Geotechnical
Environmental
Water Resources
Ecological

July 11, 2011

Elizabeth B. Lukowski
Division of Environmental Remediation
NYSDEC
625 Broadway, 11th Floor
Albany, NY 12233-7014

RE: Remedial Investigation Work Plan
Hornell Former MGP Site
Site # 8-51-032 / ACO # A8-0634-02-10

Dear Ms. Lukowski:

On behalf of National Fuel Gas Distribution Corporation, Inc. (National Fuel Gas), GEI Consultants, Inc. has prepared this work plan for the initiation of a Remedial Investigation (RI) of the former manufactured gas plant (MGP) site on Franklin Street in Hornell, New York.

BACKGROUND

A Site Characterization Investigation (SCI) was performed at the former Hornell MGP site during the winter of 2010-2011. The results of the investigation were summarized in a data package which was submitted to the New York State Department of Environmental Conservation (NYSDEC) on May 18, 2011. Based on the findings of the SCI, the NYSDEC has requested that a full RI be performed to characterize the nature and extent of the impacts found at the site.

The RI will be conducted in two phases (if necessary). The initial phase will be performed on properties which National Fuel Gas has already obtained access to work or where access can be obtained by permitting procedures with the City of Hornell. These properties include:

- **Maple City Lodging** – This property encompasses the former MGP location, the existing Comfort Inn Hotel, and a vacant area between the former Gas Holder A location and Albion Street. An access agreement was negotiated between National Fuel Gas and Maple City Lodging for the SCI; this access agreement will be renewed for the RI.
- **City of Hornell, Gas Regulator Area** – The parcel on which the National Fuel Gas gas regulators are located is owned by the City of Hornell. An access agreement is in place for conducting the RI.

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- **City of Hornell, Franklin Street Right-of-Way** – Upgradient monitoring wells are proposed to the north across Franklin Street. A city street work permit will be obtained for the installation and maintenance of these wells for the duration of the RI.

A second phase of RI field work will be conducted if the results of the investigation indicate that MGP impacts in soil, groundwater, or soil vapor may extend beyond these properties. National Fuel Gas will obtain access agreements with property owners where additional sampling will be required, and an updated RI Work Plan will be prepared to describe the additional work.

RI SCOPE OF WORK

The scope of work for the initial phase of the RI is described below. All field activities will be performed according to the approved work plan dated September 2010 for the SCI. Prior to mobilization, the site-specific Health and Safety Plan (HASP) will be reviewed and updated as needed.

Field Investigation

The following field activities will be performed to assess the nature and extent of MGP impacts within the properties described above.

Utility Clearance. Dig Safely NY will be contacted not more than two weeks prior to mobilization to update the utility mark-out for the site. The areas within the right-of-way for Franklin Street will be a particular focus in order to identify the allowable locations for the upgradient wells, and for any soil borings which may be necessary to define the northern limits of MGP-related impacts.

Soil Borings. Twelve additional soil borings will be advanced at the site, in order to better define the lateral and vertical extent of MGP impacts in the subsurface. The borings will be advanced using hollow-stem augers. A combination of split-spoon and direct-push sampling methods will be used, with standard penetration blow counts obtained from a representative number of borings. The list of borings, their locations, and rationale for including them in this scope of work is attached as Table 1. The borings advanced at the site during the SCI found that impacts did not extend more than 30 feet below ground surface (bgs); therefore the target depth for all borings for the RI will remain at 30 feet. However, if soil impacts are still present at 30 feet in a boring, it will be advanced further until 2 feet of clean soil (no visual impact) is observed.

Typically two soil samples will be obtained from each soil boring, with particular focus on characterizing the zone from the ground surface to 15 feet bgs for comparison to the commercial soil cleanup objectives (SCOs) defined by the NYSDEC document DER-10. The soil samples obtained from the borings will be analyzed according to the following sampling rationale:

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- **0-15 feet** – Benzene, toluene, ethylbenzene, xylene (BTEX) / polycyclic aromatic hydrocarbon (PAH) / Target Analyte List (TAL) Metals/total cyanide.
- **Below 15 feet** – BTEX/PAH/total cyanide.

This reduced analyte list is proposed based on the following findings from the SCI:

- No significant volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs) were detected other than BTEX and PAH compounds. Three compounds which were detected in the soil samples (styrene – a VOC, and carbazole and dibenzofuran – which are SVOCs) are typically MGP-related; however, they are not detected without BTEX and PAH compounds (which are also present at higher concentrations).
- Metals were below the NYSDEC SCOs for commercial property except for an exceedance for copper in the fill sampled at TP6(3.5-4.0).
- Total cyanide was below the Unrestricted Use SCO of 27 mg/kg except in four samples. The analysis for free cyanide at these locations found that free cyanide was either not detected, detected below the method quantitation limit, or positively quantified at a very low concentration (3.2 mg/kg at TP4 at 4.5 feet bgs).

Monitoring Well Installations. Eight additional monitoring wells will be installed at the site. The purpose of the wells is to define the limits of groundwater impact, and to characterize the nature of the impacts within the central area of the site where the majority of MGP residual materials have been observed. The list of additional monitoring wells to be installed is provided in Table 1. All additional wells will be constructed as water table wells with 10-foot long screened sections and 0.020-inch slots. The target depth for screen installation is from 12 to 22 feet bgs (groundwater has been measured to be at approximately 16 feet bgs). In areas where non-aqueous phase liquid (NAPL) may be present, the wells will be constructed with 2-foot long sumps for the collection of any dense non-aqueous phase liquid (DNAPL) which may enter the well.

Monitoring well MW5 is to be constructed in a location where NAPL was encountered in the soils above the water table. In order to prevent NAPL or impacted groundwater in the vadose zone from migrating downwards, this well will be constructed using an isolation casing. This well construction method may also be used at MW11 or other locations if NAPL is encountered above the water table.

Two downgradient wells are proposed in this work plan (MW6 and MW7). If either of these wells are found to be impacted, one or more additional wells will be installed in the presumed downgradient direction, within the Maple City Lodging property.

Surface Soil Sampling. The NYSDEC requested that five surface soil samples be obtained during the SCI. These samples could not be obtained during the SCI due to the winter conditions at the time of the investigation. These samples will be obtained during this next phase of the RI.

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The locations of the samples are not specified in this work plan, as a reconnaissance for selecting sampling locations at the site has not yet been performed without full or partial snow cover. Five locations for sampling will be selected in the field upon mobilization to the site. The locations will be biased towards locations in the historic MGP operations area which are devoid of surface vegetation. If bare or impacted soil areas are not observed at the site, the samples will be obtained at the following locations:

- **SS1** – Bare soil at the former location of the surface tar at the retort area of the MGP building.
- **SS2** – Surface soil along the west side of the site, midway between the two fenced gas regulator features.
- **SS3** – Surface soil near the southern property line in the small projecting area.
- **SS4** – Surface soil near the southern property line near Gas Holder A.
- **SS5** – Surface soil at a location within the central portion of the site, between the former gas production building and Gas Holder A.

The soil samples will be obtained from 0 to 2 inches bgs (with the vegetation removed). A representative sample from each location will be placed into a sealed plastic bag and the headspace screened for VOCs. If no VOCs are detected, the samples will be analyzed for SVOCs, metals, and total cyanide. If VOCs are present in the headspace, analysis will also be conducted for VOCs.

Soil Vapor Sampling. Four soil vapor samples will be collected at the site to assess the potential for soil vapor migration. The samples will be collected in accordance with New York State Department of Health (NYSDOH) guidance at the locations shown on Figure 1, from just below the bottom of the clay/silt unit which is present across the site. The base of this unit was observed to range from 6.5 to 12 feet bgs. Soil vapor samples will be analyzed for by EPA Method TO-15, with six additional MGP indicator compounds.

Groundwater Sampling. A groundwater sampling event will be conducted not sooner than two weeks after installation and development of the new monitoring wells. A set of synoptic water level measurements will be obtained to prepare an updated water table map. Water samples will then be obtained for laboratory analysis from all of the site wells (excluding the well which was found to exist at the site prior to this investigation). The groundwater samples will be analyzed for the full suite of analytes, since representative samples of groundwater in the core of the former MGP have not yet been obtained.

Laboratory Analysis. All soil, groundwater, and soil vapor samples will be collected, analyzed, and validated according to the methods specified by the approved September 2010 Work Plan, with the only change being the reduction in the analyte list.

Surveying. The locations and elevations of all new sampling points and monitoring wells will be surveyed during the groundwater sampling event. An updated base map will be produced which will be used for mapping the results of the investigation.

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Reporting

Following completion of this scope of work, the data summary report previously submitted for the site will be updated with the new findings and submitted to the NYSDEC for review. If additional field investigation is needed in order to complete the characterization and delineation of the MGP impacts at the site, a final scope of work will then be negotiated between National Fuel Gas and the NYSDEC and a new work plan letter will be prepared for approval.

Upon completion of the RI field investigations, a comprehensive final report will be prepared which presents the results of both the SCI and the RI.

Schedule

Upon approval of this work plan, National Fuel Gas will update its access agreement and work schedule with the property owner (Maple City Lodging). Mobilization will take place following execution of the access agreement.

Based on the scope of work presented in this work plan, the anticipated work schedule is as follows:

- **Two weeks prior to mobilization:** Utility clearance by Dig Safely NY members.
- **Day 1:** Mobilization of drillers and GEI, setup of decon area, health & safety briefing, start of soil borings.
- **Day 2-8:** Surface soil sampling, soil borings.
- **Day 9-15:** Monitoring well and soil vapor point installation, well development, and soil vapor sampling.
- **Two weeks following development of wells:** Groundwater sampling and update of site survey.
- **Site restoration**: To be determined.
- **Three months following receipt of groundwater analytical results:** Submittal of updated data summary to the NYSDEC.

Following a review of the results of this work, the NYSDEC and National Fuel Gas will discuss whether sufficient data have been collected for the RI, or whether an additional phase of field work will be required to complete the RI.

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If you have any questions regarding this work plan, please contact me at (607) 216-8959.

Sincerely yours,

GEI CONSULTANTS, INC.

Bruce Coulombe, P.G.
Senior Geologist

BC:mlr

Attachments: Table 1 – Remedial Investigation Sample Summary and Rationale
Figure 1 – Proposed Boring, Well, and SVI Locations

cc: Tanya Alexander – National Fuel Gas Distribution Corporation
Dave Terry – GEI

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Tables

Table 1
Remedial Investigation Sample Summary and Rationale
Hornell Former MGP Site
Hornell, New York

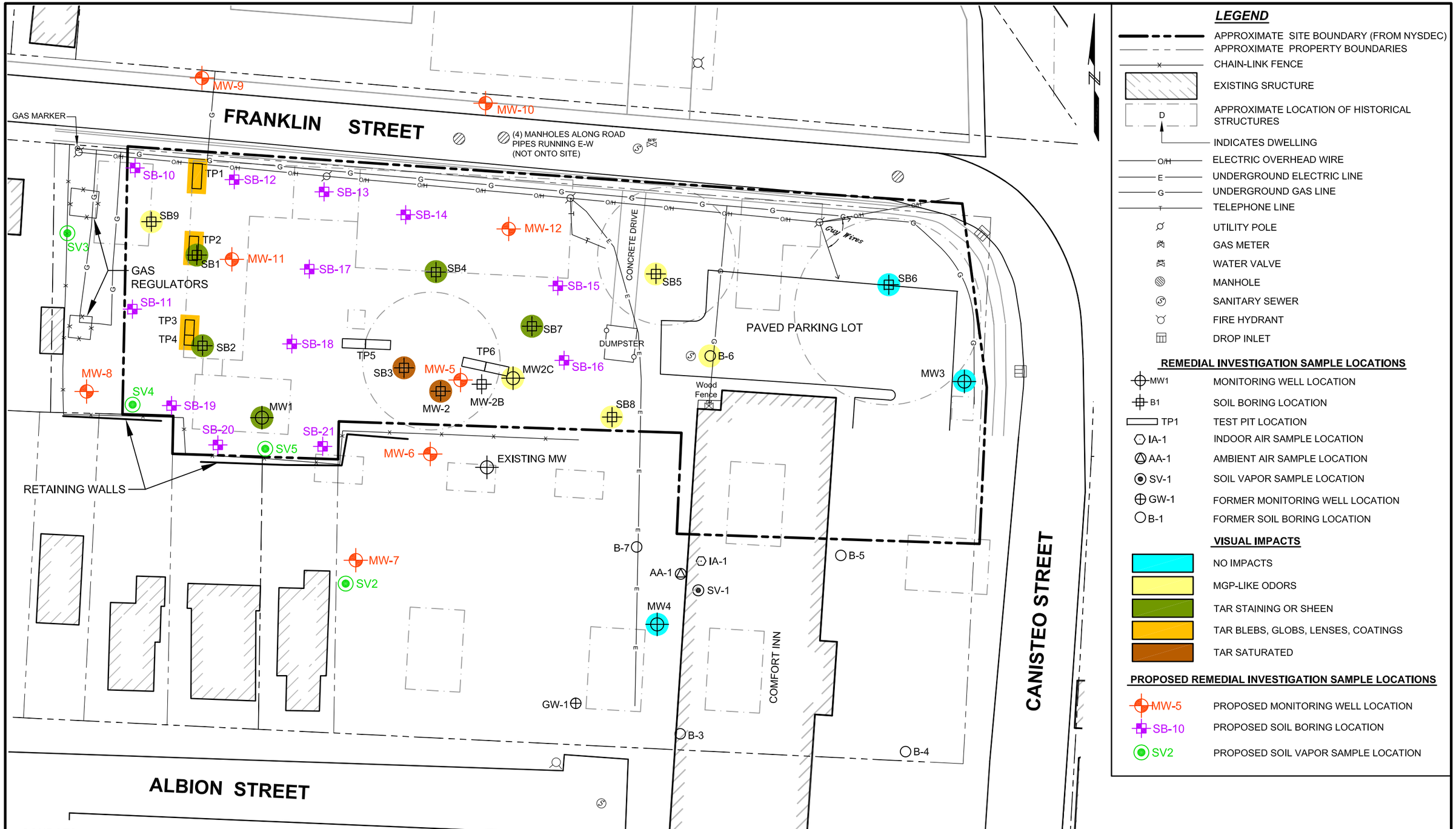
Type of Sampling	Location	Rationale	Number of Samples	Target Completion Depth	Laboratory Analyses
Soil Sampling					
Boring SB10	Northwest corner of site	Assess the limits of soil impacts	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB11	West side of site	Assess the limits of soil impacts	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB12	Retort area of gas building	Assess the limits of soil impacts	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB13	Former structure between old gas building and new purifier building	Assess for presence of source material and determine limits of soil impacts	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB14	West side of new purifier building	Assess for presence of source material and determine limits of soil impacts	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB15	Southwest of new purifier building	Assess the limits of NAPL found at SB7	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB16	East of Gas Holder A	Assess the limits of NAPL found at SB7	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB17	Between retort area and Gas Holder A	Characterize soil impacts within the MGP	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB18	Between the original purifier area and Gas Holder A	Characterize soil impacts within the MGP	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB19	Southwest side of site	Assess soil conditions at the property boundary	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB20	South of the former MGP building	Assess soil conditions at the property boundary	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Boring SB21	South side of site	Assess soil conditions at the property boundary		30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW5	Holder A	Characterize groundwater in the NAPL-impacted area	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW6	Downgradient of Holder A	Assess groundwater downgradient of NAPL-impacted area	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW7	Downgradient of Holder A near residence	Assess groundwater downgradient of NAPL-impacted area	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW8	Southwest corner of site	Characterize groundwater at the property limits	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW9	Across Franklin Street from the retort area	Assess groundwater upgradient of the MGP	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW10	Across Franklin Street from the new purifier building	Assess groundwater upgradient of the MGP	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW11	Central area of original MGP building	Assess groundwater within the MGP	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Well MW12	East side of new purifier building	Characterize groundwater at the east side of the site	2	30 feet	BTEX, PAHs TAL Metals + Cyanide (1)
Groundwater Sampling					
MW1	Center of Screened Interval	Assess groundwater conditions southeast of former MGP plant	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW2C	Center of Screened Interval	Assess groundwater conditions downgradient of / adjacent to Gas Holder A	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW3	Center of Screened Interval	Assess groundwater conditions downgradient of / adjacent to Gas Holder C	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW4	Center of Screened Interval	Assess groundwater conditions upgradient of / adjacent to Comfort Inn hotel	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW5	Center of Screened Interval	Assess groundwater conditions at Gas Holder A	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW6	Center of Screened Interval	Assess groundwater conditions downgradient (south) of Gas Holder A)	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW7	Center of Screened Interval	Assess shallow groundwater conditions downgradient of the MGP building and adjacent to a possibly downgradient residence.	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide

Table 1
Remedial Investigation Sample Summary and Rationale
Hornell Former MGP Site
Hornell, New York

Type of Sampling	Location	Rationale	Number of Samples	Target Completion Depth	Laboratory Analyses
MW8	Center of Screened Interval	Assess groundwater conditions at the southwest corner of the site	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW9	Center of Screened Interval	Assess groundwater upgradient of the former gas production building	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW10	Center of Screened Interval	Assess groundwater upgradient of the second-generation purifier building	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW11	Center of Screened Interval	Assess groundwater at the gas production building	1	~19 feet bgs	TCL VOCs, TCL SVOCs TAL Metals + Cyanide Free Cyanide
MW12	East side of new purifier building	Assess for the presence of source material and determine limits of soil impacts	2	~19 feet bgs	BTEX, PAHs TAL Metals + Cyanide (1)
Soil Vapor/Air Sampling					
SV2	Soil vapor sample	Location near northeast side of residence	1	Below clay/silt soil unit	VOCs by EPA Method TO-15+6 Helium by ASTM Method D-1945
SV3	Soil vapor sample	West of the former MGP, near adjacent residence	1	Below clay/silt soil unit	VOCs by EPA Method TO-15+6 Helium by ASTM Method D-1945
SV4	Soil vapor sample	Southwest corner of site, adjacent to residential property	1	Below clay/silt soil unit	VOCs by EPA Method TO-15+6 Helium by ASTM Method D-1945
SV5	Soil vapor sample	South side of site, adjacent to residential property	1	Below clay/silt soil unit	VOCs by EPA Method TO-15+6 Helium by ASTM Method D-1945

Note (1) Soil samples from below 15 feet will not be analyzed for metals.

Figures



LEGEND

- APPROXIMATE SITE BOUNDARY (FROM NYSDEC)
- APPROXIMATE PROPERTY BOUNDARIES
- CHAIN-LINK FENCE
- EXISTING SRUCTURE
- D — APPROXIMATE LOCATION OF HISTORICAL STRUCTURES
- INDICATES DWELLING
- O/H — ELECTRIC OVERHEAD WIRE
- E — UNDERGROUND ELECTRIC LINE
- G — UNDERGROUND GAS LINE
- T — TELEPHONE LINE
- UTILITY POLE
- GAS METER
- WATER VALVE
- MANHOLE
- SANITARY SEWER
- FIRE HYDRANT
- DROP INLET

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

- MW1 — MONITORING WELL LOCATION
- B1 — SOIL BORING LOCATION
- TP1 — TEST PIT LOCATION
- IA-1 — INDOOR AIR SAMPLE LOCATION
- AA-1 — AMBIENT AIR SAMPLE LOCATION
- SV-1 — SOIL VAPOR SAMPLE LOCATION
- GW-1 — FORMER MONITORING WELL LOCATION
- B-1 — FORMER SOIL BORING LOCATION

VISUAL IMPACTS

- NO IMPACTS
- MGP-LIKE ODORS
- TAR STAINING OR SHEEN
- TAR BLEBS, GLOBS, LENSES, COATINGS
- TAR SATURATED

PROPOSED REMEDIAL INVESTIGATION SAMPLE LOCATIONS

- MW-5 — PROPOSED MONITORING WELL LOCATION
- SB-10 — PROPOSED SOIL BORING LOCATION
- SV2 — PROPOSED SOIL VAPOR SAMPLE LOCATION

SOURCES:

1. Survey prepared for GEI Consultants, Inc. by William J Tucker, II PLS #50369, Clear Creek Land Surveying, L.L.C., Springville, N.Y. dated February 11, 2011.
2. City of Hornell, Steuben County, NY Tax Map No. 166.06 dated Oct. 18, 2008.
3. *Modification to Order on Consent and Administrative Settlement, Attachment 1* between New York State Department of Environmental Conservation, Office of General Counsel, and National Fuel Gas dated Oct. 21, 2010.
4. Sanborn Fire Insurance Maps from 1888 to 1961.

REMEDIAL INVESTIGATION WORK PLAN
HORNELL FORMER MGP SITE
HORNELL, NEW YORK

NATIONAL FUEL GAS DISTRIBUTION COMPANY

GEI Consultants

Project 102260

PROPOSED BORING, WELL, AND SVI LOCATIONS

July 2011 — Figure 1

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