nationalgrid

**Katherine Vater**
Project Manager

November 14, 2014

Mr. William Wu
Environmental Engineer
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway
Albany, NY 12233

**Re: Final Remedial Investigation Report (ARCADIS, July 31, 2014), and NYSDEC Approval Letter Dated August 22, 2014**
**Former Dangman Park Manufactured Gas Plant Site**
**Brooklyn, New York**
**NYSDEC Site No. 224047**
**Index # A2-0552-0606**

Dear Mr. Wu:

Thank you for meeting with me and Andrew Prophete on October 16, 2014. This letter transmits two printed and electronic copies on CD of National Grid's final Remedial Investigation Report (RIR) for the Former Dangman Park Manufactured Gas Plant (MGP) Site in Brooklyn, New York. As discussed in our meeting, this letter also documents additional comments regarding your August 22, 2014 letter, which approved the RIR with comments.

As I noted in my letter of September 5, 2014, in addition to the Order on Consent with NYSDEC, National Grid is regulated by the Public Service Commission. As such, National Grid is required to seek reimbursement from other potentially responsible parties for co-mingled impacts that are not the result of the operation of the former MGP[1]. The inclusion of reference to other potentially responsible parties, particularly for contaminants with other possible sources (e.g., chlorinated volatile organic compounds, petroleum) is necessary to seek reimbursement. At all the locations where petroleum impacts are noted in the RIR, there is currently a parking lot or driveway, all of which are potential post-MGP sources. Additionally, some of the petroleum impacts may be related to a former filling station that was identified to the west/southwest of the MGP on the 1930 and 1950 Sanborn maps. In addition to petroleum product impacts, the RIR identified the presence of chlorinated volatile organic compounds. A previous dry cleaner (in addition to the current dry cleaner) formerly operated, post-MGP, over the footprint of the former MGP. This is another example of another potentially responsible party that National Grid has documented and retains the right to recover remedial costs as appropriate.

[1] It also bears noting that the Order (Index # A2-0552-0606) itself recognizes National Grid's right to recover remedial costs from other potentially responsible parties.

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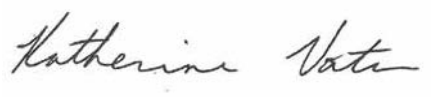
Please be assured that by identifying additional sources of contamination and, by extension, the existence of other potentially responsible parties, National Grid is merely reserving its rights with respect to potential future cost recovery against such parties. National Grid fully intends to act in good faith to comply with the Order on Consent for this site, including implementing remedial measure(s) that will address potential co-mingled impacts in the areas of MGP impacts.

Your August 22, 2014 letter approved the July 31, 2014 revised draft RIR, with comments. A copy of your letter and the MGP Colors for Impacts comparison memorandum previously provided to NYSDEC are attached, and with this letter are included with all copies of the final RIR. A copy of the final RIR will be placed in the document repository (Community Board 13). As needed, I can be reached at (608) 826-3663 or at Katherine.Vater@nationalgrid.com.

Sincerely,



Katherine Vater
Project Manager

Enclosure:

Final Remedial Investigation Report

Attachments:

- NYSDEC's August 22, 2014 Letter to National Grid, Re: Revised Draft Remedial Investigation Report (ARCADIS, July 31, 2014)

- ARCADIS' July 22, 2014 Memorandum to National Grid, Subject: MGP Colors for Impacts, National Grid Colors - Brooklyn System

cc: Gardiner Cross, NYSDEC (without enclosures)
Albert DeMarco, NYSDOH (printed copy and electronic copy)
Andrew Prophete, National Grid (without enclosures)
Linda Sullivan, Esq., National Grid (electronic copy only)
Bonnie Barnett, Esq., Drinker Biddle and Reath LLP (electronic copy only)
Steven Feldman, ARCADIS (printed copy and electronic copy)

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**Attachments**

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- ARCADIS' July 22, 2014 Memorandum to National Grid, Subject: MGP Colors for Impacts, National Grid Colors - Brooklyn System

**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
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Joe Martens
Commissioner

August 22, 2014

Ms. Katherine Vater
Project Manager
National Grid – Site Investigation and Remediation
287 Maspeth Ave
Brooklyn, NY 11211-1703

Dear Ms. Vater:

Re: K – Dangman Park MGP
Kings County, Site ID: 224047
*Revised Draft Remedial Investigation Report (ARCADIS, July 31, 2014)*

The New York State Department of Environmental Conservation (the Department) and the New York State Department of Health (NYSDOH) have reviewed the referenced report. The report is hereby approved with the following modifications:

1) In the case of the soil boring pairs SB-4/MW-10, MW-5/SB-3 and SB-5/MW-11, SB-1, the Department shall interpret the composite of the paired borings that results in the highest severity of observed impacts to be representative of the impacts at that location.
2) The Department also notes the addition of statements throughout the revised text emphasizing potential ambiguities regarding the origin of petroleum impacts found throughout the site, and particularly petroleum impacts found closely associated with the footprint of the former MGP. This revised language was not requested during the review of the original draft document and serves no useful purpose here. Although some ambiguities exist, the MGP handled significant quantities of petroleum feedstocks, and the presence of petroleum impacted soil is fully consistent with what would be expected at a former MGP site. Furthermore, petroleum contamination from any source, found intermixed with MGP contamination, would remain National Grid's responsibility under the terms of the consent order for this site.

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 report. Please ensure that all copies of the final report include this approval letter, and place copies of the report in the document repositories.

Please feel free to contact me with any questions via email at william.wu@dec.ny.gov, or via phone at (518) 402-9662.

Sincerely,

William Wu
Environmental Engineer 1
Remedial Bureau C
Division of Environmental Remediation

ec: G. Cross, NYSDEC
A. DeMarco, NYSDOH
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**MEMO**

To:
National Grid

Copies:
File

From:
Christopher Keen
Steven Feldman

Date:
July 22, 2014

ARCADIS Project No.:
B0036704.0001

Subject:
Manufactured Gas Plant (MGP) Colors For Impacts
National Grid Colors - Brooklyn System

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## Introduction

The purpose of this memorandum is to compare the National Grid *Colors for National Grid Impacts, National Grid Colors - Brooklyn* system to the New York State Department of Environmental Conservation (NYSDEC) *Standard Colors for Reporting MGP Impacts* system.

As part of the comparative analysis, terminology such as mobile, saturated, and residual is used to describe non aqueous phase liquid (NAPL) impacts. Provided below are definitions for terms that are related to this memorandum and the accompanying graphic. The source of these definitions is the Interstate Technology & Regulatory Council document titled *Evaluating LNAPL Remedial Technologies for Achieving Project Goals* (December 2009).

Mobile NAPL: NAPL that exceeds the residual saturation. Includes migrating NAPL, but not all mobile NAPL is migrating NAPL.

NAPL Saturation: The NAPL-filled fraction of the total porosity (e.g., 10% NAPL saturation means 10% of the total porosity is filled with NAPL).

Residual NAPL Saturation: The range of NAPL saturations greater than zero NAPL saturation up to the NAPL saturation at which NAPL capillary pressure equals pore entry pressure. Includes the maximum NAPL saturation below which NAPL is discontinuous and immobile under the applied gradient.

Although the Interstate Technology & Regulatory Council has provided these definitions for use, the interpretation of potential for NAPL mobility and the use of field descriptors to describe such conditions continues to evolve within the industry. Site-specific conditions (i.e., groundwater conditions, soil types and densities, temperature, etc.) can also lead to varying degrees of mobility over time and within a site, even when subsurface conditions have been investigated and described in detail.

**NYSDEC *Standard Colors for Reporting MGP Impacts***

The NYSDEC *Standard Colors for Reporting MGP Impacts* system was designed to evaluate NAPL mobility (Attachment 1). The system establishes a hierarchy of tar impacts with the highest degree of tar NAPL mobility specified as “tar saturated” and the lowest degree of tar NAPL mobility specified as “staining, odors”. There are three additional tar NAPL descriptors that include: 1) coated material, lenses; 2) hardened tar; and, 3) blebs, globs, sheen. Hardened tar is interpreted to represent weathered saturated tar if mixed with soil or pure tar which is observed as a solid at ambient temperatures. Coated material, lenses, blebs, globs, and sheen are interpreted to represent residual NAPL conditions, although it is understood that “lenses” can also potentially represent a saturated or mobile NAPL condition.

The system also includes two types of petroleum impacts, “petroleum impacts saturation & sheens” (interpreted to represent saturated petroleum NAPL impacts) and “petroleum impacts staining & odors” (interpreted to represent residual petroleum NAPL impacts). Additional descriptors include “purifier waste and odor” and “no observed impacts”.

**National Grid *Colors for National Grid Impacts, National Grid Colors – Brooklyn***

The National Grid *Colors for National Grid Impacts, National Grid Colors - Brooklyn* system was designed to describe MGP-related impacts at former MGP and Holder Station sites in the Borough of Brooklyn, New York City, Kings County, New York (Attachment 2). Similar to the NYSDEC system, the National Grid system evaluates NAPL mobility. The system establishes a hierarchy of tar impacts with the highest degree of tar NAPL mobility specified as “tar saturated” and the lowest degree of tar NAPL mobility specified as “tar staining, tar sheen”. There are two additional tar NAPL descriptors that include: 1) interbedded zones of saturated tar; and, 2) tar blebs, tar lenses, tar coated. Interbedded zones of saturated tar represent saturated tar whose distribution is controlled by a layered stratigraphy. Tar blebs, tar lenses, and tar coated represent residual NAPL conditions, although it is understood that “lenses” can also potentially represent a saturated or mobile NAPL condition.

Additional descriptors include “petroleum/naphthalene-like odors” for impacts that are exclusively related to olfactory observations and “petroleum sheen/staining odors” for petroleum-related impacts.

**Comparative Analysis of NYSDEC and National Grid Systems**

The attached graphic (Figure 1) presents a comparative analysis between the descriptors used in the NYSDEC and National Grid systems and correlates the descriptors. The graphic shows each NYSDEC descriptor and the National Grid descriptor(s) that can be generally correlated with respect to the degree of tar NAPL mobility (mobile [saturated] versus immobile [residual]). While the grouping of the descriptor terminology is different in some instances between the two systems, a NAPL mobility continuum is evident in both systems that allows for correlating the descriptors. For example, the NYSDEC descriptor of “blebs, globs, sheen” can be correlated with two National Grid descriptors, “tar blebs, tar lenses, tar coated” and “tar staining, tar sheen”. While the grouping of the terms varies between these descriptors, the common link is that they represent residual NAPL conditions and allow for an assessment of NAPL mobility. As noted on Figure 1, the NYSDEC category “coated material, lenses” and the National Grid category “tar blebs, tar lenses, tar coated” are shown in the immobile (residual) tar classification, although, depending on site-specific conditions some of these descriptions may represent a mobile (saturated) condition.

The National Grid *Colors for National Grid Impacts, National Grid Colors - Brooklyn* system does not have a direct or comparable equivalent to the hardened tar, purifier waste and odor, and no observed impacts descriptors. However, no observed impacts is generally represented on National Grid figures (e.g., cross sections) by the absence of a color designation and both hardened tar and purifier waste are considered immobile.

**NYSDEC**
**STANDARD COLORS FOR REPORTING MGP IMPACTS**

**COLORS FOR NATIONAL GRID IMPACTS**
**NATIONAL GRID COLORS - BROOKLYN**

MOBILE TAR

TAR SATURATED → TAR SATURATED

TAR SATURATED → INTERBEDDED ZONES OF SATURATED TAR

IMMOBILE TAR

COATED MATERIAL, LENSES* → TAR BLEBS, TAR LENSES, TAR COATED*

HARDENED TAR

BLEBS, GLOBS, SHEEN → TAR BLEBS, TAR LENSES, TAR COATED*

BLEBS, GLOBS, SHEEN → TAR STAINING, TAR SHEEN

STAINING, ODOR → TAR STAINING, TAR SHEEN

STAINING, ODOR → PETROLEUM / NAPHTHALENE-LIKE ODORS

PETROLEUM (LNAPL)
AND OTHER IMPACT DESIGNATIONS

PETROLEUM IMPACTS, SATURATION & SHEEN → PETROLEUM SHEEN/STAINING ODORS

PETROLEUM IMPACTS, STAINING & ODORS → PETROLEUM SHEEN/STAINING ODORS

PURIFIER WASTE AND ODOR

NO OBSERVED IMPACTS → NO OBSERVED IMPACTS
(REPRESENTED BY LACK OF COLOR)

* IN CERTAIN CONDITIONS, COATED MATERIAL AND LENSES MAY BE INTERPRETED AS MOBILE TAR (NAPL SATURATED), BUT IN THIS CASE ARE SHOWN AS IMMOBILE BECAUSE THE DESCRIPTOR CAN BE USED FOR BOTH RESIDUAL NAPL SATURATION AND MOBILE NAPL (AS DEFINED IN THE MEMORANDUM TEXT). THIS IS DISTINCT FROM THE "TAR SATURATED" CATEGORIES WHERE MOBILE NAPL CONDITIONS ARE KNOWN TO EXIST.

NATIONAL GRID
BROOKLYN, NEW YORK SITES

**COMPARATIVE ANALYSIS OF COLOR SYSTEMS**

ARCADIS

FIGURE
1

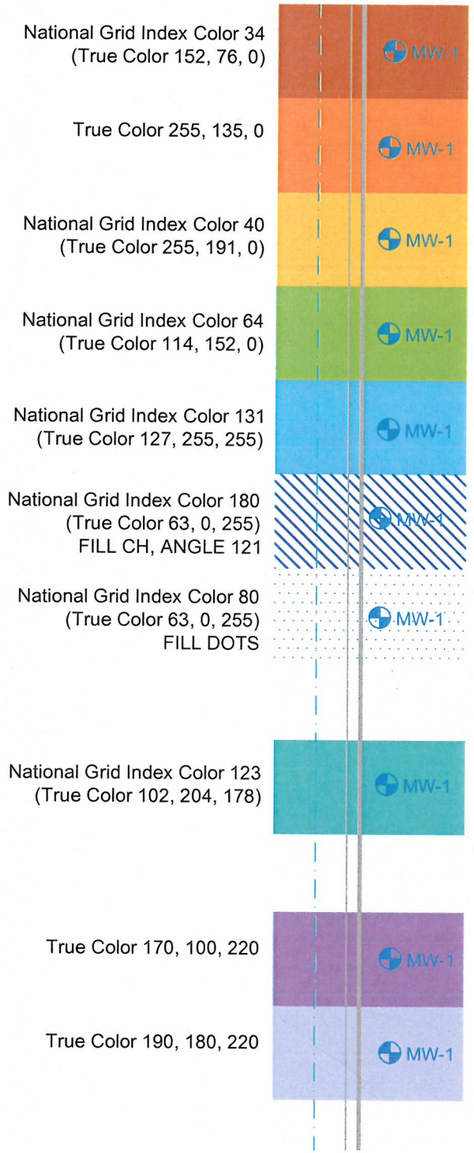
# ATTACHMENT 1

## Standard Colors for Reporting MGP Impacts

| | RGB Color | Auto Cad Index |
|---|---|---|
| **TAR SATURATED** | 255,0,0 | 10 |
| **COATED MATERIAL, LENSES** | 255,0,255 | 210 |
| **HARDENED TAR** | 129,64,0 | 34 |
| **BLEBS, GLOBS, SHEEN** | 255,191,0 | 40 |
| **STAINING, ODOR** | 255,255,0 | 50 |
| **PETROLEUM IMPACTS SATURATION & SHEENS** | 0,191,255 | 140 |
| **PETROLEUM IMPACTS STAINING & ODORS** | 170,234,255 | 141 |
| **PURIFIER WASTE AND ODOR** | 0,0,255 | 170 |
| **NO OBSERVED IMPACTS** | 0,165,0 | 92 |

**ATTACHMENT 2**

## NATIONAL GRID COLORS - NON-BROOKLYN




National Grid Index Color 34 (True Color 152, 76, 0) — TAR SATURATED

True Color 255, 135, 0 — LENSES WITH TAR SATURATION AND TAR/NAPHTHA ODORS

National Grid Index Color 40 (True Color 255, 191, 0) — BLEBS, GLOBS, LENSES, COATINGS AND TAR/NAPTHA ODORS

National Grid Index Color 64 (True Color 114, 152, 0) — TAR STAINING, SHEEN, AND TAR/NAPHTHA ODORS

National Grid Index Color 131 (True Color 127, 255, 255) — TAR/ NAPHTHALENE-LIKE ODORS

National Grid Index Color 180 (True Color 63, 0, 255) FILL CH, ANGLE 121 — PETROLEUM SHEEN/ STAINING ODORS

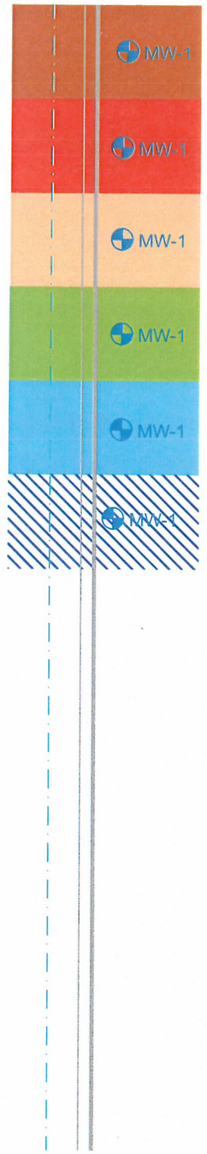
National Grid Index Color 80 (True Color 63, 0, 255) FILL DOTS — PETROLEUM ODORS

National Grid Index Color 123 (True Color 102, 204, 178) — SOLID TAR

True Color 170, 100, 220 — PURIFIER MATERIAL

True Color 190, 180, 220 — PURIFIER ODORS

## NATIONAL GRID COLORS - BROOKLYN




National Grid Index Color 34 (True Color 152, 76, 0) — TAR SATURATED

National Grid Index Color 20 (True Color 252, 63, 0) — INTERBEDDED ZONES OF SATURATED TAR

National Grid Index Color 31 (True Color 255, 191, 127) — TAR BLEBS, TAR LENSES, TAR COATED

National Grid Index Color 64 (True Color 114, 152, 0) — TAR STAINING, TAR SHEEN

National Grid Index Color 131 (True Color 127, 255, 255) — PETROLEUM/ NAPHTHALENE-LIKE ODORS

National Grid Index Color 180 (True Color 63, 0, 255) FILL CH, ANGLE 121 — PETROLEUM SHEEN/ STAINING ODORS

| | |
|---|---|
| NATIONAL GRID STANDARDS | **COLORS FOR NATIONAL GRID IMPACTS** |
| nationalgrid | March 2008 Figure 1 |

KEYSPAN\ALL SITES\KEYSPAN COLORS-2008.dwg