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Allentown, PA 18104  
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April 29, 2019

***VIA Overnight Mail***

John Grathwol  
Division of Environmental Remediation  
Remedial Bureau B  
New York State DEC  
625 Broadway, 12<sup>th</sup> Floor  
Albany, New York, 12233-7016

**Reference: #C241005 - Review Avenue Development II Site (RAD II)  
Long Island City, Queens, New York  
Period Review Report #3 – April 1, 2018 through March 31, 2019**

Dear Mr. Grathwol:

Attached please find the Periodic Review Report (PRR) and IC/EC Certification Submittal for the Review Avenue Development Site II (RAD II) Site #C241005. This is the third PRR submitted for the Site and covers the operating period of April 2018 through March 2019. As requested all submittals are being provided in electronic format.

Should you have any questions or comments regarding this submittal or any other aspect of this project, please do not hesitate to contact me at (610) 435-1151.

Sincerely,

*de maximis, inc.*

A handwritten signature in blue ink, appearing to read "R. Craig Coslett".

R. Craig Coslett  
Project Coordinator

CC: David Kushner, Cresswood Environmental Consultants  
Stephanie Selmer, New York State Department of Health  
Brent O'Dell, Wood, PLC



**Enclosure 2  
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
Site Management Periodic Review Report Notice  
Institutional and Engineering Controls Certification Form**



	<b>Box 1</b>	
<b>Site No. C241005</b>		
<b>Site Name Review Avenue Development II (a.k.a. Quanta Resources)</b>		
Site Address: 37-80 Review Avenue      Zip Code: 11101 City/Town: Long Island City County: Queens County Site Acreage: 1.8		
Reporting Period: April 1, 2018 to March 31, 2019		
	YES	NO
1. Is the information above correct?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.</b>		
5. Is the site currently undergoing development?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<b>Box 2</b>	
	YES	NO
6. Is the current site use consistent with the use(s) listed below?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Are all ICs/ECs in place and functioning as designed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.</b>		
<b>A Corrective Measures Work Plan must be submitted along with this form to address these issues.</b>		
Signature of Owner, Remedial Party or Designated Representative	Date	

**Description of Institutional Controls**

- The RAD II Site may only be used for restricted use as specified by the SMP;
- All ECs must be operated and maintained as specified in the SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Queens County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the NYSDEC.
- Groundwater monitoring must be performed as defined in the SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in the SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the SMP;
- Access to the RAD II Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated.

**Description of Engineering Controls**

1. A cover system consisting of asphalt pavement
2. A LNAPL Recovery System – consisting of:
  - a. A Vacuum Enhanced/Total Fluids (VER/TF) LNAPL recovery system
  - b. A single-phase LNAPL recovery system
3. A packaged SVE, groundwater treatment, LNAPL Storage and Control system

**Periodic Review Report (PRR) Certification Statements**

1. I certify by checking "YES" below that:

- a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;
  
- b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and complete.

YES	NO
X	<input type="checkbox"/>

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

- (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;
  
- (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;
  
- (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;
  
- (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and
  
- (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
X	<input type="checkbox"/>

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

**A Corrective Measures Work Plan must be submitted along with this form to address these issues.**

\_\_\_\_\_  
Signature of Owner, Remedial Party or Designated Representative

\_\_\_\_\_  
Date

IC CERTIFICATIONS  
SITE NO. C241005

Box 6

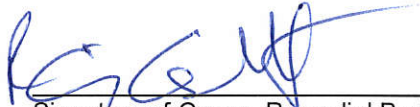
**SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE**

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I R. Craig Coslett at 1550 Pond Road, Suite 120, Allentown, PA 18104.  
print name print business address

am certifying as Owner's Representative (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.



Signature of Owner, Remedial Party, or Designated Representative  
Rendering Certification

4/29/2019  
Date

IC/EC CERTIFICATIONS

Box 7

Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Brent O'Dell, P.E. at 51 Congress Street, Suite 200, Portland, ME 04112,  
print name print business address

I am certifying as an Engineer for the \_\_\_\_\_ Remedial Party  
(Owner or Remedial Party)



*[Handwritten signature in blue ink]*

Signature of the Owner or Remedial Party, Rendering Certification

Stamp  
(Required for PE)

*4/29/19*  
Date

REVIEW AVENUE DEVELOPMENT (RAD) II  
QUEENS COUNTY  
LONG ISLAND CITY, NEW YORK

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**PERIODIC REVIEW REPORT No. 3**  
**(April 1, 2018 – MARCH 31, 2019)**

NYSDEC Site Number: RAD II – BCP #C241005

Prepared by:

**MACTEC Engineering and Geology, P.C.**

7 Southside Drive - Suite 201

Clifton Park, NY 12065

and

**Wood Environment & Infrastructure Solutions, Inc.**

200 American Metro Boulevard – Suite 113

Hamilton, New Jersey 08619

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APRIL 2019

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## GLOSSARY OF ACRONYMS AND ABBREVIATIONS

BCA	Brownfield Cleanup Agreement	O&M	Operations and Maintenance
BCP	Brownfield Cleanup Program	OM&M	Operations, Maintenance and Monitoring
DOT	Department of Transportation	PCB	Polychlorinated Biphenyl
EC	Engineering Control	POTW	Publicly-Owned Treatment Works
EOR	Engineer of Record	PRR	Periodic Review Report
FER	Final Engineering Report	RAD	Review Avenue Development
IC	Institutional Control	RAWP	Remedial Action Work Plan
LEL	Lower Explosive Limit	RI	Remedial Investigation
LGAC	Liquid Granular Activated Carbon	ROD	Record of Decision
LNAPL	Light Non-Aqueous Phase Liquid	SCGs	Standards, Criteria Goals
LRGTB	LNAPL Recovery and Groundwater Treatment Building	SMP	Site Management Plan
MSL	Mean Sea Level	SVE	Soil-Vapor Extraction
ND	Not Detected	TSCA	Toxic Substances Control Act
NYSDEC	New York State Department of Environmental Conservation	TF	Total Fluids
NYSDOH	New York State Department of Health	UST	Underground Storage Tank
		VER	Vacuum-Enhanced Recovery

## EXECUTIVE SUMMARY

Cresswood Environmental Consultants, LLC retained Golder Associates, Inc. (Golder) to prepare a Remedial Action Work Plan (RAWP) to satisfy the requirements of the New York State Department of Environmental Conservation (NYSDEC) for the Review Avenue Development (RAD) I and RAD II properties located on Review Avenue in Long Island City, New York, dated February 9, 2007. The RAWP was prepared in accordance with the DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) (NYSDEC, 2010) and Subpart 375.3 Brownfield Cleanup Program (BCP) Regulations (NYSDEC, 2006a) and submitted in November 2011. DMJ Associates, LLC, 37-80 Review Railroad, LLC and Cresswood Environmental Consultants, LLC (collectively referred to as the Volunteer) entered into Brownfield Cleanup Agreement (BCA) #C241005 in October 2005 with the NYSDEC to participate in the Brownfield's Cleanup Program for the RAD II Site.

The RAD II Site is located adjacent to the RAD I Site (BCA #C241089) and have the same physical setting. The RAD Sites have been investigated/remediated concurrently since the early 1980's, but were entered into separate BCA and assigned different BCP numbers. The remedy selected by the NYSDEC for the RAD II Site is found in the Record of Decision (ROD) for the Quanta Resources Site (a.k.a. Review Avenue Development II) Long Island City, Queens, New York issued by the NYSDEC in February 2007.

The RAD II Site is identified as Block 312 and Lot 69 on the Long Island City Tax Map, refer to Figure 1. The RAD II Site is separated from the RAD I property by a right of way (located on RAD I) for Preston Street, which runs from Review Avenue to the Long Island Railroad. To the northeast is Review Avenue and the Calvary Cemetery and to the southwest is the Long Island Railroad and the South Capasso property and the Former Peerless Oil property. The boundaries of the RAD II Site and Site Features are shown on Figure 2.

The RAD Sites are being remediated via LNAPL extraction. LNAPL is extracted using a combination of skimmer (product only) pumps and dual phase extraction (total fluids) pumps. LNAPL extracted by the skimmer pumps is conveyed through underground piping to a storage tank location on the RAD II Property. Liquid (water and LNAPL) extracted through dual phase extraction is conveyed through underground piping to the treatment system located on the RAD II property. Liquids are then processed through an oil water separator, bag and carbon filters to separate LNAPL from water. The collected LNAPL is pumped to a dedicated storage tank and the treated water is discharged to the sewer system. Construction of the remediation system was deemed complete on November 15, 2015 and NYSDEC approved the start of the operation and maintenance (O&M) period on November 16, 2015.

A Site Management Plan (SMP) was prepared by MACTEC Engineering and Consulting, P.C. (MACTEC) and Amec Foster Wheeler Environment and Infrastructure, Inc. (Amec Foster Wheeler), on behalf of Cresswood Environmental Consultants, LLC and Review Ave. System, LLC, in accordance with the requirements of the NYSDEC’s DER-10 (“Technical Guidance for Site Investigation and Remediation”), dated February 2013, and the guidelines provided by the NYSDEC. An Environmental Easement granted to NYSDEC and recorded with the County Clerk of Queens County requires compliance with the SMP and all ECs and ICs placed on the Site. The SMP addresses the means for implementing the ICs and ECs that are required by the Environmental Easement for the RAD II Site and outlines the controls established to meet the ROD requirements. Section 3.0 of this report summarizes the EC and IC requirements and compliance. IC/EC Certification has been bound to the front end of this report.

This is the third Periodic Review Report (PRR) for the RAD II Property. The 1<sup>st</sup> PRR was submitted to the Department in April 2017 and resubmitted on June 10, 2017 following comments received on the initial submittal. Approval of the 1<sup>st</sup> PRR was provided by the Department in a letter dated September 8, 2017. The 2<sup>nd</sup> PRR was submitted to the Department on April 27, 2018 and approval was provided by the Department on February 28, 2019.

## 1.0 SITE OVERVIEW

### 1.1 INTRODUCTION

The RAD II Site is being remediated in accordance with the remedy selected by the NYSDEC in the ROD for the Quanta Resources (a.k.a. RAD II) Site, dated February 9, 2007. The factors considered during the selection of the remedy for the RAD II Site are those listed in 6NYCRR 375-1.8.

In 2008, an IRM was implemented at the RAD II Site for the demolition and removal of the remaining building and fourteen (14) remaining empty and decontaminated steel aboveground storage tanks (ASTs) along with debris piles, below grade foundations, concrete pads, sumps and vaults.

The components of the remedy proposed in the ROD included work elements from the design/investigation phase through remedial action completion. The following provides a summary of the remedy selected for the RAD II Site by media:

#### LNAPL

The remedy for light non-aqueous phase liquid (LNAPL) beneath the RAD II Site was recovery via a combination of single-phase skimmer pumps and vacuum enhanced (VER) recovery methods at locations where higher viscosity LNAPL is present.

In addition, a long-term monitoring program to monitor the effectiveness of the LNAPL recovery system has been implemented pursuant to the approved Site Management Plan.

#### Soil

Restricting contact with potentially impacted soils was accomplished by installing a paving system across the entire property. The paving system is composed primarily of at least six inches of asphalt and associated subgrade materials. Other components of the cover system include the LNAPL recovery well and piping vaults which are mostly comprised of concrete with secured metal lids to prevent unauthorized access. The Site Management Plan identifies restoration requirements for future development activities.

#### Groundwater

The remedy for groundwater was the establishment of an institutional control that restricts the use of untreated groundwater beneath the RAD II Site as a source of potable water.

## Soil Vapor

The results of soil vapor investigations on the RAD II Site did not identify a threat for soil vapor beneath the RAD II Site.

Listed below are the primary elements of the selected remedy:

- Operation of the LNAPL recovery system;
- Installation of a paving system at least 6 inches thick to be protective of human health by restricting direct contact with compounds that exceed the soil objectives for restricted use;
- Establishment of an institutional control that restricts the use of untreated groundwater beneath the RAD II Site as a source of potable water;
- The execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the RAD II Site;
- Development and implementation of a SMP for long-term management of remaining contamination as required by the Environmental Easement, which includes plans for the following: (1) ECs and ICs, (2) monitoring, (3) operation and maintenance, and (4) reporting; and
- Periodic certification of the ECs and ICs listed above.

This is the third Periodic Review Report (PRR) for the RAD II Property. The 1<sup>st</sup> PRR was submitted to the Department in April 2017 and resubmitted on June 10, 2017 following comments received on the initial submittal. Approval of the 1<sup>st</sup> PRR was provided by the Department in a letter dated September 8, 2017. The second PRR was submitted to the Department on April 27, 2018 and approval was provided by the Department on February 28, 2019. This Periodic Review Report (PRR) covers the period of performance from April 1, 2018 to March 31, 2019 and includes:

- Required institutional control/engineering control (IC/EC) certification;
- Summary and documentation of site-related data to support IC/EC certification;
- A description of the LNAPL Recovery System performance; and
- Discharge monitoring data for the certification period.

## **1.2 SITE HISTORY AND DESCRIPTION**

The RAD II Site is approximately 1.8 acres in size and located in a highly industrialized part of Long Island City, County of Queens, New York. The RAD II Site is identified as Block 312 and Lot 69 on the Long Island City Tax Map. The address of the RAD II Site is 37–80 Review Avenue.

Figure 1 presents a Site Location Map. Zoning in this area is designated as heavy manufacturing. The RAD II Site is bounded by Review Avenue to the northeast, the Southern Line of the Long Island Railroad to the southwest, the Former Phoenix Beverage property to the southeast, and the RAD I property to the northwest (see Figure 2). To the northeast of Review Avenue is the Calvary Cemetery and to the southwest of the Long Island Railroad is the South Capasso property and Waste Management.

The RAD II Site was previously used for a variety of commercial and industrial purposes since at least 1898, including petroleum refining, waste oil recycling and more recently commercial vehicle and heavy equipment maintenance. Various companies currently lease portions of the RAD II Site for parking of equipment and vehicles. Figure 2 presents a Site Layout Map for the RAD II Site. All of the structures that previously existed on the RAD II Site were demolished since the property was abandoned in 1981. Much of the RAD II Site was reportedly covered by asphalt or concrete during its operation

Completion of the remedy components identified in the ROD was documented in the Site Management Plan (SMP) and Final Engineering Report (FER) which were submitted to NYSDEC in December 2015. DEC provided approval of the SMP on September 2, 2016.

Note: the DEC found that the LNAPL extraction and treatment system was constructed in accordance with the approved design (RAWP) and issued approval of the O&M start beginning November 16, 2015.

### **1.3 PHYSICAL SETTING**

The RAD II Site and the RAD I Site are adjacent to each other and have the same physical setting.

#### **1.3.1 Geology**

The stratigraphy of the RAD II Site and the adjacent properties consists of urban fill overlying glacial deposits, which in turn overlies a clay layer that has been identified as the lower Cretaceous Raritan Formation. The urban fill generally consists of heterogeneous soil ranging from sub angular, loose and compact, silty, fine sand and gravel. Intermixed with the urban fill are debris such as brick fragments, asphalt, wire, and plastic. Soil borings indicate that the urban fill ranges in thickness from 3 feet to 16 feet. The glacial deposits consist of two units distinguishable in color, but not in hydraulic characteristics. The upper section of the glacial deposits is gray to dark gray fine-to-coarse sand and fine-to-coarse gravel. There are local horizontal units of silt interbedded in the upper section of the glacial deposit. The upper section extends to approximately 30 feet below mean sea level (MSL).

The lower section of the glacial deposits is comprised of yellowish-brown, fine to coarse sand and gravel. This unit extends to 71 to 85 feet below MSL. Underlying the coarse sand and gravel is a clay unit referred to as the Lower Clay Unit. The Lower Clay Unit was identified as the Raritan Clay. The Raritan Clay or Lower Clay Unit has been described as a dark gray, finely laminated-to-thin bedded silty clay, silt and clay layer, and white to light gray clay. The clay unit appears to be laterally continuous beneath the Site and adjacent surrounding area.

### **1.3.2 Hydrogeology**

The RAD II Site is located between a local topographic high to the northeast and Newtown Creek, which is a tidally influenced regional groundwater discharge area. Monitoring wells screened in the upper section of the glacial deposits (where LNAPL occurs) and monitoring wells screened in the lower section of the glacial deposits (and cased off from the upper section) have been installed on the RAD II Site and offsite (including the RAD I Site). The locations of the wells are depicted on Figure 2.

The depth to groundwater beneath the RAD II Site has ranged from approximately 15 feet bgs to 20 feet bgs. Groundwater contour maps prepared from the groundwater levels measured in groundwater wells installed in the upper and lower sections of the glacial deposits have indicated a general groundwater flow direction to the south - southwest towards Newtown Creek. A localized groundwater mound, presumably a result of the discontinuous silt and clay layers in the upper section of the glacial deposits, has also been observed to the southwest of the Site between the LIRR tracks and Newtown Creek. The mounding does not appear to influence the direction of groundwater flow at the RAD II site. Groundwater fluctuations of approximately 0.05 to 0.1 feet have been observed beneath the Site as a result of tidal influence in Newtown Creek. During the third reporting period, groundwater elevations rose to elevations significantly higher than those observed during the first two reporting periods (approximately 2-1/2 ft higher than the baseline period during system start-up).

Overall, the horizontal hydraulic gradient beneath the Site can be described as flat, at approximately 0.0015. Vertical gradients are minimal and localized. Slug test data indicates a range of hydraulic conductivity values for the glacial deposits above the Lower Clay Unit of 62.5 feet per day (ft/d) to 0.5 ft/d. A viscous LNAPL is present on the groundwater table across most of the RAD I and RAD II properties (Golder 2005a) with a maximum apparent thickness in monitoring wells of about 4 feet at the time of the Remedial Investigation (RI) and RAWP.



## 1.4 CLEANUP GOALS AND REMEDIAL PROGRESS

The remediation goals for the RAD II Site, as stipulated by the 2011 RAWP (Golder 2011) and the February 2007 ROD (NYSDEC 2007) are to eliminate or reduce to the extent practicable:

- The presence of LNAPL as a potential source of soil, groundwater and soil gas contamination;
- Potential further migration of LNAPL that could result in soil, groundwater or soil gas contamination;
- Exposures of persons at or around the site to VOCs or exceedances of the lower explosive level (LEL) in soil vapor;
- The potential for ingestion/direct contact with contaminated soil; and
- The release of contaminants from the urban soil and LNAPL into groundwater that may create exceedances of groundwater quality standards over time.

In addition, the remediation goals for the RAD II Site are to meet to the extent practicable:

- Ambient groundwater quality standards; and
- Standards, Criteria Goals (SCGs) for soil to the extent practicable.

The remedies selected for the RAD II site are listed below by media:

### LNAPL

The remedy for LNAPL beneath the RAD II Site in areas of lower viscosity product is recovery using single-phase skimmer pumps installed in 15 recovery wells on the RAD II Site, or a total of 38 recovery wells on the combined RAD I and RAD II Sites. The remedy for higher viscosity LNAPL product is recovery using a Vacuum Enhanced Recovery/Total Fluids (VER/TF) technology at 20 recovery wells installed on the RAD II Site, or a total of 30 recovery wells on the combined RAD I and RAD II Sites. A long-term monitoring program to monitor the effectiveness of the LNAPL recovery system has been implemented.

### Soil

The remedy for the soil at the RAD II Site was to cover residual contamination in soil and urban fill using materials consistent with the development of the RAD II Site. The RAD II Site was paved with asphalt to serve as a soil cover system to prevent exposure to possible near surface remaining contamination in urban fill/soil. This cover system is

comprised of a minimum of 6 inches of asphalt pavement. Development beyond restricted use, as further described in the SMP, is prohibited.

### Groundwater

The remedy for groundwater is the establishment of an institutional control that restricts the use of untreated groundwater beneath the RAD II Site as a source of potable water. Groundwater is monitored pursuant to requirements outlined in the Site Management Plan.

### Soil Vapor

The results of soil vapor investigations on the RAD II Site have not identified a threat for migration of soil vapor laterally from the limits of the LNAPL beneath the RAD II Site. As such, no specific soil vapor remedy is being implemented other than the benefit of the existing site pavement system and recovery of LNAPL from the site.

Remedial Progress is summarized as follows:

- The LNAPL Recovery System, consisting of both the single-phase skimming and VER/TF recovery technologies, has been implemented and operational for over 40 months. The LNAPL Recovery System has recovered 377,884 gallons of LNAPL as of March 31, 2019 after the first 40-1/2 months of operation (for both RAD I and RAD II).
- All areas of existing asphalt pavement disturbance due to the LNAPL recovery system installation has been restored.
- The Institutional Controls established for the RAD II site have been maintained per the SMP and FER.

## **2.0 EVALUATION OF REMEDY PERFORMANCE, EFFECTIVENESS AND PROTECTIVENESS**

This section describes the required activities under the Site Management Plan, including ICs and ECs, the ongoing monitoring program and the implementation of the Site Operations, Maintenance and Monitoring (OM&M) Plan. A comprehensive SMP has been developed for the Site and includes plans for ICs/ECs, operations and maintenance (O&M), long term monitoring, and associated reporting (MACTEC, 2015).

### **2.1 SITE MANAGEMENT STATUS**

During this reporting period, MACTEC performed O&M for the LNAPL recovery and groundwater treatment system, performed quarterly treated water discharge sampling and reporting, prepared monthly O&M monitoring reports and an Annual Inspection Report. The monthly monitoring reports, which include a summary of site activities for both the RAD I and RAD II sites, are included as Appendix A. The Annual Inspection Report is included in Appendix B and the treated water quarterly compliance sampling reports have been provided in Appendix C. This PRR was completed using site-specific documentation including the Site's ROD (NYSDEC, 2015), annual site inspection and monthly monitoring reports, and the SMP. This review was conducted to confirm that established controls according to the SMP are operational and effective, that the SMP is being implemented and conducted accordingly, and that the remedy remains protective of the environment and/or public health. A summary of Site Management activities completed during this reporting period and an evaluation of the performance, protectiveness, and effectiveness of the remedy is provided below.

### **2.2 INSTITUTIONAL CONTROLS**

A series of ICs are required to: (1) implement, maintain and monitor EC systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the Site to Track 4 restricted uses only. Adherence to these ICs on the RAD II Site is required by the Environmental Easement and is implemented under the SMP. These ICs are as follows:

- The RAD II Site may only be used for restricted use as specified by the SMP;
- All ECs must be operated and maintained as specified in the SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Queens County Department of

Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the NYSDEC.

- Groundwater monitoring must be performed as defined in the SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in the SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the SMP;
- Access to the RAD II Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated.

## **2.3 ENGINEERING CONTROLS**

The following ECs have been implemented at the RAD II Site:

1. A cover system consisting of asphalt pavement
2. A LNAPL Recovery System – consisting of:
  - a. A Vacuum Enhanced/Total Fluids (VER/TF) LNAPL recovery system
  - b. A single-phase LNAPL recovery system
3. A packaged SVE, groundwater treatment, LNAPL Storage and Control system.

### **2.3.1 Asphalt Cover System**

The RAD II Site was paved with asphalt to serve as a cover system to prevent exposure to possible near surface remaining contamination in urban fill/soil. The extent of the cover system is documented in the as-built drawing included as Figure 2 of the SMP (MACTEC, 2015). The cover system was observed during the reporting period to be intact and continuing to function as a cover system but requires repairs at three locations in order to ensure ongoing function. Pavement repairs will be performed during the spring of 2019, pending weather conditions, and will consist of replacing asphalt pavement at three damaged locations as well as paving a berm area in the

southwest corner of RAD I. The engineer of record (EOR) will coordinate with the remediation project manager and current property owner to affect necessary repairs.

### **2.3.2 LNAPL Recovery System**

LNAPL recovery on the RAD II property is being conducted via single-phase skimmer pump recovery wells and VER/TF recovery well subsystems. The primary purposes of using the skimmer pump and VER subsystems is to recover LNAPL to the extent practical and support the achievement of the remediation goals for the Site. The LNAPL recovery system has recovered and disposed of 377,884 gallons of LNAPL, or an average of 307 gallons per calendar day, (from both RAD I and RAD II) through March 31, 2019 or 40-1/2 months of operation. A total of 92,809 gallons of LNAPL, or an average of 254 gallons per calendar day, has been recovered and disposed of for the current 12-month reporting period. The current 254 gallon per calendar day average production rate represents a 28% decrease from the 355 gallon per calendar day average production rate realized during the first 16-1/2 month reporting period. When taking into account system uptime and normalizing the production per equivalent system run-day, the LNAPL recovery system averaged 291 gallons per run-day for the current period which represents a 52% decrease from the 604 gallon per run-day average realized during the first 16-1/2 month reporting period. This reduction in production rate is attributed to significant depletion of remaining recoverable LNAPL volume and associated decreasing LNAPL transmissivity as evidenced by the substantial decrease in apparent product thickness (see paragraph 2.4.1 for more detail).

Peak LNAPL recovery rates have exceeded 700 gallons per day during the first reporting period, 500 gallons per day during the second reporting period and have exceeded 400 gallons during the current reporting period within the VER/TF Zones 4 and 5 only. Using a representative specific gravity of 0.90, according to data provided in the RAWP, this represents a total recovered LNAPL mass of 2,836,397-pounds after the first 40-1/2 months of operation or an average of 2,303 pounds per day.

During the first reporting period (16-1/2 months of operation), the specific energy consumption of the product recovery operation averaged approximately 1.0 kWh/Gal of product recovered. During reporting period 2, when VER operations were implemented, specific energy consumption rose to 1.8 kWh/Gal. Specific energy consumption further increased to 2.5 kWh/Gal during reporting period 3 as product recovery production continued to decrease with continued VER operation. As such, a commensurate increase in specific greenhouse gas emissions has also occurred (lbs/Gal) associated with generated grid energy utilized to power the system.

Monthly monitoring reports are prepared and have been included in Appendix A. A summary of offsite LNAPL disposal is included in Table 4.

### 2.3.2.1 Single-Phase Skimming

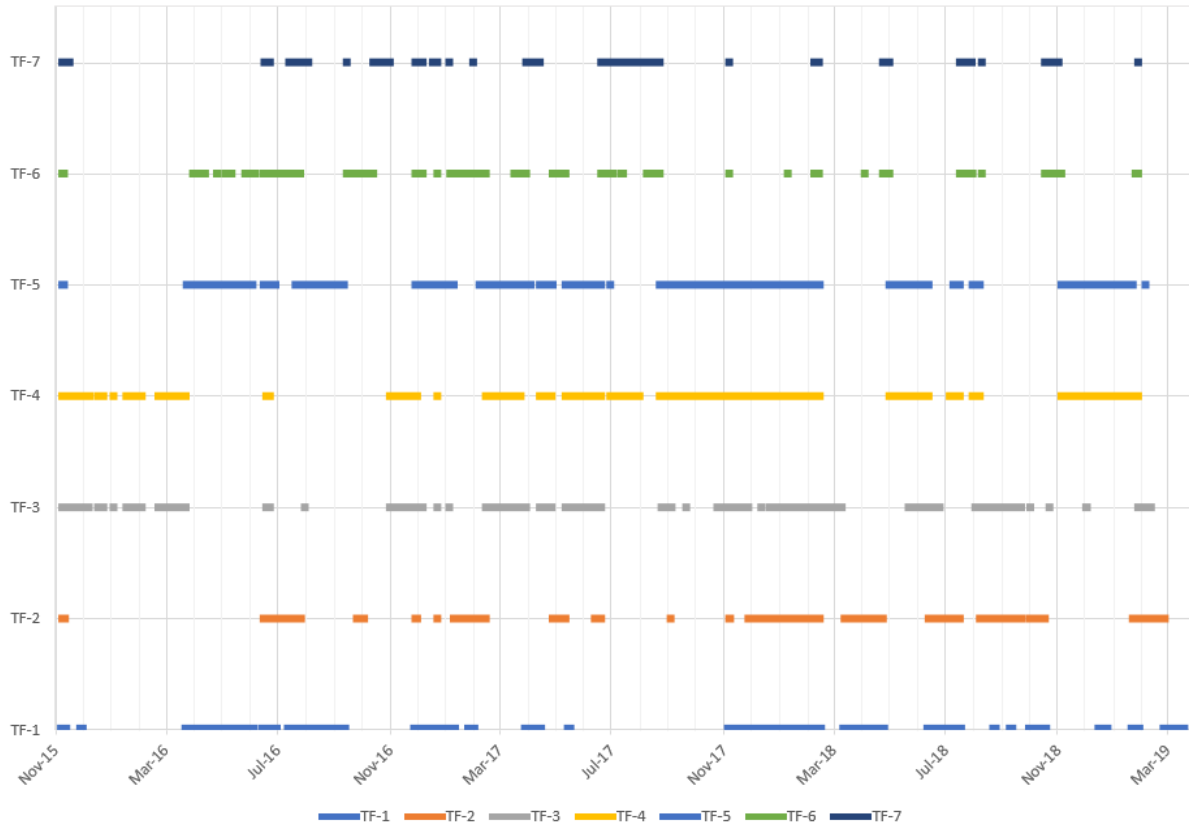
Twenty-three (23) single-phase skimmer pump wells are installed on RAD I and fifteen (15) single-phase skimmer pump wells are installed on the RAD II Site. Single-phase skimming wells are located in areas with lower viscosity LNAPL. Of the total recovered and disposed of LNAPL volume, 82,806 gallons have been recovered by the single-phase skimming system to date and 19,192 gallons for the reporting period. The skimming system had a monthly average production rate of 62 gallons per calendar day which represents a 32% decrease from the 91 gallons per calendar day average production rate realized during the first 16-1/2 month reporting period. During the reporting period, the skimmer system produced an average monthly peak average of 128 gallons per day and a minimum monthly average of 8.6 gallons per day. The skimming system has been operating a total of 22,456 run hours to date and 6,038 hours for the reporting period. For the reporting period, the skimmer system has been programmed to operate at 18 hours per day, rather than continuous, in an effort to maintain maximum product recovery while minimizing unnecessary equipment wear and energy consumption. Actual system uptime averaged 100% for the reporting period, however, a partially clogged discharge line was identified in the fall of 2018 which limited production for several weeks until it could be fully cleared. In addition, a significant increase in groundwater elevation, due to record rainfall during this reporting period (approximately 2-1/2 feet higher than during the system start-up period), led to an increase in skimmer system water production due to a submerged specific gravity float condition. Skimmer pumps have been raised to counter this condition as they were accessed during maintenance activities and accumulated water has been removed from product storage tank T-1401 and pumped back into the treatment system during this period (Fall and Winter of 2018 & 2019).

### 2.3.2.2 VER/TF Recovery

Ten (10) VER/TF wells are installed on RAD I and twenty (20) VER/TF wells are installed on the RAD II Site. VER applies a vacuum at the extraction well head, creating a pneumatic gradient causing air flow and enhanced product flow through the formation towards the extraction well. TF pumping creates a hydraulic cone of depression to further enhance the recovery of LNAPL, along with the VER, in areas where higher viscosity LNAPL present. Thirty (30) VER wells were installed and associated control systems on RAD I and RAD II. Of the total recovered and disposed of LNAPL volume, 295,078 gallons were recovered by the VER/TF recovery system to date and 73,617 gallons for the reporting period. The VER/TF system had a monthly average production of 195 gallons per calendar day with a peak monthly average of 356 gallons per calendar day and a minimum monthly average of 67 gallons per calendar day for the reporting period. When taking into account system uptime and normalizing the production per equivalent system run-day, the VER/TF recovery system averaged 229 gallons per run-day which represents a 58% decrease from

the 549 gallon per run-day average production rate realized during the first 16-1/2 month reporting period. The VER/TF recovery system had a total of 21,902 run hours to date and 7,625 hours for the reporting period. Actual system uptime averaged 95.7% for the year ranged from a low of 86% to a high of 100.0%. System uptime increased significantly from the 68.02% average realized during the first 16-1/2 months of operation. This uptime improvement is largely a result of upgrading the Oil/Water separation system with the addition of a Tube Skimmer and changing

Active Total Fluids Recovery Zones



the type of Biocide injected which does not impact the performance of the Sequestering Agent. The Tube Skimmer gear drive assembly was also replaced during the winter of 2019 upon beginning to fail after almost 3 years of continuous operation.

### 2.3.3 Groundwater Treatment System

Groundwater and LNAPL pumped from RAD II (and RAD I) flows through the LNAPL Recovery and Groundwater Treatment Building (LRGTB) located on RAD II. The LNAPL is collected and stored in one of two 6,000-gallon steel aboveground storage tanks located in a secondary containment dikes outside of the LRGTB on RAD II. One storage tank is configured to receive LNAPL recovered from the VER/TF System and the second storage tank is configured to receive LNAPL recovered from the Skimmer System. Since LNAPL Recovery System startup on

November 16, 2015, the groundwater treatment system has processed and discharged 9,514,572 gallons of process water (extracted by the VER/TF System) or an average of 7,724 gallons per calendar day. The peak process water treatment/discharge rate exceeded 18,000 gallons per day. The treated groundwater is sampled in accordance with the site discharge permit and discharged to the New York City Bowery Bay Publicly Owned Treatment Works (POTW). Quarterly discharge compliance sampling results have been provided in Appendix C.

The extracted groundwater/LNAPL mixture, or Total Fluids (TF) influent, produced by the VER/TF System during the current 12-month reporting period (April 1, 2018 through March 31, 2019) had an average extracted oil/water ratio of 2.16% which is less than the 4.18% average oil/water ratio observed during the first 16-1/2 months of operation (first reporting period). This represents a 48% reduction in extracted oil/water ratio between the first and third reporting periods despite the addition of full time VER operation. Furthermore, the peak monthly average oil/water ratio ranged from less than 1.5% to over 4% for a brief period of time in TF/VER zones 4 & 5. The variability in monthly oil/water ratios is largely due to rotating TF/VER operations between various extraction zones which have different amounts of product present on the groundwater and differences in the types of product present (viscosity, slight changes in specific gravity, amount of iron bacteria, etc.).

Recovered LNAPL, stored in both T-1401 (single-phase skimmer wells) and T-801 (VER/TF wells) is analyzed approximately once every 2 – 3 months for PCB concentrations. PCB concentrations in LNAPL recovered from the single-phase skimming wells remained at ND for this reporting period, while PCB concentrations in LNAPL recovered from the VER/TF system have varied between ND to 19.9 ppm during this reporting period. See Table 1 for a summary of recovered LNAPL PCB concentrations.

#### **2.3.4 SVE System**

The SVE system is used to employ VER technology along with hydraulic enhancement to further increase radius of influence and recoverability of higher viscosity LNAPL. The SVE system, or VER enhancement, was operated full time throughout the reporting period to counter diminishing product recovery rates from each of the six (6) TF Zones. The SVE system has operated for a total of 7,625 hours during the reporting period through March 2019. The SVE system is anticipated to be operated on a full time basis going forward into the fourth year of operation as well.

#### **2.3.5 System Operational Challenges and Actions**

- Phased out the use of emulsion breaker since installing the tube skimmer (December 2016) as part of our Oil/Water Separation process. Periodic QC testing indicates that we generally meet



sewer discharge compliance for SGT-HEM (< or = 50 ppm SGT-HEM) upstream of our liquid phase carbon treatment.

- Increased VER activity to enhance TF product recovery – have switched to full time VER operation since mid-September 2017. VER has remained full time throughout the third reporting period (2018 and early 2019).
- Installed additional auto air relief vents in the skimmer system header network at key high point locations (S-4A, S-5A and 5B) during 2017 in order to eliminate air lock and improve product flow through the skimmer system process lines.
- The recovery pumps within two of the TF wells (TF-7A and B) were determined to be stuck and un-removable with heavy duty hoist equipment. In addition, a significant amount of coarse sand is delivered to the GWTS when these pumps are operated. As such, we have concluded that the screens have failed in these wells. Re-drilling operations were not conducted in 2018.
- **High iron in groundwater** – Shortly after commencement of VER/TF system operations, the presence of >20ppm Total Iron was detected in the influent to the groundwater treatment system. Prior to the injection of sequestering agent (Redux 330) during the first year of operation, the high iron concentrations caused rapid fouling of the bag filters, LGAC treatment units and strainers which resulted in reduced system uptime. Since implementing, sequestering agent chemical injection has successfully controlled high iron concentrations and maintained high system uptime by allowing for iron mass transfer and minimizing pre-mature fouling of the bag filters and carbon filtration units. The sequestering agent injection has continued to be effective during this reporting period.
- **Biological growth/Grey Matter** – Iron related bacteria growth is rapid during warm weather operation and is controlled adequately with the use of biocide. Without biocide, fouling of the bag filters, the LGAC treatment units and the strainers cause significantly reduced run-time. During cooler weather operations, the biocide has not been needed. A new biocide (Redux 620) was employed during the Spring of 2017 (replacing the Verox 8 Biocide) and is designed to limit negative impact to the sequestering agent effectiveness. The new biocide has proven to work effectively during the warmer weather months of 2017 and 2018 with no significant grey matter formation and impact to the iron sequestration process. As such, the biological growth was successfully controlled and high system up-time was maintained throughout the warmer months of 2017 and 2018. During the Fall of 2017 and 2018 we once again ceased injection of the biocide with no adverse effects to system up-time.
- **Variable LNAPL characteristics** - Different product characteristics and associated separation difficulties were resolved in late 2016 with the addition of a tube skimmer in the primary separation tank of the two-stage oil water separation process. The addition of the tube skimmer has allowed for excellent oil/water separation at varied flow rates and LNAPL consistencies

and has continued to operate extremely well through this reporting period. Operational uptime for the VER/TF and groundwater treatment system has improved to >95% uptime since installing and optimizing the tube skimmer on December 22, 2016. In addition, product recovered from the TF Zones during 2017 has begun to change from a mostly dark colored, medium viscosity product to a mostly light brown colored product with significantly higher viscosity. Viscosity has increased to a level near and above typical petroleum industry pumpability standards based on laboratory and field viscosity testing. We believe this is an indication that most of the more mobile (darker, less viscous) product has been recovered and more of the less mobile (light brown, more viscous) product is now being recovered with the help of the VER. Since August of 2018 we have noticed that a significantly greater portion of the recovered product appears to be a highly degraded with a smaller portion of pure product. The degraded product also has a high water content which then phases out into the product storage tank (T-801) and has to be pumped out and back into the treatment system. This phenomenon has been ongoing to the end of the third reporting period since August 2019.

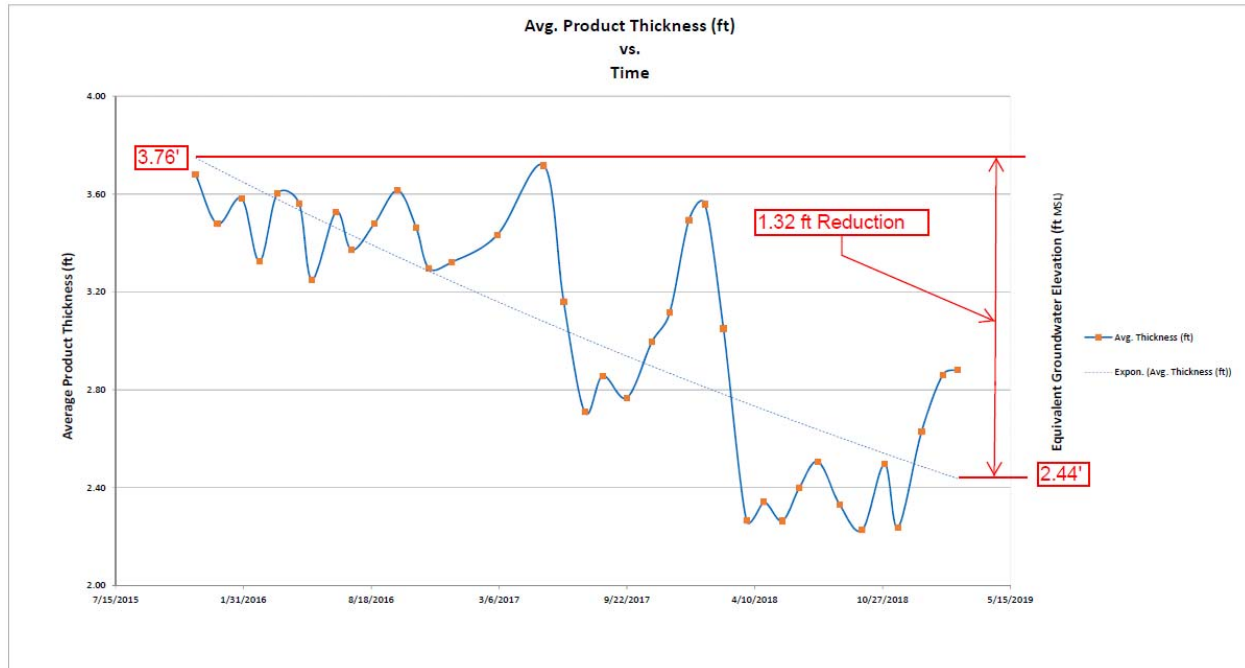
- **Recovery Well LNAPL PCB Sampling** – All four (4) identified TSCA PCB impacted recovery wells (TF-3D, 4D, 5D and 6D) were managed separately by pumping and collecting the high PCB product (>50 PPM) independently from the automated Total Fluids system via a Specific Gravity Skimmer Pump into a 55-gallon DOT shippable drum. This process continued at each of the four recovery wells until PCB concentrations in the recovered product was reduced to < 50 PPM for three consecutive rounds of pumping and sampling. The process of managing this LNAPL separate from the rest of the recovery system was approved in the SMP and completed including disposal in February 2018.

## 2.4 ADDITIONAL ACTIVITIES

In addition to system operation activities, other SMP required activities are also underway to monitor remediation progress and effectiveness as outlined below.

## 2.4.1 LNAPL Gauging

Site wide LNAPL gauging events at thirty-three (33) LNAPL monitoring wells on RAD I and RAD II provide evidence that average LNAPL thickness is trending downwards across the site and has decreased by approximately 1.32 feet (on average) at the end of March 2019 as illustrated in the figure below. This average thickness decrease is significantly greater than the 0.17 feet average decrease presented two (2) years earlier at the end of March 2017 and 0.68 feet average decrease presented one (1) year earlier at the end of March 2018.



## 2.4.2 High PCB LNAPL Management

LNAPL was sampled from each recovery well and analyzed for PCBs prior to system start-up. Wells with LNAPL PCB concentrations > 25 ppm were re-sampled during the first year of operation. Of the > 25 ppm well locations that were re-sampled, 4 wells contained LNAPL PCB concentrations  $\geq 50$  ppm and were not plumbed into the collection system such that high PCB LNAPL ( $\geq 50$  ppm) would not be mixed with other recovered LNAPL with concentrations below 50 ppm. These four (4) recovery wells were TF-3D, TF-4D, TF-5D and TF-6D of which all but TF-6D are located on RAD II. Per the SMP, product was recovered from these wells independently from the balance of the system and the high PCB concentration LNAPL was managed and disposed of separately as TSCA regulated Waste. Product was recovered from these wells with a manually controlled single-phase skimmer pump configured to discharge into a DOT-shippable 55-gallon drum until three (3) consecutive rounds of LNAPL PCB sampling indicated that concentrations

dropped below 50 ppm. All four (4) high PCB wells successfully followed this process after recovery and disposal of approximately 128 gallons of LNAPL. The TSCA regulated LNAPL was disposed of in three shipments which occurred in August 2016, August 2017 and February 2018. All four (4) of these wells have now been re-plumbed into the automated Total Fluids collection system during the 2nd reporting period. Refer to Figure 2 for locations and Tables 2 and 3, which summarize the results of baseline and years 1 and 2 sampling as well as results of PCB sampling from product recovered from each of these wells.

### **2.4.3 LNAPL Disposal Summary**

The total volume of RCRA Nonhazardous LNAPL with PCBs <50 ppm disposed offsite from RAD I and RAD II combined was 377,884 gallons through March 31, 2019. This waste stream was transported by Cycle Chem, Inc. to their facility in Elizabeth, NJ for solidification then was transported by Cycle Chem, Inc. to Conestoga Landfill in New Morgan Borough, Pennsylvania for disposal. The total volume of LNAPL with PCBs  $\geq$ 50 ppm disposed offsite from RAD II was approximately 78 gallons all of which was recovered and disposed of during the second reporting period. This waste stream was transported by Cycle Chem, Inc. to Veolia ES in Flanders, New Jersey and Port Arthur, Texas for incineration.

### **2.4.4 Groundwater Monitoring**

The fourth and fifth groundwater monitoring sampling events occurred on July 19th through 20th and December 4th through 5th, 2018. In addition, in October 2018, in response to the Department's request to sample groundwater for "emergent contaminants", five (5) groundwater monitoring wells were sampled for PFAS and 1,4- dioxane compounds. The results of the fourth and fifth sampling events were found to be consistent with historic results and were submitted under separate cover in advance of this report. The "emergent contaminants" sampling event was also submitted under separate cover in advance of this report.

### 3.0 IC/EC PLAN COMPLIANCE

#### 3.1 IC/EC REQUIREMENTS AND COMPLIANCE

##### 3.1.1 IC/EC Requirements Summary

A summary of the ICs and ECs implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by the Site Management Plan are outlined below.

Site Identification: RAD II - BCP #C241005, Long Island City, Queens, NY

Institutional Controls:	The property may be used for commercial use;
	<ul style="list-style-type: none"> <li>• The RAD II Site may only be used for restricted use.</li> <li>• All EC's must be operated and maintained as specified in the SMP. All EC's must be inspected at a frequency and in a manner defined in the SMP.</li> <li>• The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Queens County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the NYSDEC. This IC is outlined in the deed restriction recorded on 10/21/15 paragraph 2.A.(4). Groundwater monitoring must be performed as defined in the SMP.</li> <li>• Data and information pertinent to site management must be reported at the frequency and in a manner as defined in the SMP.</li> <li>• All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP.</li> <li>• Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.</li> <li>• Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the SMP.</li> <li>• Access to the RAD II Site must be provided to agents, employees or other representatives of the State of New York</li> </ul>

Site Identification: RAD II - BCP #C241005, Long Island City, Queens, NY

	<p>with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement. This IC is outlined in the above referenced deed restriction paragraph 2.A.(10).</p> <ul style="list-style-type: none"> <li>• The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated.</li> <li>• All ECs must be inspected at a frequency and in a manner defined in the SMP.</li> </ul>
Engineering Controls:	Cover system – 6-inch asphalt paving system
	<p>LNAPL Recovery and Treatment System</p> <ul style="list-style-type: none"> <li>• Two 6,000 gallon LNAPL Storage Tanks</li> <li>• Two 8’ x 40’ Equipment Enclosures</li> <li>• 38 Skimmer well pumps and piping</li> <li>• 30 VER Well pumps, SVE blower air treatment and piping, liquid treatment equipment and discharge piping.</li> </ul>
<u>Inspections:</u>	Frequency
Cover inspection	Annually
Treatment System and Equipment Inspections per OM&M Manual	Monthly, Quarterly and Semi-Annual Per OM&M Manual
<u>Monitoring:</u>	
Presence and Absence of LNAPL in Wells Identified on Table 3 of SMP for RAD II	Monthly, Quarterly and Semi-Annual as indicated on Table 3 of SMP for RAD II
Groundwater Monitoring/Sampling of Monitoring Wells Identified on Table 3 of the SMP for RAD II	Semi-Annual as indicated on Table 3 of SMP for RAD II
<u>Maintenance:</u>	
Equipment maintenance per Table of SMP	Per Table 4 of SMP

Site Identification: RAD II - BCP #C241005, Long Island City, Queens, NY

<u>Reporting:</u>	
LNAPL Monitoring	Per Table 3 of SMP
Treated Water Discharge Sampling and Reporting	Quarterly
Periodic Review Report	Annually

### 3.1.2 Status of IC/ECs

All ICs and ECs have been implemented and are being monitored and maintained in accordance with the SMP. The LNAPL Recovery and Treatment system will continue to be operated, monitored and maintained until such time that the remedial objectives as outlined in the SMP have been achieved. Treated Water quarterly compliance sampling reports are provided in Appendix C. As described above in section 2.4.1, monthly LNAPL gauging events indicate that the LNAPL Recovery System is effective.

### 3.1.3 Corrective Measures

- **Treatment Compound Fence** – The treatment compound fence between the west perimeter of the treatment compound and RAD II has been damaged by the tenant numerous times which required repairs in order to maintain site security. Some repairs were implemented, and the addition of concrete barricades were added by the property owner during 2018. Fence maintenance continues to be an ongoing process and inspections are conducted during each maintenance visit.

### 3.1.4 Conclusions and Recommendations for Changes

- Section 4.3 outlines several identified recommended actions for the asphalt cover and LNAPL recovery system ECs in order to ensure ongoing effective protection for site occupants as well as to enhance, optimize and minimize the duration of the remedy.
- The addition of concrete barriers has improved the fence integrity with fewer repairs needed since installation. The integrity of the fence is inspected during each O&M visit and repaired as needed.

### 3.1.5 IC/EC Certification

The NYSDEC Site Management PRR IC/EC Certification Form has been completed and provided and attached at the front this report.

## **4.0 CONCLUSIONS AND RECOMMENDATIONS**

Based on this review, the remedy continues to be protective of the public health and the environment and is compliant with the Site Management Plan.

### **4.1 INSTITUTIONAL CONTROLS**

The current ICs are adequate to achieve the objective for protection of human health and the environment based on current site use.

### **4.2 ENGINEERING CONTROLS**

The current ECs are adequate to achieve the objectives for protection of human health and the environment based on current site use, however, action is required this spring to replace portions of the asphalt cap on RAD I to ensure ongoing protection through 2019 and beyond.

### **4.3 OTHER SITE-RELATED ACTIVITIES**

Based on the information presented in this PRR, the following activities are recommended to be completed within the next annual reporting period in efforts to maintain the asphalt cover system, optimize LNAPL recovery system operations and accelerate the timeframe to site delisting.

- Work aggressively with the property owner and tenants to complete repairs of several identified asphalt cover potholes.
- CAC area cap repair/completion.
- RAD II west side fence along Preston Avenue repair/completion.
- Portions of the RAD II east side fence along Phoenix Beverage repair/completion.
- Treatment Compound fence repair/completion.
- Continue to optimize production by adjusting the duration and rotation of active VER/TF system zones to maximize product recovery rates while minimizing groundwater discharge to sewer and energy consumption.
- A discussion with the DEC was held in late February 2019 regarding progress to date and criteria needed to progress toward shut down of the treatment system such as:
  - Analyzing product recovery re-bounce effect when rotating through TF/VER extraction zones.
  - Determining the impact of Product Recovery Pilot Testing at Phoenix Beverage to product thickness measurements on RAD I



## 5.0 REFERENCES

Golder Associates, Inc. (Golder), 2005. *Remedial Investigation Report, Quanta Resources Site, Long Island City, New York, June 2005*

Golder Associates, Inc. (Golder), 2011. *Remedial Action Work Plan, Review Avenue Development, Long Island City, Queens, New York, November, 2011*

MACTEC Engineering and Consulting, P.C. (MACTEC), 2015. *Site Management Plan, Review Avenue Development (RAD) I, Queens County, Long Island City, New York, December, 2015.*

New York State Department of Environmental Conservation (NYSDEC), 2007. *Declaration Statement – Record of Decision, Quanta Resources Inactive Hazardous Waste Disposal Site (a.k.a. Review Avenue Development II), Long Island City, Queens, New York, Site No. 2-41-005, February 2007.*

## TABLES

**Table 1**  
**Summary of PCB Analytical Data - LNAPL Storage Tanks**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

<b>Field Sample ID:</b>	<b>Unit</b>	<b>T-801-0116</b>		<b>T-1401-0116</b>		<b>T-801</b>		<b>T-1401</b>		<b>T-801-0416</b>		<b>T-1401-0416</b>	
<b>Sample Date:</b>		<b>1/25/2016</b>		<b>1/25/2016</b>		<b>3/7/2016</b>		<b>3/7/2016</b>		<b>4/5/2016</b>		<b>4/5/2016</b>	
<b>Lab Sample ID:</b>		<b>460-108101-8</b>		<b>460-108101-7</b>		<b>JC15542-1</b>		<b>JC15542-2</b>		<b>JC17676-2</b>		<b>JC17676-3</b>	
Aroclor 1016	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor 1221	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor 1232	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor 1242	mg/kg	15		5.2		12.7		0.5	U	0.5	U	0.5	U
Aroclor 1248	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	9.35		2.03	
Aroclor 1254	mg/kg	4.9		0.5	U	0.5	U	0.5	U	5.11		0.5	U
Aroclor 1260	mg/kg	0.5	U	3.3		0.5	U	0.5	U	5.22		0.5	U
Aroclor 1268	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor 1262	mg/kg	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
<b>Total PCBs</b>	mg/kg	19.9		8.5		12.7		0.5 U		19.68		2.03	

**Table 1**  
**Summary of PCB Analytical Data - LNAPL Storage Tanks**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	T-801-052716	T-1401-052716	T-801-071116	T-1401-071116	T-801-083016	T-1401-083016
Sample Date:		5/27/2016	5/27/2016	7/11/2016	7/11/2016	8/30/2016	8/30/2016
Lab Sample ID:		JC21238-1	JC21238-2	JC23844-1	JC23844-2	JC26784-1	JC26784-2
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	4.37	1.24
Aroclor 1248	mg/kg	6.87	0.5 U	4.32	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	0.5 U	0.5 U	7.28	0.5 U	0.5 U	0.5 U
Aroclor 1260	mg/kg	5.99	0.5 U	6.23	0.5 U	5.29	2.87
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	12.86	0.5 U	17.83	0.5 U	9.66	4.11
				w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>

**Table 1**  
**Summary of PCB Analytical Data - LNAPL Storage Tanks**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	RA-T801-102116	T-801-010617	T-1401-010617	T-801-031717	T-801P-041017	T-1401-042517
Sample Date:		10/21/2016	1/6/2017	1/6/2017	3/17/2017	4/10/2017	4/25/2017
Lab Sample ID:		JC30289-2	JC35069-2	JC35069-3	JC39231-2	JC40858-1	JC42010-1
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	0.5 U	2.86	0.976	3.37	0.5 U	0.5 U
Aroclor 1248	mg/kg	2.85	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	0.5 U	4.16	3.96	0.5 U	0.5 U	0.5 U
Aroclor 1260	mg/kg	4.01	2.22	2.08	0.5 U	0.5 U	0.5 U
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	6.86	9.24	7.016	3.37	0.5 U	0.5 U
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>

**Table 1**  
**Summary of PCB Analytical Data - LNAPL Storage Tanks**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	T-801-050917	T-801-070317	T-801-101017	T-1401-101017	T-801-0118	T-1401-0118
Sample Date:		5/9/2017	7/3/2017	10/10/2017	10/10/2017	1/3/2018	1/3/2018
Lab Sample ID:		JC42990-1	JC35069-3	JC52795-4	JC52795-5	JC58353-1	JC58353-2
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	0.5 U	1.08	0.5 U	0.5 U	2.23	0.5 U
Aroclor 1248	mg/kg	0.5 U	0.5 U	20.4	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	7.27	0.5 U
Aroclor 1260	mg/kg	0.5 U	2.18	10.4	0.5 U	0.5 U	0.5 U
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	0.5 U	3.26	30.8	0.5 U	9.5	0.5 U
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>

**Table 1**  
**Summary of PCB Analytical Data - LNAPL Storage Tanks**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	T-801-031318	T-1401-031318	T-801-050118	T-1401-050118	T-801-0618	T-1401-0618
Sample Date:		3/13/2018	3/13/2018	5/1/2018	5/1/2018	6/5/2018	6/5/2018
Lab Sample ID:		JC62277-1	JC62277-2	JC65251-1	JC65251-2	JC67478-1	JC67478-2
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.13 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	0.5 U	0.5 U	0.08 U	0.5 U	0.5 U	0.5 U
Aroclor 1248	mg/kg	2.89	4.04 U	7.01	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	0.5 U	0.5 U	0.12 U	0.5 U	0.5 U	0.5 U
Aroclor 1260	mg/kg	1.95	2.71 U	6.53	0.5 U	0.5 U	0.5 U
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.074 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.038 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	4.84	4.04 U	13.54	0.5 U	0.5	0.5
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure

**Table 1  
 Summary of PCB Analytical Data - LNAPL Storage Tanks  
 Review Avenue Development Sites, NYCDEP File # C-5652  
 Long Island City, Queens, New York**

Field Sample ID:	Unit	T-801-0918	T-1401-0918	T-801-0119	T-1401-0119	T-801-0319	T-1401-0319
Sample Date:		9/5/2018	9/5/2018	1/2/2019	1/2/2019	3/14/2019	3/14/2019
Lab Sample ID:		JC73140-1	JC73140-2	JC80741-1	JC80741-2	JC84564-1	JC84564-2
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	9.7	0.5 U	11.9	0.5 U	0.5 U	0.5 U
Aroclor 1248	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1260	mg/kg	10.2	0.5 U	0.5 U	0.5 U	10.7	0.5 U
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	19.9	0.5	11.9	0.5	10.7	0.5
		w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure	w/ Permanganate Cleanup Procedure



**Table 1**  
**Summary of PCB Analytical Data - LNAPL Storage Tanks**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

**Bold** = PCB Concentration > 50 mg/kg

**Definitions:**

mg/kg = milligrams per kilogram

PCB = Polychlorinated Biphenyl

RL = Reporting Limit

**Data Qualifiers:**

J = Indicates an estimated value

U = Not detected at the indicated Reporting Limit

**Footnotes:**

(1) Samples analyzed using SW-846 EPA Test Method 3665A Sulfuric Acid/Permanganate Cleanup

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-1A	TF-1B	TF-1C	TF-1D	TF-2A	TF-2B	TF-2C
Sample Date:		12/23/2014	3/25/2015	3/25/2015	12/23/2014	12/23/2014	3/25/2015	12/23/2014
Lab Sample ID:		460-88367-14	460-92207-2	460-92207-1	460-88367-13	460-88367-10	460-92207-3	460-88367-11
Aroclor 1016	mg/kg	0.33 U	0.16 U	0.16 U	0.33 U	0.33 U	0.16 U	0.33 U
Aroclor 1221	mg/kg	0.43 U	0.21 U	0.21 U	0.43 U	0.43 U	0.21 U	0.43 U
Aroclor 1232	mg/kg	0.51 U	0.25 U	0.25 U	0.51 U	0.51 U	0.25 U	0.51 U
Aroclor 1242	mg/kg	0.33 U	0.16 U	0.16 U	9.9	0.33 U	0.16 U	0.33 U
Aroclor 1248	mg/kg	0.33 U	0.16 U	0.16 U	0.33 U	0.33 U	0.16 U	0.33 U
Aroclor 1254	mg/kg	0.33 U	0.16 U	0.16 U	0.33 U	0.33 U	0.16 U	0.33 U
Aroclor 1260	mg/kg	0.33 U	0.16 U*	0.16 U*	9.6	0.33 U	5.1 *	17
Aroclor 1268	mg/kg	0.56 U	0.27 U	0.27 U	0.56 U	0.56 U	0.27 U	0.56 U
Aroclor 1262	mg/kg	0.56 U	0.27 U	0.27 U	0.56 U	0.56 U	0.27 U	0.56 U
Total PCBs	mg/kg	0.56 U	0.27 U	0.27	19.5	0.56 U	5.1 *	17

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-2D	TF-3A	TF-3B	TF-3C	TF-3D	TF-4A	TF-4B
Sample Date:		12/23/2014	4/27/2015	12/23/2014	12/23/2014	4/30/2015	12/23/2014	12/23/2014
Lab Sample ID:		460-88367-12	460-93882-2	460-88367-9	460-88367-8	460-94094-1	460-88367-4	460-88367-5
Aroclor 1016	mg/kg	0.33 U	0.16 U *	0.34 U	0.33 U	0.17 U	0.33 U	0.33 U
Aroclor 1221	mg/kg	0.43 U	0.21 U	0.43 U	0.43 U	0.22 U	0.43 U	0.43 U
Aroclor 1232	mg/kg	0.51 U	0.25 U	0.51 U	0.51 U	0.26 U	0.51 U	0.51 U
Aroclor 1242	mg/kg	18	0.16 U	8.9	18	21	0.33 U	5.3
Aroclor 1248	mg/kg	0.33 U	0.16 U	0.34 U	0.33 U	0.17 U	0.33 U	0.33 U
Aroclor 1254	mg/kg	0.33 U	0.16 U	0.34 U	0.33 U	0.17 U	0.33 U	0.33 U
Aroclor 1260	mg/kg	14	0.16 U *	2	4.9	16	0.33 U	5.8
Aroclor 1268	mg/kg	0.56 U	0.27 U	0.56 U	0.56 U	0.28 U	0.56 U	0.56 U
Aroclor 1262	mg/kg	0.56 U	0.27 U	0.56 U	0.56 U	0.28 U	0.56 U	0.56 U
Total PCBs	mg/kg	32	0.27 U	10.9	22.9	37	0.56 U	11.1

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-4C	TF-4D	TF-5A	TF-5B	TF-5C	TF-5D	TF-6A
Sample Date:		12/23/2014	12/23/2014	12/23/2014	12/23/2014	12/23/2014	12/23/2014	1/23/2015
Lab Sample ID:		460-88367-6	460-88367-7	460-88367-3	460-88367-2	460-88367-1	460-88367-24	460-89644-1
Aroclor 1016	mg/kg	0.33 U	0.33 U	0.33 U	0.34 U	0.34 U	0.33 U	0.17 U
Aroclor 1221	mg/kg	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.22 U
Aroclor 1232	mg/kg	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.26 U
Aroclor 1242	mg/kg	29	30	0.33 U	0.34 U	27	30	9.2
Aroclor 1248	mg/kg	0.33 U	0.33 U	0.33 U	0.34 U	0.34 U	0.33 U	0.17 U
Aroclor 1254	mg/kg	0.33 U	0.33 U	0.33 U	0.34 U	0.34 U	0.33 U	0.17 U
Aroclor 1260	mg/kg	7.7	15	0.33 U	1.5 J	15	14	11
Aroclor 1268	mg/kg	0.56 U	0.56 U	0.56 U	0.57 U	0.56 U	0.56 U	0.28 U
Aroclor 1262	mg/kg	0.56 U	0.56 U	0.56 U	0.57 U	0.56 U	0.56 U	0.28 U
Total PCBs	mg/kg	36.7	45	0.56 U	1.5	42	44	20.2

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-6B	TF-6C	TF-6D	TF-7A	TF-7B	TF-7C	TF-7D
Sample Date:		1/23/2015	1/23/2015	1/23/2015	1/23/2015	1/23/2015	4/27/2015	1/23/2015
Lab Sample ID:		460-89644-3	460-89644-5	460-89644-7	460-89644-2	460-89644-4	460-93882-1	460-89644-6
Aroclor 1016	mg/kg	0.16 U	0.17 U	0.33 U	0.17 U	0.17 U	0.16 U *	0.17 U
Aroclor 1221	mg/kg	0.21 U	0.22 U	0.43 U	0.22 U	0.22 U	0.21 U	0.22 U
Aroclor 1232	mg/kg	0.25 U	0.26 U	0.51 U	0.26 U	0.26 U	0.25 U	0.26 U
Aroclor 1242	mg/kg	17	9.1	30	3.4	8	0.16 U	11
Aroclor 1248	mg/kg	0.16 U	0.17 U	0.33 U	0.17 U	0.17 U	0.16 U	0.17 U
Aroclor 1254	mg/kg	0.16 U	0.17 U	0.33 U	0.17 U	0.17 U	0.16 U	0.17 U
Aroclor 1260	mg/kg	13	11	22	4.4	12	0.16 U *	13
Aroclor 1268	mg/kg	0.27 U	0.28 U	0.56 U	0.28 U	0.28 U	0.27 U	0.28 U
Aroclor 1262	mg/kg	0.27 U	0.28 U	0.56 U	0.28 U	0.28 U	0.27 U	0.28 U
Total PCBs	mg/kg	30	20.1	52	7.8	20	0.27 U	24

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-7E	TF-7F	S-1B	S-1C	S-2A	S-2B	S-2C
Sample Date:		1/23/2015	1/30/2015	12/23/2014	12/23/2014	12/23/2014	12/23/2014	12/23/2014
Lab Sample ID:		460-89644-8	460-89873-1	460-88367-20	460-88367-19	460-88367-21	460-88367-23	460-88367-22
Aroclor 1016	mg/kg	0.17 U	0.33 U	0.33 U	0.34 U	0.33 U	0.17 U	0.17 U
Aroclor 1221	mg/kg	0.21 U	0.42 U	0.43 U	0.43 U	0.43 U	0.22 U	0.22 U
Aroclor 1232	mg/kg	0.25 U	0.5 U	0.51 U	0.51 U	0.51 U	0.26 U	0.26 U
Aroclor 1242	mg/kg	20	27	0.33 U	0.34 U	0.33 U	0.17 U	0.17 U
Aroclor 1248	mg/kg	0.17 U	0.33 U	0.33 U	0.34 U	0.33 U	0.17 U	0.17 U
Aroclor 1254	mg/kg	0.17 U	0.33 U	0.33 U	0.34 U	0.33 U	0.17 U	0.17 U
Aroclor 1260	mg/kg	17	9.8	0.33 U	0.34 U	0.33 U	0.17 U	6.3
Aroclor 1268	mg/kg	0.28 U	0.55 U	0.56 U	0.57 U	0.56 U	0.28 U	0.28 U
Aroclor 1262	mg/kg	0.28 U	0.55 U	0.56 U	0.57 U	0.56 U	0.28 U	0.28 U
Total PCBs	mg/kg	37	36.8	0.56 U	0.57 U	0.56 U	0.28 U	6.3

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

<b>Field Sample ID:</b>	<b>Unit</b>	<b>S-3A</b>		<b>S-3B</b>		<b>S-3C</b>		<b>S-3E</b>	
<b>Sample Date:</b>		<b>12/23/2014</b>		<b>12/23/2014</b>		<b>12/23/2014</b>		<b>12/23/2014</b>	
<b>Lab Sample ID:</b>		<b>460-88367-18</b>		<b>460-88367-15</b>		<b>460-88367-16</b>		<b>460-88367-17</b>	
Aroclor 1016	mg/kg	0.33	U	0.33	U	0.34	U	0.33	U
Aroclor 1221	mg/kg	0.43	U	0.43	U	0.43	U	0.43	U
Aroclor 1232	mg/kg	0.51	U	0.51	U	0.51	U	0.51	U
Aroclor 1242	mg/kg	0.33	U	0.33	U	0.34	U	0.33	U
Aroclor 1248	mg/kg	0.33	U	0.33	U	0.34	U	0.33	U
Aroclor 1254	mg/kg	0.33	U	0.33	U	0.34	U	0.33	U
Aroclor 1260	mg/kg	0.33	U	0.33	U	0.34	U	0.33	U
Aroclor 1268	mg/kg	0.56	U	0.56	U	0.57	U	0.56	U
Aroclor 1262	mg/kg	0.56	U	0.56	U	0.57	U	0.56	U
<b>Total PCBs</b>	mg/kg	0.56	U	0.56	U	0.57	U	0.56	U

**Table 2**  
**Summary of PCB Analytical Data - Baseline Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

**Bold** = PCB Concentration > 50 mg/kg

**Definitions:**

mg/kg = milligrams per kilogram

PCB = Polychlorinated Biphenyl

RL = Reporting Limit

**Data Qualifiers:**

J = Indicates an estimated value

U = Not detected at the indicated Reporting Limit

\* = Recovery or RPD exceeds control limits



**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-2D-083016	TF-3D-061516	TF-3D-061516	TF-3D-090116	TF-3D-082517	TF-3D	TF-3D	
Sample Date:		8/30/2016	6/15/2016	6/15/2016	9/1/2016	8/25/2017	10/25/2017	11/14/2017	
Lab Sample ID:		JC26783-5	JC22334-1	JC22334-1R	JC26925-1	JC49684-2			
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1242	mg/kg	12.3	25.3	21.9	3.03	11.5	0.5 U	9.33	
Aroclor 1248	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	28.7	0.5 U	
Aroclor 1254	mg/kg	9.58	26.7	18	0.5 U	20.4	16.7	11	
Aroclor 1260	mg/kg	10.0	0.5 U	14.1	3.2	0.5 U	0.5 U	0.5 U	
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
<b>Total PCBs</b>	mg/kg	31.88	52	<b>54</b>	6.18	31.9	45.4	20.33	
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-4C-061516	TF-4C-061516	TF-4C-083016	TF-4D-061516	TF-4D-061516	TF-4D-070517	TF-4D-071417
Sample Date:		6/15/2016	6/15/2016	8/30/2016	6/15/2016	6/15/2016	7/3/2017	7/14/2017
Lab Sample ID:		JC22334-2	JC22334-2R	JC26783-6	JC22334-3	JC22334-3R	JC46386-2	JC47048-1
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	26.4	17.6	18.6	43.2	25.1	13.2	0.5
Aroclor 1248	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	13.7 U
Aroclor 1254	mg/kg	18.2	9.28	0.5 U	50	20.9	0.5 U	18
Aroclor 1260	mg/kg	0.5 U	8.0	8.1	0.5 U	18.1	9.04	0.5 U
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	44.6	34.9	26.7	93.2	<b>64.1</b>	22.24	18.5
			w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-4D-072017	TF-5C-061516	TF-5C-061516	TF-5C-083016	TF-5D-061516	TF-5D-061516	TF-5D-083016	
Sample Date:		7/20/2017	6/15/2016	6/15/2016	8/30/2016	6/15/2016	6/15/2016	8/30/2016	
Lab Sample ID:		JC47416-1	JC22334-4	JC22334-4R	JC26783-7	JC22334-5	JC22334-5R	JC26783-1	
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1242	mg/kg	13.6	15.9	10.9	22.2	36.7	22.1	29.2	
Aroclor 1248	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1254	mg/kg	0.5 U	19.6	10.9	12.9	21.1	16.9	20.5	
Aroclor 1260	mg/kg	9.91	0.5 U	8.4	14.2	0.5 U	11.8	11.8	
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	
<b>Total PCBs</b>	mg/kg	<b>23.51</b>	<b>35.5</b>	<b>30.16</b>	<b>49.3</b>	<b>57.8</b>	<b>50.8</b>	<b>61.5</b>	
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-5D-010617	TF-5D-020717	TF-5D-030617	TF-5D-033017	TF-5D-041417	TF-5D-042817	TF-6B-083016
Sample Date:		1/6/2017	2/7/2017	3/6/2017	3/30/2017	4/14/2017	4/28/2017	8/30/2016
Lab Sample ID:		JC35069-1	JC37014-1	JC38433-1	JC40133-1	JC41331-1	JC42594-1	JC26783-4
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	32.6	57.6	34.3	10.3	13.3	0.5 U	8.45
Aroclor 1248	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	27	0.5 U
Aroclor 1254	mg/kg	14.2	23.5	0.5 U	7.73	0.5 U	13	0.5 U
Aroclor 1260	mg/kg	9.8	14.7	16.8	5.5	0.5 U	8.68	5.3
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
<b>Total PCBs</b>	mg/kg	<b>56.56</b>	<b>95.8</b>	<b>51.1</b>	23.51	13.3	48.68	13.72
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-6D-0416	TF-6D-041316	TF-6D-042616	TF-6D-050516	TF-6D-051216	TF-6D-052716	TF-6D-053116
Sample Date:		4/5/2016	4/13/2016	4/26/2016	5/5/2016	5/12/2016	5/27/2016	5/31/2016
Lab Sample ID:		JC17616-1	JC18303-1	JC19129-1	JC19787-1	JC20188-1	JC21237-1	JC21329-1
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	0.5 U	0.5 U	0.5 U	23.9	22.4	0.5 U	21.4
Aroclor 1248	mg/kg	31.4	21.6	17.9	0.5 U	0.5 U	17.9	0.5 U
Aroclor 1254	mg/kg	16	0.5 U	14.5	18.1	0.5 U	5 U	21.2
Aroclor 1260	mg/kg	0.5 U	12.5	14.3	12.5	15.0	15.3	12.7
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	47.4	34.1	46.7	54.5	37.4	33.2	55.3

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-6D-053116	TF-6D-061616	TF-6D-061616	TF-6D-062216	TF-6D-063016	TF-6D-070716	TF-6D-071116
Sample Date:		6/7/2016	6/16/2016	6/16/2016	6/22/2016	6/30/2016	7/7/2016	7/11/2016
Lab Sample ID:		JC21329-1	JC22334-8	JC22334-8R	JC22828-1	JC23438-1	JC23724-2	JC23844-3
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	21.2	18.2	7.78	0.5 U	10.7	8.47	9.32
Aroclor 1248	mg/kg	5 U	0.5 U	0.5 U	23.6	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	13.4	21.4	8.05	25.7	9.49	9.86	11.4
Aroclor 1260	mg/kg	11.7	100.0 U	3.9	8.2	8.0	5.6	6.3
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	46.3	39.6	19.73	<b>57.5</b>	28.17	23.92	27.06
				w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>	w/ Permanganate Cleanup Procedure <sup>(1)</sup>

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	TF-7E-061516	TF-7E-061516	TF-7E-073016	TF-7F-061516	TF-7F-061516	TF-7F-083016
Sample Date:		6/15/2016	6/15/2016	8/30/2016	6/15/2016	6/15/2016	8/30/2016
Lab Sample ID:		JC22334-6	JC22334-6R	JC26783-3	JC22334-7	JC22334-7R	JC26783-2
Aroclor 1016	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1221	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1232	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1242	mg/kg	17.1	16	7.59	35.2	13.9	15.6
Aroclor 1248	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1254	mg/kg	26.1	16.3	12.9	27.7	15.9	20.3
Aroclor 1260	mg/kg	0.5 U	0.5 U	5.3	15.6	13.4	7.5
Aroclor 1268	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Aroclor 1262	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	mg/kg	43.2	32.3	25.74	78.5	43.2	43.41
		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>		w/ Permanganate Cleanup Procedure <sup>(1)</sup>	

**Table 3**  
**Summary of PCB Analytical Data - Recovery Well Samples**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

**Bold** = PCB Concentration > 50 mg/kg after Permanganate Cleanup

**Definitions:**

mg/kg = milligrams per kilogram

PCB = Polychlorinated Biphenyl

RL = Reporting Limit

**Data Qualifiers:**

J = Indicates an estimated value

U = Not detected at the indicated Reporting Limit

**Footnotes:**

(1) Samples analyzed using SW-846 EPA Test Method 3665A Sulfuric Acid/Permanganate Cleanup



**Table 4**  
**Summary of Offsite LNAPL Disposal Quantities**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**LNAPL Waste Oil Disposal Summary (<50 ppm PCBs):**

Date	BOL Number	T-801	T-1401	Total
12/18/15	0277706	5,000 gal	-	5,000 gal
01/11/16	0277790	-	4,767 gal	4,767 gal
02/02/16	0277924	5,032 gal	-	5,032 gal
02/04/16	0277942	-	4,900 gal	4,900 gal
03/02/16	278269	2,703 gal	2,592 gal	5,295 gal
03/17/16	0278392	4,613 gal	-	4,613 gal
03/31/16	278518	5,000 gal	-	5,000 gal
04/13/16	278574	5,000 gal	-	5,000 gal
04/27/16	278823	4,880 gal	-	4,880 gal
05/05/16	278889	-	5,000 gal	5,000 gal
05/12/16	278941	5,000 gal	-	5,000 gal
05/26/16	279054	4,998 gal	-	4,998 gal
05/31/16	099965	-	3,103 gal	3,103 gal
06/07/16	279111	4,810 gal	-	4,810 gal
07/01/16	283085	5,026 gal	-	5,026 gal
07/18/16	283124	4,900 gal	-	4,900 gal
07/26/16	283125	-	5,000 gal	5,000 gal
08/09/16	283446	4,800 gal	-	4,800 gal
08/31/16	283592	5,052 gal	-	5,052 gal
09/01/16	283600	-	4,280 gal	4,280 gal
09/22/16	283745	4,950 gal	-	4,950 gal
10/07/16	180754	4,964 gal	-	4,964 gal
10/17/16	180744	-	4,800 gal	4,800 gal
11/04/16	104535	5,500 gal	-	5,500 gal
11/29/16	104145	5,300 gal	-	5,300 gal
12/01/16	258577	-	4,565 gal	4,565 gal
12/20/16	258731	4,869 gal	-	4,869 gal
01/06/17	258823	4,900 gal	-	4,900 gal
01/16/17	258893	4,875 gal	-	4,875 gal
01/25/17	259005	4,850 gal	-	4,850 gal
02/07/17	259108	4,900 gal	-	4,900 gal
02/14/17	259137	-	4,900 gal	4,900 gal
02/16/17	259170	4,860 gal	-	4,860 gal
03/01/17	259226	4,960 gal	-	4,960 gal
03/17/17	280224	4,837 gal	-	4,837 gal
03/30/17	280327	4,960 gal	-	4,960 gal
4/10/2017	280370	3,436 gal	-	3,436 gal
4/25/2017	280486	-	5,000 gal	5,000 gal
4/28/2017	280485	5,000 gal	-	5,000 gal
5/12/2017	280663	4,081 gal	-	4,081 gal
5/30/2017	280874	4,964 gal	-	4,964 gal
6/23/2017	238017	4,936 gal	-	4,936 gal
7/14/2017	238326	-	4,884 gal	4,884 gal
7/20/2017	238302	4,964 gal	-	4,964 gal
8/25/2017	179863	4,936 gal	-	4,936 gal
9/5/2017	179864	4,195 gal	-	4,195 gal
9/15/2017	179956	-	4,859 gal	4,859 gal
9/26/2017	180208	4,936 gal	-	4,936 gal
10/12/2017	284001	4,838 gal	-	4,838 gal
10/27/2017	284113	4,892 gal	-	4,892 gal
11/15/2017	284446	4,857 gal	-	4,857 gal
12/6/2017	256622	4,636 gal	-	4,636 gal
1/3/2018	256810	4,633 gal	-	4,633 gal
1/22/2018	257014	5,032 gal	-	5,032 gal
2/8/2018	257162	4,936 gal	-	4,936 gal
2/23/2018	257266	4,936 gal	-	4,936 gal
3/9/2018	257369	-	4,964 gal	4,964 gal
3/13/2018	257409	4,857 gal	-	4,857 gal
3/30/2018	276735	4,857 gal	-	4,857 gal
4/18/2018	276899	4,645 gal	-	4,645 gal
5/10/2018	ACV002088	4,810 gal	-	4,810 gal
5/29/2018	ACV002204	4,969 gal	-	4,969 gal
6/8/2018	ACV002257	5,068 gal	-	5,068 gal
6/19/2018	ACV002312	4,857 gal	-	4,857 gal
6/25/2018	ACV002336	-	5,068 gal	5,068 gal
7/13/2018	ACV002428	4,946 gal	-	4,946 gal
8/14/2018	ACV002699	4,998 gal	-	4,998 gal
8/29/2018	ACV002794	-	4,657 gal	4,657 gal
8/31/2018	ACV002809	4,857 gal	-	4,857 gal
9/25/2018	ACV002977	4,998 gal	-	4,998 gal
10/12/2018	ACV022156	5,000 gal	-	5,000 gal
11/12/2018	ACV033513	5,028 gal	-	5,028 gal
12/7/2018	ACV023259	4,964 gal	-	4,964 gal
1/4/2019	ACV023419	4,964 gal	-	4,964 gal
1/10/2019	ACV0234756	-	4,837 gal	4,837 gal
2/8/2019	ACV022841	4,900 gal	-	4,900 gal
2/20/2019	ACV022896	-	4,630 gal	4,630 gal
3/20/2019	ACV045063	4,613 gal	-	4,613 gal
<b>TOTALS:</b>		<b>295,078 gal</b>	<b>82,806 gal</b>	<b>377,884 gal</b>

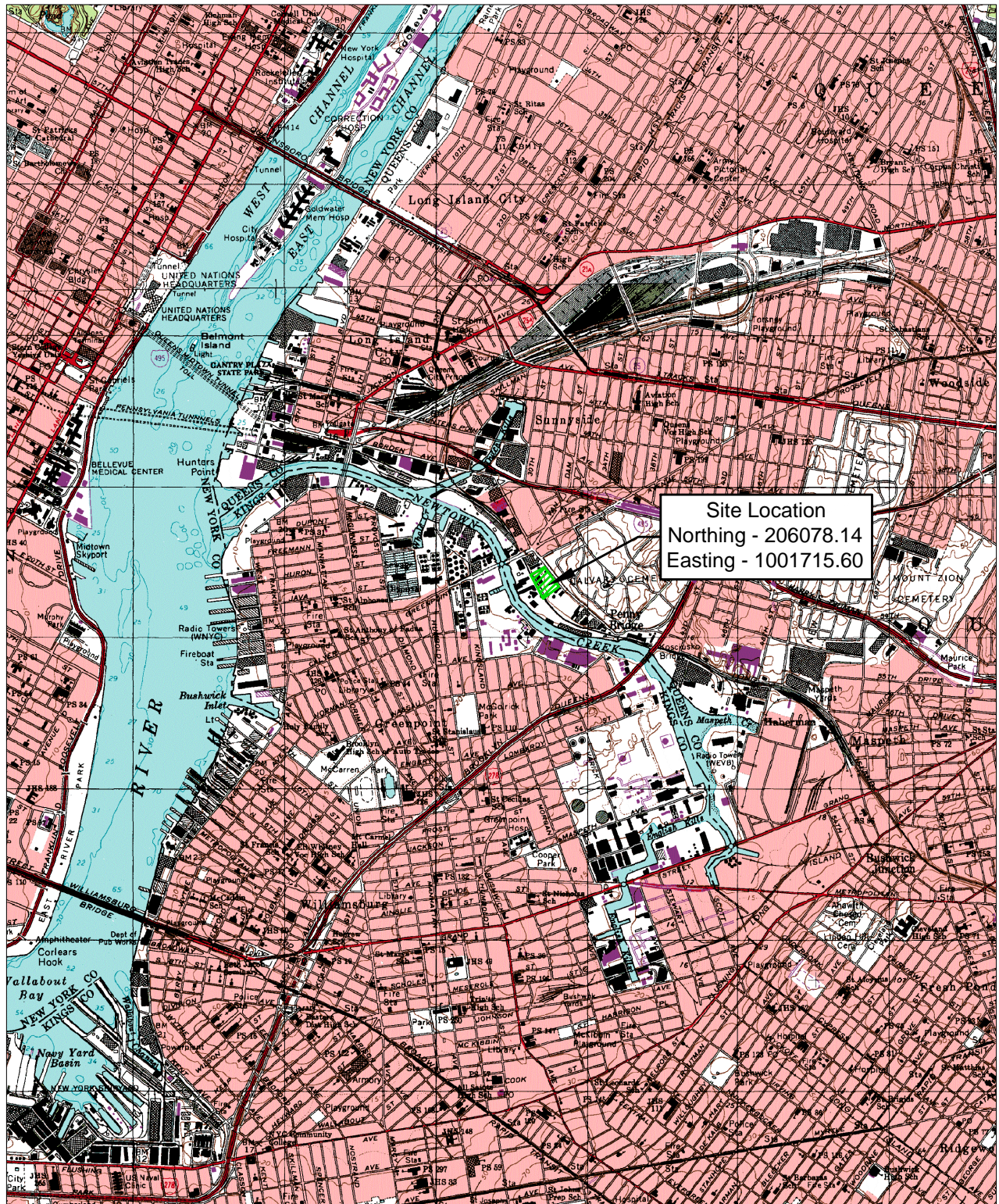
**LNAPL Waste Oil Disposal Summary (>= 50 ppm PCBs):**

Date	Manifest Number	TF-3D	TF-4D	TF-5D	TF-6D	Total
08/30/16	016113060 JJK	0 gal	0 gal	0 gal	50 gal	50 gal
08/08/17	015633471 JJK	0 gal	20 gal	35 gal	0 gal	55 gal
02/06/18	017955324 JJK	23 gal	0 gal	0 gal	0 gal	23 gal
	<b>TOTALS:</b>	<b>23 gal</b>	<b>20 gal</b>	<b>35 gal</b>	<b>50 gal</b>	<b>128 gal</b>

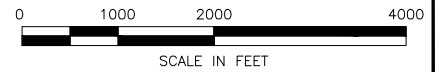
## FIGURES

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P:\CADD\QUANTA\Review Avenue\working drawings\3480160502-0600-SLMO-0000.dwg Tue, 28 Feb 2017 11:21 am vincent.whelan



Coordinate System: NAD 1983 StatePlane New York Long Island. Units: Foot US



Amec Foster Wheeler PROJECT No. 3480160502  
DRAWING: 3480160502-0600-SLMO-0000

PREPARED/DATE: VMW 2/28/2017  
CHECKED/DATE: TCK 2/28/2017



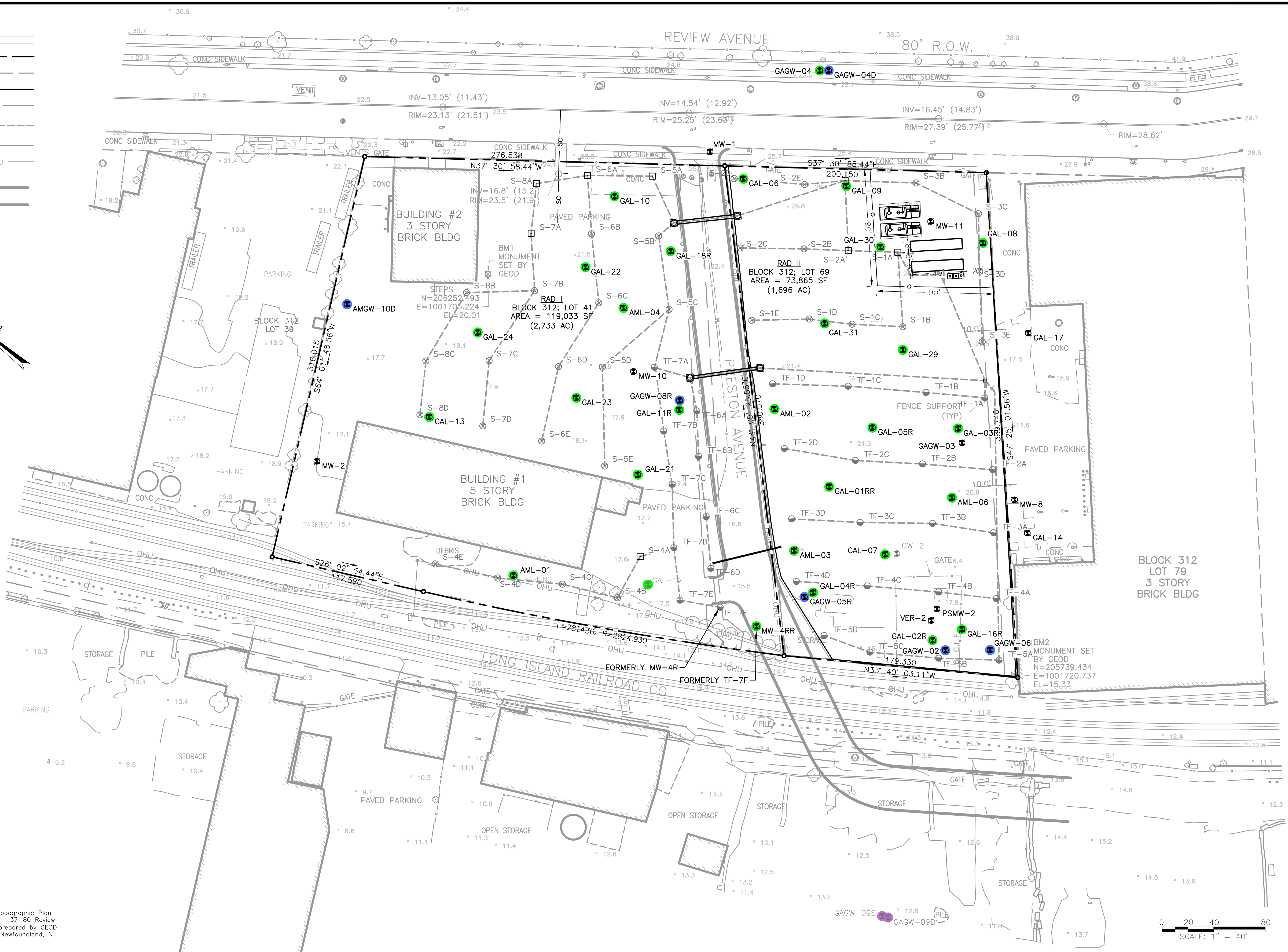
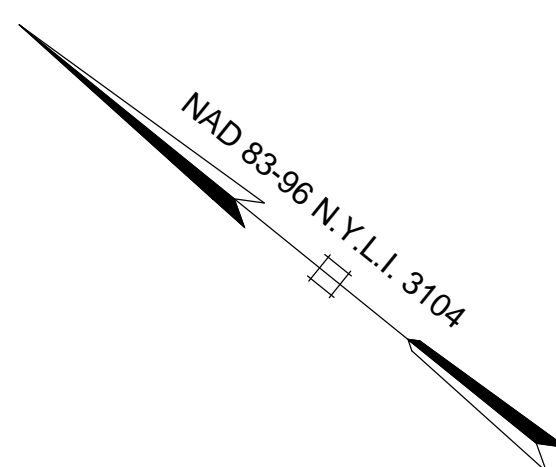
MACTEC Engineering and Consulting, P.C.  
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(207) 775-5401

**FIGURE 1**  
**SITE LOCATION MAP**  
**REVIEW AVENUE DEVELOPMENT SITES**  
**RAD I AND RAD II**  
**LONG ISLAND CITY, NEW YORK**

UNLESS OTHERWISE AGREED IN A WRITTEN CONTRACT BETWEEN MACTEC AND ITS CLIENT: (1) THIS DOCUMENT CONTAINS INFORMATION, DATA AND DESIGN THAT IS CONFIDENTIAL AND NOT TO BE COPIED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF MACTEC. (2) MACTEC SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN THIS DOCUMENT OR ANY THIRD PARTY'S USE OF THE INFORMATION CONTAINED HEREIN. (3) MACTEC SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN THIS DOCUMENT OR ANY THIRD PARTY'S USE OF THE INFORMATION CONTAINED HEREIN.

- LEGEND**
- FIRE HYDRANT
  - UNKNOWN VALVE
  - LIGHT POLE
  - UTILITY POLE
  - CATCHBASIN
  - ROUND CATCHBASIN
  - MONITORING WELL (INCLUDED IN LNAPL MONITORING PROGRAM)
  - MONITORING WELL (INCLUDED IN GROUNDWATER MONITORING PROGRAM)
  - MONITORING WELL (INCLUDED IN GROUNDWATER MONITORING PROGRAM IF ACCESSIBLE)
  - MONITORING WELL (NOT INCLUDED IN THESE LNAPL OR GROUNDWATER MONITORING PROGRAMS)
  - EXISTING MONITORING WELL (STATUS UNKNOWN)
  - PROTECTIVE POST
  - LARGE TREE
  - SMALL TREE
  - GAS VALVE
  - WATER VALVE
  - WATER BOX
  - ELECTRIC MANHOLE
  - RAILROAD Elec. VAULT
  - RAILROAD SIGNAL
  - SANITARY MANHOLE
  - WATER MANHOLE
  - TELEPHONE MANHOLE
  - UNKNOWN MANHOLE
  - SKIMMER WELL
  - SKIMMER WELL WITH CONTROLLER
  - TOTAL FLUIDS WELL

- LINE LEGEND**
- RAIL ROAD TRACKS
  - PROPERTY LINE
  - ADJOINER PROPERTY LINE
  - CURBING
  - EASEMENT LINE
  - REMEDATION SYSTEM PROCESS PIPING
  - CHAIN LINK FENCE
  - OVERHEAD WIRES
  - OHU
  - PRESTON AVE



- MONITORING WELL NOTES:**
- 1) Suffixes:
    - Where a well is designated with the suffix "R", that well is a replacement for a previous well at that location.
    - Where a well is designated with the suffix "RR", that well is a replacement for a previous replacement well at that location.
  - 2) MW-# are monitoring wells that were installed prior to the Remedial Investigation.
  - 3) The designation GAGW-# indicates a groundwater monitoring well was originally located and installed by Golder Associates. The one exception is GAGW-04 which is screened across the LNAPL zone.
  - 4) The designation GAL-# indicates a LNAPL monitoring well that was screened across the top of the water table.
  - 5) Well GAGW-06I is a smear zone monitoring well.
  - 6) The designation AMGW-# represents a GW monitoring well that was located and installed by AMEC.
  - 7) The designation AML-# is a LNAPL monitoring well located and installed by Amec Foster Wheeler.
  - 8) GAL-04R, GAL-11R, GAL-18R, GAGW-05R, AND GAGW-08R were installed by Waste Management.

- NOTES:**
- 1) This drawing references the "Topographic Plan - Block 312 Lots 41, 69 & 79 - 37-80 Review Avenue", dated 12/22/2014, prepared by GEOD Corporation, 24 Kanouse Rd., Newfoundland, NJ 07435.
  - 2) Recovery well locations (except where noted) are per survey drawings named "Property Survey, Block 312 Lot 41, 37-80 Review Avenue" and "Property Survey, Block 312 Lot 69, 37-80 Review Avenue", by GEOD Corporation, dated January 29, 2015. Recovery Wells TF-3A and TF-7C were located via field measurement methods.
  - 3) Horizontal datum is North American Datum of 1983 (NAD83 New York State Plane coordinates, Long Island zone 3104). Vertical datum is North American Vertical Datum of 1988 (NAVD88).

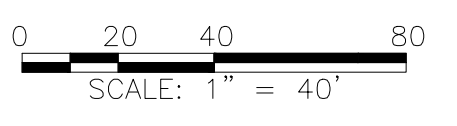
REV.	DATE	PERIODIC REVIEW REPORT STATUS	VMW PRPD BY	TCK CHKD BY
1	03/15/17			

MACTEC PROJECT No. 3480160502  
DRAWING: 3480160502-0600-SP00-0000

PREPARED/DATE: VMW 01/22/16  
CHECKED/DATE: TCK 01/22/16

MACTEC Engineering and Consulting, P.C.  
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**FIGURE 2**  
**SITE PLAN**  
**REVIEW AVENUE DEVELOPMENT SITES**  
**RAD I AND RAD II**  
**LONG ISLAND CITY, QUEENS, NY 11101**



## APPENDIX A

### Monthly Reports

**Review Ave. LNAPL Recovery System Monthly Summary**  
**April 2018**

***Work/O&M Activities completed in April 2018:***

Week of Sun 4/1 – Sat 4/7

- LGAC change-out on 4/3
- Oi/Water Separator Cleaning on 4/4
- Operating on TF Zone 1 and 2
  - SVE active

Week of Sun 4/8 – Sat 4/14

- O&M site visits on 4/10
- Changed bag filters and cleaned basket strainer on 4/10
- Transferred chemicals to drums on 4/10
- 2<sup>nd</sup> Quarter 2018 Discharge Compliance Sampling on 4/10
- Inspected recovery well heads TF-6B, 6D, 7C and 7D

Week of Sun 4/15 – Sat 4/21

- O&M site visit on 4/17 and 4/18
- On 4/17 made repairs and upgrades:
  - Installed new cartridge in effluent flow meter FIT-1201
  - Replaced Pressure Gauge on Bag-filter housing
  - Installed a lid assembly on the tube skimmer unit/pre OWS Tank
  - Installed Pump Rack in the Storage Container
  - Pulled FIT-701 and influent piping and cleaned heavy build-up of mud/clay
- On 4/17 increase SVE Inlet Manifold Vac to 35 IN WC on zones TF-1&2
- Product Load-out from T-801 on 4/18
  - 4,645 GAL Product removed (offsite) according to Bill of Lading
- Operating on TF Zones 1 and 2
  - SVE active
- Product load-out from T-801 on 4/18
- Changed bag filters and cleaned basket strainer on 4/18
- Backwashed carbon on 4/18

Week of Sun 4/22 – Sat 4/28

- O&M site visit on 4/24
- Operating on TF Zones 1 and 2, switched to zones 6 and 7 on 4/24
  - SVE active
- Changed bag filters and cleaned basket strainer on 4/24
- Skimmer wells inspected on 4/24, S-2A, C, 5A, B, E, 6A, E, 7C, D, 8D
- On 4/24 Inspected Recovery Well vaults lines TF-6 and 7, turned on TF-6D
- TF zones 6 and 7 recovery well vaults inspected
- Gauged monitoring wells on 4/24

Week of Sun 4/29 – Mon 4/30

- No O&M site visits
- No O&M site visits
- Operating on TF Zone 6 and 7
  - SVE active

General TF Treatment System Comments:

- TF System uptime over 95% in April (97.76%) with flow rates as high as 15+ gpm. Flow rates significantly increased when operation was switched on 4/24 from TF zones 1 & 2 (@ 5

## Review Ave. LNAPL Recovery System Monthly Summary April 2018

to 7 gpm) to zones TF-6 & 7 (@ 14 to 15+ gpm) continuing through 4/30. Recovered waste oil production, however, dropped during this switch to zones TF-6 & 7 with the monthly production rate averaging 222 gpd. Recovered TF oil/water concentrations have decreased by 1% to 4.90% for the month. SVE continues to be utilized to enhance product recovery rates. Bacteria fouling was not a significant problem this month without the use of Biocide.

### General Skimmer System Comments:

- Skimmer system remains at 100% in April. Production averaged 69 GPD for the month. Operation remains at 18 hr/day in an attempt to minimize entrained air and possible air locking of remote skimmer zones.

### ***VER/TF System Production Results:***

- TF System uptime for April was 611.15 Actual Run Hours out of 625.16 Available Hours, or 97.76%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
  - TF System shut down due to High Product Level alarm in T-801 on 3/30 and remained offline through the end of the month due to Carbon Change-out scheduled for 4/3.
- Approximately 6,877 GAL Product Recovered in April from Zones 1, 2, 6 and 7.
  - Average TF Product recovery rate for April was 221.8 GPD (calendar days), or 270.1 GPD (run days) accounting for system downtime.
- Approximately 229,065 GAL Product Recovered Total since system start-up.
- 4,645 GAL Product from T-801 disposed of offsite in April.
  - 226,106 GAL Product from T-801 disposed of Total since start-up.
- Approximately 140,482 GAL Effluent discharged in April
  - Average 4,682.7 GPD or 5,516.7 GPD considering downtime.
- 5,928,398 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 4.90%

### ***Skimmer System Production Results:***

- Skimmer System uptime for April was 540 Actual Run Hours out of 540 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 2,069 GAL Product Recovered in April.
  - Average Skimmer Product recovery rate for April was 69.0 GPD (calendar days)
- Approximately 68,236 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in April.
  - 63,614 GAL Product from T-1401 disposed of Total since start-up.

### ***Total Product Recovery System Results:***

- 8,946 GAL Product recovered in April.
  - Average Product recovery rate for April was 298.2 GPD.
- 297,301 GAL Product Recovered Total since system start-up.
- 4,645 GAL Product shipped off-site for disposal in April (see attached summary table)
- 289,720 GAL Product shipped off-site for disposal since system start-up as of the end of April 2018 (see attached summary table)

**Review Ave. LNAPL Recovery System Monthly Summary**  
**April 2018**

- 221,782 kWh Energy Consumption Total (as of 5/1/18) since system start-up
- 10,612 kWh Energy Consumption for April
- 1.186 kWh/GAL Average Energy Consumed per GAL of Product Recovered for April



**Review Ave. LNAPL Recovery System Monthly Summary**  
**May 2018**

***Work/O&M Activities in May 2018:***

Week of Tue 5/1 – Sat 5/5

- O&M site visit on 5/1
- Operating on TF Zone 4 and 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 5/1
- Inspected wells 5 and 4 on 5/1
- Transferred chemicals to drums on /1
- Chemical delivery on 5/1
- Sampled product in tanks T-801 and T-1401 for PCBs

Week of Sun 5/6 – Sat 5/12

- O&M site visit on 5/8
- Operating on TF Zone 4 and 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 5/8
- Backwashed carbon on 5/8
- Pumped water from tank T-801 om 5/8
- Process water from totes on 5/8
- TF lines 6 and 7 inspected on 5/8
- Replaced hose on pump TF-7E
- Product load-out from T-801 on 5/10

Week of Sun 5/13 – Sat 5/19

- O&M site visit on 5/15
- Operating on TF Zones 4 and 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 5/8
- Switched to LGAC -2
- Re-started Biocide injection

Week of Sun 5/20 – Sat 5/26

- O&M site visit on 5/22
- Operating on TF Zones 3, 4 and 5 (added TF-3 today)
  - SVE active
- Changed bag filters and cleaned basket strainer on 5/22
- Transferred chemicals to drums on 5/22
- Switched to secondary carbon tank and backwashed on 5/22

Week of Sun 5/27 – Thr 5/31

- O&M site visit on 5/29
- Product Load-out from T-801 on 5/29
  - 4,969 GAL Product removed (offsite) according to Bill of Lading
- Operating on TF Zone 3, 4 and 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 5/29
- Transferred chemicals to drums on 5/29
- Product load-out from T-801 on 5/29

## Review Ave. LNAPL Recovery System Monthly Summary May 2018

### General TF Treatment System Comments:

- TF System uptime over 95% in May (98.76%) with flow rates as high as 21 gpm. Flow rates significantly increased starting on 5/22. This is attributed to running three zones simultaneously; zones 3, 4 and 5. Total fluids flow rate increased significantly from the prior month but daily product recovery production decreased from the prior month. Recovered TF oil/water concentrations have decreased by 153% to 1.94% for the month. SVE continues to be utilized to enhance product recovery rates.

### General Skimmer System Comments:

- Skimmer system remains at 100% up-time in May. 38.8 gallons produced per day. Operation remains at 18 hr/day in an attempt to minimize entrained air and possible air locking of remote skimmer zones.

### ***VER/TF System Production Results:***

- TF System uptime for May was 727.36 Actual Run Hours out of 736.5 Available Hours, or 98.76%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 6,120 GAL Product Recovered in May from Zones 3, 4 and 5.
  - Average TF Product recovery rate for May was 197.4 GPD (calendar days), or 201.9 GPD (run days) accounting for system downtime.
- Approximately 235,185 GAL Product Recovered Total since system start-up.
- 9,779 GAL Product from T-801 disposed of offsite in May.
  - 235,885 GAL Product from T-801 disposed of Total since start-up.
- Approximately 316,173 GAL Effluent discharged in May
  - Average 10,199.1 GPD or 10,432.4 GPD considering downtime.
- 6,244,571 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.94%

### ***Skimmer System Production Results:***

- Skimmer System uptime for May was 558 Actual Run Hours out of 558 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 1,204 GAL Product Recovered in May.
  - Average Skimmer Product recovery rate for May was 38.8 GPD (calendar days), or 38.8 GPD (run days) accounting for system downtime.
- Approximately 69,439 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in May.
  - 63,614 GAL Product from T-1401 disposed of Total since start-up.

### ***Total Product Recovery System Results:***

- 7,323 GAL Product recovered in May.
  - Average Product recovery rate for May was 236.2 GPD.
- 304,625 GAL Product Recovered Total since system start-up.
- 9,779 GAL Product shipped off-site for disposal in May (see attached summary table)
- 299,499 GAL Product shipped off-site for disposal since system start-up as of the end of May 2018 (see attached summary table)

**Review Ave. LNAPL Recovery System Monthly Summary**  
**May 2018**

- 231,825 kWh Energy Consumption Total (as of 6/1/18) since system start-up
- 10,043 kWh Energy Consumption for May
- 1.371 kWh/GAL Average Energy Consumed per GAL of Product Recovered for May

**Review Ave. LNAPL Recovery System Monthly Summary**  
**June 2018**

***Work completed in June 2018:***

Week of Fri 6/1 – Sat 6/2

- No O&M site visits

Week of Sun 6/3 – Sat 6/9

- O&M site visits on 6/5 and 6/8
- Product load-out from T-801 on 6/8
  - 5,068 GAL product removed (offsite) according to Bill of Landing

Week of Sun 6/10 – Sat 6/16

- O&M site visits on 6/11 and 6/13
- System restart on 6/13

Week of Sun 6/17 – Sat 6/23

- O&M site visit on 6/19
- Product load-out from T-801 on 6/19
  - 4,857 GAL product removed (offsite) according to Bill of Landing

Week of Sun 6/24 – Sat 6/30

- O&M site visits on 6/25, 6/26 and 6/29
- Product load-out from T-1401 on 6/25
  - 5,068 GAL product removed (offsite) according to Bill of Landing

***O&M Activities:***

Week of Fri 6/1 – Sat 6/2

- Operating on TF Zone 3, 4 and 5
  - SVE active

Week of Sun 6/3 – Sat 6/9

- Operating on TF Zone 3, 4 and 5
  - SVE active
- Changed bag filters and changed cleaned basket trainers on 6/5
- Chemical delivery and chemical transfer on 6/5
- Repaired hose to VC-501 on 6/5
- Water pumped from T-801 and T-1401 on 6/5
- Product loadout form T-801 on 6/8
- Backwash LGAC 1102 on 6/8

Week of Sun 6/10 – Sat 6/16

- Operating on TF Zones 3, 4 and 5, then switched to zones 1, 2 and 3 on 6/13
  - SVE active
- Cleaned basket strainers on 6/11 and 6/13
- Restart system from OWS high-high alarm on 6/11
- Inspected line 3, 4 and 5 on 6/13
  - Line 4A was blocked
- Changed bag filters on 6/13
- Chemical transfer on 6/13

Week of Sun 6/17 – Sat 6/23

- Operating on TF Zone 2
  - SVE active

## Review Ave. LNAPL Recovery System Monthly Summary June 2018

- Changed bag filters and changed cleaned basket trainers on 6/19
- Product load-out from T-801 on 6/19
- Carbon backwash on 6/19

### Week of Sun 6/24 – Sat 6/30

- Operating on TF Zone 1, 2 and 3 then switching to zones 1 and 2
  - SVE active
- Product load-out from T-1401 on 6/25
- Carbon change on 6/26
- Cleaned basket strainers on 6/25
- Blowdown carbon on LGAC-1102
- Lines 1 and 2 inspected on 6/26
  - TF1-C found possibly stuck
- OWS cleanout event on 6/29

### General TF Treatment System Comments:

- TF System uptime over 95% in June (99.13%) with flow rates as high as 30 gpm and a monthly average flow of 12.6 gpm. Thick clay began clogging basket strainers and has been traced to TF zone 3. Clay buildup resulted in shutdown of TF recovery system from 6/26 – 6/29. Recovered TF oil/water concentrations have increased by 130% to 4.34% for the month. SVE continues to be utilized to enhance product recovery rates.

### General Skimmer System Comments:

- Skimmer system remains at 100% in June. 55.1 gallons produced per day when operational. Operation remains at 18 hr/day in an attempt to minimize entrained air and possible air locking of remote skimmer zones.

### ***VER/TF System Production Results:***

- TF System uptime for June was 556.35 Actual Run Hours out of 566.24 Available Hours, or 99.13%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 10,686 GAL Product Recovered in June from Zones 1, 2, 3, 4 and 5.
  - Average TF Product recovery rate for June was 356.2 GPD (calendar days), or 461.0 GPD (run days) accounting for system downtime.
- Approximately 245,871 GAL Product Recovered Total since system start-up.
- 9,925 GAL Product from T-801 disposed of offsite in June.
  - 245,810 GAL Product from T-801 disposed of Total since start-up.
- Approximately 246,386 GAL Effluent discharged in June
  - Average 8,213 GPD or 10,629 GPD considering downtime.
- 6,490,887 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 4.34%

### ***Skimmer System Production Results:***

- Skimmer System uptime for June was 540 Actual Run Hours out of 540 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)

**Review Ave. LNAPL Recovery System Monthly Summary**  
**June 2018**

- Approximately 1,239 GAL Product Recovered in June.
  - Average Skimmer Product recovery rate for June was 41.3 GPD (calendar days), or 41.3 GPD (run days) accounting for system downtime.
- Approximately 70,678 GAL Product Recovered Total since start-up.
- 5,068 GAL Product from T-1401 disposed of offsite in June.
  - 68,682 GAL Product from T-1401 disposed of Total since start-up.

***Total Product Recovery System Results:***

- 11,925 GAL Product recovered in June.
  - Average Product recovery rate for June was 397.5 GPD.
- 316,550 GAL Product Recovered Total since system start-up.
- 14,993 GAL Product shipped off-site for disposal in June (see attached summary table)
- 314,492 GAL Product shipped off-site for disposal since system start-up as of the end of June 2018 (see attached summary table)
- 240,715 kWh Energy Consumption Total (as of 7/1/18) since system start-up
- 8,890 kWh Energy Consumption for June
- 0.746 kWh/GAL Average Energy Consumed per GAL of Product Recovered for June

## Review Ave. LNAPL Recovery System Monthly Summary July 2018

### **Work completed in July 2018:**

#### Week of Sun 7/1 – Sat 7/7

- O&M site visit on 7/5

#### Week of Sun 7/8 – Sat 7/14

- O&M site visits on 7/10, 7/11 and 7/13
- Third Quarter effluent discharge compliance sampling completed on 7/10
- Product load-out from T-801 on 7/13
  - 4,964 GAL product removed (offsite) according to Bill of Landing

#### Week of Sun 7/15 – Sat 7/21

- O&M site visits on 7/17, 7/18, 7/19 and 7/20
- Monthly LNAPL monitoring well gauging event on 7/18
- Semi-Annual groundwater sampling event on 7/19 and 7/20

#### Week of Sun 7/22 – Sat 7/28

- O&M site visit on 7/24

#### Week of Sun 7/29 – Tues 7/31

- O&M site visit on 7/31

### **O&M Activities:**

#### Week of Sun 7/1 – Sat 7/7

- Operating on TF Zone 1, 2, 4 & 5
  - SVE active
- Alarm for non-conductive liquid went off on 7/5
- Bag filters replaced, and basket strainers cleaned on 7/5
- Piping on bag filter holders replaced on 7/5
- Product probe rod replaced after being found disconnected on 7/5

#### Week of Sun 7/8 – Sat 7/14

- Operating on TF Zone 1, 2, 4 & 5
  - SVE active
- Bag filters replaced, and basket strainers cleaned on 7/10
- Hoses and caps changed on TF wells 2A, 2D and 1D on 7/13
- Product loadout on 7/13
- Air leak found in TF line 4C on 7/10

#### Week of Sun 7/15 – Sat 7/21

- Operating on TF Zone 1, 2, 4 & 5 then switched to zones 6 & 7 on 7/17
  - SVE active
- Bag filters replaced on 7/17 and 7/19
- Basket strainers cleaned on 7/17
- Carbon backwash on 7/17
- Chemical delivery and chemical drum transfer on 7/17
- Storage trailer cleaned on 7/17
- Total fluids well inspection event on 7/17
- Ground water sampling event began on 7/19 and ended on 7/20

#### Week of Sun 7/22 – Sat 7/28

- Operating on TF Zones 6 & 7

## Review Ave. LNAPL Recovery System Monthly Summary July 2018

- SVE active
- Water removed from T-801 and T-1401 on 7/24
- Bag filters replaced, and basket strainers cleaned on 7/24

### Week of Sun 7/29 – Tues 7/31

- Operating on TF Zone 6 & 7 then switched to zones 4 & 5
  - SVE active
- Chemical transfer on 7/31
- Bag filters replaced, and basket strainers cleaned on 7/31
- Blow down on 7/31
- Carbon backwashed on 7/31

### General TF Treatment System Comments:

- TF System uptime over 95% in July (97.47%) with flow rates as high as 20 gpm and an average operational flow of 14.2 gpm. Quarterly effluent discharge compliance sampling as well as semiannual well sampling was completed this month. Recovery well pump status is now being recorded specifically to identify stuck pumps. As of July 31<sup>st</sup> two stuck pumps have been found. Recovered TF oil/water concentrations have decreased by 250% to 1.24% for the month. SVE continues to be utilized to enhance product recovery rates.

### General Skimmer System Comments:

- Skimmer system remains at 100% in July. 90.4 gallons produced per day when operational. Operation remains at 18 hr/day in an attempt to minimize entrained air and possible air locking of remote skimmer zones.

### ***VER/TF System Production Results:***

- TF System uptime for July was 602.33 Actual Run Hours out of 617.99 Available Hours, or 97.47%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 4,602 GAL Product Recovered in July from Zones 1, 2, 4, 5, 6 and 7.
  - Average TF Product recovery rate for July was 148.4 GPD (calendar days), or 183.4 GPD (run days) accounting for system downtime.
- Approximately 250,473 GAL Product Recovered Total since system start-up.
- 4,946 GAL Product from T-801 disposed of offsite in July.
  - 250,756 GAL Product from T-801 disposed of Total since start-up.
- Approximately 369,810 GAL Effluent discharged in July
  - Average 11,929.4 GPD or 14,735.2 GPD considering downtime.
- 6,860,767 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.24%

### ***Skimmer System Production Results:***

- Skimmer System uptime for July was 558 Actual Run Hours out of 558 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 2,099 GAL Product Recovered in July.
  - Average Skimmer Product recovery rate for July was 67.7 GPD (calendar days), or 67.7 GPD (run days) accounting for system downtime.



**Review Ave. LNAPL Recovery System Monthly Summary**  
**July 2018**

- Approximately 72,778 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in July.
  - 68,682 GAL Product from T-1401 disposed of Total since start-up.

***Total Product Recovery System Results:***

- 6,701 GAL Product recovered in July.
  - Average Product recovery rate for July was 216.2 GPD.
- 323,251 GAL Product Recovered Total since system start-up.
- 4,946 GAL Product shipped off-site for disposal in July (see attached summary table)
- 319,438 GAL Product shipped off-site for disposal since system start-up as of the end of July 2018 (see attached summary table)
- 251,245 kWh Energy Consumption Total (as of 8/1/18) since system start-up
- 10,530 kWh Energy Consumption for July
- 1.571 kWh/GAL Average Energy Consumed per GAL of Product Recovered for July

**Review Ave. LNAPL Recovery System Monthly Summary**  
**August 2018**

***Work completed in August 2018:***

Week of Wed 8/1 – Sat 8/4

- O&M site visit on 8/3

Week of Sun 8/5 – Sat 8/11

- O&M site visits on 8/7 & 8/8

Week of Sun 8/12 – Sat 8/18

- O&M site visits on 8/14 and 8/16
- Product load-out from T-801 on 8/14
  - 4,998 GAL product removed (offsite) according to Bill of Landing
- Replaced Product transfer pump on 8/16

Week of Sun 8/19 – Sat 8/25

- O&M site visit on 8/23
- Monthly LNAPL monitoring well gauging event on 8/21

Week of Sun 8/26 – Fri 8/31

- O&M site visits on 8/28, 8/29 and 8/31
- Product load-out from T-1401 on 8/29
  - 4,657 GAL product removed (offsite) according to Bill of Landing
- Product load-out from T-801 on 8/31
  - 4,857 GAL product removed (offsite) according to Bill of Landing

***O&M Activities:***

Week of Wed 8/1 – Sat 8/4

- Operating on TF Zones 4 & 5
  - SVE active
- System shutdown / restart on 8/3 due to clogged strainer

Week of Sun 8/5 – Sat 8/11

- Operating on TF Zones 4 & 5 then switched to Zones 2 & 3 on 8/8
  - SVE active
- System shutdown / restart on 8/7 due to sand in product transfer pump
- Changed bag filters and cleaned basket strainer on 8/8
- Backwashed carbon on 8/8
- Water removal from T-801 on 8/8
- Collected jar samples from TF-4B/C and TF-5B/C/D
- Sampled TF-4/5 product for VOC analysis on 8/8

Week of Sun 8/12 – Sat 8/18

- Operating on TF Zones 2 & 3
  - SVE offline
- Product loadout from T-801 on 8/14
- Changed bag filters and cleaned basket strainer on 8/14
- Transferred chemicals to drums on 8/14
- Cleaned SVE roof & inlet filters on 8/14
- Replaced tube skimmer tube on 8/14
- Backwashed carbon on 8/16
- Replaced Product transfer pump on 8/16

**Review Ave. LNAPL Recovery System Monthly Summary**  
**August 2018**

- Total fluids well inspection event on 8/16

**Week of Sun 8/19 – Sat 8/25**

- Operating on TF Zones 2 & 3
  - SVE offline
- Changed bag filters and cleaned basket strainer on 8/23
- Backwashed carbon on 8/23
- Transferred chemicals to drums on 8/23
- Water removal from T-801 on 8/23

**Week of Sun 8/26 – Fri 8/31**

- Operating on TF Zones 2 & 3
  - SVE offline
- Changed bag filters and cleaned basket strainer on 8/28
- Backwashed carbon (both vessels) on 8/28
- Transferred chemicals to drums on 8/28
- Process water totes on 8/28
- TF Zone 2 well inspections on 8/28
- Blow down carbon vessel LGAC-1101 on 8/28
- Product loadout from T-1401 on 8/29
- Product loadout from T-801 on 8/31

***VER/TF System Production Results:***

- TF System uptime for August was 664.14 Actual Run Hours out of 729.42 Available Hours, or 91.05%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
    - TF system shutdown on 8/3 due to OWS High Product Alarm caused by clogged strainer (sand) and restarted same day following strainer cleaning
    - TF system shutdown on 8/7 due to OWS High Product Alarm caused by sand in transfer pump and restarted same day following pump repair
    - TF system shut down on 8/10 due to Non-Conductive Liquid Alarm and restarted same day following product skimming
    - TF system shut down on 8/13 due to Non-Conductive Liquid Alarm caused and restarted 8/14 following product skimming
    - TF system shut down on 8/14 due to OWS High Product Alarm caused by failed product transfer pump and restarted 8/16 following pump replacement
- Approximately 8,101 GAL Product Recovered in August from Zones 2, 3, 4 and 5.
  - Average TF Product recovery rate for August was 261.3 GPD (calendar days), or 292.8 GPD (run days) accounting for system downtime.
- Approximately 258,574 GAL Product Recovered Total since system start-up.
- 9,855 GAL Product from T-801 disposed of offsite in August.
  - 260,611 GAL Product from T-801 disposed of Total since start-up.
- Approximately 353,191 GAL Effluent discharged in August
  - Average 11,393 GPD or 12,763 GPD considering downtime.
- 7,213,958 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 2.29%

**Review Ave. LNAPL Recovery System Monthly Summary**  
**August 2018**

***Skimmer System Production Results:***

- Skimmer System uptime for August was 558 Actual Run Hours out of 558 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 2,308 GAL Product Recovered in August.
  - Average Skimmer Product recovery rate for August was 74.5 GPD (calendar days), or 74.5 GPD (run days) accounting for system downtime.
- Approximately 75,086 GAL Product Recovered Total since start-up.
- 4,657 GAL Product from T-1401 disposed of offsite in August.
  - 73,339 GAL Product from T-1401 disposed of Total since start-up.

***Total Product Recovery System Results:***

- 10,409 GAL Product recovered in August.
  - Average Product recovery rate for August was 335.8 GPD.
- 333,660 GAL Product Recovered Total since system start-up.
- 14,512 GAL Product shipped off-site for disposal in August (see attached summary table)
- 333,950 GAL Product shipped off-site for disposal since system start-up as of the end of August 2018 (see attached summary table)
- 258,429 kWh Energy Consumption Total (as of 9/1/18) since system start-up
- 7,184 kWh Energy Consumption for August
- 0.690 kWh/GAL Average Energy Consumed per GAL of Product Recovered for August

## Review Ave. LNAPL Recovery System Monthly Summary September 2018

### **Work completed in September 2018:**

#### Week of Sat 9/1 – Sat 9/8

- O&M site visit on 9/5
- Chemical delivery on 9/5
- Air Compressor serviced on 9/5 by D&D Electric Motors and Compressors
- Sampled T-801 and T-1401 for PCB analysis on 9/5
  - 19.9 mg/kg Total PCBs in T-801
  - No PCBs detected in T-1401

#### Week of Sun 9/9 – Sat 9/15

- O&M site visits on 9/10 and 9/11
- Carbon change-out completed by Carbon Filtration Systems, Inc. on 9/10
- OWS cleanout by ACV Environment on 9/11
  - Disposal of 1,518 GAL of Non-Haz / Non-TSCA water from cleanout
- Product load-out from T-801 on 8/14
  - 4,998 GAL product removed (offsite) according to Bill of Landing

#### Week of Sun 9/16 – Sat 9/22

- O&M site visit on 9/18

#### Week of Sun 9/23 – Sun 9/30

- O&M site visits on 9/25 and 9/26
- Monthly LNAPL monitoring well gauging event on 9/25
- Product load-out from T-801 on 9/25
  - 4,998 GAL product removed (offsite) according to Bill of Landing
- LGAC Influent sampled for SGT-HEM on 9/26

### **O&M Activities:**

#### Week of Sat 9/1 – Sat 9/8

- Operating on TF Zones 2 & 3
  - SVE offline
- Changed bag filters and cleaned basket strainer on 9/5
- Transferred chemicals to drums on 9/5
- Replaced insulation on pipe bridge on 9/5

#### Week of Sun 9/9 – Sat 9/15

- Operating on TF Zone 3
  - SVE offline
- Carbon change-out on 9/10
  - Active carbon vessel switched to LGAC-1101
- OWS cleaning on 9/11
- Changed bag filters and cleaned strainers on 9/11

#### Week of Sun 9/16 – Sat 9/22

- Operating on TF Zones 2 & 3
  - SVE active on Zone 3
- Changed bag filters and cleaned basket strainer on 9/18
- Transferred chemicals to drums on 9/18
- Water removal from T-801 on 9/18
- Swapped pumps on TF-2A/C/D on 9/18

## Review Ave. LNAPL Recovery System Monthly Summary September 2018

### Week of Sun 9/23 – Sun 9/30

- Operating on TF Zones 2 & 3
  - SVE active on Zone 3
- Product loadout from T-801 on 9/25
- Changed bag filters and cleaned basket strainer on 9/26
- Transferred chemicals to drums on 9/26
- Cleaned SVE sensors on 9/26
- Skimmer well inspections on 9/26
- Backwashed carbon on 9/26

### ***VER/TF System Production Results:***

- TF System uptime for September was 533.95 Actual Run Hours out of 533.95 Available Hours, or 100%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 6,470 GAL Product Recovered in September from Zones 2 and 3.
  - Average TF Product recovery rate for September was 215.7 GPD (calendar days), or 290.8 GPD (run days) accounting for system downtime.
- Approximately 265,044 GAL Product Recovered Total since system start-up.
- 4,998 GAL Product from T-801 disposed of offsite in September.
  - 265,609 GAL Product from T-801 disposed of Total since start-up.
- Approximately 326,119 GAL Effluent discharged in September
  - Average 10,871 GPD or 14,658 GPD considering downtime.
- 7,540,077 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.98%

### ***Skimmer System Production Results:***

- Skimmer System uptime for September was 540 Actual Run Hours out of 540 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 2,041 GAL Product Recovered in September.
  - Average Skimmer Product recovery rate for September was 68 GPD (calendar days), or 68 GPD (run days) accounting for system downtime.
- Approximately 77,127 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in September.
  - 73,339 GAL Product from T-1401 disposed of Total since start-up.

### ***Total Product Recovery System Results:***

- 8,512 GAL Product recovered in September.
  - Average Product recovery rate for September was 283.7 GPD.
- 342,172 GAL Product Recovered Total since system start-up.
- 4,998 GAL Product shipped off-site for disposal in September (see attached summary table)
- 338,948 GAL Product shipped off-site for disposal since system start-up as of the end of September 2018 (see attached summary table)
- 265,762 kWh Energy Consumption Total (as of 10/1/18) since system start-up
- 7,333 kWh Energy Consumption for September
- 0.861 kWh/GAL Average Energy Consumed per GAL of Product Recovered for September

**Review Ave. LNAPL Recovery System Monthly Summary**  
**October 2018**

***Work completed in October 2018:***

Week of Mon 10/1 – Sat 10/6

- O&M site visit on 10/2
- Groundwater sampling event on 10/3 and 10/4
  - 5 wells sampled for PFAS and 1-4-Dioxane analysis

Week of Sun 10/7 – Sat 10/13

- O&M site visits on 10/9 and 10/12
- Product load-out from T-801 on 10/12
  - 5,000 GAL product removed (offsite) according to Bill of Landing

Week of Sun 10/14 – Sat 10/20

- O&M site visits on 10/17 and 10/18
- 4Q 2018 Effluent Discharge Compliance Sampling completed 10/18

Week of Sun 10/21 – Sat 10/27

- O&M site visit on 10/23
- Chemical delivery on 10/23
  - Two 55-gallon drums of Redux-330

Week of Sun 10/28 – Wed 10/31

- O&M site visits on 10/29, 10/30 and 10/31
- Monthly LNAPL monitoring well gauging event on 10/30
- Cap inspection on 10/30

***O&M Activities:***

Week of Mon 10/1 – Sat 10/6

- Operating on TF Zones 2 & 3 until 10/2; switched to TF Zones 1 & 2
  - SVE active on Zone 3 until 10/2
  - SVE active on Zones 1 & 2 starting 10/2
- Changed bag filters and cleaned strainers on 10/2
- Backwashed carbon on 10/2
- Water removal from T-801 & T-1401 on 10/2
- Transferred chemicals to drums on 10/2
- Process water totes on 10/2
- Skimmer well inspections on 10/2

Week of Sun 10/7 – Sat 10/13

- Operating on TF Zones 1 & 2
  - SVE active
- Changed bag filters and cleaned basket strainer on 10/9
- Backwashed carbon on 10/9
- Transferred chemicals to drums on 10/9
- Water removal from T-801 & T-1401 on 10/9
- Process water totes on 10/2
- TF Zone 1 & Skimmer well inspections on 10/9
- Product loadout from T-801 on 10/12

Week of Sun 10/14 – Sat 10/20

- Operating on TF Zones 1 & 2 until 10/18; switched to TF Zones 6 & 7

## Review Ave. LNAPL Recovery System Monthly Summary October 2018

- SVE active on Zones 1 & 2 until 10/18
- SVE offline starting 10/18
- Changed bag filters on 10/17 and restarted system
- Collected 4<sup>th</sup> Quarter 2018 discharge compliance samples on 10/18
- Cleaned basket strainer on 10/18
- Backwashed carbon on 10/18
- Switched active carbon vessel to LGAC-1102 on 10/18
- Transferred chemicals to drums on 10/18

### Week of Sun 10/21 – Sat 10/27

- Operating on TF Zones 6 & 7
  - SVE active starting 10/23
- Water removal from T-1401 on 10/23
- Changed bag filters and cleaned basket strainer on 10/23
- Process water totes on 10/23
- Transferred chemicals to drums on 10/23
- Backwashed carbon on 10/23
- TF Zone 6 & Skimmer well inspections on 10/23

### Week of Sun 10/28 – Wed 10/31

- Operating on TF Zones 6 & 7
  - SVE active
- Changed bag filters on 10/29 and restarted system
- Cleaned basket strainer on 10/30
- Backwashed carbon on 10/30
- Transferred chemicals to drums on 10/30
- Well vault inspection on 10/30
- Cleaned skimmer pump on 10/30
- Replace SVE blower filters on 10/31
- Replaced skimmer pumps 3B/3D/8C on 10/31

### ***VER/TF System Production Results:***

- TF System uptime for October was 672.88 Actual Run Hours out of 713.36 Available Hours, or 94.33%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 6,311 GAL Product Recovered in October from Zones 1, 2, 6 and 7.
  - Average TF Product recovery rate for October was 203.6 GPD (calendar days), or 225.1 GPD (run days) accounting for system downtime.
- Approximately 271,355 GAL Product Recovered Total since system start-up.
- 5,000 GAL Product from T-801 disposed of offsite in October.
  - 270,609 GAL Product from T-801 disposed of Total since start-up.
- Approximately 443,570 GAL Effluent discharged in October
  - Average 14,309 GPD or 15,821 GPD considering downtime.
- 7,983,647 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.42%



**Review Ave. LNAPL Recovery System Monthly Summary**  
**October 2018**

***Skimmer System Production Results:***

- Skimmer System uptime for October was 558 Actual Run Hours out of 558 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 266 GAL Product Recovered in October.
  - Average Skimmer Product recovery rate for October was 8.6 GPD (calendar days), or 8.6 GPD (run days) accounting for system downtime.
- Approximately 77,393 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in October.
  - 73,339 GAL Product from T-1401 disposed of Total since start-up.

***Total Product Recovery System Results:***

- 6,577 GAL Product recovered in October.
  - Average Product recovery rate for October was 212.2 GPD.
- 348,748 GAL Product Recovered Total since system start-up.
- 5,000 GAL Product shipped off-site for disposal in October (see attached summary table)
- 343,948 GAL Product shipped off-site for disposal since system start-up as of the end of October 2018 (see attached summary table)
- 276,044 kWh Energy Consumption Total (as of 11/1/18) since system start-up
- 10,282 kWh Energy Consumption for October
- 1.563 kWh/GAL Average Energy Consumed per GAL of Product Recovered for October

**Review Ave. LNAPL Recovery System Monthly Summary**  
**November 2018**

***Work completed in November 2018:***

Week of Thu 11/1 – Sat 11/10

- O&M site visits on 11/5 and 11/6

Week of Sun 11/11 – Sat 11/17

- O&M site visit on 11/12
- Product load-out from T-801 on 11/12
  - 5,028 GAL product removed (offsite) according to Bill of Landing
- Chemical delivery on 11/12
  - Two 55-gallon drums of Redux-330

Week of Sun 11/18 – Sat 11/24

- O&M site visit on 11/19
- Monthly LNAPL monitoring well gauging event on 11/20

Week of Sun 11/25 – Fri 11/30

- O&M site visits on 11/26 and 11/29

***O&M Activities:***

Week of Thu 11/1 – Sat 11/10

- Operating on TF Zones 6 & 7 until 11/2; switched to TF Zone 6 from 11/2 to 11/5, switched to TF Zones 4 & 5 on 11/5
  - SVE active
- Changed bag filters and cleaned basket strainer on 11/5
- Backwashed carbon on 11/5
- Transferred chemicals to drums on 11/5
- Cleaned storage container on 11/5
- Inspect TF-5A on 11/5
- TF-4 and TF-5 well inspections/repairs on 11/6

Week of Sun 11/11 – Sat 11/17

- Operating on TF Zones 4 & 5
  - SVE active
- Product loadout from T-801 on 11/12
- Changed bag filters and cleaned basket strainer on 11/12
- Backwashed carbon on 11/12
- Transferred chemicals to drums on 11/12
- Cleaned TF-5A pump on 11/12

Week of Sun 11/18 – Sat 11/24

- Operating on TF Zones 4 & 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 11/19
- Backwashed carbon on 11/19
- Repaired tube skimmer on 11/19
- Processed water totes on 11/19

Week of Sun 11/25 – Fri 11/30

- Operating on TF Zones 4 & 5
  - SVE active

## Review Ave. LNAPL Recovery System Monthly Summary November 2018

- Changed bag filters and cleaned basket strainer on 11/26
- Transferred chemicals to drums on 11/26
- Backwashed carbon on 11/26
- Blow down carbon in vessel LGAC-1 on 11/26
- Processed water totes on 11/26
- Well vault inspections on 11/26
- Skimmer line 1 cleaning and repairs on 11/29

### ***VER/TF System Production Results:***

- TF System uptime for November was 589.4 Actual Run Hours out of 685.29 Available Hours, or 86.01%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
  - Tube skimmer failure on 11/15 – system down until repairs completed on 11/19
- Approximately 5,794 GAL Product Recovered in November from Zones 6 & 7 and 4 & 5
  - Average TF Product recovery rate for November was 193.1 GPD (calendar days), or 235.9 GPD (run days) accounting for system downtime.
- Approximately 275,637 GAL Product Recovered Total since system start-up.
- 5,028 GAL Product from T-801 disposed of offsite in November.
  - 275,637 GAL Product from T-801 disposed of Total since start-up.
- Approximately 286,932 GAL Effluent discharged in November
  - Average 9,564 GPD or 11,684 GPD considering downtime.
- 8,270,579 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 2.02%

### ***Skimmer System Production Results:***

- Skimmer System uptime for November was 540 Actual Run Hours out of 540 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 336 GAL Product Recovered in November.
  - Average Skimmer Product recovery rate for November was 11.2 GPD (calendar days), or 11.2 GPD (run days) accounting for system downtime.
- Approximately 77,729 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in November.
  - 73,339 GAL Product from T-1401 disposed of Total since start-up.

### ***Total Product Recovery System Results:***

- 6,129 GAL Product recovered in November.
  - Average Product recovery rate for November was 204.3 GPD.
- 354,877 GAL Product Recovered Total since system start-up.
- 5,028 GAL Product shipped off-site for disposal in November (see attached summary table)
- 348,976 GAL Product shipped off-site for disposal since system start-up as of the end of November 2018 (see attached summary table)
- 286,210 kWh Energy Consumption Total (as of 12/1/18) since system start-up
- 10,166 kWh Energy Consumption for November
- 1.659 kWh/GAL Average Energy Consumed per GAL of Product Recovered for November

## Review Ave. LNAPL Recovery System Monthly Summary December 2018

### **Work completed in December 2018:**

#### Week of Sat 12/1 – Sat 12/8

- O&M site visits on 12/3, 12/4, 12/5 and 12/7
- OWS cleanout by ACV Environment on 12/3
  - Disposal of 1,395 GAL of Non-Haz / Non-TSCA water from cleanout
- Semi-annual groundwater sampling event on 12/4
- Carbon change-out completed by Carbon Filtration Systems, Inc. on 12/4
- Product load-out from T-801 on 12/7
  - 4,964 GAL product removed (offsite) according to Bill of Landing

#### Week of Sun 12/9 – Sat 12/15

- O&M site visit on 12/11
- Monitoring well cover replacement by Aarco on 12/12
  - 5 well covers and concrete pads replaced
- Annual site inspection on 12/12

#### Week of Sun 12/16 – Sat 12/22

- O&M site visit on 12/17

#### Week of Sun 12/23 – Mon 12/31

- O&M site visits on 12/24 and 12/31
- Monthly LNAPL monitoring well gauging event on 12/27

### **O&M Activities:**

#### Week of Sat 12/1 – Sat 12/8

- Operating on TF Zones 4 & 5
  - SVE active
- OWS cleanout on 12/3
- Carbon change-out on 12/4; switch active vessel to LGAC-1101
- Reassemble OWS connections and belt skimmer on 12/5
- Flush effluent line from meter to street on 12/5
- Clean effluent meter on 12/5
- Repair S-5B manifold on 12/5
- Backwash carbon on 12/5
- Product load-out from T-801 on 12/7
- Cleaned basket strainer on 12/7

#### Week of Sun 12/9 – Sat 12/15

- Operating on TF Zones 4 & 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 12/11
- Backwashed carbon on 12/11
- Transferred chemicals to drums on 12/11
- Inspect Skimmer Zone 4 lines on 12/11

#### Week of Sun 12/16 – Sat 12/22

- Operating on TF Zones 4 & 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 12/17
- Transferred chemicals to drums on 12/17

## Review Ave. LNAPL Recovery System Monthly Summary December 2018

- Water removal from T-1401 on 12/17

### Week of Sun 12/23 – Mon 12/31

- Operating on TF Zones 4 & 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 12/24
- Backwashed carbon on 12/24
- Replaced oil gear pump on 12/24
- Replaced drive coupling on 12/31
- Troubleshoot HMI on 12/31

### ***VER/TF System Production Results:***

- TF System uptime for December was 683.56 Actual Run Hours out of 683.56 Available Hours, or 100%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 5,677 GAL Product Recovered in December from Zones 4 & 5
  - Average TF Product recovery rate for December was 183.1 GPD (calendar days), or 199.3 GPD (run days) accounting for system downtime.
- Approximately 282,825 GAL Product Recovered Total since system start-up.
- 4,964 GAL Product from T-801 disposed of offsite in December.
  - 280,601 GAL Product from T-801 disposed of Total since start-up.
- Approximately 314,354 GAL Effluent discharged in December
  - Average 10,141 GPD or 11,037 GPD considering downtime.
- 8,584,933 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.81%

### ***Skimmer System Production Results:***

- Skimmer System uptime for December was 558 Actual Run Hours out of 558 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 1,339 GAL Product Recovered in December.
  - Average Skimmer Product recovery rate for December was 43.2 GPD (calendar days), or 43.2 GPD (run days) accounting for system downtime.
- Approximately 79,068 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in December.
  - 73,339 GAL Product from T-1401 disposed of Total since start-up.

### ***Total Product Recovery System Results:***

- 7,016 GAL Product recovered in December.
  - Average Product recovery rate for December was 226.3 GPD.
- 361,893 GAL Product Recovered Total since system start-up.
- 4,694 GAL Product shipped off-site for disposal in December (see attached summary table)
- 353,940 GAL Product shipped off-site for disposal since system start-up as of the end of December 2018 (see attached summary table)
- 297,935 kWh Energy Consumption Total (as of 1/1/19) since system start-up
- 11,725 kWh Energy Consumption for December
- 1.671 kWh/GAL Average Energy Consumed per GAL of Product Recovered for December

**Review Ave. LNAPL Recovery System Monthly Summary**  
**January 2019**

***Work completed in January 2019:***

Week of Tue 1/1 – Sat 1/5

- O&M site visits on 1/2 and 1/4
- Sampled T-801 and T-1401 for PCB analysis on 1/2
  - 11.9 mg/kg Total PCBs in T-801
  - No PCBs detected in T-1401
- Product load-out from T-801 on 1/4
  - 4,964 GAL product removed (offsite) according to Bill of Landing
- Chemical delivery on 1/4
  - Two 55-gallon drums of Redux-330

Week of Sun 1/6 – Sat 1/12

- O&M site visits on 1/8 and 1/10
- Product load-out from T-1401 on 1/10
  - 4,837 GAL product removed (offsite) according to Bill of Landing

Week of Sun 1/13 – Sat 1/19

- O&M site visit on 1/16

Week of Sun 1/20 – Sat 1/26

- O&M site visits on 1/22 and 1/25

Week of Sun 1/27 – Thu 1/31

- O&M site visits on 1/28, 1/29 and 1/31
- Monthly LNAPL monitoring well gauging event on 1/28

***O&M Activities:***

Week of Tue 1/1 – Sat 1/5

- Operating on TF Zones 4 & 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 1/2
- Backwash carbon on 1/2
- Water removal from T-801 on 1/2
- Product load-out from T-801 on 1/4
- Transferred chemicals to drums on 1/4
- Cleaned/rebuild CM1 pump on 1/4

Week of Sun 1/6 – Sat 1/12

- Operating on TF Zones 4 & 5
  - SVE active
- Water removal from T-1401 on 1/8
- Changed bag filters and cleaned basket strainer on 1/8
- Backwashed carbon on 1/8
- Processed water totes on 1/8
- Cleaned OWS trailer floor and painted w/ Rhino liner on 1/8
- Product load-out from T-1401 on 1/10

Week of Sun 1/13 – Sat 1/19

- Operating on TF Zones 4 & 5
  - SVE active
- Changed bag filters and cleaned basket strainer on 1/16

## Review Ave. LNAPL Recovery System Monthly Summary January 2019

- Backwashed carbon on 1/16
- Transferred chemicals to drums on 1/16
- Water removal from T-1401 on 1/16

### Week of Sun 1/20 – Sat 1/26

- Operating on TF Zones 4 & 5, 2 & 6
  - SVE active
- Changed bag filters and cleaned basket strainer on 1/22
- Switched active carbon vessel to LGAC-1102 on 1/22
- Heat tracing repaired on 1/25

### Week of Sun 1/27 – Thu 1/31

- Operating on TF Zone 3
  - SVE active
- Replaced tube skimmer assembly on 1/29
- Changed bag filters and cleaned basket strainer on 1/29
- Transferred chemicals to drums on 1/29
- System restarted following power glitch on 1/31

### ***VER/TF System Production Results:***

- TF System uptime for January was 652.23 Actual Run Hours out of 733.34 Available Hours, or 88.94%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
  - TF system ran intermittently from 1/21 to 1/25 due to frozen transfer lines. Heat tracing was repaired on 1/25.
- Approximately 4,293 GAL Product Recovered in January from Zones 4 & 5, some from 3
  - Average TF Product recovery rate for January was 138.5 GPD (calendar days), or 158 GPD (run days) accounting for system downtime.
- Approximately 287,118 GAL Product Recovered Total since system start-up.
- 4,964 GAL Product from T-801 disposed of offsite in January.
  - 285,565 GAL Product from T-801 disposed of Total since start-up.
- Approximately 283,380 GAL Effluent discharged in January
  - Average 9,141 GPD or 10,428 GPD considering downtime.
- 8,868,313 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.51%

### ***Skimmer System Production Results:***

- Skimmer System uptime for January was 558 Actual Run Hours out of 558 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM)
- Approximately 3,615 GAL Product Recovered in January.
  - Average Skimmer Product recovery rate for January was 116.6 GPD (calendar days), or 116.6 GPD (run days) accounting for system downtime.
- Approximately 82,683 GAL Product Recovered Total since start-up.
- 4,837 GAL Product from T-1401 disposed of offsite in January.
  - 78,176 GAL Product from T-1401 disposed of Total since start-up.

**Review Ave. LNAPL Recovery System Monthly Summary**  
**January 2019**

***Total Product Recovery System Results:***

- 7,908 GAL Product recovered in January.
  - Average Product recovery rate for January was 255.1 GPD.
- 369,801 GAL Product Recovered Total since system start-up.
- 9,801 GAL Product shipped off-site for disposal in January (see attached summary table)
- 363,741 GAL Product shipped off-site for disposal since system start-up as of the end of January 2019 (see attached summary table)
- 308,601 kWh Energy Consumption Total (as of 2/1/19) since system start-up
- 10,666 kWh Energy Consumption for January
- 1.349 kWh/GAL Average Energy Consumed per GAL of Product Recovered for January



## Review Ave. LNAPL Recovery System Monthly Summary February 2019

### **Work completed in February 2019:**

#### Week of Fri 2/1 – Sat 2/9

- O&M site visits on 2/5 and 2/8
- Chemical delivery on 2/5
  - Two 55-gallon drums of Redux-330
- Product load-out from T-801 on 2/8
  - 4,900 GAL product removed (offsite) according to Bill of Landing

#### Week of Sun 2/10 – Sat 2/16

- O&M site visit on 2/11 and 2/12
- OWS cleanout by ACV Environment on 2/11
  - Disposal of 1,250 GAL of Non-Haz / Non-TSCA water from cleanout
- Carbon change-out completed by Carbon Filtration Systems, Inc. on 2/12

#### Week of Sun 2/17 – Sat 2/23

- O&M site visits on 2/19 and 2/20
- 1Q 2019 Effluent Discharge Compliance Sampling completed 2/19
- Product load-out from T-1401 on 2/20
  - 4,630 GAL product removed (offsite) according to Bill of Landing
- Monthly LNAPL monitoring well gauging event on 2/21

#### Week of Sun 2/24 – Thu 2/28

- O&M site visit on 2/26
- Air Compressor serviced on 2/26 by D&D Electric Motors and Compressors

### **O&M Activities:**

#### Week of Fri 2/1 – Sat 2/9

- Operating on TF Zone 3
  - SVE active
- Switched skimmer system operation from 18 hrs/day to 12 hrs/day (7AM to 7PM) on 2/4
- Transferred chemicals to drums on 2/5
- Changed bag filters and cleaned basket strainer on 2/5
- Backwashed carbon on 2/5
- Water removal from T-801 on 2/5
- Processed water from totes on 2/5
- TF well inspections on 2/5
- Product load-out from T-801 on 2/8

#### Week of Sun 2/10 – Sat 2/16

- Operating on TF Zone 3 until OWS cleanout on 2/11, switch to TF Zone 2 following carbon changeout on 2/12
  - SVE active
- Switched skimmer system operation from 12 hrs/day to 8 hrs/day (7AM to 3PM) on 2/11
- Changed bag filters and cleaned basket strainer on 2/11
- OWS cleanout on 2/11
- Water removal from T-1401 on 2/11
- Replaced diaphragm on SV-1401 on 2/11
- Carbon changeout on 2/12
  - Switch active carbon vessel to LGAC-1101 on 2/12

## Review Ave. LNAPL Recovery System Monthly Summary February 2019

### Week of Sun 2/17 – Sat 2/23

- Operating on TF Zone 2
  - SVE active
- Collected 1<sup>st</sup> Quarter 2019 discharge compliance samples on 2/19
- Changed bag filters and cleaned basket strainer on 2/19
- Water removal from T-1401 on 2/20
- Product load-out from T-1401 on 2/20
- Transferred chemicals to drums on 2/20

### Week of Sun 2/24 – Thu 2/28

- Operating on TF Zone 2, switched to TF Zone 1 on 2/26
  - SVE active
- Changed bag filters and cleaned basket strainer on 2/26
- Backwash carbon on 2/26
- Water removal from T-801 on 2/26
- Transferred chemicals to drums on 2/26

### **VER/TF System Production Results:**

- TF System uptime for February was 624.63 Actual Run Hours out of 636.45 Available Hours, or 98.14%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 4,033 GAL Product Recovered in February from Zones 1, 2 and 3
  - Average TF Product recovery rate for February was 144 GPD (calendar days), or 155 GPD (run days) accounting for system downtime.
- Approximately 291,151 GAL Product Recovered Total since system start-up.
- 4,900 GAL Product from T-801 disposed of offsite in February.
  - 290,465 GAL Product from T-801 disposed of Total since start-up.
- Approximately 237,523 GAL Effluent discharged in February
  - Average 8,483 GPD or 9,126 GPD considering downtime.
- 9,105,836 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 1.70%

### **Skimmer System Production Results:**

- Skimmer System uptime for February was 282 Actual Run Hours out of 282 Available Hours, or 100%
  - Skimmer system running @ 18 hrs/day schedule (6AM – 12AM) until 2/4, 12 hr/day (7AM – 7PM) from 2/4 to 2/11, and 8 hrs/day (7AM – 3PM) beginning 2/11.
- Approximately 3,593 GAL Product Recovered in February.
  - Average Skimmer Product recovery rate for February was 128.3 GPD (calendar days), or 128.3 GPD (run days) accounting for system downtime.
- Approximately 86,275 GAL Product Recovered Total since start-up.
- 4,630 GAL Product from T-1401 disposed of offsite in February.
  - 82,806 GAL Product from T-1401 disposed of Total since start-up.

### **Total Product Recovery System Results:**

- 7,626 GAL Product recovered in February.
  - Average Product recovery rate for February was 272 GPD.

**Review Ave. LNAPL Recovery System Monthly Summary**  
**February 2019**

- 377,427 GAL Product Recovered Total since system start-up.
- 9,530 GAL Product shipped off-site for disposal in February (see attached summary table)
- 373,271 GAL Product shipped off-site for disposal since system start-up as of the end of February 2019 (see attached summary table)
- 318,591 kWh Energy Consumption Total (as of 3/1/19) since system start-up
- 9,990 kWh Energy Consumption for February
- 1.310 kWh/GAL Average Energy Consumed per GAL of Product Recovered for February

**Review Ave. LNAPL Recovery System Monthly Summary**  
**March 2019**

***Work completed in March 2019:***

Week of Fri 3/1 – Sat 3/9

- O&M site visits on 3/5 and 3/8

Week of Sun 3/10 – Sat 3/16

- O&M site visits on 3/12 and 3/14
- Sampled T-801 and T-1401 for PCB analysis on 3/14
  - 10.7 mg/kg Total PCBs in T-801
  - No PCBs detected in T-1401
- Chemical delivery on 3/14
  - Two 55-gallon drums of Redux-330

Week of Sun 3/17 – Sat 3/23

- O&M site visits on 3/19, 3/20, 3/21 and 3/22
- Product load-out from T-801 on 3/20
  - 4,613 GAL product removed (offsite) according to Bill of Lading
- Monthly LNAPL monitoring well gauging event on 3/20
- Chemical delivery on 3/20
  - Two 55-gallon drums of Redux-330

Week of Sun 3/24 – Sun 3/31

- O&M site visit on 3/27

***O&M Activities:***

Week of Fri 3/1 – Sat 3/9

- Operating on TF Zone 1
  - SVE active
- Transferred chemicals to drums on 3/5
- Changed bag filters and cleaned basket strainer on 3/5
- Backwashed carbon on 3/5
- Water removal from T-801 on 3/5
- Clean SVE pitot tubes on 3/5
- Cleaned basket strainer on 3/8
- Backwashed carbon on 3/8
- TF & skimmer well inspections on 3/8
- Water removal from T-1401 on 3/8

Week of Sun 3/10 – Sat 3/16

- Operating on TF Zone 1
  - SVE active
- Cleaned basket strainer on 3/12
- Operations staff training on 3/12
- Changed bag filters and cleaned basket strainer on 3/14
- Transferred chemicals to drums on 3/14
- Switch active carbon vessel to LGAC-1102 on 3/14
- Water removal from T-1401 on 3/14
- Replaced oil transfer pump on 3/14
- Well vault inspections on 3/14

**Review Ave. LNAPL Recovery System Monthly Summary**  
**March 2019**

**Week of Sun 3/17 – Sat 3/23**

- Operating on TF Zone 1, switched to TF Zone 6 on 3/19
  - SVE active
- Changed bag filters and cleaned basket strainer on 3/19
- Water removal from T-801 and T-1401 on 3/19
- Well vault inspections on 3/19
- Product load-out from T-801 on 3/20
- Water removal from T-1401 on 3/20
- Skimmer maintenance on 3/21
- Water removal from T-1401 on 3/22
- Skimmer maintenance on 3/22

**Week of Sun 3/24 – Sun 3/31**

- Operating on TF Zone 6
  - SVE active
- Changed bag filters and cleaned basket strainer on 3/27
- Backwash carbon on 3/27
- Water removal from T-1401 on 3/27
- Processed water from totes on 3/27
- Transferred chemicals to drums on 3/27

***VER/TF System Production Results:***

- TF System uptime for March was 707.47 Actual Run Hours out of 731.77 Available Hours, or 96.68%
  - Available Hours = Scheduled Daily Operating Hours – scheduled maintenance time – product removal time – force majeure time (power outage, weather, etc.).
- Approximately 2,075 GAL Product Recovered in March from Zones 1 and 6
  - Average TF Product recovery rate for March was 66.9 GPD (calendar days), or 70.4 GPD (run days) accounting for system downtime.
- Approximately 293,226 GAL Product Recovered Total since system start-up.
- 4,613 GAL Product from T-801 disposed of offsite in March.
  - 295,078 GAL Product from T-801 disposed of Total since start-up.
- Approximately 261,253 GAL Effluent discharged in March
  - Average 8,428 GPD or 8,863 GPD considering downtime.
- 9,367,089 GAL Effluent discharged Total since start-up.
- Recovered Oil/Extracted Groundwater Ratio = 0.79%

***Skimmer System Production Results:***

- Skimmer System uptime for March was 248 Actual Run Hours out of 248 Available Hours, or 100%
  - Skimmer system running @ 8 hrs/day schedule (7AM – 3PM)
- Approximately 2,522 GAL Product Recovered in March.
  - Average Skimmer Product recovery rate for March was 81.3 GPD (calendar days), or 81.3 GPD (run days) accounting for system downtime.
- Approximately 88,797 GAL Product Recovered Total since start-up.
- 0 GAL Product from T-1401 disposed of offsite in March.
  - 82,806 GAL Product from T-1401 disposed of Total since start-up.

**Review Ave. LNAPL Recovery System Monthly Summary**  
**March 2019**

***Total Product Recovery System Results:***

- 4,597 GAL Product recovered in March.
  - Average Product recovery rate for March was 148 GPD.
- 382,023 GAL Product Recovered Total since system start-up.
- 4,613 GAL Product shipped off-site for disposal in March (see attached summary table)
- 377,884 GAL Product shipped off-site for disposal since system start-up as of the end of March 2019 (see attached summary table)
- 328,518 kWh Energy Consumption Total (as of 4/1/19) since system start-up
- 9,927 kWh Energy Consumption for March
- 2.159 kWh/GAL Average Energy Consumed per GAL of Product Recovered for March

## APPENDIX B

### Annual Inspection Report

**Site Inspection Form – RAD II – Annual**

<b>I. Site Information</b>	
<b>Site Name:</b>	Review Avenue Development Site II (RAD II)
<b>NYSDEC Site Number:</b>	BCP #C241005
<b>Site Address:</b>	37-30 Review Avenue, Long Island City, NY
<b>Block/Lot:</b>	Block 312; Lot 69
<b>Date of Inspection:</b>	12/12/18
<b>Type of Inspection:</b>	Regular <input checked="" type="checkbox"/> Emergency <input type="checkbox"/>
<b>Inspected By:</b>	Brent O'Dell

<b>II. General Information</b>	
<b>Current Site Use: (Warehouse, Parking Lot, Vacant, etc.):</b>	Commercial
<b>Summary of Previous Inspections: See Attached.</b>	
<p>Several broken monitoring well manhole frames identified in prior inspection have been replaced. Damaged treatment compound area fence identified in prior inspection repaired and now protected by concrete barrier, however, lingering damage needs attention to maintain site security. Fence between treatment compound and Phoenix Beverage degrading and has had minor repairs completed, however, will need continual repairs going forward if not replaced.</p>	

<b>III. Weather Conditions</b>			
Time	Temperature	Condition (Sunny, Overcast, Precipitation, etc.)	Wind (Light, Moderate, Heavy, etc.)
	30s/40s	Partly Cloudy	Light wind



**Site Inspection Form – RAD II – Annual**

<b>IV. On-Site Documents &amp; Records (Stored at RAD II)</b>				
<b>Description</b>	<b>Readily available</b>	<b>Up to date</b>	<b>N/A</b>	<b>Remarks</b>
<b>O&amp;M Documents:</b>				
O&M Manual	X	yes		
As-built drawings	X	yes		
Maintenance logs	X	yes		
<b>Site Health &amp; Safety Plan:</b>				
Contingency Plan/Emergency response plan	X	yes		
<b>O&amp;M and OSHA Training Records:</b>				
O&M and OSHA Training Records	X	yes		
<b>Permits and Service Agreements:</b>				
NYSDEC Air Permit Exemption	X	yes		
NYSDEC Petroleum Bulk Storage Certification	X	yes		
NYSDEC Erosion and Sediment Control Exemption	X	yes		
NYSDEC Tidal Wetlands Jurisdiction Determination Letter	X	yes		
NYCDEP Groundwater Discharge LOA	X	yes		
NYCDEP Air Permit Informational Notice	X	yes		
NYCDEP Dewatering Scheme and Indemnity Agreement	X	yes		
NYCDEP Bureau of Customer Service Groundwater Discharge Permit	X	yes		
NYCDOB Certificates of Occupancy	X	yes		
Other:				

<b>V. Site Conditions</b>					
<b>Description</b>	<b>Inspected</b>			<b>Comments, Field Observations and Measurements (Dimensions and Depth of Disturbance of Cap), Reference Photo #</b>	
	<b>Yes</b>	<b>No</b>	<b>N/A</b>		
<b>Engineering Control: Pavement Cover System</b>					
a.	Asphalt Condition (Check for cracking, spalling, and potholes)	X			Good in treatment area Minor cracking near entrance Sealant needed.

**Site Inspection Form – RAD II – Annual**

b.	Differential Settlement (Check for settlement or subsidence)		X		
c.	Disturbance (Check for disturbance e.g. construction or utility repair, etc.)		X		
<b>Engineering Control: LNAPL Recovery System</b>					
a.	Recovery Well Vaults and Pumps (Check for leaks, operation, vault security, etc.)	X			Check list and photo's on file
b.	LNAPL Storage Tanks (Check capacity, inspect for leaks, corrosion, etc.)	X			
c.	LNAPL Recovery / Groundwater Treatment System (Check for operation, leaks, up-to-date maintenance, etc.)	X			
d.	Equipment Enclosures (Check emergency lights, signs, fire extinguishers, eyewash, condition of doors/exterior, etc.)	X			
	Treatment Enclosures <ul style="list-style-type: none"> <li>• Uneven floors and coating and containment of OWS room</li> <li>• KO tank room needs sprucing up.</li> <li>• Fence between RAD II and phoenix in the back needs repair.</li> <li>• Accessibility to eye wash and safety equipment needs to be maintained</li> </ul>				
<b>Other:</b>					
a.	Monitoring Wells (Check if secured, inspect condition of well, well cap, etc.)	X			Five (5) Monitoring Wells had manways replaced on 12/12/18 to correct broken frames – GAL-10, GAL-21, GAL-22, GAL-23, MW-04RR

**Site Inspection Form – RAD II – Annual**

b.	Security (Check fence, gates, locks, etc.)	X			Ok, however, fence between RAD II and phoenix in the back needs repair
c.	Site Use (Has site use changed? If so, is it still used for restricted use as specified in the SMP?)	X			Same.

<b>VI. Institutional Controls</b>				
<b>Status of Institutional Controls:</b>				
<b>Description</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Remarks</b>
Site conditions imply Institutional Controls not properly implemented		X		
Site conditions imply Institutional Controls not being fully enforced		X		
Permits and records are onsite and up-to-date	X			
Violations (if any) have been reported			X	
Previous suggested correction(s) have been made				Being worked on.
<b>Other problems or suggestions:</b>				

<b>VII. Groundwater and LNAPL Elevations</b>							
<b>Monthly LNAPL Thickness Measurements: SEE ATTACHED</b>							
<b>Well ID Location</b>	<b>Date</b>	<b>Time</b>	<b>Depth from TOC to</b>			<b>Measured by:</b>	<b>Remarks: Calibration data found on Instrument Calibration Record</b>
			<b>Product (ft)</b>	<b>Water (ft)</b>	<b>Bottom (ft)</b>		
AML-01							
AML-03							
AML-06							
GAL-01RR							
GAL-02R							

**Site Inspection Form – RAD II – Annual**

GAL-03R							
GAL-04R							
GAL-05R							
GAL-06							
GAL-07							
GAL-08							
GAL-09							
GAL-16R							
GAL-29							
GAL-30							
GAL-31R							
GAGW-04							

**Semi-Annual Groundwater Elevation Measurements:**

Well ID Location	Date	Time	Depth from TOC to		Measured by:	Sampled? (Y/N)	Remarks: Calibration data found on Instrument Calibration Record
			Water (ft)	Bottom (ft)			
GAGW-02	7/19/18	0840	13.92	72.4	Hess/Berk	Y	Cal record on file for 7/19/19
GAGW-02	12/4/18	1005	13.18	72.4	Hess/Berk	Y	Cal record on file for 12/04/19
GAGW-04D	7/20/18	0707	22.81	69.6	Hess/Berk	Y	Cal record on file for 7/20/19
GAGW-04D	12/4/18	0925	22.08	69.8	Hess/Berk	Y	Cal record on file for 12/04/19
GAGW-05R	7/19/18	0733	14.93	74.5	Hess/Berk	Y	Cal record on file for 7/19/19
GAGW-05R	12/4/18	0815	14.15	74.5	Hess/Berk	Y	Cal record on file for 12/04/19
GAGW-6I	7/20/18	0830	13.88	38.9	Hess/Berk	Y	Cal record on file for 7/20/19
GAGW-6I	12/5/18	1000	13.38	38.9	Hess/Berk	Y	Cal record on file for 12/05/19
GAGW-08R	7/19/18	1026	13.78	72.4	Hess/Berk	Y	Cal record on file for 7/19/19
GAGW-08R	12/5/18	0705	15.04	73	Hess/Berk	Y	Cal record on file for 12/05/19
AMGW-10D	7/19/18	1137	14.77	71.5	Hess/Berk	Y	Cal record on file for 7/19/19
AMGW-10D	12/5/18	0840	13.99	72	Hess/Berk	Y	Cal record on file for 12/05/19

**Semi-Annual LNAPL Thickness Measurements (6 Single Phase LNAPL Recovery Wells from RAD I & RAD II): SEE ATTACHED**

Well ID Location	Date	Time	Depth from TOC to			Measured by:	Remarks: Calibration data found on Instrument Calibration Record
			Product (ft)	Water (ft)	Bottom (ft)		

Site Inspection Form – RAD II – Annual

**IX. Overall Observations on Remedy Implementation & Site Conditions**

- Fence between RAD II and phoenix in the back needs repair.

Review Avenue LNAPL Recovery System  
LNAPL Monitoring Well Gauging, December 2018

Well ID	TOC	12/27/2018					
		Depth to top of product	Depth to top of water	Product Thickness	Equivalent Water Level Elevation	Nov 2015 to December 2018 Change	November to December Change
<b>Include on Product Thickness Map</b>							
AML-01	15.31	11.82	14.50	2.68	3.22	-0.20	0.12
AML-04	20.00	16.34	17.89	1.55	3.51	-1.23	0.21
GAL-10	23.21	19.50	20.44	0.94	3.61	-0.90	-0.38
GAL-11R	18.02	14.50	17.15	2.65	3.26	-0.17	0.21
GAL-13	17.74	14.16	15.8	1.64	3.42	-0.84	0.20
GAL-18R	21.31	17.61	19.2	1.59	3.54	0.52	-0.16
GAL-21	17.83	13.92	17.06	3.14	3.59	-1.45	0.39
GAL-22	21.11	17.40	18.8	1.40	3.57	-0.82	0.44
GAL-23	17.55	13.96	15.82	1.86	3.40	-1.75	-0.09
GAL-24	18.38						
MW-4RR	13.86	10.40	14.30	3.90	3.07	-1.39	1.24
GAGW-04	25.53	21.76	23.05	1.29	3.64		0.13
AML-02	20.62	17.00	19.95	2.95	3.33	-0.06	-0.16
AML-03	18.66	15.22	18.89	3.67	3.07	-1.55	0.15
AML-06	20.96	17.56	20.25	2.69	3.13	-3.29	0.20
GAL-01RR	21.36	17.92	22.25	4.33	3.01	-0.92	1.62
GAL-02R	16.22	12.8	16.20	3.40	3.08		0.21
GAL-03R	22.88	19.12	22.52	3.40	3.42	-1.80	0.33
GAL-04R	17.13	13.75	17.8	4.05	2.98	-1.78	0.95
GAL-05R	23.53	20.01	22.98	2.97	3.22	-2.24	0.26
GAL-06	25.66	dry	dry				
GAL-07	19.19	15.83	18.60	2.77	3.08	-2.89	0.14
GAL-08	26.30	15.02	15.10	0.08	11.27	-0.52	0.01
GAL-09	26.00	22.35	24.08	1.73	3.48	-1.31	1.73
GAL-16R	16.29	12.95	17.13	4.18	2.92		0.29
GAL-29	25.90	22.3	25.35	3.05	3.30	-1.04	0.23
GAL-30	26.65	22.92	25.50	2.58	3.47	-0.59	0.52
GAL-31	24.08	20.45	22.92	2.47	3.38	-1.17	0.12
VER-2	16.85	14.00	18.01	4.01	2.45	-3.86	0.52

AVG Thickness RAD I & II      2.63      AVG Change      -1.30      0.42

## APPENDIX C

### Discharge Compliance Reports



Amec Foster Wheeler Environment & Infrastructure, Inc.  
 200 American Metro Blvd., Suite 113  
 Hamilton, NJ 08619  
 Phone: (609) 689-2829 Fax: (609) 689-2838

## LETTER OF TRANSMITTAL

<p><b>To:</b> Mr. Sean H. Hulbert          Assistant Chemical Engineer          NYCDEP, Bureau of Wastewater Treatment          96-05 Horace Harding Expressway,          1<sup>st</sup> Floor          Corona, New York 11368</p> <p><b>FROM:</b> Timothy Kessler</p>	<p><b>DATE:</b> August 14, 2018  <b>PROJECT NO.:</b> 3480160502  <b>PROJ. NAME:</b> Review Avenue</p> <p><b>SUBJECT:</b>          Review Avenue Development Sites          37-30 and 37-80 Review Avenue          File # C-5652          1st Quarter 2018 Effluent Discharge Compliance Report</p>
--	--

WE TRANSMIT TO YOU:       HEREWITH       UNDER SEPARATE COVER

**SUBJECT:**

- DRAWINGS
- SPECIFICATIONS
- CALCULATIONS
- REPORT
- COST ESTIMATE
- CD

**ACTION:**

- FOR YOUR INFORMATION
- FOR YOUR COMMENT OR APPROVAL
- RETURNED FOR CORRECTION: RESUBMIT
- APPROVED AS NOTED
- AS REQUESTED

**SENT BY:**

- MAIL
- CERTIFIED MAIL
- EXPRESS
- COURIER
- HAND DELIVERED
- FACSIMILE:

# of pages (including transmittal sheet) 6

COPIES	DATE	DESCRIPTION
1	8/14/18	Compliance Monitoring Report for 3rd Quarter 2018

**REMARKS:** de maximis, Inc. will forward report to NYSDEC

**CC:** Craig Coslett, de maximis, Inc.  
 \_\_\_\_\_  
 \_\_\_\_\_

**By:** Tim Kessler  
 (609) 631-2927

**CONFIDENTIALITY NOTICE:** This message is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the above address via the U.S. Postal Service. Thank you.

If transmission is not received in good order, please call Suzy at 609-689-2829





1550 Pond Road  
Suite 120  
Allentown, PA 18104  
(610) 435-1151  
(610) 435-8459 FAX

May 14, 2018

*Via U.S. Mail*

Mr. Sean H. Hulbert  
Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, New York 11368

**RE: Review Avenue Development Sites - 37-30 and 37-80 Review Avenue  
File # C-5652  
2<sup>nd</sup> Quarter 2018 Effluent Discharge Compliance Report**

Dear Mr. Hulbert:

Enclosed is the 2<sup>nd</sup> Quarter 2018 - Effluent Discharge Compliance Report for the Review Avenue Development Sites. This report is being submitted on behalf of the Review Avenue System LLC administering the Review Avenue Development Site Brownfield Projects identified as RAD I and RAD II.

I would like to call to your attention the following, relative to discharge for the 2<sup>nd</sup> Quarter 2018:

- Approximately 408,608 gallons of water have been discharged to the sewer system since the last report was submitted.
- No constituents were reported above discharge criteria.

Please contact me with any questions at (610) 435-1151.

Sincerely,

*de maximis, inc.*

A handwritten signature in blue ink, appearing to read "R. Craig Coslett", is written over a horizontal line.

R. Craig Coslett  
Project Coordinator for RADI and RAD II

Enclosures: Compliance Monitoring Report for 2<sup>nd</sup> Quarter 2018

CC: John Grathwol, NYDEC (Electronic Mail Only)  
Tim Kessler, Wood Group (Electronic Mail Only)  
Brent O'Dell, Wood Group (Electronic Mail Only)

File: 3216 / 2<sup>nd</sup> Qrt Compliance Report 2018

May 15, 2018

Mr. Sean H. Hulbert - Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, NY 11368

Subject: **2<sup>nd</sup> Quarter 2018 Effluent Discharge Compliance  
Review Avenue Development Sites  
37-30 and 37-80 Review Avenue  
Long Island City, Queens, New York, File # C-5652**

Dear Mr. Hulbert:

Wood Environment and Infrastructure Solutions, Inc. (Wood), on behalf of Review Avenue System LLC, submits the effluent laboratory analysis data in connection with the letter of approval (LOA) for groundwater discharge to sanitary or combined sewer for the Review Avenue Development (RAD) Sites and LOA Extension dated October 17, 2017. Please note that our company name has changed on April 16, 2018 from Amec Foster Wheeler Environment & Infrastructure, Inc. to Wood Environment & Infrastructure Solutions, Inc. This change is administrative in nature and consists of a change in name only.

Wood collected the 2nd Quarter 2018 discharge compliance samples on April 10, 2018. Analytical results indicate no exceedances of the daily discharge limits for all parameters and no exceedances of the monthly discharge limits for all parameters, and therefore the discharge is in compliance with our LOA requirements. The analytical results collected for the 2nd quarter 2018 compliance sampling is summarized on Table 1 attached. The total volume of groundwater discharged to the sanitary or combined sewer, since system start-up was 5,820,523 gallons as of the April 10th sampling event and 408,608 gallons since the last quarterly sampling event.

If you have any questions, please contact either of the undersigned at (609) 689-2829.

Sincerely,

**Wood Environment & Infrastructure Solutions, Inc.**



Brent C. O'Dell, P.E.  
Principal Engineer – Civil



Timothy Kessler  
Senior Associate Engineer/PM

Attachments: Table 1 – Summary of Groundwater Analytical Results

cc: R. Craig Coslett – Review Avenue System LLC

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	NYCDEP Daily Limit	NYCDEP Monthly Limit	RA-EFF-G		RA-EFF-C	
Compliance Period:				2Q 2018		2Q 2018	
Sample Date:				4/10/2018		4/10/2018	
Lab Sample ID:				JC63905		JC63905	
Non-polar material <sup>1</sup>	mg/L	50	NL	5.4	U	-	-
pH <sup>2</sup>	SUs	5 - 12	NL	7.68		-	-
Temperature <sup>2</sup>	°F	150	NL	53.42		-	-
Flash Point <sup>3</sup>	°F	> 140	NL	> 200		-	-
Cadmium (Instantaneous)	mg/L	2	NL	0.003	U	-	-
Cadmium (Composite)	mg/L	0.69	NL	-		0.003	U
Chromium (VI)	mg/L	5	NL	0.01	U	-	-
Copper	mg/L	5	NL	0.01	U	-	-
Lead	mg/L	2	NL	0.003	U	-	-
Mercury	mg/L	0.05	NL	0.0002	U	-	-
Nickel	mg/L	3	NL	0.01	U	-	-
Zinc	mg/L	5	NL	0.0408		-	-
Benzene	µg/L	134	57	1.0	U	-	-
Carbon Tetrachloride	µg/L	NL	NL	-		1.0	U
Chloroform	µg/L	NL	NL	-		1.0	U
1,4-Dichlorobenzene	µg/L	NL	NL	1.0	U	-	-
Ethylbenzene	µg/L	380	142	1.0	U	-	-
MTBE (Methyl-Tert-Butyl-Ether)	µg/L	50	NL	1.0	U	-	-
Napthalene	µg/L	47	19	-		1.1	U
Phenol	µg/L	NL	NL	-		2.2	U
Tetrachloroethylene (Perc)	µg/L	20	NL	1.0	U	-	-
Toluene	µg/L	74	28	1.0	U	-	-
1,2,4-Trichlorobenzene	µg/L	NL	NL	-		1.1	U
1,1,1-Trichloroethane	µg/L	NL	NL	-		1.0	U
Xylenes (Total)	µg/L	74	28	1.0	U	-	-
PCBs (Total)	µg/L	1	NL	-		0.05	U
Total Suspended Solids (TSS)	mg/L	350	NL	4.0	U	-	-
CBOD	mg/L	NL	NL	-		5	U
Chloride	mg/L	NL	NL	134		-	-
Total Nitrogen	mg/L	NL	NL	-		1.9	
Total Solids	mg/L	NL	NL	975		-	-

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

RA-EFF-G: Instantaneous (Grab) Sample

RA-EFF-C: 4-Hour Flow Weighted Composite Sample

**Bold/Shaded:** Concentration exceeds daily limit

Underline: Concentration exceeds monthly limit

1. Non-polar Material reported by lab as "Silica Gel Treated n-Hexane Extractable Material (SGT-HEM)"
2. pH and Temperature measured in field
3. Flash Point reported by lab as Ignitability

**Definitions:**

MDL: Method Detection Limit

RL: Reporting Limit

NL: No Limit

**Data Qualifiers:**

J: Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U: Indicates the analyte was not detected at the indicated RL.

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

**AMEC Foster Wheeler**

**Review Avenue, Long Island City, NY**

**3480160502 PO#C012700305**

**SGS Job Number: JC63905**

**Sampling Date: 04/10/18**

### Report to:

**AMEC Foster Wheeler**

**marinna.seemuller@amecfw.com**

**ATTN: Marinna Seemuller**

**Total number of pages in report: 20**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads "Nancy F. Cole".

**Nancy Cole**  
**Laboratory Director**

**Client Service contact: Cynthia Romero 732-329-0200**

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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## Sample Summary

AMEC Foster Wheeler

Job No: JC63905

Review Avenue, Long Island City, NY  
Project No: 3480160502 PO#C012700305

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JC63905-1	04/10/18	10:15 DB	04/10/18	AQ	Effluent	RA-EFF-G
JC63905-1R	04/10/18	10:15 DB	04/10/18	AQ	Effluent	RA-EFF-G
JC63905-2	04/10/18	10:40 DB	04/10/18	AQ	Effluent	RA EFF-C
JC63905-2R	04/10/18	10:40 DB	04/10/18	AQ	Effluent	RA EFF-C

## Summary of Hits

**Job Number:** JC63905  
**Account:** AMEC Foster Wheeler  
**Project:** Review Avenue, Long Island City, NY  
**Collected:** 04/10/18

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**JC63905-1 RA-EFF-G**

Zinc		40.8	20		ug/l	EPA 200.7
Chloride		134	2.0		mg/l	EPA 300/SW846 9056A
Ignitability (Flashpoint)		> 200			Deg. F	SW846 1010A/ASTM D93
Solids, Total		975	10		mg/l	SM2540 B-11
pH <sup>a</sup>		6.99			su	SM4500H+ B-11

**JC63905-1R RA-EFF-G**

No hits reported in this sample.

**JC63905-2 RA EFF-C**

Nitrogen, Nitrate <sup>b</sup>		0.39	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.39	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total <sup>c</sup>		1.9	0.30		mg/l	SM4500 A-11
Nitrogen, Total Kjeldahl		1.5	0.20		mg/l	EPA 351.2/LACHAT

**JC63905-2R RA EFF-C**

No hits reported in this sample.

- (a) Sample received out of holding time for pH analysis.
- (b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
- (c) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)



Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-1	<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	T230628.D	1	04/11/18 20:46	CSF	n/a	n/a	VT9484
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.24	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
1330-20-7	Xylenes (total)	ND	1.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.24	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.82	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	109%		76-122%
2037-26-5	Toluene-D8 (SUR)	89%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	106%		80-120%
1868-53-7	Dibromofluoromethane (S)	113%		80-120%

ND = Not detected      MDL = Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

3.1  
3

<b>Client Sample ID:</b> RA-EFF-G		<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-1		<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent		<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY		

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	04/11/18	04/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Copper	< 10	10	ug/l	1	04/11/18	04/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Lead	< 3.0	3.0	ug/l	1	04/11/18	04/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Mercury	< 0.20	0.20	ug/l	1	04/12/18	04/12/18 JA	EPA 245.1 <sup>1</sup>	EPA 245.1 <sup>4</sup>
Nickel	< 10	10	ug/l	1	04/11/18	04/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Zinc	40.8	20	ug/l	1	04/11/18	04/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>

- (1) Instrument QC Batch: MA44190
- (2) Instrument QC Batch: MA44198
- (3) Prep QC Batch: MP6593
- (4) Prep QC Batch: MP6602

---

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-1	<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	134	2.0	mg/l	1	04/13/18 14:38	NV	EPA 300/SW846 9056A
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	04/10/18 20:30	LS	SM3500CR B-11
Ignitability (Flashpoint)	> 200		Deg. F	1	04/16/18 16:09	RI	SW846 1010A/ASTM D93
Solids, Total	975	10	mg/l	1	04/11/18 14:55	MW	SM2540 B-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	04/11/18 11:15	MW	SM2540 D-11
pH <sup>a</sup>	6.99		su	1	04/10/18 15:07	SUB	SM4500H+ B-11

(a) Sample received out of holding time for pH analysis.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-1R	<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Petroleum Hydrocarbons	< 5.4	5.4	mg/l	1	04/15/18 13:15	CB	EPA 1664A

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA EFF-C <b>Lab Sample ID:</b> JC63905-2 <b>Matrix:</b> AQ - Effluent <b>Method:</b> EPA 624 <b>Project:</b> Review Avenue, Long Island City, NY	<b>Date Sampled:</b> 04/10/18 <b>Date Received:</b> 04/10/18 <b>Percent Solids:</b> n/a
---	---

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	T230634.D	1	04/11/18 23:47	CSF	n/a	n/a	VT9484
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
56-23-5	Carbon tetrachloride	ND	1.0	0.31	ug/l	
67-66-3	Chloroform	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	112%		76-122%
2037-26-5	Toluene-D8 (SUR)	93%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	105%		80-120%
1868-53-7	Dibromofluoromethane (S)	109%		80-120%

---

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA EFF-C		<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-2		<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 625 EPA 625		
<b>Project:</b> Review Avenue, Long Island City, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P49321.D	1	04/12/18 12:18	CS	04/11/18 13:45	OP11252	E5P2357
Run #2							

	Initial Volume	Final Volume
Run #1	905 ml	1.0 ml
Run #2		

### ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-95-2	Phenol	ND	2.2	0.43	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.1	0.28	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	33%		10-110%
4165-62-2	Phenol-d5	21%		10-110%
118-79-6	2,4,6-Tribromophenol	78%		35-147%
4165-60-0	Nitrobenzene-d5	76%		32-132%
321-60-8	2-Fluorobiphenyl	62%		40-117%
1718-51-0	Terphenyl-d14	44%		33-126%

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA EFF-C	<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-2	<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	04/11/18	04/13/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA44198

(2) Prep QC Batch: MP6593

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RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> RA EFF-C	<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-2	<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Carbonaceous Bod, 5 Day	< 5.0	5.0	mg/l	1	04/11/18 19:36	SA	SM5210 B-11
Nitrogen, Nitrate <sup>a</sup>	0.39	0.11	mg/l	1	04/13/18 15:28	TG	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.39	0.10	mg/l	1	04/13/18 15:28	TG	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	04/11/18 20:30	LS	SM4500NO2 B-11
Nitrogen, Total <sup>b</sup>	1.9	0.30	mg/l	1	04/13/18 15:28	TG	SM4500 A-11
Nitrogen, Total Kjeldahl	1.5	0.20	mg/l	1	04/12/18 13:28	BM	EPA 351.2/LACHAT

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(b) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA EFF-C		<b>Date Sampled:</b> 04/10/18
<b>Lab Sample ID:</b> JC63905-2R		<b>Date Received:</b> 04/10/18
<b>Matrix:</b> AQ - Effluent		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 608 EPA 608		
<b>Project:</b> Review Avenue, Long Island City, NY		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX227433.D	1	04/24/18 06:29	RK	04/23/18 11:07	OP11474	GXX6325
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

**PCB List**

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.052	0.035	ug/l	
11104-28-2	Aroclor 1221	ND	0.052	0.030	ug/l	
11141-16-5	Aroclor 1232	ND	0.052	0.021	ug/l	
53469-21-9	Aroclor 1242	ND	0.052	0.028	ug/l	
12672-29-6	Aroclor 1248	ND	0.052	0.026	ug/l	
11097-69-1	Aroclor 1254	ND	0.052	0.035	ug/l	
11096-82-5	Aroclor 1260	ND	0.052	0.028	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		10-156%
877-09-8	Tetrachloro-m-xylene	81%		10-156%
2051-24-3	Decachlorobiphenyl	48%		10-143%
2051-24-3	Decachlorobiphenyl	51%		10-143%

---

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Misc. Forms

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Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody

# Parameter Certification Exceptions

**Job Number:** JC63905  
**Account:** HLANJPR AMEC Foster Wheeler  
**Project:** Review Avenue, Long Island City, NY

The following parameters included in this report are exceptions to NELAC certification. The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
-----------	------	--------	-----	----------------------

Nitrogen, Total		SM4500 A-11	AQ	SGS is not certified for this parameter. <sup>a</sup>
-----------------	--	-------------	----	---

(a) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

4.1  
4

SW-032718-163

E  
COMP

2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking #  
Accutest Quote # **DK4\_2016\_911**  
Accutest Job # **JC63905**

**Requested Analysis (see TEST CODE sheet)**

Flashpoint (Ignitability) - SW846 1010A	Mercury (Hg) - EPA 245.1	SGT HEM - EPA 1664A SGT	pH (SM4500+ B-1); Total Solids (SM2540 B-1); Chloride (EPA 300.0 / SM4500 ClC)	Total Suspended Solids - SM2540 D-11	VOC (V624B TXM, VMS+PCE, VMS+1,4DCB) - EPA 624	Hexavalent Chromium (SM3500 Cr B)	Phenol, Naphthalene, 1,2,4-Trichlorobenzene - EPA 825	CBOD5 - SM5210 B-11	Metals (Cadmium Only) - EPA 200.7	PCBs, Low Level (P608PCBL) - EPA 608	DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SG - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

LAB USE ONLY

4.2  
4

**Client / Reporting Information**

Company Name: **Amecc Foster Wheeler**  
Street Address: **200 American Metro BLVD #113**  
City: **Hamilton, NJ 08619**  
Project Contact: **Vincent Whelan@ameccfw.com**

**Project Information**

Project Name: **Review Ave, Long Island City, Queens**  
Street: **37-30 & 37-80 Review Avenue**  
City: **Long Island City, Queens, NY**  
Project #: **3480160502**  
Client Purchase Order #: **C012700305**  
Project Manager: **Tim Kessler**

**Collection**

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection		Sampled by	Matrix	# of bottles	Number of preserved bottles							
			Date	Time				HC	NaOH	INCl3	H2SO4	NONE	DI Water	MECH	ENCORE
1	RA-EFF-G		4/10/18	1215	AK	GW	11	8	1	5					
2	RA-EFF-C		4/10/18	1040	AK	GW	8		1	1	6				
	RA-VOC-C1		4/10/18	0730	AK	GW	3	3							
	RA-VOC-C2		4/10/18	0830	AK	GW	3	3							
2	RA-VOC-C3		4/10/18	0930	AK	GW	3	3							
	RA-VOC-C4		4/10/18	1030	AK	GW	3	3							

Turnaround Time (Business days): \_\_\_\_\_

Approved By (Accutest PM) / Data: INITIAL ASSESSMENT AK LB  
LABEL VERIFICATION

Std. 10 Business Days  
 5 Day RUSH  
 3 Day EMERGENCY  
 2 Day EMERGENCY  
 1 Day EMERGENCY  
 other \_\_\_\_\_

Commercial "A" (Level 1)  
 Commercial "B" (Level 2)  
 FULLT1 (Level 3+4)  
 NJ Reduced  
 Commercial "C"  
 NYASP Category A  
 NYASP Category B  
 State Forms  
 EDD Format  
 Other: NYCDEP

Comments / Special Instructions: **COMPOSITE RA-VOC-C1 to RA-VOC-C4 IN LAB TO BE USED FOR RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM + PCB SAMPLE**

Sample Custody must be documented below each time samples change possession, including courier deli

Relinquished by: [Signature] Date Time: 4/12/18 1330

Received By: [Signature] Date Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date Time: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date Time: \_\_\_\_\_

Custody Seal # 75406  Intact  Not intact

Preserved where applicable  On Ice  Cooling Temp. 7F



2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking # \_\_\_\_\_ Bottle Order Control # \_\_\_\_\_  
Accutest Quote # **DK4\_2016\_911** Accutest Job # **JC63905**

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes		
Company Name <b>Amec Foster Wheeler</b>		Project Name <b>Review Ave, Long Island City, Queens</b>		Total Nitrogen (TKN, NO2/NO3) - SM18 4500N Composite VOCs (4:1 Ratio) VOC (M24CHLERM, VMS+CTC, VMS+TCA) - EPA 624										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SD - Soil SL- Sludge SED- Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank RB- Rinse Blank TB-Trip Blank		
Street Address <b>200 American Metro BLVD #113</b>		Street <b>37-30 &amp; 37-80 Review Avenue</b>														
City State Zip <b>Hamilton, NJ 08619</b>		City State <b>Long Island City, Queens, NY</b>														
Project Contact <b>Vincent.Whelan@amecfw.com</b>		Project # <b>3480160502</b>														
Phone # <b>M: 609-815-6175, D: 609-689-2832, F: 609-689-2838</b>		Client Purchase Order # <b>C012700305</b>														
Project Manager <b>Tim Kessler</b>		Attention:														
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NEOH	HNO3	H2SO4	NONE	DI Water	MEDH	ENCORE	LAB USE ONLY
1	RA-EFF-G		4/10/18	1015	DK	GW	11	5								
	RA-EFF-C		4/10/18	1040	DK	GW	8									
	RA-VOC-C1		4/10/18	0730	DK	GW	3									
	RA-VOC-C2		4/10/18	0830	DK	GW	3									
	RA-VOC-C3		4/10/18	0930	DK	GW	3									
	RA-VOC-C4		4/10/18	1030	DK	GW	3									
Turnaround Time (Business days)		Data Deliverable Information		Comments / Special Instructions												
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other		Approved By (Accutest PM) / Date: <b>INITIAL ASSESSMENT</b> <b>LABEL VERIFICATION</b>		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> NYASP Category A <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NYASP Category B <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> State Forms <input type="checkbox"/> NJ Reduced <input type="checkbox"/> EDD Format <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> Other <b>NYCDEP</b>										COMPOSITE RA-VOC-C1 to RA-VOC-C4 IN LAB TO BE USED FOR RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM SAMPLE HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME		
Emergency & Rush T/A data available VIA Lablink																
Sample Custody must be documented below each time samples change possession, including courier deli																
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:											
1	4/10/18 1330	1	2		2											
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:											
3		3	4		4											
Relinquished by:	Date Time:	Received By:	Custody Seal:	Intact	Not Intact	Preserved where applicable	On Ice	Cooler Temp:								
5		5	75406	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	21.1								

4.2  
4

JC63905: Chain of Custody

Page 2 of 4

## SGS Sample Receipt Summary

**Job Number:** JC63905

**Client:** AMEC FOSTER WHEELER

**Project:** REVIEW AVENUE, LONG ISLAND CITY, NY

**Date / Time Received:** 4/10/2018 1:30:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (2.1);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6);

**Cooler Security**

- |  |   |
|--|---|
| <b>Y or N</b>  | <b>Y or N</b>   |
| 1. Custody Seals Present: <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>        |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> <input type="checkbox"/>  | 4. Smpl Dates/Time OK: <input checked="" type="checkbox"/> <input type="checkbox"/> |

**Cooler Temperature**

- |   |           |
|---|-----------|
| <b>Y or N</b>   |           |
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> <input type="checkbox"/> |           |
| 2. Cooler temp verification: _____  | IR Gun    |
| 3. Cooler media: _____  | Ice (Bag) |
| 4. No. Coolers: _____   | 1         |

**Quality Control Preservation**

- |                                 |   |            |
|---------------------------------|---|------------|
|                                 | <b>Y or N</b>   | <b>N/A</b> |
| 1. Trip Blank present / cooler: | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |            |
| 4. VOCs headspace free:         | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |            |

**Sample Integrity - Documentation**

- |  |                                     |           |                          |
|--|-------------------------------------|-----------|--------------------------|
|  | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

**Sample Integrity - Condition**

- |                                  |                                     |           |                          |
|----------------------------------|-------------------------------------|-----------|--------------------------|
|                                  | <b>Y</b>                            | <b>or</b> | <b>N</b>                 |
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |           |                          |

**Sample Integrity - Instructions**

- |  |                                     |           |                                     |                                     |
|--|-------------------------------------|-----------|-------------------------------------|-------------------------------------|
|  | <b>Y</b>                            | <b>or</b> | <b>N</b>                            | <b>N/A</b>                          |
| 1. Analysis requested is clear:            | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests: | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:         | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:           | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 216017      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC63905: Chain of Custody**

**Page 3 of 4**

4.2  
4



***de maximis, inc.***

1550 Pond Road  
Suite 120  
Allentown, PA 18104  
(610) 435-1151  
FAX (610) 435-8459

August 13, 2018

***Via U.S. Mail***

Mr. Sean H. Hulbert  
Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, New York 11368

**RE: Review Avenue Development Sites - 37-30 and 37-80 Review Avenue  
File # C-5652  
3<sup>rd</sup> Quarter 2018 Effluent Discharge Compliance Report**

Dear Mr. Hulbert:

Enclosed is the 3<sup>rd</sup> Quarter 2018 - Effluent Discharge Compliance Report for the Review Avenue Development Sites. This report is being submitted on behalf of the Review Avenue System LLC administering the Review Avenue Development Site Brownfield Projects identified as RAD I and RAD II.

I would like to call to your attention the following, relative to discharge for the 3<sup>rd</sup> Quarter 2018:

- Approximately 542,600 gallons of water have been discharged to the sewer system since the last report was submitted.
- No constituents were reported above discharge criteria.

Please contact me with any questions at (610) 435-1151.

Sincerely,

***de maximis, inc.***

R. Craig Coslett  
Project Coordinator for RAD I and RAD II





Mr. Sean H. Hulbert  
August 13, 2018  
Page 2

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Enclosures: Compliance Monitoring Report for 3<sup>rd</sup> Quarter 2018  
CC: John Grathwol, NYDEC (electronic mail only)  
Tim Kessler, Wood Group (electronic mail only)  
Brent O'Dell, Wood Group (electronic mail only)

File: 3216 / 3<sup>rd</sup> Qrt Compliance Report 2018

August 10, 2018

Mr. Sean H. Hulbert - Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, NY 11368

Subject: **3<sup>rd</sup> Quarter 2018 Effluent Discharge Compliance  
Review Avenue Development Sites  
37-30 and 37-80 Review Avenue  
Long Island City, Queens, New York, File # C-5652**

Dear Mr. Hulbert:

Wood Environment and Infrastructure Solutions, Inc. (Wood), on behalf of Review Avenue System LLC, submits the effluent laboratory analysis data in connection with the letter of approval (LOA) for groundwater discharge to sanitary or combined sewer for the Review Avenue Development (RAD) Sites and LOA Extension dated October 17, 2017. Please note that our company name has changed on April 16, 2018 from Amec Foster Wheeler Environment & Infrastructure, Inc. to Wood Environment & Infrastructure Solutions, Inc. This change is administrative in nature and consists of a change in name only.

Wood collected the 3rd Quarter 2018 discharge compliance samples on July 10, 2018. Analytical results indicate no exceedances of the daily discharge limits for all parameters and no exceedances of the monthly discharge limits for all parameters, and therefore the discharge is in compliance with our LOA requirements. The analytical results collected for the 3rd quarter 2018 compliance sampling is summarized on Table 1 attached. The total volume of groundwater discharged to the sanitary or combined sewer, since system start-up was 6,363,125 gallons as of the July 10th sampling event and 542,602 gallons since the last quarterly sampling event on April 10<sup>th</sup>.

If you have any questions, please contact either of the undersigned at (609) 689-2829.

Sincerely,

**Wood Environment & Infrastructure Solutions, Inc.**



Brent C. O'Dell, P.E.  
Principal Engineer – Civil



Timothy C. Kessler  
Senior Associate Engineer/PM

Attachments: Table 1 – Summary of Groundwater Analytical Results  
cc: R. Craig Coslett – Review Avenue System LLC

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	NYCDEP Daily Limit	NYCDEP Monthly Limit	RA-EFF-G	RA-EFF-C
Compliance Period:				3Q 2018	3Q 2018
Sample Date:				7/10/2018	7/10/2018
Lab Sample ID:				JC69520-1	JC69520-2
Non-polar material <sup>1</sup>	mg/L	50	NL	8.8	-
pH <sup>2</sup>	SUs	5 - 12	NL	7.07	-
Temperature <sup>2</sup>	°F	150	NL	69.26	-
Flash Point <sup>3</sup>	°F	> 140	NL	> 200	-
Cadmium (Instantaneous)	mg/L	2	NL	0.003 U	-
Cadmium (Composite)	mg/L	0.69	NL	-	0.003 U
Chromium (VI)	mg/L	5	NL	0.01	-
Copper	mg/L	5	NL	0.012	-
Lead	mg/L	2	NL	0.009 U	-
Mercury	mg/L	0.05	NL	0.0002 U	-
Nickel	mg/L	3	NL	0.01 U	-
Zinc	mg/L	5	NL	0.0968	-
Benzene	µg/L	134	57	0.23 U	-
Carbon Tetrachloride	µg/L	NL	NL	-	0.31 U
Chloroform	µg/L	NL	NL	-	0.2 U
1,4-Dichlorobenzene	µg/L	NL	NL	0.24 U	-
Ethylbenzene	µg/L	380	142	0.21 U	-
MTBE (Methyl-Tert-Butyl-Ether)	µg/L	50	NL	0.24 U	-
Napthalene	µg/L	47	19	-	0.23 U
Phenol	µg/L	NL	NL	-	0.39 U
Tetrachloroethylene (Perc)	µg/L	20	NL	0.82 U	-
Toluene	µg/L	74	28	0.24 U	-
1,2,4-Trichlorobenzene	µg/L	NL	NL	-	0.25 U
1,1,1-Trichloroethane	µg/L	NL	NL	-	0.36 U
Xylenes (Total)	µg/L	74	28	0.2 U	-
PCBs (Total)	µg/L	1	NL	-	0.2 U
Total Suspended Solids (TSS)	mg/L	350	NL	45.000	-
CBOD	mg/L	NL	NL	-	4.2
Chloride	mg/L	NL	NL	126.0	-
Total Nitrogen	mg/L	NL	NL	-	6.22
Total Solids	mg/L	NL	NL	980	-

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

RA-EFF-G: Instantaneous (Grab) Sample

RA-EFF-C: 4-Hour Flow Weighted Composite Sample

**Bold/Shaded:** Concentration exceeds daily limit

Underline: Concentration exceeds monthly limit

1. Non-polar Material reported by lab as "Silica Gel Treated n-Hexane Extractable Material (SGT-HEM)"
2. pH and Temperature measured in field
3. Flash Point reported by lab as Ignitability

**Definitions:**

MDL: Method Detection Limit

RL: Reporting Limit

NL: No Limit

**Data Qualifiers:**

J: Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U: Indicates the analyte was not detected at the indicated RL.

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

Wood Environment & Infrastructure Solut.

Review Avenue, Long Island City, NY

3480160502 PO#C012700305

SGS Job Number: JC69520

Sampling Date: 07/10/18


Report to:

Wood Environment & Infrastructure Solut.  
200 American Metro Boulevard Suite 113  
Hamilton, NJ 08619  
Timothy.Kessler@amecfw.com; Vincent.Whelan@amecfw.com  
ATTN: Tim Kessler

Total number of pages in report: **24**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

  
A. Paul Ioannidis  
General Manager

Client Service contact: Cynthia Romero 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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## Sample Summary

Wood Environment & Infrastructure Solut.

Job No: JC69520

Review Avenue, Long Island City, NY  
Project No: 3480160502 PO#C012700305

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC69520-1	07/10/18	10:45 DB	07/10/18	AQ	Effluent	RA-EFF-G
JC69520-1R	07/10/18	10:45 DB	07/10/18	AQ	Effluent	RA-EFF-G
JC69520-2	07/10/18	10:40 DB	07/10/18	AQ	Effluent	RA-EFF-C
JC69520-2R	07/10/18	10:40 DB	07/10/18	AQ	Effluent	RA-EFF-C

## Summary of Hits

**Job Number:** JC69520  
**Account:** Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Collected:** 07/10/18

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**JC69520-1 RA-EFF-G**

Copper		12.0	10		ug/l	EPA 200.7
Zinc		96.8	20		ug/l	EPA 200.7
Chloride		126	2.0		mg/l	EPA 300/SW846 9056A
Ignitability (Flashpoint)		> 200			Deg. F	SW846 1010A/ASTM D93
Solids, Total		980	10		mg/l	SM2540 B-11
Solids, Total Suspended		45.0	4.0		mg/l	SM2540 D-11
pH <sup>a</sup>		6.63			su	SM4500H+ B-11

**JC69520-1R RA-EFF-G**

HEM Petroleum Hydrocarbons		8.8	5.4		mg/l	EPA 1664A
----------------------------	--	-----	-----	--	------	-----------

**JC69520-2 RA-EFF-C**

Carbonaceous Bod, 5 Day		4.2	3.4		mg/l	SM5210 B-11
Nitrogen, Total <sup>b</sup>		3.0	0.30		mg/l	SM4500 A-11
Nitrogen, Total Kjeldahl		3.0	0.20		mg/l	EPA 351.2/LACHAT

**JC69520-2R RA-EFF-C**

No hits reported in this sample.

(a) Sample received out of holding time for pH analysis.

(b) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)



Sample Results

---

Report of Analysis

---

# Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G		<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-1		<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624.1		
<b>Project:</b> Review Avenue, Long Island City, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	T232706.D	1	07/12/18 18:06	CSF	n/a	n/a	VT9582
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

**Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.24	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.21	ug/l	
1330-20-7	Xylenes (total)	ND	1.0	0.20	ug/l	
1634-04-4	Methyl Tert Butyl Ether <sup>a</sup>	ND	1.0	0.24	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.24	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.82	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	102%		76-122%
2037-26-5	Toluene-D8 (SUR)	98%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	98%		80-120%
1868-53-7	Dibromofluoromethane (S)	104%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-1	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/11/18	07/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Copper	12.0	10	ug/l	1	07/11/18	07/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Lead <sup>a</sup>	< 9.0	9.0	ug/l	3	07/11/18	07/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Mercury	< 0.20	0.20	ug/l	1	07/11/18	07/11/18 DP	EPA 245.1 <sup>1</sup>	EPA 245.1 <sup>4</sup>
Nickel	< 10	10	ug/l	1	07/11/18	07/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>
Zinc	96.8	20	ug/l	1	07/11/18	07/13/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>3</sup>

(1) Instrument QC Batch: MA44819

(2) Instrument QC Batch: MA44837

(3) Prep QC Batch: MP8041

(4) Prep QC Batch: MP8049

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-1	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	126	2.0	mg/l	1	07/20/18 03:11	NV	EPA 300/SW846 9056A
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	07/10/18 17:20	LS	SM3500CR B-11
Ignitability (Flashpoint)	> 200		Deg. F	1	07/19/18 22:00	HS	SW846 1010A/ASTM D93
Solids, Total	980	10	mg/l	1	07/11/18 12:50	RC	SM2540 B-11
Solids, Total Suspended	45.0	4.0	mg/l	1	07/11/18 10:58	RC	SM2540 D-11
pH <sup>a</sup>	6.63		su	1	07/10/18 13:54	SUB	SM4500H+ B-11

(a) Sample received out of holding time for pH analysis.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-1R	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Petroleum Hydrocarbons	8.8	5.4	mg/l	1	07/19/18 10:15	TM	EPA 1664A

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C		<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-2		<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624.1		
<b>Project:</b> Review Avenue, Long Island City, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	T232707.D	1	07/12/18 18:37	CSF	n/a	n/a	VT9582
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
56-23-5	Carbon tetrachloride	ND	1.0	0.31	ug/l	
67-66-3	Chloroform	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	103%		76-122%
2037-26-5	Toluene-D8 (SUR)	99%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	100%		80-120%
1868-53-7	Dibromofluoromethane (S)	103%		80-120%

---

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-2	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 625.1 EPA 625	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F178228.D	1	07/24/18 12:37	CC	07/13/18 19:05	OP13467	EF7596
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

### ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-95-2	Phenol	ND	2.0	0.39	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		10-110%
4165-62-2	Phenol-d5	30%		10-110%
118-79-6	2,4,6-Tribromophenol	88%		35-147%
4165-60-0	Nitrobenzene-d5	75%		32-132%
321-60-8	2-Fluorobiphenyl	76%		40-117%
1718-51-0	Terphenyl-d14	86%		33-126%

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-2	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	07/11/18	07/13/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA44837

(2) Prep QC Batch: MP8041

---

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-2	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Carbonaceous Bod, 5 Day	4.2	3.4	mg/l	1	07/10/18 21:11	SA	SM5210 B-11
Nitrogen, Nitrate <sup>a</sup>	< 0.11	0.11	mg/l	1	07/13/18 11:26	BM	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	07/13/18 11:26	BM	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/10/18 20:00	LS	SM4500NO2 B-11
Nitrogen, Total <sup>b</sup>	3.0	0.30	mg/l	1	07/16/18 09:26	BM	SM4500 A-11
Nitrogen, Total Kjeldahl	3.0	0.20	mg/l	1	07/16/18 09:26	BM	EPA 351.2/LACHAT

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(b) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 07/10/18
<b>Lab Sample ID:</b> JC69520-2R	<b>Date Received:</b> 07/10/18
<b>Matrix:</b> AQ - Effluent	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 608 EPA 608	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX232571.D	1	07/23/18 04:31	CP	07/20/18 17:25	OP13653	GXX6418
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	970 ml	1.0 ml
Run #2		

### PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.052	0.035	ug/l	
11104-28-2	Aroclor 1221	ND	0.052	0.030	ug/l	
11141-16-5	Aroclor 1232	ND	0.052	0.021	ug/l	
53469-21-9	Aroclor 1242	ND	0.052	0.028	ug/l	
12672-29-6	Aroclor 1248	ND	0.052	0.026	ug/l	
11097-69-1	Aroclor 1254	ND	0.052	0.035	ug/l	
11096-82-5	Aroclor 1260	ND	0.052	0.028	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		10-156%
877-09-8	Tetrachloro-m-xylene	83%		10-156%
2051-24-3	Decachlorobiphenyl	67%		10-143%
2051-24-3	Decachlorobiphenyl	70%		10-143%

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Parameter Certification Exceptions

**Job Number:** JC69520  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY

The following parameters included in this report are exceptions to NELAC certification. The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
-----------	------	--------	-----	----------------------

Ignitability (Flashpoint)		SW846 1010A/ASTM D93	AQ	SGS is not certified for this parameter. <sup>a</sup>
Nitrogen, Total		SM4500 A-11	AQ	SGS is not certified for this parameter. <sup>b</sup>

- (a) Lab cert for analyte/method not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.
- (b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

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2235 Route 130, Dayton, NJ 08810  
TFL 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking # \_\_\_\_\_ Bottle Order Control # \_\_\_\_\_  
Accutest Quote # **DK4\_2016\_911** Accutest Job # **JC69520**

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes															
Company Name: <b>Wood EHS</b>		Project Name: _____		Flashpoint (Ignitability) - SW846 101A										DW - Drinking Water															
Street Address: <b>200 American Metro BLVD #113</b>		Street: <b>37-30 &amp; 37-80 Review Avenue</b>		Metals (Cd, Cu, Pb, Ni, Zn) - EPA 200.7										GW - Ground Water															
City: <b>Hamilton, NJ 08619</b>		City: <b>Long Island City, Queens, NY</b>		Mercury (Hg) - EPA 245.1										WW - Water															
Project Contact: <b>Vincent Whelan@amectw.com</b>		Project # <b>3480160502</b>		SGT HEM - EPA 1664A SGT										SW - Surface Water															
Phone # _____ Fax # _____		Client Purchase Order # <b>C012700305</b>		PH (SM4500H+ B-1); Total Solids (SM2540 B-11); Chloride (EPA 300.0 / SM4500 Cl-C)										SO - Soil															
M: 609-815-6175, D: 609-689-2832, F: 609-689-2838		Project Manager: <b>Tim Kessler</b>		Total Suspended Solids - SM2540 D-11										SL - Sludge															
Sample ID Name(s): <b>D. Bericowitz 8482027312</b>		Attention: _____		VOC (V624BTKM, VMS+PCE, VMS+14DCB) - EPA 624										SED - Sediment															
Accutest Sample # _____		MEOH/DI Vial # _____		Hexavalent Chromium (SM3500 Cr B)										OI - Oil															
Field ID / Point of Collection		Date		Time		Sampled by		Matrix		# of bottles		HCl		NaOH		HM3		PCBOL		NONE		DI Water		MEDA		ENCORE		LAB USE ONLY	
1 RA-EFF-G		7/10/18		1045		DB		GW		11		8		1		5										L20			
RA-EFF-C		7/10/18		1040		DB		GW		8		8		1		6										A16			
2 RA-VOC-C1		7/10/18		0730		DB		GW		3		3														L61			
RA-VOC-C2		7/10/18		0830		DB		GW		3		3														V980			
RA-VOC-C3		7/10/18		0930		DB		GW		3		3														E14			
RA-VOC-C4		7/10/18		1030		DB		GW		3		3														COMP			

INITIAL ASSESSMENT *JK 2B*  
LABEL VERIFICATION \_\_\_\_\_

Turnaround Time (Business days)		Date Deliverable Information										Comments / Special Instructions			
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____		Approved By (Accutest PM): / Date: _____		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> NYASP Category A <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NYASP Category B <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> State Forms <input type="checkbox"/> NJ Reduced <input type="checkbox"/> EDD Format <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> Other <u>NYCDEP</u>										COMPOSITE RA-VOC-C1 to RA-VOC-C4 IN LAB TO BE USED FOR  RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM + PCB SAMPLE  HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME	
Emergency & Rush TIA data available VIA Lablink															
Sample Custody must be documented below each time samples change possession, including courier deli															
Relinquished by: <i>[Signature]</i>		Date Time: <b>7/10/18 1320</b>		Received By: <i>[Signature]</i>		Date Time: _____		Relinquished By: _____		Date Time: _____		Received By: _____			
Relinquished by Sampler: _____		Date Time: _____		Received By: _____		Date Time: _____		Relinquished By: _____		Date Time: _____		Received By: _____			
Relinquished by: _____		Date Time: _____		Received By: _____		Date Time: _____		Custody Seal # _____		<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Preserved where applicable <input type="checkbox"/> Not Intact <input type="checkbox"/>		<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp. <b>13C</b> <b>FD</b>			

2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking #  
Accutest Quote # **DK4\_2016\_911** Bottle Order Control #  
Accutest Job # **JC 69520**

Client / Reporting Information		Project Information				Requested Analysis ( see TEST CODE sheet)												Matrix Codes								
Company Name: <b>Wood &amp; B+IS</b> <del>Accutest</del>		Project Name: <b>Review Ave, Long Island City, Queens</b>				Total Nitrogen (TKN, NO2/NO3) - SM18 4500N Composite VOCs (4:1 Ratio) VOC (V624CHLFRM, VMS+CTC, VMS+TCA) - EPA 624												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank								
Street Address: <b>200 American Metro BLVD #113</b>		Street: <b>37-30 &amp; 37-80 Review Avenue</b>		Billing Information (if different from Report to)																						
City: <b>Hamilton, NJ 08619</b>		City: <b>Long Island City, Queens, NY</b>		Company Name																						
Project Contact: <b>Vincent Whelan@amectw.com</b>		Project #: <b>3480160502</b>		Street Address																						
Phone #: <b>M: 609-815-6175, D: 609-689-2832, F: 609-689-2838</b>		Client Purchase Order #: <b>C012700305</b>		City																						
Sampler(s) Name(s): <b>D. Berkowitz 8487024342</b>		Project Manager: <b>Tim Kessler</b>		State																						
Field ID / Point of Collection		MEOH/DI Vial #		Collection															Matrix		# of bottles		Number of preserved Bottles		LAB USE ONLY	
1				Date: <b>7/10/18</b> Time: <b>1045</b>															DB		GW		11		5	
				Date: <b>7/10/18</b> Time: <b>1040</b>															DB		GW		8		11	
				Date: <b>7/10/18</b> Time: <b>0730</b>															DB		GW		3		1	
2				Date: <b>7/10/18</b> Time: <b>0830</b>		DB		GW		3		1														
				Date: <b>7/10/18</b> Time: <b>0930</b>		DB		GW		3		1														
				Date: <b>7/10/18</b> Time: <b>1030</b>		DB		GW		3		1														
Turnaround Time ( Business days)		Data Deliverable Information				Comments / Special Instructions																				
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____ Emergency & Rush T/A data available VIA Lablink		Approved By (Accutest PM) / Date: _____ <input type="checkbox"/> Commercial "A" ( Level 1) <input type="checkbox"/> Commercial "B" ( Level 2) <input type="checkbox"/> FULLT1 ( Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other NYCDEP				COMPOSITE RA-VOC-C1 TO RA-VOC-C4 IN LAB TO BE USED FOR RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM SAMPLE <i>AKS</i> HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME																				
Sample Custody must be documented below each time samples change possession, including courier deli																										
Relinquished by Sampler: <b>1</b>		Date Time: <b>7/10/18 1300</b>		Received By: <b>1</b>		Date Time: _____		Relinquished By: <b>2</b>		Date Time: _____		Received By: <b>2</b>														
Relinquished by Sampler: <b>3</b>		Date Time: _____		Received By: <b>3</b>		Date Time: _____		Relinquished By: <b>4</b>		Date Time: _____		Received By: <b>4</b>														
Relinquished by: <b>5</b>		Date Time: _____		Received By: <b>5</b>		Date Time: _____		Custody Seal #		<input type="checkbox"/> Intact <input type="checkbox"/> Not intact		Preserved where applicable <input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.														

4.2  
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## SGS Sample Receipt Summary

Job Number: JC69520

Client: AMEC FOSTER WHEELER

Project: REVIEW AVENUE, LONG ISLAND CITY, NY

Date / Time Received: 7/10/2018 1:20:00 PM

Delivery Method: \_\_\_\_\_

Airbill #'s: \_\_\_\_\_

Cooler Temps (Raw Measured) °C: Cooler 1: (1.3);

Cooler Temps (Corrected) °C: Cooler 1: (1.3);

**Cooler Security**

- |                           |                                     |           |                          |                       |                                     |           |                          |
|---------------------------|-------------------------------------|-----------|--------------------------|-----------------------|-------------------------------------|-----------|--------------------------|
|                           | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |                       | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

**Cooler Temperature**

- |                              |                                     |           |                          |
|------------------------------|-------------------------------------|-----------|--------------------------|
|                              | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |           |                          |
| 3. Cooler media:             | Ice (Bag)                           |           |                          |
| 4. No. Coolers:              | 1                                   |           |                          |

**Quality Control Preservation**

- |                                 |                                     |           |                                     |                          |
|---------------------------------|-------------------------------------|-----------|-------------------------------------|--------------------------|
|                                 | <u>Y</u>                            | <u>or</u> | <u>N</u>                            | <u>N/A</u>               |
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                          |
| 4. VOCs headspace free:         | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            | <input type="checkbox"/> |

**Sample Integrity - Documentation**

- |  |                                     |           |                          |
|--|-------------------------------------|-----------|--------------------------|
|  | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

**Sample Integrity - Condition**

- |                                  |                                     |           |                          |
|----------------------------------|-------------------------------------|-----------|--------------------------|
|                                  | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |           |                          |

**Sample Integrity - Instructions**

- |   |                                     |           |                                     |                                     |
|---|-------------------------------------|-----------|-------------------------------------|-------------------------------------|
|   | <u>Y</u>                            | <u>or</u> | <u>N</u>                            | <u>N/A</u>                          |
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s: pH 1-12: 216017 pH 12+: 208717 Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

JC69520: Chain of Custody

Page 3 of 4

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4

December 12, 2018

Mr. Sean H. Hulbert - Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, NY 11368

Subject: **4<sup>th</sup> Quarter 2018 Effluent Discharge Compliance  
Review Avenue Development Sites  
37-30 and 37-80 Review Avenue  
Long Island City, Queens, New York, File # C-5652**

Dear Mr. Hulbert:

Wood Environment and Infrastructure Solutions, Inc. (Wood), on behalf of Review Avenue System LLC, submits the effluent laboratory analysis data in connection with the letter of approval (LOA) for groundwater discharge to sanitary or combined sewer for the Review Avenue Development (RAD) Sites and LOA Extension dated October 12, 2018. Please note that our company name has changed on April 16, 2018 from Amec Foster Wheeler Environment & Infrastructure, Inc. to Wood Environment & Infrastructure Solutions, Inc. This change is administrative in nature and consists of a change in name only.

Wood collected the 4th Quarter 2018 discharge compliance samples on October 18th, 2018. Analytical results indicate no exceedances of the daily discharge limits for all parameters and no exceedances of the monthly discharge limits for all parameters, and therefore the discharge is in compliance with our LOA requirements. The analytical results collected for the 4th quarter 2018 compliance sampling are summarized on Table 1 attached. The total volume of groundwater discharged to the sanitary or combined sewer, since system start-up was 7,465,940 gallons as of the October 18th sampling event and 1,195,150 gallons since the last quarterly sampling event on July 10<sup>th</sup>.

If you have any questions, please contact either of the undersigned at (609) 689-2829.

Sincerely,

**Wood Environment & Infrastructure Solutions, Inc.**



Brent C. O'Dell, P.E.  
Principal Engineer – Civil



Timothy C. Kessler  
Senior Associate Engineer/PM

Attachments: Table 1 – Summary of Groundwater Analytical Results

cc: R. Craig Coslett – Review Avenue System LLC



**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	NYCDEP Daily Limit	NYCDEP Monthly Limit	RA-EFF-G		RA-EFF-C	
Compliance Period:				4Q 2018		4Q 2018	
Sample Date:				10/18/2018		10/18/2018	
Lab Sample ID:				JC76121-1		JC76121-2	
Non-polar material <sup>1</sup>	mg/L	50	NL	16.0		-	
pH <sup>2</sup>	SUs	5 - 12	NL	6.45		-	
Temperature <sup>2</sup>	°F	150	NL	57.4		-	
Flash Point <sup>3</sup>	°F	> 140	NL	> 200		-	
Cadmium (Instantaneous)	mg/L	2	NL	0.003	U	-	
Cadmium (Composite)	mg/L	0.69	NL	-		0.003	U
Chromium (VI)	mg/L	5	NL	0.01	U	-	
Copper	mg/L	5	NL	0.01	U	-	
Lead	mg/L	2	NL	0.006	U	-	
Mercury	mg/L	0.05	NL	0.0002	U	-	
Nickel	mg/L	3	NL	0.01	U	-	
Zinc	mg/L	5	NL	0.052		-	
Benzene	µg/L	134	57	0.34	U	-	
Carbon Tetrachloride	µg/L	NL	NL	-		0.33	U
Chloroform	µg/L	NL	NL	-		0.35	U
1,4-Dichlorobenzene	µg/L	NL	NL	0.78	U	-	
Ethylbenzene	µg/L	380	142	0.28	U	-	
MTBE (Methyl-Tert-Butyl-Ether)	µg/L	50	NL	1.9	U	-	
Napthalene	µg/L	47	19	-		0.40	
Phenol	µg/L	NL	NL	-		0.38	U
Tetrachloroethylene (Perc)	µg/L	20	NL	0.41	U	-	
Toluene	µg/L	74	28	0.28	U	-	
1,2,4-Trichlorobenzene	µg/L	NL	NL	-		0.25	U
1,1,1-Trichloroethane	µg/L	NL	NL	-		0.29	U
Xylenes (Total)	µg/L	74	28	1.4		-	
PCBs (Total)	µg/L	1	NL	-		0.19	U
Total Suspended Solids (TSS)	mg/L	350	NL	16.3		-	
CBOD	mg/L	NL	NL	-		20	U
Chloride	mg/L	NL	NL	116.0		-	
Total Nitrogen	mg/L	NL	NL	-		8.0	
Total Solids	mg/L	NL	NL	833		-	

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

RA-EFF-G: Instantaneous (Grab) Sample

RA-EFF-C: 4-Hour Flow Weighted Composite Sample

**Bold/Shaded:** Concentration exceeds daily limit

Underline: Concentration exceeds monthly limit

1. Non-polar Material reported by lab as "Silica Gel Treated n-Hexane Extractable Material (SGT-HEM)"
2. pH and Temperature measured in field
3. Flash Point reported by lab as Ignitability

**Definitions:**

MDL: Method Detection Limit

RL: Reporting Limit

NL: No Limit

**Data Qualifiers:**

J: Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U: Indicates the analyte was not detected at the indicated RL.

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

Wood Environment & Infrastructure Solut.

Review Avenue, Long Island City, NY

3480160502

SGS Job Number: JC76121

Sampling Date: 10/18/18


Report to:

Wood Environment & Infrastructure Soln.  
200 American Metro Boulevard Suite 113  
Hamilton, NJ 08619  
Timothy.Kessler@amecfw.com; Vincent.Whelan@amecfw.com  
ATTN: Tim Kessler

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

  
A. Paul Ioannidis  
General Manager

Client Service contact: Cynthia Romero 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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1

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## Sample Summary

Wood Environment & Infrastructure Solut.

Job No: JC76121

Review Avenue, Long Island City, NY  
Project No: 3480160502

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JC76121-1	10/18/18	10:15 DB	10/18/18	AQ	Ground Water	RA-EFF-G
JC76121-1R	10/18/18	10:15 DB	10/18/18	AQ	Ground Water	RA-EFF-G
JC76121-2	10/18/18	10:40 DB	10/18/18	AQ	Ground Water	RA-EFF-C
JC76121-2R	10/18/18	10:40 DB	10/18/18	AQ	Ground Water	RA-EFF-C

## Summary of Hits

**Job Number:** JC76121  
**Account:** Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Collected:** 10/18/18

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**JC76121-1 RA-EFF-G**

Xylenes (total)	1.4	1.0	0.35	ug/l	EPA 624.1
Methyl Tert Butyl Ether	1.9	1.0	0.46	ug/l	EPA 624.1
Zinc	52.0	20		ug/l	EPA 200.7
Chloride	116	20		mg/l	EPA 300/SW846 9056A
Ignitability (Flashpoint)	> 200			Deg. F	SW846 1010A/ASTM D93
Solids, Total	833	10		mg/l	SM2540 B-11
Solids, Total Suspended	16.3	4.0		mg/l	SM2540 D-11

**JC76121-1R RA-EFF-G**

HEM Petroleum Hydrocarbons	16.0	5.6		mg/l	EPA 1664A
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**JC76121-2 RA-EFF-C**

Naphthalene	0.40 J	0.97	0.23	ug/l	EPA 625.1
Nitrogen, Total <sup>a</sup>	8.0	0.70		mg/l	SM4500 A-11
Nitrogen, Total Kjeldahl	8.0	0.60		mg/l	EPA 351.2/LACHAT

**JC76121-2R RA-EFF-C**

No hits reported in this sample.

(a) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-1	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624.1	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A185896.D	1	10/19/18 18:02	CSF	n/a	n/a	V1A7944
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

### Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	1.4	1.0	0.35	ug/l	
1634-04-4	Methyl Tert Butyl Ether	1.9	1.0	0.46	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.78	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	93%		76-122%
2037-26-5	Toluene-D8 (SUR)	104%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	103%		80-120%
1868-53-7	Dibromofluoromethane (S)	100%		80-120%

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ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-1	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	10/24/18	10/25/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>5</sup>
Copper	< 10	10	ug/l	1	10/24/18	10/25/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>5</sup>
Lead <sup>a</sup>	< 6.0	6.0	ug/l	2	10/24/18	10/25/18 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Mercury	< 0.20	0.20	ug/l	1	11/01/18	11/01/18 EAL	EPA 245.1 <sup>3</sup>	EPA 245.1 <sup>4</sup>
Nickel	< 10	10	ug/l	1	10/24/18	10/25/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>5</sup>
Zinc	52.0	20	ug/l	1	10/24/18	10/25/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>5</sup>

(1) Instrument QC Batch: MA45521

(2) Instrument QC Batch: MA45527

(3) Instrument QC Batch: MA45564

(4) Prep QC Batch: MP10091

(5) Prep QC Batch: MP9837

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-1	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	116	20	mg/l	10	10/31/18 02:01	NV	EPA 300/SW846 9056A
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	10/18/18 22:50	LS	SM3500CR B-11
Ignitability (Flashpoint)	> 200		Deg. F	1	10/28/18 13:53	RB	SW846 1010A/ASTM D93
Solids, Total	833	10	mg/l	1	10/23/18 12:10	RC	SM2540 B-11
Solids, Total Suspended	16.3	4.0	mg/l	1	10/22/18 10:05	RC	SM2540 D-11

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-1R	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Petroleum Hydrocarbons	16.0	5.6	mg/l	1	10/28/18 15:30	CB	EPA 1664A

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-2	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624.1	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A185897.D	1	10/19/18 18:27	CSF	n/a	n/a	V1A7944
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
56-23-5	Carbon tetrachloride	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.35	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	94%		76-122%
2037-26-5	Toluene-D8 (SUR)	103%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	103%		80-120%
1868-53-7	Dibromofluoromethane (S)	100%		80-120%

---

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C		<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-2		<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 625.1 EPA 625		
<b>Project:</b> Review Avenue, Long Island City, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z133558.D	1	10/26/18 18:40	CC	10/24/18 13:15	OP16156	EZ6591
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

### ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-95-2	Phenol	ND	1.9	0.38	ug/l	
91-20-3	Naphthalene	0.40	0.97	0.23	ug/l	J
120-82-1	1,2,4-Trichlorobenzene	ND	0.97	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	27%		10-110%
4165-62-2	Phenol-d5	17%		10-110%
118-79-6	2,4,6-Tribromophenol	88%		35-147%
4165-60-0	Nitrobenzene-d5	62%		32-132%
321-60-8	2-Fluorobiphenyl	78%		40-117%
1718-51-0	Terphenyl-d14	78%		33-126%

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-2	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	10/24/18	10/25/18 ND	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA45521

(2) Prep QC Batch: MP9837

---

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-2	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Carbonaceous Bod, 5 Day	< 20	20	mg/l	1	10/18/18 21:20	MO	SM5210 B-11
Nitrogen, Nitrate <sup>a</sup>	< 0.11	0.11	mg/l	1	11/01/18 18:51	BM	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	11/01/18 18:51	BM	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	10/18/18 20:40	LS	SM4500NO2 B-11
Nitrogen, Total <sup>b</sup>	8.0	0.70	mg/l	1	11/01/18 18:51	BM	SM4500 A-11
Nitrogen, Total Kjeldahl	8.0	0.60	mg/l	3	11/01/18 11:38	BM	EPA 351.2/LACHAT

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(b) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 10/18/18
<b>Lab Sample ID:</b> JC76121-2R	<b>Date Received:</b> 10/18/18
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 608 EPA 608	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX238989.D	1	11/03/18 05:29	SK	11/01/18 14:30	OP16293	GXX6521
Run #2							

Run #1	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

### PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.048	0.032	ug/l	
11104-28-2	Aroclor 1221	ND	0.048	0.028	ug/l	
11141-16-5	Aroclor 1232	ND	0.048	0.019	ug/l	
53469-21-9	Aroclor 1242	ND	0.048	0.026	ug/l	
12672-29-6	Aroclor 1248	ND	0.048	0.024	ug/l	
11097-69-1	Aroclor 1254	ND	0.048	0.032	ug/l	
11096-82-5	Aroclor 1260	ND	0.048	0.026	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	67%		10-156%
877-09-8	Tetrachloro-m-xylene	71%		10-156%
2051-24-3	Decachlorobiphenyl	32%		10-143%
2051-24-3	Decachlorobiphenyl	131%		10-143%

---

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Parameter Certification Exceptions

**Job Number:** JC76121

**Account:** HLANJPR Wood Environment & Infrastructure Solut.

**Project:** Review Avenue, Long Island City, NY

The following parameters included in this report are exceptions to NELAC certification. The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
-----------	------	--------	-----	----------------------

Ignitability (Flashpoint)		SW846 1010A/ASTM D93	AQ	SGS is not certified for this parameter. <sup>a</sup>
Nitrogen, Total		SM4500 A-11	AQ	SGS is not certified for this parameter. <sup>b</sup>

- (a) Lab cert for analyte/method not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.
- (b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

4.1  
4

E  
COMP

GW

2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking #  
Bottle Order Control # SW-10918-138  
Accutest Quote # DK4 2016\_911  
Accutest Job # JC76121

Client / Reporting Information		Project Information					Requested Analysis (see TEST CODE sheet)										Matrix Codes	
Company Name <b>Amec Foster Wheeler</b>		Project Name <b>Review Ave, Long Island City, Queens</b>					Requested Analysis (see TEST CODE sheet)										Matrix Codes	
Street Address <b>200 American Metro BLVD #113</b>		Street <b>37-30 &amp; 37-80 Review Avenue</b>					Flashpoint (Ignitability) - SW945 1010A										DW - Drinking Water	
City <b>Hamilton, NJ 08619</b>		City <b>Long Island City, Queens, NY</b>					Metals (Cd, Cu, Pb, Ni, Zn) - EPA 200.7;										GW - Ground Water	
Project Contact <b>Vincent.Whelan@amecfw.com</b>		Billing Information (if different from Report to)					Mercury (Hg) - EPA 245.1										WW - Water	
Phone #		Client Purchase Order #					SGT HEM - EPA 1664A SGT										SW - Surface Water	
Fax #		City					Total Suspended Solids - SM2540 D-11										SO - Soil	
M: 609-815-6175, D: 609-689-2832, F: 609-689-2838		State					VOC (UG248ETXM, VMS+PCE, VMS+40CB) - EPA 824										SL - Sludge	
Sample(s) (Amount)		Project Manager					Hexavalent Chromium (SM3500 Cr B)										LIQ - Other Liquid	
8/18/18		Tim Kessler					Phenol, Naphthalene, 1,2-Trichlorobenzene - EPA 825										AIR - Air	
8/18/2018		Attention:					CBOD5 - SM4210 B-11										SOL - Other Solid	
							Metals (Cadmium Only) - EPA 200.7										WP - Wipe	
							PCBs, Low Level (P608PCBL) - EPA 608										FB - Field Blank	
							LAB USE ONLY										EB - Equipment Blank	
																	RB - Rinse Blank	
																	TB - Trip Blank	
Field ID / Point of Collection		Collection																
MEOH/DI Vial #		Date																
Date		Time																
Sampled by		Matrix																
# of bottles		# of bottles																
HCl		HCl																
HNO3		HNO3																
H2O2		H2O2																
NONE		NONE																
DI Water		DI Water																
MESH		MESH																
ENCLOSURE		ENCLOSURE																
Turnaround Time (Business days)		Data Deliverable information															Comments / Special Instructions	
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> Other		Approved By (Accutest PM): / Date:					<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> NYASP Category A <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NYASP Category B <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> State Forms <input type="checkbox"/> NJ Reduced <input type="checkbox"/> EDD Format <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> Other <u>NYCDEP</u>										COMPOSITE RA-VOC-C1 to RA-VOC-C4 IN LAB TO BE USED FOR	
Emergency & Rush T/A data available VIA Lablink							Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data										RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM + PCB SAMPLES	
Sample Custody must be documented below each time samples change possession, including courier deli																	HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME	
Relinquished By:		Received By:															Date Time:	
1. / Date Time: 8/18/18 1330		1. / Date Time:															2	
Relinquished by Sampler:		Received By:															Date Time:	
3 / Date Time:		3 / Date Time:															4	
Relinquished by:		Received By:															Date Time:	
5 / Date Time:		5 / Date Time:					Custody Seal / 139										Cooler Temp. 4.5 °C	
							<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not intact <input checked="" type="checkbox"/> Preserved where applicable											

4.2  
4

INITIAL ASSESSMENT 38 hrs  
LABEL VERIFICATION

2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote # <b>DK4_2016_911</b>	Accutest Job # <b>JC76121</b>

**Client / Reporting Information      Project Information      Requested Analysis ( see TEST CODE sheet)      Matrix Codes**

<b>Client / Reporting Information</b>	<b>Project Information</b>	<b>Requested Analysis ( see TEST CODE sheet)</b>	<b>Matrix Codes</b>
Company Name <b>Amech Foster Wheeler</b>	Project Name <b>Review Ave, Long Island City, Queens</b>	Total Nitrogen (TKN, NO2/NO3) - SM18 4500N Composite VOCs (4:1 Ratio) VOC (V624CHLFRM, VMS+CTC, VMS+TCA) - EPA 624	DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SED - Sediment QI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address <b>200 American Metro BLVD #113</b>	Street <b>37-30 &amp; 37-80 Review Avenue</b>		
City <b>Hamilton, NJ 08619</b>	City <b>Long Island City, Queens, NY</b>		
Project Contact <b>Vincent.Wheelan@amechw.com</b>	Project # <b>3480160502</b>		
Phone # <b>M: 609-815-6175, D: 609-689-2832, F: 609-689-2838</b>	Client Purchase Order # <b>CD12700305</b>		
Sample #s <b>1, 2, 3, 4, 5, 6, 7, 8, 9, 10</b>	Project Manager <b>Tim Kessler</b>		

Accutest Sample #	Field ID / Point of Collection	MEDI/ID Vial #	Collection				Number of preserved Bottles									X	X	LAB USE ONLY
			Date	Time	Sampled by	Matrix	# of bottles	CD	MCHD	HNO3	H2SO4	NONE	DI Water	MEDIA	EMCODE			
1	RA-EFF-G		12/18/18	1215	JK	GW	11	5	1	5								
2	RA-EFF-C		12/18/18	1240	JK	GW	5	1	1	6								
3	RA-VOC-C1		12/18/18	0830	JK	GW	5	1										
4	RA-VOC-C2		12/18/18	0830	JK	GW	5	1										
5	RA-VOC-C3		12/18/18	0830	JK	GW	5	1										
6	RA-VOC-C4		12/18/18	1230	JK	GW	5	1										

Turnaround Time ( Business days)	Data Deliverable Information	Comments / Special Instructions
----------------------------------	------------------------------	---------------------------------

<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other	Approved By (Accutest PM): / Date: _____	<input type="checkbox"/> Commercial "A" ( Level 1) <input type="checkbox"/> Commercial "B" ( Level 2) <input type="checkbox"/> FULLT1 ( Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C"	<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other <u>NYCDEP</u>	COMPOSITE RA-VOC-C1 to RA-VOC-C4 in LAB TO BE USED FOR RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM SAMPLE HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME
--	---	--	--	---

Sample Custody must be documented below each time samples change possession, including courier deli								
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:	Relinquished by Sampler:	Date Time:	
1 [Signature]	12/18/18 1230	2 [Signature]	2 [Signature]	12/18/18 1230	3 [Signature]	3 [Signature]	12/18/18 1230	
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:	Relinquished by Sampler:	Date Time:	
3 [Signature]	12/18/18 1230	4 [Signature]	4 [Signature]	12/18/18 1230	5 [Signature]	5 [Signature]	12/18/18 1230	
Relinquished by Sampler:	Date Time:	Received By:	Custody	Intact	Not Intact	Preserved where applicable	On Ice	Cooler Temp.
5 [Signature]	12/18/18 1230	5 [Signature]	5 [Signature]	Intact	Not Intact			9.5

12/18/18



## SGS Sample Receipt Summary

Job Number: JC76121

Client: WOOD ENVIRONMENT & INFRASTRUCT

Project: REVIEW AVENUE, LONG ISLAND CITY, NY

Date / Time Received: 10/18/2018 1:30:00 PM

Delivery Method: \_\_\_\_\_

Airbill #s: \_\_\_\_\_

Cooler Temps (Raw Measured) °C: Cooler 1: (4.5);

Cooler Temps (Corrected) °C: Cooler 1: (3.9);

<u>Cooler Security</u>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: <u>216017</u>	pH 12+: <u>208717</u>	Other: (Specify) _____
--------------------	------------------------	-----------------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC76121: Chain of Custody**

**Page 3 of 4**

4.2  
4

**Job Change Order: JC76121**

**Requested Date:** 10/25/2018      **Received Date:** 10/18/2018  
**Account Name:** Wood Environment & Infrastructure      **Due Date:** 11/1/2018  
**Project Description:** Review Avenue, Long Island City, NY      **Deliverable:** NYASPA  
**C/O Initiated By:** CR      **PM:** CR      **TAT (Days):** 14

=====  
**Sample #:** JC76121-1      **Change:**  
Dept: Relog for PHC1664.

**TAT:** 14

RA-EFF-G  
=====

=====  
**Sample #:** JC76121-2      **Change:**  
Dept: Relog for P608PCBLL.

**TAT:** 14

RA-EFF-C  
=====

**JC76121: Chain of Custody**  
**Page 4 of 4**

**Above Changes Per:** Client - Timothy Kessler      **Date/Time:** 10/25/2018 2:59:31 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

### Internal Sample Tracking Chronicle

Wood Environment & Infrastructure Solut.

Job No: JC76121

Review Avenue, Long Island City, NY  
 Project No: 3480160502

4.3  
4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC76121-1 Collected: 18-OCT-18 10:15 By: DB Received: 18-OCT-18 By: AS RA-EFF-G						
JC76121-1	SM3500CR B-11	18-OCT-18 22:50	LS			XCRSM
JC76121-1	EPA 624.1	19-OCT-18 18:02	CSF			V624BTXM
JC76121-1	SM2540 D-11	22-OCT-18 10:05	RC			TSS
JC76121-1	SM2540 B-11	23-OCT-18 12:10	RC			TS
JC76121-1	EPA 200.7	25-OCT-18 05:20	ND	24-OCT-18	TG	CD,CU,NI,ZN
JC76121-1	EPA 200.7	25-OCT-18 11:10	ND	24-OCT-18	TG	PB
JC76121-1	SW846 1010A/ASTM D28	28-OCT-18 13:53	RB			IGN
JC76121-1	EPA 300/SW846 9056A31	31-OCT-18 02:01	NV	30-OCT-18	NV	CHL
JC76121-1	EPA 245.1	01-NOV-18 14:34	EAL	01-NOV-18	EAL	HG
JC76121-2 Collected: 18-OCT-18 10:40 By: DB Received: 18-OCT-18 By: AS RA-EFF-C						
JC76121-2	SM4500NO2 B-11	18-OCT-18 20:40	LS			NO2
JC76121-2	SM5210 B-11	18-OCT-18 21:20	MO	18-OCT-18	MO	CBOD5
JC76121-2	EPA 624.1	19-OCT-18 18:27	CSF			V624CHLFRM,VMS+ CTC,VMS+ TCA
JC76121-2	EPA 200.7	25-OCT-18 05:31	ND	24-OCT-18	TG	CD
JC76121-2	EPA 625.1	26-OCT-18 18:40	CC	24-OCT-18	AY	AB625SL2
JC76121-2	EPA 351.2/LACHAT	01-NOV-18 11:38	BM	31-OCT-18	MP	TKN
JC76121-2	SM4500 A-11	01-NOV-18 18:51	BM			TNIT
JC76121-2	EPA353.2/SM4500NO2BI	01-NOV-18 18:51	BM			NO3O
JC76121-2	EPA 353.2/LACHAT	01-NOV-18 18:51	BM	01-NOV-18	BM	NO32
JC76121-1R Collected: 18-OCT-18 10:15 By: DB Received: 18-OCT-18 By: AS RA-EFF-G						
JC76121-1R	EPA 1664A	28-OCT-18 15:30	CB	28-OCT-18	CB	PHC1664
JC76121-2R Collected: 18-OCT-18 10:40 By: DB Received: 18-OCT-18 By: AS RA-EFF-C						
JC76121-2R	EPA 608	03-NOV-18 05:29	SK	01-NOV-18	AF	P608PCBLL

# SGS Internal Chain of Custody

**Job Number:** JC76121  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 10/18/18

4.4  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC76121-1.1	Secured Storage	Sahara Feliciano	10/26/18 13:50	Retrieve from Storage
JC76121-1.1	Sahara Feliciano	Secured Staging Area	10/26/18 13:50	Return to Storage
JC76121-1.1	Secured Staging Area	Chris Brunson	10/27/18 18:06	Retrieve from Storage
JC76121-1.1	Chris Brunson		10/27/18 19:09	Depleted
JC76121-1.2	Secured Storage	Sahara Feliciano	10/27/18 15:34	Retrieve from Storage
JC76121-1.2	Sahara Feliciano	Secured Staging Area	10/27/18 15:34	Return to Storage
JC76121-1.2	Secured Staging Area	Chris Brunson	10/28/18 13:45	Retrieve from Storage
JC76121-1.2	Chris Brunson	Secured Storage	10/28/18 17:04	Return to Storage
JC76121-1.3	Secured Storage	Todd Shoemaker	10/24/18 07:44	Retrieve from Storage
JC76121-1.3	Todd Shoemaker	Secured Staging Area	10/24/18 07:45	Return to Storage
JC76121-1.3	Secured Staging Area	Taylor Gorman	10/24/18 08:39	Retrieve from Storage
JC76121-1.3	Taylor Gorman	Secured Storage	10/24/18 11:13	Return to Storage
JC76121-1.3	Secured Storage	Sahara Feliciano	10/26/18 17:35	Retrieve from Storage
JC76121-1.3	Sahara Feliciano	Secured Staging Area	10/26/18 17:35	Return to Storage
JC76121-1.3	Secured Staging Area	Edouard Adrian Lee	10/29/18 08:51	Retrieve from Storage
JC76121-1.3	Edouard Adrian Lee	Secured Storage	10/29/18 18:38	Return to Storage
JC76121-1.3	Secured Storage	Sahara Feliciano	10/30/18 17:43	Retrieve from Storage
JC76121-1.3	Sahara Feliciano	Secured Staging Area	10/30/18 17:43	Return to Storage
JC76121-1.3	Secured Staging Area	Bhooma Patel	10/31/18 07:24	Retrieve from Storage
JC76121-1.3	Bhooma Patel	Secured Storage	10/31/18 15:08	Return to Storage
JC76121-1.3.1	Taylor Gorman	Metals Digestion	10/24/18 11:07	Digestate from JC76121-1.3
JC76121-1.3.1	Metals Digestion	Taylor Gorman	10/24/18 11:08	Digestate from JC76121-1.3
JC76121-1.3.1	Taylor Gorman	Metals Digestate Storage	10/24/18 11:08	Return to Storage
JC76121-1.4	Secured Storage	Benjamin Gaines	10/22/18 09:43	Retrieve from Storage
JC76121-1.4	Benjamin Gaines	Secured Staging Area	10/22/18 09:43	Return to Storage
JC76121-1.4	Secured Staging Area	Ruchitaben Chauhan	10/22/18 10:35	Retrieve from Storage
JC76121-1.4	Ruchitaben Chauhan		10/22/18 13:32	Depleted
JC76121-1.6	Secured Storage	Sahara Feliciano	10/18/18 15:35	Retrieve from Storage
JC76121-1.6	Sahara Feliciano	Secured Staging Area	10/18/18 15:35	Return to Storage
JC76121-1.6	Secured Staging Area	Dave Hunkele	10/20/18 05:43	Retrieve from Storage
JC76121-1.6	Dave Hunkele	Secured Storage	10/20/18 05:45	Return to Storage
JC76121-1.6	Secured Storage	Todd Shoemaker	10/23/18 08:19	Retrieve from Storage
JC76121-1.6	Todd Shoemaker	Secured Staging Area	10/23/18 08:19	Return to Storage
JC76121-1.6	Secured Staging Area	Ruchitaben Chauhan	10/23/18 08:59	Retrieve from Storage
JC76121-1.6	Ruchitaben Chauhan	Secured Storage	10/23/18 17:17	Return to Storage
JC76121-1.6	Secured Storage	Dwayne Johnson	10/30/18 09:59	Retrieve from Storage
JC76121-1.6	Dwayne Johnson	Secured Staging Area	10/30/18 09:59	Return to Storage
JC76121-1.6	Secured Staging Area	Natasha Verma	10/30/18 10:38	Retrieve from Storage
JC76121-1.6	Natasha Verma	Secured Storage	10/30/18 16:51	Return to Storage



# SGS Internal Chain of Custody

**Job Number:** JC76121  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 10/18/18

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4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC76121-1.7	Secured Storage	Sahara Feliciano	10/28/18 08:44	Retrieve from Storage
JC76121-1.7	Sahara Feliciano	Secured Staging Area	10/28/18 08:44	Return to Storage
JC76121-1.7	Secured Staging Area	Robert Bandstra	10/28/18 09:49	Retrieve from Storage
JC76121-1.7	Robert Bandstra	Secured Storage	10/28/18 15:47	Return to Storage
JC76121-1.8	Secured Storage	Benjamin Gaines	10/22/18 09:43	Retrieve from Storage
JC76121-1.8	Benjamin Gaines	Secured Staging Area	10/22/18 09:43	Return to Storage
JC76121-1.8	Secured Staging Area	Ruchitaben Chauhan	10/22/18 10:35	Retrieve from Storage
JC76121-1.8	Ruchitaben Chauhan	Secured Storage	10/22/18 17:01	Return to Storage
JC76121-1.8	Secured Storage	Todd Shoemaker	10/24/18 08:16	Retrieve from Storage
JC76121-1.8	Todd Shoemaker	Secured Staging Area	10/24/18 08:16	Return to Storage
JC76121-1.8	Secured Staging Area	Natasha Verma	10/24/18 08:59	Retrieve from Storage
JC76121-1.8	Natasha Verma	Secured Storage	10/24/18 18:16	Return to Storage
JC76121-1.8	Secured Storage	Todd Shoemaker	10/25/18 07:53	Retrieve from Storage
JC76121-1.8	Todd Shoemaker	Secured Staging Area	10/25/18 07:53	Return to Storage
JC76121-1.8	Secured Staging Area	Natasha Verma	10/25/18 10:03	Retrieve from Storage
JC76121-1.8	Natasha Verma	Secured Storage	10/25/18 16:22	Return to Storage
JC76121-1.8	Secured Storage	Todd Shoemaker	10/26/18 08:02	Retrieve from Storage
JC76121-1.8	Todd Shoemaker	Secured Staging Area	10/26/18 08:03	Return to Storage
JC76121-1.8	Secured Staging Area	Natasha Verma	10/26/18 08:36	Retrieve from Storage
JC76121-1.8	Natasha Verma	Secured Storage	10/26/18 17:08	Return to Storage
JC76121-1.8	Secured Storage	Benjamin Gaines	10/29/18 15:24	Retrieve from Storage
JC76121-1.8	Benjamin Gaines	Secured Staging Area	10/29/18 15:24	Return to Storage
JC76121-1.8	Secured Staging Area	Natasha Verma	10/30/18 09:13	Retrieve from Storage
JC76121-1.8	Natasha Verma	Secured Storage	10/30/18 16:51	Return to Storage
JC76121-1.11	Secured Storage	Chelsea San Filippo	10/19/18 12:28	Retrieve from Storage
JC76121-1.11	Chelsea San Filippo	GCMS1A	10/19/18 12:28	Load on Instrument
JC76121-1.11	GCMS1A	Chelsea San Filippo	10/22/18 10:34	Unload from Instrument
JC76121-1.11	Chelsea San Filippo	Secured Storage	10/22/18 10:34	Return to Storage
JC76121-2.2	Secured Storage	Todd Shoemaker	11/01/18 09:32	Retrieve from Storage
JC76121-2.2	Todd Shoemaker	Secured Staging Area	11/01/18 09:33	Return to Storage
JC76121-2.2	Secured Staging Area	Autumn Yun	11/01/18 13:21	Retrieve from Storage
JC76121-2.2	Autumn Yun		11/02/18 08:10	Depleted
JC76121-2.2.1	Autumn Yun	Organics Prep	11/01/18 13:21	Extract from JC76121-2.2
JC76121-2.2.1	Organics Prep	Amanda Furka	11/02/18 00:46	Extract from JC76121-2.2
JC76121-2.2.1	Amanda Furka	Extract Storage	11/02/18 00:46	Return to Storage
JC76121-2.2.1	Extract Storage	Summer Kotb	11/02/18 16:19	Retrieve from Storage
JC76121-2.2.1	Summer Kotb	GCXX	11/02/18 16:19	Load on Instrument
JC76121-2.3	Secured Storage	Sahara Feliciano	10/24/18 18:25	Retrieve from Storage

# SGS Internal Chain of Custody

**Job Number:** JC76121  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 10/18/18

4.4  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC76121-2.3	Sahara Feliciano	Secured Staging Area	10/24/18 18:25	Return to Storage
JC76121-2.3	Secured Staging Area	Brian Johnson	10/24/18 23:40	Retrieve from Storage
JC76121-2.3	Brian Johnson		10/25/18 10:52	Depleted
JC76121-2.3	Brian Johnson		10/25/18 10:53	Depleted
Depleted samples				
JC76121-2.3.1	Brian Johnson	Organics Prep	10/24/18 23:40	Extract from JC76121-2.3
JC76121-2.3.1	Organics Prep	Brian Johnson	10/25/18 10:49	Extract from JC76121-2.3
JC76121-2.3.1	Brian Johnson	Extract Storage	10/25/18 10:49	Return to Storage
JC76121-2.3.1	Extract Storage	Yujia Cheng	10/26/18 12:26	Retrieve from Storage
JC76121-2.3.1	Yujia Cheng	GCMSZ	10/26/18 12:27	Load on Instrument
JC76121-2.3.1	GCMSZ	Yujia Cheng	10/31/18 17:01	Unload from Instrument
JC76121-2.3.1	Yujia Cheng	Extract Freezer	10/31/18 17:01	Return to Storage
JC76121-2.5	Secured Storage	Todd Shoemaker	10/24/18 07:44	Retrieve from Storage
JC76121-2.5	Todd Shoemaker	Secured Staging Area	10/24/18 07:45	Return to Storage
JC76121-2.5	Secured Staging Area	Taylor Gorman	10/24/18 08:39	Retrieve from Storage
JC76121-2.5	Taylor Gorman	Secured Storage	10/24/18 11:13	Return to Storage
JC76121-2.5.1	Taylor Gorman	Metals Digestion	10/24/18 11:07	Digestate from JC76121-2.5
JC76121-2.5.1	Metals Digestion	Taylor Gorman	10/24/18 11:08	Digestate from JC76121-2.5
JC76121-2.5.1	Taylor Gorman	Metals Digestate Storage	10/24/18 11:08	Return to Storage
JC76121-2.6	Secured Storage	Sahara Feliciano	10/26/18 15:56	Retrieve from Storage
JC76121-2.6	Sahara Feliciano	Secured Staging Area	10/26/18 15:56	Return to Storage
JC76121-2.6	Secured Staging Area	Mahendra Patel	10/27/18 08:34	Retrieve from Storage
JC76121-2.6	Mahendra Patel	Secured Storage	10/27/18 15:59	Return to Storage
JC76121-2.6	Secured Storage	Dwayne Johnson	10/31/18 13:46	Retrieve from Storage
JC76121-2.6	Dwayne Johnson	Secured Staging Area	10/31/18 13:46	Return to Storage
JC76121-2.6	Secured Staging Area	Mahendra Patel	10/31/18 14:06	Retrieve from Storage
JC76121-2.6	Mahendra Patel	Secured Storage	10/31/18 18:54	Return to Storage
JC76121-2.7	Secured Storage	Sahara Feliciano	10/18/18 15:35	Retrieve from Storage
JC76121-2.7	Sahara Feliciano	Secured Staging Area	10/18/18 15:35	Return to Storage
JC76121-2.7	Secured Staging Area	Dave Hunkele	10/20/18 05:43	Retrieve from Storage
JC76121-2.7	Dave Hunkele	Secured Storage	10/20/18 05:45	Return to Storage
JC76121-2.8	Secured Storage	Sahara Feliciano	10/18/18 15:35	Retrieve from Storage
JC76121-2.8	Sahara Feliciano	Secured Staging Area	10/18/18 15:35	Return to Storage
JC76121-2.8	Secured Staging Area	Dave Hunkele	10/20/18 05:43	Retrieve from Storage
JC76121-2.8	Dave Hunkele	Secured Storage	10/20/18 05:45	Return to Storage
JC76121-2.9	Secured Storage	Chelsea San Filippo	10/19/18 16:18	Retrieve from Storage
JC76121-2.9	Chelsea San Filippo	GCMS1A	10/19/18 16:18	Load on Instrument

# SGS Internal Chain of Custody

**Job Number:** JC76121  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 10/18/18

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC76121-2.9	GCMS1A	Chelsea San Filippo	10/22/18 10:34	Unload from Instrument
JC76121-2.9	Chelsea San Filippo	Secured Storage	10/22/18 10:34	Return to Storage
JC76121-2.12	Secured Storage	Chelsea San Filippo	10/19/18 16:18	Retrieve from Storage
JC76121-2.12	Chelsea San Filippo		10/19/18 16:18	Depleted

4.4

4



1550 Pond Road  
Suite 120  
Allentown, PA 18104  
(610) 435-1151  
(610) 435-8459 FAX

March 27, 2019

*Via U.S. Mail*

Mr. Sean H. Hulbert  
Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, New York 11368

**RE: Review Avenue Development Sites - 37-30 and 37-80 Review Avenue  
File # C-5652  
1<sup>st</sup> Quarter 2019 Effluent Discharge Compliance Report**

Dear Mr. Hulbert:

Enclosed is the 1<sup>st</sup> Quarter 2019 - Effluent Discharge Compliance Report for the Review Avenue Development Sites. This report is being submitted on behalf of the Review Avenue System LLC administering the Review Avenue Development Site Brownfield Projects identified as RAD I and RAD II.

I would like to call to your attention the following, relative to discharge for the 1<sup>st</sup> Quarter 2019:

- Approximately 1,385,790 gallons of water have been discharged to the sewer system since the last reporting period - 10/18/18.
- No constituents were reported above discharge criteria.

Please contact me with any questions at (610) 435-1151.

Sincerely,

*de maximis, inc.*

A handwritten signature in black ink, appearing to read "R. Craig Coslett".

R. Craig Coslett  
Project Coordinator for RAD I and RAD II

Mr. Sean H. Hulbert  
March 27, 2019  
Page 2

Enclosures: Compliance Monitoring Report for 1<sup>st</sup> Quarter 2019  
CC: John Grathwol, NYDEC (electronic mail only)  
Tim Kessler, Wood Group (electronic mail only)  
Brent O'Dell, Wood Group (electronic mail only)

File: 3216 / 1<sup>st</sup> Qrt Compliance Report jiw2019

March 25, 2019

Mr. Sean H. Hulbert - Assistant Chemical Engineer  
NYCDEP, Bureau of Wastewater Treatment  
96-05 Horace Harding Expressway, 1<sup>st</sup> Floor  
Corona, NY 11368

**Subject: 1<sup>st</sup> Quarter 2019 Effluent Discharge Compliance  
Review Avenue Development Sites  
37-30 and 37-80 Review Avenue  
Long Island City, Queens, New York, File # C-5652**

Dear Mr. Hulbert:

Wood Environment and Infrastructure Solutions, Inc. (Wood), on behalf of Review Avenue System LLC, submits the effluent laboratory analysis data in connection with the letter of approval (LOA) for groundwater discharge to sanitary or combined sewer for the Review Avenue Development (RAD) Sites and LOA Extension dated October 12, 2018.

Wood collected the 1<sup>st</sup> Quarter 2019 discharge compliance samples on February 19<sup>th</sup>, 2019. Analytical results indicate no exceedances of the daily discharge limits for all parameters and no exceedances of the monthly discharge limits for all parameters, and therefore the discharge is in compliance with our LOA requirements. The analytical results collected for the 1st quarter 2019 compliance sampling are summarized on Table 1 attached. The total volume of groundwater discharged to the sanitary or combined sewer, since system start-up was 8,851,730 gallons as of the February 19<sup>th</sup> sampling event and 1,385,790 gallons since the last quarterly sampling event on October 18<sup>th</sup>.

If you have any questions, please contact either of the undersigned at (609) 689-2829.

Sincerely,

**Wood Environment & Infrastructure Solutions, Inc.**



Brent C. O'Dell, P.E.  
Principal Engineer – Civil



Timothy C. Kessler  
Senior Associate Engineer/PM

Attachments: Table 1 – Summary of Groundwater Analytical Results

cc: R. Craig Coslett – Review Avenue System LLC

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

Field Sample ID:	Unit	NYCDEP Daily Limit	NYCDEP Monthly Limit	RA-EFF-G	RA-EFF-C
Compliance Period:				1Q 2019	1Q 2019
Sample Date:				2/19/2019	2/19/2019
Lab Sample ID:				JC83071-1	JC83071-2
Non-polar material <sup>1</sup>	mg/L	50	NL	11.7	-
pH <sup>2</sup>	SUs	5 - 12	NL	7.38	-
Temperature <sup>2</sup>	°F	150	NL	36.1	-
Flash Point <sup>3</sup>	°F	> 140	NL	> 200	-
Cadmium (Instantaneous)	mg/L	2	NL	0.003 U	-
Cadmium (Composite)	mg/L	0.69	NL	-	0.003 U
Chromium (VI)	mg/L	5	NL	0.01 U	-
Copper	mg/L	5	NL	0.01 U	-
Lead	mg/L	2	NL	0.015 U	-
Mercury	mg/L	0.05	NL	0.0002 U	-
Nickel	mg/L	3	NL	0.01 U	-
Zinc	mg/L	5	NL	0.0651	-
Benzene	µg/L	134	57	0.34 U	-
Carbon Tetrachloride	µg/L	NL	NL	-	0.33 U
Chloroform	µg/L	NL	NL	-	0.35 U
1,4-Dichlorobenzene	µg/L	NL	NL	0.78 U	-
Ethylbenzene	µg/L	380	142	0.28 U	-
MTBE (Methyl-Tert-Butyl-Ether)	µg/L	50	NL	0.46 U	-
Napthalene	µg/L	47	19	-	0.23
Phenol	µg/L	NL	NL	-	0.39 U
Tetrachloroethylene (Perc)	µg/L	20	NL	0.41 U	-
Toluene	µg/L	74	28	0.28 U	-
1,2,4-Trichlorobenzene	µg/L	NL	NL	-	0.25 U
1,1,1-Trichloroethane	µg/L	NL	NL	-	0.29 U
Xylenes (Total)	µg/L	74	28	0.35 U	-
PCBs (Total)	µg/L	1	NL	-	0.034 U
Total Suspended Solids (TSS)	mg/L	350	NL	13.5	-
CBOD	mg/L	NL	NL	-	6.7
Chloride	mg/L	NL	NL	92.6	-
Total Nitrogen	mg/L	NL	NL	-	2.2
Total Solids	mg/L	NL	NL	1240	-

**Table 1**  
**Summary of Analytical Results - Groundwater Treatment System**  
**Review Avenue Development Sites, NYCDEP File # C-5652**  
**Long Island City, Queens, New York**

**Notes:**

RA-EFF-G: Instantaneous (Grab) Sample

RA-EFF-C: 4-Hour Flow Weighted Composite Sample

**Bold/Shaded:** Concentration exceeds daily limit

Underline: Concentration exceeds monthly limit

1. Non-polar Material reported by lab as "Silica Gel Treated n-Hexane Extractable Material (SGT-HEM)"
2. pH and Temperature measured in field
3. Flash Point reported by lab as Ignitability

**Definitions:**

MDL: Method Detection Limit

RL: Reporting Limit

NL: No Limit

**Data Qualifiers:**

J: Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U: Indicates the analyte was not detected at the indicated RL.



The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

Wood Environment & Infrastructure Solut.

Review Avenue, Long Island City, NY

3480160502 PO# C012700305

SGS Job Number: JC83071

Sampling Date: 02/19/19

Report to:

Wood Environment & Infrastructure Soln.  
200 American Metro Boulevard Suite 113  
Hamilton, NJ 08619  
Timothy.Kessler@amecfw.com; Vincent.Whelan@amecfw.com  
ATTN: Tim Kessler

Total number of pages in report: **24**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Brian McGuire  
General Manager

Client Service contact: Cynthia Romero 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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### Sample Summary

Wood Environment & Infrastructure Solut.

Job No: JC83071

Review Avenue, Long Island City, NY  
Project No: 3480160502 PO# C012700305

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JC83071-1	02/19/19	10:50 DB	02/19/19	AQ	Ground Water	RA-EFF-G
JC83071-1R	02/19/19	10:50 DB	02/19/19	AQ	Ground Water	RA-EFF-G
JC83071-2	02/19/19	10:40 DB	02/19/19	AQ	Ground Water	RA-EFF-C
JC83071-2R	02/19/19	10:40 DB	02/19/19	AQ	Ground Water	RA-EFF-C

## Summary of Hits

**Job Number:** JC83071  
**Account:** Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Collected:** 02/19/19

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC83071-1 RA-EFF-G**

Zinc	65.1	20			ug/l	EPA 200.7
Chloride	92.6	2.0			mg/l	EPA 300/SW846 9056A
Ignitability (Flashpoint)	> 200				Deg. F	SW846 1010A/ASTM D93
Solids, Total	1240	10			mg/l	SM2540 B-11
Solids, Total Suspended	13.5	4.0			mg/l	SM2540 D-11

**JC83071-1R RA-EFF-G**

HEM Petroleum Hydrocarbons	11.7	5.0			mg/l	EPA 1664A
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**JC83071-2 RA-EFF-C**

Carbonaceous Bod, 5 Day	6.7	5.0			mg/l	SM5210 B-11
Nitrogen, Total <sup>a</sup>	2.2	0.30			mg/l	SM4500 A-11
Nitrogen, Total Kjeldahl	2.2	0.20			mg/l	EPA 351.2/LACHAT

**JC83071-2R RA-EFF-C**

No hits reported in this sample.

(a) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

Sample Results

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Report of Analysis

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# Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-1	<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624.1	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	T236373.D	1	02/20/19 09:24	CSF	n/a	n/a	VT9742
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

**Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
108-88-3	Toluene	ND	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.28	ug/l	
1330-20-7	Xylenes (total)	ND	1.0	0.35	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.46	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.78	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	108%		76-122%
2037-26-5	Toluene-D8 (SUR)	98%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	107%		80-120%
1868-53-7	Dibromofluoromethane (S)	105%		80-120%

ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

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3

<b>Client Sample ID:</b> RA-EFF-G		<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-1		<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY		

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	02/20/19	02/21/19 GT	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Copper	< 10	10	ug/l	1	02/20/19	02/21/19 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>4</sup>
Lead <sup>a</sup>	< 15	15	ug/l	5	02/20/19	02/21/19 ND	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>4</sup>
Mercury	< 0.20	0.20	ug/l	1	02/26/19	02/26/19 LL	EPA 245.1 <sup>3</sup>	EPA 245.1 <sup>5</sup>
Nickel	< 10	10	ug/l	1	02/20/19	02/21/19 GT	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Zinc	65.1	20	ug/l	1	02/20/19	02/21/19 GT	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>

(1) Instrument QC Batch: MA46181

(2) Instrument QC Batch: MA46186

(3) Instrument QC Batch: MA46208

(4) Prep QC Batch: MP12654

(5) Prep QC Batch: MP12743

(a) Elevated detection limit due to dilution required for high interfering element.

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-1	<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	92.6	2.0	mg/l	1	03/07/19 09:21	NV	EPA 300/SW846 9056A
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	02/20/19 10:43	EB	SM3500CR B-11
Ignitability (Flashpoint)	> 200		Deg. F	1	03/06/19 22:56	EB	SW846 1010A/ASTM D93
Solids, Total	1240	10	mg/l	1	02/20/19 16:00	RC	SM2540 B-11
Solids, Total Suspended	13.5	4.0	mg/l	1	02/22/19 16:15	EB	SM2540 D-11

RL = Reporting Limit



## Report of Analysis

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3

<b>Client Sample ID:</b> RA-EFF-G	<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-1R	<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Petroleum Hydrocarbons	11.7	5.0	mg/l	1	03/11/19 13:15	BM	EPA 1664A

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-2	<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 624.1	
<b>Project:</b> Review Avenue, Long Island City, NY	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	T236374.D	1	02/20/19 09:54	CSF	n/a	n/a	VT9742
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
56-23-5	Carbon tetrachloride	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.35	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4 (SUR)	108%		76-122%
2037-26-5	Toluene-D8 (SUR)	100%		80-120%
460-00-4	4-Bromofluorobenzene (SUR)	109%		80-120%
1868-53-7	Dibromofluoromethane (S)	108%		80-120%

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ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C		<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-2		<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 625.1 EPA 625		
<b>Project:</b> Review Avenue, Long Island City, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	M152487.D	1	02/22/19 14:12	AR	02/21/19 13:00	OP18675	EM6510
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

### ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-95-2	Phenol	ND	2.0	0.39	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%		10-110%
4165-62-2	Phenol-d5	28%		10-110%
118-79-6	2,4,6-Tribromophenol	61%		35-147%
4165-60-0	Nitrobenzene-d5	76%		32-132%
321-60-8	2-Fluorobiphenyl	65%		40-117%
1718-51-0	Terphenyl-d14	70%		33-126%

(a) "PERMCLNUP for PCB extract when requested"

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ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-2	<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Cadmium	< 3.0	3.0	ug/l	1	02/20/19	02/21/19 GT	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA46181

(2) Prep QC Batch: MP12654

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C	<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-2	<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Review Avenue, Long Island City, NY	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Carbonaceous Bod, 5 Day	6.7	5.0	mg/l	1	02/20/19 22:34	MO	SM5210 B-11
Nitrogen, Nitrate <sup>a</sup>	< 0.11	0.11	mg/l	1	03/01/19 14:26	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	< 0.10	0.10	mg/l	1	03/01/19 14:26	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	02/19/19 22:03	JO	SM4500NO2 B-11
Nitrogen, Total <sup>b</sup>	2.2	0.30	mg/l	1	03/01/19 14:26	KI	SM4500 A-11
Nitrogen, Total Kjeldahl	2.2	0.20	mg/l	1	02/22/19 17:25	KI	EPA 351.2/LACHAT

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(b) Calculated as: (Nitrogen, Total Kjeldahl) + (Nitrogen, Nitrate + Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RA-EFF-C		<b>Date Sampled:</b> 02/19/19
<b>Lab Sample ID:</b> JC83071-2R		<b>Date Received:</b> 02/19/19
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 608 EPA 608		
<b>Project:</b> Review Avenue, Long Island City, NY		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G176447.D	1	02/27/19 01:47	TR	02/26/19 09:00	OP18774	G2G4589
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

### PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.050	0.034	ug/l	
11104-28-2	Aroclor 1221	ND	0.050	0.029	ug/l	
11141-16-5	Aroclor 1232	ND	0.050	0.020	ug/l	
53469-21-9	Aroclor 1242	ND	0.050	0.027	ug/l	
12672-29-6	Aroclor 1248	ND	0.050	0.025	ug/l	
11097-69-1	Aroclor 1254	ND	0.050	0.034	ug/l	
11096-82-5	Aroclor 1260	ND	0.050	0.027	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	54%		10-156%
877-09-8	Tetrachloro-m-xylene	40%		10-156%
2051-24-3	Decachlorobiphenyl	63%		10-143%
2051-24-3	Decachlorobiphenyl	39%		10-143%

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ND = Not detected      MDL = Method Detection Limit      J = Indicates an estimated value  
 RL = Reporting Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Misc. Forms

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Custody Documents and Other Forms

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Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Parameter Certification Exceptions

**Job Number:** JC83071

**Account:** HLANJPR Wood Environment & Infrastructure Solut.

**Project:** Review Avenue, Long Island City, NY

The following parameters included in this report are exceptions to NELAC certification. The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
-----------	------	--------	-----	----------------------

Ignitability (Flashpoint)		SW846 1010A/ASTM D93	AQ	SGS is not certified for this parameter. <sup>a</sup>
Nitrogen, Total		SM4500 A-11	AQ	SGS is not certified for this parameter. <sup>b</sup>

- (a) Lab cert for analyte/method not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.
- (b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

4.1  
4



2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking # \_\_\_\_\_ Bottle Order Control # \_\_\_\_\_  
Accutest Quote # **DKA\_2016\_911** Accutest Job # **JC83071**

Client / Reporting Information				Project Information				Requested Analysis ( see TEST CODE sheet)												Matrix Codes
Company Name <b>Amec Foster Wheeler</b>				Project Name <b>Review Ave, Long Island City, Queens</b>																
Street Address <b>200 American Metro BLVD #113</b>				Street <b>37-30 &amp; 37-80 Review Avenue</b>																
City <b>Hamilton, NJ 08619</b>				City <b>Long Island City, Queens, NY</b>																
Project Contact <b>Vincent.Whelan@amecfw.com</b>				Project # <b>3480160502</b>																
Phone # <b>M: 609-815-6175, D: 609-689-2832, F: 609-689-2838</b>				Client Purchase Order # <b>C012700305</b>																
Sampler(s) Name(s) <b>D 13 GRC, L 17 L 84870 2/3/12</b>				Project Manager <b>Tim Kessler</b>																
Accutest Sample #			Field ID / Point of Collection		MEOH/DI Vial #		Collection		Number of preserved Bottles										LAB USE ONLY	
Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	HNO2	HCN	Di Water	MEOH	ENCORE							
2/19/19	1050	129	GW	11	8									X						
2/19/19	1040	01	GW	8										X						
2/19/19	0730	01	GW	3	3									X						
2/19/19	0830	01	GW	3	3									X						
2/19/19	0930	01	GW	3	3									X						
2/19/19	1030	01	GW	3	3									X						
<p style="text-align: right;">INITIAL ASSESSMENT <u>3/12</u></p> <p style="text-align: right;">LABEL VERIFICATION _____</p>																				

4.2  
4

Turnaround Time ( Business days)				Data Deliverable Information				Comments / Special Instructions								
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____				Approved By (Accutest PM): / Date: _____				<input type="checkbox"/> Commercial "A" ( Level 1 ) <input type="checkbox"/> NYASP Category A <input type="checkbox"/> Commercial "B" ( Level 2 ) <input type="checkbox"/> NYASP Category B <input type="checkbox"/> FULLT1 ( Level 3+4 ) <input type="checkbox"/> State Forms <input type="checkbox"/> NJ Reduced <input type="checkbox"/> EDD Format <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> Other: <u>NYCDEP</u> Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data								
COMPOSITE RA-VOC-C1 to RA-VOC-C4 in LAB TO BE USED FOR RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM + PCB SAMPLES HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME																
Sample Custody must be documented below each time samples change possession, including courier deli																
Relinquished by Sampler: <b>1</b>	Date Time: <b>2/19/19 1325</b>	Received By: <b>P. Shet</b>	Received: <b>1</b>	Relinquished By: <b>2</b>	Date Time: <b>2/19/19 1325</b>	Received By:	Received: <b>2</b>	Relinquished By: <b>3</b>	Date Time:	Received By:	Received: <b>3</b>	Relinquished By: <b>4</b>	Date Time:	Received By:	Received: <b>4</b>	
Relinquished by Sampler: <b>3</b>	Date Time:	Received By:	Received: <b>3</b>	Relinquished By: <b>4</b>	Date Time:	Received By:	Received: <b>4</b>	Relinquished by: <b>5</b>	Date Time:	Received By:	Received: <b>5</b>	Custody Seal # <b>26564</b>	<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable <input type="checkbox"/>	On Ice <input checked="" type="checkbox"/>	Cooler Temp. <b>2.3C/1P</b>

2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3499/3480  
www.accutest.com

FED-EX Tracking # \_\_\_\_\_ Bottle Order Control # \_\_\_\_\_  
Accutest Quote # **DK4\_2016\_911** Accutest Job # **JC83071**

Client / Reporting Information		Project Information				Requested Analysis ( see TEST CODE sheet)										Matrix Codes		
Company Name <b>Amec Foster Wheeler</b>		Project Name <b>Review Ave, Long Island City, Queens</b>				Total Nitrogen (TKN, NO2/NO3) - SM18 4500N Composite VOCs (4:1 Ratio) VOC (V624CHLFRM, VMS+CTC, VMS+TCA) - EPA 624										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SD - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		
Street Address <b>200 American Metro BLVD #113</b>		Street <b>37-30 &amp; 37-80 Review Avenue</b>																
City State Zip <b>Hamilton, NJ 08619</b>		City State <b>Long Island City, Queens, NY</b>																
Project Contact <b>Vincent Whelan@amecfrw.com</b>		Project # <b>3480160502</b>																
Phone # <b>M: 609-815-6175, D: 609-689-2832, F: 609-689-2838</b>		Client Purchase Order # <b>C012700305</b>																
Sampler(s) Name(s)		Project Manager <b>Tim Kessler</b>																
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection			Matrix	# of bottles	Number of preserved Bottles								LAB USE ONLY		
			Date	Time	Sampled by			AC	NO3H	NO2H	H2SO4	NO3E	NO2E	DI Water	MEOH		ENCLOSURE	
1	RA-EFF-G		2/19/19	1350	DB	GW	1	5	1	5								
2	RA-EFF-C		2/19/19	1010	DB	GW	8			1	6				X	X		
2	RA-VOC-C1		2/19/19	0730	DB	GW	3	3							X			
	RA-VOC-C2		2/19/19	0830	DB	GW	3	3							X			
	RA-VOC-C3		2/19/19	0930	DB	GW	3	3							X			
	RA-VOC-C4		2/19/19	1030	DB	GW	3	3							X			

Turnaround Time ( Business days)		Approved By (Accutest PM) / Date:				Data Deliverable Information				Comments / Special Instructions			
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <input type="checkbox"/> other _____						<input type="checkbox"/> Commercial "A" ( Level 1 ) <input type="checkbox"/> Commercial "B" ( Level 2 ) <input type="checkbox"/> FULLT1 ( Level 3+4 ) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" Commercial "A" = Results Only Commercial "B" = Results + QC Summary NJ Reduced = Results + QC Summary + Partial Raw data				<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other <u>NYCDEP</u>			
COMPOSITE RA-VOC-C1 to RA-VOC-C4 IN LAB TO BE USED FOR RA-EFF-C VOC ANALYSIS. HOLD SGT-HEM SAMPLE HEX CHROME TEST METHOD ONLY ALLOWS 24HR HOLD TIME													

Sample Custody must be documented below each time samples change possession, including courier deli					
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 <i>[Signature]</i>	2/19/19 1325	1 <i>[Signature]</i>	2	2/19/19 1322	
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/>
5		5	26564		On Ice <input checked="" type="checkbox"/> Cooler Temp: 2.3C I.P.

JC83071: Chain of Custody

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## SGS Sample Receipt Summary

Job Number: JC83071

Client: WOOD ENVIRONMENT & INFRASTRUCT

Project: REVIEW AVENUE, LONG ISLAND CITY, NY

Date / Time Received: 2/19/2019 1:25:00 PM

Delivery Method: \_\_\_\_\_

Airbill #'s: \_\_\_\_\_

Cooler Temps (Raw Measured) °C: Cooler 1: (2.3);

Cooler Temps (Corrected) °C: Cooler 1: (1.9);

<u>Cooler Security</u>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 206717	pH 12+: 208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

JC83071: Chain of Custody

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**Job Change Order: JC83071**

**Requested Date:** 2/25/2019      **Received Date:** 2/19/2019  
**Account Name:** Wood Environment & Infrastructure      **Due Date:** 3/5/2019  
**Project Description:** Review Avenue, Long Island City, NY      **Deliverable:** NYASPA  
**C/O Initiated By:** CR      **PM:** CR      **TAT (Days):** 14

=====  
**Sample #:** JC83071-1      **Change:**  
Dept: Relog for PHC1664

**TAT:** 14

RA-EFF-G

=====  
**Sample #:** JC83071-2      **Change:**  
Dept: Relog for P608PCBLL

**TAT:** 14

RA-EFF-C

**Above Changes Per:** Client - Timothy Kessler      **Date/Time:** 2/25/2019 5:10:26 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

### Internal Sample Tracking Chronicle

Wood Environment & Infrastructure Solut.

Job No: JC83071

Review Avenue, Long Island City, NY  
 Project No: 3480160502 PO# C012700305

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Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC83071-1	Collected: 19-FEB-19 10:50	By: DB	Received: 19-FEB-19		By: AS	
RA-EFF-G						
JC83071-1	EPA 624.1	20-FEB-19 09:24	CSF			V624BTXM
JC83071-1	SM3500CR B-11	20-FEB-19 10:43	EB			XCRSM
JC83071-1	SM2540 B-11	20-FEB-19 16:00	RC			TS
JC83071-1	EPA 200.7	21-FEB-19 03:29	GT	20-FEB-19	BP	CD,NI,ZN
JC83071-1	EPA 200.7	21-FEB-19 16:21	ND	20-FEB-19	BP	CU
JC83071-1	EPA 200.7	21-FEB-19 16:26	ND	20-FEB-19	BP	PB
JC83071-1	SM2540 D-11	22-FEB-19 16:15	EB			TSS
JC83071-1	EPA 245.1	26-FEB-19 13:41	LL	26-FEB-19	EAL	HG
JC83071-1	SW846 1010A/ASTM D96	06-MAR-19 22:56	EB			IGN
JC83071-1	EPA 300/SW846 9056A07	06-MAR-19 09:21	NV	06-MAR-19	NV	CHL
JC83071-2	Collected: 19-FEB-19 10:40	By: DB	Received: 19-FEB-19		By: AS	
RA-EFF-C						
JC83071-2	SM4500NO2 B-11	19-FEB-19 22:03	JO			NO2
JC83071-2	EPA 624.1	20-FEB-19 09:54	CSF			V624CHLFRM,VMS+ CTC,VMS+ TCA
JC83071-2	SM5210 B-11	20-FEB-19 22:34	MO	20-FEB-19	MO	CBOD5
JC83071-2	EPA 200.7	21-FEB-19 03:35	GT	20-FEB-19	BP	CD
JC83071-2	EPA 625.1	22-FEB-19 14:12	AR	21-FEB-19	BJ	AB625SL2
JC83071-2	EPA 351.2/LACHAT	22-FEB-19 17:25	KI	21-FEB-19	MP	TKN
JC83071-2	SM4500 A-11	01-MAR-19 14:26	KI			TNIT
JC83071-2	EPA353.2/SM4500NO2	01-MAR-19 14:26	KI			NO3O
JC83071-2	EPA 353.2/LACHAT	01-MAR-19 14:26	KI	01-MAR-19	KI	NO32
JC83071-1R	Collected: 19-FEB-19 10:50	By: DB	Received: 19-FEB-19		By: AS	
RA-EFF-G						
JC83071-1R	EPA 1664A	11-MAR-19 13:15	BM	11-MAR-19	BM	PHC1664
JC83071-2R	Collected: 19-FEB-19 10:40	By: DB	Received: 19-FEB-19		By: AS	
RA-EFF-C						
JC83071-2R	EPA 608	27-FEB-19 01:47	TR	26-FEB-19	VP	P608PCBLL

# SGS Internal Chain of Custody

**Job Number:** JC83071  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 02/19/19

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4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC83071-1.1	Secured Storage	Sahara Feliciano	03/10/19 11:20	Retrieve from Storage
JC83071-1.1	Sahara Feliciano	Secured Staging Area	03/10/19 11:20	Return to Storage
JC83071-1.1	Secured Staging Area	Beatrice Marcelino	03/11/19 09:52	Retrieve from Storage
JC83071-1.1	Beatrice Marcelino		03/11/19 11:52	Depleted
JC83071-1.3	Secured Storage	Matthew Robbins	02/19/19 17:49	Retrieve from Storage
JC83071-1.3	Matthew Robbins	Secured Staging Area	02/19/19 17:49	Return to Storage
JC83071-1.3	Secured Staging Area	Bhooma Patel	02/20/19 08:07	Retrieve from Storage
JC83071-1.3	Bhooma Patel	Secured Storage	02/20/19 11:31	Return to Storage
JC83071-1.3	Secured Storage	Matthew Robbins	02/25/19 18:06	Retrieve from Storage
JC83071-1.3	Matthew Robbins	Secured Staging Area	02/25/19 18:06	Return to Storage
JC83071-1.3	Secured Staging Area	Lindsey Lee	02/26/19 07:24	Retrieve from Storage
JC83071-1.3	Lindsey Lee	Secured Storage	02/26/19 15:12	Return to Storage
JC83071-1.4	Secured Storage	Dwayne Johnson	02/20/19 16:13	Retrieve from Storage
JC83071-1.4	Dwayne Johnson	Secured Staging Area	02/20/19 16:13	Return to Storage
JC83071-1.4	Secured Staging Area	Ruchitaben Chauhan	02/20/19 16:34	Retrieve from Storage
JC83071-1.4	Ruchitaben Chauhan	Secured Storage	02/20/19 16:38	Return to Storage
JC83071-1.4	Secured Storage	Benjamin Gaines	02/21/19 09:30	Retrieve from Storage
JC83071-1.4	Benjamin Gaines	Secured Staging Area	02/21/19 09:30	Return to Storage
JC83071-1.4	Secured Staging Area	Ruchitaben Chauhan	02/21/19 09:53	Retrieve from Storage
JC83071-1.4	Ruchitaben Chauhan	Secured Storage	02/21/19 16:50	Return to Storage
JC83071-1.4	Secured Storage	Dwayne Johnson	02/22/19 09:09	Retrieve from Storage
JC83071-1.4	Dwayne Johnson	Secured Staging Area	02/22/19 09:09	Return to Storage
JC83071-1.4	Secured Staging Area	Elaine Banting	02/22/19 11:00	Retrieve from Storage
JC83071-1.4	Elaine Banting	Secured Storage	02/22/19 19:46	Return to Storage
JC83071-1.6	Secured Storage	Todd Shoemaker	02/20/19 15:37	Retrieve from Storage
JC83071-1.6	Todd Shoemaker	Secured Staging Area	02/20/19 15:37	Return to Storage
JC83071-1.6	Secured Staging Area	Michael Olcott	02/20/19 16:22	Retrieve from Storage
JC83071-1.6	Michael Olcott	Secured Storage	02/20/19 22:52	Return to Storage
JC83071-1.6	Secured Storage	Todd Shoemaker	03/06/19 10:36	Retrieve from Storage
JC83071-1.6	Todd Shoemaker	Secured Staging Area	03/06/19 10:36	Return to Storage
JC83071-1.6	Secured Staging Area	Natasha Verma	03/06/19 13:56	Retrieve from Storage
JC83071-1.6	Natasha Verma	Secured Storage	03/06/19 16:42	Return to Storage
JC83071-1.7	Secured Storage	Matthew Robbins	02/19/19 15:26	Retrieve from Storage
JC83071-1.7	Matthew Robbins	Secured Staging Area	02/19/19 15:26	Return to Storage
JC83071-1.7	Secured Staging Area	Rie Iwasaki	02/20/19 10:00	Retrieve from Storage
JC83071-1.7	Rie Iwasaki	Secured Storage	02/20/19 16:31	Return to Storage
JC83071-1.8	Secured Storage	Benjamin Gaines	03/05/19 09:28	Retrieve from Storage
JC83071-1.8	Benjamin Gaines	Secured Staging Area	03/05/19 09:28	Return to Storage
JC83071-1.8	Secured Staging Area	Elaine Banting	03/05/19 17:25	Retrieve from Storage

# SGS Internal Chain of Custody

**Job Number:** JC83071  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 02/19/19

4.4  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC83071-1.8	Elaine Banting	Secured Storage	03/06/19 00:45	Return to Storage
JC83071-1.8	Secured Storage	Sahara Feliciano	03/06/19 18:03	Retrieve from Storage
JC83071-1.8	Sahara Feliciano	Secured Staging Area	03/06/19 18:03	Return to Storage
JC83071-1.8	Secured Staging Area	Elaine Banting	03/06/19 18:36	Retrieve from Storage
JC83071-1.8	Elaine Banting	Secured Storage	03/07/19 00:18	Return to Storage
JC83071-1.9	Secured Storage	Chelsea San Filippo	02/20/19 09:51	Retrieve from Storage
JC83071-1.9	Chelsea San Filippo	GCMST	02/20/19 09:51	Load on Instrument
JC83071-1.9	GCMST	Chelsea San Filippo	02/21/19 08:54	Unload from Instrument
JC83071-1.9	Chelsea San Filippo	Secured Storage	02/21/19 08:54	Return to Storage
JC83071-1.10	Secured Storage	Chelsea San Filippo	02/20/19 08:27	Retrieve from Storage
JC83071-1.10	Chelsea San Filippo	GCMST	02/20/19 08:27	Load on Instrument
JC83071-1.10	GCMST	Chelsea San Filippo	02/21/19 08:54	Unload from Instrument
JC83071-1.10	Chelsea San Filippo	Secured Storage	02/21/19 08:54	Return to Storage
JC83071-2.1	Secured Storage	Vikas Parikh	02/26/19 08:19	Retrieve from Storage
JC83071-2.1	Vikas Parikh	Secured Storage	02/26/19 15:04	Return to Storage
JC83071-2.1.1	Vikas Parikh	Organics Prep	02/26/19 08:21	Extract from JC83071-2.1
JC83071-2.1.1	Organics Prep	Vikas Parikh	02/26/19 11:55	Extract from JC83071-2.1
JC83071-2.1.1	Vikas Parikh	Extract Storage	02/26/19 11:55	Return to Storage
JC83071-2.1.1	Extract Storage	Tianwei Ruan	02/26/19 15:44	Retrieve from Storage
JC83071-2.1.1	Tianwei Ruan	GC2G	02/26/19 15:44	Load on Instrument
JC83071-2.3	Secured Storage	Matthew Robbins	02/25/19 18:32	Retrieve from Storage
JC83071-2.3	Matthew Robbins	Secured Storage	02/25/19 18:32	Return to Storage
JC83071-2.4	Secured Storage	Brian Johnson	02/21/19 05:57	Retrieve from Storage
JC83071-2.4	Brian Johnson		02/21/19 11:33	Depleted
JC83071-2.4.1	Brian Johnson	Organics Prep	02/21/19 05:57	Extract from JC83071-2.4
JC83071-2.4.1	Organics Prep	Brian Johnson	02/21/19 13:37	Extract from JC83071-2.4
JC83071-2.4.1	Brian Johnson	Extract Storage	02/21/19 13:37	Return to Storage
JC83071-2.4.1	Extract Storage	Angela Rastelli	02/22/19 12:30	Retrieve from Storage
JC83071-2.4.1	Angela Rastelli	GCMSM	02/22/19 12:30	Load on Instrument
JC83071-2.4.1	GCMSM	Angela Rastelli	02/25/19 10:23	Unload from Instrument
JC83071-2.4.1	Angela Rastelli	Extract Freezer	02/25/19 10:23	Return to Storage
JC83071-2.5	Secured Storage	Matthew Robbins	02/19/19 17:49	Retrieve from Storage
JC83071-2.5	Matthew Robbins	Secured Staging Area	02/19/19 17:49	Return to Storage
JC83071-2.5	Secured Staging Area	Bhooma Patel	02/20/19 08:07	Retrieve from Storage
JC83071-2.5	Bhooma Patel	Secured Storage	02/20/19 11:31	Return to Storage

# SGS Internal Chain of Custody

**Job Number:** JC83071  
**Account:** HLANJPR Wood Environment & Infrastructure Solut.  
**Project:** Review Avenue, Long Island City, NY  
**Received:** 02/19/19

4.4  
4

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC83071-2.6	Secured Storage	Benjamin Gaines	02/21/19 08:34	Retrieve from Storage
JC83071-2.6	Benjamin Gaines	Secured Staging Area	02/21/19 08:34	Return to Storage
JC83071-2.6	Secured Staging Area	Mahendra Patel	02/21/19 08:54	Retrieve from Storage
JC83071-2.6	Mahendra Patel	Secured Storage	02/21/19 18:53	Return to Storage
JC83071-2.6	Secured Storage	Todd Shoemaker	03/01/19 10:07	Retrieve from Storage
JC83071-2.6	Todd Shoemaker	Secured Staging Area	03/01/19 10:07	Return to Storage
JC83071-2.6	Secured Staging Area	Kimberly Ignace	03/01/19 13:07	Retrieve from Storage
JC83071-2.6	Kimberly Ignace	Secured Storage	03/01/19 20:22	Return to Storage
JC83071-2.6	Secured Storage	Todd Shoemaker	03/06/19 09:46	Retrieve from Storage
JC83071-2.6	Todd Shoemaker	Secured Staging Area	03/06/19 09:47	Return to Storage
JC83071-2.6	Secured Storage	Sahara Feliciano	03/06/19 22:11	Retrieve from Storage
Bottle was returned to secure storage, but inadvertently not scanned.				
JC83071-2.6	Sahara Feliciano	Secured Staging Area	03/06/19 22:11	Return to Storage
JC83071-2.6	Secured Staging Area	Todd Shoemaker	03/07/19 09:27	Retrieve from Storage
JC83071-2.6	Todd Shoemaker	Secured Storage	03/07/19 09:27	Return to Storage
JC83071-2.6	Secured Storage	Todd Shoemaker	03/07/19 09:33	Retrieve from Storage
JC83071-2.6	Todd Shoemaker	Secured Staging Area	03/07/19 09:33	Return to Storage
JC83071-2.6	Secured Staging Area	Kimberly Ignace	03/07/19 20:10	Retrieve from Storage
JC83071-2.6	Kimberly Ignace	Secured Storage	03/07/19 20:11	Return to Storage
JC83071-2.7	Secured Storage	Todd Shoemaker	02/20/19 15:37	Retrieve from Storage
JC83071-2.7	Todd Shoemaker	Secured Staging Area	02/20/19 15:37	Return to Storage
JC83071-2.7	Secured Staging Area	Michael Olcott	02/20/19 16:22	Retrieve from Storage
JC83071-2.7	Michael Olcott	Secured Storage	02/20/19 22:52	Return to Storage
JC83071-2.8	Secured Storage	Matthew Robbins	02/19/19 15:42	Retrieve from Storage
JC83071-2.8	Matthew Robbins	Secured Staging Area	02/19/19 15:42	Return to Storage
JC83071-2.8	Secured Staging Area	Michael Olcott	02/19/19 15:46	Retrieve from Storage
JC83071-2.8	Michael Olcott	Secured Storage	02/19/19 23:58	Return to Storage
JC83071-2.9	Secured Storage	Chelsea San Filippo	02/20/19 09:40	Retrieve from Storage
JC83071-2.9	Chelsea San Filippo	GCMST	02/20/19 09:40	Load on Instrument
JC83071-2.9	GCMST	Chelsea San Filippo	02/21/19 08:54	Unload from Instrument
JC83071-2.9	Chelsea San Filippo	Secured Storage	02/21/19 08:54	Return to Storage
JC83071-2.10	Secured Storage	Chelsea San Filippo	02/20/19 08:27	Retrieve from Storage
JC83071-2.10	Chelsea San Filippo	GCMST	02/20/19 08:27	Load on Instrument
JC83071-2.10	GCMST	Chelsea San Filippo	02/21/19 08:54	Unload from Instrument
JC83071-2.10	Chelsea San Filippo	Secured Storage	02/21/19 08:54	Return to Storage
JC83071-2.12	Secured Storage	Chelsea San Filippo	02/20/19 08:10	Retrieve from Storage
JC83071-2.12	Chelsea San Filippo		02/20/19 08:10	Depleted