New York State Department of Environmental Conservation Division of Environmental Remediation

Remedial Bureau C, 11th Floor 625 Broadway, Albany, New York 12233-7014 Phone: (518) 402-9662 • Fax: (518) 402-9679 Website: www.dec.ny.gov



Commissioner

June 18, 2013

Mr. Jesse Gallo MGP Project Manager Central Hudson Gas & Electric Corporation 284 South Avenue Poughkeepsie, New York 12601

Re: Newburgh MGP Site Former Propane Tank Area Investigation (Area A) NYSDEC Site No. 3-36-042

Dear Mr. Gallo,

The New York State Department of Environmental Conservation (the Department) and the New York State Department of Health (NYSDOH) have reviewed the Former Propane Tank Area Investigation (Area A) work plan for the above referenced site, dated May 13, 2013. The work plan is hereby approved with the following modifications:

- 1. A series of test pits or test trench will be excavated along the alignment of the retaining wall. These test pits/trench should extend the full length of the retaining wall to the extent feasible to determine the presence of all former MGP structures and observations of NAPL.
- 2. Additional borings or test pits may be requested by the Department as necessary.

In accordance with the Order on Consent and 6NYCRR 375-1.6(d), please indicate within 15 days whether you accept the Department's modified work plan. Please ensure that all copies of the final work plan include this approval letter, and place copies of the work plan in the document repositories.

If you have any questions, please feel free to contact me at (518)402-9564 or email me at eblukows@gw.dec.state.ny.us.

Sincerely,

Elizabeth B. Lukowski Engineering Geologist Remedial Action Bureau C Division of Environmental Remediation ec:

Mark McLean, CHGE Nancy Gensky, ARCADIS David Cornell, ARCADIS Adam Etringer, ARCADIS K. Kulow, DOH G. Cross E. Lukowski

Mr. Jesse Gullo MGP Project Manager Central Hudson Gas & Electric Corpo 284 South Aventes Poughlocopsie, New York 12601

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Mr. Jesse Gallo MGP Project Manager Central Hudson Gas & Electric Corporation 284 South Avenue Poughkeepsie, New York 12601

Subject: Newburgh MGP Site NAPL Collection Well Installation (Areas A and B) NYSDEC Site No. 3-36-042

Dear Mr. Gallo:

This letter represents a work plan for the installation of non-aqueous phase liquid (NAPL) collection wells at the Central Hudson Gas & Electric Corporation (CHGE) former Newburgh Manufactured Gas Plant (MGP) Site. The following activities are associated with this work plan.

- NAPL collection wells will be installed in two specific locations of the former MGP (Area A) and the City of Newburgh sewage treatment plant (Area B) to facilitate collection and removal of dense NAPL (DNAPL), and to continue to monitor DNAPL presence. The NAPL collection well locations were originally presented in the March 14, 2008 Collection Well Summary Report, and approved by the New York State Department of Environmental Conservation (NYSDEC) in an e-mail dated March 24, 2010. The installation of the wells was delayed in order to evaluate NAPL collection data obtained following the construction of the barrier wall and NAPL collection trench. Additionally, in an e-mail dated February 7, 2013, the NYSDEC requested that the NAPL collection well system near NMW-46 be expanded.
- Well maintenance activities will be conducted to replace damaged flushmount well covers at several existing wells.

Details of the well installation and maintenance program are described below.

NAPL Collection Well Installation

Prior to the installation of the NAPL collection wells, underground utilities will be located and marked by contacting Dig Safely New York, and by procuring a private utility locating service. Furthermore, each well location will be hand cleared to fivefeet below ground surface. NAPL collection wells will be installed at the locations shown on Figure 1. Perimeter air monitoring will be performed during the well installation activities, per the New York State Department of Health (NYSDOH) ARCADIS of New York, Inc. 855 Route 146 Suite 210 Clifton Park New York 12065 Tel 518 250 7300 Fax 518 250 7301 www.arcadis-us.com

ENVIRONMENT

Date: May 13, 2013

Contact: Adam Etringer

Phone: 518.250.7314

Email: adam.etringer@arcadisus.com

Our ref: B0020531.0001 Generic Community Air Monitoring Plan (CAMP). A total of five overburden and two bedrock NAPL collection wells will be installed. In addition, redevelopment and maintenance activities will be performed at select existing well locations.

Overburden NAPL Collection Well Installation

Two overburden NAPL collection wells will be installed at locations NMW-44 and NMW-45 to an estimated depth of 55 feet below ground surface (bgs). The borings for each of the wells will be advanced using 8.25-inch inside diameter hollow-stem augers (HSAs). The borehole will be blind drilled (drilling without sampling) from the ground surface to a depth of 35 feet bgs at each of the locations. Continuous split spoon sampling will be conducted from 35 feet bgs to boring termination to confirm soil types and identify the presence and distribution of NAPL.

Three overburden NAPL collection wells will be installed at locations NMW-47, NMW-48, and NMW-49 to an estimated depth of 25 feet bgs. The borings for each of these wells will be advanced using 8.25-inch inside diameter HSAs. Each borehole will be blind drilled from the ground surface to a depth of 15 feet. Continuous split spoon sampling will be conducted from 15 feet bgs to boring termination to confirm soil types and identify the presence and distribution of NAPL.

Soil recovered from each sample interval will be visually characterized (for soil type, grain size, color, texture, and moisture content) and placed in a container for headspace screening using a photoionization detector (PID). In addition, the presence of visible staining, NAPL, and odors, if any, will be noted per the NYSDEC *Field Descriptions of Samples for Former MGP Sites.*

Each overburden NAPL collection well will be constructed of 6-inch diameter Schedule 40 polyvinylchloride (PVC) well casings with 10-foot long 20 slot (0.020inch slot size) PVC well screens attached. The exact screen interval will be selected based on the DNAPL distribution observed. Each well will be equipped with a 4-foot long, 6-inch diameter Schedule 40 PVC sump. The annulus between the sump and the borehole wall will be tremie grouted with a neat cement grout. After allowing the grout to set overnight, a Morie No. 1 silica sand pack will be placed in the annulus between the well screen and the borehole wall and will extend to approximately 2feet above the top of the screen. An approximately 2-foot thick hydrated bentonite seal will be installed above the sand pack and the remainder of the annulus to within 18 inches of the ground surface will be filled with cement bentonite grout. A sand drain will be placed above the grout seal and will extend up into a 12-inch flushmount road box that will be finished at the surface in a concrete pad. Each well will be fitted with a 6-inch locking J-plug cap.

Bedrock NAPL Collection Well Installation

Similar to the adjacent bedrock collection wells installed in 2007, two bedrock collection wells will be installed at locations NMW-25RA and NMW-26RA (Figure 1) to a depth between 40 and 45 feet bgs (approximately 25 feet below the bedrock surface). It is assumed that the bedrock surface will be encountered between 15 and 20 feet bgs.

The bedrock NAPL collection wells will be advanced similarly to the previously installed adjacent collection wells by initially blind drilling to the top of bedrock using the 8.25-inch inside diameter HSAs. Split spoon samples may be collected to confirm the presence of bedrock or if requested by the on-site NYSDEC representative. Once auger refusal is encountered at the bedrock surface, a 7 7/8-inch rollerbit will be used to drill a 2-foot rock socket for the placement of a permanent 6-inch steel casing (grouted in-place) in order to seal off the overburden. The casing will be allowed to set up overnight and then the remainder of the borehole will be advanced by fluid rotary drilling using a 5 7/8-inch rollerbit to the terminal depth of the boring, approximately 25 feet below the bedrock surface or until NAPL impacts are not observed for four successive feet of drilling, whichever is deeper.

Each bedrock NAPL collection well will be completed as either a 6-inch openbedrock collection well containing a 4-foot long steel sump (grouted in-place) or as a 4-inch PVC collection well containing a 4-foot long sump (grouted in-place) and a fully screened bedrock interval, depending on the conditions encountered. Should the PVC well construction be used, a 20 slot screen and No. 1 silica sand pack will extend from the bottom of the steel casing to the top of the PVC sump. A minimal 2foot thick bentonite seal will be placed above the sand and a bentonite-cement grout will extend from the bentonite seal to within 18 inches of the ground surface. Wells will be completed at the surface similar to the overburden collection wells described above.

Well Installation Support

Well installation support activities include well development, well surveying, decontamination, and investigation-derived waste (IDW) management. At least 24-hours following installation, each newly installed well will be developed using air-lifting techniques. Existing wells NMW-26, NMW-26R, NMW-33R, NMW-37R, NMW-39R and NMW-40R will also be re-developed using air-lifting techniques to remove sediment accumulation in the sumps. A minimum of three well volumes will be removed from each of the newly installed collection wells or until the wells are pumped "dry". Should a collection well be pumped "dry", then the well will be allowed to recharge overnight and will then be pumped dry again. As long as the well is relatively free of accumulated sediment following the second pumping, it will be considered developed. Development will continue until the water being removed is

reasonably free of visible sediment and the bottom of the well is relatively free of accumulated sediment. No more than five well volumes of water will be removed from each collection well.

Following installation of the NAPL collection wells, the location, top-of-casing elevation and ground elevation at each well will be surveyed. Horizontal survey will be relative to UTM Zone 18 coordinates referenced to the North American Datum of 1983 (NAD83) and vertical survey measurements will be relative to the National Geodetic Vertical Datum of 1929 (NGVD29).

All drilling equipment will be decontaminated between borings and prior to leaving the site using a steam cleaner. A decontamination pad will be constructed at a location to be determined in the field.

Decontamination water, drilling fluids, and development water will be stored in a plastic storage tank, frac-tank or New York State Department of Transportation (NYSDOT)-approved 55-gallon drums. All drill cuttings will be containerized in NYSDOT-approved 55-gallon drums or in a securely covered roll-off container.

All drums and containers will be properly labeled and staged on-site at a location to be determined in the field by CHGE and the field team. Waste characterization, transportation, and disposal will be coordinated by CHGE.

Well Maintenance Activities

The 8-inch diameter flush-mount well covers, sand drains, and J-plugs (if necessary) at well locations W-96-10S, W-97-10I, and W-97-10I2 will be replaced with new materials. An appropriately sized concrete pad will be constructed for the installation of each new well cover.

The 12-inch diameter well cover, sand drain and J-plug at NMW-05 will also be replaced during these activities. The asphalt area will be saw-cut prior to the installation of the new concrete pad and heavy duty road box.

Should any wells need to be cut down or raised up during the maintenance activities, a new reference point will be established on the well and the location will be resurveyed as described above for the NAPL collection well installation.

Reporting

Following completion of the work, ARCADIS will prepare a letter report detailing the results of the work described above. This reporting will be conducted in conjunction with the reporting for the soil boring and test-pitting investigation work to be

conducted in the former propane tank area located in Area A (work plan submitted concurrently under separate cover).

Schedule

It is anticipated that the field work described herein will be initiated within one month of the approval to proceed from NYSDEC, weather and access permitting, and will be based on the availability of the drilling subcontractor. It is estimated that the field activities will be completed in approximately five weeks, assuming no delays due to weather, access, or other unforeseen events.

If you have any questions, please contact me at (518) 250-7314, or by e-mail at adam.etringer@arcadis-us.com.

Sincerely,

ARCADIS of New York, Inc.

adam Hunger

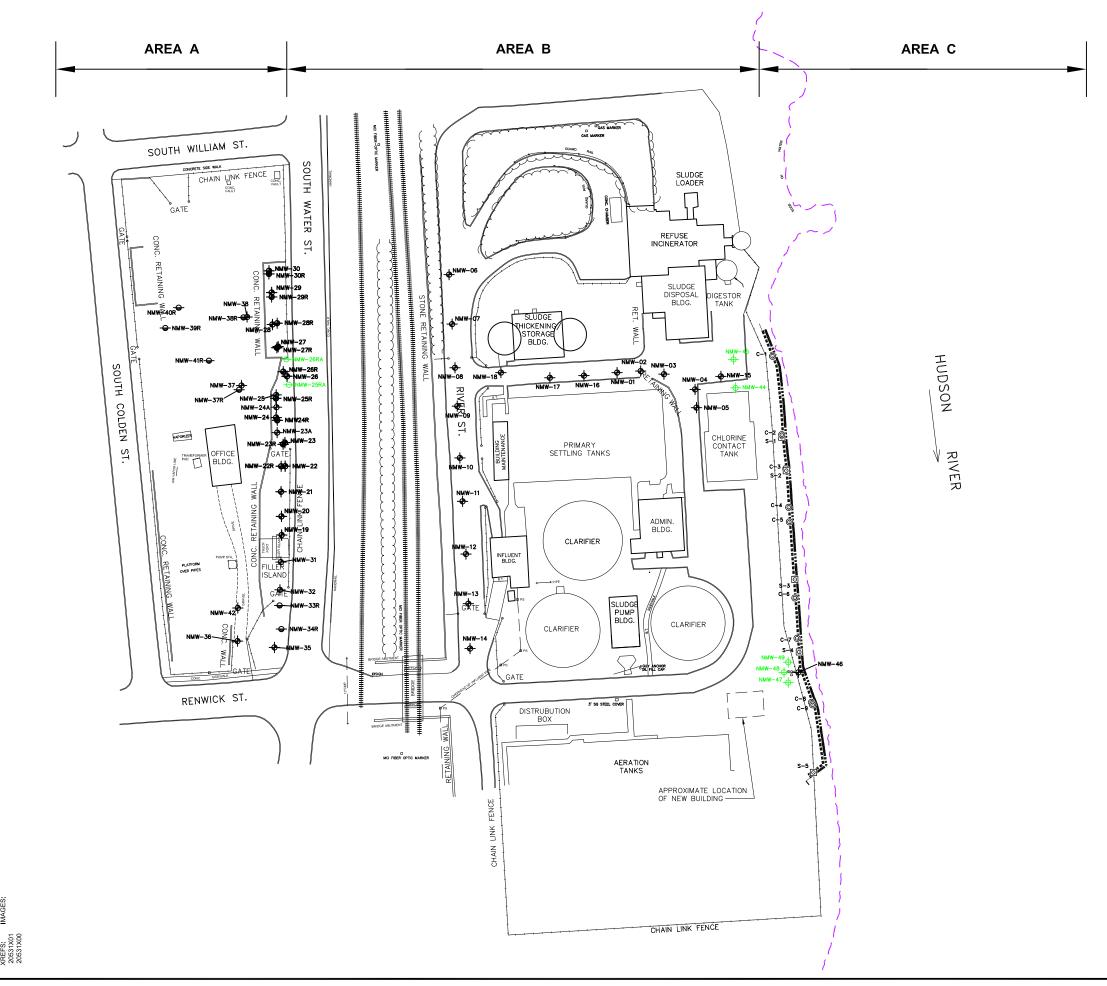
Adam Etringer Project Manager

Attachments: Figure 1 Attachment 1 – NYSDOH Generic Community Air Monitoring Plan Attachment 2 – NYSDEC *Field Descriptions of Samples for Former MGP Sites*

Copies: Mark McLean, CHGE Nancy Gensky, ARCADIS David Cornell, ARCADIS



Figure



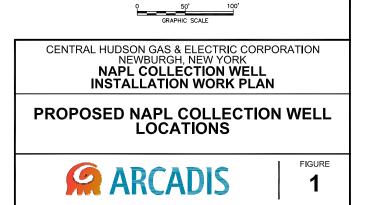


NOTES:

- BASE MAP DEVELOPED FROM SITE SURVEY CONDUCTED BY BLASLAND, BOUCK AND LEE, INC. BETWEEN DECEMBER 14, 1995 AND JANUARY 5, 1996 WITH DEEP SNOW CONDITIONS. DUE TO THE SNOW CONDITIONS, LOCATIONS CONSIDERED APPROXIMATE.
- 2. MGP STRUCTURES MAY BE APPROXIMATE.
- 3. ALL SUMP AND CLEANOUT LOCATIONS ARE APPROXIMATE.
- 4. ALL PROPOSED BORING AND WELL LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD BASED ON UTILITIES AND ACCESS TO LOCATIONS.

LEGEND:

	WATER ELEVATION AT MEAN LOW WATER (MLW)
	BARRIER WALL
	COLLECTION TRENCH
0	COLLECTION TRENCH SUMP
Ø	COLLECTION TRENCH CLEANOUT
+	OVERBURDEN NAPL COLLECTION WELL
•	BEDROCK NAPL COLLECTION WELL
\	PROPOSED OVERBURDEN NAPL COLLECTION WELL
\	PROPOSED BEDROCK NAPL COLLECTION WELL



Attachment 1

NYSDOH Generic Community Air Monitoring Plan

Appendix 1A New York State Department of Health Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all <u>ground intrusive</u> activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during <u>non-intrusive</u> activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the

work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Attachment 2

NYSDEC Field Descriptions of Samples for Former MGP Sites

<u>Field Descriptions of Samples for</u> 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. PID/FID to 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 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 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.
- **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.
- **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/freephase 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.

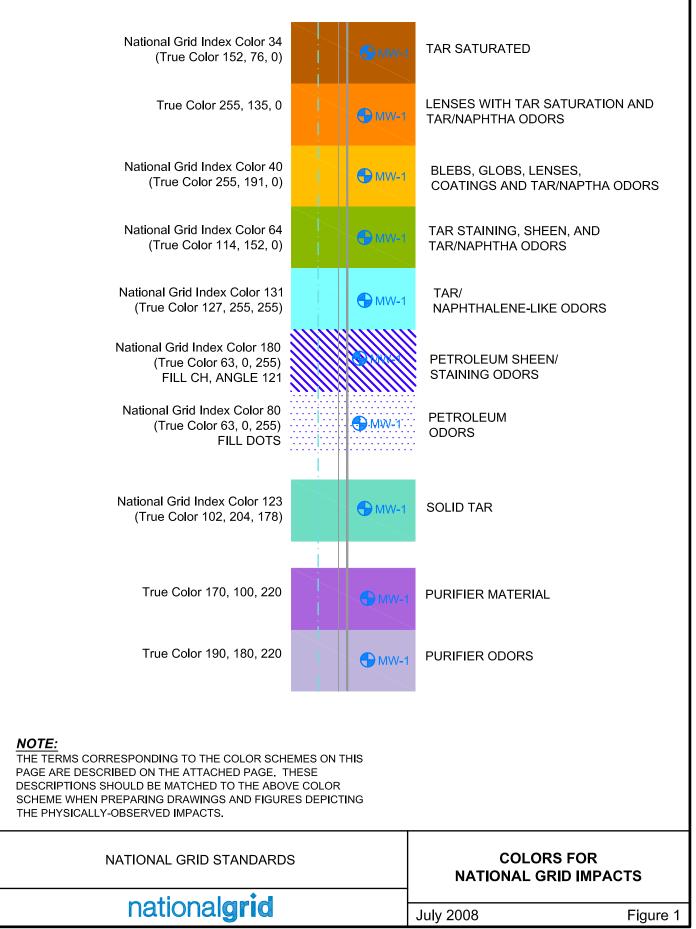
Viscosity of Free-Phase Product – If free-phase product/tar is present a qualitative description C:\Documents and Settings\tleissing\My Documents\MGP Information\KeySpan Guidance\Current Characterization and Reporting Guidance\Field Descriptors Memo-KeySpan 11-05 DRAFT.doc 2

of viscosity should be made. 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.



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