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July 15, 2024

Ms. Greta White
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C, Section A
625 Broadway, 11th Floor
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170033

Subject: Pre-Design Investigation Work Plan
Fulton (South First Street) Former MGP Site
Fulton, Oswego County, New York
NYSDEC Site No. 738034

Dear Ms. White:

On behalf of Niagara Mohawk Power Corporation (d.b.a. National Grid), Brown and Caldwell Associates (BC) has prepared this Pre-Design Investigation Work Plan (PDIWP) for the Fulton (South First Street) Former Manufactured Gas Plant (MGP) site located in the City of Fulton, Oswego County, New York ("Site"). The Site is referred to as New York State Department of Environmental Conservation (NYSDEC) Site No. 738034.

Investigation and remediation activities, including implementation of this PDIWP, are being performed at the Site under the NYSDEC State Superfund Program and in accordance with an Order on Consent (Index No. A4-0473-0000) between National Grid and the NYSDEC, which was executed on November 7, 2003.

This PDIWP proposes additional investigation activities at the Site in order to obtain supplementary information for the design of the selected remedy described in the Amended Record of Decision (AROD) dated February 2023. The AROD-selected remedy includes the following components (refer to AROD for additional details):

- Remedial Design
- Excavation
- In Situ Solidification (ISS)
- Cover System
- Groundwater Treatment
- Institutional Control
- Site Management Plan (SMP)

In 2023 National Grid opted to change engineering firms to develop the remedial design for the Site. BC was selected in a competitive bid process due to previous experience with the design and successful implementation of remedial actions requiring containing similar components (in particular ISS) at other National Grid former MGP sites including Oswego (West Utica Street), Cohoes (Linden Street), Watertown (Engine Street), Troy (Water Street), and Patchogue.

Pre-Design Investigation Work Plan

This work plan describes the PDI activities being proposed to obtain supplementary information to support design of the selected remedy. The rationale for each of the PDI activities is detailed on Table 1. The locations of the PDI activities are depicted on Figure 1.

Water Level Measurements and NAPL Gauging

Before completion of soil borings and test pits, a full round of water level measurements and gauging for presence of non-aqueous phase liquid (NAPL) using an electronic oil/water interface probe will be performed in the existing monitoring wells. If NAPL is detected, presence of NAPL will be confirmed by lowering a threaded rod to the water-NAPL interface to get an approximate thickness of the NAPL accumulation (NAPL will often adhere to grooves in the threaded rod). If confirmed, the approximate thickness of NAPL accumulation will be documented and removal will be evaluated.

After completion of the implementation of the PDI, National Grid and BC will evaluate options for the removal effort, then notify the NYSDEC of the selected options and the schedule for the removal efforts.

Utility Mark Outs and Clearance

Prior to conducting the intrusive activities described below, the planned investigation locations will be marked in the field. UDIG New York will be contacted to clear subscribed underground utilities. The City of Fulton will be contacted to clear utilities that they maintain (e.g., sewer and water). Some of the proposed investigation locations may be adjusted to provide for adequate clearance from underground and aboveground utilities. The final locations for the investigation locations will be determined in the field following the mark-out of underground utilities. At each investigation location, clearance of subsurface utilities will be confirmed by physical means (e.g., vacuum soil extraction, hand tools, etc.). Physical clearance will be used to remove the soil at each investigation location to a depth of approximately 5 feet below grade surface (bgs).

Soil Borings and Test Pits

This task includes the completion of soil borings and test pits intended to further define the limits of the areas subject to excavation or ISS, and to confirm the location, construction, and dimensions of former MGP structures.

BC will retain the services of a drilling contractor and an environmental earthwork contractor to advance 20 soil borings (SB-66 through SB-90) and excavate 11 test pits (TP-5 through TP-15) at the Site. The rationale for each of the borings and test pits is detailed on Table 1 and their locations are shown on Figure 1.

Soil Borings

During the advancement of soil borings or completion of test pits, a Community Air Monitoring Plan (CAMP) that meets or exceeds the requirements of the New York State Department of Health's (NYSDOH) Generic CAMP will be implemented. A discussion of the methods and procedures associated with the CAMP will be incorporated into the HASP for the Site.

The soil borings will be advanced using either direct-push drilling (e.g., Geoprobe®) or via hollow-stem auger drilling with a 2-foot-long split spoon sampler from ground surface to the target depth (refer to Table 1 for soil boring depths). The target depth, in general, is to identify the deepest observed indications of non-aqueous phase liquids (NAPL) identified at the Site as well as the anticipated bottom of the ISS according to the AROD. The soils will be visually assessed for the presence of NAPL and described in the field to characterize soil type, including grain size, texture, and apparent moisture content. Visible MGP-related source material defined as visible coal tar or separate phase materials, if encountered, will be noted, and described with regard to color, odor, viscosity, consistency, and distribution in the sample (i.e., degree of saturation). Soil samples will be screened in the field for organic vapors using a photoionization detector (PID) as described below. Soil samples will be logged in accordance with the Burmister Soil Classification System and classified using the Unified Soil Classification System (USCS). MGP-related impacts will be described using the NYSDEC Field Descriptions of Samples from Former Manufactured Gas Plant Sites included as Attachment 1 to this PDIWP.

Pending field observations of MGP-related impacts, soil borings may be advanced at additional locations (step-out borings) to further refine the limits of the areas subject to excavation or ISS, and to confirm the location, construction, and dimensions of former MGP structures.

Test Pits

The locations of the test pits depicted on Figure 1 may be adjusted based on the findings of the PDI soil boring program. Observations in the test pits will focus on assessing the presence or absence of former MGP structures in the subsurface, and if the structures, if encountered, contain visual indications of MGP-related impacts. Soils encountered in the test pits will be visually assessed for the presence of NAPL and described in the field to characterize soil type, including grain size, texture, and apparent moisture content. Visible MGP-related source material defined as visible coal tar or separate phase materials, if encountered, will be noted, and described with regard to color, odor, viscosity, consistency, and distribution in the sample (i.e., degree of saturation). Soil samples will be screened in the field for organic vapors using a PID as described below. Soil samples will be logged in accordance with the Burmister Soil Classification System and classified using the Unified Soil Classification System (USCS). MGP-related impacts will be described using the NYSDEC Field Descriptions of Samples from Former Manufactured Gas Plant Sites included as Attachment 1 to this PDIWP.

For the advancement of the test pits, depths will be determined in the field based on the findings during test pitting activities. Excavated material will be temporarily stockpiled on polyethylene sheeting adjacent to the test pit. Water draining from the stockpiled soil, if any, will be directed back to the excavation. Upon completion of the test pits, the excavated material will be backfilled into the excavations in the reverse order the material was excavated (i.e., last out, first in), placing the backfill in approximately 1.5- to 2-foot lifts and tamping with the excavator bucket. If significant odors are observed during backfilling, polyethylene liner and crushed stone will be placed over the test pits. The corners of the test pits will be marked for surveying.

The test pits adjacent to the existing retaining wall between the Site and the neighboring residential property will be completed in segments oriented perpendicular to the wall. The wall will be photographed to document construction, approximate dimensions, and general condition.

PID Field Screening

Soil collected from soil borings and test pits will be field screened for indications of MGP-related impacts, or other impacts based on appearance, odors or organic vapor concentrations measured using a PID. Head-space screening will be conducted using the PID by immediately transferring a representative subsample of the soil to a clean glass jar and sealing its lid with aluminum foil or to a sealable polyethylene plastic bag (e.g., Ziploc®). To allow the sample to equilibrate, it will remain sealed for a period of time (approximately 15 minutes) and then the tip of the PID will be inserted through the foil, or though the plastic bag, and the maximum instrument reading will be recorded.

Geotechnical Testing

Based on previous remediation investigation activities, the subsurface at the Site consists of the following deposits in descending order:

- Surface cover (e.g., concrete, asphalt, vegetation)
- Fill materials
- Fluvial deposits (sand, silt, gravel, clay)
- Till (less dense till above denser till)

Selected representative samples of each deposit encountered during the completion of the test pits/borings will be tested in the laboratory for the following geotechnical parameters:

- Grain Size
- Moisture Content
- Atterberg Limits (Liquid Limit, Plastic Limit, Plasticity Index) (performed on the material passing the No. 200 sieve)

Waste Characterization

To initially characterize waste materials, samples will be collected from soil expected to be disposed off-site during remediation (e.g., excavation areas) and analyzed for the following analytical parameters. These analytical parameters represent a compilation of analytical requirements from disposal facilities that may accept MGP-related waste materials.

- Toxicity Characteristic Leaching Procedure (TCLP)- United States Environmental Protection Agency (EPA) SW846 Method 1311 (volatile organic compounds (VOCs), semi-VOCs, metals, pesticides, herbicides)
- Ignitability – EPA SW846 Method 1010
- Reactive Cyanide – EPA SW846 Method 9014
- Reactive Sulfide – EPA SW846 Method 9034
- Polychlorinated biphenyls (PCBs) – EPA SW846 Method 8082
- Total Sulfur – ASTM D129
- Heat content in British Thermal Units (BTUs) – ASTM D240
- VOCs – EPA SW846 Method 8260B
- SVOCs – EPA SW846 Method 8270C
- Metals (8 Resource Conservation and Recovery Act [RCRA] metals) – EPA SW846 Method 6010B (arsenic, barium, cadmium, chromium, lead, selenium, silver) and 7471A (mercury)
- Total Cyanide – EPA SW846 Method 9012A

Surveying

BC will contract with a surveyor, licensed in the State of New York, to survey the horizontal locations of the PDI locations (boring locations and test pit corners). In addition, the surveyor will conduct base map surveying and prepare a base map of the Site. The survey will include one-foot contour intervals and will include and identify the property boundaries, site features, improvements, easements, and rights-of-way in compliance with American Land Title Association/American Congress of Surveying and Mapping (ALTA/ACSM) standards. The survey will include a separate metes and bounds survey to support the Environmental Easement prepared as part of the Site Management Plan after the remedial action is completed.

Reporting

Findings of the PDI will be included in the 50% Submission - Remedial Design Report.

Schedule

The PDI activities described in this PDIWP will proceed following review, comment, revisions (as necessary) and approval from the NYSDEC.

If you should have any questions or comments, please do not hesitate to contact either Steve Stucker (National Grid – 315.247.6490) or myself (BC – 201.574.4765) at your earliest convenience.

Very truly yours,

Brown and Caldwell Associates

Keith J. Bogatch
Chief Engineer

cc: Steve Stucker, National Grid
S. Saucier – NYSDEC
K. Thompson – NYSDEC
K. Kulow – NYSDOH
S. McLaughlin – NYSDOH
J. Giordano – National Grid

Attachments (3):

- Attachment 1 - NYSDEC Field Descriptions of Samples from Former Manufactured Gas Plant Sites
- Table 1 – Pre-Design Investigation Activities and Location Rationale
- Figure 1 – Proposed PDI Soil Boring and Test Pit Locations

Attachment 1: NYSDEC Field Descriptions of Samples from Former Manufactured Gas Plant Sites

Field Descriptions of Samples for Former Manufactured Gas Plant (MGP) Sites

SOIL SAMPLE DESCRIPTIONS

It is important that descriptive qualifiers are consistently used to characterize degree and nature of contaminant impacts and visual-manual soil classification. The following presents some examples of descriptive qualifiers.

SOIL LOGGING

• All soils are to be logged using the **Unified Soil Classification** (ASTM D 2488 field descriptions)

• **PID or FID** used to screen all soil samples (Jar Headspace method) – maximum readings should be recorded and included on the logs. The PID/FID should be calibrated daily at a minimum

• **Moisture terms** are: Dry, Moist, and Wet

• **Color terms** - use geotechnical color charts - colors may be combined: e.g. red-brown. Color terms should be used to describe the "natural color" of the sample as opposed to staining caused by contamination (see below)

• **Log of each sample interval** should be prepared as follows:

[Coarse Grained Example] NARROWLY GRADED SAND (SP); mostly fine sand; <5% fines; red-brown, moist, environmental/depositional/geologic descriptions.

[Fine Grained Example] SANDY SILT (ML); heterogeneous till structure, nonplastic, ~30% fine to coarse, subangular sand; ~10% subangular fine gravel, max. size ~ 10 mm; brown; environmental/depositional/geologic descriptions.

• **Representativeness** – Soil logs should include particular notes if the field representative believes that there is a possibility that the soil sample being described is not representative of the interval sampled.

• **Intervals for Description** – if using a 2' (split spoon) or 4' (Macro-core) long sampler – the field description should not necessarily be for the entire sample interval. It is important to look for, identify, and describe small-scale units and changes within each sample interval.

DESCRIPTION OF CONTAMINANTS

Visible Contamination Descriptors

• **Sheen** - iridescent petroleum-like sheen. Not to be used to describe a "bacterial sheen", which can be distinguished by its tendency to break up on the water surface at angles, whereas a petroleum sheen will be continuous and will not break up. A field test for sheen is to put a soil sample in a jar of water and shake the sample (jar shake test) , then observe the presence/absence of sheen on the surface of the water in the jar.

• **Stained** - used w/ color (i.e. black or brown stained) to indicate that the soil matrix is stained a color other than the natural (unimpacted) color of the soil.

• **Coated** - soil grains are coated with tar/free product – there is not sufficient free-phase material present to saturate the pore spaces. The degree of coating should be described as light, moderate, or heavy.

• **Blebs** - observed discrete sphericals of tar/free product - but for the most part the soil matrix was not visibly contaminated or saturated. Typically this is residual product. The estimated size and number of blebs should be reported.

• **Saturated** - the entirety of the pore space for a sample is saturated with the tar/free product. Care should be taken to ensure that you're not observing water saturating the pore spaces if you use this term. Depending on viscosity, tar/free-phase saturated materials may freely drain from a soil sample.

• **Oil** - Used to characterize free and/or residual product that exhibits a distinct fuel oil or diesel fuel like odor; distinctly different from MGP-related odors/impacts.

• **Tar** - Used to describe free and/or residual product that exhibits a distinct "coal tar" type odor (e.g. naphthalene-like odor). Colors of product can be brown, black, reddish-brown, or gold.

• **Solid Tar** - Used to describe product that is solid or semi-solid phase. The magnitude of the observed solid tar should be described (e.g. discrete granules or a solid layer).

• **Purifier Material** - Purifier material is commonly brown/rust or blue/green wood chips or granular material. It is typically associated with a distinctive sulfur-like odor. Other colors may be present.

Olfactory Descriptors

• Use terms such as " tar-like odor" or "naphthalene-like odor" or "fuel oil-like odor" that provide a qualitative description (opinion) as to the possible source of the odor.

• Use modifiers such as strong, moderate, faint to indicate intensity of the observed odor.

DNAPL/LNAPL

- A jar shake test should be performed to identify and determine whether observed tar/free phase product is either denser or lighter than water. In addition, MGP residues can include both light and dense phases - this test can help determine if both light and dense phase materials are present at a particular location.

Viscosity of Free-Phase Product – If free-phase product/tar is present a qualitative description of viscosity should be made. Use descriptors such as:

- Highly viscous (e.g. taffy-like)
- Viscous (e.g. No. 6 fuel oil or bunker crude like)
- Low viscosity (e.g. No. 2 fuel oil like)

GROUNDWATER SAMPLING OBSERVATIONS

- Any observations of sheen, blebs, free-phase product/tar, staining or coating of the sampling equipment, odor, etc. that made during sampling of groundwater are to be included in the groundwater sample collection log.

Standard Colors for Reporting MGP Impacts

	RGB Color	Auto Cad Index
TAR SATURATED	255,0,0	10
COATED MATERIAL, LENSES	255,0,255	210
HARDENED TAR	129,64,0	34
BLEBS, GLOBS, SHEEN	255,191,0	40
STAINING, ODOR	255,255,0	50
PETROLEUM IMPACTS SATURATION & SHEENS	0,191,255	140
PETROLEUM IMPACTS STAINING & ODORS	170,234,255	141
PURIFIER WASTE AND ODOR	0,0,255	170
NO OBSERVED IMPACTS	0,165,0	92

Table 1 – Pre-Design Investigation Activities and Location Rationale

TABLE 1
PRE-DESIGN INVESTIGATION ACTIVITIES AND LOCATION RATIONALE
FULTON (SOUTH FIRST STREET) FORMER MGP SITE
FULTON, NEW YORK

Location ID	Objective	Target Depth
TEST PITS		
TP-5 (Area 1)	Determine thickness of concrete around perimeter of former Gas Holder.	Excavation depth will be field determined based on findings during test pitting activities.
TP-6 (Area 2)	Assess whether subsurface remnants of former Coal Shed remain and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-7 (Area 2)	Assess whether subsurface remnants remain in area of former Retorts and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-8 (Area 2)	Assess whether subsurface remnants of former Generator Room remain and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-9 (Area 2)	Assess whether subsurface remnants remain in area of former Engineeering Room and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-10 (Area 2)	Assess whether subsurface remnants remain in area of former Purifying House and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-11 (Area 2)	Assess whether subsurface remnants remain in area of former Oil House and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-12 (Area 2)	Assess whether subsurface remnants remain in area of former Gas Tanks and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-13 (Area 2)	Assess whether subsurface remnants of former Coke Shed remain and if encountered, evaluate construction material/foundation type and depth.	Excavation depth will be field determined based on findings during test pitting activities.
TP-14 (Area 2)	Assess construction and depth of retaining wall adjacent to Canal Corp. property.	Excavation depth will be field determined based on findings during test pitting activities.
TP-15 (Area 2)	Assess construction and depth of retaining wall adjacent to Canal Corp. property.	Excavation depth will be field determined based on findings during test pitting activities.
SOIL BORINGS		
SB-66 through SB-68 (Area 2)	Further evaluate lateral extents of visible MGP-related impacts (i.e., NAPL and sheen below water table) in soil in area planned for ISS treatment.	Below depth of visible MGP-related impacts in adjacent borings.
SB-69 (Area 2)	Assess and confirm NAPL presence in soils adjacent to screened interval for monitoring well MW-5.	Below depth of visible MGP-related impacts in adjacent borings.
SB-70 (Area 2)	Assess and confirm NAPL presence in soils adjacent to screened interval for monitoring well MW-4.	Below depth of visible MGP-related impacts in adjacent borings.
SB-71 through SB-86 (Area 2)	Further evaluate lateral extents of visible MGP-related impacts (i.e., NAPL and sheen below water table) in soil in area planned for ISS treatment.	Below depth of visible MGP-related impacts in adjacent borings.
SB-87 through SB-90 (Area 1)	Further evaluate lateral extents of visible MGP-related impacts (i.e., NAPL and sheen below water table) in soil in area planned for excavation/removal.	Below depth of visible MGP-related impacts in adjacent borings.

Figure 1 – Proposed PDI Soil Boring and Test Pit Locations

SB-28 20
MW-01 28.5
SB-49 8
SB-15 20.2
SB-38 6.9 20.8
SB-89
SB-34 17.3
SB-50 9.6 12
SB-88
SB-35 7.4 24.7
TP-1 5
SB-87
SB-90 #
SB-46 12.4
SB-47 5.1
SB-57 8
SB-17 14.4
SB-51 8
SB-56 4
TP-5
SB-48 4.4
SB-40 24.1
SB-52 8
SB-59 4
TP-2 5
SB-16 16.7
SB-29 20
TP-3 5
SB-18 16.2
MW-02 24.4
SB-63 20
SB-65 20
SB-53 10
TP-6
SB-23 20
SB-84
MW-10 16
SB-85
SB-9 3.5
SB-6 19.5
SB-24 19.5
MW-12S 14
SB-61 20
SB-62 20
PZ-01 28
SB-2 9.3 18
SB-64 20
SB-82
SB-83
TP-7
SB-60 20
SB-81
TP-4 4
TP-8
SB-86
MW-12D 9.2* 28
SB-14 20
SB-10 19.3 19.3
SB-7
SB-32 20
SB-80
SB-54 8
SB-79
SB-78
SB-77
MW-03 18.4 26.4
SB-58 9.5 11
SB-55 9.1 12
SB-21 9.1 19.6
TP-9
SB-30 20
MW-09S 18
SB-75
SB-74
PZ-07 14.5
SB-76
MW-06 37
SB-8
MW-09D 29.3
SB-22 20
SB-11 16.5
TP-11
SB-73
SB-1 28.2
SB-71
TP-10
SB-39 24.2
SB-72
PZ-06 14.3* 14.3
TP-13
SB-12 20
MW-04 28.2
SB-5 8.5 19.6
TP-12
SB-27 19.3
SB-31 20
PZ-05 13.7
SB-20 16 21.6
SB-43 18.8
SB-42 24.8
SB-70
MW-05 15.7
SB-69
SB-45 24.2
MW-08D 32.1
SB-4 19.3
SB-26 19
SB-44 24.3
MW-08S 15.8
SB-68
SB-3 19.5
MW-13 22.75 26
SB-36 22.5 28.6
SB-13 20
SB-66
SB-67
TP-14
SB-37 27.3
PZ-04 13
MW-11 12.8
PZ-03 14
TP-15
SB-33 20
SB-19 12.8
MW-07S 14
SB-41 10.8 32.5
SB-25 19
PZ-02 12.8
MW-07D 29.3

SOUTH FIRST STR

OSWEGO RIVER

Notes:
9.3 - Depth of deepest NAPL or NAPL and Sheen in soil boring (ft., bgs)
12.0 - Total depth of soil boring (ft., bgs)
* - Observed impacts not considered site-related per Remedial Investigation Report (O'BRIEN & GERE, September 2009) and Feasibility Study (O'BRIEN & GERE, February 2009).
# - Completion of boring contingent on drill rig accessibility proximal to overhead utilities.

1. Base map developed based on the following drawings:
   a. Fulton MGP Site at South First, Drawing Number D-53200-C (Niagara Mohawk Power Corporation, December 1995, Revised August 2004).
   b. Lands of National Grid, N/F Parts of Blocks 157 and 158, City of Fulton, Oswego County, New York (Richard M. Rybinski, L.S., December 2009).
2. Aerial Photography Sourced from Nearmap, April 9, 2023. 0.075 meters/pixel

Legend

- Proposed Soil Boring
- Proposed Test Pit (Locations may be modified based on findings from borings)

Prior Sample Locations

- Soil Boring
- Monitoring Well
- Test Pits
- Indications of potential NAPL in well/piezometer during August 2019 sampling event.
- NAPL or NAPL and Sheen in Soil
- Tar Well
- Tar Pit
- Building Outlines
- Foundations/Possible Concrete
- Topographic Contours

Utilities

- Overhead Electric
- Underground Electric
- Overhead Telecom
- Gas
- Sanitary Sewer
- Storm Sewer
- Water
- MGP Related Structures from 1911 and 1924 Sanborn Maps
- Site Boundary
- Property Lines

Brown AND Caldwell

National Grid 170033

Fulton Former Manufactured Gas Plant Site, NYSDEC Site Number 738034

Date: 1/24/2024 10:11 AM

Notes: n/a

Drawn By:
Checked By: CRM

Spatial Reference:
Name: NAD 1983 StatePlane New York Central FIPS 3102 Feet

N

0 25 50
Feet

FIGURE 1
PROPOSED PDI SOIL BORING AND TEST PIT LOCATIONS