

December 8, 2009

Mr. Amen M. Omorogbe, P.E.
Project Manager
New York State Department of Environmental Conservation
MGP Remedial Section, Division of Environmental Remediation
Bureau of Western Remedial Action, 11th Floor
625 Broadway
Albany, New York 12233-7017

**Re: Revised Non-Aqueous Phase Liquid Recovery Pilot Test Work Plan
Clifton Former Manufactured Gas Plant (MGP) Site, Operable Unit 1
Staten Island, New York
Site No. 2-43-023
Index No. D2-0001-98-04**

Dear Mr. Omorogbe:

National Grid is submitting for your review and approval the following Revised Non-Aqueous Phase Liquid (NAPL) Recovery Pilot Test Work Plan for Operable Unit 1 (OU-1) of the Clifton former Manufactured Gas Plant (MGP) site at 40 Willow Avenue, Staten Island, New York (Figure 1). National Grid and its contractors have recently completed the installation of a subsurface barrier wall at OU-1 as part of the New York State Department of Environmental Conservation (NYSDEC)-approved Remedial Design entitled *Final Remedial Design Report, Clifton Former Manufactured Gas Plant (MGP) Site, Operable Unit 1 (OU-1) 40 Willow Avenue Parcel Site No. 2-43-023 dated February 2007*. National Grid has prepared this work plan to evaluate passive NAPL collection as part of the remedial program at OU-1. This NAPL Recovery Pilot Test Work Plan will provide data needed to determine the viability of NAPL recovery at the Site. The proposed recovery well locations are shown in Figure 2.

1.0 NAPL Recovery Pilot Test Scope of Work

Three NAPL recovery wells (NRW-01 through NRW-03) are proposed to evaluate shallow, intermediate and deep subsurface soils impacted with NAPL. The locations and depths are based on intervals of NAPL saturated soils encountered during previous boring and monitoring well installations. The recovery characteristics of the NAPL will be evaluated in each of the recovery well to determine the potential recoverability of NAPL within the barrier wall containment cell at OU-1.

NAPL recovery installation activities will be conducted in general accordance with the NYSDEC and New York State Department of Health (NYSDOH) approved Remedial Design Report, Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), and Field Sampling Plan (FSP). The remainder of this letter describes recovery well installation, NAPL measurement/recovery and reporting activities.

1.1 NAPL Recovery Well Installation

Three NAPL recovery wells (NRW-01 through NRW-03) are proposed within the containment cell. The proposed recovery well locations are shown in Figure 2. The proposed recovery wells will target NAPL saturated soils encountered during previous investigations in three zones as follows:

- Shallow recovery well (NRW-01): Will evaluate tar recovery within the former holder foundation to a depth of approximately 16 feet below ground surface (bgs) (-3 feet National Geodetic Vertical Datum [NGVD]).
- Intermediate recovery well (NRW-02): Will evaluate tar recovery below the bottom of the holder in the vicinity of previous remedial investigation boring locations (SB-22 and GP-06) between approximately 25 feet bgs (-13 feet NGVD) and 45 feet bgs (-33 feet NGVD).
- Deep recovery well (NRW-03): To evaluate deeper tar impacts, a well will be installed near the trial field monitoring wells (TF-MW-06 and TF-MW-07) to a depth of approximately 77 feet bgs (-64 feet NGVD).

The boring/monitoring well logs for this area of OU-1 are included as Attachment A.

The concrete pad will be cored at each location prior to installation. Recovery wells will be installed utilizing a combination resonant sonic and hollow stem auger drilling, depending on encountered conditions. The soils will be continuously logged for geologic conditions and visual evidence of NAPL. Each tar recovery well will be constructed with a 4-inch 0.020" slotted stainless steel screen, 10 feet in length and flush threaded to 4-inch stainless steel riser to the concrete pad surface. NRW-02 and NRW-03 will be constructed with at least a 5-foot long sump at the bottom of the well for collection of NAPL. A sump will not be installed at NRW-01 due to its proximity to the bottom of the holder foundation. The wells will be completed with a protective steel road box at the surface. The deep well will be outfitted with a temporary riser during gauging/recovery to manage potential artesian groundwater conditions. Alternative strategies to manage artesian conditions may be investigated.

Each recovery well will be developed following installation. NAPL measurements will be made before, during and after development to evaluate the initial NAPL accumulation in the well.

1.2 NAPL Monitoring, Recovery and Disposal

Monitoring and evaluation of the recovery rate of NAPL will be completed in one initial monitoring event and two follow-up monthly events as discussed in the following sections.

1.2.1 Initial NAPL Recovery Monitoring Event

The initial monitoring and recovery event will be conducted over a two day period to evaluate the short term NAPL recovery into the wells and will be completed at a minimum of two weeks following development of the recovery wells as follows:

- NAPL levels in each of the recovery wells will be gauged prior to removal and the volume of NAPL will be calculated.
- NAPL will be collected utilizing a combination of down hole and surface mounted positive displacement NAPL recovery pumps. Dedicated pumps and tubing will be utilized. Alternative recovery technologies such as bailers or other types of pumps may be evaluated.
- To the extent practical, NAPL will be removed to approximately 90 percent of the pre-pumping level.
- After the NAPL is removed from the well, the well will be gauged at approximately 15 minute intervals for 2 hours, then hourly for an additional 2 hours or until NAPL levels return to 90 percent of their pre-pumping level, whichever is shorter.
- In the event that the time frame for NAPL levels to return to 90 percent of their pre-pumping level is short, additional recovery and monitoring may be undertaken at the discretion of National Grid.

A sample of accumulated NAPL will be collected from a minimum of one of the pilot test recovery wells at 40 Willow Avenue and from monitoring well RW-18 on the 25 Willow Avenue to evaluate the characteristics of the NAPL. The samples will be submitted to PTS Laboratories for physical characteristic testing including viscosity, density, interfacial, and surface tension analysis using the American Society for Testing and Materials (ASTM) Methods D445 and D1481. NAPL samples will also be submitted to an analytical laboratory for chemical characteristic testing including volatile organic compounds (VOCs) using Environmental Protection Agency (EPA) Method 8260, semivolatile organic compounds (SVOCs) using EPA Method 8270, and total organic carbon (TOC) via EPA Method 9060.

The procedures outlined above may be modified based on field observations.

1.2.2 Monthly NAPL Recovery Monitoring Event

Each of the monthly monitoring events will be conducted over a one day period to evaluate the sustained NAPL recovery into the wells. Two monthly NAPL recovery monitoring events will be completed following initial recovery event as follows:

- NAPL levels in each of the recovery wells will be gauged prior to removal and the volume of NAPL will be calculated.
- NAPL will be collected utilizing a combination of down hole and surface mounted positive displacement NAPL recovery pumps. Dedicated pumps and tubing will be utilized. Alternative recovery technologies such as bailers or other types of pumps may be evaluated.
- To the extent practical, NAPL will be removed to approximately 90 percent of its pre-pumping level.
- After the NAPL is removed from the well, the well will be gauged at approximately 15 minute intervals for 2 hours or until NAPL levels return to 90 percent of their pre-pumping level, whichever is shorter.

The procedures outlined above may be modified based on field observations.

2.0 Waste Disposal

All waste generated during the field activities will be containerized within USDOT-approved containers, characterized and disposed of at a National Grid-approved facility in accordance with all Local, State and Federal regulations.

3.0 NAPL Recovery Pilot Test Report

After the completion of all the recovery test activities, a NAPL Recovery Pilot Test report will be prepared to provide a summary of the NAPL Pilot Test recovery data and an evaluation of the viability of NAPL recovery at the Site. A summary of the preliminary NAPL recovery pilot test findings will be included as part of the Construction Completion Report that is being prepared by National Grid and its contractors.


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4.0 Proposed Schedule

Pilot test work is anticipated to begin in mid-December once the drilling contractors are secured. It is anticipated that the field work detailed in the Work Plan can be completed within three months. The timing of the monthly sampling events may be modified based on observed field conditions. A schedule is currently being developed for the implementation of this Scope of Work.

If you have any questions or require additional information, please feel free to contact me at (718) 963-5412. Thank you.

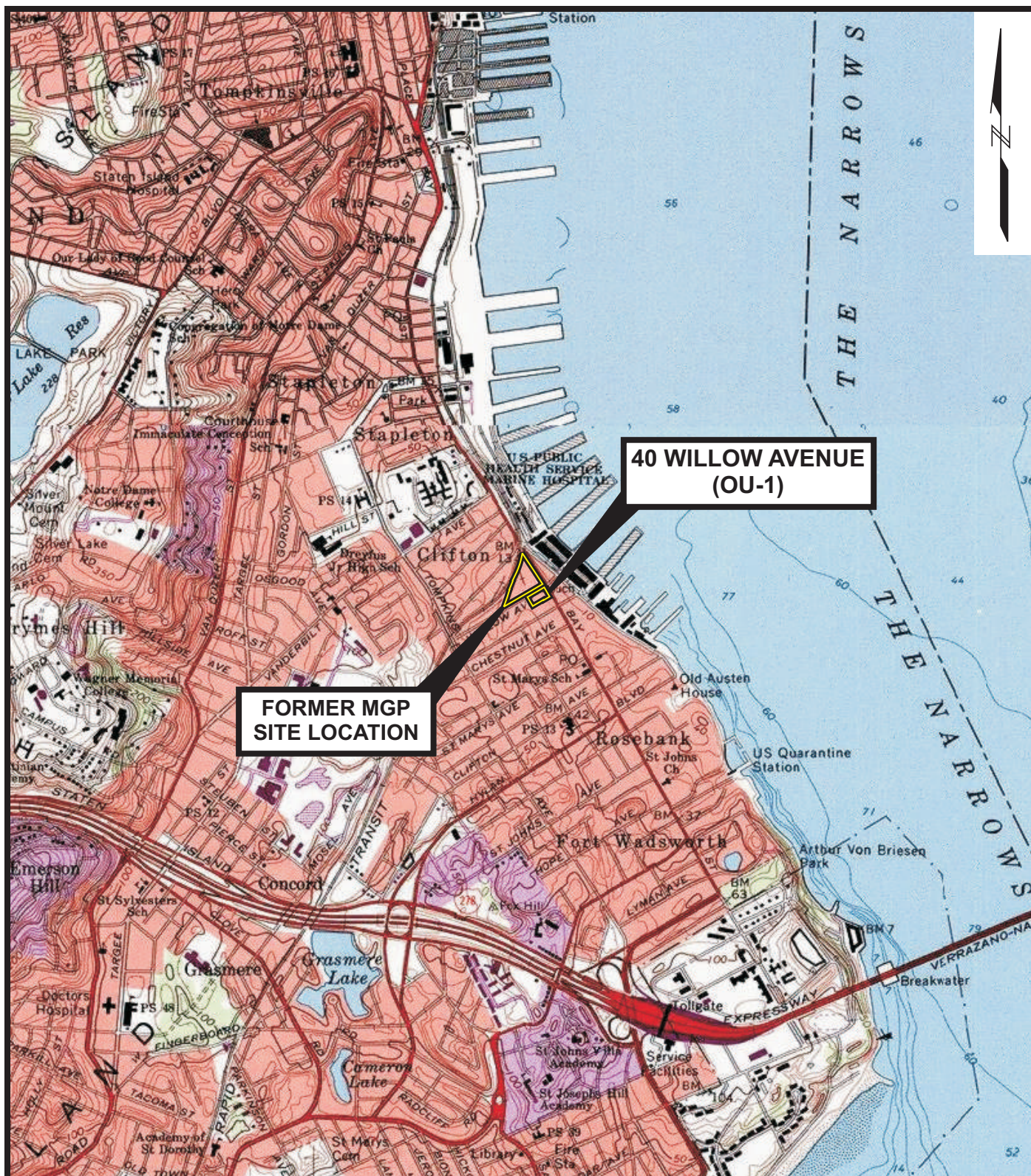
Sincerely,


Andrew Prophete
Project Manager

Enclosures

cc: S. Deyette – NYSDEC
S. Selmer – NYSDOH
T. Bell – National Grid
L. Sullivan – National Grid
J. Hastings – National Grid
D. Boram – de maximus
T. Helgasen – de maximus
L. Willey – GEI
D. Work – GEI

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SOURCE:
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NAPL RECOVERY PILOT TEST WORK PLAN
CLIFTON FORMER MGP SITE (OU-1)
STATEN ISLAND, NEW YORK

nationalgrid

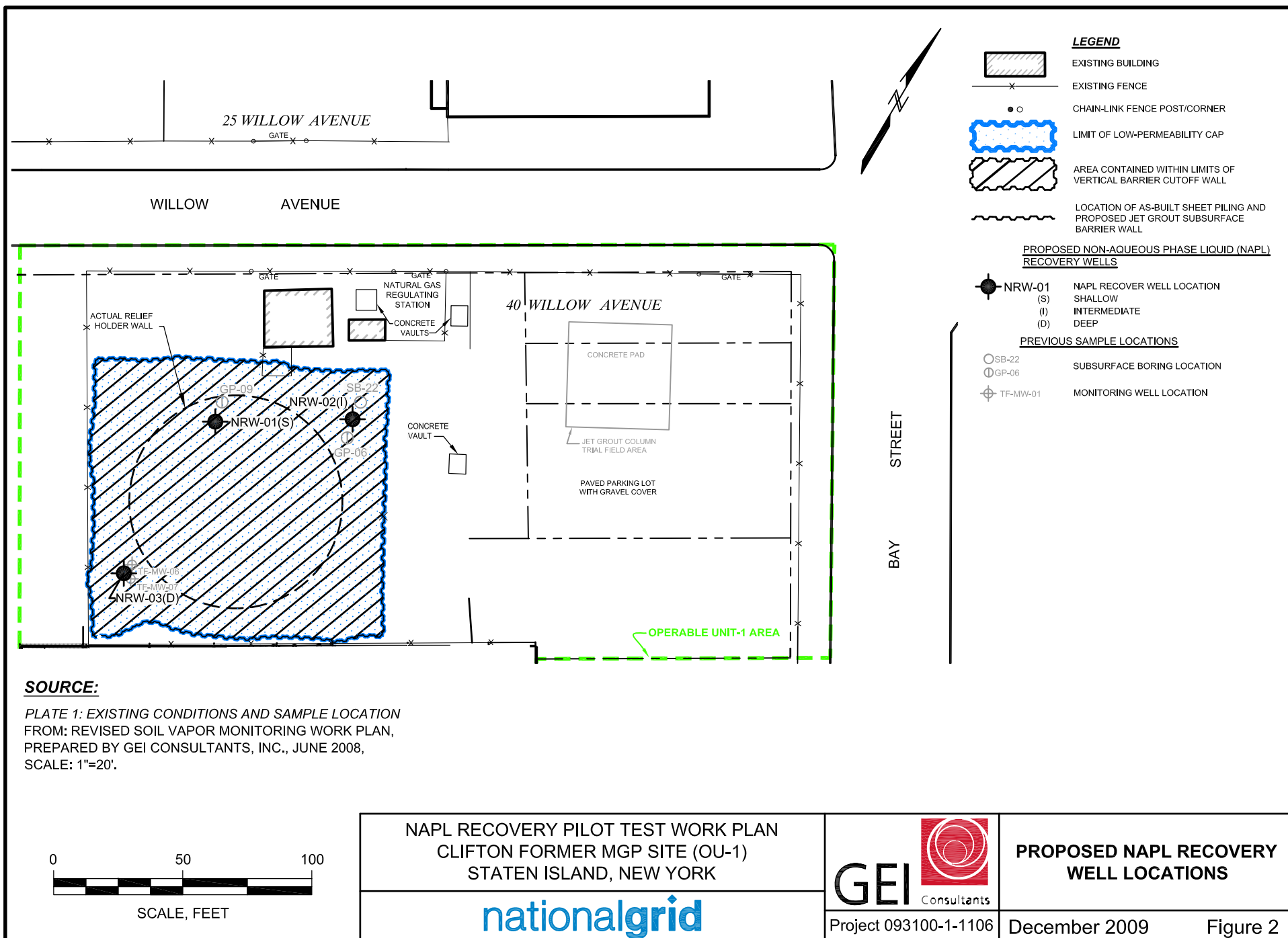


Project 093100-1-1106

SITE LOCATION MAP

December 2009

Figure 1



ATTACHMENT A
SOIL BORING LOGS
AND
MONITORING WELL
LOGS