

May 11, 2021
Revised February 3, 2022

Mr. Patrick Van Rossem
Project Manager
National Grid
175 E. Old Country Rd.
Hicksville, NY 11801

**Revised Pre-Design Investigation Work Plan
Metropolitan Works Former Manufactured Gas Plant (MGP) Site
Brooklyn, New York
NYSDEC Site No. 224046**

Dear Mr. Van Rossem:

As requested, attached is the Pre-Design Investigation (PDI) Work Plan that summarizes the planned pre-design investigation work for the 475 linear feet of bulkhead located along the Metropolitan former MGP Site. The PDI work is proposed in accordance with the request from the New York Department of Environmental Conservation (NYSDEC) for an interim remedial measure (IRM) in a letter dated October 30, 2020. This PDI Work Plan has been revised to address comments received from the New York State Department of Health (NYSDOH) via email from the NYSDEC on January 5, 2022.

The planned work includes in water work within the Gowanus Canal and 11th Street Turning Basin, and work on land adjacent to the existing building formerly occupied by the Pathmark Supermarket. The goal of the PDI will be to collect subsurface geotechnical data and information to support the IRM design for the proposed non-aqueous phase liquid (NAPL) barrier wall/bulkhead along the 475-feet of alignment shown on the attached Figure 1. Please note that the in-canal portion of the work has been completed as of January 19, 2022. The upland portion of the work will be completed following execution of an access agreement with the property owner.

Background

A Remedial Investigation (RI) was conducted over multiple mobilizations between April 2010 and April 2012 and a Supplemental Remedial Investigation (SRI) was conducted during a single mobilization between March and April 2017. The final RI Report was submitted to and approved by the NYSDEC and NYSDOH in October 2014. The final SRI Report was submitted to and approved by NYSDEC and NYSDOH in May 2020.

The existing bulkhead at the Site exhibits signs of age/damage. Some timbers may have up to one-inch of section loss, concrete shows some cracking and spalls, and there is moderate corrosion to steel components. Upper areas of the bulkhead are heavily deteriorated. The concrete corner entering the 11th basin adjacent to the existing building shows signs of settlement. Along the portions of the Canal adjacent the Site, the bulkhead and associated retained fill and deck are missing. The proposed NAPL barrier/bulkhead wall may include installation of a new bulkhead outboard of the existing bulkhead along the 475 feet long area identified in Figure 1.

PDI Work Plan Scope of Work

To support development of the bulkhead/barrier wall design, additional data will be collected through the completion of a field investigation during the PDI. Field work conducted as of January 2022 includes the following:

- Advancement of three geotechnical borings within the Gowanus Canal/11th Street Turning Basin along the proposed alignment of the bulkhead/barrier wall. Obstructions within the canal near the corner entering the 11th Street Turning Basin prevented the advancement of a fourth geotechnical boring within the Gowanus Canal as originally planned.
- Collection of samples from each boring for geotechnical laboratory testing and for disposal characterization of sediments/soils following by management of investigation derived waste from the in-canal boring program.
- Completion of an obstruction evaluation via probing at approximately 5 foot spacing using vibracoring equipment to push a closed-end rod into the sediments along the proposed bulkhead alignment.
- Community air monitoring in accordance with the project Community Air Monitoring Plan (CAMP) during the in-canal field activities.
- Visual inspection/conditions survey of the former Pathmark building and the existing bulkhead.

The remaining (upland) field work to be conducted includes the following:

- Geophysical survey to locate utilities in the area of proposed upland boring, along the bulkhead in support of upland utility survey, and inside the former Pathmark building.
- Advancement of three upland soil borings along the upland side of the proposed bulkhead/ NAPL barrier wall.
- Collection of samples from each boring for geotechnical laboratory testing and for disposal characterization of sediments/soils if needed.
- Excavation of one or more test pits along exterior wall of former Pathmark building.
- Upland survey to provide topography, utility locations, and locations of site features.
- Restoration of PDI locations.
- Management of IDW.
- Community air monitoring in accordance with the project CAMP.

Pre-Work Notifications

Prior to each phase of work in the Canal, the driller submitted a Local Notice to Mariners (LNM) in accordance with the requirements of the United States Coast Guard (USCG). Copies of the USCG LNMs are included in Attachment 1. The LNMs were submitted a minimum of two weeks prior to the start of work and were updated when the dates of work changed.

The driller also submitted a utility location request to New York 811 a minimum of 2 full working days and not more than 10 working days prior to the work start date. The New York 811 utility location request will also be submitted prior to the upland drilling/ excavation work.

Pre-Condition Inspection

AECOM conducted the pre-condition inspection in June 2021, during which the AECOM engineer performed a visual inspection of parts of the building, the grounds, and the bulkhead that were accessible and/or visible by walking and by observation from a boat traveling close to the shore. Inspection included elements that abut or extend through the existing bulkhead, whether or not such elements are indicated

on the available record plans. Existing conditions were documented in a project memorandum to be included in the PDI Report, and areas of deterioration or failure were identified to determine the structural stability of the inspected components. This information will be used to support the design of the bulkhead, and to evaluate the potential for failure of existing structures during construction.

Utility Identification and Geophysical Survey

Boring and test pit locations on land will be cleared for utilities following National Grid pre-clearance protocols involving geophysical practices and low energy excavation techniques. Utility clearance within the Canal will be made through the notification to New York 811, observation of signs if present at the banks of the Canal and through review of navigation charts.

Geophysical survey methods will also be utilized behind the existing bulkhead to identify utilities that extend through the bulkhead to provide information for development of an existing site plan for the bulkhead/ barrier wall design. Geophysical surveying will also be completed inside the former Pathmark building to identify the locations of timber piles if they are present as foundation structures that support the building.

Sheen Mitigation

Oil absorbent booms and sweeps were deployed and used during drilling and probing in the Gowanus Canal to capture and contain sheen and floating NAPL from the water's surface within the work area.

Advancement of Geotechnical Borings

Geotechnical Borings in Canal

Three geotechnical borings were advanced beneath water in June 2021, three in the Gowanus Canal and one in the 11th Street Turning Basin at the locations shown in Figure 2. Borings were advanced from a barge using mud rotary drilling methods. Standard penetration testing (SPT) split-barrel samples were collected continuously from the mudline to 20 feet below mudline and then at 5-foot intervals to the bottom of the borehole at 80 feet below water.

In December 2021 and January 2022, probing was completed along the proposed bulkhead/ barrier wall alignment at approximately 5 feet centers to determine if debris or other obstructions exist along the alignment or if components of the existing bulkhead extend into the Canal below the mudline. The probing was performed using vibracoring equipment to push a closed-end rod into the sediments along the proposed bulkhead alignment. Although the objective of this effort was to push to an elevation of approximately -20.0 feet NAVD, the probing encountered refusal at all locations.

Geotechnical Boring on Land

Three geotechnical borings will be advanced along the upland side of the proposed bulkhead/ NAPL barrier wall in the approximate locations shown on Figure 2 to determine the parameters of the soils behind the existing bulkhead. This boring will be advanced using mud rotary drilling methods. Standard penetration testing (SPT) split-barrel samples will be collected continuously to the bottom of the borehole at 80 feet bgs.

Boring Logs

Soil descriptions will be logged by AECOM's field engineer/geologist based on visual observations. The soil will be classified in accordance with the Burmister Identification System. The soil borings will be logged by AECOM staff recording such data as the presence of fill material, the nature of each geologic unit encountered, observations regarding moisture content, the results of photoionization detector (PID) readings, and visual/olfactory observations regarding the presence of hydrocarbon-like residuals.

Laboratory Testing

Undisturbed soil samples will be submitted to a geotechnical laboratory and will be analyzed for the following:

- Water content by ASTM D2216
- Particle size analysis by ASTM D6913
- Atterberg limits by ASTM D4318
- pH by ASTM D4972
- Standard triaxial test by ASSTM D2850
- Consolidation test by ASTM D2435

Samples were collected from the soil cuttings generated during advancement of geotechnical borings and were submitted to an analytical laboratory. The purpose of these samples was to characterize investigation-derived wastes (IDW) for disposal.

Test Pit Excavation and Backfill

One or more test pits will be excavated along the exterior wall of the former Pathmark building in the former loading dock area to determine the foundation construction. Prior to excavation, the existing concrete or asphalt surface will be saw-cut and removed for off-site disposal. Test pit(s) are anticipated to be approximately 4 feet wide by 10 feet long and will be advanced until encountering the bottom of the building foundation, top of groundwater, and/or the test pit sidewalls become unstable. During excavation, soils removed from each test pit will be temporarily staged on plastic sheeting next to each test pit. Following observation and documentation of the building foundation depth and characteristics, soils will be returned to each test pit in the order in which they were removed. During backfilling, soils will be compacted in lifts. If the foundation is not observable, or a change in foundation characteristics is suspected, subsequent test pit(s) will be excavated to allow for collection of additional information on the building foundation characteristics.

If significantly impacted soils are identified during excavation of test pits (i.e., by visual observations), such impacted soils will be staged on plastic sheeting and will be containerized and transported offsite for disposal at an approved disposal facility. Odor suppressants and/or an odor suppression system will be present on-site during test pit operations and will be utilized in the event significantly impacted soils are encountered. Impacted soils will also be covered. Granular backfill will then be obtained from an approved source and will be used to restore the test pit(s).

Restoration

Following completion, the soil boring in the loading dock area will be grouted to the ground surface and the surface restored to match pre-existing conditions of the concrete slab to the extent feasible. After backfilling the test pit(s) the concrete or asphalt surface will also be restored to match pre-existing conditions to the extent feasible.

Site Surveying

An upland site survey will be conducted to provide the location/alignment of the existing bulkhead, topography for a minimum distance of 50 feet upland from the existing bulkhead, top and bottom of utility locations where accessible, and locations of site features including the soil boring and test pit(s) advanced during the PDI. Surveying will be completed by a licensed New York surveyor. All horizontal locations will be reported in the New York State Plane Coordinate System, Long Island Zone (NAD83) in feet. All vertical measurements will be reported in NAVD88 in feet, to the nearest 0.1 feet.

Management of IDW

IDW waste characterization analysis will be performed to support disposal of drill cuttings, spent oil absorbent materials, decontamination fluids, and personal protective equipment at an approved off-site facility.

Community Air Monitoring

Work is being conducted in accordance with a Community Air Monitoring Plan (CAMP) developed in accordance with the Generic CAMP protocols presented as Appendix 1A of the New York State Department of Environmental Conservation DER-10 Guidance Document (May 2015). Since test pitting will occur within 20 feet of the existing on-site building, special requirements will be implemented in addition to the general CAMP requirements to protect people and businesses potentially located within 20 feet of ground-intrusive work areas. These special requirements, as recommended by NYSDOH via an email from NYSDEC on January 5, 2022, including the following:

- An additional monitoring station will be placed between work area and walls of occupied structures. During test pitting activities, the additional monitoring station will be placed adjacent to each test pit and against the wall (between the test pit and air intakes if present).
- As noted above under Test Pit Excavation and Backfill, impacted soils, if encountered, will be staged on plastic sheeting and covered. Odor suppressants will be present onsite during test pitting and will be utilized if required.
- If total volatile organic compounds near the outside walls of the building (as indicated by the additional monitoring station) exceed 1ppm above background, the field team will stop work, implement mitigation measures as needed, and continue monitoring at the outside wall and near intakes if present. Test pits will be positioned away from intakes to the extent practicable. Access to the interior of the building during the work is not anticipated.
- If total particulate concentrations near the outside walls of the building exceed $150 \mu\text{g}/\text{m}^3$ above background, the field team will stop work, implement mitigation measures as needed, and continue monitoring at the outside wall and near intakes if present.

Deliverables

Following completion of the investigation, the results of the PDI will be incorporated into the bulkhead design documents for the Site.

Schedule

Field work in the Canal commenced in June 2021 following the conditional approval of this PDI Work Plan by NYSDEC on May 18, 2021. The remaining field activities will be completed following coordination with the property owner for uplands work.

Sincerely,



Brenda D. McEver, P.E.
Sr. Project Manager, AVP
AECOM
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E: brenda.mcever@aecom.com

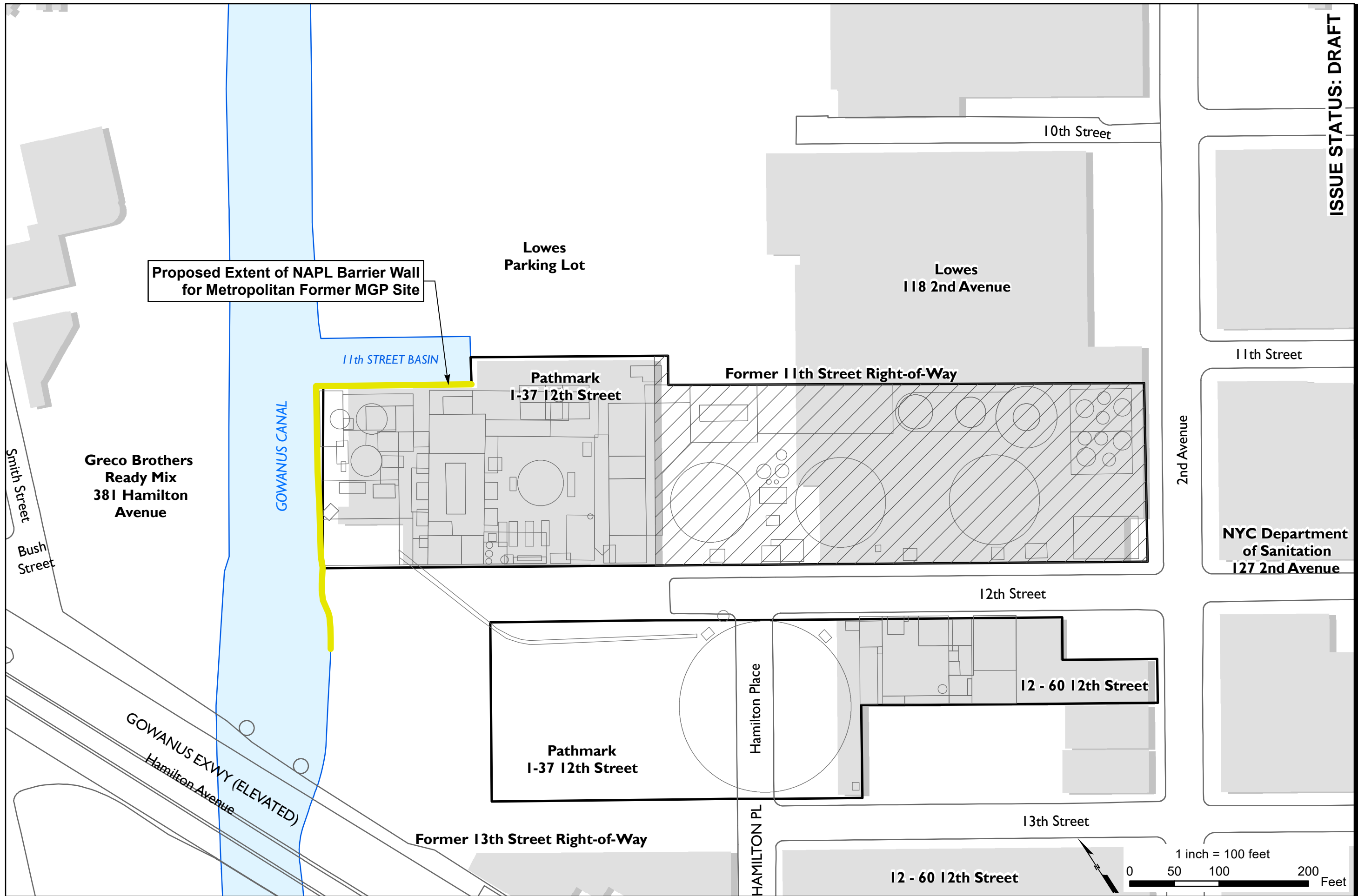
enclosures: Figures
Attachment 1 - Local Notices to Mariners

cc: J. Alonzo, deMaximis
M. Gardner, AECOM

Figures

Figure 1 – Metropolitan Former MGP Site Bulkhead

Figure 2 – Proposed Geotechnical Borings

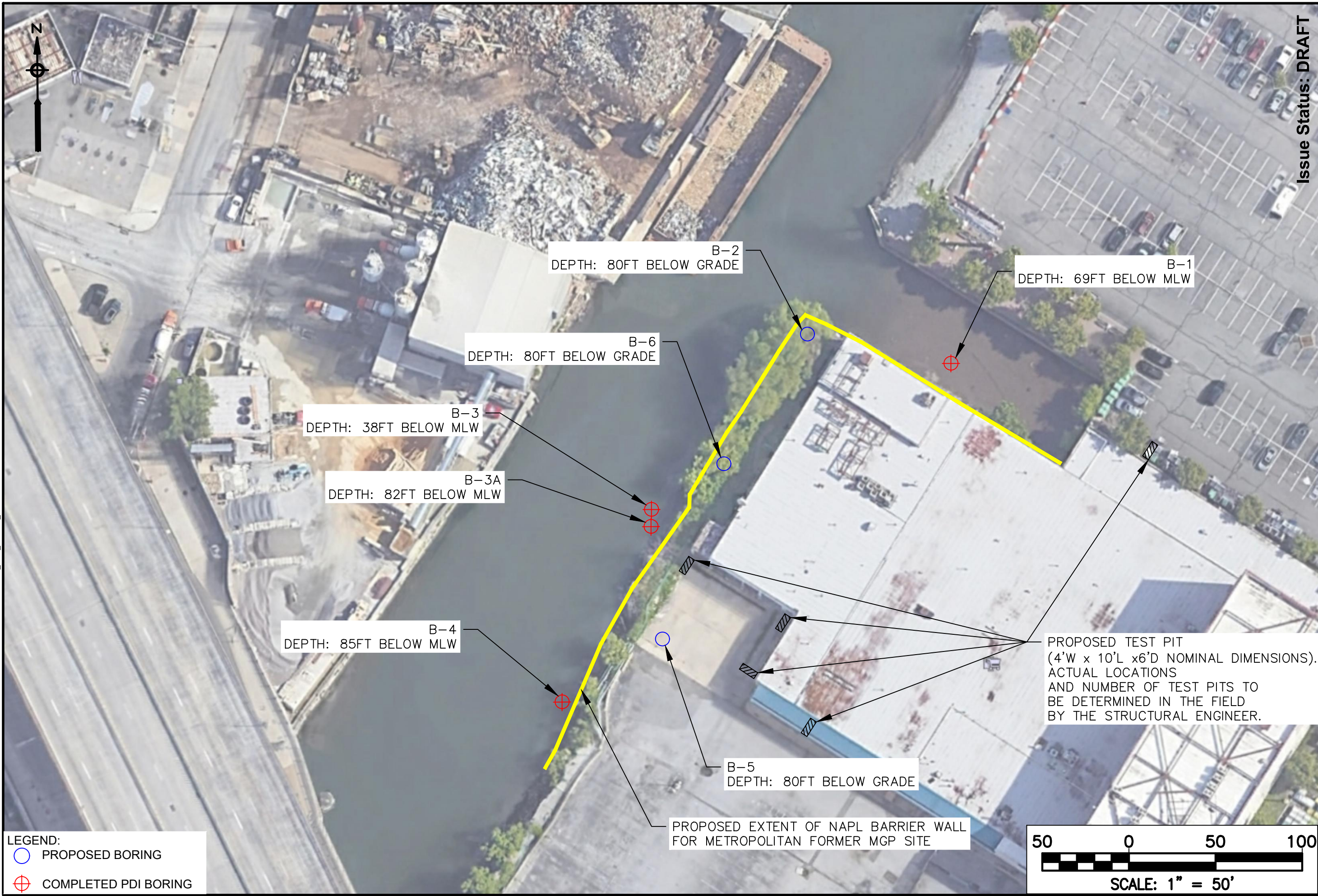


ISSUE STATUS: DRAFT

AECOM
FIGURE 1

Metropolitan Former MGP Site Bulkhead

National Grid
Former Metropolitan Works MGP Site
Brooklyn, NY
Project No.: 60137361 Date 2021-04-13



LEGEND:
○ PROPOSED BORING
⊕ COMPLETED PDI BORING

50 0 50 100
SCALE: 1" = 50'

B-2
DEPTH: 80FT BELOW GRADE

B-1
DEPTH: 69FT BELOW MLW

B-6
DEPTH: 80FT BELOW GRADE

B-3
DEPTH: 38FT BELOW MLW

B-3A
DEPTH: 82FT BELOW MLW

B-4
DEPTH: 85FT BELOW MLW

B-5
DEPTH: 80FT BELOW GRADE

PROPOSED TEST PIT
(4'W x 10'L x 6'D NOMINAL DIMENSIONS).
ACTUAL LOCATIONS
AND NUMBER OF TEST PITS TO
BE DETERMINED IN THE FIELD
BY THE STRUCTURAL ENGINEER.

PROPOSED EXTENT OF NAPL BARRIER WALL
FOR METROPOLITAN FORMER MGP SITE

Issue Status: DRAFT

PROPOSED GEOTECHNICAL BORINGS

**BULKHEAD/BARRIER WALL DESIGN
METROPOLITAN FORMER MGP SITE, BROOKLYN, NY
NATIONAL GRID**

Project No.: 60137361

Attachment 1

Local Notices to Mariners



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U.S. COAST GUARD
First Coast Guard District



LNM Information Form

DATE: 5/5/21

NAME: Matthew B. Ficeto

PHONE NUMBER: 516-616-6026

EMAIL ADDRESS: mficeto@aquiferdrilling.com

COMPANY NAME: Aquifer Drilling and Testing, Inc.

TYPE OF WORK: Marine Borings

LOCATION (WATERWAY) WHERE WORK WILL BE DONE:

N/NE of Hamilton Ave Bridge, Brooklyn Ave in Gowanus Canal

LAT/LONG: (degrees, minutes, seconds & thousandths)

Please See attached- there are 4 Borings to be conducted

BEGINNING/ENDING DATES: 5/10/21 – 6/18/21

HOURS OF OPERATION (DAYS PER WEEK, HOURS PER DAY):

Monday- Friday, 7 a.m. – 7 p.m.

EQUIPMENT ON SCENE: (1) 18x40 Lift Boat with track mounted mount drill rig, (1) 25' aluminum transport boat with (2) 75HP outboard motors

RADIO FREQUENCY VESSELS CAN BE CONTACTED ON (IF USED):

Channel 13 and 16



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PASSING ARRANGEMENTS/Time to move vessels to not impede navigation:

Please advise if work will impede any possible navigable channels or if any 24 hr operation will be required - Will not impede channel _____

NOAA Chart #: 12327 _____

Pease fax form two weeks before the work is to begin to: Mary Swanson @ 617-223-8094 or email: lnm@uscg.mil . The LNM (Local Notice to Mariners) can be found on the following website: <http://www.navcen.uscg.gov>



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LNM Information Form

DATE: November 18, 2021

NAME: Lisa Pipolo

PHONE NUMBER: 908-788-8700

EMAIL ADDRESS: pipolo@aquasurvey.com

COMPANY NAME: Aqua Survey, Inc.

TYPE OF WORK: Sediment Probe Sampling

LOCATION (STATE AND WATERWAY) WHERE WORK WILL BE DONE:

Gowanus Canal, Brooklyn, NY

LAT/LONG: (degrees, minutes, seconds & thousandths)

40 40'21.35" N, 73 59'51.40" W

BEGINNING/ENDING DATES: Dec. 6, 2021 – December 31, 2021

HOURS OF OPERATION (DAYS PER WEEK, HOURS PER DAY):

Monday through Friday – 0800 - 1500

EQUIPMENT ON SCENE: R/V Tesla

RADIO FREQUENCY VESSELS CAN BE CONTACTED ON (IF USED):

Channel 16

PASSING ARRANGEMENTS/Time to move vessels to not impede navigation:

We can move on demand



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Pease fax form two weeks before the work is to begin to: Mary Swanson @ 617-223-8094 or email: D01-SMB-LNM@uscg.mil . The LNM (Local Notice to Mariners) can be found on the following website: <http://www.navcen.uscg.gov>



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LNM Information Form

DATE: December 27, 2021

NAME: Lisa Pipolo

PHONE NUMBER: 908-788-8700

EMAIL ADDRESS: pipolo@aquasurvey.com

COMPANY NAME: Aqua Survey, Inc.

TYPE OF WORK: Sediment Probe Sampling

LOCATION (STATE AND WATERWAY) WHERE WORK WILL BE DONE:

Gowanus Canal, Brooklyn, NY

LAT/LONG: (degrees, minutes, seconds & thousandths)

40 40'21.35" N, 73 59'51.40" W

BEGINNING/ENDING DATES: Jan. 1, 2022 – Jan. 31, 2022

HOURS OF OPERATION (DAYS PER WEEK, HOURS PER DAY):

Monday through Friday – 0800 - 1500

EQUIPMENT ON SCENE: R/V Tesla

RADIO FREQUENCY VESSELS CAN BE CONTACTED ON (IF USED):

Channel 16

PASSING ARRANGEMENTS/Time to move vessels to not impede navigation:

We can move on demand



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First Coast Guard District



Pease fax form two weeks before the work is to begin to: Mary Swanson @ 617-223-8094 or email: D01-SMB-LNM@uscg.mil . The LNM (Local Notice to Mariners) can be found on the following website: <http://www.navcen.uscg.gov>