required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act.

Buffalo District Only Permit-specific Regional Conditions: None

New York District Only Permit-specific Regional Conditions:

a. For those activities that are located within Essential Fish Habitat waters as defined in Section G-D.8. below, to the maximum extent practicable, no in-water work shall occur between March 1 and June 30.

b. For those activities that would impact more than 0.5 acres of waters of the United States, and are located within Essential Fish Habitat waters as defined in Section G-D.8. below, a complete copy of any PCN submitted to the Corps of Engineers shall also be forwarded by the applicant, directly to the National Marine Fisheries Service (NMFS) Habitat Conservation Division, 212 Rogers Avenue, Milford, Connecticut 06460. The applicant must provide evidence to the Corps that this has been accomplished. The Corps of Engineers will coordinate review of the PCN with the NMFS pursuant to the requirements of the Magnuson Stevens Fishery Conservation and Management Act.

Section 401 Water Quality Certification:
The New York State Department of Environmental Conservation (NYSDEC) has denied Section 401 Water Quality Certification in New York State for this Nationwide Permit. Any party conducting the activities authorized by this NWP must apply for and obtain an individual Section 401 Water Quality Certification from the New York State Department of Environmental Conservation.

New York State Department of State Coastal Zone Management Consistency Determination:
Pursuant to 15 CFR Part 930.41, the New York State Department of State (NYSDOS) concurs with the USACE consistency determination for this NWP with which all general and all Buffalo and New York District regional conditions are complied.

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined

to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to

ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

G. General Regional Conditions
These conditions apply to ALL Nationwide Permits.

G-A. Construction Best Management Practices (BMP's): Unless specifically approved otherwise through issuance of a waiver by the District Engineer, the following BMP's must be implemented to the maximum degree practicable, to minimize erosion, migration of sediments, and adverse environmental impacts. Note that at a minimum, all erosion and sediment control and stormwater management practices must be designed, installed and maintained in accordance with the latest version of the *"New York Standards and Specifications for Erosion and Sediment Control"* and the *"New York State Stormwater Management Design Manual"*. These documents are available at: http://www.dec.ny.gov/chemical/29066.html and http://www.dec.ny.gov/chemical/29072.html , respectively.

1. All synthetic erosion control features (e.g., silt fencing, netting, mats), which are intended for temporary use during construction, shall be completely removed and properly disposed of after their initial purpose has been served. Only natural fiber materials, which will degrade over time, may be abandoned in place.

2. Materials resulting from trench excavation for utility line installation or ditch reshaping activities which are temporarily sidecast or stockpiled into waters of the United States must be backfilled or removed to an upland area within 30 days of the date of deposition. Note: upland options shall be utilized prior to temporary placement within waters of the U.S., unless it can be demonstrated that it would not be practicable or if the impacts of complying with this upland option requirement would result in more adverse impacts to the aquatic environment.

3. For trenching activities in wetlands the applicant shall install impermeable trench dams or trench breakers at the wetland boundaries and every 100 feet within wetland areas to prevent inadvertent drainage of wetlands or other waters of the United States.

4. Dry stream crossing methods (e.g., diversion, dam and pump, flume, bore) shall be utilized for culvert or other pipe, or utility installations to reduce downstream impacts from turbidity and sedimentation. This may require piping or pumping the stream flow around the work area and the use of cofferdams.

5. No in-stream work shall occur during periods of high flow, except for work that occurs in dewatered areas behind temporary diversions, cofferdams or causeways.

6. Construction access shall be by means that avoid or minimize impacts to aquatic sites (e.g. upland access, floating barges, mats, etc.). Discharges of fill material associated with the construction of temporary access roads and work pads in wetlands shall be placed on filter fabric. All temporary fills shall be removed upon completion of the work and the disturbed area restored to pre-construction contours, elevations and wetland conditions.

7. All return flow from dredge material disposal areas shall not result in an increase in turbidity in the receiving water body that will cause a substantial visible contrast to natural conditions. (See NWP #16)

8. For activities involving the placement of concrete into waters of the U.S., the permittee must employ watertight forms. The forms shall be dewatered prior to the placement of the concrete. The use of tremie concrete is allowed, provided that it complies with New York State water quality standards.

9. New stormwater management facilities shall be located outside of waters of the U.S. A waiver of this requirement may be requested with the submission of a PCN. The PCN must include justification which demonstrates that avoidance and minimization efforts have been met.

10. To the maximum extent practicable, the placement of fill in wetlands must be designed to maintain pre-construction surface water flows/conditions between remaining on or off-site waters. This may require the use of culverts and/or other measures. Furthermore, the activity must not restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters). The activity may alter the pre-construction flows/conditions if it can be shown that it benefits the aquatic environment (i.e. wetland restoration and/or enhancement).

11. In order to ensure compliance with NWP General Condition #2 – Aquatic Life Movement and #9 Management of Water Flows, all new or replacement culverts shall be constructed/installed in accordance with the following:

General Information:

a. Use of the following requirements and recommendations alone will not satisfy the need for proper engineering and design. In particular, appropriate engineering is required to ensure structures are sized

and designed to provide adequate capacity (to pass various flood flows) and stability (bed, bed forms, footings and abutments).

b. Site specific information (i.e. stream bed slope, type and size of stream bed material, stream type, existing natural or manmade barriers, etc.) should be assessed to determine appropriate culvert design and to ensure management of water flows and aquatic life movement.
c. Before replacing a culvert or other crossing structure with a larger structure it is essential that the replacement be evaluated for its impacts on: downstream flooding, upstream and downstream habitat (in-stream habitat, wetlands), potential for erosion and headcutting, and stream stability.
d. Measures should be included in all culvert designs that will promote the safe passage of fish and other indigenous aquatic organisms.
e. The dimension, pattern, and profile of the stream above and below the stream crossing should not be permanently modified by changing the width or depth of the stream channel.

Preconstruction Notification (PCN)/Waiver Requirements:

A. A PCN is not required for projects that are designed to meet Requirements B and C, below, unless a PCN is otherwise required by the NWP regulations.

B. In order to comply with General Condition #2 Aquatic Life Movement, either a bottomless culvert or bridge must be used where practicable. If the stream cannot be spanned, the culvert must be installed with its bottom buried (embedded) below the grade of the stream bed where practicable. (Note: When not practicable to do so due to small culvert size, it is suitable to allow natural deposition to cover the interior of the culvert bed.)

   i. A minimum of three stream channel cross sections shall be taken at proximal locations to the crossing location to determine the average of the lowest points in elevation of the stream bed. This average low point shall be used to ensure low flow is maintained through the culvert and from which all embedment depths are measured.
   ii. To ensure low flow and aquatic life movement is maintained, an embedment depth of a minimum of 20 percent of the culvert vertical rise throughout the length of the culvert is recommended. Additionally, it is recommended that the culvert bed slope remain consistent with the slope of the adjacent stream channel.

C. In order to comply with General Condition #9 Management of Water Flows, bank-full flows shall be accommodated through maintenance of the existing bank-full channel cross sectional dimensions within the culvert. Bank-full width is generally considered to be the top width at the stage where a stream begins to overtop its banks and spread into the floodplain.

   i. An average of three measurements (project location and straight sections of the stream upstream and downstream) shall be used to determine appropriate opening width. If the project is a replacement of an existing structure then only upstream and downstream locations shall be used to compute the average.
   ii. To ensure bank-full flow is accommodated by the culvert, it is recommended that minimum culvert widths include a minimum of 1.25 times width of the stream channel at the ordinary high water or a 2 year design storm.

D. In summary, a PCN is required, requesting a waiver of the above requirements for projects where:
   i. both spanning the waterway and embedding are found to be not practicable;
   ii. embedding is practicable but the recommendations for embedment depth cannot be met;
   iii. bank-full flow will not be accommodated within the culvert;
   iv. less than the recommended minimum culvert width is proposed

E. In addition to the PCN requirements of General Condition #31, the PCN must include the following information:
   i. a note indicating which of the above requirements will not be met by the proposed project;
   ii. information as to why the use of such structures or measures would not be practicable;
   iii. a brief description of the stream discussing the items outlined in the above General Information section;
   iv. the cross sections of the stream used to calculate the stream bed low point and bank-full

width;

v. an evaluation of the effects the crossing would have on aquatic life movement and/or water flows; and

vi. mitigation measures that will be employed to minimize these effects.

A waiver of the requirement(s) will be issued if it can be demonstrated that the proposal would result in the least environmentally damaging practicable alternative (e.g. compliance with any of the requirement(s) would result in detrimental impacts to the aquatic system).

12. Culvert Rehabilitation Projects, not including culvert replacement projects:

a. A PCN is required for culvert rehabilitation projects which will involve pipe slip lining or other activities, including concrete invert paving and concrete lining, that raise the existing invert elevation such that it causes an impediment to the passage of low flow or aquatic life movement. A PCN is not required for projects that utilize cured-in-place pipe lining. Slip lining is defined as the insertion of a smaller diameter pipe into an existing pipe by pulling pushing, or spiral winding.

b. Culvert rehabilitation projects shall assess the existing culvert, prior to the proposed repair, for compliance with Nationwide Permit General Conditions (GC) #2 (Aquatic Life Movements) and #9 (Management of Water Flows). If an impediment is found to exist, a PCN is required for any rehabilitation project.

c. For all projects requiring PCN, the applicant must provide an evaluation of the existing culvert and proposed rehabilitation project and their effects upon aquatic life movements and low/ high flow conditions in order to show compliance with GC #2 & #9. For those culverts that will impede the movement of aquatic life and water flows, the applicant must provide information as to how they will mitigate for those deficiencies. Mitigation measures may include, but are not limited to baffles, weirs, roughened channels, and grade control structures.

G-B. No regulated activity authorized by a Nationwide Permit can cause the loss of areas classified as a bog or fen in the State of New York, as determined by the Buffalo or the New York District Corps of Engineers, due to the scarcity of this habitat in New York State and the difficulty with in-kind mitigation. The Districts will utilize the following document in the classification:

Reschke, C. 1990. *Ecological Communities of New York State.* New York Natural Heritage Program. New York State Department of Environmental Conservation. Latham, N.Y. 96p. This document is available at the following location: http://www.dec.ny.gov/animals/29389.html

G-C. National Wild and Scenic Rivers (NWSR): The Upper Delaware River has been designated as a National Wild and Scenic River from the confluence of the East and West Branches below Hancock, New York, to the existing railroad bridge immediately downstream of Cherry Island in the vicinity of Sparrow Bush, New York. Also, the portion of the Genesee River located within Letchworth Gorge State Park, beginning at the southern boundary of the park and extending downstream to the Mt. Morris Dam, was designated by Congress as a permanent Study River in the Genesee River Protection Act of 1989. In accordance with General Condition #16, no activity may occur within a NWSR, including Study Rivers, unless the National Park Service (NPS) has determined in writing that the proposed work will not adversely affect the NWSR designation or study status. Therefore, a PCN is required for any NWP which would impact the designated portions of the Genesee River or the Upper Delaware River. (Note: the applicant may not commence work under any NWP until the NPS determines in writing that the project will not adversely affect the NWSR even if 45-days have passed since receipt of the PCN package.) Information regarding NWSR may be found at: http://www.rivers.gov/wildriverslist.html

G-D. For all proposals requiring a pre-construction notification (PCN), in addition to the requirements in General Condition 31, the applicant shall also include: (Note: the application will not be considered complete until all of the applicable information is received).

1. **New York State/USACE Joint Application Form:** The application form shall be completed and signed and shall clearly indicate that the submission is a PCN.

2. **Drawings:** The PCN must include legible, black and white project drawings on 8.5" x 11" paper. Full size drawings may be submitted in addition to the 8.5" x 11" plans to aid in the application review. Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are a Vicinity Map (i.e. a location map such as a USGS topographical map), a Plan View and a Cross-Section Map. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view or cross section). The Vicinity Map shall provide the location of the entire project site. In addition, each illustration should be identified with a figure or attachment number. The location map shall include the Latitude and Longitude or UTM coordinates of the project. For linear projects, the PCN shall include a map of the entire project including a delineation of all waters of the U.S. within the corridor. Aquatic resource information shall be submitted using the Cowardin Classification System mapping conventions (e.g. PFO, PEM, etc.)

3. **Color photographs:** The photos should be sufficient to accurately portray the project site, keyed to a location map and not taken when snow cover is present.

4. **Avoidance and Minimization:** The PCN must include a written narrative explaining how avoidance and minimization of temporary impacts and permanent losses of waters of the U.S. were achieved on the project site (i.e. site redesign, reduction in scope, alternate methods, etc). It should include a description of the proposed construction practices that would be implemented to perform the proposed work and a description of the reasonably foreseeable direct and indirect effects to waters of the U.S. from the proposed construction practices.

5. **Mitigation**(See General Conditions 23 & 31(b)(5)):The PCN must include at least a conceptual compensatory mitigation plan for all projects resulting in the loss of greater than $1/10^{th}$ of an acre of waters of the United States; or for which a waiver of the 300 linear foot limit on intermittent and ephemeral streams is being requested. Mitigation conceptual plans submitted with the PCN must include the following information at a minimum: proposed compensation type (bank or in-lieu fee credit, restoration, creation, preservation, etc.), location and brief discussion on factors considered for site selection (i.e. soils, water source, potential for invasive species, etc.), amount proposed per resource type and a discussion of how the proposal will compensate for aquatic resource functions and services lost as a result of the project.
Note 1: All mitigation projects must comply with the Federal Regulations on compensatory mitigation (33 CFR 332) entitled "Compensatory Mitigation for Losses of Aquatic Resources: Final Rule", dated April 10, 2008, which is available at: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title33/33cfr332_main_02.tpl, and any applicable District Guidelines.
Note 2: Although a conceptual mitigation plan may be sufficient for the purposes of a PCN submission, a detailed mitigation plan must be approved by the Corps before any jurisdictional work may occur on the project site.

6. **Nationwide Rivers Inventory:** The PCN shall indicate if a river segment listed within the National Park Service Nationwide Rivers Inventory (NRI) is located within the proposed project area. For project areas containing a listed NRI segment, the PCN shall also include a statement as to how adverse effects to the river have been avoided or mitigated. The list is available at: http://www.nps.gov/ncrc/programs/rtca/nri/states/ny.html.

7. **Historic or Cultural Resources:** In accordance with General Condition 20, a PCN is required for any non-federal activity which may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places. Please refer to General Condition 20 for submission requirements. In addition, all PCNs must include a written statement indicating if any such properties may be affected by the proposed project. A copy of any completed survey reports shall be provided with the PCN. If a survey has not been performed, the statement shall include a list of resources checked in the determination. Copies of any available correspondence from the New York State Office of Parks, Recreation, and Historic Preservation State Historic Preservation Officer (SHPO) regarding historic properties shall be provided with the PCN. Information regarding cultural resources may be found at: http://nysparks.state.ny.us/shpo/. In addition, assistance regarding the determination of the presence of historic or cultural resources at or near the project site should be directed to SHPO. NOTE: as stated in General Condition 20, if any listed, eligible or potentially eligible properties are present, the applicant shall not begin the activity until notified by the district engineer in writing either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

8. **Endangered Species** (See General Condition 18) **and Essential Fish Habitat:** The PCN must include a written statement and documentation concerning any Essential Fish Habitat (EFH) and any federally listed Threatened and Endangered (T&E) species or designated critical habitat that might be affected or is in the vicinity of the project, or

if the project is located in designated critical habitat. The PCN must include a copy of any correspondence from the U.S. Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration Fisheries Service (NOAA-Fisheries) formerly National Marine Fisheries Service (NMFS), regarding the presence of T&E species or evidence that the applicant has utilized the USFWS T&E website: http://www.fws.gov/northeast/nyfo/es/section7.htm. Information on NOAA-Fisheries (NMFS) species (both T&E and EFH) can be found at: http://www.nero.noaa.gov/nero.
Website evidence shall include a County list of T&E species. For projects located in counties containing T&E species, the PCN shall also include a discussion of potential T&E habitat within the project site. If there is potential habitat for any Federally listed species within the project site the following should be submitted:

a. The results of any habitat surveys and presence/absence surveys. Note: all surveys should be coordinated with the USFWS and/or NOAA-Fisheries(NMFS) prior to initiation.

b. A detailed description of the proposed project, including secondary impacts and approximate proposed project construction schedule of project activities (e.g. land clearing, utilities, stormwater management).

c. A description of the natural characteristics of the property and surrounding area (e.g. forested areas, freshwater wetlands, open waters, and soils). Additionally, please include a description of surrounding land use (residential, agricultural, or commercial).

d. A description of the area to be impacted by the proposed project, including the species and number or acres of trees to be removed.

e. The location of the above referenced property and extent of any project related activities or discharges clearly indicated on a copy of a USGS 7.5 minute topographic quadrangle (quad) with the name of the quad(s) and latitude/longitude clearly labeled.

f. A description of conservation measures to avoid or minimize impacts to listed species.

Please note that there are no known threatened or endangered (T&E) species or EFH species under the jurisdiction of the NOAA-Fisheries (NMFS) within the Buffalo District. Therefore, all Buffalo District requests for information regarding the presence of T&E species should be directed to the USFWS.

General Condition #18 is emphasized, ..."In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed work will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed."

9. **100 Year Floodplain:** For permanent fills within waters of the United States within the 100 year floodplain, documentation of compliance with FEMA-approved state or local floodplain management requirements.

10. **Submission of Multiple Copies of PCN:**

a) One (1) additional copy of the PCN package shall be provided to USACE for coordination with National Oceanic and Atmospheric Administration (NOAA) for utility lines to be constructed or installed in navigable waters of the U.S. proposed under NWP #12, (See Note 1 of NWP #12)

b) One (1) additional copy of the PCN package shall be provided to USACE for coordination with Department of Defense Siting Clearinghouse (See NWP #12, 39, 51 & 52 Notes) for:
   i. overhead utility lines proposed under NWP #12 and
   ii. any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission lines proposed under NWP #39, 51 or 52

c) Two (2) additional copies of the PCN package shall be provided to USACE when the project is located within the New York City Watershed, for coordination with the New York City Department of Environmental Protection.

d) Five (5) additional copies of the PCN package shall be submitted to USACE for agency coordination in accordance with General Condition # 31(d)(2) for:
   i. All NWP activities that result in the loss of greater than 1/2-acre of waters of the United States,
   ii. NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed,
   iii. All NWP 48 activities requiring pre-construction notification.

G- E. CRITICAL RESOURCE WATERS

In accordance with NWP General Condition (GC) #22, certain activities in Critical Resource Waters cannot be authorized under the NWP program or would require a PCN (see GC #22 for a list of the NWP activities that are either excluded or require a PCN).

Critical Resource Waters in New York State include the following:

1. **East-of-Hudson portion of the New York City Water Supply:** This area includes portions of Dutchess, Putnam and Westchester Counties as delineated on Enclosure 2.

2. **Hudson River National Estuarine Research Reserves (NERR):** The Hudson River NERR consists of four components: Piermont Marsh, Iona Island, Tivoli Bay, and Stockport Flats.

H. NYSDEC General Water Quality Certification (WQC) Conditions applicable to all NWPs for which WQC has been provided are as follows:

1. Non-contamination of Waters:
• All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, resins, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

2. Installation and Maintenance of Culverts:
• This certification does not authorize the installation of any culverts that are not embedded beneath the existing grade of the stream channel.
• This certification does not authorize culvert rehabilitation projects that involve slip lining, invert paving, or similar treatments that can result in an impediment to the passage of aquatic life movement through the culvert.
• This certification does authorize the rehabilitation of culverts utilizing Cure in Place Pipe Lining (CIPP) or concrete spray lining for culverts which currently meet Nationwide Permit General Condition # 2 - Aquatic Life Movements.

3. Discharges and Disturbances:
• Except for Nationwide Permit # 3, 4, 20, 22, 27, 30, 33, 37, 41 and maintenance activities under Nationwide Permit 43, this certification does not authorize discharges greater than 1/4 acre in size or more than 300 feet of stream disturbance.

4. Maintenance of Water Levels:
• Except for Nationwide Permit 27, this certification does not authorize any activity that results in a permanent water level alteration in waters of the United States, such as draining or impounding.

5. Dewatering:
• Authorized dewatering is limited to immediate work areas that are cofferdammed or otherwise isolated from the larger water body or waters of the United States. Dewatering must be localized and not drain extensive areas of a water body or reduce the water level such that fish and other aquatic vertebrates are killed, or their eggs and nests are exposed to desiccation, freezing or depredation in areas outside of the immediate work site.
• Cofferdams or diversions shall not be constructed in a manner that causes or exacerbates erosion of the bed or banks of a watercourse.
• All dewatering structures must be permanently removed when construction is completed.

6. Endangered or Threatened Species:
• Applicants must certify that the proposed activity will not jeopardize the existence of an endangered species or threatened species listed in 6 NYCRR Part 182, or likely to destroy or adversely modify the habitat of such species. Information on New York State endangered or threatened species may be obtained from the NYS Department of Environmental regional offices, the New York Natural Heritage Program in Albany, New York or on the NYSDEC website at http://www.dec.ny.gov/animals/29338.html. If it is determined that there is a species of concern that may be impacted by the proposed activity, this blanket water quality certification is not applicable, and the applicant will need an individual water quality certification from the Department.

7. Prohibition Period/or In-stream Work:
Unless approved in writing by the Regional Natural Resources Supervisor or their designee, in-stream work is prohibited during the following time periods:

- in cold water trout fisheries (waters classified under Article 15 of New York's Environmental Conservation Law with a "t" or "ts" designation), beginning October 1 and ending May 31
- in perennial warm water fisheries, (non- trout waters classified under Article 15 of New York's Environmental Conservation Law as "A, B or C"), beginning March 1 and ending July 15.

To determine which prohibition period is in effect for a particular water, contact the Regional Natural Resources Supervisor in the appropriate NYSDEC regional office.

8. Significant Coastal Fish and Wildlife Habitat:
• This certification does not authorize any discharge occurring in a designated Significant Coastal Fish and Wildlife Habitat area pursuant to 19 NYCRR Part 602 ; Title 19 Chapter 13, Waterfront Revitalization and Coastal Resources.

9. Coastal Erosion Hazard Areas:
• This certification does not authorize projects in Coastal Erosion Hazard Areas, as identified in NYS Environmental Conservation Law (ECL) Article 34, and its implementing regulations, 6 NYCRR Part 505.

10. State-owned Underwater Lands:
• Prior to undertaking any Nationwide Permit activity that will involve or occupy state owned lands now or formerly under the waters of New York State, the party proposing the activity must first obtain all necessary approvals from:

NYS Office of General Services
Division of Real Estate Development
Corning Tower Building, 26th Floor
Empire State Plaza
Albany, NY 12242
Tel. (518) 474-2195

11. Tidal Wetlands:
• This authorization does not authorize any activities in tidal wetlands as defined in Article 25 of NYS ECL, with the exception of NWP # 4, 20 and 48.

12. Wild, Scenic and Recreational Rivers:
• This certification docs not authorize activities in any Wild, Scenic or Recreational River or state designated WSR corridors.

13. Floodplains:
• Authorized projects must be in compliance with State and Local Floodplain Regulations.

14. Combined use of permits:
• This authorization does not allow the stacking of NWPs so that in combination they exceed *1/4* of an acre of fill or 300 linear feet of stream disturbance. When used in combination, the most restrictive conditions apply.

15. Public Service Commission:
• This certification does not authorize activities regulated pursuant to Article VII of the New York State Public Service Law. For such projects, Section 401 Water Quality Certification is obtained from the New York State Public Service Commission.

16. Utility Projects:
• This certification does not authorize maintenance or other activities associated with hydropower projects.
• This certification does not authorize the construction of substation facilities or permanent access roads in wetlands or within the FEMA mapped 100 year floodplain.
• Excess materials resulting from trench excavation must be moved out of the wetland and contained so that they do not re-enter any waters of the United States.

I. New York State Department of State (NYSDOS) Coastal Zone Management Consistency Determination applicable to all NWPs located within or affecting the NYS Coastal Zone:

To ensure that the NWPs and activities authorized by USACE would be consistent with the NYS Coastal Management Program and approved LWRPs, the following conditions will apply to NWPS where NYSDOS has objected to the USACE consistency determination or where the project will not comply with the NYSDOS NWP specific condition(s):

The applicant will submit a request for an individual consistency determination to NYSDOS. Within thirty (30) days of receipt by NYSDOS of an applicant's submission, which should include a complete joint New York State Department of Environmental Conservation and U.S. Army Corps of Engineers Permit Application, completed Federal Consistency Assessment Form, and all information and data necessary to assess the effects of the proposed activity on and its consistency with the CMP, including location maps and photographs of the site where the activity is proposed, NYSDOS will inform the applicant and the Corps whether:

1) Necessary data and information is missing from the applicant's submission. If so, the NYSDOS will notify the applicant and the Corps of the missing necessary data and information, and state that the NYSDOS review will not commence until the date the necessary data and information is provided;

2) The activity meets the General Concurrence criteria set forth in the CMP and therefore, further review of the proposed activity by the NYSDOS, and the NYSDOS concurrence with an individual consistency certification for the proposed activity, are not required; or

3) NYSDOS review of the proposed activity and NYSDOS concurrence with the applicant's consistency certification is necessary. If NYSDOS indicates review of the activity and a consistency certification for it is necessary, the activity shall not be authorized by NWP or other form of Corps authorization unless NYSDOS concurs with an applicant's consistency certification, in accordance with 15 CFR Part 930, Subpart D, or unless NYSDOS indicates the activity meets CMP General Concurrence criteria (see item 2 above).

NYSDOS concurrence with an applicant's consistency certification shall not be presumed unless NYSDOS fails to concur with or object to an applicant's consistency certification within six (6) months of commencement of NYSDOS review of an applicant's consistency certification and all necessary data and information in accordance with 15 CFR Parts 930.62 or 930.63.

Notes:

- Unless NYSDOS issues consistency concurrence or USACE has determined that NYSDOS concurrence is presumed, NWPs are not valid within the Coastal Zone.

- Limits of the coastal zone, including the CMP special management area designations of Significant Coastal Fish and Wildlife Habitats (SCFWH), can be viewed at: http://www.dos.ny.gov/communitieswaterfronts/atlas/index.html Local Waterfront Revitalization Program information can be viewed at: http://www.dos.ny.gov/communitieswaterfronts/WFRevitalization/LWRP_status.html
- All consistency concurrence determination requests must be submitted directly to NYSDOS.
- Details regarding NYSDOS submission requirements can be obtained at: http://www.dos.ny.gov/communitieswaterfronts/consistency/federal.html

J. INFORMATION ON NATIONWIDE PERMIT VERIFICATION

Verification of the applicability of these Nationwide Permits is valid until March 19, 2017 unless the Nationwide Permit is modified, suspended revoked, or the activity complies with any subsequent permit modification.

It is the applicant's responsibility to remain informed of changes to the Nationwide Permit program. A public notice announcing any changes will be issued when they occur and will be available for viewing at our website: http://www.lrb.usace.army.mil/Missions/Regulatory.aspx.

Please note in accordance with 33 CFR part 330.6(b), that if you commence or are under contract to commence an activity in reliance of the permit prior to the date this Nationwide permit expires, is suspended or revoked, or is modified such that the activity no longer complies with the terms and conditions, you have twelve months from the date of permit modification, expiration, or revocation to complete the activity under the present terms and conditions of the permit, unless the permit has been subject to the provisions of discretionary authority.

Possession of this permit does not obviate you of the need to contact all appropriate state and/or local governmental officials to insure that the project complies with their requirements.

NOTE: This document is an excerpt of the May 30, 2012 Public Notice by USACE Buffalo & New York Districts. The above referenced Enclosures 2-4 and Appendix A are not included in this Buffalo District document as they are only applicable within the geographic boundaries of the New York District. The Public Notice is available at the USACE websites or by contacting the Districts at the addresses provided below in Section K.

K. AGENCY CONTACT INFORMATION

NYS Department of Environmental Conservation

www.dec.ny.gov

NYS DEC REGION 1
Regional Permit Administrator
SUNY @ Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409
(631) 444-0365

NYS DEC REGION 2
Regional Permit Administrator
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101-5407
(718) 482-4997

NYS DEC REGION 3
Regional Permit Administrator
21 South Putt Corners Road
New Paltz, NY 12561-1620
(845) 256-3054

NYS DEC REGION 4
Regional Permit Administrator
1130 North Westcott Road
Schenectady, NY 12306-2014
(518) 357-2069

NYS DEC REGION 4 Sub-Office
Deputy Regional Permit Administrator
65561 State Hwy 10
Stamford, NY 12167-9503
(607) 652-7741

NYS DEC REGION 5
Regional Permit Administrator
PO Box 296
1115 Route 86
Ray Brook, NY 12977-0296
(518)897-1234

NYS DEC REGION 5 Sub-Office
Deputy Regional Permit Administrator
PO Box 220
232 Golf Course Rd
Warrensburg, NY 12885-0220
(518) 623-1281

NYS DEC REGION 6
Regional Permit Administrator
317 Washington Street
Watertown, NY 13601-3787
(315) 785-2245

NYS DEC REGION 6 Sub-Office
Deputy Regional Permit Administrator
207 Genesee Street
Utica, NY 13501-2885
(315) 793-2555

NYS DEC REGION 7
Regional Permit Administrator
615 Erie Blvd. West
Syracuse, NY 13204-2400
(315)426-7438

NYS DEC REGION 7 Sub-Office
Deputy Regional Permit Administrator
1285 Fisher Avenue
Cortland, NY 13045-1090
(607) 753-3095

NYS DEC REGION 8
Regional Permit Administrator
6274 E. Avon - Lima Road
Avon, NY 14414-9519
(585) 226-2466

NYS DEC REGION 9
Regional Permit Administrator
270 Michigan Avenue
Buffalo, NY 14203-2915
(716) 851-7165

NYS DEC REGION 9 Sub-Office
Deputy Regional Permit Administrator
182 East Union Street
Allegany, NY 14706-1328
(716) 372-0645

NYS Department of State

Division of Coastal Resources
Consistency Review Unit
One Commerce Plaza
99 Washington Avenue, Suite 1010
Albany, NY 12231-00001
(518) 474-6000
www.nyswaterfronts.com
PO Box 296
1115 Route 86
Ray Brook, NY 12977-0296
(518) 897-1234

US Army Corps of Engineers

www.usace.army.mil

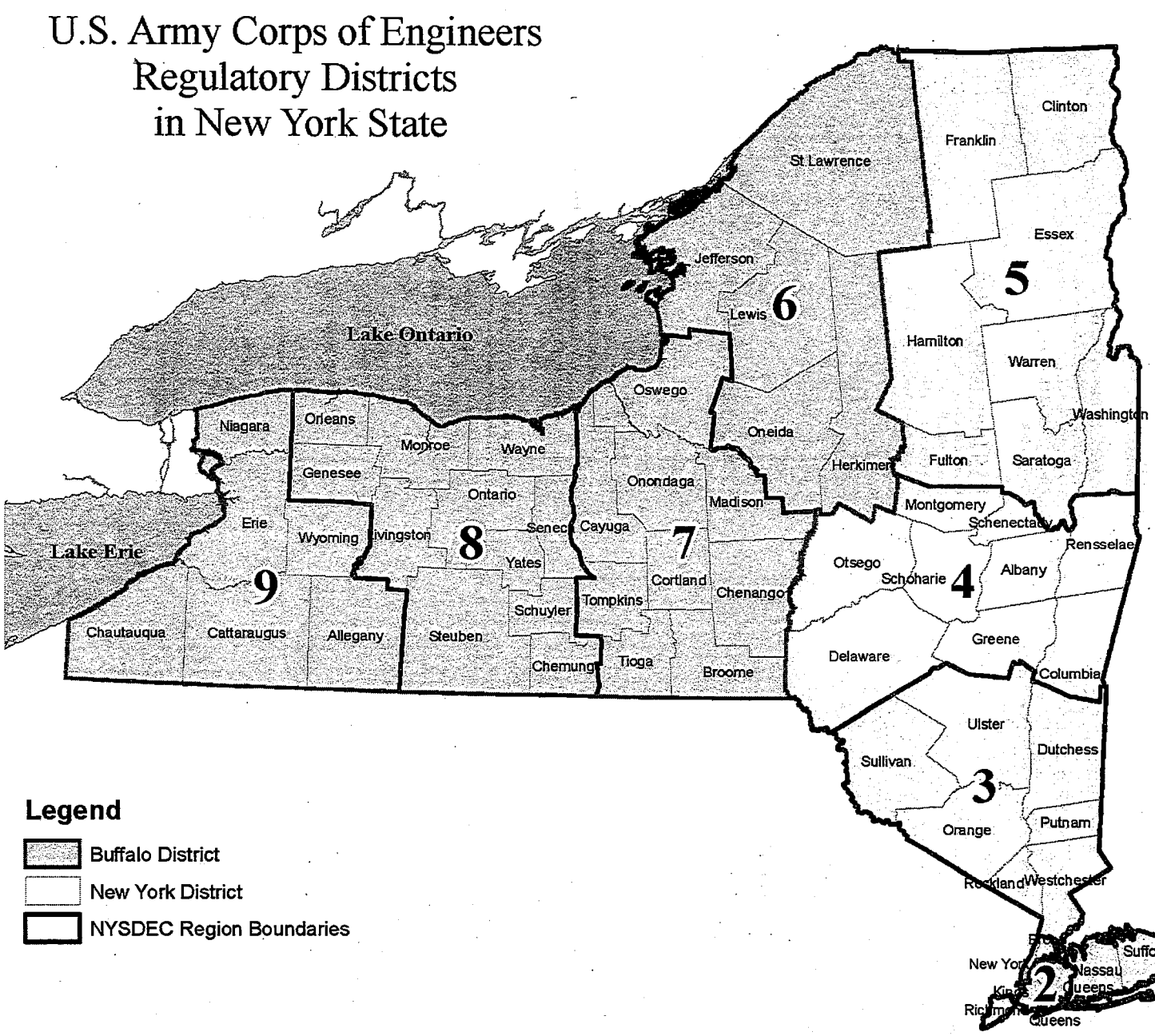
For DEC Regions 1, 2 and 3
US Army Corps of Engineers NY District
ATTN: Regulatory Branch
26 Federal Plaza, Room 1937
New York, NY 10278-0090
Email: CENAN.PublicNotice@usace.army.mil
For DEC Regions 1, 2, Westchester County and Rockland County (917) 790-8511
For the other counties of DEC Region 3 -
(917) 790-8411

For DEC Regions 4, 5
Department of the Army
ATTN: CENAN-OP-R
NY District, Corps of Engineers
1 Buffington Street
Building 10, 3rd Floor
Watervliet, NY 12189-4000
(518) 266-6350 - Permits team
(518) 266-6360 - Compliance Team

Email: cenan.rfo@usace.army.mil

For DEC Regions 6, 7, 8, 9
US Army Corps of Engineers
Buffalo District
ATTN: Regulatory Branch
1776 Niagara Street
Buffalo, NY 14207-3199
(716) 879-4330
Email: LRB.Regulatory@usace.army.mil
www.lrb.usace.army.mil

U.S. Army Corps of Engineers Regulatory Districts in New York State



Legend

- Buffalo District
- New York District
- NYSDEC Region Boundaries

Buffalo District

Regulatory Branch, District Office
1776 Niagara Street
Buffalo, New York 14207
(716) 879-4330

Regulatory Branch, Auburn Field Office
7413 County House Road
Auburn, New York 13021
(315) 255-8090

New York District

Regulatory Branch, District Office
26 Federal Plaza
New York, New York 10278-0090
(917) 790-8411

Regulatory Branch, Upstate Field Office
1 Buffington Street
Watervliet, New York 12189-4000
(518) 266-6350

U.S. Army
Corps of Engineers

ENCLOSURE 1

NATIONWIDE PERMIT SPECIAL CONDITIONS

1. All work will be conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000 and NYSDEC Record of Decision Operable Unit No. 1, and the NYSDEC Water Quality Certification dated March 2, 2015 (Appendix A).
2. If any tree clearing (dead or alive) greater than three inches Diameter at Breast Height (DBH) associated with this authorization or work authorized by the permit will be conducted after April 2, 2015, the permittee must stop tree cutting activities and work authorized with the permit and contact this office immediately to determine if any coordination is required with the U.S. Fish and Wildlife Service for potential impacts to the Northern long-eared bat (*Myotis septentrionalis*), a currently Proposed Endangered species under the Endangered Species Act (ESA). Failure to refrain from cutting trees after this date may result in "take" of a listed species under the ESA, which may result in violation of the ESA. This condition is assuming the final decision on listing is the proposed date of April 2, 2015. For more information on the species and the decision on listing, please contact either this office or the USFWS.
3. Restoration and monitoring of wetlands to be impacted will be accomplished through the implementation of the drawings referred to as Sheets 1 – 10 of the December 5, 2012 affirmation and Sheets 1-12 of this affirmation; and the Site-Wide Vegetative
   Plan dated August 2014, which is hereby incorporated into this permit as Appendix B.
4. Monitoring the restored wetlands shall meet the success criteria outlined in the Site-Wide Vegetative Plan (Appendix B). In addition:
   a. No more than five (5) percent (%) areal cover of the restored area will be vegetated at the end of the 5-year monitoring period with the following species: Purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), narrow-leaf cattail (*Typha angustifolia*) or hybrid cattail (*Typha* x *glauca*). If this threshold is exceeded during or at the end of each monitored year, corrective measures must be implemented to preclude the growth of the above listed species within the mitigation areas. Corrective measures, such as but not limited to, herbicide application, mechanical/manual removal, etc. shall be implemented. Any corrective measures proposed must be coordinated and approved, in writing, with this office prior to implementation. Additional yearly monitoring of the site, above the 5-year required monitoring, may be required at the discretion of the District Engineer.
   b. The restored wetland must meet the vegetative and hydrology requirements specified in the 1987 Corps of Engineers Wetland Delineation Manual, including the appropriate Regional Supplement.
5. The permittee is required to submit annual monitoring and/or compliance reports for the wetland remediation project to this office for the first five (5) years

following completion of the construction based upon data collected during each monitored year between June and October. The reports must follow the requirements outlined in Regulatory Guidance Letter No. 08-03 (Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources). The first annual report is due by December 31 in the year following completion of all wetland restoration activities affirmed by NWP 38, or by an approved extension date. For purposes of this special condition, "completion" means all activities associated with site grading and seeding and/or planting. All reports must be submitted to Mr. Harold Keppner, Chief, Monitoring & Enforcement Section by December 31 of the year due, or by a Corps-approved extension date. This requirement may be waived for years 3 and 4 if, after the first two growing seasons, the wetland is shown to meet performance criteria listed in the permit. These reports must include:

a. Wetland Delineation, including a map of wetland boundary.
b. Photographs (minimum 5) from fixed locations with a photo location reference map.
c. Plant species list with the following information:
    1. Wetland Indicator Status and strata.
    2. Dominant plants and percent cover.
d. A list of plants introduced through seeding or planting.
e. Water depth and date of measurement from representative locations within the mitigation area during the growing season. The sample points will be fixed locations and shall be plotted on a map.
f. Fish and wildlife observations at the mitigation site.
g. Summary statement regarding the perceived success of the wetland restoration project. The report will evaluate the goals/performance standards as set forth in the permit or mitigation and monitoring plan as well as current wetland functions. These reports must also address any potential problem areas and include suggestions and timetable for correction if it is anticipated that projected goals may not be met.
h. Date(s) of field inspection(s).

Appendix A
2008-00854
3/6/15 issue date

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
NIAGARA MOHAWK POWER CORPORATION
300 ERIE BLVD WEST
SYRACUSE, NY 13202-4201
(315) 474-1511

Facility:
HARBOR POINT REMEDIAL SITE

41 WASHINGTON ST
UTICA, NY 13502

Facility Permit Contact:
NATIONAL GRID USA SERVICE COMPANY INC
BRIAN STEARNS
300 ERIE BLVD WEST
SYRACUSE, NY 13202
(315) 428-5731

Facility Application Contact:
O'BRIEN & GERE ENGINEERS INC

KYLE BUELOW
PO BOX 4873
SYRACUSE, NY 13221-4873
(315) 437-6100

Facility Location: in UTICA in ONEIDA COUNTY **Village:** Utica
Facility Principal Reference Point: NYTM-E: 481.458 NYTM-N: 4772.92
Latitude: 43°06'31.6" Longitude: 75°13'40.4"
Project Location: Harbor Point
Authorized Activity: This project consists of a remediation project conducted per NYSDEC Consent Order A4-0473--0000 and a NYSDEC ROD for "Harbor Point Property, OU-1" dated March 2002, Site #6-33-021. This permit covers impacts to all US Army Corps of Engineers (USACE) wetlands within the project site conducted under USACE Nationwide Permits (NWP) 33 & 38.

This project involves the excavation of approximately 6,700 cu yds of material in USACE wetlands and along the banks of the Utica Harbor. In order to minimize sedimentation of the harbor, steel sheet piling, silt fences and a skorboom will be installed.

Permit Authorizations

Excavation & Fill in Navigable Waters - Under Article 15, Title 5
Permit ID 6-3016-00219/00005
New Permit Effective Date: 3/2/2015 Expiration Date: 3/1/2020
Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 6-3016-00219/00006
New Permit Effective Date: 3/2/2015 Expiration Date: 3/1/2020

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: TERRY R TYOE, Deputy Regional Permit Administrator
Address: NYSDEC REGION 6 UTICA SUB-OFFICE
STATE OFFICE BLDG - 207 GENESEE ST
UTICA, NY 13501 -2885

Authorized Signature: _____ Date 3/2/15

Distribution List

NATIONAL GRID USA SERVICE COMPANY INC
O'BRIEN & GERE ENGINEERS INC
JOHN SPELLMAN
US ARMY CORPS OF ENGINEERS - BUFFALO DISTRICT

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Permit Attachments

Permit Sign
Site Plan

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: EXCAVATION & FILL IN NAVIGABLE WATERS; WATER QUALITY CERTIFICATION

1. **Post Permit Sign** The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

2. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by O'Brien & Gere and updated December 2014.

3. **Install Controls as Shown on Plans** Prior to commencement of the activities authorized herein, the permittee shall install securely anchored silt fencing and any other sedimentation controls as shown on the plans or drawings referenced in this permit.

4. **No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.

5. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

6. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

7. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

8. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC REGION 6 UTICA SUB-OFFICE
STATE OFFICE BLDG - 207 GENESEE ST
UTICA, NY13501 -2885

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Water Quality Certification.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

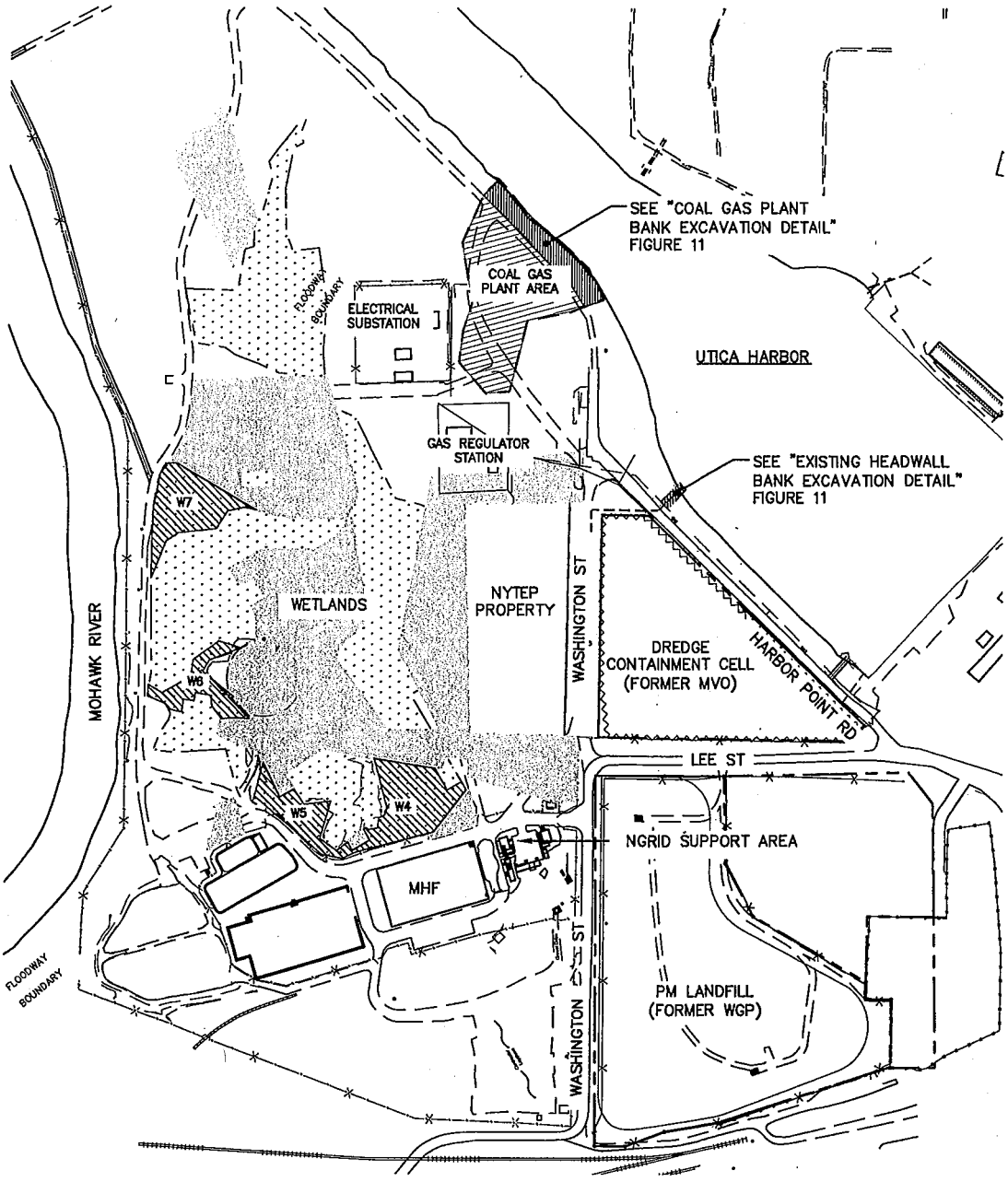
Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

FIGURE 10



LEGEND

- PAH RESTORATION AREAS (COMPLETED EARLY 2014) PER 12/5/12 USACE AUTHORIZATION
- COAL GAS PLANT (SCHEDULED FOR 2015) PER 12/5/12 USACE AUTHORIZATION
- COAL GAS PLANT (SCHEDULED FOR 2015) PENDING USACE AUTHORIZATION
- ADDITIONAL WORK COAL GAS PLANT (SCHEDULED FOR 2015) PENDING USACE AUTHORIZATION

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION –
PAH–IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

FILE NO. 1118.43175.
DECEMBER 2014

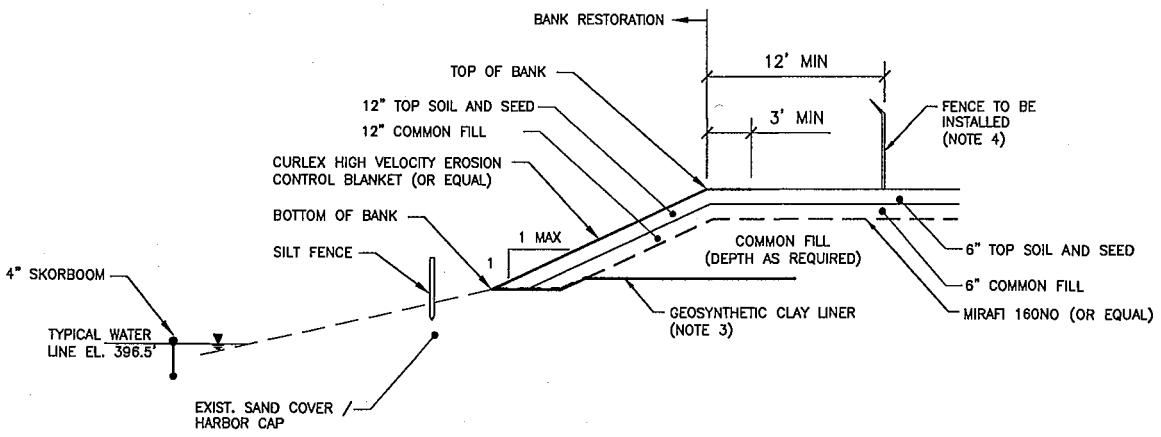
ADDITIONAL LIMITS OF WORK

NOT TO SCALE

O'BRIEN & GERE

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\CORRES\USACE\43175-FIG10.DWG

FIGURE 12



DETAIL NOTES:

1. ALL DISTURBED AREAS ALONG THE BANK SHALL BE COVERED WITH CURLEX HIGH VELOCITY EROSION CONTROL BLANKET. CURLEX HIGH VELOCITY EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
2. SILT FENCE AND SKORBOOM SHALL REMAIN IN PLACE UNTIL ALL RESTORATION ACTIVITIES HAVE BEEN PERFORMED AND ACCEPTED BY THE ENGINEER.
3. GEOSYNTHETIC CLAY LAYER SHOWN HERE SHALL ONLY BE INSTALLED IN AREAS THAT NAPL IS OBSERVED AT THE 6' EXCAVATION DEPTH.
4. EXISTING FENCE PREVIOUSLY REMOVED TO PERFORM THE WORK SHALL BE REPLACED IN KIND.
5. ALL BACKFILL MATERIAL, ASSOCIATED WITH BANK RESTORATIDN, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375-6.7(d)(1)(ii)(d). NO ON-SITE SOIL SHALL BE USED FOR BANK RESTORATION.
6. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH BANK RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375-6.7(d)(1)(ii)(b)) AND THE OCTOBER 3, 2008 RECORD OF DECISION MODIFICATION.
7. ALL VEGETATIVE BANK RESTORATION SHALL BE IN ACCORDANCE WITH SPECIFICATION 02982 "FLOODPLAIN FOREST AND MEADOW RESTORATION".

TYPICAL BANK RESTORATION DETAIL

NOT TO SCALE

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 REMEDIAL ACTION –
PAH-IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

FILE NO. 1118.43175.
DECEMBER 2014

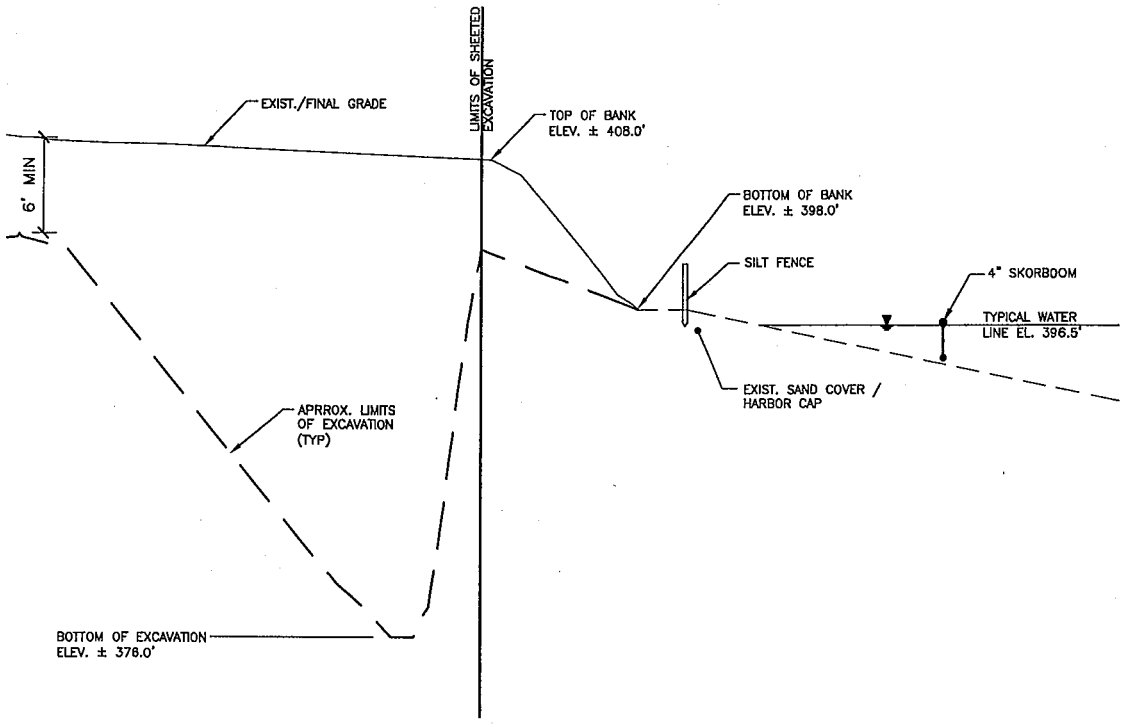
DETAILS

NOT TO SCALE

O'BRIEN & GERE

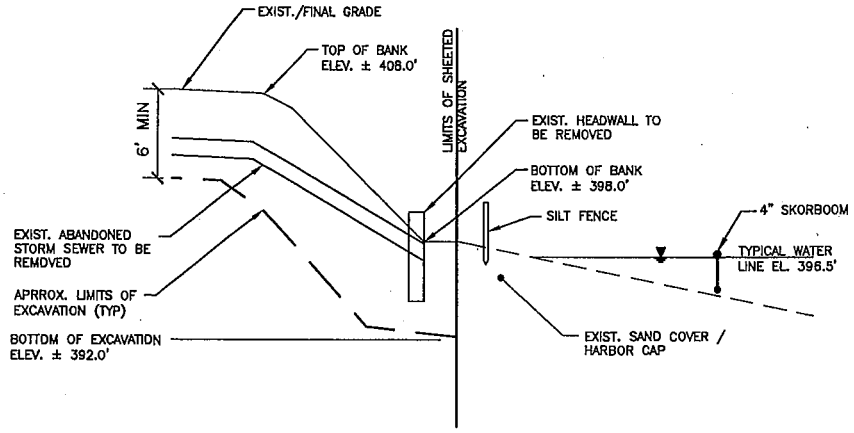
I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-CO\CORRES\USACE\43175-FIG11-12.DWG

FIGURE 11



COAL GAS PLANT BANK EXCAVATION DETAIL

NOT TO SCALE



EXISTING HEADWALL BANK EXCAVATION DETAIL

NOT TO SCALE

NATIONAL GRID – HARBOR POINT SITE
SITE 6–33–021
OU–1 REMEDIAL ACTION –
PAH–IMPACTED SOIL REMOVAL COAL GAS PLANT
UTICA, NEW YORK

DETAILS

NOT TO SCALE

FILE NO. 1118.43175.
DECEMBER 2014

O'BRIEN & GERE

I:\NATIONAL–GRID.1118\43175.HARBOR–POINT–CO\CORRES\USACE\43175–FIG11–12.DWG

RESTORATION PLAN

Site-Wide Vegetative Restoration Plan
Harbor Point Former MGP Site for
Operable Unit 1 and Unit 3
NYSDEC Site Number 633021
Utica, New York

Appendix B
2008-00854
3/6/15 issue date

nationalgrid

Revised: August 2014

Auburn Field Office
Received
OCT 29 2014
USACE

O'BRIEN & GERE

1118 | 43175

Site-Wide Vegetative Restoration Plan
Harbor Point Former MGP Site for
Operable Unit1 and Unit 3
NYSDEC Site Number 633021
Utica, New York

nationalgrid

STEPHEN W. ANAGNOST, PE, MANAGING ENGINEER
O'BRIEN & GERE ENGINEERS, INC.

TABLE OF CONTENTS

List of Tables i
List of Figures i
List of Specifications ii
List of Exhibits ii
1. Background and Site Description 1
2. Purpose of Plan 3
3. Description of Remedial Actions 4
3.1 Record of Decision Requirements 4
3.2 Projects Completed to Date 5
3.3 Projects Pending 6
4. Description of Restoration Efforts for New Projects (*i.e.* After June 2014) 7
4.1 Floodplain Forest and Meadow Zones 7
4.1.1 Bank Areas 7
4.1.2 Upland Areas 8
4.2 Subaqueous Zones 9
4.3 Wetland Zones 10
4.4 Unanticipated Impacts 13
4.5 OU-2 – Mohawk River 13
5. Vegetative Monitoring and Maintenance Plan 14
5.1 Performance Standards 14
5.2 Invasive Species 15

LIST OF TABLES

4-1 ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix
4-2 Floodplain Forest Plant Mix
4-3 ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix
4-4 Subaqueous Plant Mix
4-5 Zone A – Emergent Seed Mix
4-6 Zone A – Emergent Plant Mix
4-7 Zone B – West Meadow Seed Mix
4-8 Zone B – Wet Meadow Plant Mix
4-9 Zone C – Scrub-Shrub Seed Mix
4-10 Zone D – Floodplain Forest Seed Mix
4-11 Zone D – Floodplain Forest Plant Mix

LIST OF FIGURES

1. Site-Wide Vegetative Restoration Plan
2. Site-Wide Restoration Schedule
3. Typical Vegetative Restoration Detail

LIST OF SPECIFICATIONS

02208 Restoration of Surfaces

02981 Wetland Restoration

02982 Floodplain Forest and Meadow Restoration

LIST OF EXHIBITS

A. *Restoration Plan for Disturbed Banks and Subaqueous Areas, Harbor Point Site – Utica, New York (June 29, 2012)*
B. *Revised Interim List of Invasive Plant Species in New York State (May 14, 2012)*

1. BACKGROUND AND SITE DESCRIPTION

Niagara Mohawk Power Corporation entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) in March 2002, to investigate and remediate certain portions of what is generally referred to as the Harbor Point Former Manufactured Gas Plant (MGP) Site (the Site) located in the City of Utica, Oneida County, New York. Administratively, the NYSDEC has divided the Site into three Operable Units (OUs).

Operable Unit 1 (OU-1) – Peninsula, New York State Tar Emulsion Products (NYTEP) and Mohawk Valley Oil (MVO) Sites

OU-1 is, in total, approximately 140 acres of land located on a peninsula formed by the intersection of the New York State Barge Canal, Utica Harbor, and the Mohawk River (Figure 1). The site consists of approximately 100 acres owned by National Grid (formerly Niagara Mohawk Power Corp), and other contiguous parcels including the NYTEP Products/Beazer/Suit-Kote parcel and the MVO site.

Based on the vegetative covertype assessment performed by O'Brien & Gere, the estimated acreages of OU-1 that will be impacted include the following habitats:

- 3.2 acres of floodplain forest dominated by boxelder (*Acer negundo*), black willow (*Salix nigra*), eastern cottonwood (*Populus deltoids*), and Norway maple (*Acer platanoides*)
- 2.9 acres of floodplain meadow dominated by grasses and forbs including fescue (*Festuca spp.*), goldenrod (*Solidago spp.*), buttercup (*Ranunculus spp.*), milkweed (*Asclepias syriaca*), and dandelion (*Taraxacum officinale*)
- 10.9 acres of wetland comprising:
  - 1.03 acres of emergent wetland that supports a mix of vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches of water) emergent areas
  - 5.8 acres of wet meadow that supports a mix of vegetative species that thrive in intermittently flooded, seasonally saturated areas
  - 1.5 acres of scrub shrub wetland that supports a mix of shrub and vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches) water
  - 2.6 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

Adjacent to the Harbor Point Site (but not included within the Site) to the south is a mainline railroad right-of-way operated by the CSX Corporation. The former Monarch Chemical property abuts the Harbor Point Site to the east. Remediation and restoration of the NYTEP and Monarch Chemicals sites is being undertaken by those respective responsible parties.

Operable Unit 2 (OU-2) – Mohawk River

OU-2 consists of approximately a one mile stretch of the Mohawk River that borders the Site along the western and northern boundaries. This consists of aquatic habitats that transition from shallow emergent habitat at or near the typical water line elevation of 396.5 ft, submerged aquatic habitat to an approximate water depth of 2 ft, to deep water habitat below the 2 ft water depth.

Operable Unit 3 (OU-3) – Utica Harbor

OU-3 consists of the Utica Harbor and three Dredge Spoil Areas (DSAs) not on the Harbor Point Site. The NYS Canal Corporation (NYSCC) is the Owner and primary user of Utica Harbor. The NYSCC operates a canal maintenance facility on the southern and eastern sides of the harbor on property which is owned by New York State. Across from the Barge Canal and canal locks are two of the three former dredged spoil areas. DSA-1 and

DSA-2 are east and north of the Barge Canal, respectively. DSA-3 is on the west side of the Mohawk River, west of the tip of the Harbor Point peninsula.

Similar to OU-2, the portion of OU-3 included in the Harbor Point Site (Utica Harbor) consists of aquatic habitats that transition from shallow emergent habitat at or near the typical water line elevation of 396.5 ft, submerged aquatic habitat to an approximate water depth of 2 ft, to deep water habitat below the 2 ft depth.

2. PURPOSE OF PLAN

The purpose of this Site Wide Vegetative Restoration Plan is to:

- Identify the remedial activities necessary to comply with the NYSDEC Order on Consent that lie within the various habitat areas that the NYSDEC has identified as of concern, and
- Identify the materials, methods and practices to be used to restore the habitat areas of concern to a condition acceptable to the NYSDEC.

This Plan provides means to restore and monitor ecological habitat within the portions of OU-1 and OU-3 that have been remediated, are currently being remediated, or have NYSDEC approved remedial plans in place. A Site Wide Restoration Schedule that identifies the start and end dates of remediation and monitoring activities in these areas is included as Figure 2.

This Plan does not apply to the remedial or restoration efforts associated with OU-2. OU-2 is currently in the Feasibility Study phase and the scope and level of effort has not been determined by the NYSDEC at this time. However, reference to the OU-2 remediation has been included herein such that this Plan can be updated once the decision document for OU-2 is completed.

3. DESCRIPTION OF REMEDIAL ACTIONS

3.1 RECORD OF DECISION REQUIREMENTS

OU-1 Peninsula

The Record of Decision (March 2002) and the November 2010 ROD Modifications set forth the remedial elements for OU-1 for which Niagara Mohawk (now National Grid) is responsible. The remedial elements for which Niagara Mohawk (now National Grid) is responsible that have impacted or will impact ecological habitat are described below, along with the type and acreage of habitat impacted. Areas will be restored to pre-disturbance conditions as prescribed in Section 4. Start and end dates for remediation and monitoring are provided in the Site-Wide Restoration Schedule (Figure 2):

- Removal of purifier waste from all areas of the Peninsula to a depth of 6 feet and consolidation of the material within the WGP barrier wall impacted

  3.2 acres of wet meadow that supports a mix of vegetative species that thrive in intermittently flooded, seasonally saturated areas0.6 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

- Excavation of soil in the area of the former Lee Street extension sewer containing visual tar or non-aqueous phase liquid (NAPL) or soil containing greater than 1,000 ppm PAHs impacted

  - 0.7 acres of wet meadow that supports a mix of vegetative species that thrive in intermittently flooded, seasonally saturated areas

- Removal of subsurface soils containing visual tar, NAPL, or PAHs greater than 1,000ppm in the top 6 feet of the site have impacted or will impact

  - 1.03 acres of emergent wetland that supports a mix of vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches of water) emergent areas
  - 1.7 acres of wet meadow that supports a mix of vegetative species that thrive in intermittently flooded, seasonally saturated areas
  - 1.2 acres of scrub shrub wetland that supports a mix of shrub and vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches) water 1.4 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

  Either removal or covering surface soils exceeding 10 ppm cPAHs to a depth of 2 feet in the Northern and Southern Areas (as defined in the ROD) and replacement with clean fill. This requirement was subsequently modified to a 1 foot thick cover. The modification to a 1 foot thickness did not apply to the banks of the Mohawk River and the Barge Canal. These activities have impacted or will impact 3.2 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

- Excavation of soil in the Coal Gas Plant (CGP) area containing NAPL and/or tar. Installation of a subsurface air sparging system to remediate impacted groundwater. These activities have impacted or will impact

  - 0.9 acres of wet meadow that supports a mix of vegetative species that thrive in intermittently flooded, seasonally saturated areas
  - 0.3 acres of scrub shrub wetland that supports a mix of shrub and vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches) water 0.7 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

Placement of a 2 foot thick soil cover over the entire Central Area (as defined in the ROD). This requirement was subsequently modified to a 1 foot thick cover. The modification to a 1 foot thickness did not apply to the banks of the Mohawk River and the Barge Canal. These activities have impacted or will impact 1.4 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

OU-3 Utica Harbor

The elements of the selected remedy for OU-3 were set forth in the NYSDEC Record of Decision (March 2001 for which Niagara Mohawk (now National Grid) is responsible include:

- Placement of a minimum 2 foot thick layer of clean material suitable for benthic life to form on the new harbor bottom after dredging (by others)
- Cleaning and slip lining or abandonment of the Washington Street Sewer
- Cleaning and slip lining or abandonment of the numerous private sewer lines on the Harbor Point Peninsula
- Other activities associated with three Dredge Spoil Areas (by others).

These remedial activities impacted:

- 0.05 acres of subaqueous habitat
- 1.0 acres of floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water.

3.2 PROJECTS COMPLETED TO DATE

The elements of the selected remedies completed to date and the respective restoration efforts completed or remaining to be completed are presented in Figure 2 and are described below:

OU-1 Peninsula

Purifier Material Relocation

In 2008, approximately 35,250 cubic yards of purifier material was removed from the Central Area of the Site. Of the 5.6 acres of land disturbed during this remedial effort, approximately 3.1 acres of wetland were affected. All work was conducted in accordance with the Nationwide Permit No. 38 (Permit) issued jointly by the USACE and NYSDEC. The wetland areas were restored in accordance with the NYDEC approved Contract Documents (CDM, 2008) referenced in the Nationwide Permit.

Vegetative Monitoring and Maintenance activities are still required for this area. Refer to Section 5 for a description of the Vegetative Monitoring and Maintenance plan.

Lee Street Sewer (non-Bank Area)

In 2009, approximately 16,000 cubic yards of soil impacted with tar and NAPL were removed from the Lee Street Sewer Extension area. Of the 0.6 acres of land disturbed during this remedial effort, approximately 0.2 acres of wetland were affected. All work was conducted in accordance with the Nationwide Permit No. 38 (Permit) issued jointly by the USACE and NYSDEC (USACE Application No. 2008-00854; NYSDEC No. 6-3016-00219/00001). The wetland areas were restored in accordance with the NYSDEC approved Contract Documents (CDM, 2009) referenced in the Nationwide Permit.

Vegetative Monitoring and Maintenance activities are still required for this area. Refer to Section 5 for a description of the Vegetative Monitoring and Maintenance plan.

PAH Removal Areas

Between late 2012 and early 2014 , approximately 106,000 cubic yards of soils containing visual tar, NAPL, or PAHs greater than 1,000ppm where removed from the Central Area. During this PAH Removal Project

approximately 3.1 acres of wetland were affected. All work was conducted in accordance with the renewed Nationwide Permit No. 38 (Permit) issued jointly by the USACE and NYSDEC (USACE Application No. 2008-00854; NYSDEC No. 6-3016-00219/00001). The wetland areas were restored in accordance with the NYSDEC approved Contract Documents (O'Brien & Gere, 2012) referenced in the Nationwide Permit.

Vegetative Monitoring and Maintenance activities are still required for this area. Refer to Section 5 for a description of the Vegetative Monitoring and Maintenance plan.

OU-3 Utica Harbor

In 2010, approximately 47,000 cubic yards of sediment was hydraulically dredged from the Utica Harbor by the NYSCC. Dredged sediments were placed in the MVO Containment Cell.

During portions of 2011and 2012, National Grid placed an engineered cap system over approximately 15 acres of the Harbor bottom. The cap system consisted of a reactive core mat (RCM), 12-inches of sand, and 18-inches of gravel material high in cobble content. To complete the project before the onset of winter weather, the shoreline of the Harbor was clear-cut from the top of the bank to the water line to facilitate expedited placement of the cap system in a safe manner. All work was conducted in accordance with the Nationwide Permit No. 38 (Permit) issued jointly by the USACE and NYSDEC (USACE Application No. 2012-00202; NYSDEC No. 6-3016-00219/00003) and the NYSDEC approved Contract Documents (Arcadis, 2012).

Due to a difference of opinion between the NYSDEC and the NYSCC regarding restoration of the Bank Area, restoration of the impacted areas of Utica Harbor has been delayed. The general approach to restoration of the Bank Area was agreed to between the parties in April 2013. This Restoration Plan presents the details of final vegetative restoration of both the Bank and Subaqueous Areas associated with the Harbor. Refer to Section 4.1 and 4.2 and Exhibit A for a description of the proposed restoration efforts.

3.3 PROJECTS PENDING

The elements of the selected remedies and the respective restoration efforts remaining to be completed are presented in Figure 2 and described below:

Peninsula Excavation and Restoration Project

The Peninsula Excavation and Restoration Project will consist of clearing and grubbing of approximately 0.9 acres of Bank Area and 3.9 acres of upland area. Approximately 15,000 cubic yards of surface soils will be removed from 13 Bank Areas and 5 upland areas.

The 0.9 acres of Bank Area associated with this project will require vegetative restoration. Refer to Section 4.1 for a description of the proposed Restoration Efforts.

Coal Gas Plant Project

The Coal Gas Plant (CGP) project will include the removal of approximately 41,500 cubic yards of NAPL impacted soil and tar associated with the sludge sump, scale, underground gasoline tank, and water gas tank. The CGP project includes, for contractual convenience, a portion of Bank Area and Wetland Zones not previously addressed under other projects.

Approximately 1.0 acre of Bank Area associated with this project will require restoration. Refer to Section 4.1 for a description of the proposed Restoration Efforts.

Final Site Close-Out Project

The Final Site Close-Out project is, as of yet, not completely scoped out but will include removal of the various soil staging areas, relocation of the existing water treatment system, general site pick-up, and final landscaping. It is anticipated that all of these future activities will occur in non-regulated areas of the site.

4. DESCRIPTION OF RESTORATION EFFORTS FOR NEW PROJECTS (*I.E.* AFTER JUNE 2014)

This section describes the restoration efforts to be implemented for all projects at the Harbor Point Site commencing after June 1, 2014, including the Peninsula Excavation and Restoration Project. Projects completed prior to June 1, 2014 (see section 3.2 above) are subject to the Monitoring and Maintenance Plan described below.

Refer to Figure 1 for the location of the various remedial and restoration efforts and Figure 3 for typical details of how the work will be constructed[1].

4.1 FLOODPLAIN FOREST AND MEADOW ZONES

4.1.1 Bank Areas

The NYSDEC ROD (2002) and Rod Modifications (2010) requires the removal or capping of soils with concentrations of cPAHs exceeding 10 ppm. With issuance of the Part 375 soil clean up guidance (specifically section 375-6.6 Soil cleanup objectives for the protection of ecological resources), the NYSDEC required the Bank Areas within the Site meet these additional criteria. Bank areas are defined pursuant to 6NYCRR Part 608 as the land area immediately adjacent to the watercourse from the top crest of the slope to the lower bank edge when the Harbor has a water level elevation of 396.5.

To comply with the NYSDEC clean-up criteria, all disturbed Bank Areas will be cleared and grubbed and then excavated to a depth of 24-inches below ground surface (bgs) (refer to Figure 2, Floodplain Forest and Meadow Zone D). Areas of excavation along the bank slope with initial slopes steeper than 1 vertical to 1 horizontal (1:1 or 45 degrees) will be cut back to 1:1 due to concerns with long term stability of soil and vegetation on the steeper slopes. All other slopes will be restored to their original grade.

With NYSDEC approval, the following bank areas of the Peninsula Excavation and Restoration Project were completed in accordance with the original design which called for 6 inches of topsoil and will remain as constructed: B-26, B-28, B-29, B-31, and B-33. The remaining bank areas to be completed will receive 12 inches of topsoil as requested by the NYSDEC. Vegetation in all disturbed Bank Areas will be restored with an application of a Native Upland Wildlife Forage & Cover Meadow Seed Mix and a mix of Floodplain Forest Plants as described below. Refer to Specification 02982 – Floodplain Forest and Meadow Restoration for more details.

Table 4-1. ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix

Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*

Source: O'Brien & Gere

Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas

[1] Note that except for a small amount of fertilizer hand cast into tree-planting excavations, fertilizer will not be applied within 100-ft horizontally landward from the bank location with elevation 398.5.

Table 4-2. Floodplain Forest Plant Mix	
Common Name	**Botanical Name**
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*
American Sycamore	*Platanus occidentalis*
Boxelder	*Acer negundo*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*
Source: O'Brien & Gere	

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D restoration area shall include the following:

- **Trees 3-4 inch diameter at breast height (DBH) planted at a density of 50 per acre**
- **Trees 1-inch DBH planted at a density of 100 per acre**

4.1.2 Upland Areas

The NYSDEC ROD (2002) requires the excavation to a depth of 24 inches or capping with clean soil to at thickness of 24 inches of soils with concentrations of cPAHs exceeding 10 ppm. In 2010, the NYSDEC amended the ROD requirement to require excavation or capping to 12-inches in lieu of 24-inches. The Upland Areas are defined as any area extending inland from the topographic top-of-bank.

To comply with the ROD requirements, all Upland Areas with concentrations of cPAHs exceeding 10 ppm will be cleared/grubbed and excavated to a depth of 12-inches. A demarcation layer will be installed and the excavation will then be backfilled with 6-inches of common fill and 6-inches of topsoil. Areas where underground utilities are present may be capped by placing a demarcation layer over existing grade and then placing 6-inches of common fill and 6-inches of topsoil or 12-inches of crushed stone, or a combination of approved cover materials that when placed total a minimum of 12-inches in depth. The method chosen (*i.e.* excavation or capping) will depend on the location within the Peninsula area (*i.e.* floodplain, floodway, or non-regulated areas). Vegetation in all disturbed areas restored with topsoil Upland Areas will be restored with an application of a Native Upland Wildlife Forage & Cover Meadow Seed Mix as shown below. Refer to Specification 02982 – Floodplain Forest and Meadow Restoration for more details.

Table 4-3. ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix		
Content (%)	**Common Name**	**Botanical Name**
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*

Table 4-3. ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix		
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*
		Source: O'Brien & Gere
Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas.		

4.2 SUBAQUEOUS ZONES

The Subaqueous Zones are associated with the limits of the Harbor Capping Project only. The Harbor Capping project was completed in early 2013 in accordance with the NYSDEC approved Contract Documents (Arcadis, 2012) with the exception of vegetative restoration. The Subaqueous Zone E extends from the "Typical Water Level" of 396.5 (as established by the USACE and NYSDEC) to a depth of two feet below the Typical Water Level. The actual width of the Subaqueous Zone will depend on the topography of the near shore cap system.

The previously approved subaqueous plant mix from the *Restoration Plan for Disturbed Banks and Subaqueous Areas* (Exhibit A) is provided below in Table 4-4 and on the Design Drawings. Refer to Specification 02208 – Subaqueous Restoration for more details.

Table 4-4. Subaqueous Plant Mix	
Species	Common Name
Iris versicolor	Blue flag
Leersia oryzoides	Rice cutgrass
Sparganium americanum	Eastern bur-reed
Polygonum amphibium	Water smartweed
Rumex verticillatus	Swamp dock
Saurus cernus	Lizard tail
Scirpus fluviatilis	River bulrush
Scirpus validus	Soft stem bulrush
Carex lacustris	Lake sedge
Elodea americanum	American elodea
Potamogeton nodosus	Long-leaved pondweed
Potamongeton perfoliatus	Clasping-leaved pondweed
Sagittaria rigida	Duck potato
Vallisneria americana	Wild celery
Zizania aquatia	Wild rice
	Source: O'Brien & Gere
Note: The actual aquatic plants to be planted in Utica Harbor will be selected based on commercial availability at the time of planting. National Grid will contact a minimum of three nurseries before determining the plant supplier. Prior to finalization of the planting plan, consideration will also be given to the preferred planting season for each species. Any modification to the planting plan proposed herein (including species type) will be discussed and determined in consult with NYSDEC prior to implementation.)	

Auburn Field Office
Received
OCT 29 2014
USACE

4.3 WETLAND ZONES

Wetland Zones are defined as those areas delineated by the updated wetland survey prepared by CDM (2009). There are several sub-zones identified based on existing vegetation within the overall Wetland Zone. Each sub-zone will be delineated for each project and replaced in-kind.

All disturbed wetland zones will be cleared, grubbed and excavated to a depth of 24-inches and backfilled with topsoil back to existing grade. All disturbed wetland zones will be revegetated using the previously NYSDEC-approved specification presented below.

The following seed and plant mixtures shall be applied to areas indicated below. Refer to Specification 02981 – Wetland Restoration for more details.

Table 4-5. Zone A – Emergent Seed Mix

Content (%)	Common Name	Botanical Name
20	Virginia Wild Rye	*Elymus virginicus*
10	American Bur Reed	*Sparganium americanum*
10	Water Smartweed	*Polygonum amphibium*
5	Soft-stem Bulrush	*Scirpus validus*
5	Duck potato	*Sagitaria latifolia*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Fox Sedge	*Carex vulpinoidea*
5	Water Plantain	*Alisma subcordatum*
5	Soft Rush	*Juncus effusus*
5	Wool Grass	*Scirpus cyperinus*
5	Eastern Bur Reed	*Sparganium americanum*
5	Dark Green Bulrush	*Scirpus atrovirens*
5	Sensitive fern	*Onoclea sensibilis*
5	Rattlesnake Grass	*Glyceria canadensis*
5	Rice Cutgrass	*Leersia oryzoides*

Source: O'Brien & Gere

Note: Apply seed at 40 lbs. per acre to Zone A areas

Table 4-6. Zone A - Emergent Plant Mix

Common Name	Botanical Name
American Bur Reed	*Sparganium americanum*
Duck potato	*Sagitaria latifolia*
Water Plantain	*Alisma subcordatum*
Sensitive Fern	*Onoclea sensibilis*

Source: O'Brien & Gere

Note: Individual 2 inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone A

Table 4-7. Zone B – Wet Meadow Seed Mix

Content (%)	Common Name	Botanical Name
15	Red Top Grass	*Agrostis alba*
12	Virginia Wild Rye	*Elymus virginicus*
5	Soft Rush	*Juncus effusus*
5	Spotted touch me not	*Impatiens capensis*
5	Pale touch me not	*Impatiens pallida*
5	Beggar Ticks	*Bidens frondosa*
5	Umbrella Sedge	*Cyperus strigosus*
5	Blue Vervain	*Verbena hastata*
5	Jerusalem Artichoke	*Helianthus tuberosus*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
5	Swamp Milkweed	*Asclepias incarnata*
5	Purple Stemmed Aster	*Aster puniceus*
5	Joe Pye Weed	*Eupatorium maculatum*
5	Boneset	*Eupatorium perfoliatum*
2	Fox Sedge	*Carex vulpinoidea*
2	Field Horsetail	*Equisetum arvense*
2	Rough Horsetail	*Equisetum hyemale*
2	Nodding Bur Marigold	*Bidens cernua*
1	Indian Hemp	*Apocynum cannabinum*
1	Water Horehound	*Lycopus americanus*
1	Monkey Flower	*Mimulus ringens*
1	Awl Sedge	*Carex stipata*
1	False Nettle	*Boehmaria cylindrica*

Source: O'Brien & Gere

Note: Apply seed at 40 lbs. per acre to Zone B areas

Table 4-8. Zone B – Wet Meadow Plant Mix

Common Name	Botanical Name
Cinnamon Fern	*Osmunda cinnamomea*
Sensitive Fern	*Onoclea sensibilis*

Source: O'Brien & Gere

Note: Individual 2 inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone B

Table 4-9. Zone C – Scrub-Shrub Seed Mix		
Content (%)	Common Name	Botanical Name
25	Fox Sedge	*Carex vulpinoidea*
42	Virginia Wild Rye	*Elymus virginicus*
11	Soft rush	*Juncus effusus*
5	Hop Sedge	*Carex lupulina*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
3	Pennsylvania smartweed	*Polygonum pensylvanicum*
2	Awl Sedge	*Carex stipata*
1	Cosmos (Bristly) Sedge	*Carex comosa*
1	Nodding Bur Marigold	*Bidens cernua*
5	Umbrella Sedge	*Cyperus strigosus*
		Source: O'Brien & Gere
Note: Apply seed at 20 lbs. per acre to Zone C areas.		

Zone C - Scrub-Shrub Live stakes

Live stakes shall range from 0.5" to 1.5" in diameter, with the following lengths:

a. Black willow (*Salix nigra*): 2'
b. Buttonbush (*Cephalanthus occidentalis*): 2'
c. Stiff-leaved dogwood (*Cornus foemina*): 2'-3'
d. Red osier dogwood (*Cornus stolonifera*): 2'-3'
e. Speckled alder (*Alnus rugosa*): 2'-3'
f. Arrow wood (*Viburnum dentatum*): 2'-3'

Live stakes shall be planted in Zone C areas at a density of one stake per 16 square feet (i.e. approximately 4 foot spacing).

Table 4-10. Zone D – Floodplain Forest Seed Mix		
Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*
		Source: O'Brien & Gere
Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas		

Table 4-11. Zone D – Floodplain Forest Plant Mix	
Common Name	Botanical Name
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*
American Sycamore	*Platanus occidentalis*
Boxelder	*Acer negundo*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*

Source: O'Brien & Gere

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D restoration area shall include the following:

- **Trees 3-4 inch DBH planted at a density of 50 per acre**
- **Trees 1-inch DBH planted at a density of 100 per acre**

4.4 UNANTICIPATED IMPACTS

The Contract Documents provide that disturbed areas are to be restored to pre-disturbance conditions as specified. This includes areas that are disturbed outside of the anticipated limits of disturbance. In addition, silt fence will be placed at the bottom of the bank and skirted sorbent oil boom floated adjacent to excavations to minimize impacts to the adjacent aquatic resource. National Grid will notify the NYSDEC as needed of additional excavation that may be required to achieve the remedial goals.

4.5 OU-2 – MOHAWK RIVER

A Feasibility Study was submitted to the NYSDEC in December 2013. As of August 2014, a remedy had not been selected nor designed. When the remedy is selected and designed, the restoration requirements will be appended to this Plan.

5. VEGETATIVE MONITORING AND MAINTENANCE PLAN

National Grid will monitor restored areas annually for a period of five years from the date of installation as illustrated on Figure 2. Monitoring events will be performed during the growing season (*i.e.,* April through October) and the results summarized in annual reports that will be submitted to the NYSDEC and USACE. The following information will be documented for each restoration area:

- Date and time of data collection efforts, as well as recent weather information
- Comparison of site conditions to pre-disturbance conditions
- Species identification of what restoration plants are deceased and those that have survived
- Enumeration of deceased and surviving restoration plants
- Percent vegetative cover
- Identification of pioneer species
- Percent cover and identification of invasive species
- Surface water levels
- Photographs from fixed reference points of each restoration area showing representative portions of the restoration areas
- Observed fish and wildlife.

Aquatic vegetation surveys will be performed as proposed in the *Restoration Plan for Disturbed Banks and Subaqueous Areas, Harbor Point Site, June 29, 2012* (Exhibit A) and the results included in the annual reports.

5.1 PERFORMANCE STANDARDS

The restoration areas will be maintained in accordance with the following performance standards:

- One year from the date of installation, deceased planted stock will be replaced (with the same size planted stock) or bare areas reseeded based on the following criteria:
  - Minimum 95% survival of planted stock
  - Minimum 95% ground coverage of seeded areas
  - Plants and/or seeds shall be replaced during the optimal season for plant survival.
- In both years 2 and 3 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:
  - Maintain the original densities. However, species that are observed to be successful (*i.e.*, are growing vigorously) may be substituted for less successful species
  - Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations
  - Plants and/or seeds shall be replaced during the optimal season for plant survival.
- In both years 4 and 5 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:
  - Maintain the original prescribed densities and species diversities. Species that are observed to be successful (*i.e.*, are growing vigorously) may be substituted for less successful species

- » Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations
- » Plants and/or seeds shall be replaced during the optimal season for plant survival.

5.2 INVASIVE SPECIES

If invasive species are observed during the vegetative surveys associated with the monitoring plan, actions will be taken to eliminate invasive species problems within 30 -90 days, including but not limited to:

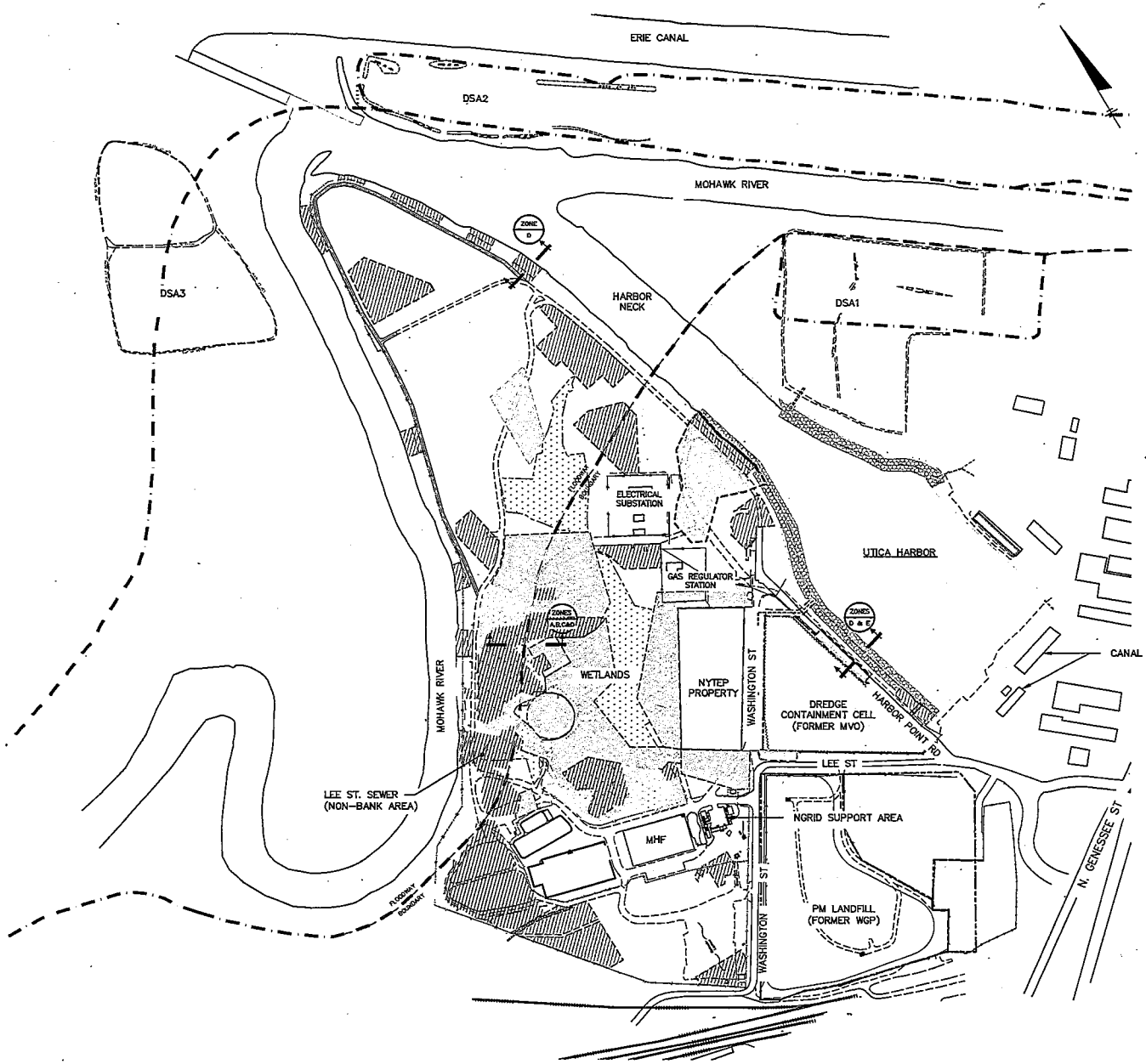
- The species, location and size of the population will be recorded as well as the control method and date of control action
- If the population is of manageable size (*e.g.*, less than approximately 500 stems or 0.1 acres):
  - » Invasive plants will be manually removed by excavating roots, pulling or clipping until the population is eliminated
  - » The area that had the invasive species will be covered with a non-translucent tarp for a minimum of one growing season
  - » Invasive plants which grow up around the tarp will be pulled or clipped
  - » Invasive plant refuse will be appropriately disposed of, *i.e.*, burned or landfilled in nontranslucent bags. Invasive plant refuse cannot be composted, added to stockpile soils or handled in a way that would lead to reuse at this or any other site.
- If the population is considered to be too large for manual control methods, a NYSDEC-approved herbicide will be used according to manufacturer's instructions
- With agreement from NYSDEC, control methods can be adapted over time given outcomes of initial control efforts. The timing and methods for control measures will be specifically designed for each species observed
- Efforts to eliminate invasive species will continue throughout the monitoring period within the restored areas. The presence of any invasive species identified in the current or future *Revised Interim List of Invasive Plant Species in New York State*, included herein as Exhibit B, will not be allowed. Any other invasive species not specified on the noted list may not occupy more than 5% of the restored areas.

Auburn Field Office
Received
OCT 29 2014
USACE

Site-Wide Vegetative Restoration Plan

Auburn Field Office
Received
OCT 29 2014
USACE





DRAWING NOTES:

1. VARIOUS ASPECTS OF RESTORATION WILL OCCUR ACROSS THE HARBOR POINT SITE. RESTORATION SHALL BE BASED UPON VEGETATIVE COVER TYPES IDENTIFIED PRIOR TO CONSTRUCTION. NON VEGETATIVE AREAS (I.E. ROADWAYS, GRAVEL DRIVES, ETC.) SHALL BE RESTORED TO MEET PRE-EXISTING CONDITIONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. ALL DISTURBED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE "TYPICAL VEGETATIVE RESTORATION DETAIL" SHT. 3.
3. ALL BACKFILL MATERIAL ASSOCIATED WITH BANK OR WETLAND RESTORATION, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375-6.7(d)(1)(ii)(d).
4. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH BANK OR WETLAND RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375-6.7(d)(1)(ii)(b)).
5. NO ON-SITE SOIL SHALL BE USED FOR WETLAND OR BANK RESTORATION.

LEGEND

- PURIFIER MATERIAL RESTORATION AREA
- PAH RESTORATION AREAS
- PENISULA EXCAVATION AND RESTORATION PROJECT
- COAL GAS PLANT PROJECT
- UTICA HARBOR SUBAQUEOUS AND BANK RESTORATION AREA

NO.	DATE	REVISION	INIT.

1"=200' 200 0 200 400

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

O'BRIEN & GERE ENGINEERS INC.

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 AND OU-3
SITE WIDE VEGETATIVE RESTORATION PLAN
UTICA, NEW YORK

GENERAL

SITE VEGETAVIVE RESTORATION PLAN

IN CHARGE OF_____
DESIGNED BY____ CHECKED BY____
DRAWN BY_____

FILE NO. 1118.43175.425
DATE AUGUST 2014

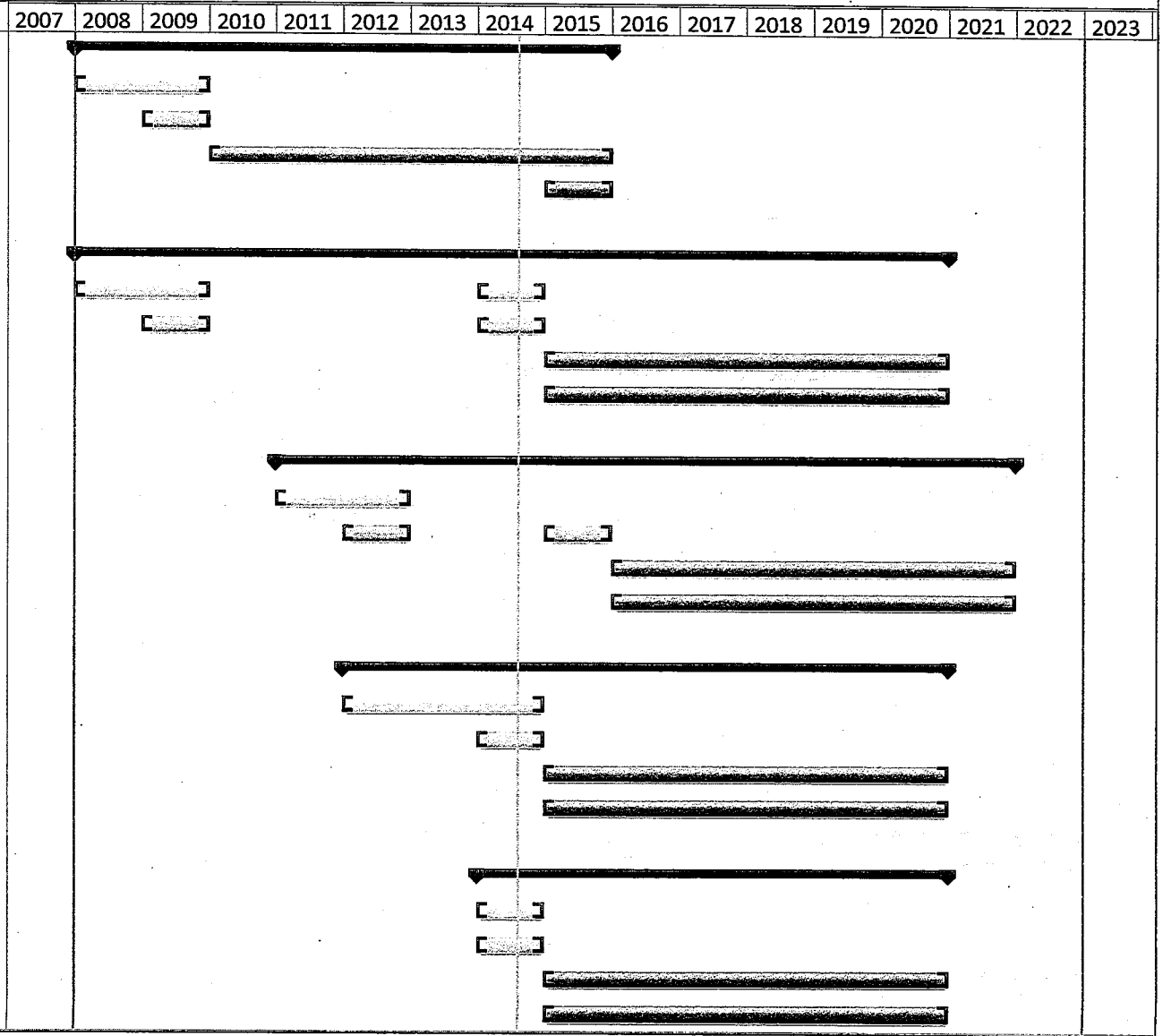
1

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-OU\DOCS\DWG\FINAL SITE RESTORATION\43175-425-FIG1-2 FINAL SITE RESTORATION PLAN.DWG

Site-Wide Restoration Schedule

Figure 2
National Grid - Harbor Point
Site Wide Restoration Schedule

ID	Task Name
1	**REMEDIATION**
2	**OU1 - Purifer Material Excavation and Restoration**
3	Completed Remediation (Oct 2009)
4	Planned Monitoring Period*
5	Annual Monitoring Report to NYSDEC
6	
7	**REMEDIATION**
8	**OU-1 - Lee Street Sewer**
11	Completed Remediation (Oct 2009)
14	Planned Monitoring Period
15	Annual Monitoring Report to NYSDEC
16	
17	**REMEDIATION**
18	**OU-3 Utica Harbor****
19	Completed Remediation**(Dec. 2012)
22	Planned Monitoring Period
23	Annual Monitoring Report to NYSDEC
24	
25	**REMEDIATION**
26	**OU-1 PAH Impacted Soil Removal Project**
27	Completed Remediation (Feb 2014)
28	Planned Monitoring Period
29	Annual Monitoring Report to NYSDEC
30	
31	**REMEDIATION**
32	**OU-1 Peninsula Excavation and Restoration Project**
33	Completed Remediation (Estimated)
34	Planned Monitoring Period
35	Annual Monitoring Report to NYSDEC



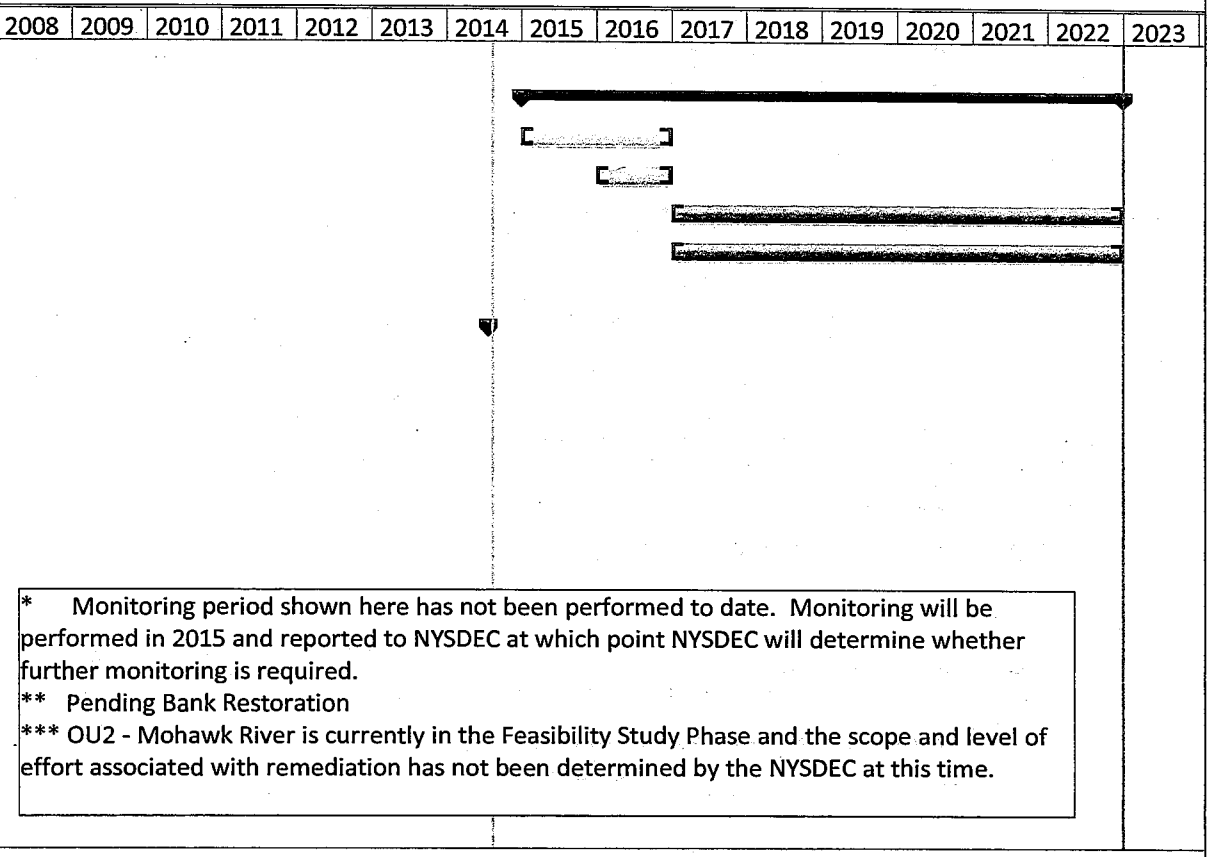
Project: Harbor Point
Date: Wed 8/13/14

Summary — Manual Task

\\syracusesvr\projects\National-Grid.1118\43175.Harbor-Point-Co\Docs\Final Site Restoration\Harbor Point Restoration Schedule.mpp

Figure 2
National Grid - Harbor Point
Site Wide Restoration Schedule

ID	Task Name
36	
37	**REMEDIATION**
38	**OU-1 PAH Impacted Soil Removal - Coal Gas Plant**
39	Completed Remediation (Estimated)
40	Planned Monitoring Period
41	Annual Monitoring Report to NYSDEC
42	
43	**REMEDIATION**
44	**OU2 - Mohawk River*** **
45	Completed Remediation
46	Planned Monitoring Period
47	Annual Monitoring Report to NYSDEC



* Monitoring period shown here has not been performed to date. Monitoring will be performed in 2015 and reported to NYSDEC at which point NYSDEC will determine whether further monitoring is required.
** Pending Bank Restoration
*** OU2 - Mohawk River is currently in the Feasibility Study Phase and the scope and level of effort associated with remediation has not been determined by the NYSDEC at this time.

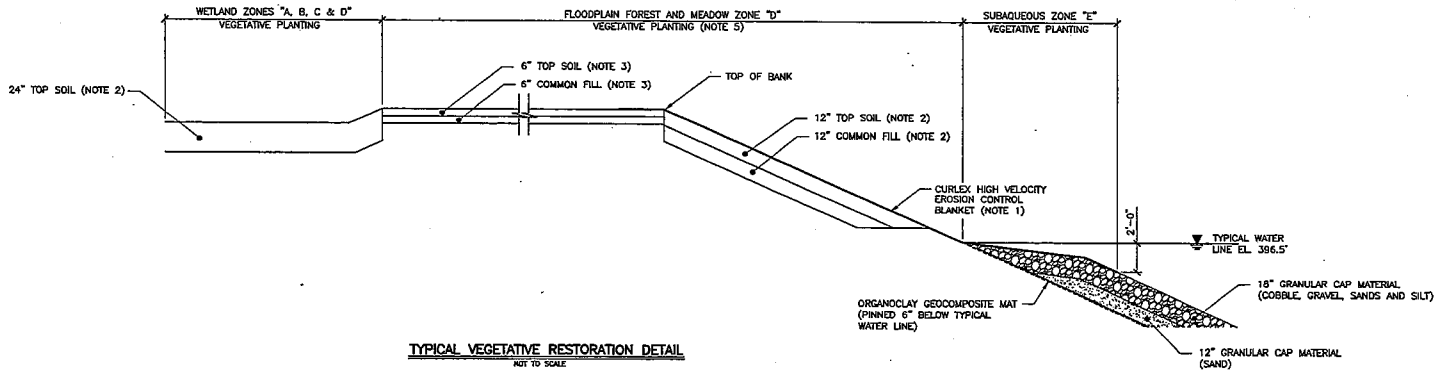
Project: Harbor Point
Date: Wed 8/13/14

Summary Manual Task

\\syracusesvr\projects\National-Grid.1118\43175.Harbor-Point-Co\Docs\Final Site Restoration\Harbor Point Restoration Schedule.mpp

Typical Vegetative Restoration Detail

Auburn Field Office
Received
OCT 29 2014
USACE



TYPICAL VEGETATIVE RESTORATION DETAIL

NOT TO SCALE

Zone A – Emergent Seed Mix

Container (No.)	Common Name	Botanical Name
20	Virginia Wild Rye	*Elymus virginicus*
10	Swamp or Bur Reed	*Sparganium americanum*
10	Water Smartweed	*Polygonum amphibium*
5	Soft-stem Bulrush	*Scirpus validus*
5	Fox Sedge	*Carex vulpinoidea*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Path Rush	*Juncus tenuis*
5	Water Plantain	*Alisma subcordatum*
5	Soft Rush	*Juncus effusus*
5	Wool Grass	*Scirpus cyperinus*
5	Eastern Bur Weed	*Sparganium eurycarpum*
5	Dark Green Bulrush	*Scirpus atrovirens*
5	Sensitive fern	*Onoclea sensibilis*
5	Switchgrass Grass	*Panicum virgatum*
5	Blue Flag Iris	*Iris versicolor*

Note: Apply seed at 30 lbs. per acre to Zone A areas

Zone A – Emergent Plant Mix

Common Name	Botanical Name
Sweetflag (Rhizome)	*Acorus calamus*
Arrow Arum	*Peltandra virginica*
Blue Flag Iris	*Iris versicolor*
Pickerelweed	*Pontederia cordata*

Note: Individual 2 inch diameter plugs or 3-gallon containers shall be planted at a density of 3 plants per 10 square feet

Zone B – Wet meadow Seed Mix

Container (No.)	Common Name	Botanical Name
15	Red Top Grass	*Agrostis alba*
12	Virginia Wild Rye	*Elymus virginicus*
8	Fowl Bluegrass	*Poa palustris*
5	Fowl Manna Grass	*Glyceria striata*
5	Soft-stem Bulrush	*Scirpus validus*
5	Path Rush	*Juncus tenuis*
5	Swamp Milkweed	*Asclepias incarnata*
5	Purple Stemmed Aster	*Aster puniceus*
5	Joe Pye Weed	*Eupatorium maculatum*
5	Boneset	*Eupatorium perfoliatum*
5	Blue Vervain	*Verbena hastata*
5	Fox Sedge	*Carex vulpinoidea*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Bristly Sedge	*Carex comosa*
5	Shallow Sedge	*Carex lurida*
5	Tussock Sedge	*Carex stricta*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Fox Sedge	*Carex vulpinoidea*
5	Bristly Sedge	*Carex comosa*
5	Tussock Sedge	*Carex stricta*
5	Blue Vervain	*Verbena hastata*
5	Boneset	*Eupatorium perfoliatum*
5	Joe Pye Weed	*Eupatorium maculatum*
5	Swamp Milkweed	*Asclepias incarnata*
5	Purple Stemmed Aster	*Aster puniceus*
5	Path Rush	*Juncus tenuis*
5	Soft Rush	*Juncus effusus*
5	Fowl Manna Grass	*Glyceria striata*
5	Fowl Bluegrass	*Poa palustris*
5	Red Top Grass	*Agrostis alba*
5	Virginia Wild Rye	*Elymus virginicus*

Note: Apply seed at 40 lbs. per acre

Zone C – Meadowland Seed Mix

Container (No.)	Common Name	Botanical Name
15	Fox Sedge	*Carex vulpinoidea*
10	Virginia Wild Rye	*Elymus virginicus*
10	Soft Rush	*Juncus effusus*
5	Bur Sedge	*Carex grayi*
5	Green Fruited Bulrush	*Scirpus atrovirens*
5	Fowl Manna Grass	*Glyceria striata*
5	Switchgrass	*Panicum virgatum*
5	Soft Sedge	*Carex hyalinolepis*
5	Common (Bristly) Sedge	*Carex comosa*
5	Shallow Bur Sedge	*Carex lurida*
5	Tussock Sedge	*Carex stricta*

Note: Apply seed at 20 lbs. per acre

Zone D – Floodplain Forest Seed Mix

Container (No.)	Common Name	Botanical Name
25	Bur Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Fultzbush Pea	*Chamaecrista fasciculata*
5	Blackeyed Susan	*Rudbeckia hirta*
5	Fowl Bluegrass	*Poa palustris*
5	Showy Goldenrod	*Oligoneuron rigidum*
5	Oxeye Sunflower	*Heliopsis helianthoides*
5	Plains Coreopsis	*Coreopsis tinctoria*

Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas

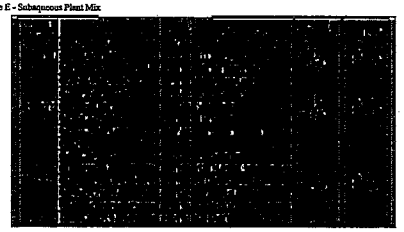
Zone D – Floodplain Forest Plant Mix

Common Name	Botanical Name
Silver Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*
American Sycamore	*Platanus occidentalis*
Basswood	*Tilia americana*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D reforestation area shall include the following:

- Trees 2-4 inch DBH planted at a density of 20 per acre
- Trees 1-inch DBH planted at a density of 100 per acre
- Trees in 6 to 12-inch diameter pots planted as needed to achieve the required density

Zone E – Subaqueous Plant Mix



NOTES:

1. ALL DISTURBED AREAS ALONG THE BANK SHALL BE COVERED WITH CURLEX HIGH VELOCITY EROSION CONTROL BLANKET. CURLEX HIGH VELOCITY EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
2. ALL BACKFILL MATERIAL, ASSOCIATED WITH WETLAND AND/OR BANK RESTORATION, SHALL SATISFY THE PROTECTION OF ECOLOGICAL RESOURCES SOIL CLEANUP OBJECTIVE, ESTABLISHED IN NYCRR PART 375-6.7(d)(1)(ii)(d). NO ON-SITE SOIL SHALL BE USED FOR BANK RESTORATION.
3. ALL BACKFILL MATERIAL, NOT ASSOCIATED WITH WETLAND AND/OR BANK RESTORATION, SHALL BE COMPLIANT WITH THE COMMERCIAL USE STANDARDS LISTED IN NYCRR PART 375 AND SHALL SATISFY THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES (PART 375-6.7(d)(1)(ii)(b)) AND THE OCTOBER 3, 2008 RECORD OF DECISION MODIFICATION.
4. THE SUBAQUEOUS VEGETATION PLANTING ZONE "E" WILL INCLUDE THE TOP 2 FEET OF WATER (I.E. WILL EXTEND DOWN TO ELEVATION 394.5 FT.
5. VARIOUS ASPECTS OF RESTORATION WILL OCCUR ACROSS THE HARBOR POINT SITE. RESTORATION SHALL BE BASED UPON VEGETATIVE COVER TYPES IDENTIFIED PRIOR TO CONSTRUCTION. NON VEGETATIVE AREAS (I.E. ROADWAYS, GRAVEL DRIVES, ETC.) SHALL BE RESTORED TO MEET PRE-EXISTING CONDITIONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

THIS DRAWING WAS PREPARED AT THE SCALE INDICATED IN THE TITLE BLOCK. INACCURACIES IN THE STATED SCALE MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED BY ANY MEANS. USE THE GRAPHIC SCALE BAR IN THE TITLE BLOCK TO DETERMINE THE ACTUAL SCALE OF THIS DRAWING.

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

NO.	DATE	REVISION	INIT.

NOT TO SCALE

O'BRIEN & GERE ENGINEERS INC.

NATIONAL GRID – HARBOR POINT SITE
SITE 6-33-021
OU-1 AND OU-3
SITE VEGETATIVE RESTORATION PLAN
UTICA, NEW YORK

GENERAL

TYPICAL VEGETATIVE RESTORATION DETAIL

IN CHARGE OF _____ FILE NO. 1118.43175.426

DESIGNED BY ____ CHECKED BY ____ DATE AUGUST 2014

DRAWN BY _____

3

Auburn Field Office
Received
OCT 29 2014
USACE

I:\NATIONAL-GRID.1118\43175.HARBOR-POINT-GO\DOCS\DWG\FINAL SITE RESTORATION\43175-423-FIG1-2 FINAL SITE RESTORATION PLAN.DWG

Specification 02208
Restoration of Surfaces

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to or better than the condition of each before the Project began, as reviewed by the Owner.

2. The maintenance required until acceptance.

1.03 SUBMITTALS

A. The Contractor shall submit a schedule of restoration operations for review.

B. Seed Certificates: At least 14 days prior to seeding, submit certificates from seed vendors for each seed mixture required, stating botanical and common name, percentage by weight and percentages of purity, germination, and weed seed for each species. Note that the seed certificates will be copied to NYSDEC, preferably prior to seeding, but no later than the end of the growing season after seeding.

C. Mulch Information: At least 14 days prior to mulching, submit a description of the mulch material, the proposed mulching methods, and application rates.

1.04 SCHEDULE OF RESTORATION

A. After an accepted schedule has been agreed upon, the schedule shall be adhered to unless otherwise revised and reviewed by the Owner.

B. The restoration of surfaces at any time, as scheduled or as directed, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Seed mixtures

1. Riparian Area plantings (above typical water line of 396.5 feet NGVD29 and below the mean high watermark of 398.5 feet NGVD29): shall consist of the following mix (i.e., the New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites as manufactured by New England Wetland Plants, Inc., or approved equivalent):

Species	**Common Name**

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

Species	Common Name
Agrostis scabra	Rough Bentgrass
Andropogon gerardii	Big Bluestem
Aster novae-angliae	New England Aster
Carex vulpinoidea	Fox Sedge
Elymus virginicus	Virginia Wild Rye
Eupatorium perfoliatum	Boneset
Festuca rubra	Creeping Red Fescue
Grass Leaved Goldenrod	Euthamia graminifolia
Juncus effuses	Soft Rush
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Scirpus atrovirens	Green Bulrush
Scirpus cyperinus	Wool Grass
Verbena hastate	Blue Vervain

B. The Contractor shall select, supply, and install mulch material in accordance with this Section, the New York State Standards and Specifications for Erosion and Sediment Control, and/or as directed by the Owner.

C. Mulch shall be stalks of oats, wheat, rye, or other approved crops free from noxious weeds.

PART 3 - EXECUTION

3.01 RIPARIAN AREAS

A. Riparian seeding shall be installed below 398.5 feet NGVD29 down to approximately 396.5 feet NGVD29 (i.e., between the mean high watermark and the typical water surface elevation) along portions of the shoreline of Utica Harbor, as indicated on the Design Drawings.

B. The seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of approximately 35 pounds/acre / 1,250 square feet/pound.

1. Seeding and mulching shall not be done during windy weather.

2. The seed shall be raked lightly into the surface and rolled with a light lawn roller to incorporate seed into the uppermost ½-inch of soil.

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

C. The mulch, if necessary, shall be hand or machine spread to form a continuous blanket over the seed bed, approximately two inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.

1. Mulch shall be anchored by an acceptable method.

2. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

D. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established.

E. Hydroseeding may be accepted as an alternative method of applying seed, and mulch. If hydroseeding is the selected method of planting, the following shall also apply:

1. Mulch materials shall be free of weeds and other foreign materials; free of growth or germination inhibiting ingredients; manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material will become uniformly suspended to form a homogeneous slurry; dyed a suitable color to facilitate inspection of the placement of the material; and capable of forming an absorptive mat, which will allow moisture to percolate into the underlying soil.

2. Seeding and mulching shall be a one-step process in which seed, hydraulic mulch, and mulch adhesive are applied simultaneously in a homogeneous water slurry via hydraulic seeder/mulcher.

3. Hydraulic Seeder/Mulcher: Apply seed, hydraulic mulch, and temporary cover adhesive using an acceptable hydraulic seeder/mulcher. The hydraulic seeder/mulcher shall be equipped with mechanical agitation equipment capable of mixing the materials into a homogeneous water slurry and maintaining the slurry in a homogeneous state until it is applied. The discharge pumps and gun nozzles shall be capable of applying the materials uniformly.

4. Volume Certification: Hydraulic seeding/mulching equipment shall have the tank volume certified by a plate affixed by the manufacturer and confirmed by the Owner by means of measurements or tests prior to the commencement work. This plate shall be affixed in plain view on the hydraulic seeder/mulcher and shall not be removed or altered. The plate shall certify tank volume only, and shall imply equipment conformance to other requirements of this Section.

5. Application of Materials: Measure the quantity of each material to be charged into the hydraulic seeder/mulcher tank either by mass or by a system of mass-calibrated volume measurements acceptable to the Owner. Add the materials to the tank while it is being loaded with water. Thoroughly mix the materials into a

homogeneous water slurry and distribute uniformly over the designated surface area via the hydraulic seeder/mulcher. Apply seed and hydraulic mulch adhesive within 2 hours of being charged into the hydraulic seeder/mulcher tank. During loading of the hydraulic seeder/mulcher tank, add materials in the following sequence: seed, then hydraulic mulch and adhesive.

6. Blend into existing adjacent grass areas to bond new growth to existing adjacent areas or to previous applications to form uniform surfaces.

7. Seed mixture shall be applied in accordance with the manufacturer's written instructions and Part 3.01.C of this Section.

F. The Contractor shall maintain the newly seeded areas, including regrading, reseeding, and watering, in good condition in accordance with Part 3.02 of this Section.

3.02 SUB-AQUEOUS AREAS

A. Sub-aqueous vegetative plants shall be installed below 396.5 feet NGVD29 down to approximately 394.5 feet NGVD29 (i.e., approximately two feet below the typical water surface elevation) along portions of the shoreline of Utica Harbor, as indicated on the Design Drawings.

B. The proposed species to be planted are as follows, and as indicated on the Design Drawings:

Species	Common Name
Iris versicolor	Blue flag
Leersia oryzoides	Rice cutgrass
Sparganium americanum	Eastern bur-reed
Polygonum amphibium	Water smartweed
Rumex verticillatus	Swamp dock
Saurus cernus	Lizard tail
Scirpus fluviatilis	River bulrush
Scirpus validus	Soft stem bulrush
Carex lacustris	Lake sedge
Elodea americanum	American elodea
Potamogeton nodosus	Long-leaved pondweed
Potamongeton perfoliatus	Clasping-leaved pondweed
Sagittaria rigida	Duck potato
Vallisneria americana	Wild celery
Zizania aquatia	Wild rice

(Note: The actual aquatic plants to be planted in Utica Harbor will be selected based on commercial availability at the time of planting. National Grid will contact a minimum of three nurseries before determining the plant supplier. Prior to finalization of the planting plan, consideration will also be given to the preferred planting season for each species.

MATERIALS AND PERFORMANCE – SECTION 02208

RESTORATION OF SURFACES

Any modification to the planting plan proposed herein (including species type) will be discussed and determined in consult with NYSDEC prior to implementation.)

C. Each species will be planted at an approximate density of 5 plants per 10 square feet.

3.03 OTHER TYPES OF RESTORATION

A. Trees, shrubs, and landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and based on discussions with the property owner, unless otherwise directed by the Owner.

B. Fences destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original or new location, or as directed by the Owner.

C. Other site features removed or damaged as a result of the construction operations shall be restored in-kind to their original location and condition unless otherwise directed by the Owner.

3.06 MAINTENANCE

A. Contractor shall maintain the newly seeded areas in good condition until seeded areas have established a minimum uniform 80-percent density of native perennial vegetation and until acceptance by the Owner. The Contractor shall be required to repair any areas of erosion and reseed as necessary until complete coverage and satisfactory sod growth is achieved.

B. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one year following the date of substantial completion.

– END OF SECTION –

Specification 02981
Wetland Restoration

SECTION 02981

WETLAND RESTORATION

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes topsoil, fertilizer, seed, plantings, mulch, and associated work. The vegetative seed mixes and plantings provided in this specification are to be applied to the site based on the vegetative covertypes defined on the Contract Drawings or as directed by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 - Earthwork
B. 02502 – Restoration of Surfaces
C. 02980 – Topsoil and Seeding

1.3 REFERENCES

A. Restoration activities shall be performed in compliance with the following:

1. New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000
2. NYSDEC Record of Decision Operable Unit No. 1.
3. Sections 401 and 404 of the Clean Water Act.
4. Conditions of permits issued by the U.S. Army Corps of Engineers (USACE), NYSDEC, and others.

1.4 SUBMITTALS

A. The following items shall be submitted:

1. The location of source and data for off-site topsoil.

2. Source and content data for all seed mixes, plants, and trees. Data for each container of seed used shall be submitted; data submitted as representative of multiple containers will not be accepted.

3. Should hydroseeder be used, the Contractor shall submit all data including material and application rates.

4. Submit certificates from plant nursery stock supplier for each group of live plant stock required, stating botanical name, common name,

origin, age, date of packaging, and name and address of supplier. Submit at least 4 weeks prior to planting.

5. Invoices for all plants and seed procured for the project shall be submitted.

6. Source and content data for organic mulch (*e.g.,* hay). If synthetic mulch is used, catalog data that includes the manufacturer, materials, and installation procedures, shall be submitted.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil shall be unfrozen friable silt loam free from clay lumps, stones, roots, sticks, stumps, brush or foreign objects.

1. Topsoil shall have moderate pH (5 to 6.5) and organic matter concentration between (6% - 20%).

2. Topsoil shall be comprised of the following particle sizes:

i. At least 50% silt (0.05 to 0.002 mm dia) and 12 to 27% clay (less than 0.002 mm dia) or

ii. 50 to 80% silt and less than 12% clay.

3. All topsoil used for bank or wetland restoration shall satisfy the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

4. All topsoil, not associated with the bank or wetland restoration, shall be compliant with the commercial use standards listed in NYCRR PART 375 and shall satisfy the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b).

B. Fertilizer shall be a standard quality commercial carrier of available plant food elements and shall consist of a complete prepared and packaged material containing a minimum of 10% nitrogen, 10% phosphoric acid and 10 % potash.

1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

C. Seed mixtures shall be of commercial stock of the current or prior season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. Seed shall be labeled true to species and variety. The

percent of pure live strain of the seed shall be submitted with the seed mixture.

D. The seed supplier shall provide a seed analysis report including certified analyses of percent viability, percent weed seeds, and percent of other crop seed. The certifying laboratory shall be indicated on the seed tag or on associated submittals.

E. The state of origin of the seed shall be indicated on the seed tag or on associated submittals.

F. The following weed seeds shall not be present in any seed mix:
1. Smooth brome (*Bromus inermis*)
2. Tall fescue (*Schedonorus phoenix*)
3. Purple loosestrife (*Lythrum salicaria*)
4. Common reed (*Phragmites australis*)
5. Cattail (*Typha angustifolia, T. x glauca*)
6. Reed canarygrass (*Phalaris arundinacea*)

G. All seed shall meet the standards of germination and purity set by New York State or the Association of Official Seed Certifying Agencies (AOSCA).

H. The following seed and plant mixtures shall be applied as to areas indicated below:

Zone A - Emergent Seed Mix

Content (%)	Common Name	Botanical Name
20	Virginia Wild Rye	*Elymus virginicus*
10	American Bur Reed	*Sparganium americanum*
10	Water Smartweed	*Polygonum amphibium*
5	Soft-stem Bulrush	*Scirpus validus*
5	Duck potato	*Sagitaria latifolia*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Fox Sedge	*Carex vulpinoidea*
5	Water Plantain	*Alisma subcordatum*
5	Soft Rush	*Juncus effusus*
5	Wool Grass	*Scirpus cyperinus*
5	Eastern Bur Reed	*Sparganium americanum*
5	Dark Green Bulrush	*Scirpus atrovirens*
5	Sensitive fern	*Onoclea sensibilis*
5	Rattlesnake Grass	*Glyceria canadensis*
5	Rice Cutgrass	*Leersia oryzoides*

Note: Apply seed at 40 lbs. per acre to Zone A areas indicated on sheet G-12 of the contract drawings.

Zone A – Emergent Plant Mix

Common Name	Botanical Name
American Bur Reed	*Sparganium americanum*
Duck potato	*Sagitaria latifolia*
Water Plantain	*Alisma subcordatum*
Sensitive Fern	*Onoclea sensibilis*

Notes: Individual 2 inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone A on sheet G-12 of the contract drawings.

Zone B - Wet meadow Seed Mix

Content (%)	Common Name	Botanical Name
15	Red Top Grass	*Agrostis alba*
12	Virginia Wild Rye	*Elymus virginicus*
5	Soft Rush	*Juncus effusus*
5	Spotted touch me not	*Impatiens capensis*
5	Pale touch me not	*Impatiens pallida*
5	Beggar Ticks	*Bidens frondosa*
5	Umbrella Sedge	*Cyperus strigosus*
5	Blue Vervain	*Verbena hastata*
5	Jerusalem Artichoke	*Helianthus tuberosus*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
5	Swamp Milkweed	*Asclepias incarnata*
5	Purple Stemmed Aster	*Aster puniceus*
5	Joe Pye Weed	*Eupatorium maculatum*
5	Boneset	*Eupatorium perfoliatum*
2	Fox Sedge	*Carex vulpinoidea*
2	Field Horsetail	*Equisetum arvense*
2	Rough Horsetail	*Equisetum hyemale*
2	Nodding Bur Marigold	*Bidens cernua*
1	Indian Hemp	*Apocynum cannabinum*
1	Water Horehound	*Lycopus americanus*
1	Monkey Flower	*Mimulus ringens*
1	Awl Sedge	*Carex stipata*
1	False Nettle	*Boehmaria cylindrica*

Note: Apply seed at 40 lbs. per acre to Zone B areas indicated on sheet G-12 of the contract drawings.

Zone B – Wet Meadow Plant Mix

Common Name	Botanical Name
Cinnamon Fern	*Osmunda cinnamomea*
Sensitive Fern	*Onoclea sensibilis*

Notes: Individual 2 inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone B on sheet G-12 of the contract drawings.

Zone C - Scrub-Shrub Seed Mix

Content (%)	Common Name	Botanical Name
25	Fox Sedge	*Carex vulpinoidea*
42	Virginia Wild Rye	*Elymus virginicus*
11	Soft rush	*Juncus effusus*
5	Hop Sedge	*Carex lupulina*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
3	Pennsylvania smartweed	*Polygonum pensylvanicum*
2	Awl Sedge	*Carex stipata*
1	Cosmos (Bristly) Sedge	*Carex comosa*
1	Nodding Bur Marigold	*Bidens cernua*
5	Umbrella Sedge	*Cyperus strigosus*

Note: Apply seed at 20 lbs. per acre to Zone C areas indicated on sheet G-12 of the contract drawings.

Zone C - Scrub-Shrub Live stakes

Live stakes shall range from 0.5" to 1.5" in diameter, with the following lengths:

a. Black willow (*Salix nigra*): 2'

b. Buttonbush (*Cephalanthus occidentalis*): 2'

c. Stiff-leaved dogwood (*Cornus foemina*): 2'-3'

d. Red osier dogwood (*Cornus stolonifera*): 2'-3'

e. Speckled alder (*Alnus rugosa*): 2'-3'

f. Arrow wood (*Viburnum dentatum*): 2'-3'

Live stakes shall be planted in Zone C areas indicated on sheet G-12 at a density of one stake per 16 square feet (i.e., approximately 4 foot spacing).

Auburn Field Office
Received
OCT 29 2014
Wetland Restoration
USACE

Zone D – Floodplain Forest Seed Mix

ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix

Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*

Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas indicated on the Contract Drawings.

Zone D – Floodplain Forest Plant Mix

Common Name	Botanical Name
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*
American Sycamore	*Platanus occidentalis*
Boxelder	*Acer negundo*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D restoration area shall include the following:

- Trees 3-4 inch DBH planted at a density of 50 per acre
- Trees 1-inch DBH planted at a density of 100 per acre
- Trees in 6 to 12-inch diameter pots planted as needed to achieve the required density

I. Plantings

1. All plant materials shall comply with state and federal laws with respect to inspection for plant diseases and insect infestations.

2. Plants shall be in accordance with the current edition of the *American Standard for Nursery Stock* (ANSI Z60.1-2004) unless otherwise specified.

3. Woody plants shall be of high quality and symmetrical. They shall be healthy, well branched and densely foliated when in leaf.

4. Plants shall be free of disease and insects, eggs, or larvae, and have healthy, well-developed root systems such that the root ball does not fall apart upon plant removal from the pot or tray.

5. Plants shall be tagged true to species name and variety and not contain weeds.

   i. For plugs, each tray shall be tagged

   ii. For live stakes, each bundle shall be tagged

   iii. For trees and shrubs in individual pots, each pot or stem shall be tagged.

6. Plants shall arrive at the job site free from physical damage.

7. Trays of grass and sedge plugs may be stacked during shipment. Forbs shall not be stacked.

8. Each species shall be handled and packed in a manner approved for that plant. All precautions that are customary in good trade practice shall be taken such that plants arrive at the Site in good condition. Plants that arrive dried out, exposed to excessive heat, or that have been in storage for protracted periods of time, will not be accepted. If, upon inspection, the plants or root stocks display mold or decay, the material will not be accepted.

9. All woody seedlings shall have a heavy fibrous root system that has been developed by proper horticultural treatment, transplanting, and root pruning.

J. Mulch shall be stalks of oats, wheat, rye or other approved crops which are free from noxious weeds. Mulch may also be EcoBlanket® or a hydromulch with tackifier that is made out of bio-degradable material. Photodegradable blankets or plastic blankets cannot be used.

PART 3 EXECUTION

3.1. GENERAL

Trees outside of the excavation area that are greater than 6 inches DBH should be protected by placing a barrier around the tree at the tree drip-line. This applies to trees that are near the movement of construction equipment, with the intention of the barrier to prevent damage through inadvertent driving, bucket swings and lifts, etc.

3.2. INSTALLATION

A. The Contractor shall verify that the exposed subgrade in Zones A, B, and C has a minimum clay content of 20%. If the clay content is less than 20%, the area shall be compacted to a minimum of 90% as determined with density tests designated in ASTM D698 Method D.

B. Place topsoil within wetland restoration areas (Zones A, B, and C) and rough grade to achieve an average depth of 24-inches. Finished grade may vary from the 24-inch depth proposed by up to 6-inches but shall average 24-inches. Topsoil depths may vary between a maximum depth of 30 inches and a minimum depth of 18 inches. The topsoil shall not be compacted or fine graded but shall be loose and non-uniform such that an irregular (*i.e.*, includes hummocks and hollows) surface results. Topsoil shall be placed within Zone D and meadow restoration areas to achieve finished grade as indicated on Contract Drawings.

C. Soil staging activities shall be coordinated with the Owner prior to placement. Excess soil shall be disposed of on-site in an approved location or off-site. Silt fence shall be installed around the perimeter of the disposal area(s) until disposal activities are completed, and the area(s) is graded, seeded, and mulched. Silt fence shall be removed after a minimum of 80% of vegetative coverage is achieved.

D. Seeding shall be performed during two seasonal windows: mid-April to early June or the month of November. If site soils require seeding and stabilization at times outside of these dates, they shall be temporarily seeded and mulched using 30 pounds per acre of oats (*Avena sativa*).

E. Alternative species and/or seed mixes may be used with Engineer approval only.

F. Procedures for planting woody potted stock:

1. Potted trees and shrubs shall be planted from mid-April to late May or from September through December.

2. The planting hole diameter shall be at least 1.5 times the diameter of the root ball and dug to a depth such that the root flare is even with the finished grade when the plant is placed in the hole.

3. If the planting hole is initially dug too deeply, soil shall be added back into the hole to attain the proper elevation.

4. Cut roots encircling the root ball with a sharp knife and install the plant as soon as possible once it has been removed from the pot.

5. Backfill the planting hole and firmly work soil into and around the root ball with care taken to fill in air spaces.

6. Tamp the backfill with foot pressure sufficient to prevent the root ball from shifting or leaning.

7. Leave the top of the root ball exposed in order to allow water to flow down into it.

8. Form earthen water-holding saucers (4 inches deep with a similar diameter as the planting hole) around each plant.

9. Water all plants immediately after planting. Apply water directly to the root ball and adjacent soil. Fill the water holding saucer with water.

10. Following installation, remove all tags, labels, strings, etc. from all plants.

11. Planting procedures for plugs shall follow those outlined above for woody species with the following exceptions:

    a. Planting of plugs shall occur from mid-April to early June.

    b. Plugs shall be installed such that the top of the root ball is even with the finished soil grade.

    c. The height of the water holding saucer shall be approximately 1 inch.

    d. Roots encircling the plug shall not be cut.

e. Following planting, individual plugs shall be watered in a similar fashion as woody plants or 1 inch of water may be evenly applied across areas where plugs were installed.

G. Live stakes shall be planted when materials are dormant, after leaf drop in the fall and before bud break in the spring. Live stakes shall be installed by:

1. Cutting a pilot hole with a bar of approximately similar diameter as the live stake.

2. A minimum of 2" to 4" and two live buds of the live stake shall be exposed above the soil.

3. Equal numbers of each species shall be planted.

4. Live stakes shall be cut to a point on the basal end for insertion on the ground.

5. Use a dead blow hammer to drive stakes into the ground. The hammer head should be filled with shot or sand. A dibble, iron bar, or similar tool shall be used to make a pilot hole to prevent damaging the material during installation.

6. After placement, tamp soil around live stakes.

7. Any live stake that is damaged shall be left in place and supplemented with a replacement live stake adjacent.

H. Nursery grown materials shall be stored under continuously cool, covered, and moist conditions prior to use.

I. Seed shall be applied to Zone C areas after placement of live stakes and to Zone D after placement of trees

J. Soak live branches for a minimum of 24 hours before planting. Soaking for 5-7 days is preferred.

K. Coarse woody debris (*i.e.*, individual logs, stumps) shall be placed randomly throughout each wetland restoration area (Zones A, B, and C). Debris shall consist of cleared site vegetation and shall be placed as ground cover over a minimum of 1% of each mitigation area. Material to be used shall be a minimum of 6-inch diameter breast height (dbh) throughout, obtained from materials cleared as part of on-site construction activities. Place stockpiled debris as directed prior to planting.

L. In Zone D, 100 grams of slow-release 10-10-10 fertilizer shall be placed in each planting hole prior to placing woody potted stock.

M. When the topsoil surface has been graded, the seed mixture shall be uniformly applied by a method approved by the Owner's Representative.

1. Tracking shall be performed over seeded areas using the tracks of a bulldozer (or equivalent), running perpendicular to the slope gradient where present. In areas receiving trees or shrubs, soil tracking shall occur before tree installation and seed broadcasting.

2. Seeding and mulching shall not be done during windy weather.

N. The mulch shall be hand or machine spread over restored areas to form a continuous blanket over the seed bed:

a. If straw mulch or similar is used, approximately 1 to 1.5 inches uniform thickness at loose measurement shall be applied. Excessive amounts or bunching of mulch will not be permitted.

b. If EcoBlanket® or hydromulch is used, these mulches shall be installed at a rate recommended by the manufacturer.

O. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

P. Watering of herbaceous species (*i.e.,* seed or plugs) shall occur from July to September of the planting year if soils are not moist and if plants are showing signs of moisture stress. Watering shall be in such a manner as to prevent washing out of seed or exposing plant roots. Sufficient water shall be applied to each plant to maintain plant health and vigor.

Q. Watering of woody species (live stakes and potted plants) shall occur if one inch of rain is not received during any seven-day window from June 1 through August 31 in the year of installation. Watering events may be avoided if the woody plants are not showing moisture stress and with written approval from the Engineer. Watering shall occur in the first July to September following planting (i.e., woody plants installed in the fall shall be watered the following year). Sufficient water shall be applied to each plant to maintain plant health and vigor.

R. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The Contractor shall submit all data regarding materials and application rates to the Engineer for review.

3.2 MONITORING AND MAINTENANCE

A. The Contractor shall warranty the plantings (potted stock, live stakes) and seed for a period of one year or until the end of the next growing season, whichever is later. The Contractor shall replace deceased planted stock or reseed areas based on the following criteria:

1. Minimum 95% survival of planted stock
2. Minimum 95% ground coverage of seeded areas
3. Plants and/or seeds shall be replaced during the optimal season for plant survival.

B. Replacements shall be of the same size originally planted and subject to the first year maintenance efforts prescribed herein.

C. Alternative species and/or seed mixes may be used during replacement with Engineer approval only.

D. National Grid will monitor the plantings (potted stock) and seed for an additional period of four years. This monitoring is not a part of this contract. Monitoring events will be performed during the growing season (*i.e.,* April through October) and the results summarized in annual reports that will be submitted to the NYSDEC and USACE. National Grid will replace deceased planted stock or reseed areas based on the following:

1. In Years 2 and 3 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

   a. Maintain the densities and species diversities. However, species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species.
   b. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.
   c. Plants and/or seeds shall be replaced during the optimal season for plant survival.

2. In Years 4 and 5 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

   1. Maintain the original prescribed densities and species diversities. Species that are observed to be successful (i.e., are

growing vigorously) may be substituted for less successful species.

2. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.

3. The following additional information will be recorded during monitoring events for the five year monitoring period:

   i. Date and time of data collection efforts, as well as recent weather information
   ii. Comparison of site conditions to pre-disturbance conditions
   iii. Species identification of what restoration plants are deceased and those that have survived
   iv. Enumeration of deceased and surviving restoration plants
   v. Percent vegetative cover
   vi. Identification of pioneer species
   vii. Percent cover and identification of invasive species
   viii. Surface water levels
   ix. Photographs from fixed reference points of each restoration area showing representative portions of the restoration areas
   x. Observed fish and wildlife

4. If invasive species are observed during the vegetative surveys, actions will be taken within 30 -90 days to eliminate invasive species problems, including but not limited to:

   a. The species, location and size of the population will be recorded as well as the control method and date of control action
   b. If the population is of manageable size (e.g., less than approximately 500 stems or 0.1 acres):
      1. Invasive plants will be manually removed by excavating roots, pulling or clipping until the population is eliminated
      2. The area that had the invasive species will be covered with a non-translucent tarp for a minimum of one growing season
      3. Invasive plants which grow up around the tarp will be pulled or clipped
      4. Invasive plant refuse will be appropriately disposed of, i.e., burned or landfilled in nontranslucent bags. Invasive plant refuse cannot be composted, added to stockpile soils

or handled in a way that would lead to reuse at this or any other site.

c. If the population is considered to be too large for manual control methods, a NYSDEC-approved herbicide will be used according to manufacturer's instructions

d. With agreement from NYSDEC, control methods can be adapted over time given outcomes of initial control efforts. The timing and methods for control measures will be specifically designed for each species observed

e. Efforts to eliminate invasive species will continue throughout the monitoring period within the restored areas. The presence of any invasive species identified in the current or future Revised Interim List of Invasive Plant Species in New York State, included herein as Exhibit B, will not be allowed. Any other invasive species not specified on the noted list may not occupy more than 5% of the restored areas.

* * * * *

Specification 02982 Floodplain Forest and Meadow Restoration

Auburn Field Office
Received
OCT 29 2014
USACE

SECTION 02982

FLOODPLAIN FOREST AND MEADOW RESTORATION

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes topsoil, fertilizer, seed, plantings, mulch, and associated work. The vegetative seed mixes and plantings provided in this specification are to be applied to the site based on the vegetative covertypes defined on the Contract Drawings or as directed by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. 02220 - Earthwork
B. 02502 – Restoration of Surfaces
C. 02980 – Topsoil and Seeding

1.3 REFERENCES

A. Restoration activities shall be performed in compliance with the following:

1. New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000
2. NYSDEC Record of Decision Operable Unit No. 1.
3. Sections 401 and 404 of the Clean Water Act.
4. Conditions of permits issued by the U.S. Army Corps of Engineers (USACE), NYSDEC, and others.

1.4 SUBMITTALS

A. The following items shall be submitted:

1. The location of source and data for off-site topsoil.

2. Source and content data for all seed mixes, plants, and trees. Data for each container of seed used shall be submitted; data submitted as representative of multiple containers will not be accepted.

3. Should hydroseeder be used, the Contractor shall submit all data including material and application rates.

4. Submit certificates from plant nursery stock supplier for each group of live plant stock required, stating botanical name, common name,

origin, age, date of packaging, and name and address of supplier. Submit at least 4 weeks prior to planting.

5. Invoices for all plants and seed procured for the project shall be submitted.

6. Source and content data for organic mulch (*e.g.,* hay). If synthetic mulch is used, catalog data that includes the manufacturer, materials, and installation procedures, shall be submitted.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil shall be unfrozen friable silt loam free from clay lumps, stones, roots, sticks, stumps, brush or foreign objects.

1. Topsoil shall have moderate pH (5 to 6.5) and organic matter concentration between (6% - 20%).

2. Topsoil shall be comprised of the following particle sizes:

i. At least 50% silt (0.05 to 0.002 mm dia) and 12 to 27% clay (less than 0.002 mm dia) or

ii. 50 to 80% silt and less than 12% clay.

3. All topsoil used for bank restoration shall satisfy the Protection of Ecological Resources Soil Cleanup Objectives, established in NYCRR Part 375-6.7(d)(1)(ii)(d).

4. All topsoil, not associated with the bank restoration, shall be compliant with the commercial use standards listed in NYCRR PART 375 and shall satisfy the Protection of Groundwater Soil Cleanup Objectives Part 375-6.7(d)(1)(ii)(b).

B. Fertilizer shall be a standard quality commercial carrier of available plant food elements and shall consist of a complete prepared and packaged material containing a minimum of 10% nitrogen, 10% phosphoric acid and 10 % potash.

1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

C. Seed mixtures shall be of commercial stock of the current or prior season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix. Seed shall be labeled true to species and variety. The

percent of pure live strain of the seed shall be submitted with the seed mixture.

D. The seed supplier shall provide a seed analysis report including certified analyses of percent viability, percent weed seeds, and percent of other crop seed. The certifying laboratory shall be indicated on the seed tag or on associated submittals.

E. The state of origin of the seed shall be indicated on the seed tag or on associated submittals.

F. The following weed seeds shall not be present in any seed mix:
1. Smooth brome (*Bromus inermis*)
2. Tall fescue (*Schedonorus phoenix*)
3. Purple loosestrife (*Lythrum salicaria*)
4. Common reed (*Phragmites australis*)
5. Cattail (*Typha angustifolia, T. x glauca*)
6. Reed canarygrass (*Phalaris arundinacea*)

G. All seed shall meet the standards of germination and purity set by New York State or the Association of Official Seed Certifying Agencies (AOSCA).

H. The following seed and plant mixtures shall be applied as to areas indicated below:

ERNMX-123: Native Upland Wildlife Forage & Cover Meadow Mix

Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*

Note: Apply seed at 20 lbs. per acre to both Meadow and Floodplain Forest areas indicated on the Contract Drawings.

Auburn Field Office
Received
OCT 29 2014
USACE

Floodplain Forest Plant Mix

Common Name	Botanical Name
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*

American Sycamore	*Platanus occidentalis*
Boxelder	*Acer negundo*
Quaking Aspen	*Populus tremuloides*
Black Willow	*Salix nigra*

Note: Trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted. Each Zone D restoration area shall include the following:

- Trees 3-4 inch DBH planted at a density of 50 per acre
- Trees 1-inch DBH planted at a density of 100 per acre

Trees in 6 to 12-inch diameter pots planted as needed to achieve the required density

I. Plantings

1. All plant materials shall comply with state and federal laws with respect to inspection for plant diseases and insect infestations.

2. Plants shall be in accordance with the current edition of the *American Standard for Nursery Stock* (ANSI Z60.1-2004) unless otherwise specified.

3. Woody plants shall be of high quality and symmetrical. They shall be healthy, well branched and densely foliated when in leaf.

4. Plants shall be free of disease and insects, eggs, or larvae, and have healthy, well-developed root systems such that the root ball does not fall apart upon plant removal from the pot or tray.

5. Plants shall be tagged true to species name and variety and not contain weeds.

   i. For trees and shrubs in individual pots, each pot or stem shall be tagged.

6. Plants shall arrive at the job site free from physical damage.

7. Each species shall be handled and packed in a manner approved for that plant. All precautions that are customary in good trade practice shall be taken such that plants arrive at the Site in good condition. Plants that arrive dried out, exposed to excessive heat, or that have been in storage for protracted periods of time, will not be accepted. If, upon inspection, the plants or root stocks display mold or decay, the material will not be accepted.

8. All woody seedlings shall have a heavy fibrous root system that has been developed by proper horticultural treatment, transplanting, and root pruning.

J. Mulch shall be stalks of oats, wheat, rye or other approved crops which are free from noxious weeds. Mulch may also be EcoBlanket® or a hydromulch with tackifier that is made out of bio-degradable material. Photodegradable blankets or plastic blankets cannot be used.

PART 3 EXECUTION

3.1. GENERAL

Trees outside of the excavation area that are greater than 6 inches DBH should be protected by placing a barrier around the tree at the tree drip-line. This applies to trees that are near the movement of construction equipment, with the intention of the barrier to prevent damage through inadvertent driving, bucket swings and lifts, etc.

3.2. INSTALLATION

A. Place topsoil within restoration areas and grade to achieve finished grade.

B. Soil staging activities shall be coordinated with the Owner prior to placement. Excess soil shall be disposed of on-site in an approved location or off-site. Silt fence shall be installed around the perimeter of the disposal area(s) until disposal activities are completed, and the area(s) is graded, seeded, and mulched. Silt fence shall be removed after a minimum of 80% of vegetative coverage is achieved.

C. Seeding shall be performed during two seasonal windows: mid-April to early June or the month of November. If site soils require seeding and stabilization at times outside of these dates, they shall be temporarily seeded and mulched using 30 pounds per acre of oats (*Avena sativa*).

D. Alternative species and/or seed mixes may be used with Engineer approval only.

E. Procedures for planting woody potted stock:

1. Potted trees and shrubs shall be planted from mid-April to late May or from September through December.

2. The planting hole diameter shall be at least 1.5 times the diameter of the root ball and dug to a depth such that the root flare is even with the finished grade when the plant is placed in the hole.

3. If the planting hole is initially dug too deeply, soil shall be added

back into the hole to attain the proper elevation.

4. Cut roots encircling the root ball with a sharp knife and install the plant as soon as possible once it has been removed from the pot.

5. Backfill the planting hole and firmly work soil into and around the root ball with care taken to fill in air spaces.

6. Tamp the backfill with foot pressure sufficient to prevent the root ball from shifting or leaning.

7. Leave the top of the root ball exposed in order to allow water to flow down into it.

8. Form earthen water-holding saucers (4 inches deep with a similar diameter as the planting hole) around each plant.

9. Water all plants immediately after planting. Apply water directly to the root ball and adjacent soil. Fill the water holding saucer with water.

9. Following installation, remove all tags, labels, strings, etc. from all plants.

H. Nursery grown materials shall be stored under continuously cool, covered, and moist conditions prior to use.

I. Seed shall be applied after placement of trees

J. In Floodplain Forest areas, 100 grams of slow-release 10-10-10 fertilizer shall be placed in each planting hole prior to placing woody potted stock.

K. When the topsoil surface has been graded, the seed mixture shall be uniformly applied by a method approved by the Owner's Representative.

1. Tracking shall be performed over seeded areas using the tracks of a bulldozer (or equivalent), running perpendicular to the slope gradient where present. In areas receiving trees or shrubs, soil tracking shall occur before tree installation and seed broadcasting.

2. Seeding and mulching shall not be done during windy weather.

L. The mulch shall be hand or machine spread over restored areas to form a continuous blanket over the seed bed:

a. If straw mulch or similar is used, approximately 1 to 1.5 inches uniform thickness at loose measurement shall be applied. Excessive amounts or bunching of mulch will not be permitted.

b. If EcoBlanket® or hydromulch is used, these mulches shall be installed at a rate recommended by the manufacturer.

M. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

N. Watering of herbaceous species (*i.e.,* seed) shall occur from July to September of the planting year if soils are not moist and if plants are showing signs of moisture stress. Watering shall be in such a manner as to prevent washing out of seed or exposing plant roots. Sufficient water shall be applied to each plant to maintain plant health and vigor.

O. Watering of woody species (potted plants) shall occur if one inch of rain is not received during any seven-day window from June 1 through August 31 in the year of installation. Watering events may be avoided if the woody plants are not showing moisture stress and with written approval from the Engineer. Watering shall occur in the first July to September following planting (i.e., woody plants installed in the fall shall be watered the following year). Sufficient water shall be applied to each plant to maintain plant health and vigor.

P. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The Contractor shall submit all data regarding materials and application rates to the Engineer for review.

3.2 MONITORING AND MAINTENANCE

A. The Contractor shall warranty the plantings (potted stock) and seed for a period of one year or until the end of the next growing season, whichever is later. The Contractor shall replace deceased planted stock or reseed areas based on the following criteria:

1. Minimum 95% survival of planted stock
2. Minimum 95% ground coverage of seeded areas
3. Plants and/or seeds shall be replaced during the optimal season for plant survival

B. Replacements shall be of the same size originally planted and subject to the first year maintenance efforts prescribed herein.

C. Alternative species and/or seed mixes may be used during replacement with Engineer approval only.

D. National Grid will monitor the plantings (potted stock) and seed for an additional period of four years. This monitoring is not a part of this contract. Monitoring events will be performed during the growing season (*i.e.,* April through October) and the results summarized in annual reports that will be submitted to the NYSDEC and USACE. National Grid will replace deceased planted stock or reseed areas based on the following:

1. In Years 2 and 3 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

    a. Maintain the densities and species diversities. However, species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species.
    b. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.
    c. Plants and/or seeds shall be replaced during the optimal season for plant survival.

2. In Years 4 and 5 of the monitoring period, deceased planted stock will be replaced or bare areas reseeded based on the following criteria:

    1. Maintain the original prescribed densities and species diversities. Species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species.

    2. Vigorously growing non-invasive volunteers may be included in the survival, density, and percent cover calculations.

3. The following additional information will be recorded during monitoring events for the five year monitoring period:

    i. Date and time of data collection efforts, as well as recent weather information
    ii. Comparison of site conditions to pre-disturbance conditions
    iii. Species identification of what restoration plants are deceased and those that have survived
    iv. Enumeration of deceased and surviving restoration plants
    v. Percent vegetative cover
    vi. Identification of pioneer species
    vii. Percent cover and identification of invasive species
    viii. Surface water levels

ix. Photographs from fixed reference points of each restoration area showing representative portions of the restoration areas

x. Observed fish and wildlife

4. If invasive species are observed during the vegetative surveys, actions will be taken within 30 -90 days to eliminate invasive species problems, including but not limited to:

a. The species, location and size of the population will be recorded as well as the control method and date of control action

b. If the population is of manageable size (e.g., less than approximately 500 stems or 0.1 acres):
   1. Invasive plants will be manually removed by excavating roots, pulling or clipping until the population is eliminated
   2. The area that had the invasive species will be covered with a non-translucent tarp for a minimum of one growing season
   3. Invasive plants which grow up around the tarp will be pulled or clipped
   4. Invasive plant refuse will be appropriately disposed of, i.e., burned or landfilled in nontranslucent bags. Invasive plant refuse cannot be composted, added to stockpile soils or handled in a way that would lead to reuse at this or any other site.

c. If the population is considered to be too large for manual control methods, a NYSDEC-approved herbicide will be used according to manufacturer's instructions

d. With agreement from NYSDEC, control methods can be adapted over time given outcomes of initial control efforts. The timing and methods for control measures will be specifically designed for each species observed

e. Efforts to eliminate invasive species will continue throughout the monitoring period within the restored areas. The presence of any invasive species identified in the current or future Revised Interim List of Invasive Plant Species in New York State, included herein as Exhibit B, will not be allowed. Any other invasive species not specified on the noted list may not occupy more than 5% of the restored areas..

* * * * *

Auburn Field Office
Received
OCT 29 2014
USACE

Restoration Plan for Disturbed Banks and Subaqueous Areas, Harbor Point Site – Utica, New York (June 29, 2012)

Restoration Plan for Disturbed Banks and Subaqueous Areas
Harbor Point Site – Utica, New York
June 29, 2012

1. Introduction

On March 19, 2012 National Grid submitted via email a draft version of the Remedial Design Report for Operable Unit 3 – Utica Harbor, Harbor Point Site, Utica, New York (Remedial Design Report) to the New York State Department of Environmental Conservation (NYSDEC). The Remedial Design Report was conditionally approved by the NYSDEC in letters dated April 16, 2012 and April 27, 2012. National Grid responded to NYSDEC via email on May 22, 2012, and proposed that a Restoration Plan for the disturbed banks and certain portions of the subaqueous area be submitted as an addendum to the Remedial Design Report. This Restoration Plan for Disturbed Banks and Subaqueous Areas (Restoration Plan) provides details related to the anticipated restoration, planting and monitoring activities to be implemented following construction of a sediment cap at the Operable Unit 3 (OU-3) Utica Harbor site (the Site). A general plan view of the harbor and associated restoration areas is shown on Drawing 1. Material and Performance [M&P] sections referenced herein are included as part of the Remedial Design Report, and are also attached to this Restoration Plan for reference as Attachment 1.

2. Bank Restoration Zone

Before initiating capping activities, an approximate 100 foot wide area of the bank will be partially cleared of vegetation to accommodate the movement of stockpiled cap soil from the upland temporary support zone (i.e. an existing gravel/paved area) on to barges moored adjacent to and within the riparian and subaqueous restoration zones. National Grid's selected Remediation Contractor will determine the extent of clearing and grubbing in the field based on actual needs, however, it is not anticipated that the entire 100 foot wide area will be totally cleared of all vegetation.

In general, restoration of bank areas disturbed for access will involve removal of any temporary ramp or dock structures, removal of common embankment material, and regarding of disturbed surfaces. If topsoil is removed from the bank zone to be restored, subsurface soil will be graded to a minimum depth of 6 inches below the proposed final grade, and 6 inches of new topsoil will be installed to create the final grade and to serve as the medium for plant establishment. If at least 6 inches of suitable topsoil remains on the bank following the removal of the temporary structures or other construction-related materials, the existing topsoil surface shall be loosened to a depth of 2 to 4 inches prior to reseeding. The furnishing and placing of topsoil, seed, and mulch shall be in accordance with M&P – Section 02210, titled Topsoil and Seeding (Attachment 1).

Upon completion of bank grading, bank vegetation will be restored by seeding and planting with native species similar to those removed from the area. Shrubs that are removed from the bank will be replaced with in-kind or with other native species on a one-for-one basis. Table 1 presents a list of shrub species currently being considered to replace removed shrubs.

Table 1
Native Shrub Species Proposed for Restored Bank Areas

Species	Common Name	Proposed Habitat
Cephalanthus occidentalis	Buttonbush	Edge of Water
Cornus obliqua	Silky Dogwood	Moist Soil
Ilex verticillata	Winterberry	Wet soil
Lindera benzoin	Spicebush	Shaded Upland
Cornus sericea	Redosier Dogwood	Wet soil
Cornus racemosa	Gray Dogwood	Upland
Viburnum dentatum	Arrowwood	Upland

Trees that are removed from the bank will be replaced in-kind at a frequency of one-for-one for each tree removed, up to a supplier recommended maximum density. Preliminary discussions with potential suppliers indicate the frequency will be in the range of approximately 10 plants per 1,000 square feet (sq ft). Trees will be restored with in-kind species based on a pre-construction survey of the bank area to be disturbed.

Trees and shrubs planted for restoration purposes, as necessary, will be planted outside of the growing season and in consideration of supplier recommendations and warranty conditions. All plants will be delivered to and staged onsite prior to planting. Plants will be examined prior to planting to ensure proper species, good health, and proper root development. Any plants found to be in poor health, having poor root development or showing signs of disease will be rejected and will be replaced by the Remediation Contractor. Planting pits for trees and shrubs will be dug 1 foot wider than the plant container, with the pit depth equal to the depth of the plant container. Plants will be placed in the pit so as to allow for further growth without additional constriction of the root ball. When the trees and shrubs have been properly set, they will be thoroughly watered during and after backfilling. The existing soil will be used as backfill and placed to bring the surface, when settled, to the required grade. At the time of planting, watering will be conducted in a manner such that the newly installed plant is not injured, nor is the surrounding soil eroded away. After planting and watering, each plant will be mulched with wood chips from on-site cleared vegetation or commercial sources and fertilized with a slow release fertilizer, applied at the product-recommended application rate.

The seed mix to be used for the bank area above the Mean High Watermark disturbed during construction will consist of New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites, in accordance with M&P – Section 02210 (Attachment 1).

Seeding of Riparian Restoration Zone

The disturbed herbaceous community between the Typical Water Line (i.e., the OWM) and the Mean High Watermark (i.e., the Riparian Restoration zone between 396.5 and 398.5 feet [ft] NGVD29[1]) will be restored with the seed mix proposed in Table 2. The proposed seed mix consists of a mix of native species that are adapted to the anticipated range in hydrologic conditions.

[1] Note that as a Mean High Watermark is not defined by the NYSCC for Utica Harbor, an elevation two feet above the Typical Water Line (i.e., Ordinary Water Mark) has been selected to represent the Mean High Watermark for purposes of this comment response letter.

Table 2
Riparian Restoration Zone Seed Mix

Species	Common Name
Agrostis scabra	Rough Bentgrass
Andropogon gerardii	Big Bluestem
Aster novae-angliae	New England Aster
Carex vulpinoidea	Fox Sedge
Elymus virginicus	Virginia Wild Rye
Eupatorium perfoliatum	Boneset
Festuca rubra	Creeping Red Fescue
Grass Leaved Goldenrod	Euthamia graminifolia
Juncus effuses	Soft Rush
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Scirpus atrovirens	Green Bulrush
Scirpus cyperinus	Wool Grass
Verbena hastate	Blue Vervain

APPLICATION RATE: 35 lbs/acre | 1250 sq ft/lb

The seed mix will be applied at the manufacturer's recommended seeding rate, and submittals will be required from the seed supplier that include information about percentage by weight, percent purity for each species, germination percent, and weed seed content. The attached Drawing 2 illustrates a plan view detail of the planting plan, including the bank area between the Mean High Watermark and Typical Water Line.

The newly seeded bank and riparian areas will be maintained, as required, including regrading, reseeding, watering, and mowing in accordance with M&P – Section 02210, titled Topsoil and Seeding (Attachment 1). In addition, any silt fence and/or other temporary erosion control installations will be removed once they are no longer considered necessary. A potential access point/bank area of disturbance that would be restored is illustrated on Drawing 1, while the related example riparian restoration plan is provided in Drawing 2. The specific restoration plan details will be determined based on actual site clearing activities performed during construction.

3. Subaqueous Zone

As part of remedial requirements, a cap will be installed over the bed of Utica Harbor below the Typical Water Line (i.e., 396.5 ft NGVD29). Following placement of the cap, subaqueous vegetation will be installed between 396.5 ft NGVD29 and approximately 394.5 ft NGVD29 (i.e., approximately in the top two feet of water depth) along the shoreline of Utica Harbor (excluding those areas adjacent to the bulkheads walls). A plan view illustrating the general extent of the area in which the subaqueous vegetation will be installed, is provided on the attached Drawing 1. A cross section illustrating the Typical Water Line and the 0.0-0.5 ft, 0.5-1.0 ft, and 1.0-2.0 ft water depths and a detail of the anticipated restoration are provided on the attached Drawing 3.

The restored subaqueous vegetation community will consist of the native species listed in Table 3, and will be established using tubers or rooted plants. The actual aquatic plants to be planted in Utica Harbor will be selected based on commercial availability at the time of planting. National Grid will contact a minimum of three nurseries before determining the plant supplier. Prior to finalization of the planting plan, consideration will also be given to the preferred planting season for each species with respect to the anticipated date for completion of capping activities. Plants will be installed at a density of five plants per 10 sq ft.

Table 3
Subaqueous Vegetation Planting Summary

Water Depth (ft)	Species	Symbol	Common Name	Plant Form	Planting Density
0-0.5	*Iris versicolor*	IV	Blue flag	bare root/peat pot	5 per 10 sq ft
	Leersia oryzoides	LO	Rice cutgrass		
	Sparganium americanum	SA	Eastern bur-reed		
0.5-1.0	*Polygonum amphibium*	PA	Water smartweed	bare root/peat pot	5 per 10 sq ft
	Rumex verticillatus	RV	Swamp dock		
	Saurus cernus	SC	Lizard tail		
	Scirpus fluviatilis	SF	River bulrush		
	Scirpus validus	SV	Soft stem bulrush		
1.0-2.0	*Carex lacustris*	CL	Lake sedge	tuber/bare root	5 per 10 sq ft
	Elodea americanum	EA	American elodea		
	Potamogeton nodosus	PN	Long-leaved pondweed		
	Potamongeton perfoliatus	PP	Clasping-leaved pondweed		
	Sagittaria rigida	SR	Duck potato		
	Vallisneria americana	VA	Wild celery		
	Zizania aquatia	ZA	Wild rice		

Any modification to the planting plan proposed herein (including species type) will be discussed and determined in consult with NYSDEC prior to implementation.

4. Inspection and Maintenance

The restored bank areas and the vegetation planted in these bank areas and the subaqueous planting zones will be inspected one month after completion of the final restoration activities. This initial inspection will be performed to visually identify potential problems associated with response actions, such as bank settlement or excessive mortality of planted vegetation. After the initial inspection, monitoring will be performed semi-annually for the first year after restoration (for a total of three inspections during the first year), and annually thereafter for two additional years. During each inspection, information will be collected to evaluate the percent survival of planted trees and shrubs, as well as to evaluate the percent herbaceous ground cover in restored bank disturbance areas, the percent cover of invasive species that may be present, and the percent cover of aquatic plants. In addition, the following general information will be recorded using the inspection checklist provided as Exhibit 1:

- Date of the monitoring inspection.

- Observations of the general site conditions compared to restored conditions, including water surface elevation (as indicated by the NYSCC staff gage on-site), observed fish and wildlife, etc..

- Photographs from fixed reference points showing representative portions of the restoration areas.

- Evidence of erosion, the effectiveness of erosion controls in areas where vegetation is not established, evidence of depressions and/or surface water ponding, any areas where excessive settlement has occurred relative to the surrounding areas, or any drainage or vegetative growth problems.

Inspections of the vegetation above the Typical Water Line will include observations of any trees and shrubs planted as part of the restoration activities to assess the survival and condition of these plantings, and notations related to any presumed volunteer specimens. The percent cover of seeded bank areas will be determined during semi-annual and annual monitoring events by estimating percent cover by each species observed in randomly-established 1-square meter sampling quadrants. Quadrants will be established at a density of 10 per acre, but will include a minimum of three locations if the restoration is smaller than 0.3 acres.

Inspection of the subaqueous vegetation (i.e., the vegetation below the Typical Water Line) will also include observation of the vegetation planted during the restoration activities to assess the survival and condition of these plantings. The determination of percent cover of aquatic plants will be based on visual inspections of fifteen randomly-located, 30-ft long linear sample plots encompassing all of the vertical planting zones. Depending on the clarity of the water, visual assessments will either be performed by land or in the water using equipment/methods to facilitate visibility below the water surface (e.g., snorkeling, underwater camera, clear-bottom boat, clear-bottom bucket). The observations will be used collectively to establish the percent cover of the aquatic plants. If natural recruits of other native species that were not planted are observed during the inspection, such species will be included in the assessment of the percent cover.

The information gathered during the inspection with regard to percent survival of bank plants, percent herbaceous ground cover, and percent subaqueous vegetation cover will be compared to the following performance standards, and deceased planted stock will be replaced or bare areas reseeded/replanted based on the following criteria:

- One, two, or three years from the date of installation, deceased planted stock above the Typical Water Line will be replaced if a minimum 85% survival of planted stock is not observed and bare areas will be reseeded if a minimum 85% ground cover of the seeded areas is not observed. Deceased planted subaqueous vegetation stock below the Typical Water Line will be replaced if a minimum 85% cover is not observed.

In years two and three post-installation, the original pre-disturbance densities and species diversities will continue to be maintained, however if replacement is required based on comparison with the performance standards above, species that are observed to be successful (i.e., are growing vigorously) may be substituted for less successful species. Additionally, vigorously growing non-invasive volunteers will be included in the survival, density, and percent cover calculations. The following measures may also be implemented to achieve the specified performance standards:

Auburn Field Office
Received
OCT 29 2014
USACE

- Installation of approved (by NYSDEC) alternate seed mixes or species if species initially installed are unsuccessful.

- Installation of additional security measures (e.g., additional signage) if vandalism to vegetation is observed during periodic monitoring.

- Installation of prohibitive measures such as dead Canada goose decoys if Canada geese activities appear to be preventing establishment of emergent plant communities.

- Use of preventative measures (e.g., fencing) or alternate, less palatable species if browsing or deer rubbing is problematic.

If the information gathered during the inspection with regard to percent cover of invasive species indicates invasive species occupy greater than 5% of the restored areas, the following invasive species controls will be implemented:

- If the population is of manageable size (e.g., less than approximately 500 stems or 0.1 acres), invasive species will be manually removed by pulling or clipping until the population is eliminated. The area that had the invasive species will be covered with a non-translucent tarp for a minimum of one growing season, and any invasive species which grow up and around the tarp during that time will be pulled or clipped.

- If the population of invasive species is considered too large for manual control methods, a NYSDEC-approved herbicide will be used according to manufacturer's instructions.

The species, location, and size of the population will be recorded on the inspection checklist provided as Exhibit 1, as well as the control method and date of control action, if applicable. With agreement from NYSDEC, control methods may be adapted over time given outcomes of initial efforts. The timing and methods for control measures will be specifically designed for each invasive species observed.

5. Reporting

The inspection and monitoring activities discussed herein will be summarized in an annual report. The report will provide the results of the inspection, including how and any maintenance activities performed or identified as being required. The report will be prepared using field notes and other information collected during each of the monitoring visits, and will include a copy of the completed inspection checklist (Exhibit 1). The report will also include photographic documentation of the conditions at the relevant areas, and figures indicating target tree and shrub species, areas of volunteer and invasive species plant growth (if any), and identification of the 30-ft long aquatic plant sample plots and 1-square meter herbaceous ground cover sample quadrants, and the percent cover within each area.

Revised Interim List of Invasive Plant Species in New York State (May 14, 2014)

REVISED INTERIM LIST OF INVASIVE PLANT SPECIES IN NEW YORK STATE

14 May 2012

Purpose

This list was not prepared pursuant to ECL 9-1705 (5) (h), the so-called "four-tier system".

The primary purpose of this list to inform New York State agencies so they can incorporate invasive species management into their funding, regulatory and other activities pursuant to ECL 9-1705 (b) and especially ECL 9-1709 (2):

> "...[DEC] in cooperation with [DAM] shall have the authority...to... coordinate state agency and public authority actions to do the following: (a) **phasing out uses of invasive species**; (b) **expanding use of native species**; (c) **promoting private and local government use of native species as alternatives to invasive species**; and (d) wherever practical and where consistent with watershed and/or regional invasive species management plans, **prohibiting and actively eliminating invasive species at project sites funded or regulated by the state**;...."

It is intended to inform regulatory actions pursuant to existing statutory authorities, e.g., protection of waters (ECL Article 15), wetlands (ECL Articles 24 and 25), State Environmental Quality Review (ECL Article 8), biocontrol (ECL Article 11), and pesticides (ECL Article 33). This list is also intended to inform non-regulatory management decisions and actions, such as for planning and priority-setting, prevention, early detection, monitoring, rapid response, control and eradication, restoration, research, and public education.

This list does not include *all* plant species that are invasive or potentially-invasive in New York State. Rather, it includes many of those plant species that are widely-recognized as invasive or potentially-invasive in New York State. ECL 9-1703 (10) defines "invasive species" as:

> "...a species that is: (a) nonnative to the ecosystem under consideration; and (b) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. For the purposes of this paragraph, the harm must significantly outweigh any benefits."

Thus, when complying with the provisions of 9-1709, agency staff use professional judgment in assessing the potential environmental harm (or harm to human health) when considering particular species in particular contexts.

Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of Forests and Woodlands
http://www.fs.fed.us/ne/newtown_square/publications/information_bulletins/NA-TP-05-04.pdf
Mistaken Identity? Invasive Plants and their Native Look-alikes: an Identification Guide for the Mid-Atlantic
http://www.nybg.org/files/scientists/rnaczi/Mistaken_Identity_Final.pdf

* * *

REVISED INTERIM LIST OF INVASIVE PLANT SPECIES IN NEW YORK STATE

Species are assigned to the most commonly known plant catagory, although overlap may exist.

Floating & Submerged Aquatic		
Common Name	**Scientific Name**	**Draft Rank**
Water Thyme	*Hydrilla verticillata*	Very High
Common Frogbit	*Hydrocharis morsus-ranae*	Very High
Floating Primrose Willow	*Ludwigia peploides*	Very High
Broadleaf Water-milfoil	*Myriophyllum heterophyllum*	Very High
Eurasian Water-milfoil	*Myriophyllum spicatum*	Very High
Water Chestnut	*Trapa natans*	Very High
Rock Snot (diatom)	*Didymosphenia geminata*	Not Ranked
Carolina Fanwort	*Cabomba caroliniana*	High
Brazilian Waterweed	*Egeria densa*	High
Parrot-feather	*Myriophyllum aquaticum*	High
Yellow Floating Heart	*Nymphoides peltata*	High
Curly Pondweed	*Potamogeton crispus*	High

Emergent Wetland & Littoral		
Common Name	**Scientific Name**	**Draft Rank**
Uruguayan Primrose-willow	*Ludwigia grandiflora spp. hexapetala*	Very High
Floating Primrose-willow	*Ludwigia peploides spp. glabrescens*	Very High
Purple Loosestrife	*Lythrum salicaria*	Very High
European Common Reed Grass	*Phragmites australis*	Very High
Tall Glyceria	*Glyceria maxima*	High
Yellow Iris	*Iris pseudacorus*	High
Broad-leaf Pepper-grass	*Lepidium latifolium*	High
Marsh Dewflower	*Murdannia keisak*	High
Reed Canary-grass	*Phalaris arundinacea*	High

Terrestrial - Herbaceous		
Common Name	**Scientific Name**	**Draft Rank**
Garlic Mustard	*Alliaria petiolata*	Very High
Slender False Brome	*Brachypodium sylvaticum*	Very High
Black swallow-wort	*Cynanchum louiseae*	Very High
Pale Swallow-wort	*Cynanchum rossicum*	Very High
Japanese Knotweed	*Fallopia japonica*	Very High
Japanese Stilt Grass	*Microstegium vimineum*	Very High
Lesser Celandine	*Ranunculus ficaria*	Very High
Wild Chervil	*Anthriscus sylvestris*	High
Mugwort	*Artemisia vulgaris*	High
Small Carpgrass	*Arthraxon hispidus*	High
Narrowleaf Bittercress	*Cardamine impatiens*	High
Spotted Knapweed*	*Centaurea stoebe ssp.*	High

Auburn Field Office
Received
OCT 29 2014
USACE

	micranthos	
Canada Thistle	*Cirsium arvense*	High
Chinese Yam	*Dioscorea polystachya*	High
Cut-leaf Teasel	*Dipsacus laciniatus*	High
Winter Creeper	*Euonymus fortunei*	High
Cypress Spurge	*Euphorbia cyparissias*	High
Leafy Spurge	*Euphorbia esula*	High
Giant Hogweed	*Heracleum mantegazzianum*	High
Japanese Hops	*Humulus japonicus*	High
Cogon Grass	*Imperata cylindrica*	High
Chinese Lespedeza	*Lespedeza cuneata*	High
Garden Loosestrife	*Lysimachia vulgaris*	High
Chinese Silver Grass	*Miscanthus sinensis*	High
Wavyleaf Basketgrass	*Oplismenus hirtellus*	High
Cup-plant	*Silphium perfoliatum*	High

Terrestrial - Vines		
Common Name	**Scientific Name**	**Draft Rank**
Oriental Bittersweet	*Celastrus orbiculatus*	Very High
Japanese Honeysuckle	*Lonicera japonica*	Very High
Mile-a-minute Weed	*Persicaria perfoliata*	Very High
Kudzu	*Pueraria montana*	Very High
Porcelain Berry	*Ampelopsis brevipedunculata*	High
Japanese Virgin's-bower	*Clematis terniflora*	High

Terrestrial - Shrubs & Trees		
Common Name	**Scientific Name**	**Draft Rank**
Norway Maple	*Acer platanoides*	Very High
Japanese Angelica Tree	*Aralia elata*	Very High
Japanese Barberry	*Berberis thunbergii*	Very High
Autumn Olive	*Elaeagnus umbellata*	Very High
Winged Euonymus	*Euonymus alatus*	Very High
Amur Honeysuckle	*Lonicera maackii*	Very High
Morrow's Honeysuckle	*Lonicera morrowii (incl. xbella)*	Very High
Common Buckthorn	*Rhamnus cathartica*	Very High
Black Locust	*Robinia pseudoacacia*	Very High
Multiflora Rose	*Rosa multiflora*	Very High
Wineberry	*Rubus phoenicolasius*	Very High
Rusty Willow	*Salix atrocinerea*	Very High
Sycamore Maple	*Acer pseudoplatanus*	High
Smooth Buckthorn	*Frangula alnus*	High
Border Privet	*Ligustrum obtusifolium*	High
Amur Cork Tree	*Phellodendron amurense*	High
Beach vitex	*Vitex rotundifolia*	High

* Brown and Black Knapweed have also been known to be problematic in grassland habitats.

~ END ~

ACTIVITIES AUTHORIZED BY 2012 NATIONWIDE PERMIT WITHIN THE STATE OF NEW YORK

Expiration March 18, 2017

B. Nationwide Permits

38. Cleanup of Hazardous and Toxic Waste. Specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Court ordered remedial action plans or related settlements are also authorized by this NWP. This NWP does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 31.) (Sections 10 and 404)

Note: Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA as approved or required by EPA, are not required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act.

Buffalo District Only Permit-specific Regional Conditions: None

New York District Only Permit-specific Regional Conditions:

a. For those activities that are located within Essential Fish Habitat waters as defined in Section G-D.8. below, to the maximum extent practicable, no in-water work shall occur between March 1 and June 30.

b. For those activities that would impact more than 0.5 acres of waters of the United States, and are located within Essential Fish Habitat waters as defined in Section G-D.8. below, a complete copy of any PCN submitted to the Corps of Engineers shall also be forwarded by the applicant, directly to the National Marine Fisheries Service (NMFS) Habitat Conservation Division, 212 Rogers Avenue, Milford, Connecticut 06460. The applicant must provide evidence to the Corps that this has been accomplished. The Corps of Engineers will coordinate review of the PCN with the NMFS pursuant to the requirements of the Magnuson Stevens Fishery Conservation and Management Act.

Section 401 Water Quality Certification:
The New York State Department of Environmental Conservation (NYSDEC) has denied Section 401 Water Quality Certification in New York State for this Nationwide Permit. Any party conducting the activities authorized by this NWP must apply for and obtain an individual Section 401 Water Quality Certification from the New York State Department of Environmental Conservation.

New York State Department of State Coastal Zone Management Consistency Determination:
Pursuant to 15 CFR Part 930.41, the New York State Department of State (NYSDOS) concurs with the USACE consistency determination for this NWP with which all general and all Buffalo and New York District regional conditions are complied.

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined

to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to

ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

F. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

G. General Regional Conditions
These conditions apply to ALL Nationwide Permits.

G-A. Construction Best Management Practices (BMP's): Unless specifically approved otherwise through issuance of a waiver by the District Engineer, the following BMP's must be implemented to the maximum degree practicable, to minimize erosion, migration of sediments, and adverse environmental impacts. Note that at a minimum, all erosion and sediment control and stormwater management practices must be designed, installed and maintained in accordance with the latest version of the *"New York Standards and Specifications for Erosion and Sediment Control"* and the *"New York State Stormwater Management Design Manual"*. These documents are available at: http://www.dec.ny.gov/chemical/29066.html and http://www.dec.ny.gov/chemical/29072.html , respectively.

1. All synthetic erosion control features (e.g., silt fencing, netting, mats), which are intended for temporary use during construction, shall be completely removed and properly disposed of after their initial purpose has been served. Only natural fiber materials, which will degrade over time, may be abandoned in place.

2. Materials resulting from trench excavation for utility line installation or ditch reshaping activities which are temporarily sidecast or stockpiled into waters of the United States must be backfilled or removed to an upland area within 30 days of the date of deposition. Note: upland options shall be utilized prior to temporary placement within waters of the U.S., unless it can be demonstrated that it would not be practicable or if the impacts of complying with this upland option requirement would result in more adverse impacts to the aquatic environment.

3. For trenching activities in wetlands the applicant shall install impermeable trench dams or trench breakers at the wetland boundaries and every 100 feet within wetland areas to prevent inadvertent drainage of wetlands or other waters of the United States.

4. Dry stream crossing methods (e.g., diversion, dam and pump, flume, bore) shall be utilized for culvert or other pipe, or utility installations to reduce downstream impacts from turbidity and sedimentation. This may require piping or pumping the stream flow around the work area and the use of cofferdams.

5. No in-stream work shall occur during periods of high flow, except for work that occurs in dewatered areas behind temporary diversions, cofferdams or causeways.

6. Construction access shall be by means that avoid or minimize impacts to aquatic sites (e.g. upland access, floating barges, mats, etc.). Discharges of fill material associated with the construction of temporary access roads and work pads in wetlands shall be placed on filter fabric. All temporary fills shall be removed upon completion of the work and the disturbed area restored to pre-construction contours, elevations and wetland conditions.

7. All return flow from dredge material disposal areas shall not result in an increase in turbidity in the receiving water body that will cause a substantial visible contrast to natural conditions. (See NWP #16)

8. For activities involving the placement of concrete into waters of the U.S., the permittee must employ watertight forms. The forms shall be dewatered prior to the placement of the concrete. The use of tremie concrete is allowed, provided that it complies with New York State water quality standards.

9. New stormwater management facilities shall be located outside of waters of the U.S. A waiver of this requirement may be requested with the submission of a PCN. The PCN must include justification which demonstrates that avoidance and minimization efforts have been met.

10. To the maximum extent practicable, the placement of fill in wetlands must be designed to maintain pre-construction surface water flows/conditions between remaining on or off-site waters. This may require the use of culverts and/or other measures. Furthermore, the activity must not restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters). The activity may alter the pre-construction flows/conditions if it can be shown that it benefits the aquatic environment (i.e. wetland restoration and/or enhancement).

11. In order to ensure compliance with NWP General Condition #2 – Aquatic Life Movement and #9 Management of Water Flows, all new or replacement culverts shall be constructed/installed in accordance with the following:

General Information:

a. Use of the following requirements and recommendations alone will not satisfy the need for proper engineering and design. In particular, appropriate engineering is required to ensure structures are sized

and designed to provide adequate capacity (to pass various flood flows) and stability (bed, bed forms, footings and abutments).

b. Site specific information (i.e. stream bed slope, type and size of stream bed material, stream type, existing natural or manmade barriers, etc.) should be assessed to determine appropriate culvert design and to ensure management of water flows and aquatic life movement.

c. Before replacing a culvert or other crossing structure with a larger structure it is essential that the replacement be evaluated for its impacts on: downstream flooding, upstream and downstream habitat (in-stream habitat, wetlands), potential for erosion and headcutting, and stream stability.

d. Measures should be included in all culvert designs that will promote the safe passage of fish and other indigenous aquatic organisms.

e. The dimension, pattern, and profile of the stream above and below the stream crossing should not be permanently modified by changing the width or depth of the stream channel.

Preconstruction Notification (PCN)/Waiver Requirements:

A. A PCN is not required for projects that are designed to meet Requirements B and C, below, unless a PCN is otherwise required by the NWP regulations.

B. In order to comply with General Condition #2 Aquatic Life Movement, either a bottomless culvert or bridge must be used where practicable. If the stream cannot be spanned, the culvert must be installed with its bottom buried (embedded) below the grade of the stream bed where practicable. (Note: When not practicable to do so due to small culvert size, it is suitable to allow natural deposition to cover the interior of the culvert bed.)

   i. A minimum of three stream channel cross sections shall be taken at proximal locations to the crossing location to determine the average of the lowest points in elevation of the stream bed. This average low point shall be used to ensure low flow is maintained through the culvert and from which all embedment depths are measured.
   ii. To ensure low flow and aquatic life movement is maintained, an embedment depth of a minimum of 20 percent of the culvert vertical rise throughout the length of the culvert is recommended. Additionally, it is recommended that the culvert bed slope remain consistent with the slope of the adjacent stream channel.

C. In order to comply with General Condition #9 Management of Water Flows, bank-full flows shall be accommodated through maintenance of the existing bank-full channel cross sectional dimensions within the culvert. Bank-full width is generally considered to be the top width at the stage where a stream begins to overtop its banks and spread into the floodplain.

   i. An average of three measurements (project location and straight sections of the stream upstream and downstream) shall be used to determine appropriate opening width. If the project is a replacement of an existing structure then only upstream and downstream locations shall be used to compute the average.
   ii. To ensure bank-full flow is accommodated by the culvert, it is recommended that minimum culvert widths include a minimum of 1.25 times width of the stream channel at the ordinary high water or a 2 year design storm.

D. In summary, a PCN is required, requesting a waiver of the above requirements for projects where:
   i. both spanning the waterway and embedding are found to be not practicable;
   ii. embedding is practicable but the recommendations for embedment depth cannot be met;
   iii. bank-full flow will not be accommodated within the culvert;
   iv. less than the recommended minimum culvert width is proposed

E. In addition to the PCN requirements of General Condition #31, the PCN must include the following information:
   i. a note indicating which of the above requirements will not be met by the proposed project;
   ii. information as to why the use of such structures or measures would not be practicable;
   iii. a brief description of the stream discussing the items outlined in the above General Information section;
   iv. the cross sections of the stream used to calculate the stream bed low point and bank-full

width;

v. an evaluation of the effects the crossing would have on aquatic life movement and/or water flows; and

vi. mitigation measures that will be employed to minimize these effects.

A waiver of the requirement(s) will be issued if it can be demonstrated that the proposal would result in the least environmentally damaging practicable alternative (e.g. compliance with any of the requirement(s) would result in detrimental impacts to the aquatic system).

12. Culvert Rehabilitation Projects, not including culvert replacement projects:

a. A PCN is required for culvert rehabilitation projects which will involve pipe slip lining or other activities, including concrete invert paving and concrete lining, that raise the existing invert elevation such that it causes an impediment to the passage of low flow or aquatic life movement. A PCN is not required for projects that utilize cured-in-place pipe lining. Slip lining is defined as the insertion of a smaller diameter pipe into an existing pipe by pulling pushing, or spiral winding.

b. Culvert rehabilitation projects shall assess the existing culvert, prior to the proposed repair, for compliance with Nationwide Permit General Conditions (GC) #2 (Aquatic Life Movements) and #9 (Management of Water Flows). If an impediment is found to exist, a PCN is required for any rehabilitation project.

c. For all projects requiring PCN, the applicant must provide an evaluation of the existing culvert and proposed rehabilitation project and their effects upon aquatic life movements and low/ high flow conditions in order to show compliance with GC #2 & #9. For those culverts that will impede the movement of aquatic life and water flows, the applicant must provide information as to how they will mitigate for those deficiencies. Mitigation measures may include, but are not limited to baffles, weirs, roughened channels, and grade control structures.

G-B. No regulated activity authorized by a Nationwide Permit can cause the loss of areas classified as a bog or fen in the State of New York, as determined by the Buffalo or the New York District Corps of Engineers, due to the scarcity of this habitat in New York State and the difficulty with in-kind mitigation. The Districts will utilize the following document in the classification:

Reschke, C. 1990. *Ecological Communities of New York State.* New York Natural Heritage Program. New York State Department of Environmental Conservation. Latham, N.Y. 96p. This document is available at the following location: http://www.dec.ny.gov/animals/29389.html

G-C. National Wild and Scenic Rivers (NWSR): The Upper Delaware River has been designated as a National Wild and Scenic River from the confluence of the East and West Branches below Hancock, New York, to the existing railroad bridge immediately downstream of Cherry Island in the vicinity of Sparrow Bush, New York. Also, the portion of the Genesee River located within Letchworth Gorge State Park, beginning at the southern boundary of the park and extending downstream to the Mt. Morris Dam, was designated by Congress as a permanent Study River in the Genesee River Protection Act of 1989. In accordance with General Condition #16, no activity may occur within a NWSR, including Study Rivers, unless the National Park Service (NPS) has determined in writing that the proposed work will not adversely affect the NWSR designation or study status. Therefore, a PCN is required for any NWP which would impact the designated portions of the Genesee River or the Upper Delaware River. (Note: the applicant may not commence work under any NWP until the NPS determines in writing that the project will not adversely affect the NWSR even if 45-days have passed since receipt of the PCN package.) Information regarding NWSR may be found at: http://www.rivers.gov/wildriverslist.html

G-D. For all proposals requiring a pre-construction notification (PCN), in addition to the requirements in General Condition 31, the applicant shall also include: (Note: the application will not be considered complete until all of the applicable information is received).

1. **New York State/USACE Joint Application Form:** The application form shall be completed and signed and shall clearly indicate that the submission is a PCN.

2. **Drawings:** The PCN must include legible, black and white project drawings on 8.5" x 11" paper. Full size drawings may be submitted in addition to the 8.5" x 11" plans to aid in the application review. Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are a Vicinity Map (i.e. a location map such as a USGS topographical map), a Plan View and a Cross-Section Map. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view or cross section). The Vicinity Map shall provide the location of the entire project site. In addition, each illustration should be identified with a figure or attachment number. The location map shall include the Latitude and Longitude or UTM coordinates of the project. For linear projects, the PCN shall include a map of the entire project including a delineation of all waters of the U.S. within the corridor. Aquatic resource information shall be submitted using the Cowardin Classification System mapping conventions (e.g. PFO, PEM, etc.)

3. **Color photographs:** The photos should be sufficient to accurately portray the project site, keyed to a location map and not taken when snow cover is present.

4. **Avoidance and Minimization:** The PCN must include a written narrative explaining how avoidance and minimization of temporary impacts and permanent losses of waters of the U.S. were achieved on the project site (i.e. site redesign, reduction in scope, alternate methods, etc). It should include a description of the proposed construction practices that would be implemented to perform the proposed work and a description of the reasonably foreseeable direct and indirect effects to waters of the U.S. from the proposed construction practices.

5. **Mitigation**(See General Conditions 23 & 31(b)(5)):The PCN must include at least a conceptual compensatory mitigation plan for all projects resulting in the loss of greater than $1/10^{th}$ of an acre of waters of the United States; or for which a waiver of the 300 linear foot limit on intermittent and ephemeral streams is being requested. Mitigation conceptual plans submitted with the PCN must include the following information at a minimum: proposed compensation type (bank or in-lieu fee credit, restoration, creation, preservation, etc.), location and brief discussion on factors considered for site selection (i.e. soils, water source, potential for invasive species, etc.), amount proposed per resource type and a discussion of how the proposal will compensate for aquatic resource functions and services lost as a result of the project.
Note 1: All mitigation projects must comply with the Federal Regulations on compensatory mitigation (33 CFR 332) entitled "Compensatory Mitigation for Losses of Aquatic Resources: Final Rule", dated April 10, 2008, which is available at: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title33/33cfr332_main_02.tpl, and any applicable District Guidelines.
Note 2: Although a conceptual mitigation plan may be sufficient for the purposes of a PCN submission, a detailed mitigation plan must be approved by the Corps before any jurisdictional work may occur on the project site.

6. **Nationwide Rivers Inventory:** The PCN shall indicate if a river segment listed within the National Park Service Nationwide Rivers Inventory (NRI) is located within the proposed project area. For project areas containing a listed NRI segment, the PCN shall also include a statement as to how adverse effects to the river have been avoided or mitigated. The list is available at: http://www.nps.gov/ncrc/programs/rtca/nri/states/ny.html.

7. **Historic or Cultural Resources:** In accordance with General Condition 20, a PCN is required for any non-federal activity which may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places. Please refer to General Condition 20 for submission requirements. In addition, all PCNs must include a written statement indicating if any such properties may be affected by the proposed project. A copy of any completed survey reports shall be provided with the PCN. If a survey has not been performed, the statement shall include a list of resources checked in the determination. Copies of any available correspondence from the New York State Office of Parks, Recreation, and Historic Preservation State Historic Preservation Officer (SHPO) regarding historic properties shall be provided with the PCN. Information regarding cultural resources may be found at: http://nysparks.state.ny.us/shpo/. In addition, assistance regarding the determination of the presence of historic or cultural resources at or near the project site should be directed to SHPO. NOTE: as stated in General Condition 20, if any listed, eligible or potentially eligible properties are present, the applicant shall not begin the activity until notified by the district engineer in writing either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

8. **Endangered Species** (See General Condition 18) **and Essential Fish Habitat:** The PCN must include a written statement and documentation concerning any Essential Fish Habitat (EFH) and any federally listed Threatened and Endangered (T&E) species or designated critical habitat that might be affected or is in the vicinity of the project, or

if the project is located in designated critical habitat. The PCN must include a copy of any correspondence from the U.S. Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration Fisheries Service (NOAA-Fisheries) formerly National Marine Fisheries Service (NMFS), regarding the presence of T&E species or evidence that the applicant has utilized the USFWS T&E website: http://www.fws.gov/northeast/nyfo/es/section7.htm. Information on NOAA-Fisheries (NMFS) species (both T&E and EFH) can be found at: http://www.nero.noaa.gov/nero.
Website evidence shall include a County list of T&E species. For projects located in counties containing T&E species, the PCN shall also include a discussion of potential T&E habitat within the project site. If there is potential habitat for any Federally listed species within the project site the following should be submitted:

a. The results of any habitat surveys and presence/absence surveys. Note: all surveys should be coordinated with the USFWS and/or NOAA-Fisheries(NMFS) prior to initiation.

b. A detailed description of the proposed project, including secondary impacts and approximate proposed project construction schedule of project activities (e.g. land clearing, utilities, stormwater management).

c. A description of the natural characteristics of the property and surrounding area (e.g. forested areas, freshwater wetlands, open waters, and soils). Additionally, please include a description of surrounding land use (residential, agricultural, or commercial).

d. A description of the area to be impacted by the proposed project, including the species and number or acres of trees to be removed.

e. The location of the above referenced property and extent of any project related activities or discharges clearly indicated on a copy of a USGS 7.5 minute topographic quadrangle (quad) with the name of the quad(s) and latitude/longitude clearly labeled.

f. A description of conservation measures to avoid or minimize impacts to listed species.

Please note that there are no known threatened or endangered (T&E) species or EFH species under the jurisdiction of the NOAA-Fisheries (NMFS) within the Buffalo District. Therefore, all Buffalo District requests for information regarding the presence of T&E species should be directed to the USFWS.

General Condition #18 is emphasized, ..."In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed work will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed."

9. **100 Year Floodplain:** For permanent fills within waters of the United States within the 100 year floodplain, documentation of compliance with FEMA-approved state or local floodplain management requirements.

10. **Submission of Multiple Copies of PCN:**

a) One (1) additional copy of the PCN package shall be provided to USACE for coordination with National Oceanic and Atmospheric Administration (NOAA) for utility lines to be constructed or installed in navigable waters of the U.S. proposed under NWP #12, (See Note 1 of NWP #12)

b) One (1) additional copy of the PCN package shall be provided to USACE for coordination with Department of Defense Siting Clearinghouse (See NWP #12, 39, 51 & 52 Notes) for:
   i. overhead utility lines proposed under NWP #12 and
   ii. any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission lines proposed under NWP #39, 51 or 52

c) Two (2) additional copies of the PCN package shall be provided to USACE when the project is located within the New York City Watershed, for coordination with the New York City Department of Environmental Protection.

d) Five (5) additional copies of the PCN package shall be submitted to USACE for agency coordination in accordance with General Condition # 31(d)(2) for:
   i. All NWP activities that result in the loss of greater than 1/2-acre of waters of the United States,
   ii. NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed,
   iii. All NWP 48 activities requiring pre-construction notification.

G- E. CRITICAL RESOURCE WATERS

In accordance with NWP General Condition (GC) #22, certain activities in Critical Resource Waters cannot be authorized under the NWP program or would require a PCN (see GC #22 for a list of the NWP activities that are either excluded or require a PCN).

Critical Resource Waters in New York State include the following:

1. **East-of-Hudson portion of the New York City Water Supply:** This area includes portions of Dutchess, Putnam and Westchester Counties as delineated on Enclosure 2.

2. **Hudson River National Estuarine Research Reserves (NERR):** The Hudson River NERR consists of four components: Piermont Marsh, Iona Island, Tivoli Bay, and Stockport Flats.

H. NYSDEC General Water Quality Certification (WQC) Conditions applicable to all NWPs for which WQC has been provided are as follows:

1. Non-contamination of Waters:
• All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, resins, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

2. Installation and Maintenance of Culverts:
• This certification does not authorize the installation of any culverts that are not embedded beneath the existing grade of the stream channel.
• This certification does not authorize culvert rehabilitation projects that involve slip lining, invert paving, or similar treatments that can result in an impediment to the passage of aquatic life movement through the culvert.
• This certification does authorize the rehabilitation of culverts utilizing Cure in Place Pipe Lining (CIPP) or concrete spray lining for culverts which currently meet Nationwide Permit General Condition # 2 - Aquatic Life Movements.

3. Discharges and Disturbances:
• Except for Nationwide Permit # 3, 4, 20, 22, 27, 30, 33, 37, 41 and maintenance activities under Nationwide Permit 43, this certification does not authorize discharges greater than 1/4 acre in size or more than 300 feet of stream disturbance.

4. Maintenance of Water Levels:
• Except for Nationwide Permit 27, this certification does not authorize any activity that results in a permanent water level alteration in waters of the United States, such as draining or impounding.

5. Dewatering:
• Authorized dewatering is limited to immediate work areas that are cofferdammed or otherwise isolated from the larger water body or waters of the United States. Dewatering must be localized and not drain extensive areas of a water body or reduce the water level such that fish and other aquatic vertebrates are killed, or their eggs and nests are exposed to desiccation, freezing or depredation in areas outside of the immediate work site.
• Cofferdams or diversions shall not be constructed in a manner that causes or exacerbates erosion of the bed or banks of a watercourse.
• All dewatering structures must be permanently removed when construction is completed.

6. Endangered or Threatened Species:
• Applicants must certify that the proposed activity will not jeopardize the existence of an endangered species or threatened species listed in 6 NYCRR Part 182, or likely to destroy or adversely modify the habitat of such species. Information on New York State endangered or threatened species may be obtained from the NYS Department of Environmental regional offices, the New York Natural Heritage Program in Albany, New York or on the NYSDEC website at http://www.dec.ny.gov/animals/29338.html. If it is determined that there is a species of concern that may be impacted by the proposed activity, this blanket water quality certification is not applicable, and the applicant will need an individual water quality certification from the Department.

7. Prohibition Period/or In-stream Work:
Unless approved in writing by the Regional Natural Resources Supervisor or their designee, in-stream work is prohibited during the following time periods:

- in cold water trout fisheries (waters classified under Article 15 of New York's Environmental Conservation Law with a "t" or "ts" designation), beginning October 1 and ending May 31
- in perennial warm water fisheries, (non- trout waters classified under Article 15 of New York's Environmental Conservation Law as "A, B or C"), beginning March 1 and ending July 15.

To determine which prohibition period is in effect for a particular water, contact the Regional Natural Resources Supervisor in the appropriate NYSDEC regional office.

8. Significant Coastal Fish and Wildlife Habitat:
• This certification does not authorize any discharge occurring in a designated Significant Coastal Fish and Wildlife Habitat area pursuant to 19 NYCRR Part 602 ; Title 19 Chapter 13, Waterfront Revitalization and Coastal Resources.

9. Coastal Erosion Hazard Areas:
• This certification does not authorize projects in Coastal Erosion Hazard Areas, as identified in NYS Environmental Conservation Law (ECL) Article 34, and its implementing regulations, 6 NYCRR Part 505.

10. State-owned Underwater Lands:
• Prior to undertaking any Nationwide Permit activity that will involve or occupy state owned lands now or formerly under the waters of New York State, the party proposing the activity must first obtain all necessary approvals from:

NYS Office of General Services
Division of Real Estate Development
Corning Tower Building, 26th Floor
Empire State Plaza
Albany, NY 12242
Tel. (518) 474-2195

11. Tidal Wetlands:
• This authorization does not authorize any activities in tidal wetlands as defined in Article 25 of NYS ECL, with the exception of NWP # 4, 20 and 48.

12. Wild, Scenic and Recreational Rivers:
• This certification docs not authorize activities in any Wild, Scenic or Recreational River or state designated WSR corridors.

13. Floodplains:
• Authorized projects must be in compliance with State and Local Floodplain Regulations.

14. Combined use of permits:
• This authorization does not allow the stacking of NWPs so that in combination they exceed *1/4* of an acre of fill or 300 linear feet of stream disturbance. When used in combination, the most restrictive conditions apply.

15. Public Service Commission:
• This certification does not authorize activities regulated pursuant to Article VII of the New York State Public Service Law. For such projects, Section 401 Water Quality Certification is obtained from the New York State Public Service Commission.

16. Utility Projects:
• This certification does not authorize maintenance or other activities associated with hydropower projects.
• This certification does not authorize the construction of substation facilities or permanent access roads in wetlands or within the FEMA mapped 100 year floodplain.
• Excess materials resulting from trench excavation must be moved out of the wetland and contained so that they do not re-enter any waters of the United States.

I. New York State Department of State (NYSDOS) Coastal Zone Management Consistency Determination applicable to all NWPs located within or affecting the NYS Coastal Zone:

To ensure that the NWPs and activities authorized by USACE would be consistent with the NYS Coastal Management Program and approved LWRPs, the following conditions will apply to NWPS where NYSDOS has objected to the USACE consistency determination or where the project will not comply with the NYSDOS NWP specific condition(s):

The applicant will submit a request for an individual consistency determination to NYSDOS. Within thirty (30) days of receipt by NYSDOS of an applicant's submission, which should include a complete joint New York State Department of Environmental Conservation and U.S. Army Corps of Engineers Permit Application, completed Federal Consistency Assessment Form, and all information and data necessary to assess the effects of the proposed activity on and its consistency with the CMP, including location maps and photographs of the site where the activity is proposed, NYSDOS will inform the applicant and the Corps whether:

1) Necessary data and information is missing from the applicant's submission. If so, the NYSDOS will notify the applicant and the Corps of the missing necessary data and information, and state that the NYSDOS review will not commence until the date the necessary data and information is provided;

2) The activity meets the General Concurrence criteria set forth in the CMP and therefore, further review of the proposed activity by the NYSDOS, and the NYSDOS concurrence with an individual consistency certification for the proposed activity, are not required; or

3) NYSDOS review of the proposed activity and NYSDOS concurrence with the applicant's consistency certification is necessary. If NYSDOS indicates review of the activity and a consistency certification for it is necessary, the activity shall not be authorized by NWP or other form of Corps authorization unless NYSDOS concurs with an applicant's consistency certification, in accordance with 15 CFR Part 930, Subpart D, or unless NYSDOS indicates the activity meets CMP General Concurrence criteria (see item 2 above).

NYSDOS concurrence with an applicant's consistency certification shall not be presumed unless NYSDOS fails to concur with or object to an applicant's consistency certification within six (6) months of commencement of NYSDOS review of an applicant's consistency certification and all necessary data and information in accordance with 15 CFR Parts 930.62 or 930.63.

Notes:

- Unless NYSDOS issues consistency concurrence or USACE has determined that NYSDOS concurrence is presumed, NWPs are not valid within the Coastal Zone.

- Limits of the coastal zone, including the CMP special management area designations of Significant Coastal Fish and Wildlife Habitats (SCFWH), can be viewed at: http://www.dos.ny.gov/communitieswaterfronts/atlas/index.html Local Waterfront Revitalization Program information can be viewed at: http://www.dos.ny.gov/communitieswaterfronts/WFRevitalization/LWRP_status.html
- All consistency concurrence determination requests must be submitted directly to NYSDOS.
- Details regarding NYSDOS submission requirements can be obtained at: http://www.dos.ny.gov/communitieswaterfronts/consistency/federal.html

J. INFORMATION ON NATIONWIDE PERMIT VERIFICATION

Verification of the applicability of these Nationwide Permits is valid until March 19, 2017 unless the Nationwide Permit is modified, suspended revoked, or the activity complies with any subsequent permit modification.

It is the applicant's responsibility to remain informed of changes to the Nationwide Permit program. A public notice announcing any changes will be issued when they occur and will be available for viewing at our website: http://www.lrb.usace.army.mil/Missions/Regulatory.aspx.

Please note in accordance with 33 CFR part 330.6(b), that if you commence or are under contract to commence an activity in reliance of the permit prior to the date this Nationwide permit expires, is suspended or revoked, or is modified such that the activity no longer complies with the terms and conditions, you have twelve months from the date of permit modification, expiration, or revocation to complete the activity under the present terms and conditions of the permit, unless the permit has been subject to the provisions of discretionary authority.

Possession of this permit does not obviate you of the need to contact all appropriate state and/or local governmental officials to insure that the project complies with their requirements.

NOTE: This document is an excerpt of the May 30, 2012 Public Notice by USACE Buffalo & New York Districts. The above referenced Enclosures 2-4 and Appendix A are not included in this Buffalo District document as they are only applicable within the geographic boundaries of the New York District. The Public Notice is available at the USACE websites or by contacting the Districts at the addresses provided below in Section K.

K. AGENCY CONTACT INFORMATION

NYS Department of Environmental Conservation

www.dec.ny.gov

NYS DEC REGION 1
Regional Permit Administrator
SUNY @ Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409
(631) 444-0365

NYS DEC REGION 2
Regional Permit Administrator
1 Hunter's Point Plaza
47-40 21st Street
Long Island City, NY 11101-5407
(718) 482-4997

NYS DEC REGION 3
Regional Permit Administrator
21 South Putt Corners Road
New Paltz, NY 12561-1620
(845) 256-3054

NYS DEC REGION 4
Regional Permit Administrator
1130 North Westcott Road
Schenectady, NY 12306-2014
(518) 357-2069

NYS DEC REGION 4 Sub-Office
Deputy Regional Permit Administrator
65561 State Hwy 10
Stamford, NY 12167-9503
(607) 652-7741

NYS DEC REGION 5
Regional Permit Administrator
PO Box 296
1115 Route 86
Ray Brook, NY 12977-0296
(518)897-1234

NYS DEC REGION 5 Sub-Office
Deputy Regional Permit Administrator
PO Box 220
232 Golf Course Rd
Warrensburg, NY 12885-0220
(518) 623-1281

NYS DEC REGION 6
Regional Permit Administrator
317 Washington Street
Watertown, NY 13601-3787
(315) 785-2245

NYS DEC REGION 6 Sub-Office
Deputy Regional Permit Administrator
207 Genesee Street
Utica, NY 13501-2885
(315) 793-2555

NYS DEC REGION 7
Regional Permit Administrator
615 Erie Blvd. West
Syracuse, NY 13204-2400
(315)426-7438

NYS DEC REGION 7 Sub-Office
Deputy Regional Permit Administrator
1285 Fisher Avenue
Cortland, NY 13045-1090
(607) 753-3095

NYS DEC REGION 8
Regional Permit Administrator
6274 E. Avon - Lima Road
Avon, NY 14414-9519
(585) 226-2466

NYS DEC REGION 9
Regional Permit Administrator
270 Michigan Avenue
Buffalo, NY 14203-2915
(716) 851-7165

NYS DEC REGION 9 Sub-Office
Deputy Regional Permit Administrator
182 East Union Street
Allegany, NY 14706-1328
(716) 372-0645

NYS Department of State

Division of Coastal Resources
Consistency Review Unit
One Commerce Plaza
99 Washington Avenue, Suite 1010
Albany, NY 12231-00001
(518) 474-6000
www.nyswaterfronts.com
PO Box 296
1115 Route 86
Ray Brook, NY 12977-0296
(518) 897-1234

US Army Corps of Engineers

www.usace.army.mil

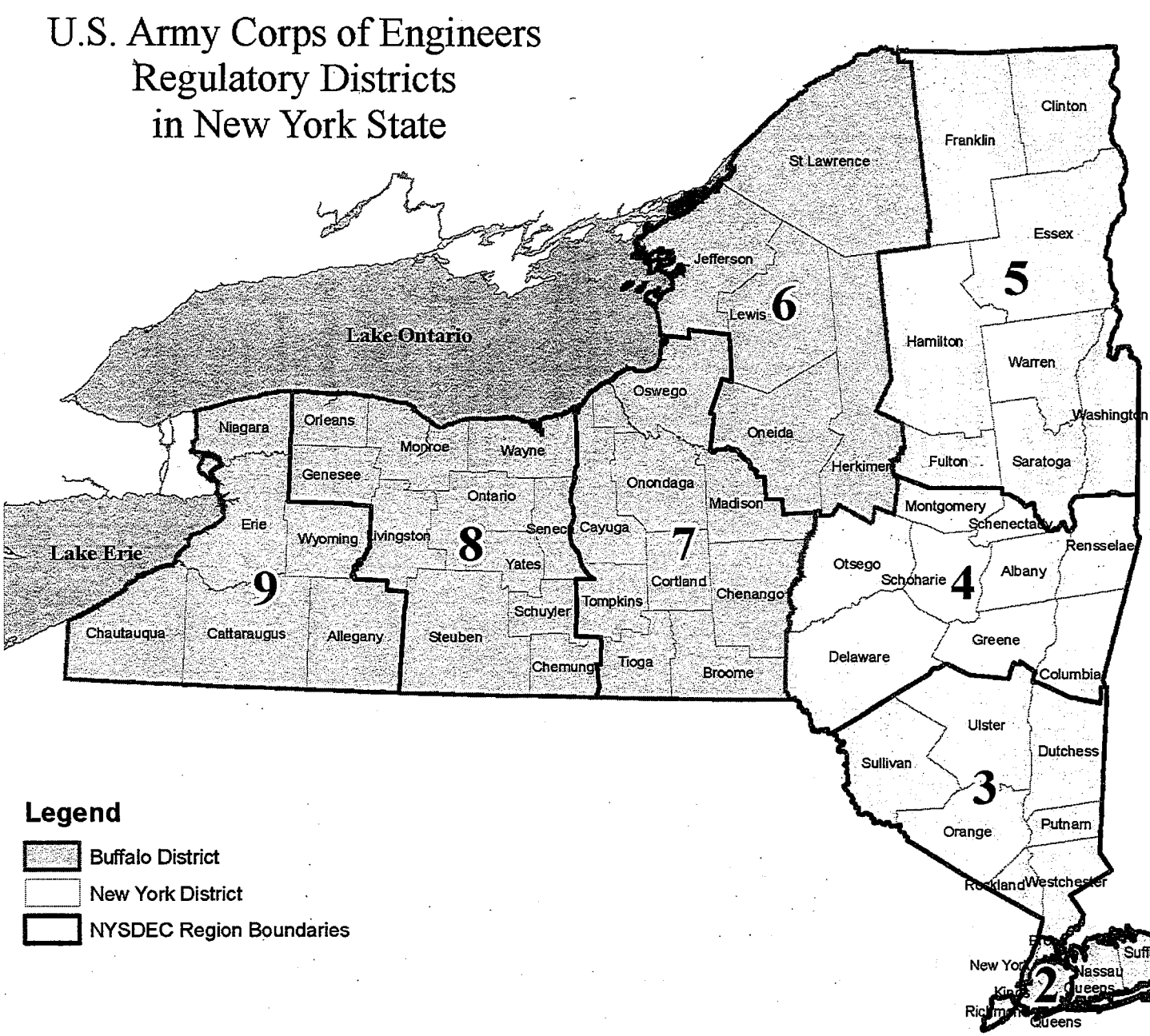
For DEC Regions 1, 2 and 3
US Army Corps of Engineers NY District
ATTN: Regulatory Branch
26 Federal Plaza, Room 1937
New York, NY 10278-0090
Email: CENAN.PublicNotice@usace.army.mil
For DEC Regions 1, 2, Westchester County and Rockland County (917) 790-8511
For the other counties of DEC Region 3 -
(917) 790-8411

For DEC Regions 4, 5
Department of the Army
ATTN: CENAN-OP-R
NY District, Corps of Engineers
1 Buffington Street
Building 10, 3rd Floor
Watervliet, NY 12189-4000
(518) 266-6350 - Permits team
(518) 266-6360 - Compliance Team

Email: cenan.rfo@usace.army.mil

For DEC Regions 6, 7, 8, 9
US Army Corps of Engineers
Buffalo District
ATTN: Regulatory Branch
1776 Niagara Street
Buffalo, NY 14207-3199
(716) 879-4330
Email: LRB.Regulatory@usace.army.mil
www.lrb.usace.army.mil

U.S. Army Corps of Engineers Regulatory Districts in New York State



Buffalo District

Regulatory Branch, District Office
1776 Niagara Street
Buffalo, New York 14207
(716) 879-4330

Regulatory Branch, Auburn Field Office
7413 County House Road
Auburn, New York 13021
(315) 255-8090

New York District

Regulatory Branch, District Office
26 Federal Plaza
New York, New York 10278-0090
(917) 790-8411

Regulatory Branch, Upstate Field Office
1 Buffington Street
Watervliet, New York 12189-4000
(518) 266-6350

U.S. Army
Corps of Engineers

ENCLOSURE 1

NATIONWIDE PERMIT SPECIAL CONDITIONS

1. All work will be conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) Order on Consent #A4-0473-0000 and NYSDEC Record of Decision Operable Unit No. 1, and the NYSDEC Water Quality Certification dated March 2, 2015 (Appendix A).
2. If any tree clearing (dead or alive) greater than three inches Diameter at Breast Height (DBH) associated with this authorization or work authorized by the permit will be conducted after April 2, 2015, the permittee must stop tree cutting activities and work authorized with the permit and contact this office immediately to determine if any coordination is required with the U.S. Fish and Wildlife Service for potential impacts to the Northern long-eared bat (*Myotis septentrionalis*), a currently Proposed Endangered species under the Endangered Species Act (ESA). Failure to refrain from cutting trees after this date may result in "take" of a listed species under the ESA, which may result in violation of the ESA. This condition is assuming the final decision on listing is the proposed date of April 2, 2015. For more information on the species and the decision on listing, please contact either this office or the USFWS.
3. Restoration and monitoring of wetlands to be impacted will be accomplished through the implementation of the drawings referred to as Sheets 1 – 10 of the December 5, 2012 affirmation and Sheets 1-12 of this affirmation; and the Site-Wide Vegetative
   Plan dated August 2014, which is hereby incorporated into this permit as Appendix B.
4. Monitoring the restored wetlands shall meet the success criteria outlined in the Site-Wide Vegetative Plan (Appendix B). In addition:
   a. No more than five (5) percent (%) areal cover of the restored area will be vegetated at the end of the 5-year monitoring period with the following species: Purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), narrow-leaf cattail (*Typha angustifolia*) or hybrid cattail (*Typha* x *glauca*). If this threshold is exceeded during or at the end of each monitored year, corrective measures must be implemented to preclude the growth of the above listed species within the mitigation areas. Corrective measures, such as but not limited to, herbicide application, mechanical/manual removal, etc. shall be implemented. Any corrective measures proposed must be coordinated and approved, in writing, with this office prior to implementation. Additional yearly monitoring of the site, above the 5-year required monitoring, may be required at the discretion of the District Engineer.
   b. The restored wetland must meet the vegetative and hydrology requirements specified in the 1987 Corps of Engineers Wetland Delineation Manual, including the appropriate Regional Supplement.
5. The permittee is required to submit annual monitoring and/or compliance reports for the wetland remediation project to this office for the first five (5) years

following completion of the construction based upon data collected during each monitored year between June and October. The reports must follow the requirements outlined in Regulatory Guidance Letter No. 08-03 (Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources). The first annual report is due by December 31 in the year following completion of all wetland restoration activities affirmed by NWP 38, or by an approved extension date. For purposes of this special condition, "completion" means all activities associated with site grading and seeding and/or planting. All reports must be submitted to Mr. Harold Keppner, Chief, Monitoring & Enforcement Section by December 31 of the year due, or by a Corps-approved extension date. This requirement may be waived for years 3 and 4 if, after the first two growing seasons, the wetland is shown to meet performance criteria listed in the permit. These reports must include:

a. Wetland Delineation, including a map of wetland boundary.
b. Photographs (minimum 5) from fixed locations with a photo location reference map.
c. Plant species list with the following information:
    1. Wetland Indicator Status and strata.
    2. Dominant plants and percent cover.
d. A list of plants introduced through seeding or planting.
e. Water depth and date of measurement from representative locations within the mitigation area during the growing season. The sample points will be fixed locations and shall be plotted on a map.
f. Fish and wildlife observations at the mitigation site.
g. Summary statement regarding the perceived success of the wetland restoration project. The report will evaluate the goals/performance standards as set forth in the permit or mitigation and monitoring plan as well as current wetland functions. These reports must also address any potential problem areas and include suggestions and timetable for correction if it is anticipated that projected goals may not be met.
h. Date(s) of field inspection(s).