

May 24, 2013

Mr. Henry Willems  
New York State Department of Environmental Conservation  
Division of Environmental Remediation  
Remedial Bureau C, 11<sup>th</sup> Floor  
625 Broadway,  
Albany, New York 12233-7014

**Subject: Remedial Investigation Work Plan Addendum (No. 2) Modification  
Former Equity Works Manufactured Gas Plant (MGP) Site  
Brooklyn, New York  
NYSDEC Site No.: 224050, Order on Consent Index #: A2-0552-0606**

Dear Mr. Willems:

Confirming our prior conversations, National Grid is submitting this RIWP Addendum (No. 2) Modification Letter for off-site groundwater investigation. The work plan presented below has been prepared by AECOM, National Grid's consultant for the subject site. On April 19, 2012, National Grid submitted the Remedial Investigation Work Plan (RIWP) Addendum (No. 2) for the former Equity Works manufactured gas plant (MPG) site (the Site), located at 222 – 254 Maspeth Avenue in Brooklyn, New York. National Grid submitted the Remedial Investigation Work Plan Addendum (No. 1) to the NYSDEC in August 2011 to addend the July 2009 RIWP.

To further delineate the extent of dissolved phase constituents, National Grid proposes to install borings and wells to the east and hydraulically downgradient of the Site at a subset of the Tier I and Tier II contingency locations that were included on Figure 1 in the attached NYSDEC-approved RIWP Addendum (No. 2). Figure 1A, attached to this WP Addendum Modification Letter, is an expanded view of the Site and the surrounding areas, and includes the Tier I and Tier II locations originally proposed in the RIWP Addendum No. 2. Selected locations, identified by a circle, will be advanced to the Gardiners Clay by methods consistent with previous work plans. Nested wells will be installed at each location such that well screens are placed from approximately 30 to 40 feet bgs and 70 to 80 ft bgs. Exact screen depths will be determined in the field based on observed stratigraphy. Shallow wells (screens placed from approximately 5 to 15 ft bgs across the water table) may also be installed at these locations, which will be determined based on field observations. Additional Tier II contingency locations will be advanced as appropriate to complete delineation.

National Grid is also proposing a third tier of monitoring wells downgradient from the Tier II locations adjacent to English Kills. These Tier III locations, shown on Figure 1A, will be installed if groundwater analytical results from the Tier II locations indicate that additional information is required to complete the delineation of dissolved phase MGP constituents. The results of the Tier II locations will be used to target which Tier III locations will be advanced. Screen intervals may be one or a combination of shallow water table wells (5 to 15 ft bgs), intermediate (30 to 40 ft bgs), and/or deep 70 to 80 ft bgs, which will be determined based on Tier I / Tier II results and Tier III field observations. Any Tier III wells that are proposed to be installed will be presented to you for review and comment prior to installation.

Completed wells will be developed, gauged, and sampled by low-flow purging methods. Groundwater samples will be submitted to an ELAP Certified laboratory for the following analyses (other analyses may be included based on field observations):

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- Volatile Organic Compounds by EPA Method 8260
- Semi-Volatile Organic Compounds by EPA Method 8270, and
- Total Cyanide

Please let me know if you have any questions regarding the enclosed approach. If you are in agreement, National Grid will notify you of the schedule before mobilizing to the field.

Sincerely,

A handwritten signature in cursive script that reads "Donald Campbell". The signature is written in dark ink on a light-colored background.

Donald Campbell

Cc: A. Hecht (National Grid) – electronic file only  
J. Parkinson (National Grid) – electronic file only  
C. Rooney (National Grid) – electronic file only  
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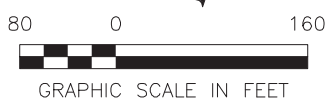
## Figure 1A



- LEGEND:**
- PROPERTY LINE
  - ROADWAY EASEMENT
  - CURB
  - ▬ BUILDING WALL
  - ▨ CONCRETE WALL
  - x—x— FENCE
  - HISTORIC STRUCTURES
  - 1900s HISTORIC WATERCOURSE

- ▲ 254-B-6 PREVIOUS INVESTIGATION SAMPLE LOCATION
- ▲ PDI-8 PRE-DESIGN INVESTIGATION LOCATION ABANDONED
- ⊙ MW-1 MONITORING WELL
- ▲ SB-4 SOIL BORING
- ⊠ TP-4 TEST PIT

- SB- TIER I CONTINGENCY RI ADDENDUM LOCATIONS
- SB- TIER II CONTINGENCY RI ADDENDUM LOCATIONS
- SB- TIER III CONTINGENCY RI ADDENDUM LOCATIONS



NATIONAL GRID EQUITY FORMER MGP SITE, BROOKLYN NY 60137362-400		<b>RECOMMENDED REMEDIAL                  INVESTIGATION ADDENDUM LOCATIONS</b>
DATE: 05/06/2013	DRWN: BcV/C-MA	<b>FIGURE - 1A</b>

# **Remedial Investigation Work Plan Addendum (No. 2)**

April 19, 2012

Mr. Henry Willems  
New York State Department of Environmental Conservation  
Division of Environmental Remediation  
625 Broadway, 12th Floor  
Albany, New York 12233-7013

**Subject: Remedial Investigation Work Plan Addendum (No. 2)  
Equity Former Manufactured Gas Plant (MGP) Site  
Brooklyn, New York  
NYSDEC Site No.: 224050, Order on Consent Index #: A2-0552-0606**

Dear Mr. Willems:

National Grid is submitting the following Remedial Investigation Work Plan (RIWP) Addendum (No.2) for the Equity former manufactured gas plant (MPG) site (the Site), located at 222 – 254 Maspeth Avenue in Brooklyn, New York. This addendum describes work to be performed at select areas within the Site boundaries and at several off-site locations in both right-of-way areas and private property located at 300 Maspeth Avenue and 7 Rewe Street.

The former Equity MGP was operated by The Brooklyn Union Gas Company (BUG), a predecessor company to National Grid, from approximately 1893 to 1929. As you are aware, the Remedial Investigation of the Site is being conducted by National Grid pursuant to a Multi-site Order on Consent and Administrative Settlement with the NYSDEC, Index # A2-0552-0606, executed on February 22, 2007 and modified on August 10, 2007, and in accordance with applicable guidelines of the NYSDEC and the New York State Department of Health (NYSDOH). Specifics of the RI scope of work are presented in the NYSDEC-approved work plan (Remedial Investigation Work Plan, Equity Former MGP Works) produced by AECOM in July 2009.

National Grid submitted the Remedial Investigation Work Plan Addendum (No. 1) to the NYSDEC in August 2011 to addend the July 2009 RIWP. The purpose of the work described in this RIWP Addendum (No. 2) is to further delineate MGP residuals through the advancement of at least six borings at areas adjacent to the Site. Five of these borings were included in the RIWP Addendum (No.1), but were not installed in 2011 due to access limitations. Additional work includes the advancement of soil boring SB-20/MW-8J to a maximum depth of 140 ft bgs to identify the elevation of the Jameco Gravel and assess potential impacts. Monitoring wells will be installed at select locations as outlined later in this submittal. At each boring location, the boring will be advanced and continuously logged to delineate zones of soil impacts (MGP residuals) identified in various RI borings previously installed at the Site. Two tiers of contingency boring are also proposed, and will be installed if soil observations from adjacent borings indicate the presence of MGP residuals.

Remedial investigation locations completed to date, proposed soil borings, proposed monitoring well locations, and proposed contingency locations are shown on Figure 1. The rationale and sampling analysis summary for each proposed boring and monitoring well is included on Table 1. All work will be performed in accordance with the procedures specified in the 2009 NYSDEC Approved RI Work Plan except where noted below.

## **RIWP Addendum Scope of Work**

### **Borehole Advancement and Monitoring Well Installation**

In general, the target completion criteria for soil borings SB-25, SB-26, SB-27, SB-28, SB-31, and SB-32 will be contact with the Gardiner's Clay and/or 10 feet into visually clean material. If impacts are not observed within 10 ft of the Gardiner's Clay, the boring will be terminated at the Gardiner's Clay surface. The anticipated completion depth for these soil borings is approximately 105 feet (Table 1). The anticipated completion depth of boring SB-20 is 140 ft bgs. The purpose of SB-20 is to determine the soil and groundwater quality below the surface of the Gardiner's Clay. The final completion depth of boring SB-20 will be approximately ten feet into the Jameco Gravel. However, the thickness of the Gardiner's Clay ranges from a few feet to over 200 ft. Therefore, if the SB-20 boring is advanced approximately 50 ft or more into the Gardiner's Clay, a point at which migration of constituents across the extremely low porosity clay to the Jameco Gravel would be considered highly unlikely, the SB-20 boring may be terminated.

Prior to advancement, each boring location will be cleared for utilities following National Grid and AECOM utility pre-clear protocols/standard operating procedures (SOP) and low energy/soft-dig excavation techniques. The AECOM Underground Utility Preclearance SOP was recently updated in 2012 from the original identified in the RIWP (2009). A third party geophysical survey clearance subcontractor will be contracted to identify marked and unmarked subsurface utilities, and any possible obstructions in the proposed investigation areas. If any soil boring and/or well locations need to be significantly modified based on access due to subsurface and overhead utilities, Figure 1 will be revised and provided for approval.

Once the locations are cleared to a minimum of 5 ft bgs, soil borings will be advanced by sonic drilling, hollow stem auger, and / or direct-push techniques. The actual drilling locations and screen intervals will be determined based upon field conditions encountered and subsurface utility clearance activities. Soils will be logged continuously and screened with a photoionization detector (PID) from ground surface to the terminus of the borehole. Soil borings SB-20, SB-25, and SB-26 will be converted to monitoring wells. Targeted screen depth intervals and rationale for the monitoring wells are provided in Table 1. Each monitoring well will be constructed with 2-inch diameter, 0.010-inch slot well screen or 0.020-inch slot well screen if NAPL is observed in soils in the screen interval during drilling. An exception may be the well diameter and slot-size for MW-8J (to be installed at SB-20), which may be larger, based on the anticipated gravel matrix of the Jameco formation. Well components will be generally constructed of PVC, except where DNAPL is present in the soil column, at which interval(s) well materials may be constructed of stainless steel. During the implementation of this work plan, other borings may be converted to monitoring wells if required, and following consultation with NYSDEC. The newly installed monitoring wells will be developed no sooner than 24 hours following installation. Each monitoring well will be developed using alternative surging and pumping methods as outlined in the existing 2009 RI Work Plan.

Tier I and Tier II borings will be advanced contingent on the observations and measurements following the advancement of the Remedial Investigation Addendum No. 2 Locations and in consultation with NYSDEC. The borings will be advanced in accordance with the methods specified above, and target depths will be selected based on observations at adjacent borings. All contingency locations will be cleared using geophysical techniques during the initial pre-clearing activities to allow access to these locations during the same mobilization. Borings may be converted to monitoring wells if required, and following consultation with NYSDEC.

### **Soil Sampling**

Two soil samples will be collected from each borehole during soil boring advancement (see Table 1). Soil samples may be collected at the following depth intervals based on field observations:

- At the depth interval exhibiting the highest PID readings or visual evidence of impacts. If no impacts are noted, this sample will be collected from an interval with elevated impacts from a nearby boring; and
- At the first clean interval or the base of the borehole.

Actual soil sampling depths may be adjusted based on field conditions or in consultation with NYSDEC field oversight personnel. Soil samples will be analyzed for:

- Volatile organic compounds (VOCs) by EPA Method 8260B
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270C

### **Groundwater Gauging and Sampling**

The newly installed monitoring wells will be gauged and sampled following EPA's low-flow groundwater sampling procedures in accordance with the RI Work Plan. Each monitoring well will be gauged with an oil-water interface probe to detect the presence of DNAPL. If DNAPL is present, a groundwater sample will not be collected.

Field measurements will be collected during the sampling of each monitoring well. The following parameters will be monitored: salinity, pH, specific conductance, dissolved oxygen (DO), oxidation reduction potential (ORP), temperature, and turbidity.

Groundwater samples will be collected from the newly installed monitoring wells at least two weeks after well development. Groundwater samples will be collected using low flow groundwater sampling procedures. Groundwater samples will be analyzed for:

- VOCs by EPA Method 8260B
- SVOCs by EPA Method 8270C
- RCRA 8 Metals by EPA Methods 6010B (ICP - metals) and 7471A (mercury), and
- Total cyanide by EPA Method 9012B.

### **Quality Assurance and Quality Control**

Quality assurance and quality control (QA/QC) samples of soil and groundwater will be collected and submitted in accordance with the RIWP.

### **Community Air Monitoring Plan**

A Community Air Monitoring Plan (CAMP) has been developed for this project that will be followed during all invasive fieldwork (soil borings, borings for well installations, and test pitting). The CAMP will monitor concentrations of VOCs and particulate matter less than 10 microns in size (PM-10) in accordance with NYSDEC and NYSDOH guidance. The CAMP will monitor these parameters upwind and downwind of the work area. Included in the CAMP is a description of methods that may be used to control odors during the RI if needed. The CAMP is included in the approved RI Work Plan for the site.



Mr. Hank Willems  
April 19, 2012  
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### **Surveying**

A survey of the investigation sampling points will be conducted at the end of the fieldwork by a licensed NY-State surveying contractor. 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 ft. and 0.01 ft. for soil borings and monitoring wells respectively.

### **Schedule**

Field work can commence following the approval of this Work Plan addendum and following coordination with property owner and receipt of right-of-way work permits. AECOM and their drilling, geophysical, laboratory, and surveying subcontractors are ready to initiate field activities in Late Spring/ early the Summer of 2012. If the proposed work is sufficient to complete the delineation of MGP residuals in combination with data derived from the original July 2009 RIWP and the August 2011 RIWP Addendum (No. 1), the data will be presented in a single, all-inclusive RI Report.

Yours sincerely,



Donald Campbell

Cc: T. Bell (National Grid) – electronic file only  
A. Hecht (National Grid) – electronic file only  
J. Giordano (National Grid) – electronic file only  
A. DeMarco (NYSDOH) – electronic file only  
P. Cox (AECOM) – electronic file only

## Table

**Table 1**  
**Remedial Investigation Addendum No. 2**  
**Sample Locations, Rationale, and Analyses Summary**  
**Equity Former MGP Site, Brooklyn, New York**

Location ID	Sample ID	Completion Depth	Sample Depth (bgs)	No. of Samples	Analyses	Rationale
<b>Subsurface Soil</b>						
<b>Remedial Investigation Addendum No. 2 Locations</b>						
SB-20J	SB-20 (depth)	Est. 140 feet max	TBD	TBD	TBD	North of former relief holder and northwest of former settling tank, as well as adjacent to onsite water supply well PW-1 to determine presence and elevations of the Gardiners Clay and the Jameco Gravel.
SB-25	SB-25 (depth)	Est. 105 feet	Zone of worst-case impacts, and first clean or bottom	2	VOCs, SVOCs	Advance to delineate impacts observed on the Gardiners Clay at SB-22. Boring shifted southeast from RIWP Addendum No. 1 location given the apparent trending of tar towards the east at SB-22 adjacent to the building at 7 Rewe Street.
SB-26	SB-26 (depth)	Est. 105 feet	Zone of worst-case impacts, and first clean or bottom	2	VOCs, SVOCs	Advance to delineate impacts observed on the lower clay lens at SB-16C and on the intermediate clay at SB-12. Due to proximity of the lower clay to the Gardiners Clay, boring will be advanced to the Gardiners Clay.
SB-27	SB-27 (depth)	Est. 105 feet	Zone of worst-case impacts, and first clean or bottom	2	VOCs, SVOCs	Advance to delineate impacts observed at SB-20 at shallower depths above the intermediate clay and impacts above the lower clay lens. Due to proximity of the lower clay to the Gardiners Clay, boring will be advanced to the Gardiners Clay.
SB-28	SB-28 (depth)	Est. 105 feet	Zone of worst-case impacts, and first clean or bottom	2	VOCs, SVOCs	Advance to delineate impacts observed at SB-20 to delineate impacts at shallower depths above the intermediate clay and for delineation of impacts on the lower clay lens at SB-16C and SB-29. Due to proximity of the lower clay to the Gardiners Clay, boring will be advanced to the Gardiner's Clay.
SB-31	SB-31 (depth)	Est. 105 feet	Zone of worst-case impacts, and first clean	2	VOCs, SVOCs	Advance to the intermediate clay to delineate impacts observed at SB-21. Advance to the Gardiners Clay to delineate impacts observed on the Gardiners Clay at SB-22.
SB-32	SB-32 (depth)	Est. 105 feet	Zone of worst-case impacts, and first clean	2	VOCs, SVOCs	Advance to the Gardiners Clay to delineate tar impacts observed at SB-1 to the north above the Gardiners Clay.
<b>Tier I Contingency RI Addendum Locations</b>						
SB-ID	SB-ID (depth)	TBD	Zone of worst-case impacts, and first clean or bottom	2	VOCs, SVOCs	Borings will be advanced contingent on the observations and measurements following the advancement of the Remedial Investigation Addendum No. 2 Locations. Target depth will be selected based on observations at adjacent borings. May be converted to monitoring well if required (and following consultation with NYSDEC). Numerical IDs will be added sequentially if borings are advanced.
<b>Tier II Contingency RI Addendum Locations</b>						
SB-ID	SB-ID (depth)	TBD	Zone of worst-case impacts, and first clean or bottom	2	VOCs, SVOCs	Borings will be advanced contingent on the observations and measurements following the advancement of Tier I Contingency RI Addendum Locations. Target depth will be selected based on observations at adjacent borings. May be converted to monitoring well if required (and following consultation with NYSDEC). Numerical IDs will be added sequentially if borings are advanced.

**Notes**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. No. - number</li> <li>2. ID - identification</li> <li>3. ft - feet</li> <li>4. MGP - Manufactured Gas Plant</li> <li>5. EST. - Estimated</li> <li>6. bgs - Below ground surface</li> </ul> | <ul style="list-style-type: none"> <li>7. SB - Soil Boring (Subsurface Soil)</li> <li>8. VOCs - Volatile Organic Compounds</li> <li>9. SVOCs - Semi-Volatile Organic Compounds</li> <li>A - Depths may be adjusted in the field based on stratigraphy and observed impacts. Borings will be advanced to 10 feet into clean soils. If impacts are not observed within 10 ft of the Gardner's Clay, the boring will be terminated at the Gardner's Clay surface.</li> </ul> |
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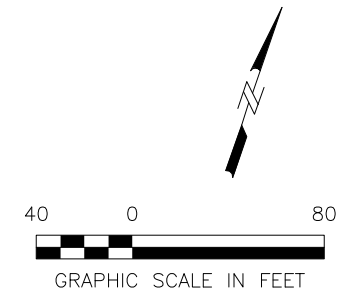
**Table 1**  
**Remedial Investigation Addendum No. 2**  
**Sample Locations, Rationale, and Analyses Summary**  
**Equity Former MGP Site, Brooklyn, New York**

Location ID	Sample ID	Completion Depth	Sample Depth (bgs)	No. of Samples	Analyses	Rationale
<b>Groundwater</b>						
MW-8/ SB-20	MW-8J <sup>J</sup> (date)	~140 ft bgs	J* ~130-140 ft bgs	1	VOCs, SVOCs, RCRA 8 Metals, and Total CN	Adjacent to onsite water supply well PW-1, north of former relief holder, and northwest of former settling tank to determine hydraulic gradients. Determine water quality of the Jameco Gravel unit below the Gardner's Clay.
MW-11/ SB-25	MW-11B (date)	~42 ft bgs	B ~ 30-40 ft bgs	1	VOCs, SVOCs, RCRA 8 Metals, and Total CN	In the FedEx Loading Dock area east of SB-7B to determine hydraulic gradients, and evaluate the presence/absence and distribution of MGP residuals/dissolved phase impacts.
	MW-11C (date)	~82 ft bgs	C ~ 70-80 ft bgs	1		
MW-12/ SB-26	MW-12B (date)	~42 ft bgs	B ~ 30-40 ft bgs	1	VOCs, SVOCs, RCRA 8 Metals, and Total CN	In the FedEx Loading Dock area down gradient of MW-3 to determine hydraulic gradients, and evaluate the presence/absence and distribution of MGP residuals/dissolved phase impacts.
	MW-12C (date)	~82 ft bgs	C ~ 70-80 ft bgs	1		

**Notes**

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|--|--|
| <ul style="list-style-type: none"> <li>1. No. - number</li> <li>2. ID - identification</li> <li>3. ft - feet</li> <li>4. MGP - Manufactured Gas Plant</li> <li>5. EST. - Estimated</li> <li>6. bgs - Below ground surface</li> <li>7. SB - Soil Boring (Subsurface Soil)</li> <li>8. MW - Monitoring Well</li> </ul> | <ul style="list-style-type: none"> <li>9. * - Well designated "J" for Jameco Gravel.</li> <li>10. Resource Conservation and Recovery Act.</li> <li>11. VOCs - Volatile Organic Compounds</li> <li>12. CN - Cyanide</li> <li>13. SVOCs - Semi-Volatile Organic Compounds</li> <li>A - Depths may be adjusted in the field based on stratigraphy and observed impacts. Borings will be advanced to 10 feet into clean soils. If impacts are not observed within 10 ft of the Gardner's Clay, the boring will be terminated at the Gardner's Clay surface.</li> </ul> |
|--|--|

## Figure



- LEGEND:**
- PROPERTY LINE
  - - - - - APPROXIMATE ADJACENT PROPERTY
  - - - - - ROADWAY EASEMENT
  - CURB
  - ▬ BUILDING WALL
  - ▨ CONCRETE WALL
  - FENCE
  - HISTORIC WATERCOURSE
  - HISTORIC STRUCTURE
  - CURRENT FEATURE
  - MW-1 RI MONITORING WELL
  - ▲ SB-4 RI SOIL BORING
  - ▭ TP-3 RI TEST PIT
  - △ 254-B-6 PREVIOUS INVESTIGATION SAMPLE LOCATION
  - SB21 MW21 INSTALLED RI ADDENDUM MONITORING WELL
  - ▲ SB-4 INSTALLED RI ADDENDUM SOIL BORING
  - ▭ TP-4 INSTALLED RI ADDENDUM TEST PIT
  - SB31 MW13 PROPOSED RI ADDENDUM MONITORING WELL
  - ▲ SB-28 PROPOSED RI ADDENDUM SOIL BORING
  - SB- TIER I CONTINGENCY RI ADDENDUM LOCATIONS
  - SB- TIER II CONTINGENCY RI ADDENDUM LOCATIONS

PROPOSED MONITORING WELL  
SCREEN INTERVALS:  
B ~ 30-40 FT BGS  
C ~ 70-80 FT BGS  
J ~ 140-150 FT BGS

**NOTES:**  
1. SB-20J/MW-8J REMAINS TO BE INSTALLED.

NATIONAL GRID  
EQUITY FORMER MGP SITE, BROOKLYN NY  
RI WORK PLAN ADDENDUM (No.2)  
60137362-400

DATE: 04/18/2012    DRWN: BcV/C-MA

**RECOMMENDED REMEDIAL INVESTIGATION  
ADDENDUM LOCATIONS**

**FIGURE - 1**

