

**Quarterly Operations Report  
Third Quarter 2015**

**Groundwater Treatment Plant  
GM-38 Area Groundwater Remediation  
Naval Weapons Industrial Reserve Plant  
Bethpage, New York**

**Contract No. N40085-10-D-9409  
Contract Task Order No. 0002**

February 2016

Prepared for:



Naval Facilities Engineering Command Mid-Atlantic  
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Prepared by:



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A handwritten signature in blue ink that reads "Patrick Schauble".

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Patrick Schauble  
Program Manager

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Jennifer Good  
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Date

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## Acronyms and Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirement
AS	air stripper
ASE	air stripper effluent
BFE	bag filter effluent
bgs	below ground surface
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DAR	Division of Air Resources
DCA	dichloroethane
DCE	dichloroethene
DMR	Discharge Monitoring Report
DO	dissolved oxygen
DoD	Department of Defense
DTW	depth to water
ECL	Environmental Conservation Law
EB	equipment rinsate blank
ELAP	Environmental Laboratory Accreditation Program
GOCO	Government Owned Contractor Operated
gpm	gallon per minute
GWTP	groundwater treatment plant
H&S	H&S Environmental, Inc.
HMI	human-machine interface
IRP	Installation Restoration Program
LGAC	liquid-phase granular activated carbon
MS/MSD	matrix spike/matrix spike duplicate
NAVFAC	Naval Facilities Engineering Command Mid-Atlantic
Navy	U.S. Department of the Navy
NELAC	National Environmental Accreditation Conference
NG	Northrop Grumman
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
ORP	oxidation reduction potential

OU	operable unit
PCE	tetrachloroethene
PLC	programmable logic controller
QA/QC	quality assurance / quality control
ROD	Record of Decision
RPD	relative percent difference
SC	standard conductivity
scfm	standard cubic feet per minute
SPDES	Storm Pollution Discharge Elimination System
TB	trip blank
TCE	trichloroethene
TE	treated effluent
TSS	total suspended solids
TtEC	Tetra Tech EC, Inc.
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VFD	variable frequency drive
VGAC	vapor-phase granular activated carbon
VOC	volatile organic compound

## 1.0 INTRODUCTION

H&S Environmental, Inc. (H&S) has prepared this Quarterly Operations Report for the GM-38 Area Groundwater Treatment Plant (GWTP) at the Naval Weapons Industrial Reserve Plant (NWIRP) in Bethpage, New York. This report has been prepared for the U.S. Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC), Mid-Atlantic, under Contract No. N40085-10-D-9409, Contract Task Order No. 0002. This Third Quarter 2015 Operations Report details activities that occurred from July 2015 to September 2015. Data was collected and operational activities were performed by H&S in accordance with the following documents:

- *Final Operation, Maintenance & Monitoring Plan for Groundwater Treatment Plant GM-38 Area Groundwater Remediation, Naval Weapons Industrial Reserve Plant, Bethpage, New York* prepared by Tetra Tech EC, Inc. (TtEC) in 2010, hereafter referred to as the “O&M Manual.”
- *Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan), UFP-SAP for Operations, Maintenance, and Monitoring of the Groundwater Treatment Plant, GM-38 Area, Naval Weapons Industrial Reserve Plant, Bethpage, New York* prepared by TtEC in 2010.

### 1.1 Background

NWIRP Bethpage is located in east central Nassau County, Long Island, New York, approximately 30 miles east of New York City (**Figure 1**) and is currently listed by New York State Department of Environmental Conservation (NYSDEC) as an “inactive hazardous waste site” (#1-30-003B). In the late 1990s, the Navy's property totaled approximately 109.5 acres and was a Government Owned Contractor-Operated (GOCO) facility that was operated by Northrop Grumman (NG) until September 1998. NWIRP Bethpage was bordered on the north, west, and south by property owned, or formerly owned, by NG that covered approximately 550 acres, and on the east by a residential neighborhood.

The GM-38 Area refers to a cluster of monitoring wells installed in the 1990s by NG. The GM-38 Area is approximately 8,500 feet south, southeast and hydraulically downgradient of NWIRP Bethpage. The GWTP is located within a utility easement with a street address of 100 Broadway, Bethpage, NY.

The “hot spot” cleanup remedy for the GM-38 Area groundwater was originally set forth in Record of Decision (ROD) documents for Operable Unit 2 (OU 2) Groundwater for the NG and NWIRP Sites (New York State Registry Site Numbers 1-30-003A & 1-30-003B, respectively) issued by NYSDEC Division of Environmental Remediation in March 2001 and for the NWIRP Bethpage Site by NAVFAC in April 2003 (Revision 1). The selected remedy was chosen in accordance with the New York State Environmental Conservation Law (ECL) and the Navy's Installation Restoration Program (IRP). It is also consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. §§ 9601-9675.

## 1.2 GWTP Overview

Groundwater is extracted from recovery wells RW-1 and RW-3 (though RW-3 has recently been taken off-line, as described below) and treated in the GWTP. The treatment process consists of flow equalization, air stripping and vapor-phase carbon treatment, bag filtration, and liquid-phase carbon treatment. Though the GWTP was originally equipped with a pH adjustment system utilizing sodium hydroxide, it has since been determined that pH adjustment is not necessary and the equipment has been taken off-line and sodium hydroxide sent off site for beneficial reuse. A process flow diagram is presented as **Figure 2**. The treated water is either re-injected into injection well IW-1 or discharged into the Nassau County Recharge Basin #495. Under CERCLA, the Navy is required to meet the effluent requirement in the NYSDEC's Storm Pollution Discharge Elimination System (SPDES) Permit Application as an Applicable or Relevant and Appropriate Requirement (ARAR).

The GWTP was designed to operate at an average flow rate of 1,100 gallons per minute (gpm) (800 gpm from RW-1 and 300 gpm from RW-3), as measured by the average discharge flow rate. It was determined that this flow rate would be necessary to effectively contain the higher concentration of contamination in the GM-38 Area groundwater. Volatile Organic Compounds (VOCs) in the influent groundwater consist of trichloroethene (TCE), tetrachloroethene (PCE), vinyl chloride (VC), cis-1,2-dichloroethene (cis-1,2-DCE), 1,2-dichloroethane (1,2-DCA), benzene, toluene, and total xylenes.

The air stripper (AS) is a structural aluminum tower that is packed with 3.5-inch diameter polypropylene Jaeger Tripack. Groundwater is pumped to the air stripper distribution port and sprayed over the column of Jaeger Tripack at a flow rate of approximately 1,100 gpm. Previously, 100 gpm of recirculated water was also rerouted through the AS, but as of October 2010, recirculation was no longer deemed necessary to the operation of the system. An induced draft countercurrent flow of air enters the air stripper below the base of the packing material at a rate of 8,000 standard cubic feet per minute (scfm). The large surface area of the packing material allows for a mass transfer of the VOCs from the groundwater into the air stream. The VOCs in the off-gas, except for vinyl chloride, are removed via two 20,000-lb vapor phase granular activated carbon (VGAC) units (VGAC-1 and VGAC-2). Vinyl chloride is oxidized by a 20,000-lb vessel containing zeolite impregnated with potassium permanganate (VGAC-3) into potassium chloride and carbon dioxide. The potassium chloride remains in the pore structure of the zeolite substrate. The treated off-gas is discharged from the stack.

Water treated by the air stripper is subsequently processed through three 8,000-lb liquid phase granular activated carbon (LGAC) units in parallel prior to discharge in the recovery basin (or injection well, if necessary. To date, no water has been discharged to the injection well).

The GWTP is controlled by a programmable logic controller (PLC)-based digital and analog control system, with instrumentation that monitors pH, pressure, tank level, flow transmitters, differential pressure transmitters, water level in recovery wells, and motor operational status. The information in the PLC is made available to an operator via a human-machine interface (HMI) program. By using this program, the status of the GWTP can be displayed in real time and adjusted, if necessary, by the operator.

A recent evaluation of the GM-38 Area, conducted in order to better determine the capture zone of the recovery wells, recommended that use of recovery well RW-3 be discontinued. The report entitled “*Capture Zone Evaluation and Path Forward, GM-38 Area Groundwater Treatment Plant*” (Tetra Tech 2014) was submitted to NYSDEC in March 2014. The recommended path forward consisted of ceasing operation of recovery well RW-3 and increasing the pumping rate of recovery well RW-1. These system modifications would maintain the existing GWTP pumping rate of 1,000 to 1,100 gpm while maintaining the desired capture zone of the GWTP (Tetra Tech 2014). NYSDEC concurred with the implementation of this path forward and associated system modifications on 20 April 2015. On 1 July 2015, in accordance with the approved path forward, recovery well RW-3 was taken off-line. The flowrate of recovery well RW-1 was increased from approximately 800 gpm to approximately 1,000 gpm.

## **2.0 GWTP OPERATIONS AND MAINTENANCE**

While designed to run completely automated, the GWTP requires regular visits by an operator to record and adjust operational parameters and to perform scheduled maintenance. The GWTP is equipped with telemetry that will alert an on-call operator in the event of a plant shutdown.

### **2.1 Routine Maintenance Activities**

Routine maintenance activities at the GWTP were performed during the operator's visits. These activities include general site inspections, collection of operational data (water and vapor flowrates, differential pressures across the AS, carbon units, bag filter units and blower discharge pressures, tank levels and totalizer readings), measurement of water levels in the recovery wells, adjustment of pump signal settings, collection of vapor and process water samples, changing out of bag filters, switching of lead/lag pump assignments, and preventive maintenance of system equipment. In addition, the following maintenance tasks were also performed during this reporting period:

- On 13 July and 17 August, bag filters were changed out.
- On 16 and 17 September, a carbon changeout was performed on VGAC-1 and VGAC-2.

### **2.2 Non-routine Maintenance / Site Activities**

The following non-routine activities occurred during the Third Quarter:

- As previously mentioned, on 1 July, recovery well RW-3 was taken off-line and the pumping rate for RW-1 was increased. RW-3 was operated for approximately one hour each subsequent month to maintain the integrity of the well for potential future use.
- On 2 July, a spare variable frequency drive (VFD) for RW-1 was procured.
- On 20 July, 11 August, and 16 August, rain gauge alarms were received. The system was restarted upon clearing of the alarms.
- On 27 August, security cameras were installed throughout the GWTP.

### 3.0 GWTP MONITORING

The intent of the GWTP is to remove contaminant mass and reduce elevated VOC levels to levels similar to those in the surrounding aquifer. It is anticipated that GWTP operation will minimize contaminant impacts on water supply wells and currently unaffected portions of the groundwater aquifer. The GWTP is not intended to remediate groundwater contamination in the local aquifer to non-detectable levels (TtEC 2010). Various process samples (water and vapor) are collected on a monthly basis to monitor GWTP efficiency and to ensure compliance with Federal and State effluent discharge and air emission requirements. In addition, groundwater samples are collected semi-annually to monitor water quality and determine the effectiveness of the remediation activities and monitor the hydraulic containment and capture of impacted groundwater by the recovery wells.

#### 3.1 Process Water Quality Monitoring

Processed groundwater is analyzed to comply with calculations submitted by the Navy and approved by NYSDEC Water Division for the effluent limitations and monitoring requirements. These results are also submitted to NYSDEC on a monthly basis in the form of a Discharge Monitoring Report (DMR). A copy of the approved NYSDEC effluent limitation and monitoring constituents and the reporting forms are included in **Appendix A**.

Monthly aqueous samples are collected from the active recovery well, RW-1, and the treated effluent (TE) discharge line. In addition, various intermediary process system samples are collected monthly, consisting of air stripper effluent (ASE), bag filter effluent (BFE), and effluent of each of the three LGAC units (LC1, LC2, and LC3). Sampling frequency of now inactive recovery well, RW-3, was reduced from monthly to semi-annually. The analytical results of monthly process water samples collected during the Third Quarter are presented in **Table 1**. The data demonstrates that all permitted constituents were in compliance with regulatory requirements during the Third Quarter. **Table 1** also summarizes the average monthly flowrates in gallons per minute along with the total volume of water processed during each month of the Third Quarter.

Monthly DMRs for the Third Quarter (July – September 2015) are included in **Appendix A**.

#### 3.2 Air Quality Monitoring

Treated off-gas discharged at the stack of the GWTP is subject to emissions limitations. Original discharge goals were derived from calculations submitted by the Navy and approved by the NYSDEC Division of Air Resources (DAR) in July 2009. In November 2011, the Navy submitted an evaluation proposing revised discharge goals, which NYSDEC approved in October 2013. A copy of this documentation is included as **Appendix B**.

While only sampling of the stack emissions is required for NYSDEC compliance, process vapor samples are also collected using 6-L summa canisters at various locations to monitor for breakthrough of the VGAC units. The analytical results of monthly influent and effluent vapor samples as well as midfluent samples (VC12 and VC13) collected during the Third Quarter are presented in **Table 2**. Air emissions calculations using the stack vapor concentrations along with discharge flowrates are presented in **Table 3**.

The calculations demonstrate that all constituents were within the regulatory requirements during the Third Quarter based on the calculated emission rates.

### 3.3 Groundwater Quality Monitoring

The groundwater monitoring well system at the GM-38 Groundwater Remediation Area consists of fourteen monitoring wells (as summarized in **Table 4**), three recovery wells (RW-1, RW-2, RW-3) and one injection well (IW-1). Though RW-2 was installed in 2005, a pump was never installed in this well and the well is not operated as a recovery well due to concerns expressed by the Bethpage Water District. As mentioned above, RW-3 was taken off-line on 1 July 2015. Well locations are depicted on **Figure 3**.

Depth to water (DTW) measurements are collected from twelve of the monitoring wells on a quarterly basis. Prior to 2014, water quality samples were collected from eight of the monitoring wells on a quarterly basis; beginning in 2014, the sample collection frequency was reduced to semi-annually, with sample collection generally in the March and September time-frame. The monitoring network includes well clusters located near the recovery and injection wells as described below and as shown on **Figure 3**. In addition, two wells, GM-38D and GM-38D2, located at the corner of Arthur Avenue and Broadway, are monitored by others.

Semi-annual groundwater samples were collected from eight monitoring wells (RW1-MW1, RW1-MW3, RW2-MW1, RW3-MW1, RW3-MW2, RW3-MW3, RW3-MW4, and TP-01) and one recovery well (RW-3). Samples were collected from monitoring wells using bladder pumps in accordance with the U.S. Environmental Protection Agency (USEPA) low-flow sampling methodologies. Samples were collected from recovery well RW-3 using the dedicated extraction pump following a 3-well volume purge. Results of the groundwater sampling for the Third Quarter are presented in Section 3.3.1 below, and descriptions of monitoring well locations are as follows:

#### Recovery Well 1 (RW-1) Monitoring Wells

The RW-1 cluster consists of three monitoring wells screened between 395 and 435 feet below ground surface (bgs). RW1-MW1 is located approximately 140 feet northwest of RW-1 and RW1-MW2 is located approximately 50 feet north of RW-1. RW1-MW3 is located approximately 400 feet northeast of RW-1, on the eastern side of Seaford Oyster Bay Expressway. All three wells are hydraulically monitored while only RW1-MW1 and RW1-MW3 are also monitored for water quality.

#### Recovery Well 2 (RW-2) Monitoring Wells

The RW-2 cluster consists of three monitoring wells screened between 470 and 510 feet bgs. RW2-MW1 is located approximately 60 feet northwest of RW-2, RW2-MW2 is located approximately 20 feet west of RW-2, and RW2-MW3 is located approximately 100 feet west of RW-2. All three wells are hydraulically monitored while only RW2-MW1 is monitored for water quality.

#### Recovery Well 3 (RW-3) Monitoring Wells

The RW-3 cluster consists of four monitoring wells. RW3-MW1 and RW3-MW4 are screened between 475 and 495 feet bgs. RW3-MW2 and RW3-MW3 are screened between 330 and 350 feet bgs and 320 and 340 feet bgs, respectively. RW3-MW1 and RW3-MW2 are located approximately 500 feet west of the GM-38 cluster, at the intersection of Arthur Avenue and Leroy Avenue. RW3-MW3 and RW3-MW4



are located approximately 400 feet north of the intersection of Arthur Avenue and Broadway. All four wells are both hydraulically monitored and monitored for water quality.

#### TP-01

TP-01 is screened between 450 and 470 feet bgs and is located approximately 25 feet north of the GWTP building, inside the fenced area. It is hydraulically monitored to observe the change in water levels due to the influence from the pumping rates at the neighboring public water supply well field near the hot spot area and is also monitored for water quality.

#### Injection Well 1 (IW-1) Monitoring Well

There is one monitoring well associated with injection well IW-1. IW1-MW1 is screened between 20 and 150 feet bgs, is located approximately 20 feet south of IW-1, and is only hydraulically monitored on a quarterly basis.

### **3.3.1 Groundwater Quality Results**

H&S collected groundwater samples for the Third Quarter on 14-15 September 2015. Field parameters measured during well purging, which consisted of pH, specific conductance (SC), temperature, oxidation-reduction potential (ORP) and dissolved oxygen (DO), are summarized in **Table 5**. Following stabilization of field parameters, groundwater samples were collected. Copies of the field logs and chain of custody documentation are presented in **Appendix C**.

Groundwater samples were submitted to a National Environmental Laboratory Accreditation Conference (NELAC), Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) certified, laboratory, Analytical Laboratories Services, located in Middletown, PA. The samples were analyzed for VOCs via USEPA Method 624, mercury via USEPA Method 245.1, and total suspended solids (TSS) via USEPA Method SM20 2540D. Validated analytical sampling results collected during the Third Quarter monitoring event are summarized in **Table 6**. Data validation reports are presented in **Appendix D**. Raw analytical data is provided under separate cover.

### **3.3.2 Quality Assurance/Quality Control Sampling**

Quality assurance/quality control (QA/QC) samples were collected during the semi-annual groundwater monitoring event in accordance with the *Final Sampling and Analysis Plan* (TtEC 2010a). These samples consisted of blind field duplicates (collected from TP-01 during the Third Quarter), matrix spike/matrix spike duplicate (MS/MSD) samples, equipment rinsate blanks (EB) collected at a rate of one per sampling event, and trip blanks (TB) submitted at a rate of one per sample cooler. No contaminants were detected in the equipment blank or trip blank submitted for this event. The overall lack of contamination in the blanks indicates that quality control requirements were achieved.

For field duplicate samples, the precision between the original sample and its duplicate is evaluated by calculating the relative percent difference (RPD). RPDs for the Third Quarter sampling event are presented in the data validation report in **Appendix D**. As indicated, RPDs for all analytes were well below the guideline of 50%. This overall consistency between the samples and its duplicate verifies that proper sample collection methods were followed.

### 3.3.3 Groundwater Concentration Trends

Historical groundwater analytical results through the Third Quarter are presented in **Table 7**. Groundwater analytical results of select VOCs (cis-1,2-DCE, PCE, TCE, and VC) for the Third Quarter monitoring event are presented graphically as **Figure 4**. Additionally, concentration trends of select VOCs (cis-1,2-DCE, TCE, and PCE, as well as VC for RW-1) over time for each recovery well (RW-1, sampled monthly, and RW-3 now sampled semi-annually) and the eight monitoring wells sampled during the Third Quarter monitoring event are presented in **Figures 5 through 14** and discussed below.

**Figure 5** presents concentrations detected at recovery well RW-1. Concentrations of TCE have decreased from initial concentrations in early 2010 (maximum value of 710 µg/L detected in February 2010), remaining below 300 µg/L since the latter half of 2012 and below 200 µg/L since May 2014. During the Third Quarter 2015, concentrations ranged from 144-166 µg/L. Concentrations of cis-1,2-DCE have followed a similar trend, decreasing from a high of 160 µg/L in February 2010 to a low of 12.8 µg/L in July 2015. PCE concentrations have also exhibited decreasing trends over time, with concentrations decreasing from 180 µg/L in February 2010 to a low of 32.5 µg/L in September 2015. Concentrations of VC have decreased below initial concentrations in 2010. After reaching a maximum concentration of 61 µg/L in February 2010, VC concentrations have remained below 5.0 µg/L since the final quarter of 2011 and below 1.0 µg/L since June 2013.

**Figure 6** presents concentrations detected at recovery well RW-3. Concentrations of TCE have decreased from initial concentrations in February 2010 (660 µg/L), remaining below 300 µg/L since the latter half of 2012, with a TCE concentration of 237 µg/L in the Third Quarter 2015. Concentrations of cis-1,2-DCE have remained consistently below 4.0 µg/L, and below 2.0 µg/L since September 2013. PCE has been detected at low levels during only a few sampling events, with the most recent detection of 0.68 J µg/L in September 2015. Vinyl chloride has not been detected during any sampling event.

**Figure 7** presents concentrations detected at RW1-MW1, with the most recent data collected in Third Quarter 2015. The concentration of TCE in the Third Quarter 2015 (98.9 µg/L) was higher than initial concentrations observed in May 2005 (53.6 µg/L) but less than the highest concentration observed to date (175 µg/L in September 2013). The concentration of cis-1,2-DCE in the Third Quarter 2015 (22.0 µg/L) was below the initial concentration observed in May 2005 (78.6 µg/L), below the maximum concentration observed in May 2009 (180 µg/L), and the lowest concentration observed to date. Concentrations of PCE have remained consistently below 1.0 µg/L.

**Figure 8** presents concentrations detected at RW1-MW3, with the most recent data collected in Third Quarter 2015. Concentrations of cis-1,2-DCE and PCE have consistently remained below 1.0 µg/L. Concentrations of TCE have also remained consistently low, ranging from 0.58 J – 3.2 µg/L.

**Figure 9** presents concentrations detected at RW2-MW1, with the most recent data collected in Third Quarter 2015. Concentrations of TCE in the Third Quarter 2015 (27.5 µg/L) were less than initial concentrations observed in May 2005 (37.6 µg/L), which was also the highest TCE concentration observed to date. The concentration of cis-1,2-DCE observed in the Third Quarter 2015 (13.3 µg/L) was

above initial concentrations observed in May 2005 (non-detect) and also the maximum observed to date. PCE has not been detected during any sampling event.

**Figure 10** presents concentrations detected at RW3-MW1, with the most recent data collected in Third Quarter 2015. Concentrations of TCE in the Third Quarter 2015 (45.4 µg/L) were higher than initial concentrations observed in January 2010 (35.0 µg/L), though remain less than maximum TCE concentrations observed in November 2010 (77.6 µg/L). Concentrations of cis-1,2-DCE have remained consistently below 2.0 µg/L and concentrations of PCE have remained consistently near or below 2.0 µg/L.

**Figure 11** presents concentrations detected at RW3-MW2, with the most recent data collected in Third Quarter 2015. TCE concentrations observed in the Third Quarter 2015 (169 µg/L) were slightly above initial concentrations observed in January 2010 (160 µg/L), but less than the maximum concentration observed in April 2010 (211 µg/L). Concentrations of cis-1,2-DCE at this location have consistently remained between 1.0 – 2.0 µg/L. PCE has only been detected during a few sampling events, with concentrations ranging from 0.28 J µg/L to 0.52 J µg/L.

**Figure 12** presents concentrations detected at RW3-MW3, with the most recent data collected in Third Quarter 2015. TCE concentrations observed in the Third Quarter 2015 (138 µg/L) were less than initial concentrations observed in January 2010 (350 µg/L), and also less than the maximum concentration observed in June 2013 (410 µg/L). Concentrations of cis-1,2-DCE have remained near or below 2.0 µg/L and PCE has remained below 1.0 µg/L.

**Figure 13** presents concentrations detected at RW3-MW4, with the most recent data collected in Third Quarter 2015. TCE concentrations have decreased since the initial sampling event in January 2010 (21 µg/L), with a concentration of 4.1 µg/L observed in the Third Quarter 2015. PCE was detected for the first time during the Third Quarter 2015 sampling event at a concentration of 0.31 J µg/L, and cis-1,2-DCE has not been detected since the initial sampling event in January 2010 (0.46 µg/L).

**Figure 14** presents concentrations detected at TP-01, with the most recent data collected in Third Quarter 2015. TCE concentrations observed in the Third Quarter 2015 (53.0 µg/L) were less than initial concentrations observed in January 2010 (65 µg/L), which was also the maximum concentration observed to date. Concentrations of cis-1,2-DCE have generally decreased over time, from an initial value of 190 µg/L to 11.3 µg/L in the Third Quarter 2015. PCE concentrations have ranged from non-detectable levels in March 2014 to 6.0 µg/L in June 2012.

#### **4.0 CONCLUSIONS AND RECOMMENDATIONS**

The intent of the groundwater treatment system at GM-38 is to remove mass and reduce elevated VOC concentrations to levels similar to those in the surrounding aquifer, and in doing so minimize the impacts on downgradient water supply wells and currently unaffected portions of the aquifer. Based on the removal of VOCs by the GWTP and decreasing contaminant concentration trends observed in the recovery wells and several of the monitoring wells, progress toward these goals is apparent. Based on the concentrations in the groundwater wells, the GWTP should continue to be operated. In accordance with the O&M Manual, the groundwater sampling frequency for the eight monitoring wells has been reduced to semi-annually. Water levels for the 14 monitoring wells will continue to be monitored on a quarterly basis.

## 5.0 REFERENCES

Tetra Tech, Inc. (Tetra Tech). 2014. *Capture Zone Evaluation and Path Forward, GM-38 Area Groundwater Treatment Plant, Naval Weapons Industrial Reserve Plant, Bethpage, New York*. March.

Tetra Tech EC, Inc. (TtEC). 2010. *Final Operation, Maintenance & Monitoring Plan for Groundwater Treatment Plant GM-38 Area Groundwater Remediation, Naval Weapons Industrial Reserve Plant, Bethpage, New York*. April.

Tetra Tech EC, Inc. (TtEC). 2010a. *Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan), UFP-SAP for Operations, Maintenance, and Monitoring of the Groundwater Treatment Plant, GM-38 Area, Naval Weapons Industrial Reserve Plant, Bethpage, New York*. September.

## **TABLES**

**Table 1**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Discharge Monitoring Results**  
**Third Quarter 2015**

SPDES Parameters	Daily Maximum Goal	Units	July 2015									
			RW-1 <sup>(1)</sup>	RW-3 <sup>(1)</sup>	Combined Influent <sup>(1)</sup> (RW-1 + RW-3)	Air Stripper Effluent (ASE)	Bag Filter Effluent (BFE)	Liquid Carbon 1 Effluent (LC1)	Liquid Carbon 2 Effluent (LC2)	Liquid Carbon 3 Effluent (LC3)	Treated Effluent (TE)	Treated Effluent (TE) Duplicate
Process Stream												
Well Depth		ft	445	530	NA	NA	NA	NA	NA	NA	NA	NA
Screened Interval		ft	335-395 410-430	392-412 442-504	NA	NA	NA	NA	NA	NA	NA	NA
Sampling Date			7/6/15									
Average Flowrate	1100	GPM	996	0	996	NR	995	NR	NR	NR	1,033	NR
Total Flow		gallons	44,442,267	0	44,442,267	NR	44,417,233	NR	NR	NR	46,103,733	NR
pH	5.5 - 8.5	SU	5.21	NS	5.21	6.37	6.48	6.47	6.47	6.48	6.48	6.49
Carbon Tetrachloride	NA	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane	5	µg/L	1.8	NS	1.8	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	0.6	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethene	5	µg/L	1.9	NS	1.9	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis 1,2-Dichloroethene	5	µg/L	12.8	NS	12.8	0.45 J	0.36 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
trans 1,2-Dichloroethene	5	µg/L	0.23 J	NS	0.23 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	5	µg/L	39.8	NS	39.8	0.30 J	0.30 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,1-Trichloroethene	5	µg/L	1.2	NS	1.20	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trichloroethene	5	µg/L	148	NS	148	2.0	1.6	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vinyl Chloride	2	µg/L	0.42 J	NS	0.42 J	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Mercury	0.25	µg/L	ND (0.00050)	NS	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Total Suspended Solids (TSS)	NA	mg/L	ND (5)	NS	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)

**Table 1**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Discharge Monitoring Results**  
**Third Quarter 2015**

SPDES Parameters	Daily Maximum Goal	Units	August 2015									
			RW-1 <sup>(1)</sup>	RW-3 <sup>(1)</sup>	Combined Influent <sup>(1)</sup> (RW-1 + RW-3)	Air Stripper Effluent (ASE)	Bag Filter Effluent (BFE)	Liquid Carbon 1 Effluent (LC1)	Liquid Carbon 2 Effluent (LC2)	Liquid Carbon 3 Effluent (LC3)	Treated Effluent (TE)	Treated Effluent (TE) Duplicate
Process Stream												
Well Depth		ft	445	530	NA	NA	NA	NA	NA	NA	NA	NA
Screened Interval		ft	335-395 410-430	392-412 442-504	NA	NA	NA	NA	NA	NA	NA	NA
Sampling Date			8/5/15									
Average Flowrate	1100	GPM	995	0.3	996	NR	993	NR	NR	NR	1,032	NR
Total Flow		gallons	44,438,133	11,700	44,449,833	NR	44,322,267	NR	NR	NR	46,085,667	NR
pH	5.5 - 8.5	SU	5.39	NS	5.39	6.40	6.49	6.48	6.47	6.49	6.48	6.48
Carbon Tetrachloride	NA	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane	5	µg/L	2.4	NS	2.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	0.6	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethene	5	µg/L	2.3	NS	2.3	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis 1,2-Dichloroethene	5	µg/L	14.6	NS	14.6	0.53 J	0.43 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
trans 1,2-Dichloroethene	5	µg/L	0.26 J	NS	0.26 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	5	µg/L	33.9	NS	33.9	0.47 J	0.55 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.37 J
1,1,1-Trichloroethene	5	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trichloroethene	5	µg/L	144	NS	144	1.9	2.1	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.74 J
Vinyl Chloride	2	µg/L	0.43 J	NS	0.43 J	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Mercury	0.25	µg/L	ND (0.00050)	NS	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Total Suspended Solids (TSS)	NA	mg/L	ND (5)	NS	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)



**Table 1**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Discharge Monitoring Results**  
**Third Quarter 2015**

SPDES Parameters	Daily Maximum Goal	Units	September 2015									
			RW-1 <sup>(1)</sup>	RW-3 <sup>(1) (2)</sup>	Combined Influent <sup>(1)</sup> (RW-1 + RW-3)	Air Stripper Effluent (ASE)	Bag Filter Effluent (BFE)	Liquid Carbon 1 Effluent (LC1)	Liquid Carbon 2 Effluent (LC2)	Liquid Carbon 3 Effluent (LC3)	Treated Effluent (TE)	Treated Effluent (TE) Duplicate
Process Stream												
Well Depth		ft	445	530	NA	NA	NA	NA	NA	NA	NA	NA
Screened Interval		ft	335-395 410-430	392-412 442-504	NA	NA	NA	NA	NA	NA	NA	NA
Sampling Date			9/14/15									
Average Flowrate	1100	GPM	952	0.4	952	NR	951	NR	NR	NR	988	NR
Total Flow		gallons	41,105,400	18,000	41,123,400	NR	41,073,600	NR	NR	NR	42,692,600	NR
pH	5.5 - 8.5	SU	5.30	NA	5.30	5.76	5.83	5.97	5.98	5.99	6.01	6.02
Carbon Tetrachloride	NA	µg/L	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane	5	µg/L	2.3	NA	2.3	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	0.6	µg/L	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethene	5	µg/L	2.4	NA	2.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis 1,2-Dichloroethene	5	µg/L	14.9	NA	14.9	0.57 J	0.38 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
trans 1,2-Dichloroethene	5	µg/L	0.28 J	NA	0.28 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	5	µg/L	32.5	NA	32.5	0.33 J	0.32 J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,1-Trichloroethene	5	µg/L	1.6	NA	1.6	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trichloroethene	5	µg/L	166	NA	166	2.4	2.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vinyl Chloride	2	µg/L	0.53 J	NA	0.53 J	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Mercury	0.25	µg/L	0.00004 J	NA	0.00004 J	0.00003 J	0.00004 J	0.00004 J	ND (0.00010)	0.00004 J	0.00006 J	ND (0.00010)
Total Suspended Solids (TSS)	NA	mg/L	ND (5)	NA	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)

**Notes:**

J - Estimated result between laboratory method detection limit and reporting limit

NA - Not Applicable

ND - Not detected above laboratory method detection limit. Limit of detection (LOD) given in parentheses.

NR - Not Recorded

NS - Not Sampled

gpm - gallons per minute

(1) On 1 July 2015, the RW-1 flowrate was increased from ~800 gpm to ~1,000 gpm and RW-3 was taken off-line, as approved by NYSDEC on 20 April 2015. To maintain the integrity of RW-3 for potential future use, approximately 200 gallons per minute of water are pumped for a 1-hour period from the well on a monthly basis. RW-3 will be sampled semi-annually, consistent with the groundwater monitoring program. Influent concentrations presented above are therefore equivalent to RW-1 concentrations only.

(2) Analytical results for the September 2015 sample collection of RW-3 are presented in Tables 6 and 7.

**Table 2**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Air Sampling Results**  
**Third Quarter 2015**

DAR Parameters	Discharge Goal <sup>(3)</sup>	Units	July 2015					August 2015				
			Influent (VCI1)	VC12	VC23	Effluent	Effluent Duplicate	Influent (VCI1)	VC12	VC23	Effluent	Effluent Duplicate
Process Stream												
Sampling Date			7/6/15					8/7/15				
Average Flowrate		CFM	NR	NR	NR	9,251	NR	NR	NR	NR	9,316	NR
Total Flow <sup>(1)</sup>		ft <sup>3</sup>	NR	NR	NR	412,958,263	NR	NR	NR	NR	415,878,994	NR
Total Flow <sup>(2)</sup>		m <sup>3</sup>	NR	NR	NR	11,693,676	NR	NR	NR	NR	11,776,382	NR
1,2-Dichloroethane	NA	µg/m <sup>3</sup>	4.2 J	4.0 J	ND	1.1 J	ND	3.3 J	4.9 J	1.9 J	2.1 J	1.9 J
cis 1,2-Dichloroethene	> 100,000 <sup>(4)</sup>	µg/m <sup>3</sup>	200	160	310	160	150	150	180	280	160	150
trans 1,2-Dichloroethene		µg/m <sup>3</sup>	3.4 J	4.3 J	4.7	1.9 J	1.2 J	5.0 J	3.5 J	4.5	1.3 J	1.6 J
1,2-Dichloroethene (total)	> 100,000	µg/m <sup>3</sup>	200	170	320	160	160	150	180	290	160	160
Toluene	NA	µg/m <sup>3</sup>	1.6 J	0.76 J	0.60 J	ND	0.64 J	6.4 J	ND	ND	1.4 J	ND
Xylene	NA	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NA	µg/m <sup>3</sup>	3.0 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	2,600	µg/m <sup>3</sup>	2,200	2,100	84	12	4.9	2,700	2,600	100	19	10
Vinyl Chloride	560	µg/m <sup>3</sup>	5.2	6.3	6.0	2.7	2.6	11	4.8	4.3	1.9	2.0
Tetrachloroethene	5,100	µg/m <sup>3</sup>	530	32	67.0	4.8 J	2.4 J	1,000	38	87	8.8	4.9 J

**Table 2**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Air Sampling Results**  
**Third Quarter 2015**

DAR Parameters	Discharge Goal <sup>(3)</sup>	Units	September 2015				
			Influent (VC11)	VC12	VC23	Effluent	Effluent Duplicate
Process Stream							
Sampling Date			9/8/2015 <sup>(5)</sup>				
Average Flowrate		CFM	NR	NR	NR	9,190	NR
Total Flow <sup>(1)</sup>		ft <sup>3</sup>	NR	NR	NR	397,022,400	NR
Total Flow <sup>(2)</sup>		m <sup>3</sup>	NR	NR	NR	11,242,422	NR
1,2-Dichloroethane	NA	µg/m <sup>3</sup>	3.5 J	NS	1.9 J	2.4 J	2.4 J
cis 1,2-Dichloroethene	> 100,000 <sup>(4)</sup>	µg/m <sup>3</sup>	140	NS	270	160	160
trans 1,2-Dichloroethene		µg/m <sup>3</sup>	ND	NS	4.2	1.7 J	ND
1,2-Dichloroethene (total)	> 100,000	µg/m <sup>3</sup>	140	NS	280	160	160
Toluene	NA	µg/m <sup>3</sup>	4.2 J	NS	1.5 J	ND	ND
Xylene	NA	µg/m <sup>3</sup>	ND	NS	ND	ND	ND
1,1,2-Trichloroethane	NA	µg/m <sup>3</sup>	2.0 J	NS	ND	ND	ND
Trichloroethene	2,600	µg/m <sup>3</sup>	1,600	NS	120	23	7.8
Vinyl Chloride	560	µg/m <sup>3</sup>	4.4	NS	4.5	2.6	2.5
Tetrachloroethene	5,100	µg/m <sup>3</sup>	400	NS	110	10.0	3.4 J

Notes:

NA - Not applicable

ND - Not detected

NR - Not recorded

NS - Not sampled

SGC - Short-term Guideline Concentration

µg/m<sup>3</sup> - micrograms per cubic meter

CFM - cubic feet per minute

DAR - Division of Air Resources

(1) Total Flow (ft<sup>3</sup>) = avg flowrate (cfm) \* operational time (min)

(2) Total Flow (m<sup>3</sup>) = total flow (ft<sup>3</sup>) \* (0.3048<sup>3</sup>)m<sup>3</sup>/ft<sup>3</sup>

(3) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

(4) Discharge goal is for total 1,2-Dichloroethene.

(5) Monthly process samples were collected on 9/8/15. Changeout of the vapor phase granular activated carbon (VGAC) was performed on 9/16-9/17/15.

**Table 3**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Stack Emissions**  
**Third Quarter 2015**

DAR Parameters	Discharge Goal <sup>(1)</sup>	Units	July 2015	August 2015	September 2015
Sampling Date			7/6/15	8/7/15	9/8/15
Average Flowrate		CFM	9,251	9,316	9,190
Total Flow		ft <sup>3</sup>	412,958,263	415,878,994	397,022,400
Total Flow		m <sup>3</sup>	11,693,676	11,776,382	11,242,422
Trichloroethene	0.09	lb/hr	0.00042	0.00066	0.00079
Vinyl Chloride	0.02	lb/hr	0.00009	0.00007	0.00009
1,2 Dichloroethene	11	lb/hr	0.00554	0.00558	0.00551
1,2-Dichloroethane	NA	lb/hr	0.00004	0.00007	0.00008
Toluene	NA	lb/hr	0.00000	0.00005	0.00000
Xylene	NA	lb/hr	0.00000	0.00000	0.00000
1,1,2-Trichloroethane	NA	lb/hr	0.00000	0.00000	0.00000
Tetrachloroethene	0.18	lb/hr	0.00017	0.00031	0.00034

Notes:

NA - Not applicable

lb/hr - pounds per hour

DAR - Division of Air Resources

CFM - Cubic feet per minute

Stack Emissions (lb/hr) = average flowrate (cfm) \* (0.3048<sup>^3</sup>)m<sup>3</sup>/ft<sup>3</sup> \* conc.(ug/m<sup>3</sup>) \* 1 lb/453592370 ug \*  
60 min/hr

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

**Table 4**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Groundwater Level Measurements**  
**Third Quarter 2015**

Monitoring Well ID	Date	Well Elevation (ft amsl)	Total Depth (ft)	Screen Interval (ft)	Depth to Water (ft)	Groundwater Elevation (ft amsl)
RW1-MW1	09/14/15	85.86	435	395-435	39.36	46.50
RW1-MW2	09/14/15	87.35	435	395-435	41.68	45.67
RW1-MW3	09/14/15	80.34	435	395-435	32.15	48.19
RW2-MW1	09/14/15	90.75	510	470-510	42.28	48.47
RW2-MW2	09/14/15	90.15	510	470-510	41.31	48.84
RW2-MW3	09/14/15	89.75	510	470-510	41.21	48.54
RW3-MW1	09/14/15	92.22	350	330-350	39.35	52.87
RW3-MW2	09/14/15	91.98	495	475-495	41.10	50.88
RW3-MW3	09/14/15	92.98	340	320-340	41.25	51.73
RW3-MW4	09/14/15	92.92	495	475-495	43.47	49.45
TP-01	09/14/15	85.91	470	450-470	36.86	49.05
IW1-MW1	09/14/15	89.41	150	20-150	37.90	51.51
GM38D	NA	91.37	340	320-340	NA	NA
GM382D	NA	91.57	495	475-495	NA	NA

**Notes:**

amsl - above mean sea level

ft - feet

NA - Not Available

**Table 5**  
**Summary of Final Groundwater Chemistry Data**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Summary of Groundwater Chemistry Results**  
**Third Quarter 2015**

Location	Temp (°C)	pH (SU)	S.C. (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Color (Visual)
RW1-MW1	17.39	4.38	159	0.79	270.8	0.10	clear
RW1-MW3	13.87	5.00	176	0.25	181.7	3.27	clear
RW2-MW1	15.18	5.79	203	0.23	14.3	3.59	clear
RW3-MW1	18.44	4.39	128	4.27	272.1	2.81	clear
RW3-MW2	16.53	4.30	86	0.12	301.7	1.31	clear
RW3-MW3	16.28	4.81	140	1.21	272.6	9.40	clear
RW3-MW4	15.96	4.37	117	0.12	316.4	0.38	clear
TP-01	15.15	5.65	182	7.47	190.5	0.20	clear

**Notes:**

S.C. = Specific Conductance  
mS/cm = milliSiemens per centimeter  
NTU = nephelometric turbidity units  
mg/L = milligrams per liter  
°C = degrees celsius  
mV = millivolts  
SU = standard units  
ORP = oxidation/reduction potential

**Table 6**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Summary of Detected Groundwater Analytical Results**  
**Third Quarter 2015**

Sample ID	RW1-MW1	RW1-MW3	RW2-MW1	RW3-MW1	RW3-MW2	RW3-MW3	RW3-MW4	TP-01	TP-01	RW-3 <sup>(2)</sup>
Sample Date	9/15/2015	9/14/2015	9/14/2015	9/15/2015	9/14/2015	9/15/2015	9/15/2015	9/14/2015	9/14/2015	9/15/2015
Comments									Duplicate	
<b>VOCS (EPA 624) ug/L<sup>(1)</sup></b>										
Chloroform	ND	ND	2.2	ND	ND	ND	ND	1.3	1.3	ND
1,1-dichloroethane	5.1	7.7	6.3	0.76 J	0.47 J	1.2	0.88 J	2.1	2.0	1.9
1,2-dichloroethane	ND	ND	1.4	ND	ND	ND	ND	0.82 J	0.82 J	ND
1,1-dichloroethene	1.9	2.3	2.6	0.41 J	0.30 J	1.1	0.21 J	0.77 J	0.83 J	1.9
cis-1,2-dichloroethene	22.0	0.49 J	13.3	ND	1.4	1.3	ND	11.3	11.6	1.6
trans-1,2-dichloroethene	0.50 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.62 J	0.50 J	ND	1.6	0.52 J	0.77 J	0.31 J	0.82 J	0.88 J	0.68 J
1,1,1-trichloroethane	ND	1.6	ND	0.36 J	0.41 J	0.36 J	ND	ND	ND	0.96 J
1,1,2-trichloroethane	ND	0.44 J	ND	ND	ND	ND	ND	ND	ND	0.30 J
Trichloroethene	98.9	2.4	27.5	45.4	169	138	4.1	53.0	53.9	237
Mercury (EPA 245.1) ug/L	ND	ND	ND	0.04 J	ND	ND	ND	ND	ND	ND
TSS (SM20 2540D) mg/L	ND	ND	11	ND	ND	ND	ND	ND	ND	ND

**Notes:**

J = estimated value

ND = Not detected above laboratory method detection limit

mg/L = milligrams per liter

µg/L = micrograms per liter

(1) Samples were analyzed for TCL VOCs. Only those VOCs detected are presented above.

(2) RW-3, previously an active extraction well sampled on a monthly basis, was taken off-line on 7/1/15. RW-3 is now sampled semi-annually, in conjunction with the semi-annual LTM events.

Table 7  
 GM-38 Area Groundwater Remediation  
 Groundwater Treatment Plant  
 Naval Weapons Industrial Reserve Plant - Bethpage, NY  
 Summary of Historical Groundwater Analytical Results  
 Through Third Quarter 2015

Sample ID	RW1-MW1																										
	5/4/2005	7/22/2005	5/27/2009	1/21/2010	4/21/2010	7/28/2010	11/10/2010	3/25/2011	6/14/2011 <sup>(1)</sup>	6/14/2011	9/28/2011	11/30/2011	3/8/2012	6/6/2012	6/6/2012	8/21/2012	12/4/2012	3/13/2013	6/19/2013 <sup>(2)</sup>	9/17/2013	12/16/2013	3/24/2014	3/24/2014	9/22/2014	3/25/2015	9/15/2015	
Sample Date										Duplicate																	
Comments																											
Well Depth (Ft)	435																										
Screened Interval (Ft)	395-435																										
VOCS (EPA 624) ug/L																											
Acrolein	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	30 R	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
Acetone	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	R	R	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
carbon disulfide	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	ND	0.32J	ND	ND	ND	0.17J	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NR	NR	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	2.0 R	ND	ND	ND	ND
Chloroform	ND	0.7J	1.1	ND	0.70J	0.65J	0.56J	0.55J	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55 J	0.39 J	ND	ND	ND
Chloromethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
1,3-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
1,4-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
dichlorodifluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	0.74J	0.79J	3.3	2.9J	2.8	2.8	3.0	3.6	1.6J	4.2J	4.0J	4.1	5.2	4.8	4.3	5.3	4.9	5.3	4.8J	4.7J	5.2	5.3	5.3	4.1J	5.1	5.1	
1,2-dichloroethane	ND	ND	0.29J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	1.3	2.8	3.1	1.7J	1.9	1.7	1.7	1.9	0.85 J	2.1 J	2.3 J	2.1	2.7	2.5	2.3	2.8	2.0	2.8	ND	2.5	2.6	2.8	2.7	2.2 J	2.2 J	1.9	
cis-1,2-dichloroethene	78.6	80.4	180D	130	121	118	108	121	55.8 J	145 J	164	132	179	165	145	167	108	91.7	64	86.2 J	84.4	92.6 J	94.2	49.8	39.5	22.0	
trans-1,2-dichloroethene	2.0	1.3J	2.8	4J	2.9	2.1	1.3	4.2	0.71 J	2.0 J	2.0 J	1.7	3.0	3.7	2.6	2.4	1.8	1.7	ND	ND	1.4	1.4	1.4	1.0	0.79 J	0.50 J	
1,2-dichloropropane	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-dichloropropene	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-dichloropropene	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dioxane	1.75J	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-hexanone	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
methylcyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
styrene	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2,2-tetrachloroethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-trichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	ND	ND	0.72J	ND	0.42J	ND	ND	ND	ND	ND	0.36 J	ND	ND	ND	ND	ND	ND	ND	ND	0.35 J	0.67 J	0.33 J	0.37 J	0.76 J	0.30 J	0.62 J	
Toluene	ND	0.33J	0.68	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	0.71J	ND	0.52J	0.43J	0.53J	0.79J	ND	0.63 J	1.1 J	0.66 J	0.96 J	0.98 J	0.89 J	0.99 J	0.88 J	1.1	ND	1.2	1.5	ND	ND	ND	ND	ND	
1,1,2-trichloroethane	ND	ND	0.58J	NR	ND	ND	ND	ND	NR	NR	ND	0.33 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	53.6	52.7	140.0	79.0	116	95.4	84.2	97.6	26.6 J	73.8 J	129	84.5	115	107	102	126	85	101	78	175	128	101	103	94.3	99.5	98.9	
m,p-xylene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	1.6	ND	ND	ND	0.17J	ND	ND	0.38 J	0.29 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury (EPA 245.1) ug/L	NR	NR	ND	0.20	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TSS (SM20 2540D) mg/L	NR	NR	2.8	2.8	6.0	4.0	4.0	4.0	4.0	ND	6	ND	11	16	9	5	6	ND	ND	ND	ND	11	ND	ND	ND	ND	



Table 7  
GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Summary of Historical Groundwater Analytical Results  
Through Third Quarter 2015

Sample ID	RW1-MW2				RW1-MW3																				
	5/4/2005	7/22/2005	5/28/2009	6/18/2013 <sup>(2)</sup>	1/20/2010	4/21/2010	7/29/2010	11/10/2010	3/25/2011	6/14/2011	9/28/2011	11/30/2011	3/8/2012	6/7/2012	8/22/2012	12/7/2012	3/14/2013	6/19/2013 <sup>(2)</sup>	9/17/2013	12/17/2013	3/25/2014	9/23/2014	3/25/2015	9/14/2015	
Comments																									
Well Depth (Ft)	435				435																				
Screened Interval (Ft)	395-435				395-435																				
VOCS (EPA 624) ug/L																									
Acrolein	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Acetone	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Bromodichloromethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Bromoform	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Bromomethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
2-butanone	R	R	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
carbon disulfide	ND	ND	ND	NR	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Dibromochloromethane	NR	NR	ND	ND	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Chloroethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Chloroform	ND	1.4	ND	ND	0.67J	0.80J	0.47J	0.69J	0.73J	NR	0.97 J	ND	0.73 J	0.64 J	ND	1.2 J	ND	0.82	ND	ND	0.74 J	0.67 J	0.79 J	ND	
Chloromethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
cyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
1,2-dibromo-3-chloro-propane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
1,2-dibromomethane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
1,2-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
1,3-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
1,4-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
dichlorodifluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
1,1-dichloroethane	4.6	5.5	3.4	3.9	2.4	4.6	1.5	2.3	2.4	9.3	10.1 J	2.1	8.4	5.7	9.4	9.3	8.5	10	9.7 J	8.1	8.6	6.1 J	8.1	7.7	
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18 J	ND	ND	ND	ND	ND	ND	
1,1-dichloroethene	3.2	12.3	ND	ND	0.42J	1.10	ND	0.28J	ND	1.8	2.2 J	ND	1.8	0.86 J	2.4	2.2	1.7	1.8	1.6	1.9	2.1	1.6 J	2.3 J	2.3	
cis-1,2-dichloroethene	181.0	47.6	160.0	120	0.54J	0.48J	0.36J	0.55J	0.58J	0.59 J	0.43 J	0.55 J	0.68 J	0.33 J	0.56 J	0.46 J	0.53 J	0.46 J	0.72 J	0.60 J	0.57 J	0.44 J	0.54 J	0.49 J	
trans-1,2-dichloroethene	2.5	7.6	2.5	1.9 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,2-dichloropropane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis-1,3-dichloropropene	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
trans-1,3-dichloropropene	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,4-dioxane	4.01	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2-hexanone	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
isopropylbenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
methyl acetate	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Methylene chloride	1.0	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
methylcyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
4-methyl-2-pentanone	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
methyl-tert-butyl-ether	NR	NR	ND	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
styrene	ND	ND	ND	NR	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
1,1,2,2-tetrachloroethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	0.23 J	ND	ND	ND	0.20 J	ND	ND	ND	ND	ND	ND	
1,2,4-trichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Tetrachloroethene	ND	134.0	19.0	5.9	ND	049J	ND	ND	ND	0.33 J	0.62 J	ND	0.65 J	0.30 J	0.97 J	0.40 J	ND	ND	ND	ND	ND	ND	0.50 J		
Toluene	0.32J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,1,1-trichloroethane	1.3	1.0	ND	ND	0.41J	0.98J	ND	0.26J	0.33J	1.6	2.7 J	ND	ND	1.1 J	1.9	1.7	1.4	1.8	1.5	2.0	1.7	1.2 J	1.5	1.6	
1,1,2-trichloroethane	ND	0.65J	ND	ND	0.62J	0.60J	0.36J	0.55J	0.41J	NR	0.57 J	0.63 J	0.70 J	0.61 J	0.56 J	0.54 J	0.61 J	0.46 J	ND	0.55 J	0.46 J	0.46 J	0.43 J	0.44 J	
Trichloroethene	158.0	198.0	200.0	64	1.2	1.6	0.58J	0.91J	1.0	1.4	1.8 J	1.0 J	2.2	1.3	2.3	1.6	1.9	1.7	2.5	3.2	2.5	1.9	2.0	2.4	
m,p-xylene	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	
Trichlorofluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Trichlorofluoromethane	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Trichlorotrifluoroethane	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	
o-xylene	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Vinyl chloride	12.9	187.0	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
xylenes (total)	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	
Mercury (EPA 245.1) ug/L	NR	NR	0.20	NR	NR	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
TSS (SM20 2540D) mg/L	NR	NR	4.0	NR	NR	8.0	<4.0	<4.0	<4.0	ND	ND	ND	5	ND	ND	ND	ND	ND	ND	5	ND	ND	ND	ND	

Table 7  
 GM-38 Area Groundwater Remediation  
 Groundwater Treatment Plant  
 Naval Weapons Industrial Reserve Plant - Bethpage, NY  
 Summary of Historical Groundwater Analytical Results  
 Through Third Quarter 2015

Sample ID	RW2-MW1																							RW2-MW2			
	5/4/2005	7/20/2005	5/27/2009	1/18/2010	4/21/2010	7/28/2010	11/3/2010	3/24/2011	6/14/2011	9/27/2011	11/29/2011	3/7/2012	6/6/2012	8/21/2012	12/7/2012	3/13/2013	6/17/2013 <sup>(2)</sup>	9/17/2013	12/17/2013	12/17/2013	3/25/2014	9/23/2014	3/26/2015	9/14/2015	5/4/2005	7/21/2005	6/17/2013 <sup>(2)</sup>
Comments																								Duplicate			
Well Depth (Ft)	510																							510			
Screened Interval (Ft)	470-510																							470-510			
VOCS (EPA 624) ug/L																											
Acrolein	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	30 R	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
Acetone	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Benzene	ND	ND	ND	ND	0.15J	0.69J	0.58J	0.30J	NR	0.22 J	0.27 J	0.22 J	ND	ND	0.68 J	0.54 J	ND	0.59 J	ND	ND	0.21 J	0.21 J	0.56 J	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	1.8 J	ND	ND	ND	ND	ND	ND
2-butanone	R	R	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	R	R	ND
carbon disulfide	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NR	NR	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
Chloroethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2.0 R	2.0 R	ND	ND	NR	NR	NR
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	0.38 J	ND	ND	ND	2.9	ND	ND	ND	2.8 J	1.5	0.46 J	2.2	ND	ND	0.55
Chloromethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	0.68 J	ND	ND	ND	ND	ND	ND	ND
cyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
1,3-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
1,4-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
dichlorodifluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	0.53J	0.93J	1.2J	0.82J	0.60J	0.58J	0.42J	ND	0.61 J	0.64 J	ND	0.50 J	4.2	4.8	0.58 J	0.52 J	7.0	ND	5.8	6.4	5.1	ND	2.1	6.3	ND	0.78J	4.9
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	1.9 J	1.7 J	1.3	0.69 J	0.41 J	1.4	ND	ND	0.32 J
1,1-dichloroethene	ND	0.58J	0.55J	0.63J	ND	ND	ND	ND	ND	ND	ND	ND	0.55 J	0.95 J	0.19 J	ND	1.9	ND	2.6	2.6	1.8	1.3 J	0.61 J	2.6	ND	0.41J	0.72
cis-1,2-dichloroethene	ND	0.55J	1.9	1.0	0.78J	0.80J	0.55J	0.43J	0.56 J	0.32 J	0.39 J	0.34 J	0.32 J	0.39 J	0.33 J	0.29 J	7.7	0.77 J	11.0 J	11.1 J	8.0	4.0	2.6	13.3	0.33J	0.41J	4.6
trans-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-dichloropropene	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-dichloropropene	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dioxane	5.34	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-hexanone	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
methylcyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
styrene	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2,2-tetrachloroethane	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-trichlorobenzene	NR	NR	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	0.85J	1.0	ND	0.52J	0.49J	0.50J	ND	NR	0.24 J	0.29 J	0.19 J	ND	ND	0.27 J	ND	0.31 J	ND	ND	ND	ND	ND	0.26 J	ND	0.33J	0.53J	ND
1,1,1-trichloroethane	ND	0.37J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33 J	ND	ND	0.84	ND	0.94 J	0.94 J	ND	0.39 J	ND	ND	ND	ND	0.34 J
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	37.6	34.6	12.0	15.0	0.42J	ND	ND	1.7	1.6	0.89 J	0.67 J	0.67 J	9.0	20.8	0.73 J	0.67 J	14	1.5	34.6	33.5	23.4	18.3	4.3	27.5	7.8	13.8	12
m,p-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (total)	ND	1.4J	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury (EPA 245.1) ug/L	NR	NR	0.05J	NR	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR
TSS (SM20 2540D) mg/L	NR	NR	2260.0	NR	58.0	<4.0	<4.0	<4.0	181	5	36	6	25	12	10	ND	13	12	30	24	12	6	17	11	NR	NR	NR

Table 7  
 GM-38 Area Groundwater Remediation  
 Groundwater Treatment Plant  
 Naval Weapons Industrial Reserve Plant - Bethpage, NY  
 Summary of Historical Groundwater Analytical Results  
 Through Third Quarter 2015

Sample ID	RW2-MW3										RW3-MW1																
	5/3/2005	7/20/2005	5/28/2009	6/18/2013 <sup>(2)</sup>	1/19/2010	4/22/2010	7/29/2010	11/9/2010	3/25/2011	3/25/2011	6/14/2011	9/27/2011	11/30/2011	11/30/2011	3/7/2012	6/7/2012	8/22/2012	12/6/2012	3/14/2013	6/20/2013 <sup>(2)</sup>	6/20/2013 <sup>(2)</sup>	9/18/2013	12/17/2013	3/25/2014	9/23/2014	3/25/2015	9/15/2015
Comments											Duplicate																
Well Depth (Ft)	510										350																
Screened Interval (Ft)	470-510										330-350																
VOCS (EPA 624) ug/L																											
Acrolein	NR	NR	30 R	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Acetone	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
Bromoform	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
Bromomethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
2-butanone	R	R	ND	ND	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
carbon disulfide	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	0.19J	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
Dibromochloromethane	NR	NR	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
Chloroethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chloroform	ND	ND	ND	ND	ND	ND	ND	0.20J	ND	ND	NR	ND	ND	ND	ND	ND	0.63 J	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
Chloromethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR
cyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,3-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,4-dichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
dichlorodifluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	0.68J	0.31J	1.4	7.4	1.6	1.5	1.7	1.4	1.3	1.1	1.0 J	0.96 J	0.93 J	0.90 J	0.80 J	0.87 J	0.98 J	1.2	ND	ND	1.2 J	1.2	1.1	0.69 J	0.64 J	0.76 J	
1,2-dichloroethane	ND	ND	ND	ND	0.27J	ND	ND	ND	ND	ND	ND	0.57 J	ND	ND	0.43 J	ND	0.50 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	ND	ND	0.42J	ND	1.2	1.3	1.2	1.2	1.2	1.1	0.85 J	0.65 J	0.64 J	0.66 J	0.47 J	0.19 J	0.54 J	0.65 J	0.68 J	ND	ND	0.57 J	0.69 J	0.74 J	0.43 J	0.42 J	0.41 J
cis-1,2-dichloroethene	0.40J	0.66J	2.3	ND	0.37J	ND	0.32J	0.45J	0.47J	0.45J	0.48 J	0.31 J	0.36 J	0.43 J	0.37 J	0.39 J	0.36 J	0.44 J	0.38 J	ND	ND	0.43 J	0.41 J	0.38 J	0.30 J	ND	ND
trans-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-dichloropropene	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-dichloropropene	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dioxane	7.42J	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-hexanone	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methylcyclohexane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
styrene	ND	ND	ND	NR	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2,2-tetrachloroethane	ND	ND	ND	ND	NR	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2,4-trichlorobenzene	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	ND	ND	ND	ND	0.49J	0.81J	0.73J	1.5	1.4	1.6	1.2	1.3 J	1.0	1.1	1.0	0.33 J	ND	0.44 J	1.6	1.8 J	1.7 J	1.2	1.6	1.5	1.6	2.2	1.6
Toluene	ND	0.50J	0.39J	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,1-trichloroethane	ND	ND	ND	ND	ND	0.98J	0.84J	1.2	1.1	1.1	0.78 J	1.0 J	0.59 J	0.63 J	0.58 J	0.54 J	0.42 J	0.34 J	0.49 J	ND	ND	0.61 J	0.66 J	0.66 J	0.39 J	0.35 J	0.36 J
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichloroethene	16.2	20.6	18.0	60	35.0	53.2	52.3	77.6	76.2	77.9	63.1	72.4 J	51.0	55.2	59.0	42.5	37.7	42.8	46.6	49	48	62.7	60.5	60.0	43.4	41.8	45.4
m,p-xylene	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury (EPA 245.1) ug/L	NR	NR	ND	NR	NR	<0.20	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.04 J
TSS (SM20 2540D) mg/L	NR	NR	14.8	NR	NR	<4.0	<4.0	<4.0	<4.0	<4.0	5160	ND	ND	ND	NR	17	ND	ND	16	ND	9.5 J	ND	15	14	8	12	ND

Table 7  
 GM-38 Area Groundwater Remediation  
 Groundwater Treatment Plant  
 Naval Weapons Industrial Reserve Plant - Bethpage, NY  
 Summary of Historical Groundwater Analytical Results  
 Through Third Quarter 2015

Sample ID	RW3-MW2																								
	1/19/2010	1/19/2010	4/22/2010	7/29/2010	11/9/2010	11/9/2010	3/25/2011	6/14/2011	9/27/2011	11/30/2011	3/8/2012	6/7/2012	8/22/2012	8/22/2012	12/4/2012	12/4/2012	3/14/2013	6/20/2013 <sup>(2)</sup>	9/17/2013	12/17/2013	3/25/2014	9/23/2014	9/23/2014	3/25/2015	9/14/2015
Sample Date		Duplicate			Duplicate									Duplicate	Duplicate								Duplicate		
Comments	495																								
Well Depth (Ft)	495																								
Screened Interval (Ft)	475-495																								
VOCS (EPA 624) ug/L																									
Acrolein	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	30 R	30 R	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND
Acetone	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	
Benzene	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	NR	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
carbon disulfide	NR	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NR	NR	ND	ND	ND	ND	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chloroform	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	0.23 J	ND	ND	0.62 J	0.64 J	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	NR	NR	ND	ND	ND	ND	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,3-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,4-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR
dichlorodifluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	ND	ND	0.54 J	ND	ND	ND	ND	0.52 J	0.37 J	ND	0.41 J	0.66 J	0.74 J	0.73 J	0.69 J	0.71 J	0.68 J	ND	0.65 J	0.59 J	0.62 J	0.51 J	0.51 J	0.56 J	0.47 J
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	ND	ND	1.2	ND	ND	ND	ND	0.57 J	0.45 J	0.27 J	0.27 J	0.36 J	0.49 J	0.49 J	0.40 J	0.43 J	0.53 J	ND	0.29 J	0.45 J	0.44 J	0.38 J	0.33 J	0.33 J	0.30 J
cis-1,2-dichloroethene	1.5 J	1.6 J	2.4	1.1	0.92 J	0.92 J	1.6	1.7	1.1	1.4	1.3	1.5	1.6	1.5	1.6	1.6	ND	1.3 J	1.9	1.7	1.4	1.3	1.5	1.4	
trans-1,2-dichloroethene	ND	ND	0.43 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	0.69 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-dichloropropene	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-dichloropropene	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dioxane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-hexanone	NR	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
methylcyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	NR	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
styrene	NR	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2,2-tetrachloroethane	NR	NR	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-trichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28 J	ND	ND	ND	ND	ND	ND	ND	0.29 J	ND	ND	ND	0.52 J
Toluene	ND	ND	ND	ND	ND	ND	ND	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	0.58 J	ND	ND	ND	ND	0.39 J	0.43 J	ND	ND	0.54 J	0.52 J	0.49 J	0.42 J	0.43 J	0.41 J	ND	0.47 J	0.50 J	0.43 J	0.36 J	0.39 J	0.38 J	0.41 J
1,1,2-trichloroethane	ND	ND	ND	ND	0.25 J	0.27 J	ND	NR	0.32 J	0.32 J	0.32 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	160	170	211	73	58.2	60.9	110	135	151	71.9	96.5	209	198	192	173 J	171	155	140	174	176	164	148	151	159	169
m,p-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (total)	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury (EPA 245.1) ug/L	NR	NR	<0.20	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TSS (SM20 2540D) mg/L	NR	NR	5.0	6.0	ND	10.0	10.0	7	6	ND	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 7  
 GM-38 Area Groundwater Remediation  
 Groundwater Treatment Plant  
 Naval Weapons Industrial Reserve Plant - Bethpage, NY  
 Summary of Historical Groundwater Analytical Results  
 Through Third Quarter 2015

Sample ID	RW3-MW3																						
	1/20/2010	4/22/2010	4/22/2010	7/28/2010	11/3/2010 <sup>(A)</sup>	3/25/2011	6/15/2011	9/28/2011	11/29/2011	3/7/2012	3/7/2012	6/7/2012	8/22/2012	12/4/2012	3/14/2013	6/21/2013 <sup>(B)</sup>	9/18/2013	12/17/2013	3/26/2014	9/23/2014	3/25/2015	3/25/2015	9/15/2015
Comments			Duplicate								Duplicate											Duplicate	
Well Depth (Ft)	340																						
Screened Interval (Ft)	320-340																						
VOCS (EPA 624) ug/L																							
Acrolein	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	150 R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR
Benzene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
carbon disulfide	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.0 R	ND	ND
Chloroform	ND	ND	0.40J	0.46J	ND	0.33J	NR	0.48 J	ND	0.42 J	0.42 J	2.3 J	ND	0.88 J	ND	ND	ND	3.4 J	ND	0.27 J	0.40 J	0.33 J	ND
Chloromethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
dichlorodifluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	ND	1.6	1.6	2.3	1.0	1.5	7.1	3.2 J	1.5	3.3	3.3	2.6 J	ND	4.2	4.5 J	ND	ND	3.7 J	4.9 J	1.3 J	1.8	1.8	1.2
1,2-dichloroethane	ND	0.52J	0.54J	ND	ND	ND	0.37 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-dichloroethene	ND	1.1	1.3	1.2	ND	0.96J	2.6	1.8 J	0.96 J	1.9	1.9	1.7 J	1.4 J	1.9	2.1 J	ND	ND	2.4 J	0.94 J	1.5 J	1.4 J	1.1	
cis-1,2-dichloroethene	ND	2.1	2.1	1.7	ND	2.3	1.2	1.9	2.1	2.1	1.4 J	1.8 J	1.2	ND	ND	ND	ND	1.2	1.3	1.3	1.3	1.3	
trans-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-dichloropropene	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-dichloropropene	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dioxane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-hexanone	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	3.2 J	ND	6.2 J	ND	ND	ND	ND	ND	ND	ND
methylcyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
styrene	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,1,2-tetrachloroethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-trichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	ND	0.45J	0.49J	ND	ND	ND	0.40 J	0.50 J	ND	0.72 J	0.69 J	ND	ND	0.43 J	ND	ND	ND	ND	ND	0.36 J	0.37 J	0.77 J	
Toluene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	0.95J	1.0J	0.72J	ND	0.62J	1.3	1.0 J	0.49 J	0.84 J	0.87 J	ND	ND	0.85 J	ND	ND	ND	ND	ND	0.40 J	0.48 J	0.45 J	0.36 J
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	350	397	382	297	8.5	288	331	215 J	250	312	325	285	248	291	347	410	322	322	350	147	182	184	138
m,p-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (total)	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury (EPA 245.1) ug/L	NR	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TSS (SM20 2540D) mg/L	NR	4.0	5.0	<4.0	<4.0	<4.0	ND	ND	ND	ND	ND	13	10	5	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 7  
 GM-38 Area Groundwater Remediation  
 Groundwater Treatment Plant  
 Naval Weapons Industrial Reserve Plant - Bethpage, NY  
 Summary of Historical Groundwater Analytical Results  
 Through Third Quarter 2015

Sample ID	RW3-MW4																				
Sample Date	1/20/2010	4/22/2010	7/28/2010	7/28/2010	11/3/2010 <sup>(1)</sup>	3/24/2011	6/15/2011	9/28/2011	11/29/2011	3/7/2012	6/7/2012	8/22/2012	12/4/2012	3/14/2013	6/21/2013 <sup>(2)</sup>	9/17/2013	12/17/2013	3/26/2014	9/23/2014	3/25/2015	9/15/2015
Comments				Duplicate																	
Well Depth (Ft)	495																				
Screened Interval (Ft)	475-495																				
VOCS (EPA 624) ug/L																					
Acrolein	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	30 R	ND	ND	NR	ND	ND	ND	ND	ND	ND
Acrylonitrile	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND
Acetone	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR
Benzene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-butanone	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
carbon disulfide	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-chloroethylvinyl ether	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	0.32J	ND	NR	0.87 J	ND	0.38 J	ND	ND	0.71 J	ND	1.2	ND	ND	1.2 J	0.38 J	1.2	ND
Chloromethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND
1,3-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND
1,4-dichlorobenzene	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND
dichlorodifluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	2.5	0.6	0.54J	0.50J	1.8	0.81	0.78 J	5.4 J	0.84 J	1.8	0.50 J	ND	1.2	3.8	4.6	2.9	4.9	5.5	2.7 J	6.9	0.88 J
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	0.23 J	ND	ND	0.37 J	ND	ND	ND
1,1-dichloroethene	1.0	ND	ND	ND	0.86J	ND	0.20 J	0.53 J	ND	0.21 J	ND	ND	0.19 J	0.38 J	0.42 J	ND	0.39 J	0.95 J	0.37 J	1.3 J	0.21 J
cis-1,2-dichloroethene	0.46J	ND	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-dichloropropene	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-dichloropropene	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-dioxane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-hexanone	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
methylcyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
styrene	NR	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2,2-tetrachloroethane	NR	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-trichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.31 J
Toluene	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-trichloroethane	ND	ND	ND	ND	0.67J	ND	ND	0.66 J	ND	ND	ND	ND	ND	ND	0.29 J	ND	0.39 J	0.48 J	ND	0.60 J	ND
1,1,2-trichloroethane	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	21	11	7.5	8.0	308	7.7	6.7	3.4 J	5.6	4.6	5.4	5.5	4.5	2.3	1.8	5.0	4.4	3.3	2.5	2.7	4.1
m,p-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	ND	NR	NR	NR	NR	NR	NR
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
xylenes (total)	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury (EPA 245.1) ug/L	NR	<0.20	<0.20	<0.20	<0.20	<0.20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TSS (SM20 2540D) mg/L	NR	16.0	<4.0	<4.0	<4.0	<4.0	ND	11	6	5	ND	ND	ND	22	ND	ND	ND	9	5	5	ND

**Table 7**  
**GM-38 Area Groundwater Remediation**  
**Groundwater Treatment Plant**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Summary of Historical Groundwater Analytical Results**  
**Through Third Quarter 2015**

Sample ID	TP-01																				IW-1 MW-1		IW-1	RW-3 <sup>(1)</sup>
	1/21/2010	6/15/2011	9/27/2011	9/27/2011	11/30/2011	3/8/2012	6/6/2012	8/22/2012	12/4/2012	3/13/2013	3/13/2013	6/17/2013 <sup>(2)</sup>	9/17/2013	9/17/2013	12/16/2013	3/25/2014	9/22/2014	3/25/2015	9/14/2015	9/14/2015	5/3/2005	6/18/2013 <sup>(3)</sup>	5/27/2009	9/15/2015
Sample Date	Duplicate																				Duplicate		Duplicate	
Comments																								
Well Depth (Ft)	470																				150		230	530
Screened Interval (Ft)	450-470																				20-150		200-230	392-412
VOCS (EPA 624) ug/L																								442-504
Acrolein	NR	NR	ND	ND	ND	ND	ND	30 R	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Acrylonitrile	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Acetone	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Benzene	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Bromodichloromethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34 J	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Bromoform	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Bromomethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
2-butanone	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	R	ND	ND	NR
carbon disulfide	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Carbon tetrachloride	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Chlorobenzene	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Dibromochloromethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Chloroethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
2-chloroethylvinyl ether	NR	NR	ND	ND	ND	ND	ND	ND	ND	2.0 R	2.0 R	NR	ND	ND	ND	ND	ND	ND	2.0 R	ND	NR	NR	NR	ND
Chloroform	ND	NR	0.68 J	0.74 J	ND	0.74 J	0.82 J	ND	2.5 J	1.2	1.1	11	5.2 J	ND	7.4	6.8 J	1.9	2.6	1.3	1.3	0.94J	ND	0.98J	ND
Chloromethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
cyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromo-3-chloro-propane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dibromomethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-dichlorobenzene	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
1,3-dichlorobenzene	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
1,4-dichlorobenzene	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
dichlorodifluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1-dichloroethane	3.6J	5.0	3.7	3.7	2.9	3.7	3.7	3.4	1.1	1.5	1.4	3.2	2.1 J	2.8	1.5	ND	1.3 J	2.5	2.1	2.0	0.39J	0.51	0.22J	1.9
1,2-dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.35 J	0.36 J	0.37 J	0.30 J	ND	ND	ND	0.67 J	0.88 J	0.82 J	0.82 J	0.82 J	ND	ND	ND	ND
1,1-dichloroethene	ND	1.7	1.1	1.0	1.0	1.2	1.4	1.1	0.23 J	0.44 J	0.42 J	0.77	0.66 J	0.74 J	0.33 J	0.22 J	0.47 J	1.2 J	0.77 J	0.83 J	ND	ND	ND	1.9
cis-1,2-dichloroethene	190	43.4	40.4	40.2	74.9	53.3	29.9	16.1	4.2	5.8	5.8	8.7	14.1 J	14.7	8.0	5.3	7.6	13.4	11.3	11.6	ND	ND	ND	1.6
trans-1,2-dichloroethene	3.0J	1.1	1.0 J	0.92 J	1.1	0.87 J	0.79 J	0.35 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-dichloropropane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
cis-1,3-dichloropropene	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
trans-1,3-dichloropropene	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
1,4-dioxane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
2-hexanone	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
isopropylbenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl acetate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Methylene chloride	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
methylcyclohexane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4-methyl-2-pentanone	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
methyl-tert-butyl-ether	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0.46J
styrene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2,2-tetrachloroethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
1,2,4-trichlorobenzene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	3.4J	3.3	4.4	4.4	3.6	4.7	6.0	4.0	0.42 J	0.34 J	0.32 J	1.6	0.77 J	1.5 J	0.57 J	ND	0.48 J	0.82 J	0.88 J	ND	0.55	ND	0.68 J	
Toluene	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
1,1,1-trichloroethane	ND	0.63 J	0.73 J	0.76 J	0.29 J	0.57 J	1.1 J	0.86 J	ND	0.35 J	0.35 J	0.62	0.66 J	0.66 J	0.50 J	ND	ND	ND	ND	ND	0.47	0.92	0.49J	0.96 J
1,1,2-trichloroethane	ND	NR	0.31 J	0.31 J	0.32 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	0.30 J
Trichloroethene	65	35.3	41.0	39.6	38.0	38.1	40.4	27.9	22.0	25.9	25.4	25	27.0	26.7	29.8	21.7	31.9	52.3	53.0	53.9	ND	ND	0.17J	237
m,p-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorofluoromethane	NR	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	ND
Trichlorofluoromethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Trichlorotrifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
o-xylene	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,1,2-trichloro-1,2,2-trifluoroethane	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	NR
xylenes (total)	ND	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury (EPA 245.1) ug/L	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	0.20
TSS (SM20 2540D) mg/L	NR	63	18	NR	ND	7	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	NR	NR	2.4

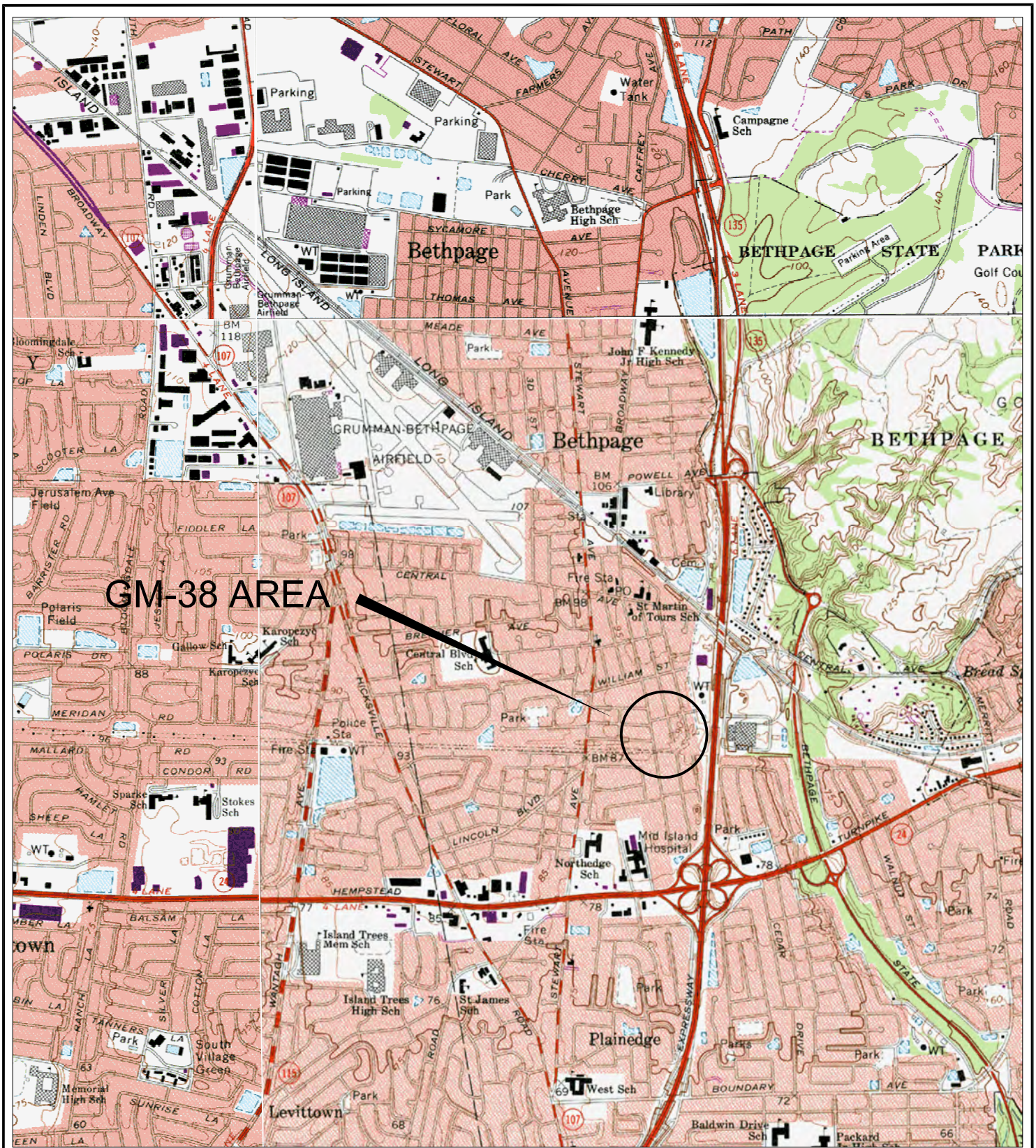
**Note:**  
VOC analysis changed from SW846 8260B to EPA Method 624 in January 2010.  
D = Dilution  
J = estimated value  
ND = not detected  
NR = not reported / required  
R = rejected  
mg/L - milligrams per liter  
µg/L - micrograms per liter

(1) Analytical results presented above for samples collected from RW3-MW3 and RW3-MW4 in November 2010 are not consistent with historical trends, indicating samples may have been switched. For trend analysis, concentrations for RW3-MW3 were used for RW3-MW4 for November 2010 and vice versa.  
(2) VOCs were analyzed by USEPA Method 524.2 (as opposed to Method 624) in June 2013 to correlate with samples collected under the Bethpage Regional Plume Comprehensive Groundwater Sampling Plan conducted in June 2013.  
(3) RW-3, previously an active extraction well sampled on a monthly basis, was taken off-line on 7/1/15. RW-3 is now sampled semi-annually, in conjunction with the semi-annual LTM events.

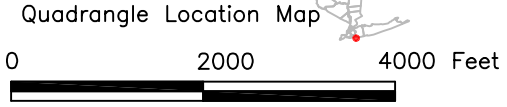
Data prior to June 2011 were collected by others.

## **FIGURES**





**GM-38 AREA**



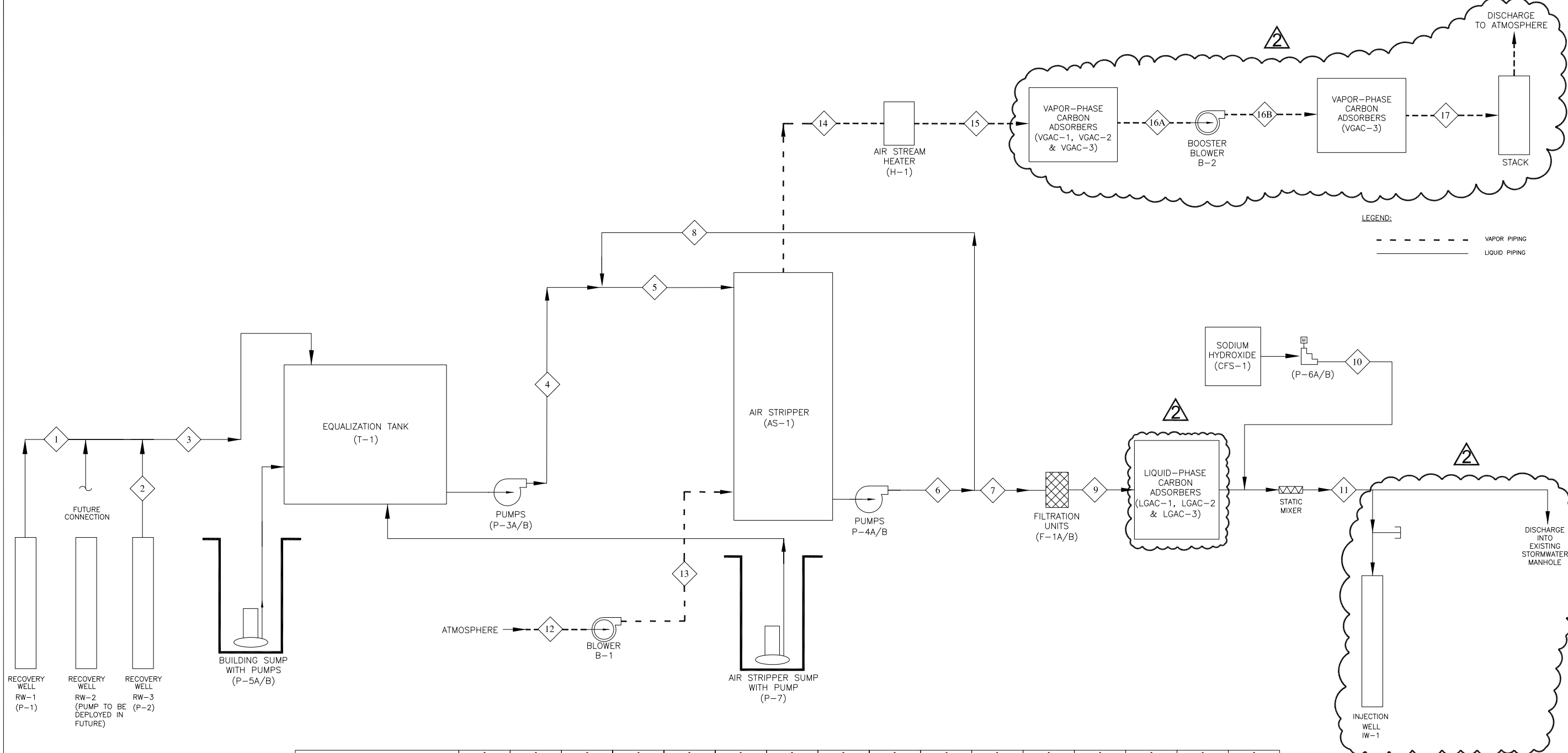
U.S. Navy RAC  
 Engineering Field Activity, Northeast  
 GM-38 Area (Offsite)  
 NWIRP Bethpage  
 Bethpage, NY

Figure 1  
 Site Location Map

Source: U.S.G.S. Topographic Maps (7.5 Minute)  
 Amityville, Freeport, Hicksville, Huntington, NY Quadrangles



NOTES:  
1. FOR SYMBOL AND ABBREVIATION LISTS SEE DRAWING P-2.



LEGEND:  
- - - - - VAPOR PIPING  
\_\_\_\_\_ LIQUID PIPING

STREAM NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
COMPOSITION (UG/L, UNLESS OTHERWISE NOTED)																
BENZENE	4	4	4	4	3	-	-	-	-	-	-	-	-	-	-	-
TOLUENE	15	15	15	15	12	-	-	-	-	-	-	-	-	-	-	-
XYLENES, TOTAL	16	16	16	16	12	-	-	-	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE	3	3	3	3	2.8	-	-	-	-	-	2.7 E-07	-	-	-	-	-
cis 1,2-DICHLOROETHENE	1100	1100	1100	1100	1008	0.10	0.10	0.10	0.10	-	1.0 E-04	-	-	-	-	-
VINYL CHLORIDE	300	300	300	300	275	0.03	0.03	0.03	0.03	-	2.7 E-05	-	-	-	-	-
TETRACHLOROETHENE (PCE)	900	900	900	900	825	0.08	0.08	0.08	0.08	-	8.2 E-05	-	-	-	-	-
TRICHLOROETHENE (TCE)	3400	3400	3400	3400	3117	3.12	3.12	3.12	3.12	-	3.1 E-03	-	-	-	-	-
WATER FLOW RATE (GPM)	800	300	1100	1100	1200	1200	1100	100	1100	1.1 gpd	1100	-	-	-	-	-
TEMPERATURE (°F)	55	55	55	55	55	55	55	55	55	60	55	-	-	-	-	-
PRESSURE (PSIG)												-0.27	1.50	1.36	1.18	0.53
DENSITY (lb/ft <sup>3</sup> )										95.5		0.077	0.085	0.084	0.082	0.079
MASS FLOW RATE (lb/hr)	400364	150136	550500	550500	600545	600545	550500	50,045	550500	0.59	550500	36,960	40,800	40,320	39,360	37,920
RELATIVE HUMIDITY (%)												50	50	100	50	50
STATIC PRESSURE (PSIA)												0.214	0.214	0.214	0.275	0.275
pH (S.U.)	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	14	7.0					
VAPOR FLOW RATE (CFM)												8000	8000	8000	8000	8000
TOTAL VAPOR VOC (PPMV)												-	-	25.5	25.5	1.2
TOTAL VAPOR VOC (LBS/HR)												-	-	3.18	3.18	0.15

THIS DRAWING PRODUCED ON AUTOCAD DO NOT REVISE MANUALLY

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DEPARTMENT OF THE NAVY  
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT  
LESTER

ENGINEERING FIELD ACTIVITY - NORTHEAST  
PENNSYLVANIA  
BETHPAGE, NEW YORK

GM-38 AREA  
GROUNDWATER TREATMENT PLANT  
PROCESS FLOW DIAGRAM - GROUNDWATER AND OFF-GAS TREATMENT

APPROVED: [Signature] DATE: 05/05/06

PREP BY: DL DATE: 05/05/06  
DLB DATE: 03/31/08  
DLB DATE: 02/24/09

DESCRIPTION: ADDITIONAL RECOVERY WELL #1 CONNECTION REVISED BASED ON VENDOR SUBMITTALS. DRAWING UPDATES FOR CONSTRUCTION.

REV: 0 FINAL DESIGN  
1 ADDRESS REVISIONS TO WELL #1 CONNECTION  
2 REVISED BASED ON VENDOR SUBMITTALS. DRAWING UPDATES FOR CONSTRUCTION.

APPROVED: [Signature] DATE: 05/05/06

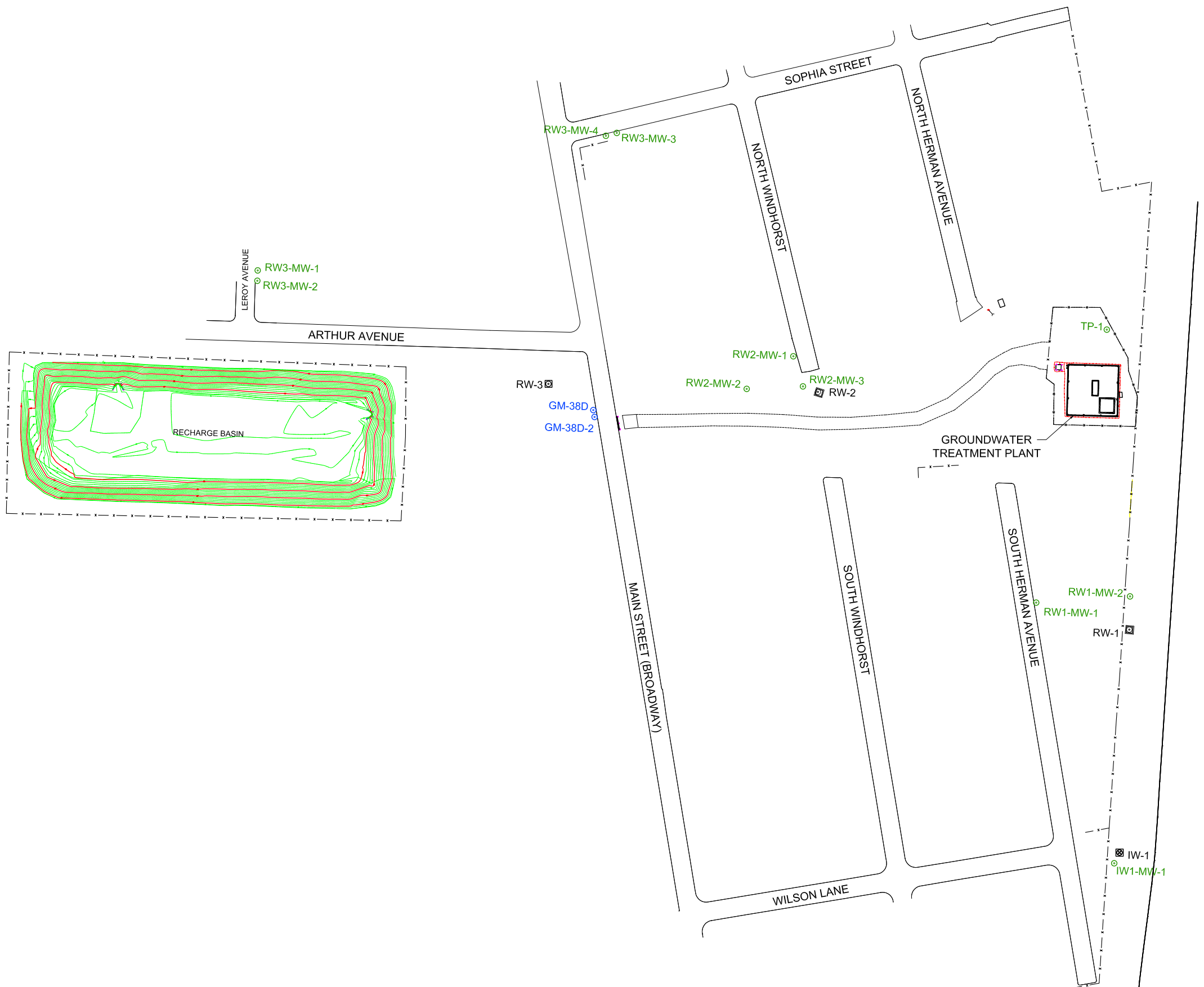
DATE: 05/05/06

CODE: LD. NO. 80091  
SCALE: AS SHOWN  
SPEC. NO.  
CONSTR. CONTR. NO. N62472-99-D-0032  
NAVFAC DRAWING NO. Figure 2

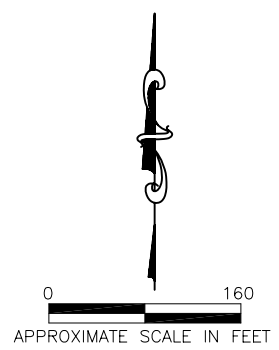
SHEET OF DIS. SH. NO. 1-4

**Legend**

- Monitoring Well (Monitored by Navy)
- Monitoring Well (Monitored by Northrop Grumman)
- ◻ Recovery Well
- ◻ Injection Well



(SEAFORD-OYSTER BAY EXPRESSWAY - RTE 135)

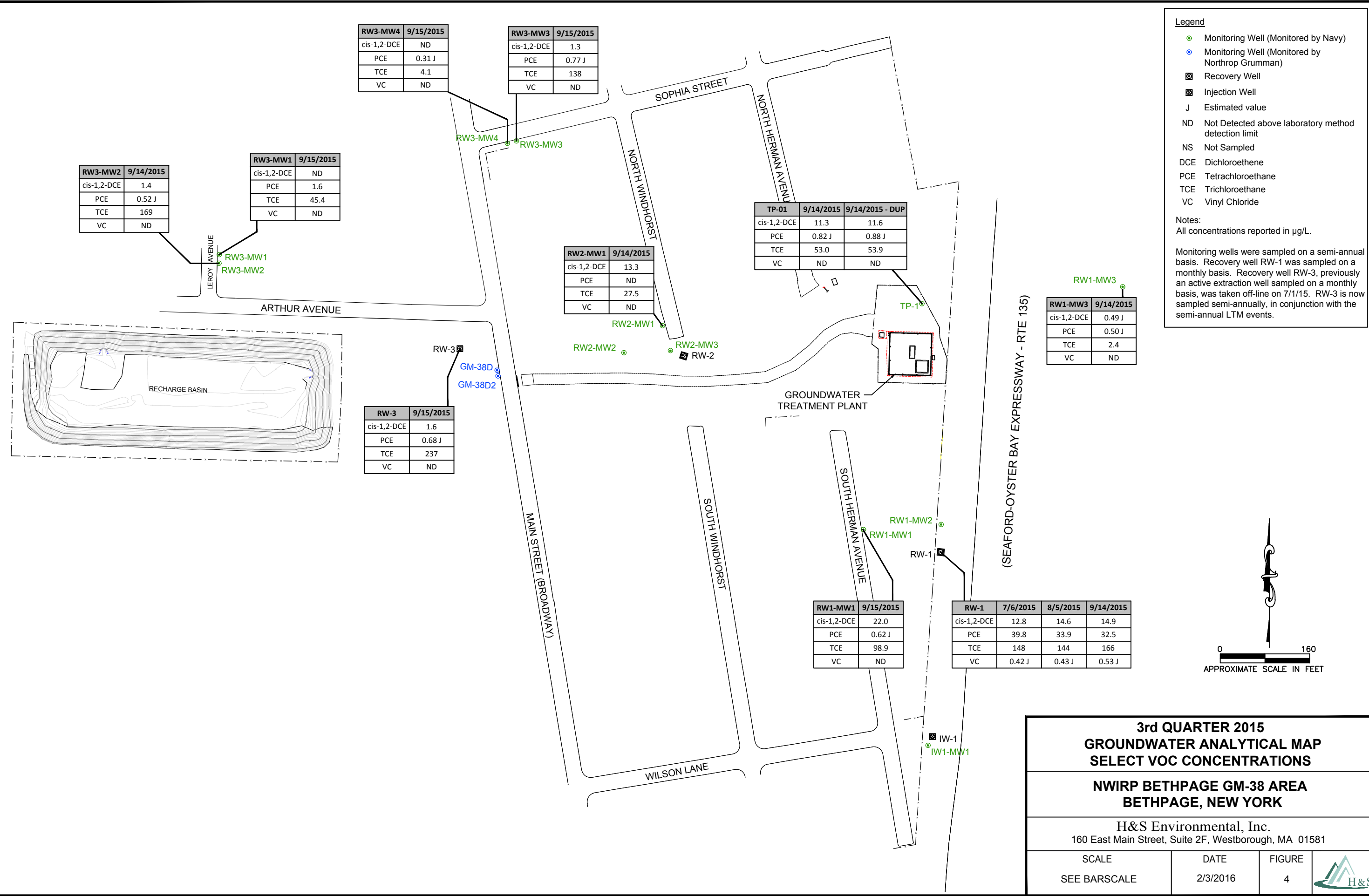


<b>SITE MAP</b>		
<b>NWIRP BETHPAGE GM-38 AREA BETHPAGE, NEW YORK</b>		
H&S Environmental, Inc. 160 East Main Street, Suite 2F, Westborough, MA 01581		
SCALE SEE BARSCALE	DATE 4/12/2012	FIGURE 3

- Legend**
- Monitoring Well (Monitored by Navy)
  - Monitoring Well (Monitored by Northrop Grumman)
  - ⊠ Recovery Well
  - ⊠ Injection Well
  - J Estimated value
  - ND Not Detected above laboratory method detection limit
  - NS Not Sampled
  - DCE Dichloroethene
  - PCE Tetrachloroethane
  - TCE Trichloroethane
  - VC Vinyl Chloride

**Notes:**  
 All concentrations reported in µg/L.

Monitoring wells were sampled on a semi-annual basis. Recovery well RW-1 was sampled on a monthly basis. Recovery well RW-3, previously an active extraction well sampled on a monthly basis, was taken off-line on 7/1/15. RW-3 is now sampled semi-annually, in conjunction with the semi-annual LTM events.



RW3-MW2	9/14/2015
cis-1,2-DCE	1.4
PCE	0.52 J
TCE	169
VC	ND

RW3-MW1	9/15/2015
cis-1,2-DCE	ND
PCE	1.6
TCE	45.4
VC	ND

RW3-MW4	9/15/2015
cis-1,2-DCE	ND
PCE	0.31 J
TCE	4.1
VC	ND

RW3-MW3	9/15/2015
cis-1,2-DCE	1.3
PCE	0.77 J
TCE	138
VC	ND

RW2-MW1	9/14/2015
cis-1,2-DCE	13.3
PCE	ND
TCE	27.5
VC	ND

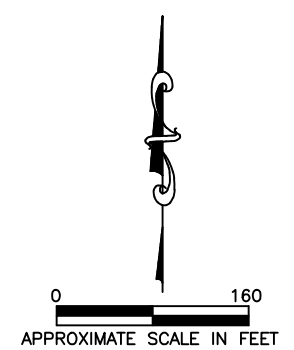
TP-01	9/14/2015	9/14/2015 - DUP
cis-1,2-DCE	11.3	11.6
PCE	0.82 J	0.88 J
TCE	53.0	53.9
VC	ND	ND

RW1-MW3	9/14/2015
cis-1,2-DCE	0.49 J
PCE	0.50 J
TCE	2.4
VC	ND

RW-3	9/15/2015
cis-1,2-DCE	1.6
PCE	0.68 J
TCE	237
VC	ND

RW1-MW1	9/15/2015
cis-1,2-DCE	22.0
PCE	0.62 J
TCE	98.9
VC	ND

RW-1	7/6/2015	8/5/2015	9/14/2015
cis-1,2-DCE	12.8	14.6	14.9
PCE	39.8	33.9	32.5
TCE	148	144	166
VC	0.42 J	0.43 J	0.53 J



<b>3rd QUARTER 2015 GROUNDWATER ANALYTICAL MAP SELECT VOC CONCENTRATIONS</b>			
<b>NWIRP BETHPAGE GM-38 AREA BETHPAGE, NEW YORK</b>			
H&S Environmental, Inc. 160 East Main Street, Suite 2F, Westborough, MA 01581			
SCALE	DATE	FIGURE	
SEE BARSCALE	2/3/2016	4	

**Figure 5**  
**GM-38 Area Groundwater Remediation**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Groundwater Concentration Trends of Select VOCs**  
**RW1**

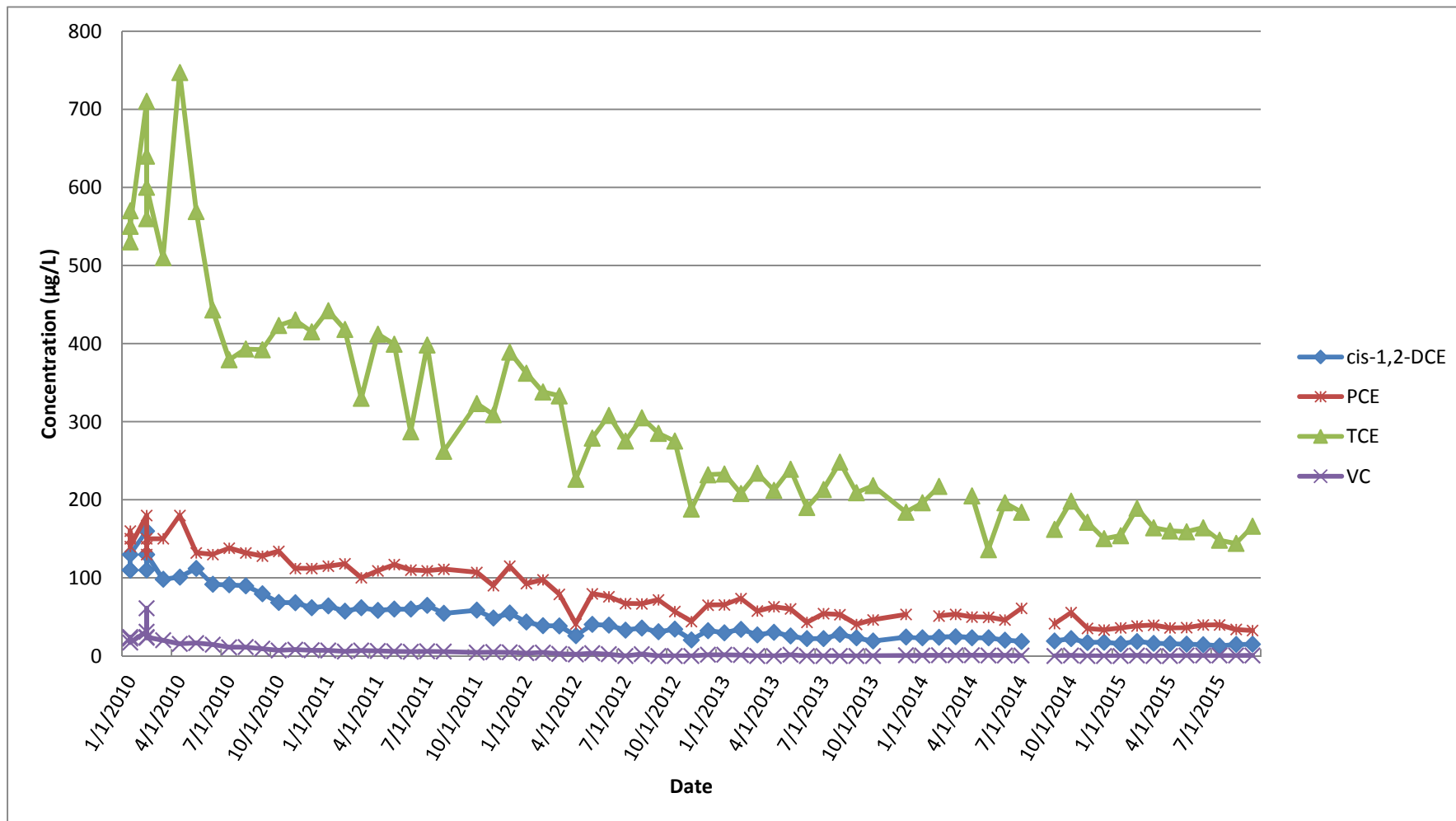


Figure 6  
GM-38 Area Groundwater Remediation  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Groundwater Concentration Trends of Select VOCs  
RW3

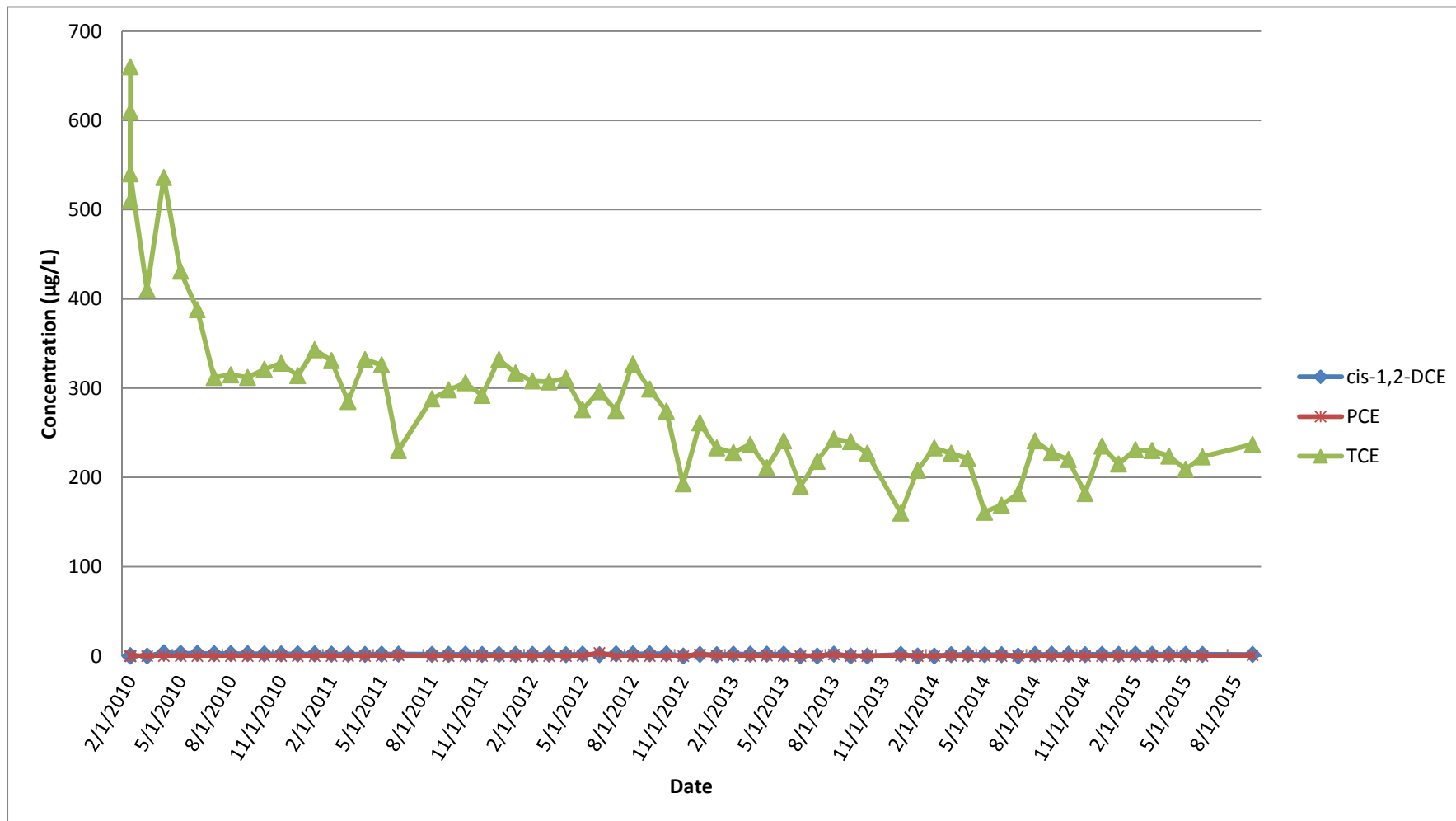
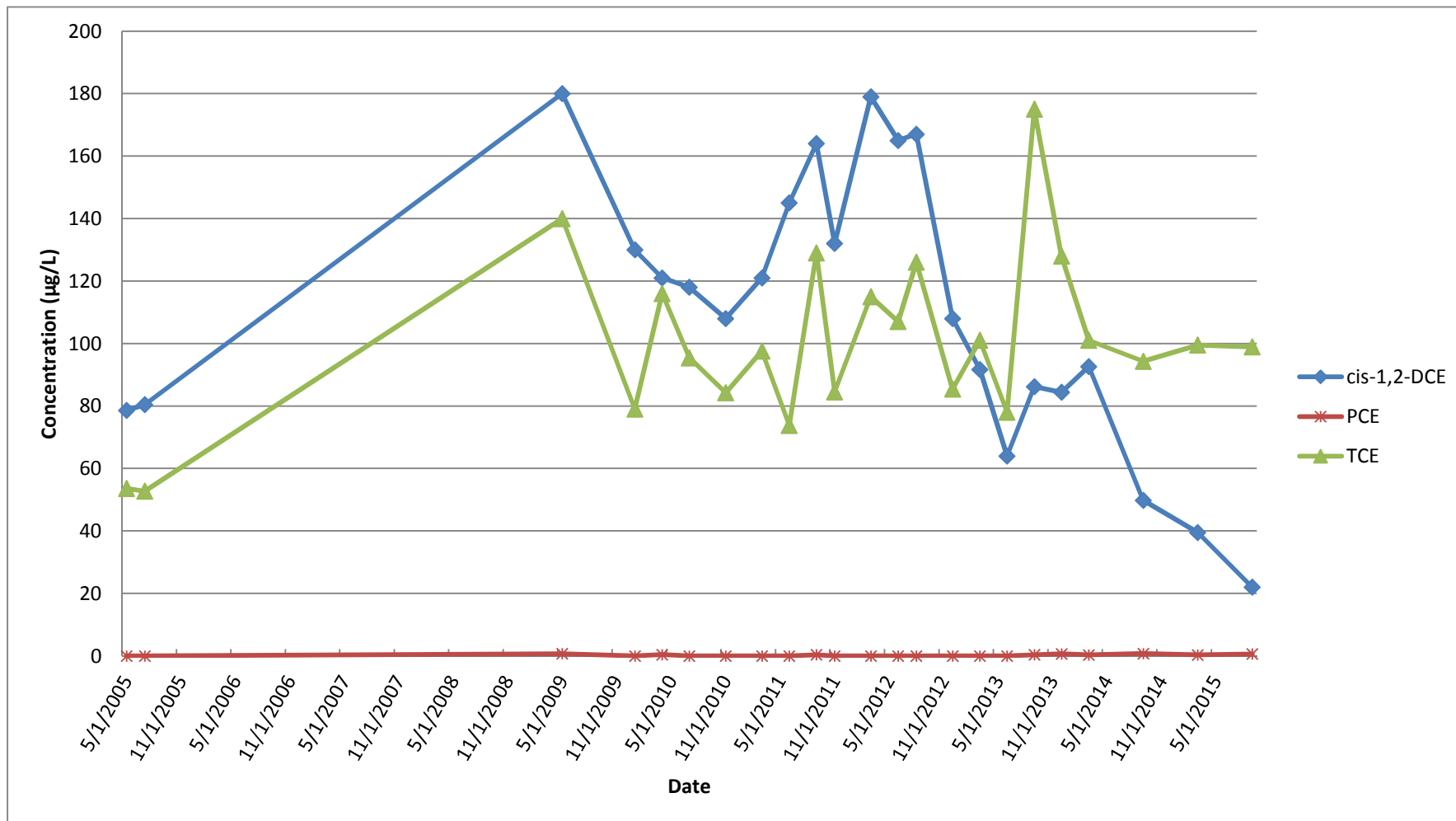
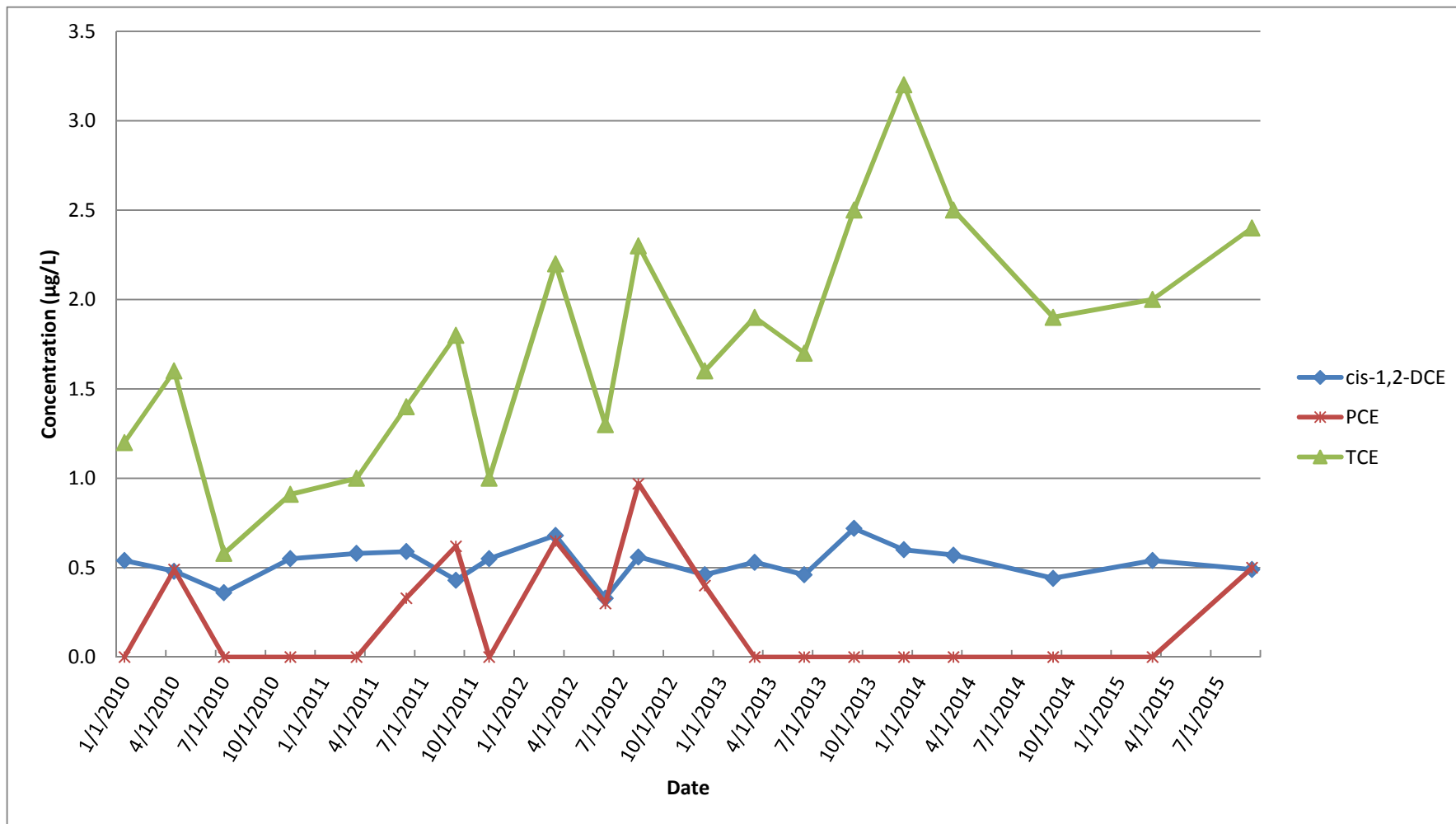


Figure 7  
GM-38 Area Groundwater Remediation  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Groundwater Concentration Trends of Select VOCs  
RW1-MW1



**Figure 8**  
**GM-38 Area Groundwater Remediation**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Groundwater Concentration Trends of Select VOCs**  
**RW1-MW3**





**Figure 9**  
**GM-38 Area Groundwater Remediation**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Groundwater Concentration Trends of Select VOCs**  
**RW2-MW1**

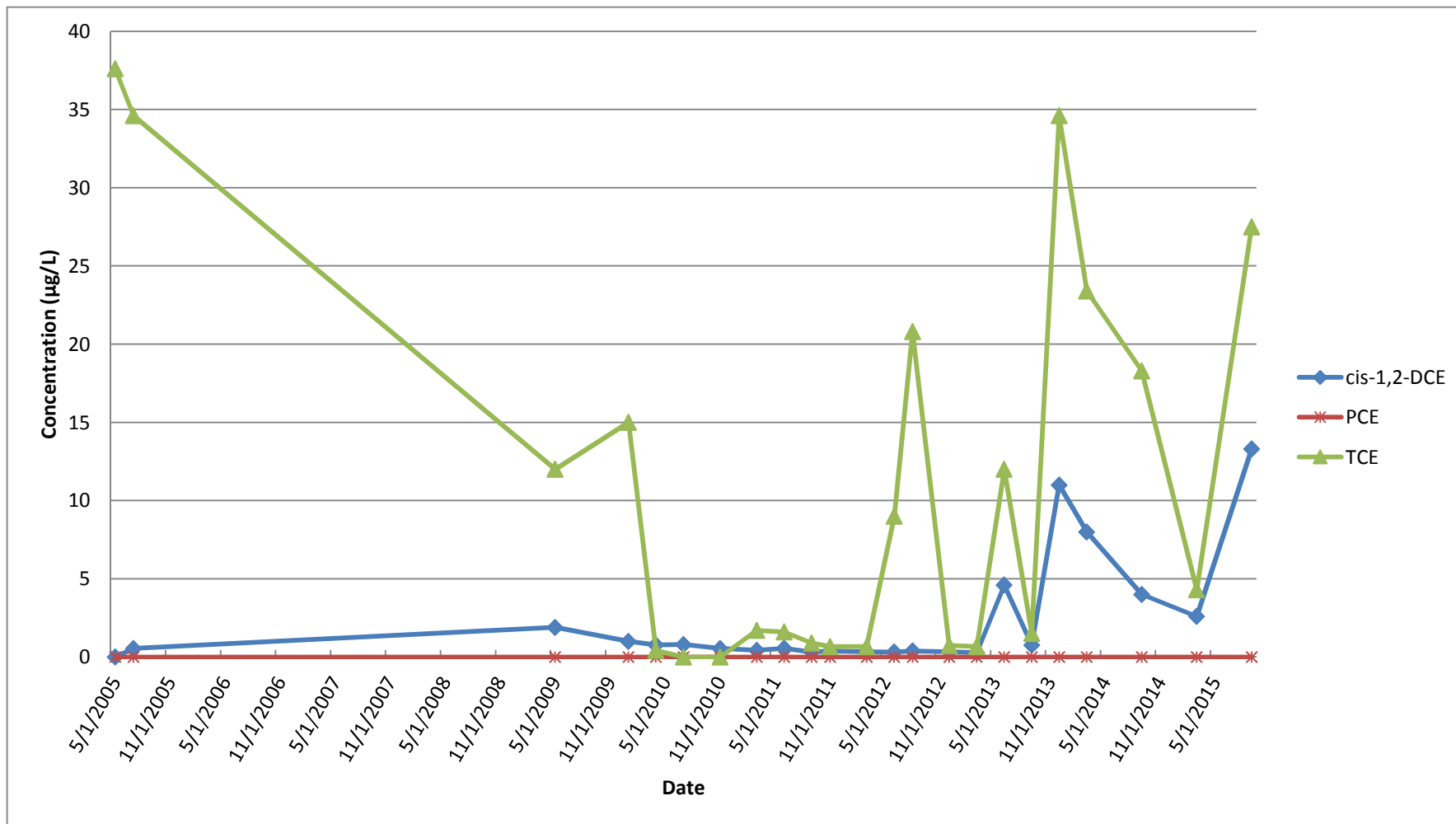


Figure 10  
GM-38 Area Groundwater Remediation  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Groundwater Concentration Trends of Select VOCs  
RW3-MW1

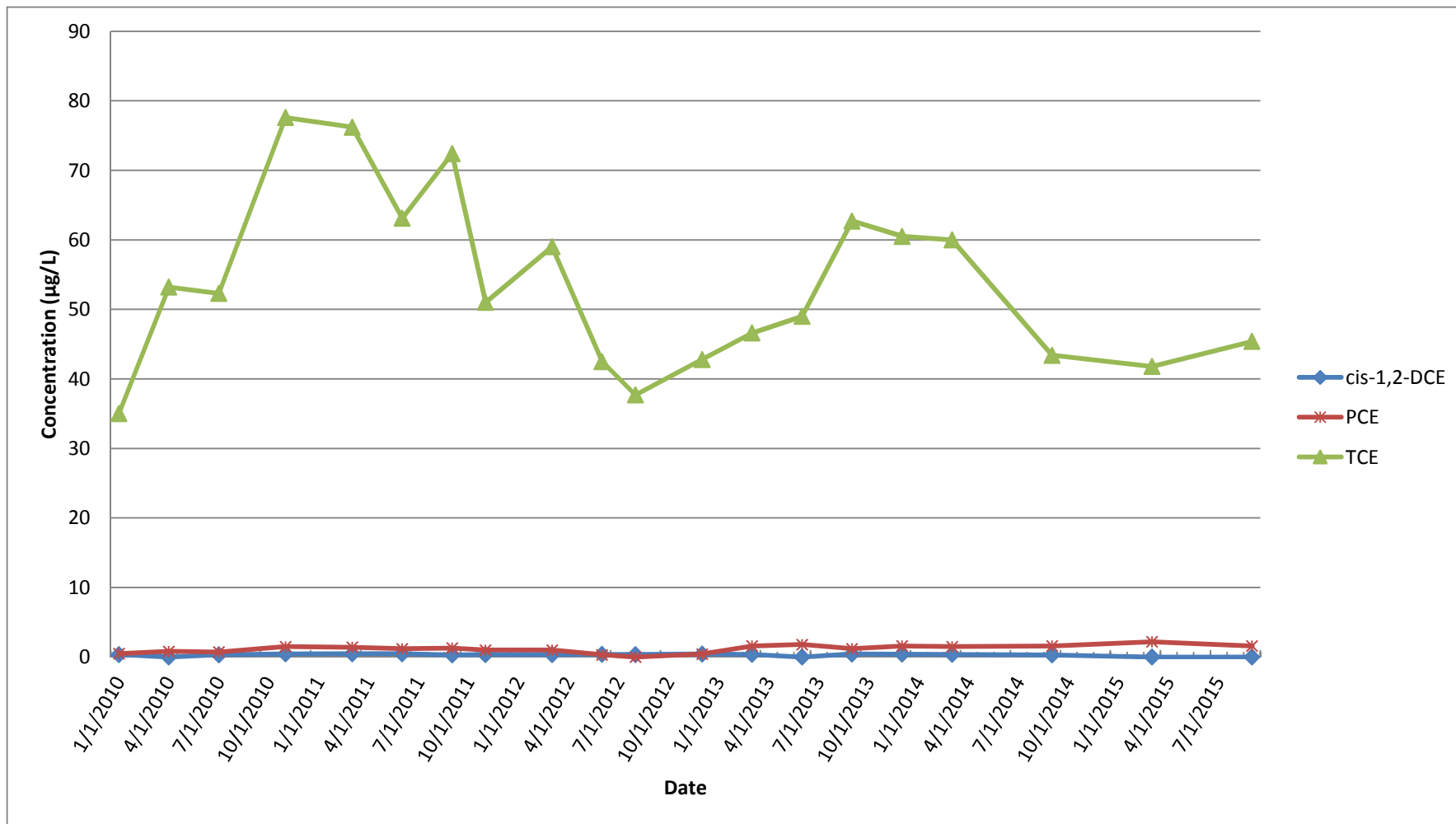


Figure 11  
GM-38 Area Groundwater Remediation  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Groundwater Concentration Trends of Select VOCs  
RW3-MW2

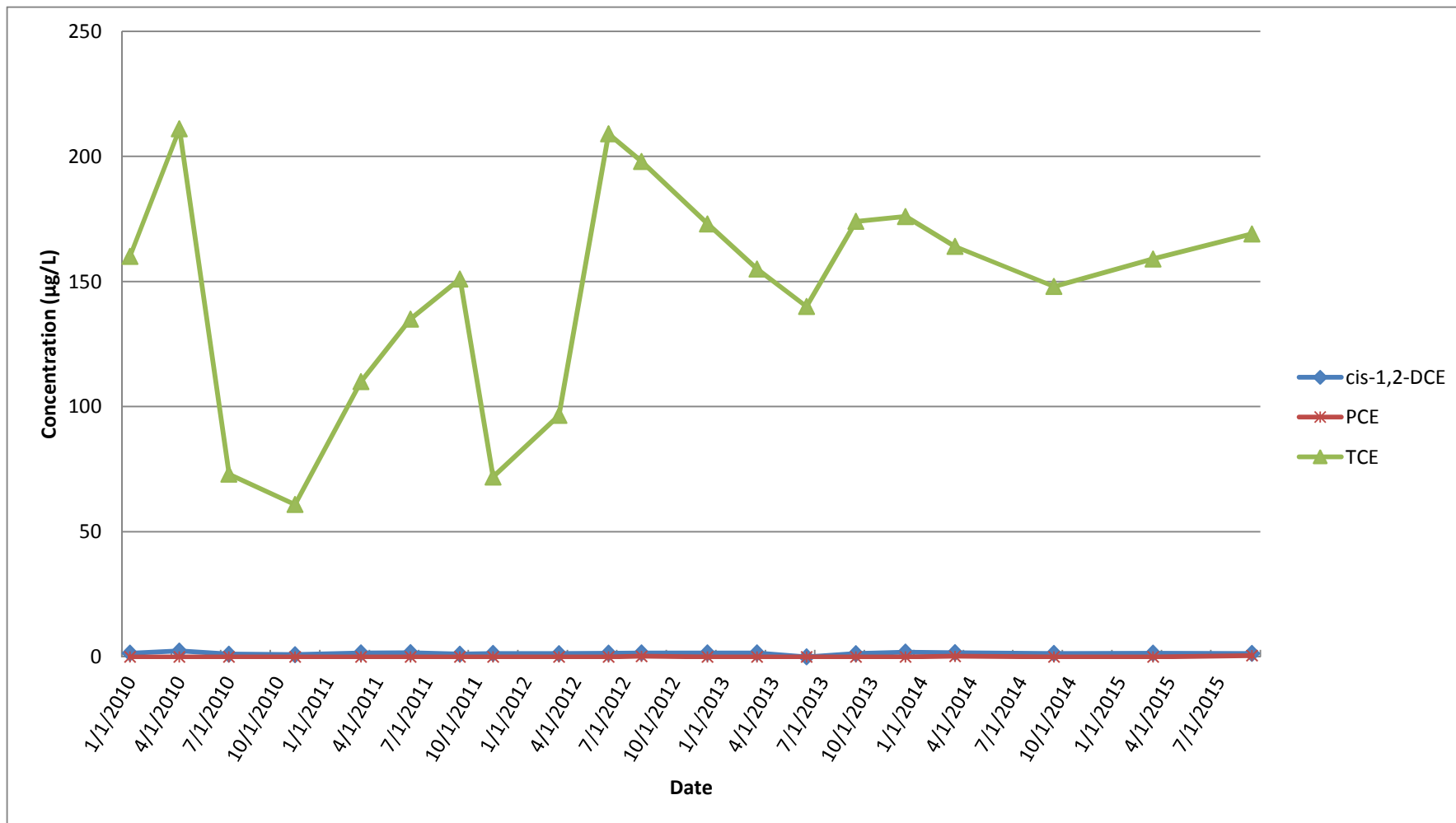
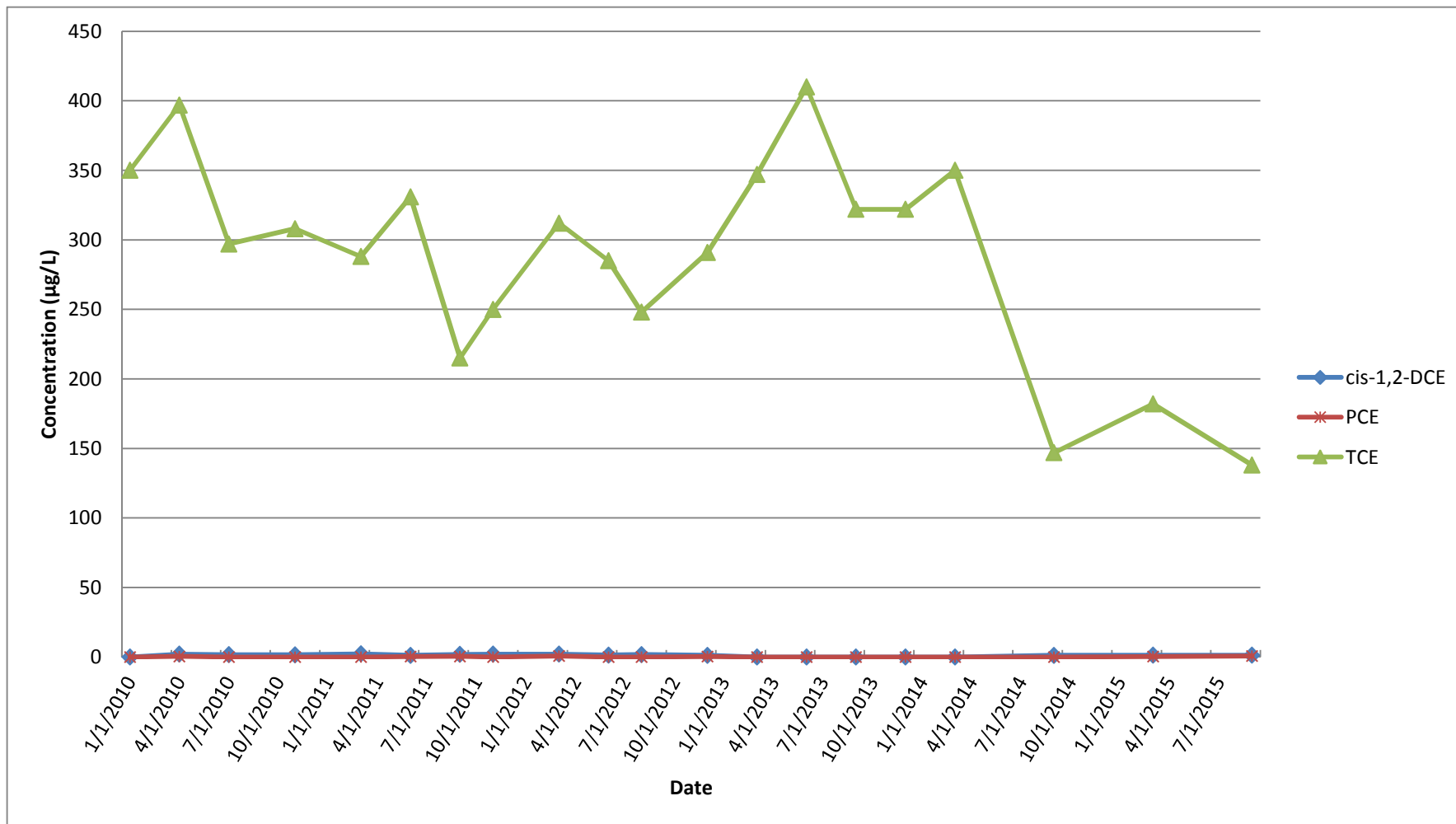
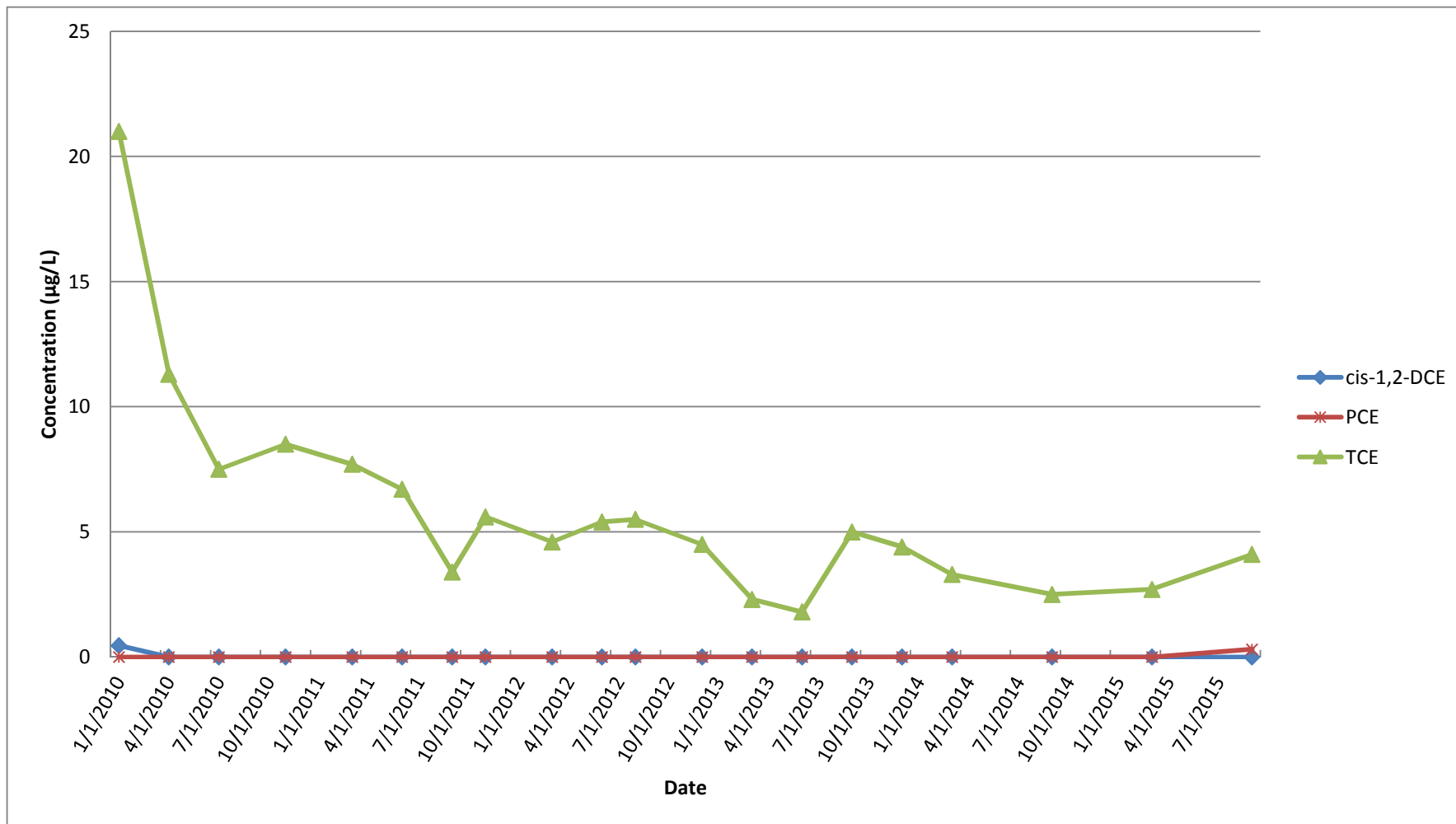


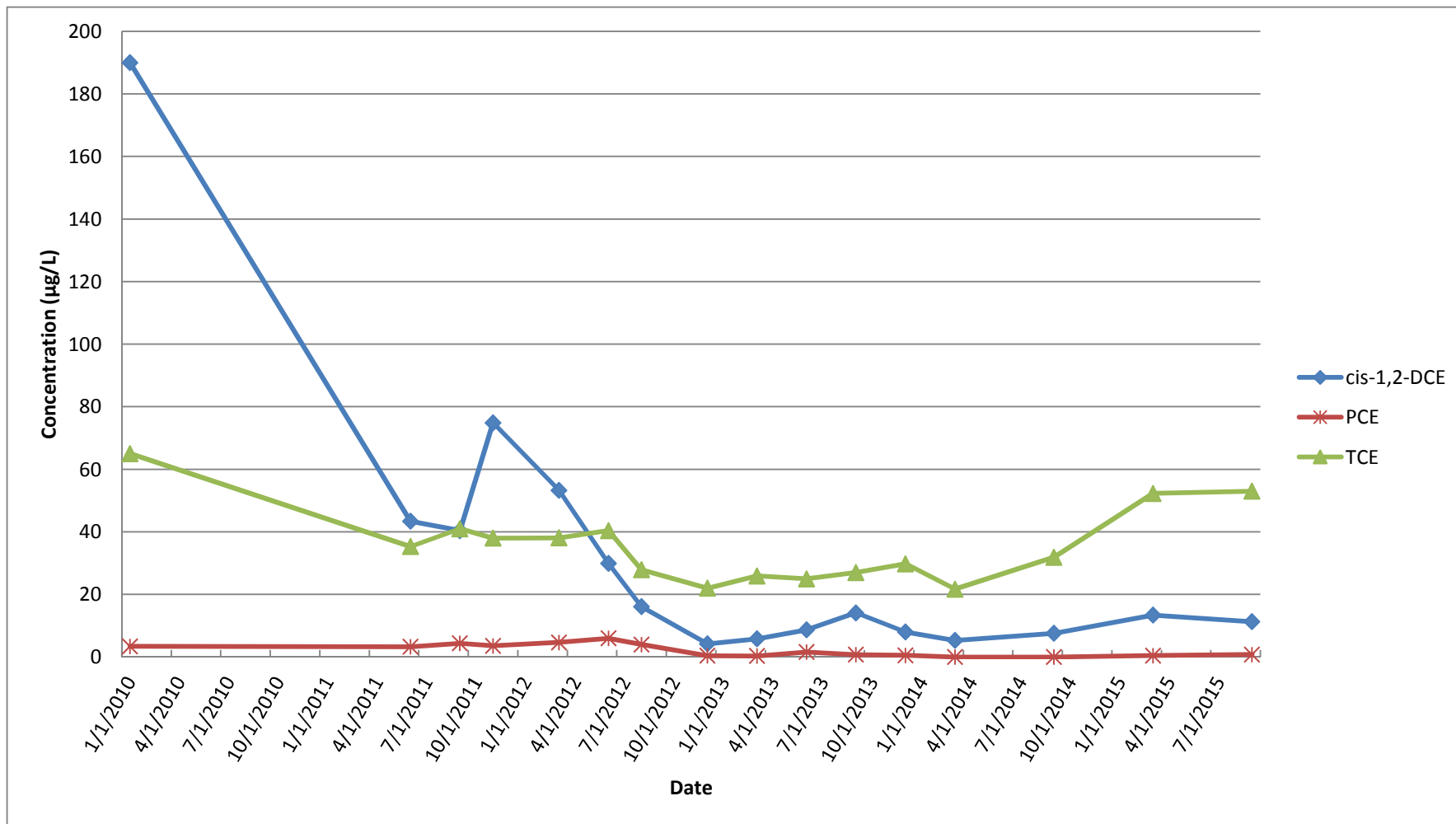
Figure 12  
GM-38 Area Groundwater Remediation  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Groundwater Concentration Trends of Select VOCs  
RW3-MW3



**Figure 13**  
**GM-38 Area Groundwater Remediation**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Groundwater Concentration Trends of Select VOCs**  
**RW3-MW4**



**Figure 14**  
**GM-38 Area Groundwater Remediation**  
**Naval Weapons Industrial Reserve Plant - Bethpage, NY**  
**Groundwater Concentration Trends of Select VOCs**  
**TP-01**

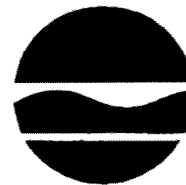


**APPENDIX A**

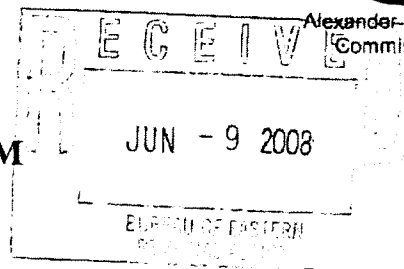
**NYSDEC EFFLUENT LIMITATIONS AND MONITORING  
REQUIREMENTS AND MONTHLY DMRS**

**New York State Department of Environmental Conservation  
Division of Water**

**Bureau of Water Permits, 4<sup>th</sup> Floor**  
625 Broadway, Albany, New York 12233-3505  
**Phone:** (518) 402-8111 • **FAX:** (518) 402-9029  
**Website:** www.dec.state.ny.us



Alexander B. Grannis  
Commissioner



**MEMORANDUM**

**TO:** Steven Scharf, DER

**FROM:** Jean Occidental, DOW, Bureau of Water Permits JO

**SUBJECT:** Naval Weapons Industrial Reserve Plant (NWIRP); DER Site # 1-01-001

**DRAINAGE BASIN:** na

**DATE:** June 6, 2008

In response to your request and the permittee's SPDES Permit Equivalent Application dated April 27, 2008, attached is the effluent criteria for the above noted groundwater remediation discharge.

The Division of Water does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. The Division of Environmental Remediation will be responsible for ensuring compliance with the attached effluent criteria and approval of all engineering submissions. Additional Condition (1) identifies the contact to send all effluent results, engineering submissions, and modification requests. The Regional Water Engineer should be kept apprised of the status of these discharges and, in accordance with the attached criteria, receive a copy of the effluent results for informational purposes.

If you have any questions, please call me at (518) 402-8116.

Attachment

cc: (w/att) RWE, Region 1  
C. Webber  
BWP Permit Coordinator



Naval Weapons Industrial Reserve Plant

DER site # 1-01-001

Page 1 of 2

## EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning: April 1, 2009and lasting until: April 1, 2014

the discharges from the treatment facility to Groundwater shall be limited and monitored by the operator as specified below:

Outfall and Parameters	Limitations		Units	Minimum Monitoring Requirements	
	Daily Avg.	Daily Max.		Measurement Frequency	Sample Type
Treated Groundwater Remediation Discharge from: Recovery Wells 1, 2, and 3					
Flow	Monitor	1100	GPM	Continuous	Recorder
pH (range)	5.5 - 8.5		SU	Weekly	Grab
1,1-Dichloroethane	NA	5	µg/l	Monthly <sup>1</sup>	Grab
1,2-Dichloroethane	NA	0.6	µg/l	Monthly <sup>1</sup>	Grab
1,1-Dichloroethene	NA	5	µg/l	Monthly <sup>1</sup>	Grab
cis-1,2-Dichloroethene	NA	5	µg/l	Monthly <sup>1</sup>	Grab
trans-1,2-Dichloroethene	NA	5	µg/l	Monthly <sup>1</sup>	Grab
Tetrachloroethene	NA	5	µg/l	Monthly <sup>1</sup>	Grab
1,1,1-Trichloroethane	NA	5	µg/l	Monthly <sup>1</sup>	Grab
Trichloroethene	NA	5	µg/l	Monthly <sup>1</sup>	Grab
Vinyl chloride	NA	2	µg/l	Monthly <sup>1</sup>	Grab
Mercury	NA	0.25	µg/l	Monthly <sup>1</sup>	Grab

Footnotes:

- (1) The minimum measurement frequency shall be monthly following a period of 24 consecutive weekly sampling events showing no exceedances of the stated discharge limitations.

Naval Weapons Industrial Reserve Plant

DER site # 1-01-001

Page 1 of 2

Additional Conditions:

- (1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

Steven Scharf  
Division of Environmental Remediation  
NYSDEC, 625 Broadway  
Albany, NY 12233-7015  
Phone: (518) 402-9620

With a copy sent to:

Regional Water Engineer  
NYSDEC - Region 1  
Building 40, SUNY Campus  
Stony Brook, New York 11790-2356  
Phone: (631) 444-0354

- (2) Only site generated wastewater is authorized for treatment and discharge.
- (3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.
- (4) Any use of corrosion/scale inhibitors, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.
- (5) This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.

**JULY 2015**



21 August 2015

Mr. Henry Wilkie  
New York State Department of Environmental Conservation  
Division of Solid & Hazardous Materials  
625 Broadway  
Albany, NY 12233-7252

**Subject: GROUNDWATER DISCHARGE MONITORING/AIR EMISSION REPORT  
GM-38 AREA, NWIRP BETHPAGE, NY; DER SITE # 1-30-003B-OU 2  
JULY 2015 REPORTING PERIOD**

Dear Mr. Wilkie:

H&S Environmental, Inc. (H&S) is submitting this monthly monitoring report of the groundwater discharge and air emission results for the Groundwater Treatment Plant (GWTP) located at the Former Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, GM-38 Area. This report was prepared in accordance with GWTP operational requirements for DER Site # 1-30-003B-OU 2.

A capture zone evaluation of the GM-38 Area GWTP was performed in 2014, and as a result of that evaluation, a path forward was recommended. This recommended path forward consisted of ceasing operation of recovery well RW-3 and increasing the pumping rate of recovery well RW-1. These system modifications would maintain the existing GWTP pumping rate of 1,000 to 1,100 gallons per minute (gpm) while maintaining the desired capture zone of the GWTP (Tetra Tech 2014). The New York State Department of Environmental Conservation (NYSDEC) concurred with the implementation of this path forward and associated system modifications on 20 April 2015.

On 1 July 2015, in accordance with the approved path forward, recovery well RW-3 was taken off-line. The flowrate of recovery well RW-1 was increased from approximately 800 gpm to approximately 1,000 gpm, as indicated in Attachment A.

GWTP operational data from 1 July 2015 to 31 July 2015 are presented in Attachment A. There was no significant downtime for the GWTP during this reporting period, and all permitted constituents were in compliance with regulatory guidelines during this reporting period.

Please contact me at 508-366-7442 with any questions or concerns you may have regarding this report.

Sincerely,  
H&S Environmental, Inc.



Jennifer Good  
Project Manager

Attachment A: Groundwater and Air Sampling Results from July 2015

Cc: Steven Scharf – NYSDEC  
Jean Occidental - NYSDEC Division of Water  
Jennifer Pilewski - NYSDEC – Region 1 Water Engineer  
Gerard Ennis - Nassau County Department of Public Works  
Linda Bianculli - Town of Oyster Bay  
Lora Fly - NAVFAC Mid-Atlantic RPM  
Greg Pearman – NWIRP Bethpage  
GM-38 Copy

**ATTACHMENT A**  
**GROUNDWATER AND AIR SAMPLING RESULTS**  
**JULY 2015**

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Discharge Monitoring Report  
July 2015**

SPDES Parameters	July 2015					
	Daily Treated Effluent Maximum	Units	RW-1 <sup>(2)</sup>	RW-3 <sup>(2)</sup>	Combined Influent <sup>(1)</sup> (RW-1 + RW-3)	Treated Effluent
Well Depth	N/A	ft	445	530	N/A	N/A
Screened Interval	N/A	ft bgs	335-395 410-430	392-412 442-504	N/A	N/A
Sampling Date	N/A		7/6/15			
Average Flowrate	1100	GPM	996	0	996	1,033
Total Flow	N/A	gallons	44,442,267	0	44,442,267	46,103,733
pH	5.5 - 8.5	SU	5.21	NS	5.21	6.48
Carbon Tetrachloride	NA	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)
1,1-Dichloroethane	5	µg/L	1.8	NS	1.8	ND (1.0)
1,2-Dichloroethane	0.6	µg/L	ND (1.0)	NS	ND (1.0)	ND (1.0)
1,1-Dichloroethene	5	µg/L	1.9	NS	1.9	ND (1.0)
cis 1,2-Dichloroethene	5	µg/L	12.8	NS	12.8	ND (1.0)
trans 1,2-Dichloroethene	5	µg/L	0.23 J	NS	0.23 J	ND (1.0)
Tetrachloroethene	5	µg/L	39.8	NS	39.8	ND (1.0)
1,1,1-Trichloroethene	5	µg/L	1.2	NS	1.2	ND (1.0)
Trichloroethene	5	µg/L	148	NS	148	ND (1.0)
Vinyl Chloride	2	µg/L	0.42 J	NS	0.42 J	ND (2.0)
Mercury	0.25	mg/L	ND (0.00050)	NS	ND (0.00050)	ND (0.00050)
Total Suspended Solids (TSS)	N/A	mg/L	ND (5)	NS	ND (5)	ND (5)

**Notes:**

J - Estimated result between laboratory method detection limit and reporting limit

ND - Not detected above laboratory method detection limit. Limit of detection (LOD) given in parentheses.

NR - Not Recorded

NS - Not Sampled. RW-3 sampling frequency has been reduced from monthly to semi-annually.

N/A - Not Applicable

(1) Influent concentrations have historically been presented as the weighted average concentrations of RW-1 and RW-3. Because RW-3 was not on-line during this reporting period, influent concentrations are equivalent to concentrations of RW-1 only.

(2) RW-3 was taken off-line and the RW-1 flowrate was increased from ~800 gpm to ~1,000 gpm on 1 July 2015, in accordance with NYSDEC approval of these operational modifications dated 20 April 2015.

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Air Sampling Results  
July 2015**

DAR Parameters	Units	Discharge Goal <sup>(1)</sup>	July 2015	
			Influent	Effluent
Process Stream				
Sampling Date	N/A	N/A	7/6/15	
Average Flowrate	CFM	N/A	NR	9,251
Total Flow	ft <sup>3</sup>	N/A	NR	412,958,263
Total Flow	m <sup>3</sup>	N/A	NR	11,693,676
1,2-Dichloroethane	µg/m <sup>3</sup>	N/A	4.2 J	1.1 J
cis 1,2-Dichloroethene	µg/m <sup>3</sup>	> 100,000 <sup>(2)</sup>	200	160
trans 1,2-Dichloroethene	µg/m <sup>3</sup>		3.4 J	1.9 J
1,2-Dichloroethene (total)	µg/m <sup>3</sup>	>100,000	200	160
Toluene	µg/m <sup>3</sup>	N/A	1.6 J	ND
Total Xylene	µg/m <sup>3</sup>	N/A	ND	ND
1,1,2-Trichloroethane	µg/m <sup>3</sup>	N/A	3.0 J	ND
Trichloroethene	µg/m <sup>3</sup>	2,600	2,200	12
Vinyl Chloride	µg/m <sup>3</sup>	560	5.2	2.7
Tetrachloroethene	µg/m <sup>3</sup>	5,100	530	4.8 J

Notes:

CFM - cubic feet per minute

DAR - Division of Air Resources

J - Estimated result between laboratory method detection limit and reporting limit

N/A - Not Applicable

NR - Not recorded

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

(2) Discharge goal is for total 1,2-Dichloroethene.



**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Controlled Stack Emissions  
July 2015**

<b>DAR Parameters</b>	<b>Units</b>	<b>Discharge Goal <sup>(1)</sup></b>	<b>July 2015</b>
Sampling Date	N/A	N/A	7/6/15
Average Flowrate	CFM	N/A	9,251
Total Flow	ft <sup>3</sup>	N/A	412,958,263
Total Flow	m <sup>3</sup>	N/A	11,693,676
Trichloroethene	lb/hr	0.09	0.00042
Vinyl Chloride	lb/hr	0.02	0.00009
1,2 Dichloroethene	lb/hr	11	0.00554
1,2-Dichloroethane	lb/hr	N/A	0.00004
Toluene	lb/hr	N/A	0.00000
Total Xylene	lb/hr	N/A	0.00000
1,1,2-Trichloroethane	lb/hr	N/A	0.00000
Tetrachloroethene	lb/hr	0.18	0.00017

Notes:

CFM - cubic feet per minute

DAR - Division of Air Resources

N/A - Not Applicable

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

**AUGUST 2015**



23 September 2015

Mr. Henry Wilkie  
New York State Department of Environmental Conservation  
Division of Solid & Hazardous Materials  
625 Broadway  
Albany, NY 12233-7252

**Subject: GROUNDWATER DISCHARGE MONITORING/AIR EMISSION REPORT  
GM-38 AREA, NWIRP BETHPAGE, NY; DER SITE # 1-30-003B-OU 2  
AUGUST 2015 REPORTING PERIOD**

Dear Mr. Wilkie:

H&S Environmental, Inc. (H&S) is submitting this monthly monitoring report of the groundwater discharge and air emission results for the Groundwater Treatment Plant (GWTP) located at the Former Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, GM-38 Area. This report was prepared in accordance with GWTP operational requirements for DER Site # 1-30-003B-OU 2.

As discussed previously in the July 2015 Report, on 1 July 2015, the flowrate of recovery well RW-1 was increased from approximately 800 gpm to approximately 1,000 gpm and recovery well RW-3 was taken off-line. To maintain the integrity of RW-3 for potential future use, approximately 12,000 gallons of water over a 1-hour period are pumped from the well on a monthly basis, as indicated in Attachment A. RW-3 will be sampled on a semi-annual basis, consistent with the groundwater monitoring program.

GWTP operational data from 1 August 2015 to 31 August 2015 are presented in Attachment A. There was no significant downtime for the GWTP during this reporting period, and all permitted constituents were in compliance with regulatory guidelines during this reporting period.

Please contact me at 508-366-7442 with any questions or concerns you may have regarding this report.

Sincerely,  
H&S Environmental, Inc.

Jennifer Good  
Project Manager

Attachment A: Groundwater and Air Sampling Results from August 2015

Cc: Steven Scharf – NYSDEC  
Jean Occidental - NYSDEC Division of Water  
Jennifer Pilewski - NYSDEC – Region 1 Water Engineer  
Gerard Ennis - Nassau County Department of Public Works  
Linda Bianculli - Town of Oyster Bay  
Lora Fly - NAVFAC Mid-Atlantic RPM  
Greg Pearman – NWIRP Bethpage  
GM-38 Copy

**ATTACHMENT A**  
**GROUNDWATER AND AIR SAMPLING RESULTS**  
**AUGUST 2015**

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Discharge Monitoring Report  
August 2015**

SPDES Parameters	August 2015					
Process Stream	Daily Treated Effluent Maximum	Units	RW-1 <sup>(1)</sup>	RW-3 <sup>(1)</sup>	Combined Influent <sup>(1)</sup>	Treated Effluent
Well Depth	N/A	ft	445	530	N/A	N/A
Screened Interval	N/A	ft bgs	335-395 410-430	392-412 442-504	N/A	N/A
Sampling Date	N/A		8/5/15			
Average Flowrate	1100	GPM	995	0	996	1,032
Total Flow	N/A	gallons	44,438,133	11,700	44,449,833	46,085,667
pH	5.5 - 8.5	SU	5.39	N/A	5.39	6.48
Carbon Tetrachloride	NA	µg/L	ND (1.0)	N/A	ND (1.0)	ND (1.0)
1,1-Dichloroethane	5	µg/L	2.4	N/A	2.4	ND (1.0)
1,2-Dichloroethane	0.6	µg/L	ND (1.0)	N/A	ND (1.0)	ND (1.0)
1,1-Dichloroethene	5	µg/L	2.3	N/A	2.3	ND (1.0)
cis 1,2-Dichloroethene	5	µg/L	14.6	N/A	14.6	ND (1.0)
trans 1,2-Dichloroethene	5	µg/L	0.26 J	N/A	0.26 J	ND (1.0)
Tetrachloroethene	5	µg/L	33.9	N/A	33.9	ND (1.0)
1,1,1-Trichloroethene	5	µg/L	ND (1.0)	N/A	ND (1.0)	ND (1.0)
Trichloroethene	5	µg/L	144	N/A	144	ND (1.0)
Vinyl Chloride	2	µg/L	0.43 J	N/A	0.43 J	ND (2.0)
Mercury	0.25	mg/L	ND (0.00050)	N/A	ND (0.00050)	ND (0.00050)
Total Suspended Solids (TSS)	N/A	mg/L	ND (5)	N/A	ND (5)	ND (5)

**Notes:**

J - Estimated result between laboratory method detection limit and reporting limit

ND - Not detected above laboratory method detection limit. Limit of detection (LOD) given in parentheses.

NR - Not Recorded

NS - Not Sampled. RW-3 sampling frequency has been reduced from monthly to semi-annually.

N/A - Not Applicable

(1) On 1 July 2015, the RW-1 flowrate was increased from ~800 gpm to ~1,000 gpm and RW-3 was taken off-line, as approved by NYSDEC on 20 April 2015. To maintain the integrity of RW-3 for potential future use, approximately 12,000 gallons of water over a 1-hour period are pumped from the well on a monthly basis. RW-3 will be sampled semi-annually, consistent with the groundwater monitoring program. Influent concentrations presented above are therefore equivalent to RW-1 concentrations only.

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Air Sampling Results  
August 2015**

DAR Parameters	Units	Discharge Goal <sup>(1)</sup>	August 2015	
			Influent	Effluent
Process Stream				
Sampling Date	N/A	N/A	8/7/15	
Average Flowrate	CFM	N/A	NR	9,316
Total Flow	ft <sup>3</sup>	N/A	NR	415,878,994
Total Flow	m <sup>3</sup>	N/A	NR	11,776,382
1,2-Dichloroethane	µg/m <sup>3</sup>	N/A	3.3 J	2.1 J
cis 1,2-Dichloroethene	µg/m <sup>3</sup>	> 100,000 <sup>(2)</sup>	150	160
trans 1,2-Dichloroethene	µg/m <sup>3</sup>		5.0 J	1.3 J
1,2-Dichloroethene (total)	µg/m <sup>3</sup>	>100,000	150	160
Toluene	µg/m <sup>3</sup>	N/A	6.4 J	1.4 J
Total Xylene	µg/m <sup>3</sup>	N/A	ND	ND
1,1,2-Trichloroethane	µg/m <sup>3</sup>	N/A	ND	ND
Trichloroethene	µg/m <sup>3</sup>	2,600	2,700	19
Vinyl Chloride	µg/m <sup>3</sup>	560	11	1.9
Tetrachloroethene	µg/m <sup>3</sup>	5,100	1,000	8.8

Notes:

CFM - cubic feet per minute

DAR - Division of Air Resources

J - Estimated result between laboratory method detection limit and reporting limit

N/A - Not Applicable

NR - Not recorded

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

(2) Discharge goal is for total 1,2-Dichloroethene.

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Controlled Stack Emissions  
August 2015**

<b>DAR Parameters</b>	<b>Units</b>	<b>Discharge Goal <sup>(1)</sup></b>	<b>August 2015</b>
Sampling Date	N/A	N/A	8/7/15
Average Flowrate	CFM	N/A	9,316
Total Flow	ft <sup>3</sup>	N/A	415,878,994
Total Flow	m <sup>3</sup>	N/A	11,776,382
Trichloroethene	lb/hr	0.09	0.00066
Vinyl Chloride	lb/hr	0.02	0.00007
1,2 Dichloroethene	lb/hr	11	0.00558
1,2-Dichloroethane	lb/hr	N/A	0.00007
Toluene	lb/hr	N/A	0.00005
Total Xylene	lb/hr	N/A	0.00000
1,1,2-Trichloroethane	lb/hr	N/A	0.00000
Tetrachloroethene	lb/hr	0.18	0.00031

Notes:

CFM - cubic feet per minute

DAR - Division of Air Resources

N/A - Not Applicable

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.



**SEPTEMBER 2015**



28 October 2015

Mr. Henry Wilkie  
New York State Department of Environmental Conservation  
Division of Solid & Hazardous Materials  
625 Broadway  
Albany, NY 12233-7252

**Subject: GROUNDWATER DISCHARGE MONITORING/AIR EMISSION REPORT  
GM-38 AREA, NWIRP BETHPAGE, NY; DER SITE # 1-30-003B-OU 2  
SEPTEMBER 2015 REPORTING PERIOD**

Dear Mr. Wilkie:

H&S Environmental, Inc. (H&S) is submitting this monthly monitoring report of the groundwater discharge and air emission results for the Groundwater Treatment Plant (GWTP) located at the Former Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, NY, GM-38 Area. This report was prepared in accordance with GWTP operational requirements for DER Site # 1-30-003B-OU 2.

GWTP operational data from 1 September 2015 to 30 September 2015 are presented in Attachment A. During this reporting period, scheduled downtime occurred for maintenance activities, consisting of the changeout of the vapor phase granular activated carbon (VGAC). This scheduled downtime affected the average flowrates during the September 2015 reporting period.

As indicated in Attachment A, all permitted constituents were in compliance with regulatory guidelines during this reporting period.

Please contact me at 508-366-7442 with any questions or concerns you may have regarding this report.

Sincerely,  
H&S Environmental, Inc.

Jennifer Good  
Project Manager

Attachment A: Groundwater and Air Sampling Results from September 2015

Cc: Steven Scharf – NYSDEC  
Jean Occidental - NYSDEC Division of Water  
Jennifer Pilewski - NYSDEC – Region 1 Water Engineer  
Gerard Ennis - Nassau County Department of Public Works  
Linda Bianculli - Town of Oyster Bay  
Lora Fly - NAVFAC Mid-Atlantic RPM  
Greg Pearman – NWIRP Bethpage  
GM-38 Copy

**ATTACHMENT A**  
**GROUNDWATER AND AIR SAMPLING RESULTS**  
**SEPTEMBER 2015**

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Discharge Monitoring Report  
September 2015**

SPDES Parameters	September 2015					
Process Stream	Daily Treated Effluent Maximum	Units	RW-1 <sup>(1)</sup>	RW-3 <sup>(1)</sup>	Combined Influent <sup>(1)</sup>	Treated Effluent
Well Depth	N/A	ft	445	530	N/A	N/A
Screened Interval	N/A	ft bgs	335-395 410-430	392-412 442-504	N/A	N/A
Sampling Date	N/A		9/14/15			
Average Flowrate	1100	GPM	952	0.4	952	988
Total Flow	N/A	gallons	41,105,400	18,000	41,123,400	42,692,600
pH	5.5 - 8.5	SU	5.30	N/A	5.30	6.01
Carbon Tetrachloride	NA	µg/L	ND (1.0)	N/A	ND (1.0)	ND (1.0)
1,1-Dichloroethane	5	µg/L	2.3	N/A	2.3	ND (1.0)
1,2-Dichloroethane	0.6	µg/L	ND (1.0)	N/A	ND (1.0)	ND (1.0)
1,1-Dichloroethene	5	µg/L	2.4	N/A	2.4	ND (1.0)
cis 1,2-Dichloroethene	5	µg/L	14.9	N/A	14.9	ND (1.0)
trans 1,2-Dichloroethene	5	µg/L	0.28 J	N/A	0.28 J	ND (1.0)
Tetrachloroethene	5	µg/L	32.5	N/A	32.5	ND (1.0)
1,1,1-Trichloroethene	5	µg/L	1.6	N/A	1.6	ND (1.0)
Trichloroethene	5	µg/L	166	N/A	166	ND (1.0)
Vinyl Chloride	2	µg/L	0.53 J	N/A	0.53 J	ND (2.0)
Mercury	0.00025	mg/L	0.00004 J	N/A	0.00004 J	0.00006 J
Total Suspended Solids (TSS)	N/A	mg/L	ND (5)	N/A	ND (5)	ND (5)

**Notes:**

J - Estimated result between laboratory method detection limit and reporting limit

ND - Not detected above laboratory method detection limit. Limit of detection (LOD) given in parentheses.

NR - Not Recorded

NS - Not Sampled. RW-3 sampling frequency has been reduced from monthly to semi-annually.

N/A - Not Applicable

(1) On 1 July 2015, the RW-1 flowrate was increased from ~800 gpm to ~1,000 gpm and RW-3 was taken off-line, as approved by NYSDEC on 20 April 2015. To maintain the integrity of RW-3 for potential future use, approximately 200 gallons per minute of water are pumped for a 1-hour period from the well on a monthly basis. RW-3 will be sampled semi-annually, consistent with the groundwater monitoring program. Influent concentrations presented above are therefore equivalent to RW-1 concentrations only.

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Air Sampling Results  
September 2015**

DAR Parameters	Units	Discharge Goal <sup>(1)</sup>	September 2015	
			Influent	Effluent
Process Stream				
Sampling Date	N/A	N/A	9/8/2015 <sup>(3)</sup>	
Average Flowrate	CFM	N/A	NR	9,190
Total Flow	ft <sup>3</sup>	N/A	NR	397,022,400
Total Flow	m <sup>3</sup>	N/A	NR	11,242,422
1,2-Dichloroethane	µg/m <sup>3</sup>	N/A	3.5 J	2.4 J
cis 1,2-Dichloroethene	µg/m <sup>3</sup>	> 100,000 <sup>(2)</sup>	140	160
trans 1,2-Dichloroethene	µg/m <sup>3</sup>		ND	1.7 J
1,2-Dichloroethene (total)	µg/m <sup>3</sup>	>100,000	140	160
Toluene	µg/m <sup>3</sup>	N/A	4.2 J	ND
Total Xylene	µg/m <sup>3</sup>	N/A	ND	ND
1,1,2-Trichloroethane	µg/m <sup>3</sup>	N/A	2.0 J	ND
Trichloroethene	µg/m <sup>3</sup>	2,600	1,600	23
Vinyl Chloride	µg/m <sup>3</sup>	560	4.4	2.6
Tetrachloroethene	µg/m <sup>3</sup>	5,100	400	10

Notes:

CFM - cubic feet per minute

DAR - Division of Air Resources

J - Estimated result between laboratory method detection limit and reporting limit

N/A - Not Applicable

NR - Not recorded

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

(2) Discharge goal is for total 1,2-Dichloroethene.

(3) Monthly process samples were collected on 9/8/15. Changeout of the vapor phase granular activated carbon (VGAC) was performed on 9/16-9/17/15.

**GM-38 Area Groundwater Remediation  
Groundwater Treatment Plant  
Naval Weapons Industrial Reserve Plant - Bethpage, NY  
Controlled Stack Emissions  
September 2015**

<b>DAR Parameters</b>	<b>Units</b>	<b>Discharge Goal <sup>(1)</sup></b>	<b>September 2015</b>
Sampling Date	N/A	N/A	9/8/15
Average Flowrate	CFM	N/A	9,190
Total Flow	ft <sup>3</sup>	N/A	397,022,400
Total Flow	m <sup>3</sup>	N/A	11,242,422
Trichloroethene	lb/hr	0.09	0.00079
Vinyl Chloride	lb/hr	0.02	0.00009
1,2 Dichloroethene	lb/hr	11	0.00551
1,2-Dichloroethane	lb/hr	N/A	0.00008
Toluene	lb/hr	N/A	0.00000
Total Xylene	lb/hr	N/A	0.00000
1,1,2-Trichloroethane	lb/hr	N/A	0.00000
Tetrachloroethene	lb/hr	0.18	0.00034

Notes:

CFM - cubic feet per minute

DAR - Division of Air Resources

N/A - Not Applicable

(1) Discharge goal as approved by NYSDEC's letter dated 31 October 2013.

**APPENDIX B**

**NYSDEC AIR DISCHARGE LIMIT  
DOCUMENTATION**



**New York State Department of Environmental Conservation**  
**Division of Environmental Remediation**  
**Remedial Action Bureau A, 12<sup>th</sup> Floor**  
625 Broadway, Albany, New York 12233-7015  
Phone: (518) 402-9620 FAX: (518) 402-9022



Joseph Martens  
Commissioner

October 31, 2013

Lora Fly  
Remedial Program Manager  
NAVFAC Mid-Atlantic  
Northeast IPT  
9742 Maryland Avenue  
Norfolk, VA, 23511-3095

RE: Northrop Grumman, Naval Weapons Industrial  
Reserve Plant (NWIRP) and Grumman Steel Los Sites,  
NYSDEC Site No.'s 1-30-003 A & B.

Dear Ms. Fly:

Tetra Tech NUS Inc., on behalf of the Department of the Navy NAVFAC Midlantic, has submitted an application to remove the GM 38 Area Groundwater Extraction and Treatment system impregnated Xeolite<sup>™</sup> resin from the air discharge treatment system. Currently, the air treatment system uses a combined activated carbon with permanganate impregnated resin treatment train. The New York State Department of Environmental Conservation (NYSDEC) has reviewed the Department of the Navy application and concurs with the findings presented.

The routine monitoring, as detailed in Table 1, clearly indicates that vinyl chloride, one of the main contaminants of concern, has diminished to almost non-detect, and discharge concentrations have dropped to below the limit to require air treatment for the other contaminants as well. However, NAVFAC Midlantic is still proposing activated carbon to reduce the other discharge contaminant levels. Therefore, the NYSDEC hereby approves the proposed changes to the GM 38 Area air treatment. The Xeolite<sup>™</sup> resin beds will remain in place should reactivation, based on routine monitoring, be required.

If you have any questions in the interim, please contact me at (518)402-9620.

Sincerely,

Steven M. Scharf, P.E.  
Project Engineer  
Remedial Action Bureau A  
Division of Environmental Remediation

EC: J. Swartwout  
S. Scharf  
W. Parish, Region 1  
S. Karpinski, NYSDOH  
E. Hannon, NGC  
D. Stern, Arcadis  
D. Brayack, TTNUS



NOR-01264

November 21, 2011

Mr. Stephen Scharf  
New York Department of Environmental Conservation  
Division of Environmental Remediation  
Bureau of Remedial Action A  
625 Broadway, 11<sup>th</sup> Floor  
Albany, New York 12233-7015

Reference: CLEAN Contract No. N62470-08-D-1001  
Contract Task Order WE06

Subject: Proposed Modification to Discharge Limits for Off Gas Volatile Organic Compounds (VOCs)  
for Air Stripping Tower  
GM-38 Offsite Groundwater Treatment Plant,  
NWIRP Bethpage, New York

Dear Mr. Scharf:

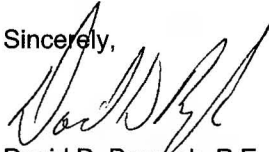
On behalf of the Navy, please find enclosed a copy of the subject document. This document presents an evaluation of current concentrations of off gas VOCs from the GM-38 groundwater treatment plant air-stripping tower (prior to treatment with granular activated carbon). Maximum emission rates were re-evaluated due to decreasing maximum concentrations of target VOCs in un-treated air stripper AS-1 off gas. In addition, breakthrough of target contaminants (e.g., cis-1,2-dichloroethene) is beginning to occur in the granular activated carbon bed. Maximum emission rates were re-evaluated to provide a determination if breakthrough of contaminants would trigger the need for a replacement of the granular activated carbon bed.

Existing Discharge Goals were established in the "Final Operation, Maintenance and Monitoring Plan for Groundwater Treatment Plant GM-38 Area Groundwater Remediation" prepared by Tetra Tech EC (April 2010). Existing goals were based on emission estimates for a 95% reduction (see Attachment A), instead of being based on the original DAR-1 analysis of air stripper off gas. Emission estimates were calculated using the air stripper design flow rate of 8,000 cubic feet per minute (cfm), and previous contaminant discharge rates in pounds per hour (lb/hr). Original emission estimates are provided in Attachment B.

Proposed Revised Discharge Goals were calculated using an average flow rate of 9,200 cfm, January to March 2011 VOC loading rates (taken from the Quarterly Operations Report First Quarter 2011 from ECOR Federal Services), and the Actual Annual % of Annual Guideline Concentrations (AGCs), taken from the revised DAR-1 Model Output. The revised DAR-1 Model Output is provided in Attachment C. Existing Discharge Goals and Proposed Revised Discharge Goals are compared in tabular format in the first page of the attachment. Proposed Revised Discharge Goals for trichloroethene (TCE) are the same as previous. The proposed limit for tetrachloroethene (PCE) is approximately 10 times the previous limit, and vinyl chloride is approximately 2 times the previous limit. Revised Discharge Goals for 1,2-dichloroethene (goals are the same for cis-1,2-dichloroethene) are 100 times greater than previously established limits. It is recommended that these revised limits replace previous discharge goals, and treatment of air stripper off gas by granular activated carbon is recommended to continue for TCE and PCE, with no treatment required for vinyl chloride and 1,2-dichloroethene.

If you have any questions please contact Ms. Lora Fly, NAVFAC Mid-LANT, at (757) 341-2012.

Sincerely,



David D. Brayack, P.E.  
Project Manager

Enclosure: (1) Proposed Modification to Discharge Limits for Off Gas Volatile Organic Compounds  
(VOCs) for Air Stripping Tower  
GM-38 Offsite Groundwater Treatment Plant

Distribution:

Mid-Lant, Lora Fly  
NYSDEC (Albany), Henry Wilkie  
NYSDOH (Troy), Steve Karpinski  
NAVAIR, Richard Smith  
USEPA, Carol Stein  
NGC, Kent Smith  
Tetra Tech NUS, Dave Brayack  
ECOR Solutions, Al Taormina  
Administrative Record  
Public Repository  
Project File

Tetra Tech NUS, Inc.

5700 Lake Wright Drive, Suite 309, Norfolk, VA 23502  
Tel 757.461.3768 Fax 757.461.4148 www.ttnus.com

**TABLE 1**  
**COMPARISON OF EXISTING DISCHARGE GOALS WITH ACTUAL EMISSIONS AND PROPOSED DISCHARGE GOALS**  
**AIR STRIPPING TOWER GM-38 OFFSITE GROUNDWATER TREATMENT PLANT**  
**NWIRP BETHPAGE, NEW YORK**

Chemical	Existing Discharge Goal		Actual January to March 2011 Values (Pre-Off Gas Treatment)		Proposed Revised Discharge Goals based on DAR-1 Analysis	
	Existing Discharge Loading Rate (pounds (lbs)/hour) <sup>(1)</sup>	Equivalent Existing Discharge Goals (µg/m <sup>3</sup> ) <sup>(2)</sup>	Actual Jan-Mar 2011 Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>	Actual VOC Loading Pre-Off Gas Treatment (lbs/hour) <sup>(4)</sup>	Proposed Discharge Loading Rate (lbs/hour) <sup>(5)</sup>	Equivalent Proposed Discharge Goal (µg/m <sup>3</sup> ) <sup>(5)</sup>
TCE	0.09	2,600	10,000	0.345	0.09	2,600
PCE	0.02	580	6,800	0.234	0.18	5,100
Vinyl Chloride	0.01	290	76	0.003	0.02	560
1,2-Dichloroethene (total)	0.03	870	750	0.026	11	greater than 100,000

**Notes:**

<sup>(1)</sup>Existing Discharge Goals are based on the design flow rate of 8,000 cfm. Existing Discharge Goals were taken from the Final Operations and Maintenance Plan for GM-38 Area Groundwater Remediation from Tetra Tech EC. Existing goals were based on emission estimates for a 95% reduction, and not the previous DAR-1 Analysis. Attachment B (provided at the end of this package) provides the original emission estimates.

<sup>(2)</sup>Existing Discharge Goals were calculated using the actual flow rate of 9,200 cfm and the existing discharge loading rate in pounds per hour (lb/hr).

<sup>(3)</sup>Values were taken from the Quarterly Operations Report First Quarter 2011 from ECOR Federal Services. Values were the maximum effluent concentration in off gas from air stripper stack AS-1 prior to treatment with vapor phase granular activated carbon (GAC), for the months of January, February and March 2011.

<sup>(4)</sup>Actual VOC Loading was calculated using an average flow rate of 9,200 cfm and the January-March 2011 concentrations. Existing off gas treatment consists of two stage vapor phase GAC followed by potassium permanganate zeolite media to provide additional treatment for vinyl chloride.

<sup>(5)</sup>Values were calculated using an average flow rate of 9,200 cfm, and the Actual Annual % of the AGCs from the 2011 DAR-1 Model Output to achieve air quality requirements.

**ATTACHMENT A**  
**2008 AIR PERMIT SUBMITTAL**

# New York State Department of Environmental Conservation Air Permit Application



DEC ID									
-									

APPLICATION ID									
-									

OFFICE USE ONLY									

## Section I - Certification

Title V Certification	
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information [required pursuant to 6 NYCRR 201-6.3(d)] I believe the information is, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.	
Responsible Official	Title
Signature	Date ____ / ____ / ____

State Facility Certification	
I certify that this facility will be operated in conformance with all provisions of existing regulations.	
Responsible Official	Title
Signature	Date ____ / ____ / ____

## Section II - Identification Information

Title V Facility Permit <u>N/A</u>	<input type="checkbox"/> New	<input type="checkbox"/> Significant Modification	<input type="checkbox"/> Administrative Amendment	State Facility Permit <u>N/A</u>
<input type="checkbox"/> Renewal	<input type="checkbox"/> Minor Modification	General Permit Title: _____		<input type="checkbox"/> New
<input checked="" type="checkbox"/> Application involves construction of new facility		<input type="checkbox"/> Application involves construction of new emission unit(s)		
				<input type="checkbox"/> Modification
				General Permit Title: _____

Owner/Firm				
Name <u>US Navy/NAVFAC Midlant</u>				
Street Address <u>9742 Maryland Ave, Bldg Z-144</u>				
City <u>Norfolk</u>	State <u>VA</u>	Country <u>US</u>	Zip <u>23511-3095</u>	
Owner Classification <input checked="" type="checkbox"/> Federal		<input type="checkbox"/> State	<input type="checkbox"/> Municipal	
<input type="checkbox"/> Corporation/Partnership		<input type="checkbox"/> Individual	Taxpayer ID	
Facility <input type="checkbox"/> Confidential				
Name <u>Naval Weapons Industrial Reserve Plant (NWIRP) GM-38 Area</u>				
Location Address <u>Bethpage</u>				
<input type="checkbox"/> City / <input checked="" type="checkbox"/> Town / <input type="checkbox"/> Village <u>Oyster Bay, New York</u>			Zip <u>11714</u>	
Project Description <input type="checkbox"/> Continuation Sheet(s)				
<u>Air stripping of groundwater to remove VOCs</u>				

Owner/Firm Contact Mailing Address				
Name (Last, First, Middle Initial) <u>Fly, Lora</u>			Phone No. (757) 444-0781	
Affiliation <u>Department of the Navy</u>		Title <u>Remedial PM</u>	Fax No. ( )	
Street Address <u>9742 Maryland Ave. Bldg Z-144</u>				
City <u>Norfolk</u>	State <u>VA</u>	Country <u>US</u>	Zip <u>23511-3095</u>	
Facility Contact Mailing Address				
Name (Last, First, Middle Initial) <u>Same</u>			Phone No. ( )	
Affiliation		Title	Fax No. ( )	
Street Address				
City	State	Country	Zip	

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**Section III - Facility Information**

Classification					
<input type="checkbox"/> Hospital	<input type="checkbox"/> Residential	<input type="checkbox"/> Educational/Institutional	<input type="checkbox"/> Commercial	<input checked="" type="checkbox"/> Industrial	<input type="checkbox"/> Utility

Affected States (Title V Only)					N/A
<input type="checkbox"/> Vermont	<input type="checkbox"/> Massachusetts	<input type="checkbox"/> Rhode Island	<input type="checkbox"/> Pennsylvania	Tribal Land: _____	
<input type="checkbox"/> New Hampshire	<input type="checkbox"/> Connecticut	<input type="checkbox"/> New Jersey	<input type="checkbox"/> Ohio	Tribal Land: _____	

SIC Codes											
9999											

Facility Description		<input type="checkbox"/> Continuation Sheet(s)
Groundwater Remediation by Air Stripping followed by Vapor-Phase GAC for emission control		

Compliance Statements (Title V Only)		N/A
<p>I certify that as of the date of this application the facility is in compliance with all applicable requirements: <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If one or more emission units at the facility are not in compliance with all applicable requirements at the time of signing this application (the 'NO' box must be checked), the noncomplying units must be identified in the "Compliance Plan" block on page 8 of this form along with the compliance plan information required. For all emission units at this facility that are operating <u>in compliance</u> with all applicable requirements complete the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> This facility will continue to be operated and maintained in such a manner as to assure compliance for the duration of the permit, except those units referenced in the compliance plan portion of Section IV of this application.</li> <li><input type="checkbox"/> For all emission units, subject to any applicable requirements that will become effective during the term of the permit, this facility will meet all such requirements on a timely basis.</li> <li><input type="checkbox"/> Compliance certification reports will be submitted at least once a year. Each report will certify compliance status with respect to each requirement, and the method used to determine the status.</li> </ul>		

Facility Applicable Federal Requirements									N/A	<input type="checkbox"/> Continuation Sheet(s)
Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause	
	CERCLA	all substantive		requirements						

Facility State Only Requirements									<input type="checkbox"/> Continuation Sheet(s)
Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause





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**Section IV - Emission Unit Information**

<b>Emission Unit Description</b>										<input type="checkbox"/> Continuation Sheet(s)
EMISSION UNIT	0	-	0	0	E	U	1			
Air Stripper AS-1 for groundwater remediation, provided with activated carbon for emission control.										
The emission point is stack 00ST-1. The 2-stage VGAC is followed by a 3rd vessel containing a potassium permanganate zeolite media for increased VC capacity.										

<b>Building</b>					<input type="checkbox"/> Continuation Sheet(s)
Building	Building Name		Length (ft)	Width (ft)	Orientation
BLDG-1	Treatment Plant		75	75	0

<b>Emission Point</b>							<input type="checkbox"/> Continuation Sheet(s)
EMISSION PT.	00ST1						
Ground Elev. (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
90	40	15	36	80	Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	
19	8020			BLDG-1	50		
EMISSION PT.							
Ground Elev. (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section		
					Length (in)	Width (in)	
Exit Velocity (FPS)	Exit Flow (ACFM)	NYTM (E) (KM)	NYTM (N) (KM)	Building	Distance to Property Line (ft)	Date of Removal	

<b>Emission Source/Control</b>								<input type="checkbox"/> Continuation Sheet(s)
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model No.	
ID	Type				Code	Description		
AS-1	I				048	Granular Act. Carbon	Air Stripping Column	
Design Capacity	Design Capacity Units			Waste Feed		Waste Type		
	Code	Description		Code	Description	Code	Description	
Emission Source		Date of Construction	Date of Operation	Date of Removal	Control Type		Manufacturer's Name/Model No.	
ID	Type				Code	Description		
Design Capacity	Design Capacity Units			Waste Feed		Waste Type		
	Code	Description		Code	Description	Code	Description	

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**Section IV - Emission Unit Information (continued)**

Process Information										<input type="checkbox"/> Continuation Sheet(s)	
EMISSION UNIT 0 - 00 E U 1								PROCESS		P R 1	
Description											
The remedial system is air stripping, using a packed column at a groundwater flow rate of 1,100 gpm (plus 100 gpm recycle, for a total of 1,200 gpm). Vapor phase treatment includes the use of 3 vessels, a 2-stage GAC unit, followed by a 3rd vessel containing a potassium permanganate impregnated zeolite for increased VC capacity. Prior to entering the vapor-phase GAC adsorption system, the humidity of the air stripper exhaust is reduced to approximately 50 percent or less to optimize the efficiency of the vapor-phase GAC.											
Air Stripper AS-1: Existing. Type: Vertical, Cylindrical Construction: Aluminum											
Packing: 25-foot Jaeger Tripack. Dimensions: 10.0 ft. Dia x 47 ft. H											
Source Classification Code (SCC)		Total Thruput		Thruput Quantity Units							
		Quantity/Hr	Quantity/Yr	Code	Description						
<input type="checkbox"/> Confidential <input checked="" type="checkbox"/> Operating at Maximum Capacity <input type="checkbox"/> Activity with Insignificant Emissions		Operating Schedule		Building		Floor/Location					
		Hrs/Day	Days/Yr								
		24	365	BLDG-1		Main					
Emission Source/Control Identifier(s)											
AS-1											
EMISSION UNIT -								PROCESS			
Description											
Source Classification Code (SCC)		Total Thruput		Thruput Quantity Units							
		Quantity/Hr	Quantity/Yr	Code	Description						
<input type="checkbox"/> Confidential <input type="checkbox"/> Operating at Maximum Capacity <input type="checkbox"/> Activity with Insignificant Emissions		Operating Schedule		Building		Floor/Location					
		Hrs/Day	Days/Yr								
Emission Source/Control Identifier(s)											

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**Section IV - Emission Unit Information (continued)**

Emission Unit	Emission Point	Process	Emission Source	Emission Unit Applicable Federal Requirements										<input type="checkbox"/> Continuation Sheet(s)	
				Title	Type	Part	Sub Part	Section	Sub Division	Parag.	Sub Parag.	Clause	Sub Clause		
-															
-															
-															
-															

Emission Unit	Emission Point	Process	Emission Source	Emission Unit State Only Requirements										<input type="checkbox"/> Continuation Sheet(s)	
				Title	Type	Part	Sub Part	Section	Sub Division	Parag.	Sub Parag.	Clause	Sub Clause		
-															
-															
-															
-															

Emission Unit Compliance Certification										<input type="checkbox"/> Continuation Sheet(s)
<b>Rule Citation</b>										
Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause	
6	NYCRR	212								
<input checked="" type="checkbox"/> Applicable Federal Requirement			<input type="checkbox"/> State Only Requirement			<input type="checkbox"/> Capping				
Emission Unit	Emission Point	Process	Emission Source	CAS No.			Contaminant Name			
0-00EU1	00ST1	PR1	AS-1	00079 - 01 - 6			Trichloroethylene			
<b>Monitoring Information</b>										
<input type="checkbox"/> Continuous Emission Monitoring <input checked="" type="checkbox"/> Intermittent Emission Testing <input type="checkbox"/> Ambient Air Monitoring					<input type="checkbox"/> Monitoring of Process or Control Device Parameters as Surrogate <input type="checkbox"/> Work Practice Involving Specific Operations <input type="checkbox"/> Record Keeping/Maintenance Procedures					
<b>Description</b>										
Monthly grab samples analyzed for VOCs from the vapor phase treatment system influent, effluent and two intermediate locations.										
Work Practice		Process Material				Reference Test Method				
Type	Code	Description								
Parameter		Manufacturer Name/Model No.								
Code	Description									
23	Concentration									
Limit			Limit Units							
Upper	Lower	Code	Description							
3,125		255	micrograms per cubic meter							
Averaging Method		Monitoring Frequency		Reporting Requirements						
Code	Description	Code	Description	Code	Description					
01	Instantaneous	05	Monthly	10	Upon Request					

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**Section IV - Emission Unit Information (continued)**

Determination of Non-Applicability (Title V Only) N/A <input type="checkbox"/> Continuation Sheet(s)										
Rule Citation										
Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause	
Emission Unit	Emission Point	Process	Emission Source			<input type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement				
Description										
Rule Citation										
Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause	
Emission Unit	Emission Point	Process	Emission Source			<input type="checkbox"/> Applicable Federal Requirement <input type="checkbox"/> State Only Requirement				
Description										
Process Emissions Summary <input type="checkbox"/> Continuation Sheet(s)										
EMISSION UNIT	0 - 0 0 E U 1					PROCESS	P	R	1	
CAS No.	Contaminant Name			% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
0079 - 01 - 6	Trichloroethylene					95	1.87	02		
PTE			Standard Units	PTE How Determined		Actual				
(lbs/hr)	(lbs/yr)	(standard units)				(lbs/hr)	(lbs/yr)			
0.09	99			02						
EMISSION UNIT	0 - 0 0 E U 1					PROCESS	P	R	1	
CAS No.	Contaminant Name			% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
00075 - 01 - 4	Vinyl Chloride					95	0.17	03		
PTE			Standard Units	PTE How Determined		Actual				
(lbs/hr)	(lbs/yr)	(standard units)				(lbs/hr)	(lbs/yr)			
0.01	3.7			02						
EMISSION UNIT	0 - 0 0 E U 1					PROCESS	P	R	1	
CAS No.	Contaminant Name			% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined		
000540 - 59 - 0	1,2-Dichloroethylene					95	0.6	02		
PTE			Standard Units	PTE How Determined		Actual				
(lbs/hr)	(lbs/yr)	(standard units)				(lbs/hr)	(lbs/yr)			
0.03	7.3			02						

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**Section IV - Emission Unit Information (continued)**

EMISSION UNIT		Emission Unit Emissions Summary				<input type="checkbox"/> Continuation Sheet(s)
0	-	0	0	E	U	1
CAS No.		Contaminant Name				
00107- 06 - 2		1,2-Dichloroethane				
ERP (lbs/yr)	PTE Emissions		Actual			
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)		
13.4	Below Reporting Threshold BRT					
CAS No.		Contaminant Name				
00108 - 88 - 3		Toluene				
ERP (lbs/yr)	PTE Emissions		Actual			
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)		
72.7	BRT		BRT			
CAS No.		Contaminant Name				
01330- 20 - 7		Xylene				
ERP (lbs/yr)	PTE Emissions		Actual			
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)		
77.1	BRT		BRT			
CAS No.		Contaminant Name				
-		1,1,2-Trichloroethane				
ERP (lbs/yr)	PTE Emissions		Actual			
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)		
	BRT		BRT			

Compliance Plan													<input type="checkbox"/> Continuation Sheet(s)
For any emission units which are <u>not in compliance</u> at the time of permit application, the applicant shall complete the following													
Consent Order			Certified progress reports are to be submitted every 6 months beginning ____ / ____ / ____										
Emission Unit	Process	Emission Source	Applicable Federal Requirement										
			Title	Type	Part	Sub Part	Section	Sub Division	Parag.	Sub Parag.	Clause	Sub Clause	
Remedial Measure / Intermediate Milestones										R/I	Date Scheduled		

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**Section IV - Emission Unit Information (continued)**

Request for Emission Reduction Credits										<input type="checkbox"/> Continuation Sheet(s)														
EMISSION UNIT										-														
Emission Reduction Description																								
Contaminant Emission Reduction Data																								
Baseline Period										/					to					/				
										Date					Method									
										/					/									
CAS No.					Contaminant Name										ERC (lbs/yr)									
-					-										Netting					Offset				
-					-										-					-				
-					-										-					-				
Facility to Use Future Reduction																								
Name										APPLICATION ID														
-										-														
Location Address																								
<input type="checkbox"/> City / <input type="checkbox"/> Town / <input type="checkbox"/> Village										State					Zip									

Use of Emission Reduction Credits										<input type="checkbox"/> Continuation Sheet(s)														
EMISSION UNIT										-														
Proposed Project Description																								
Contaminant Emissions Increase Data																								
CAS No.					Contaminant Name										PEP (lbs/yr)									
-					-										-									
Statement of Compliance																								
<input type="checkbox"/> All facilities under the ownership of this "ownership/firm" are operating in compliance with all applicable requirements and state regulations including any compliance certification requirements under Section 114(a)(3) of the Clean Air Act Amendments of 1990, or are meeting the schedule of a consent order.																								
Source of Emission Reduction Credit - Facility																								
Name										PERMIT ID														
-										-														
Location Address																								
<input type="checkbox"/> City / <input type="checkbox"/> Town / <input type="checkbox"/> Village										State					Zip									
Emission Unit					CAS No.					Contaminant Name					ERC (lbs/yr)									
-					-					-					Netting					Offset				
-					-					-					-					-				
-					-					-					-					-				



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Supporting Documentation

- P.E. Certification (form attached)
- List of Exempt Activities (form attached)
- Plot Plan
- Methods Used to Determine Compliance (form attached)
- Calculations
- Air Quality Model ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- Confidentiality Justification
- Ambient Air Monitoring Plan ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- Stack Test Protocols/Reports ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- Continuous Emissions Monitoring Plans/QA/QC ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- MACT Demonstration ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- Operational Flexibility: Description of Alternative Operating Scenarios and Protocols
- Title IV: Application/Registration
- ERC Quantification (form attached)
- Use of ERC(s) (form attached)
- Baseline Period Demonstration
- Analysis of Contemporaneous Emission Increase/Decrease
- LAER Demonstration ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- BACT Demonstration ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )
- Other Document(s): \_\_\_\_\_ ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )  
 \_\_\_\_\_ ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )  
 \_\_\_\_\_ ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )  
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 \_\_\_\_\_ ( \_\_\_\_ / \_\_\_\_ / \_\_\_\_ )

**ATTACHMENT B**

**2008 EMISSION ESTIMATES BASED ON 95% REMOVAL**



**ATTACHMENT 1  
Emission Estimate**

POTENTIAL EMISSION ESTIMATES,  
USED TO DEVELOP 95% REDUCTION  
OF EMISSION VALUES AS BASED ON  
INFLUENT GROUNDWATER CONCENTRATIONS  
(95% REDUCTION OF EMISSION  
VALUES ARE PROVIDED  
ON PAGE 7 OF THE 2008 AIR  
PERMIT APPLICATION PROCESS  
EMISSIONS SUMMARY)

Feed Water Flow 1,100 gpm: max or normal  
250 m<sup>3</sup>/hr  
Water Flow Including Recycle 1,200 gpm: max or normal  
273 m<sup>3</sup>/hr  
Air Flow 8,000 cfm  
13,592 m<sup>3</sup>/hr  
A/W vol ratio 50

EXAMPLE EMISSION CALC: Vinyl Chloride  
4.8 ug/L x 1000 L/m<sup>3</sup> x 250 m<sup>3</sup> water/13,623 m<sup>3</sup> air = 88 ug/m<sup>3</sup>

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Name	CAS Number	Toxicity: H/M/L <sup>2</sup>	VOC <sup>3</sup>	HAP <sup>4</sup>	GW Conc. <sup>1</sup>		Effluent Conc. <sup>1</sup>		Uncontrolled Stripper Exhaust							
					Max ug/L	Avg ug/L	Max ug/L	Avg ug/L	Max lb/day	Avg lb/day	Max lb/hr	Avg lb/hr	Max gm/sec	Avg gm/sec	Max ug/m <sup>3</sup>	Avg ug/m <sup>3</sup>
1,1,1-Trichloroethane (Methyl Chloroform)	00071-55-6	L	No	Yes	3	3.0			0.04	0.04	0.00	0.00	2.08E-04	2.08E-04	55	55
1,1,2-Trichloroethane	00079-00-5	M	Yes	Yes	3.5	0.3			0.05	0.00	0.00	0.00	2.43E-04	2.08E-05	64	6
1,1-Dichloroethane	00075-34-3	L	Yes	Yes	4	0.7			0.05	0.01	0.00	0.00	2.77E-04	4.85E-05	74	13
1,2-Dichloroethane	00107-06-2	M	Yes	Yes	3	1.0	0.3	0.1	0.04	0.01	0.00	0.00	1.87E-04	6.24E-05	55	18
1,1-Dichloroethylene (Vinylidene Chloride)	00075-35-4	M	Yes	Yes	9	1.6			0.12	0.02	0.00	0.00	6.24E-04	1.11E-04	165	29
1,2-Dichloroethylene	00540-59-0	M	Yes	No	1,100	31.5	1.3	0.0	14.51	0.42	0.60	0.02	7.62E-02	2.18E-03	20,219	579
Benzene	00071-43-2	H	Yes	Yes	4	0.1			0.05	0.00	0.00	0.00	2.77E-04	6.94E-06	74	2
Carbon Tetrachloride	00056-23-5	H	Yes	Yes	4	0.1			0.05	0.00	0.00	0.00	2.77E-04	6.94E-06	74	2
Chlorobenzene (Monochlorobenzene)	00108-90-7	M	Yes	Yes	1	0.1			0.01	0.00	0.00	0.00	6.94E-05	6.94E-06	18	2
Chloroform	00067-66-3	M	Yes	Yes	2	0.8			0.03	0.01	0.00	0.00	1.39E-04	5.55E-05	37	15
Methyl Tert Butyl Ether	01634-04-4	M	Yes	Yes	2	0.1			0.03	0.00	0.00	0.00	1.39E-04	6.94E-06	37	2
Tetrachloroethylene	00127-18-4	M	Yes	Yes	900	33.8	0.9	0.0	11.88	0.45	0.49	0.02	6.24E-02	2.34E-03	16,543	621
Toluene	00108-88-3	L	Yes	Yes	15	0.7			0.20	0.01	0.01	0.00	1.04E-03	4.85E-05	276	13
Trichloroethylene	00079-01-6	M	Yes	Yes	3,400	411.5	4.5	0.5	44.86	5.43	1.87	0.23	2.35E-01	2.85E-02	62,494	7,564
Vinyl chloride	00075-01-4	H	Yes	Yes	300	4.8	0.0	0.0	3.96	0.06	0.17	0.00	2.08E-02	3.33E-04	5,514	88
Xylenes	01330-20-7	M	Yes	Yes	16	0.2			0.21	0.00	0.01	0.00	1.11E-03	1.39E-05	294	4
Total VOCs					5,764	487.3	7.0	0.6	76.05	6.43	3.17	0.27				
Total HAPs					4,667	458.8	5.7	0.6	61.57	6.05	2.57	0.25				

Total Uncontrolled VOC 2,347 lb/yr  
Total Uncontrolled HAP 2,209 lb/yr

1. Source: "GM-38 Groundwater Remedy Analysis Report", February 2003
2. Source: DAR-1 AGC/SGC Tables, NYSDEC Division of Air Resources, Air Toxics Section, September 10, 2007.
3. Source: 6 NYCRR Part 200.1(cg)
4. Source: 6 NYCRR Part 200.1(ag)

**ATTACHMENT 1  
Emission Estimate**

Feed Water Flow 1,100 gpm: max or normal  
250 m<sup>3</sup>/hr  
Water Flow Including Recycle 1,200 gpm: max or normal  
273 m<sup>3</sup>/hr  
Air Flow 8,000 cfm  
13,592 m<sup>3</sup>/hr  
A/W vol ratio 50

Name	CAS Number	Toxicity: H/M/L <sup>2</sup>	VOC <sup>3</sup>	HAP <sup>4</sup>	Control by GAC	Controlled Stripper Exhat			
						Max lb/day	Avg lb/day	Max gm/sec	Avg gm/sec
1,1,1-Trichloroethane (Methyl Chloroform)	00071-55-6	L	No	Yes	95%	0.00	0.00	1.04E-05	1.04E-05
1,1,2-Trichloroethane	00079-00-5	M	Yes	Yes	95%	0.00	0.00	1.21E-05	1.04E-06
1,1-Dichloroethane	00075-34-3	L	Yes	Yes	95%	0.00	0.00	1.39E-05	2.43E-06
1,2-Dichloroethane	00107-06-2	M	Yes	Yes	95%	0.00	0.00	9.36E-06	3.12E-06
1,1-Dichloroethylene (Vinylidene Chloride)	00075-35-4	M	Yes	Yes	95%	0.01	0.00	3.12E-05	5.55E-06
1,2-Dichloroethylene	00540-59-0	M	Yes	No	95%	0.73	0.02	3.81E-03	1.09E-04
Benzene	00071-43-2	H	Yes	Yes	95%	0.00	0.00	1.39E-05	3.47E-07
Carbon Tetrachloride	00056-23-5	H	Yes	Yes	95%	0.00	0.00	1.39E-05	3.47E-07
Chlorobenzene (Monochlorobenzene)	00108-90-7	M	Yes	Yes	95%	0.00	0.00	3.47E-06	3.47E-07
Chloroform	00067-66-3	M	Yes	Yes	95%	0.00	0.00	6.94E-06	2.77E-06
Methyl Tert Butyl Ether	01634-04-4	M	Yes	Yes	95%	0.00	0.00	6.94E-06	3.47E-07
Tetrachloroethylene	00127-18-4	M	Yes	Yes	95%	0.59	0.02	3.12E-03	1.17E-04
Toluene	00108-88-3	L	Yes	Yes	95%	0.01	0.00	5.20E-05	2.43E-06
Trichloroethylene	00079-01-6	M	Yes	Yes	95%	2.24	0.27	1.18E-02	1.43E-03
Vinyl chloride	00075-01-4	H	Yes	Yes	95%	0.20	0.00	1.04E-03	1.66E-05
Xylenes	01330-20-7	M	Yes	Yes	95%	0.01	0.00	5.55E-05	6.94E-07
Total VOCs						3.80	0.32		
Total HAPs						3.08	0.30		
						Total Controlled VOC		117 lb/yr	
						Total Controlled HAP		110 lb/yr	

1. Source: "GM-38 Groundwater Remedy Analysis Report", February 2003
2. Source: DAR-1 AGC/SGC Tables, NYSDEC Division of Air Resources, Air Tox
3. Source: 6 NYCRR Part 200.1(cg)
4. Source: 6 NYCRR Part 200.1(ag)

**ATTACHMENT C**  
**2011 DISCHARGE GOALS AND 2011 DAR-1 ANALYSIS**

Tetra Tech NUS		STANDARD CALCULATION SHEET	
CLIENT: US CLEAN	FILE No:	BY: SK	PAGE: 1 of 1
SUBJECT: Calculation of Current Discharge Goals GM-38 Area NWIRP Bethpage, New York		CHECKED BY:	DATE: 9/7/2011

**1. Purpose:**

To calculate current discharge goals for Trichloroethene (TCE), Tetrachloroethene (PCE), Vinyl Chloride, cis 1,2-Dichloroethene, and 1,2-Dichloroethene (total), for treatment of off-gas from the air stripper stack AS-1.

**2. Approach:**

From the Contaminant Assessment Summary of the DAR-1 Model output for TCE, PCE, Vinyl Chloride, cis 1,2-Dichloroethene, and 1,2-Dichloroethene (total) (see DAR-1 output for analysis inputs), use the Actual Annual % of the Annual Guideline Concentration (AGC), a current average flow rate of 9,200 cubic feet per minute (cfm), and influent chemical emission rates in pounds per hour (lb/hour) and pounds per year (lb/year) to back calculate current discharge goals.

**3. Calculation of Current Discharge Goals:**

Chemical	Current Actual Annual % of AGC <sup>(1)</sup>	Current Maximum Concentration (µg/m <sup>3</sup> ) <sup>(2)</sup>	Current Chemical Emission Rate Prior to Treatment (lb/hour) <sup>(3)</sup>	Current Chemical Emission Rate Prior to Treatment (lb/year) <sup>(3)</sup>	Calculated Discharge Goal (lb/hr) <sup>(4)</sup>	Calculated Discharge Goal (lb/year) <sup>(4)</sup>	Maximum Allowable Concentration (µg/m <sup>3</sup> ) <sup>(4)</sup>
TCE	390.6	10,000	0.3446	3,019	0.0882	770	2,600
PCE	132.8	6,800	0.2344	2,053	0.1764	1,500	5,100
Vinyl Chloride	13.49	76	0.0026	22.94	0.0194	170	560
cis 1,2-Dichloroethene	0.2322	750	0.0258	226.4	11.13	98,000	320,000
1,2-Dichloroethene (total)	0.2322	750	0.0258	226.4	11.13	98,000	320,000

**Notes:**

<sup>(1)</sup>Actual Annual % of the AGCs is from the attached DAR-1 Model Output.

<sup>(2)</sup>Values were taken from the Quarterly Operations Report First Quarter 2011 (June 2011) from ECOR Federal Services. Values were the maximum effluent concentration in off gas from air stripper stack AS-1 for the months of January, February, and March 2011.

<sup>(3)</sup>Chemical Emission Rates were calculated from maximum concentrations and an average flow rate of 9,200 cfm.

<sup>(4)</sup>Discharge Goals are based on a flow of 9,200 cfm, and calculated from the Actual Annual % of the AGCs from the DAR-1 Model Output to achieve air quality requirements. The summary of additional inputs for this model run is provided in the DAR-1 Model Output. Stack height is 40 feet, and the property line was evaluated at a distance of 50 feet.

BETHPAGE SITE GM-38 OFF-SITE GROUNDWATER AIR STRIPPER STACK EMISSIONS  
 DAR-1 MODEL OUTPUT, POINT SOURCE (STACK EMISSIONS) TYPE  
 INCLUDES ISCLT MODELING SUMMARY

- I. Summary of Inputs for Model Run to Nearest Property Line (50 feet), worst case scenario (highest contaminant concentrations seen in first quarter 2011 in untreated effluent from Air Stripper AS-1 prior to treatment with granular activated carbon (GAC))

Chemical	CAS No. 00079-01-6 (TCE)	CAS No. 00127-18-4 (PCE)	CAS No. 00075-01-4 (Vinyl Chloride)	CAS No. 00156-59-2 (cis 1,2-Dichloroethene)	CAS No. 00540-59-0 (1,2-Dichloroethene, total)
Emission Rate Prior to Treatment <sup>(1)</sup> (lb/hour)	0.3444	0.2342	0.0026	0.0258	0.0258
Emission Rate Prior to Treatment <sup>(1)</sup> (lb/year)	3,017	2,052	22.93	226.0	226.0
Maximum Concentration of Untreated Off Gas ( $\mu\text{g}/\text{m}^3$ ) <sup>(1)</sup>	10,000	6,800	76	750	750
Annual Guideline Concentration (AGC) ( $\mu\text{g}/\text{m}^3$ )	0.5	1.0	0.11	63	63
Short-term Guideline Concentration (SGC) ( $\mu\text{g}/\text{m}^3$ )	14,000	1,000	180,000	--	--

HA	Height Above stack/ maximum height of plume (HA, feet)	15
SH	Stack Height/Treatment Building Air Stack (SH, feet)	40
D	Stack Diameter (D, inches)	36
T	Stack Exit Temperature (T, degrees Fahrenheit)	80
V	Stack Exit Velocity (V, ft/sec)	21.69
Q <sup>(2)</sup>	Stack Exit Flow Rate [Q, Actual Cubic Feet per Minute (ACFM)]	9,200
Dpl	Shortest Distance from Source Building (Treatment Building) to Property Line (Dpl, feet) for point sources	50
BW	Building Width (BW, feet) of Source Building (Treatment Building) for point sources	75
BL	Building Length (BL, feet) of Source Building (Treatment Building)	75
Q	Actual Hourly Emission Rate (lbs/hour) for source contaminant	Chemical specific, see above
Qa	Actual Annual Emission Rate (lbs/year) for source contaminant	Chemical specific, see above

<sup>(1)</sup> Emission rates and maximum concentration values were taken from the Quarterly Operations Report First Quarter (June 2011) as provided by ECOR Services, using January, February, and March 2011 maximum rates of untreated off gas from Air Stripper AS-1 in the

GM-38 Treatment Building. Emission rates are based on continuous operation 24 hours per day, 7 days a week, 52 weeks a year, or approximately 8,760 hours of operation.

<sup>(2)</sup> "Q" is an average value of January and February 2011 monthly flow rates. Effective water and vapor flow rates were reduced during the reporting period of March due to a shutdown of the Treatment Plant on March 23, 2011.

II. Contaminant Assessment Summary of TCE, PCE, Vinyl Chloride, cis 1,2-Dichloroethene, and 1,2-Dichloroethene (total):

CONTAMINANT ASSESSMENT SUMMARY OF DAR-1 ANALYSIS						9/ 8/11
						Page 1
CAS NUMBER	AGC ug/m3	SHORT-TERM	CAVITY	POINT or AREA SOURCE		
		MAXIMUM (Cav. Pt. Area) % OF SGC	ACTUAL ANNUAL % OF AGC	POTENTIAL ANNUAL % OF AGC	ACTUAL ANNUAL % OF AGC	
00075-01-4	0.11000000	0.0005	0.0000	13.3889	13.4948	
00079-01-6	0.50000000	0.7757	0.0000	390.1734	390.6266	
00127-18-4	1.00000000	7.3852	0.0000	132.6635	132.8415	
00156-59-2	63.00000000	0.0000	0.0000	0.2320	0.2322	
00540-59-0	63.00000000	0.0000	0.0000	0.2320	0.2322	
SUMMARY TOTALS		8.1614	0.0000	536.6897	537.4274	

III. Contaminant Impact Summary of TCE, PCE, Vinyl Chloride, cis 1,2-Dichloroethene, and 1,2-Dichloroethene (total):

CONTAMINANT IMPACT SUMMARY OF DAR-1 ANALYSIS						9/ 8/11
						Page 1
CAS NUMBER	AGC ug/m3	SHORT-TERM	CAVITY	POINT or AREA SOURCE		
		MAXIMUM (Cav. Pt. Area) ug/m3	ACTUAL ANNUAL ug/m3	POTENTIAL ANNUAL ug/m3	ACTUAL ANNUAL ug/m3	
00075-01-4	0.11000000	0.81988204	0.00000000	0.01472780	0.01484433	
00079-01-6	0.50000000	108.60282900	0.00000000	1.95086694	1.95113296	
00127-18-4	1.00000000	73.85244750	0.00000000	1.32663476	1.32841504	
00156-59-2	63.00000000	8.13575172	0.00000000	0.14614509	0.14630693	
00540-59-0	63.00000000	8.13575172	0.00000000	0.14614509	0.14630693	



IV. Contaminant Impact Summary Step by Step Menu for TCE:

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*****
NWIRP BETHPAGE GM-38 AREA          BETHPAGE          OYSTER BAY, NEW
EMISSION POINT =          TOTAL          CAS NUMBER = 00079-01-6          SIC = 0
AGC =          0.500000000 ug/m3          SGC =          14000.000000 ug/m3
STACK: HA= 15., SH= 40., D= 36., T= 80., U= 21.69, q= 9200.00
BUILDING: Dpl= 50., BW= 75., BL= 75., %CONTROL= 0.0000
** Reported Hourly Emission Rate (Q) is equal to          0.344400000 lbs/hour.
** Reported Annual Emission Rate (Qa) is equal to          3017.000000 lbs/year.
II.B. REFINED CAVITY IMPACT METHOD (DAR-1, APPENDIX B).
II.B.1. Shortest Distance from building to Property Line ( 50. feet )
is less than or equal to the cavity length, or 3 building
heights ( 75. feet ). Therefore, this building will have
cavity impacts (if they occur) at receptors off plant property.
II.B.2. The largest building dimension ( 75. feet ) is greater than or
equal to the building height ( 25. feet ). Therefore, the
computer will NOT redefine the cavity length.
II.B.3. Stack height ( 40. feet ) is greater than cavity height
( 38. feet ). Therefore, this source does not contribute to
the buildings cavity impact. The Computer will assume the
CAVITY Annual Impact equals 0.00 ug/m3.
II.C. CAVITY Annual Impact ( 0.000 ug/m3 ) is less than AGC
( 0.500 ug/m3 ).
III.A. STANDARD POINT SOURCE METHOD (DAR-1, APPENDIX B).
III.A.1.b. Momentum flux, Fm, is equal to 1000.331 ft(4)/sec(2).
III.A.1.b. Effective stack height, he, is equal to 51.001 feet.
III.A.2. STANDARD POINT SOURCE Actual Annual Impact is equal
to 2.604 ug/m3 for 8760. hours/year of operation.
III.A.3. STANDARD POINT SOURCE Potential Annual Impact is equal
to 2.601 ug/m3 assuming 8,760 hours/year of operation.
III.A.4.a. Stack height to building height ratio is greater than
1.5, but less than 2.5. Computer will multiply actual
annual & potential annual impacts by 0.75 factor.

```

III.A.5. STANDARD POINT SOURCE Short-Term Impact is calculated below using the DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.

III.D. STANDARD POINT SOURCE Actual Annual Impact ( 1.953 ug/m3 ) is greater than AGC ( 0.500 ug/m3 ).

\*\*\*\* Refer to DAR-1 Section III.D.1. A refined site \*\*\*\*  
\*\*\*\* specific modeling analysis may be required. \*\*\*\*

III.D. STANDARD POINT SOURCE Potential Annual Impact ( 1.951 ug/m3 ) is greater than AGC ( 0.500 ug/m3 ).

\*\*\*\* Potential Annual Impact is based upon 8760 hours/year \*\*\*\*  
\*\*\*\* operation instead of reported 8760. hours/year. \*\*\*\*

2.0 DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.  
See 'Technical Reference for the Screening Procedures of the DAR-1 Software Program, Wade/Sedefian,' 1/11/94.

2.2 CAVITY Short-Term Impact is equal to 0.00 ug/m3 as the plume escaped the cavity region:  $h_c(40. \text{ feet}) > h_c(26. \text{ feet})$ .

II.C. CAVITY Short-Term Impact ( 0.000 ug/m3 ) is less than SGC ( 14000.000 ug/m3 ).

2.3 Momentum flux,  $F_m$ , is equal to 1000.331 ft(4)/sec(2).

2.3 Effective stack height,  $h_e$ , is equal to 51.001 feet.

2.4 Maximum non-downwash GEP stack Short-Term Impact (CSTP) is equal to 38.826 ug/m3, for  $h_s/h_b = 1.60$

2.5 Maximum downwash Short-Term Impact (CSTD) is equal to 129.908 ug/m3, for:  $h_s/h_b = 1.60$  and  $ESH = 51. \text{ feet}$ .

2.6 Adjusted maximum downwash Short-Term (CSTD) is equal to 108.603 ug/m3, for:  $RF = 0.84$

III.D. Maximum non-cavity Short-Term Impact (CST: 108.603 ug/m3 ) is less than the SGC ( 14000.000 ug/m3 ) for the point source.

2.7 Maximum Short-Term cavity, point, or area source impact (SHORT-TERM MAXIMUM, (Cav,Pt,Area)) equals 108.603 ug/m3 and is reported in the ANALYSIS MENU. This value is less than the SGC ( 14000.000 ug/m3 ).



V. Contaminant Impact Summary Step by Step Menu for PCE:

```

*****
NWIRP BETHPAGE GM-38 AREA          BETHPAGE          OYSTER BAY, NEW
EMISSION POINT =          TOTAL          CAS NUMBER = 00127-18-4          SIC = 0
AGC =          1.000000000 ug/m3          SGC =          1000.000000 ug/m3
STACK: HA=          15., SH=          40., D=          36., T=          80., U=          21.69, q=          9200.00
BUILDING: Dp1=          50., BW=          75., BL=          75., %CONTROL=          0.0000
** Reported Hourly Emission Rate (Q) is equal to          0.234200000 lbs/hour.
** Reported Annual Emission Rate (Qa) is equal to          2052.000000 lbs/year.
II.B. REFINED CAVITY IMPACT METHOD (DAR-1, APPENDIX B).
II.B.1. Shortest Distance from building to Property Line ( 50. feet )
is less than or equal to the cavity length, or 3 building
heights ( 75. feet ). Therefore, this building will have
cavity impacts (if they occur) at receptors off plant property.
II.B.2. The largest building dimension ( 75. feet ) is greater than or
equal to the building height ( 25. feet ). Therefore, the
computer will NOT redefine the cavity length.
II.B.3. Stack height ( 40. feet ) is greater than cavity height
( 38. feet ). Therefore, this source does not contribute to
the buildings cavity impact. The Computer will assume the
CAVITY Annual Impact equals 0.00 ug/m3.
II.C. CAVITY Annual Impact ( 0.000 ug/m3 ) is less than AGC
( 1.000 ug/m3 ).
III.A. STANDARD POINT SOURCE METHOD (DAR-1, APPENDIX B).
III.A.1.b. Momentum flux, Fm, is equal to 1000.331 ft<4>/sec<2>.
III.A.1.b. Effective stack height, he, is equal to 51.001 feet.
III.A.2. STANDARD POINT SOURCE Actual Annual Impact is equal
to 1.771 ug/m3 for 8762. hours/year of operation.
III.A.3. STANDARD POINT SOURCE Potential Annual Impact is equal
to 1.769 ug/m3 assuming 8,760 hours/year of operation.
III.A.4.a. Stack height to building height ratio is greater than
1.5, but less than 2.5. Computer will multiply actual
annual & potential annual impacts by 0.75 factor.

```

III.A.5. STANDARD POINT SOURCE Short-Term Impact is calculated below using the DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.

III.D. STANDARD POINT SOURCE Actual Annual Impact ( 1.328 ug/m3 ) is greater than AGC ( 1.000 ug/m3 ).

\*\*\*\* Refer to DAR-1 Section III.D.1. A refined site specific modeling analysis may be required. \*\*\*\*

III.D. STANDARD POINT SOURCE Potential Annual Impact ( 1.327 ug/m3 ) is greater than AGC ( 1.000 ug/m3 ).

\*\*\*\* Potential Annual Impact is based upon 8760 hours/year operation instead of reported 8762. hours/year. \*\*\*\*

2.0 DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.  
See "Technical Reference for the Screening Procedures of the DAR-1 Software Program, Wade/Sedefian, 1/11/94.

2.2 CAVITY Short-Term Impact is equal to 0.00 ug/m3 as the plume escaped the cavity region: hc( 40. feet ) > hc( 26. feet).

II.C. CAVITY Short-Term Impact ( 0.000 ug/m3 ) is less than SGC ( 1000.000 ug/m3 ).

2.3 Momentum flux,  $F_m$ , is equal to 1000.331 ft<sup>4</sup>/sec<sup>2</sup>.

2.3 Effective stack height,  $h_e$ , is equal to 51.001 feet.

2.4 Maximum non-downwash GEP stack Short-Term Impact (CSTP) is equal to 26.483 ug/m3, for  $h_c/h_b = 1.60$

2.5 Maximum downwash Short-Term Impact (CSTD) is equal to 88.340 ug/m3, for:  $h_c/h_b = 1.60$  and ESH = 51. feet.

2.6 Adjusted maximum downwash Short-Term (CSTD) is equal to 73.852 ug/m3, for: RF = 0.84

III.D. Maximum non-cavity Short-Term Impact (CST: 73.852 ug/m3 ) is less than the SGC ( 1000.000 ug/m3 ) for the point source.

2.7 Maximum Short-Term cavity, point, or area source impact (SHORT-TERM MAXIMUM, (Cav,Pt,Area)) equals 73.852 ug/m3 and is reported in the ANALYSIS MENU. This value is less than the SGC ( 1000.000 ug/m3 ).



VI. Contaminant Impact Summary Step by Step Menu for Vinyl Chloride:

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*****
NWIRP BETHPAGE GM-38 AREA          BETHPAGE          OYSTER BAY, NEW
EMISSION POINT =          TOTAL          CAS NUMBER = 00075-01-4          SIC = 0
AGC =          0.110000000 ug/m3          SGC =          180000.000000 ug/m3
STACK: HA=          15., SH=          40., D=          36., T=          80., U=          21.69, q=          9200.00
BUILDING: Dpl=          50., BW=          75., BL=          75., %CONTROL=          0.0000
** Reported Hourly Emission Rate <Q> is equal to          0.002600000 lbs/hour.
** Reported Annual Emission Rate <Qa> is equal to          22.930000 lbs/year.
II.B. REFINED CAVITY IMPACT MEIHOD <DAR-1, APPENDIX B>.
II.B.1. Shortest Distance from building to Property Line < 50. feet >
is less than or equal to the cavity length, or 3 building
heights < 75. feet >. Therefore, this building will have
cavity impacts <if they occur> at receptors off plant property.
II.B.2. The largest building dimension < 75. feet > is greater than or
equal to the building height < 25. feet >. Therefore, the
computer will NOT redefine the cavity length.
II.B.3. Stack height < 40. feet > is greater than cavity height
< 38. feet >. Therefore, this source does not contribute to
the buildings cavity impact. The Computer will assume the
CAVITY Annual Impact equals 0.00 ug/m3.
II.C. CAVITY Annual Impact < 0.000 ug/m3 > is less than AGC
< 0.110 ug/m3 >.
III.A. STANDARD POINT SOURCE METHOD <DAR-1, APPENDIX B>.
III.A.1.b. Momentum flux, Fm, is equal to 1000.331 ft<4>/sec<2>.
III.A.1.b. Effective stack height, he, is equal to 51.001 feet.
III.A.2. STANDARD POINT SOURCE Actual Annual Impact is equal
to 0.020 ug/m3 for 8819. hours/year of operation.
III.A.3. STANDARD POINT SOURCE Potential Annual Impact is equal
to 0.020 ug/m3 assuming 8,760 hours/year of operation.
III.A.4.a. Stack height to building height ratio is greater than
1.5, but less than 2.5. Computer will multiply actual
annual & potential annual impacts by 0.75 factor.

```

III.A.5. STANDARD POINT SOURCE Short-Term Impact is calculated below  
 using the DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.

III.D. STANDARD POINT SOURCE Actual Annual Impact  $\langle 0.015 \text{ ug/m}^3 \rangle$  is  
 less than AGC  $\langle 0.110 \text{ ug/m}^3 \rangle$ .

III.D. STANDARD POINT SOURCE Potential Annual Impact  $\langle 0.015 \text{ ug/m}^3 \rangle$   
 is less than AGC  $\langle 0.110 \text{ ug/m}^3 \rangle$ .

\*\*\*\* Potential Annual Impact is based upon 8760 hours/year \*\*\*\*  
 \*\*\*\* operation instead of reported 8819. hours/year. \*\*\*\*

2.0 DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.  
 See "Technical Reference for the Screening Procedures of the  
 DAR-1 Software Program, Wade/Sedefian," 1/11/94.

2.2 CAVITY Short-Term Impact is equal to  $0.00 \text{ ug/m}^3$  as the plume  
 escaped the cavity region:  $h_c \langle 40. \text{ feet} \rangle > h_c \langle 26. \text{ feet} \rangle$ .

II.C. CAVITY Short-Term Impact  $\langle 0.000 \text{ ug/m}^3 \rangle$  is less  
 than SGC  $\langle 180000.000 \text{ ug/m}^3 \rangle$ .

2.3 Momentum flux,  $F_m$ , is equal to  $1000.331 \text{ ft}^4/\text{sec}^2$ .

2.3 Effective stack height,  $h_e$ , is equal to  $51.001 \text{ feet}$ .

2.4 Maximum non-downwash GEP stack Short-Term Impact  $\langle \text{CSTP} \rangle$  is equal  
 to  $0.293 \text{ ug/m}^3$ , for  $h_c/h_b = 1.60$

2.5 Maximum downwash Short-Term Impact  $\langle \text{CSTD} \rangle$  is equal  
 to  $0.981 \text{ ug/m}^3$ , for:  $h_c/h_b = 1.60$  and  $ESH = 51. \text{ feet}$ .

2.6 Adjusted maximum downwash Short-Term  $\langle \text{CSTD} \rangle$  is equal  
 to  $0.820 \text{ ug/m}^3$ , for:  $RF = 0.84$

III.D. Maximum non-cavity Short-Term Impact  $\langle \text{CST} : 0.820 \text{ ug/m}^3 \rangle$  is  
 less than the SGC  $\langle 180000.000 \text{ ug/m}^3 \rangle$  for the point source.

2.7 Maximum Short-Term cavity, point, or area source impact  
 $\langle \text{SHORT-TERM MAXIMUM, } \langle \text{Cav, Pt, Area} \rangle \rangle$  equals  $0.820 \text{ ug/m}^3$   
 and is reported in the ANALYSIS MENU. This value is less than  
 the SGC  $\langle 180000.000 \text{ ug/m}^3 \rangle$ .



VII. Contaminant Impact Summary Step by Step Menu for cis 1,2-Dichloroethene:

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*****
NWIRP BETHPAGE GM-38 AREA          BETHPAGE          OYSTER BAY, NEW
EMISSION POINT =          TOTAL          CAS NUMBER = 00156-59-2          SIC = 0
AGC =          63.0000000000 ug/m3          SGC =          0.000000 ug/m3
STACK: HA=          15., SH=          40., D=          36., I=          80., U=          21.69, q=          9200.00
BUILDING: Dp1=          50., BW=          75., BL=          75., %CONTROL=          0.0000
** Reported Hourly Emission Rate <Q> is equal to          0.025800000 lbs/hour.
** Reported Annual Emission Rate <Qa> is equal to          226.000000 lbs/year.
II.B. REFINED CAVITY IMPACT METHOD <DAR-1, APPENDIX B>.
II.B.1. Shortest Distance from building to Property Line < 50. feet >
is less than or equal to the cavity length, or 3 building
heights < 75. feet >. Therefore, this building will have
cavity impacts <if they occur> at receptors off plant property.
II.B.2. The largest building dimension < 75. feet > is greater than or
equal to the building height < 25. feet >. Therefore, the
computer will NOT redefine the cavity length.
II.B.3. Stack height < 40. feet > is greater than cavity height
< 38. feet >. Therefore, this source does not contribute to
the buildings cavity impact. The Computer will assume the
CAVITY Annual Impact equals 0.00 ug/m3.
II.C. CAVITY Annual Impact < 0.000 ug/m3 > is less than AGC
< 63.000 ug/m3 >.
III.A. STANDARD POINT SOURCE METHOD <DAR-1, APPENDIX B>.
III.A.1.b. Momentum flux, Fm, is equal to 1000.331 ft<4>/sec<2>.
III.A.1.b. Effective stack height, he, is equal to 51.001 feet.
III.A.2. STANDARD POINT SOURCE Actual Annual Impact is equal
to 0.195 ug/m3 for 8760. hours/year of operation.
III.A.3. STANDARD POINT SOURCE Potential Annual Impact is equal
to 0.195 ug/m3 assuming 8,760 hours/year of operation.
III.A.4.a. Stack height to building height ratio is greater than
1.5, but less than 2.5. Computer will multiply actual
annual & potential annual impacts by 0.75 factor.

```

III.A.S. STANDARD POINT SOURCE Short-Term Impact is calculated below using the DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.

III.D. STANDARD POINT SOURCE Actual Annual Impact < 0.146 ug/m3 > is less than AGC < 63.000 ug/m3 >.

III.D. STANDARD POINT SOURCE Potential Annual Impact < 0.146 ug/m3 > is less than AGC < 63.000 ug/m3 >.

\*\*\*\* Potential Annual Impact is based upon 8760 hours/year \*\*\*\*  
 \*\*\*\* operation instead of reported 8760. hours/year. \*\*\*\*

2.0 DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.  
 See 'Technical Reference for the Screening Procedures of the DAR-1 Software Program, Wade/Sedefian,' 1/11/94.

2.2 CAVITY Short-Term Impact is equal to 0.00 ug/m3 as the plume escaped the cavity region: hs( 40. feet) > hc( 26. feet).

II.C. CAVITY Short-Term Impact is equal to 0.000 ug/m3.  
 There is no SGC for this contaminant.

2.3 Momentum flux, Fm, is equal to 1000.331 ft(4)/sec(2).

2.3 Effective stack height, he, is equal to 51.001 feet.

2.4 Maximum non-downwash GEP stack Short-Term Impact (CSIP) is equal to 2.909 ug/m3, for hs/hb = 1.60

2.5 Maximum downwash Short-Term Impact (CSTD) is equal to 9.732 ug/m3, for: hs/hb = 1.60 and ESH = 51. feet.

2.6 Adjusted maximum downwash Short-Term (CSTD) is equal to 8.136 ug/m3, for: RP = 0.84

III.D. Maximum non-cavity Short-Term Impact (CST) equals 8.136 ug/m3 for the point source. There is no SGC for this contaminant.

2.7 Maximum Short-Term cavity, point, or area source impact (SHORT-TERM MAXIMUM, (Cav,Pt,Area)) equals 8.136 ug/m3 and is reported in the ANALYSIS MENU.



VIII. Contaminant Impact Summary Step by Step Menu for 1,2-Dichloroethene (total):

```
*****
NWIRP BETHPAGE GM-38 AREA          BETHPAGE          OYSTER BAY, NEW
EMISSION POINT =          TOTAL          CAS NUMBER = 00540-59-0          SIC = 0
AGC =          63.000000000 ug/m3          SGC =          0.000000 ug/m3
STACK: HA=          15., SH=          40., D=          36., T=          80., U=          21.69, q=          9200.00
BUILDING: Dpl=          50., BW=          75., BL=          75., %CONTROL=          0.0000
** Reported Hourly Emission Rate <Q> is equal to          0.025800000 lbs/hour.
** Reported Annual Emission Rate <Qa> is equal to          226.000000 lbs/year.
II.B. REFINED CAVITY IMPACT METHOD <DAR-1, APPENDIX B>.
II.B.1. Shortest Distance from building to Property Line < 50. feet >
is less than or equal to the cavity length, or 3 building
heights < 75. feet >. Therefore, this building will have
cavity impacts <if they occur> at receptors off plant property.
II.B.2. The largest building dimension < 75. feet > is greater than or
equal to the building height < 25. feet >. Therefore, the
computer will NOT redefine the cavity length.
II.B.3. Stack height < 40. feet > is greater than cavity height
< 38. feet >. Therefore, this source does not contribute to
the buildings cavity impact. The Computer will assume the
CAVITY Annual Impact equals 0.00 ug/m3.
II.C. CAVITY Annual Impact < 0.000 ug/m3 > is less than AGC
< 63.000 ug/m3 >.
III.A. STANDARD POINT SOURCE METHOD <DAR-1, APPENDIX B>.
III.A.1.b. Momentum flux, Pm, is equal to 1000.331 ft<4>/sec<2>.
III.A.1.b. Effective stack height, he, is equal to 51.001 feet.
III.A.2. STANDARD POINT SOURCE Actual Annual Impact is equal
to 0.195 ug/m3 for 8760. hours/year of operation.
III.A.3. STANDARD POINT SOURCE Potential Annual Impact is equal
to 0.195 ug/m3 assuming 8,760 hours/year of operation.
III.A.4.a. Stack height to building height ratio is greater than
1.5, but less than 2.5. Computer will multiply actual
annual & potential annual impacts by 0.75 factor.
```



```

III.A.5. STANDARD POINT SOURCE Short-Term Impact is calculated below
         using the DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.

III.D. STANDARD POINT SOURCE Actual Annual Impact < 0.146 ug/m3 > is
         less than AGC < 63.000 ug/m3 >.

III.D. STANDARD POINT SOURCE Potential Annual Impact < 0.146 ug/m3 >
         is less than AGC < 63.000 ug/m3 >.

**** Potential Annual Impact is based upon 8760 hours/year ****
**** operation instead of reported 8760. hours/year. ****

2.0 DAR-1 SOFTWARE PROGRAM SHORT-TERM METHOD.
    See "Technical Reference for the Screening Procedures of the
    DAR-1 Software Program, Wade/Sedefian," 1/11/94.

2.2 CAVITY Short-Term Impact is equal to 0.00 ug/m3 as the plume
     escaped the cavity region: hs< 40. feet > hc< 26. feet >.

II.C. CAVITY Short-Term Impact is equal to 0.000 ug/m3.
       There is no SGC for this contaminant.

2.3 Momentum flux, Fm, is equal to 1000.331 ft<4>/sec<2>.

2.3 Effective stack height, he, is equal to 51.001 feet.

2.4 Maximum non-downwash GEP stack Short-Term Impact <CSTP> is equal
     to 2.909 ug/m3, for hs/hb = 1.60

2.5 Maximum downwash Short-Term Impact <CSTD> is equal
     to 9.732 ug/m3, for: hs/hb = 1.60 and ESH = 51. feet.

2.6 Adjusted maximum downwash Short-Term <CSTD> is equal
     to 8.136 ug/m3, for: RF = 0.84

III.D. Maximum non-cavity Short-Term Impact <CST> equals 8.136 ug/m3
       for the point source. There is no SGC for this contaminant.

2.7 Maximum Short-Term cavity, point, or area source impact
     <SHORT-TERM MAXIMUM, <Cav.Pt.Area>> equals 8.136 ug/m3
     and is reported in the ANALYSIS MENU.

```

IX. AGCs and SGCs for TCE, PCE, Vinyl Chloride, cis 1,2-Dichloroethene, and 1,2-Dichloroethene (total):

AGCs & SGCs				9/ 8/11	
				Page 1	
CAS NUMBER	CONTAMINANT NAME	SGC ug/m3	II O V	AGC ug/m3	II I O O V X CODES
00075-01-4	VINYL CHLORIDE	18000.00000	D	0.110000000	E H U HA
00079-01-6	TRICHLOROETHYLENE	14000.00000	Z	0.500000000	D M U HA
00127-10-4	TETRACHLOROETHYLENE	1000.00000	H	1.000000000	H M U HA
00156-59-2	DICHLOROETHYLENE, cis	0.00000		63.000000000	D M
00540-59-0	DICHLOROETHYLENE, 12	0.00000		63.000000000	D M



X. Contaminant Emissions Summary for TCE, PCE, Vinyl Chloride, cis 1,2-Dichloroethene, and 1,2-Dichloroethene (total):

CONTAMINANT EMISSIONS SUMMARY				9/ 8/11
				Page 1
CAS NUMBER	CONTAMINANT NAME	NUM. OF EPs PER CONTAM.	EMISSIONS (lbs/hour)	EMISSIONS (lbs/year)
00075-01-4	VINYL CHLORIDE	1	0.0026000	22.93000
00079-01-6	TRICHLOROETHYLENE	1	0.3444000	3017.00000
00127-10-4	TETRACHLOROETHYLENE	1	0.2342000	2052.00000
00156-59-2	DICHLOROETHYLENE, cis	1	0.0258000	226.00000
00540-59-0	DICHLOROETHYLENE, 12	1	0.0258000	226.00000
SUMMARY TOTALS		5	0.6328000	5543.93000

XI. Meter Grid Modeling Results for Maximum Annual Concentrations of TCE, within 25 meters:

CONCENTRATIONS x 10 <sup>-2</sup> (ug/m3) for 00079-01-6														09/08/11
AGC =														13:17:58
TIME	367000.	368000.	369000.	370000.	371000.	372000.	373000.	374000.	375000.	376000.	377000.	378000.	379000.	
4511000.	0.04	0.06	0.08	0.14	0.23	0.32	0.41	0.30	0.14	0.10	0.08	0.06	0.05	
4510000.	0.03	0.05	0.08	0.13	0.25	0.43	0.60	0.40	0.17	0.12	0.09	0.07	0.06	
4509000.	0.02	0.03	0.06	0.11	0.24	0.58	1.01	0.52	0.22	0.14	0.11	0.08	0.06	
4508000.	0.02	0.03	0.04	0.06	0.18	0.62	2.16	0.64	0.31	0.19	0.13	0.11	0.09	
4507000.	0.02	0.03	0.04	0.06	0.11	0.26	7.27	1.43	0.60	0.34	0.22	0.15	0.12	
4506000.	0.03	0.03	0.05	0.07	0.13	0.33	2.58	2.99	1.12	0.51	0.30	0.20	0.14	
4505000.	0.03	0.04	0.05	0.08	0.20	0.45	0.94	0.81	0.60	0.45	0.33	0.23	0.16	
4504000.	0.03	0.04	0.07	0.12	0.20	0.22	0.47	0.43	0.33	0.27	0.24	0.20	0.16	

TOP 100 CONTRIBUTORS TO MAXIMUM CONCENTRATION FOR 00079-01-6							09/08/11
@ UTMN: 373000. UTMN: 4507000.							13:17:58
Emission Point	Facility Name (shortened)	EP DIR	Distance to Max.(m)	CONC. ug/m3	Percent of Max.		
TOTAL	NWIRP BETHPAGE GM-38 AREA	SSE	539.	0.727E-01	100.000		
TOTAL OF ALL	1 CONTRIBUTORS						0.727E-01 100.000

XII. ISCLT Model Run Information, within 25 meters:

```

                                MODEL RUN INFORMATION
                                09/08/11
                                13:17:58

1. Current GRID SPACING equals 1000. meters.
2. Maximum Concentration (flashing) equals 0.0727115273 ug/m3
   @ UTME: 373000. UTMN: 4507000.

3. RUN FILE: TEMP?.RUN
4. METEOROLOGICAL FILE: ALB.MET
5. RUN MODE: URBAN
6. HALF-LIVES: not used to account for pollutant removal from air.
7. BLD. WAKE EFFECTS: AS-1 METHOD, All data KNOWN (hb, hv, hl, orientation)
8. EMISSIONS: ACTUAL ANNUAL EMISSIONS
9. SOURCES: All sources within 25. meters of
   UTME: 373275. UTMN: 4506537.
10. CONTAMINANT CAS NUMBER(s): 00079-01-6
11. EMISSION POINT - CONTAMINANT(s) found by computer: 1
12. No data is being copied to DUMP file.
```

**APPENDIX C**

**FIELD LOGS AND  
CHAIN OF CUSTODY DOCUMENTATION**



Date: 09/14/15



**Groundwater Level Measurement Sheet**

Project Site: NWIRP Bethpage - GM-38

Location: Bethpage, NY

Field Crew: SEIKA

Water Level Meter: Solinst

Weather: Clear, breezy 25°F

Time of Low Tide: N/A

Time of High Tide: N/A

Well ID	Time	Depth to Water (ft.)	Total Depth of Well / Screenshot Interval (ft.)	PID (ppm)	Comments
320/15 RW1-MW1	1118	32.15 39.36	435 / 395-435	---	
RW1-MW2	1815	41.68	435 / 395-435	---	
350/15 RW1-MW3	1148	32.15	435 / 395-435	---	
410/15 RW2-MW1	0940	42.28	510 / 470-510	---	
RW2-MW2	1122	41.31	510 / 470-510	---	
RW2-MW3	1120	41.21	510 / 470-510	---	
400/15 RW3-MW1	1313	39.35	350 / 330-350	---	
300/15 RW3-MW2	1405	41.10	495 / 475-495	---	
250/15 RW3-MW3	1000	41.25	340 / 320-340	---	
400/15 RW3-MW4	0811	43.47	495 / 475-495	---	
400/15 TP1	1642	36.86	470 / 450-470	---	
IW1-MW1	1810	37.90	470 / 450-470	---	
RW-1		GOOD	9/15/15		Open vault and check integrity of piping, etc.
RW-3		GOOD	9/15/15		Open vault and check integrity of piping, etc.

Signature: [Handwritten Signature]

Date: 9/14/15

# H&S Environmental, Inc.

Low Flow/ Low Stress Groundwater Sampling Log

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW | - MW |

Date: 09/15 /15  
 Sampler: JFKR  
 PID: \_\_\_\_\_



Start Time: 1135 End Time: 1245

### Field Testing Equipment

Well Construction: 4"  
 Depth to Water: 39.36  
 Well Depth: 435'  
 Water Column: ~395'  
 Total Volume Removed (L): ~14L  
 Dedicated Pump in Well?: No

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	Real 1
Marschalk Bladder Pump	24"	ID# 9987

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1140	~1.0	~200	39.34	21.16	5.22	160	9.43	244.3	0.26	clear
1145			39.32	18.21	4.72	160	4.50	261.8	0.51	"
1150			39.31	17.87	4.60	161	2.55	269.8	0.50	"
1155			39.31	17.67	4.47	161	1.82	276.5	0.30	"
1200			39.31	17.91	4.44	160	1.42	273.6	0.32	"
1205			39.31	18.31	4.41	160	1.11	279.7	0.22	"
1210			39.29	17.50	4.40	159	0.99	281.2	0.07	"
1215			39.27	17.43	4.38	158	0.94	281.0	0.15	"
1220			39.27	17.27	4.35	158	0.89	281.4	0.08	"
1225			39.27	17.36	4.35	159	0.85	279.6	0.21	"
1230			39.25	17.34	4.36	159	0.81	278.0	0.23	"
1235			39.23	17.25	4.37	160	0.81	274.1	0.12	"

Acceptance Criteria: <0.3ft    3%    ±0.1    3%    10%    ±10mv    10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
	NWIRP-GM-38-GW-	40 mL CG	3	---	TCL VOCs (624)
	RW   -MW   - 091515	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	---	TSS (SM2540D)

### Comments

Signature: [Signature] Date: 9/15/15

1.0 | ~200 | 39.22 | 17.30 | 4.38 | 159 | 0.80 | 272.3 | 0.17 | clear |

↓ | ↓ | 39.21 | 17.39 | 4.38 | 159 | 0.79 | 270.8 | 0.17 | 1/2

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW 1 - MW 3

Date: 09/14 /15  
 Sampler: DF, KA  
 PID: \_\_\_\_\_



Start Time: 1207 End Time: 1252

Well Construction: 4"

Depth to Water: 32.15

Well Depth: 435

Water Column: ~403'

Total Volume Removed (L): ~11L

Dedicated Pump in Well?: No

### Field Testing Equipment

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	
Marschalk Bladder Pump	24"	ID# 32510

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>o</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1207	1.1L	220	32.16	14.27	5.01	175	1.67	200.1	5.60	Clear
1212			32.15	13.98	4.98	177	1.15	183.1	5.78	"
1217			32.14	13.90	4.97	177	0.67	180.3	4.40	"
1222			32.14	13.89	4.97	177	0.56	180.6	3.89	"
1227			32.14	13.87	4.98	177	0.47	181.5	3.26	"
1232			32.14	13.88	4.98	177	0.35	182.0	3.87	"
1237			32.14	13.86	4.98	176	0.31	182.5	4.21	"
1242			32.10	13.89	5.00	176	0.26	181.7	3.46	"
1247			32.10	13.90	5.00	174	0.25	181.7	2.89	"
1252			32.10	13.87	5.00	174	0.25	181.7	3.27	"

Acceptance Criteria: <0.3ft    3%    ±0.1    3%    10%    ± 10mv    10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1252	NWIRP-GM-38-GW-	40 mL CG	3	---	TCL VOCs (624)
	RW 1 - MW 3	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	---	TSS (SM2540D)

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature: \_\_\_\_\_ Date: 9/14/15



# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW 2 - MW 1

Date: 09/14/15  
 Sampler: SP, KA  
 PID: \_\_\_\_\_



Start Time: 1000 End Time: 1050

### Field Testing Equipment

Well Construction: 4"  
 Depth to Water: 42.28  
 Well Depth: 510  
 Water Column: ~468'  
 Total Volume Removed (L): ~12L  
 Dedicated Pump in Well?: No

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	
Marschalk Bladder Pump	24"	ID# 32510

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>o</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1005	1.2L	24	42.25	14.61	6.85	161	0.09	174.1	5.65	Clear
1010			42.25	15.12	7.41	160	0.10	157.4	6.11	"
1015			42.25	15.13	7.81	149	0.13	-103.1	7.12	"
1020			42.25	15.14	6.73	173	0.15	-23.7	8.24	"
1025			42.25	15.13	6.47	181	0.16	-12.7	5.85	"
1030			42.22	15.12	5.87	203	0.27	7.3	5.65	"
1035			42.20	15.11	5.80	203	0.28	11.1	6.75	"
1040			42.18	15.08	5.79	203	0.25	12.5	5.07	"
1045			42.15	15.08	5.79	203	0.25	13.6	3.49	"
1050			42.15	15.18	5.79	203	0.23	14.3	3.59	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ± 10mv 10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1050	NWIRP-GM-38-GW-	40 mL CG	3	---	TCL VOCs (624)
	RW 2-MW 1 - 091415	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	---	TSS (SM2540D)

### Comments

collected equipment blank (EB-1-091415) after downing pump @ 1115

Signature

09/14/15  
 Date

# H&S Environmental, Inc.

Low Flow/ Low Stress Groundwater Sampling Log

pg 1/2

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW 3 - MW 1

Date: 09/15/15  
 Sampler: JR KA  
 PID: \_\_\_\_\_



Start Time: 1400 End Time: 1500

Well Construction: 4"  
 Depth to Water: 39.45  
 Well Depth: 495'  
 Water Column: ~455'  
 Total Volume Removed (L): ~16L  
 Dedicated Pump in Well?: No

### Field Testing Equipment

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	pent 1
Marschalk Bladder Pump	24"	ID# 9987

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>2</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1410	3.0	300	39.45	20.24	4.45	130	5.53	247.4	9.57	Clear
1415	1.5	↓	39.45	18.76	4.33	129	4.98	263.6	4.34	"
1420	1.5	250	39.44	18.50	4.30	129	4.89	267.9	4.01	"
1425	1.25	↓	39.42	18.67	4.34	128	4.63	268.2	3.67	"
1430	↓	↓	39.40	18.88	4.36	128	4.50	270.8	2.99	"
1435	↓	↓	39.40	18.82	4.36	128	4.50	271.3	2.78	"
1440	↓	↓	39.40	18.74	4.36	128	4.49	271.0	2.62	"
1445	↓	↓	39.40	18.73	4.38	128	4.43	271.6	2.89	"
1450	↓	↓	39.40	18.48	4.39	127	4.29	272.1	3.27	"
1455	↓	↓	39.40	18.53	4.39	127	4.26	272.0	2.80	"
1500	↓	↓	39.40	18.44	4.39	128	4.27	272.1	2.81	"

Acceptance Criteria: <0.3ft    3%    ±0.1    3%    10%    ±10mv    10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
	NWIRP-GM-38-GW-	40 mL CG	3	---	TCL VOCs (624)
	RW 3-MW 1 - 091515	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	---	TSS (SM2540D)

### Comments

See pg 2 for details -  
 could not use drop tube extension, silt & no flow - sample  
 using gas/water line & pump only (~265' BTCL)

Signature

9/15/15  
Date

pg 1/2



# H&S Environmental, Inc.

Low Flow/ Low Stress Groundwater Sampling Log

pg 2/2

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW3 - MW1

Date: 09/14/15  
 Sampler: JB, KA  
 PID: \_\_\_\_\_



Start Time: 1330 End Time: NA

### Field Testing Equipment

Well Construction: 4"  
 Depth to Water: 39.35  
 Well Depth: 350'  
 Water Column: 234'  
 Total Volume Removed (L): \_\_\_\_\_  
 Dedicated Pump in Well?: No

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	Panel 1
Marschalk Bladder Pump	24"	ID# 32510

9/14/15

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>o</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1335	0.6	120	39.35	22.14	4.66	119	3.60	266.7	9.78	Clear
1340			39.32	21.54	4.53	119	2.77	281.5	15.7	Clear w/ rusty bits
1345			39.31	22.37	4.50	119	2.47	285.0	30.2	
Flow rate continues to drop - stop purging - pull pump - bladder is collapsed Pull out pump & install new pump, still cannot get flow, water very turbid Pull out 2nd pump, take off drop tube extension, still no flow - 2nd pump bladder collapsed, pull out 2nd pump, Move into def well, then close lock w/ 3rd pump still cannot get flow, water very turbid Arrive at well, hook up pump 3 & drop extension - flow minimal & very turbid, no steps completely Pull out pump										

9/15/15

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ±10mv 10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
	NWIRP-GM-38-GW-	40 mL CG	3	---	TCL VOCs (624)
	RW3 -MW1 - 091415	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	---	TSS (SM2540D)
	NA				

### Comments

Tubing appears to hit bottom of well - pull up 12' from bottom  
 Thanks getting water initially, pressure up but this is low - see turbidity

Signature

Date

Pull out drop tube extension & rewire - 300 ft (very depth!) - bottom ss weights covered in fine silt  
 Install pump w/ only air/water line & sample from that depth - not in screen



# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW 3 - MW 3

Date: 09/15/15  
 Sampler: JG KA  
 PID: \_\_\_\_\_



Start Time: 1002 End Time: 1047

### Field Testing Equipment

Well Construction: 4"  
 Depth to Water: 41.25  
 Well Depth: 340'  
 Water Column: ~299'  
 Total Volume Removed (L): ~13L  
 Dedicated Pump in Well?: No

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	Realt 1
Marschalk Bladder Pump	24"	ID# 9987

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>o</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1007	~1.25	~250	41.34	16.92	4.92	139	3.35	251.0	8.79	Clear
1012			41.35	16.61	4.91	139	1.25	260.5	11.0	"
1017			41.32	16.47	4.86	139	1.24	270.4	7.82	"
1022			41.30	16.27	4.81	140	1.28	275.6	7.49	"
1027			41.30	16.27	4.81	140	1.30	276.3	8.23	"
1032			41.30	16.29	4.81	140	1.24	275.0	8.10	"
1037			41.30	16.27	4.82	140	1.23	272.9	9.53	"
1042			41.30	16.27	4.82	140	1.22	272.6	9.38	"
1047			41.30	16.28	4.81	140	1.21	272.6	9.40	"

Acceptance Criteria: <0.3ft    3%    ±0.1    3%    10%    ±10mv    10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
	NWIRP-GM-38-GW-	40 mL CG	3	—	TCL VOCs (624)
	RW 3-MW 3-091515	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	—	TSS (SM2540D)

### Comments

No issues, water came right up  
Slight orange red tint to water, but still clear

[Signature]  
 Signature

9/15/15  
 Date

# H&S Environmental, Inc.

Low Flow/ Low Stress Groundwater Sampling Log

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: RW 3 - MW 4

Date: 09/15/15  
 Sampler: JFKR  
 PID: \_\_\_\_\_



Start Time: 0840 End Time: 0940

### Field Testing Equipment

Well Construction: 4"  
 Depth to Water: 43.47  
 Well Depth: 495  
 Water Column: 451  
 Total Volume Removed (L): 12L  
 Dedicated Pump in Well?: No

Make	Model	Serial #
YSI	556	06E1361
LaMotte	2020e	4684-3514
QED	MP15	Wind 1
Marschalk Bladder Pump	24"	ID# 9987

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>o</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
<del>0850</del>	1.0	200	43.58	15.99	4.74	170	1.70	253.4	2.11	Clear
0855			43.58	15.87	4.24	159	0.80	282.4	1.15	"
0900			43.59	15.86	4.31	123	0.46	288.4	0.33	"
0905			43.60	15.86	4.31	117	0.30	296.3	0.15	"
0910			43.60	15.94	4.32	116	0.21	302.5	0.02	"
0915			43.60	15.91	4.34	117	0.18	307.4	1.02	"
0920			43.60	15.91	4.34	117	0.16	309.4	0.18	"
0925			43.60	15.92	4.37	117	0.12	312.7	0.38	"
0930			43.60	15.94	4.36	116	0.12	315.7	0.35	"
0935			43.59	15.95	4.35	117	0.11	317.2	0.28	"
0940			43.58	15.96	4.37	117	0.12	316.4	0.38	"

Acceptance Criteria: <0.3ft    3%    ±0.1    3%    10%    ±10mv    10%

2" Screen Volume = 0.16 gal/ft

6" Screen Volume = 1.46 gal/ft

4" Screen Volume = 0.64 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
0940	NWIRP-GM-38-GW-	40 mL CG	3	---	TCL VOCs (624)
	RW 3-MW 4-091515	500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
		250 mL PL	1	---	TSS (SM2540D)

### Comments

Had trouble getting water to come up - had to pull up NFA & set line to prime & pump

Signature

9/15/15  
Date

# H&S Environmental, Inc.

## Low Flow/ Low Stress Groundwater Sampling Log

Project: NWIRP Bethpage - GM-38  
 Location: Bethpage, NY  
 Well ID: TP1

Date: 09/14/15  
 Sampler: JK, KA  
 PID: \_\_\_\_\_



Start Time: 1702 End Time: 1737

### Field Testing Equipment

Well Construction: 4"  
 Depth to Water: 36.86  
 Well Depth: 470'  
 Water Column: ~433'  
 Total Volume Removed (L): ~9L  
 Dedicated Pump in Well?: No

Make	Model	Serial #
YSI	556	06F1361
LaMotte	2020e	4684-3514
QED	MP15	
Marschalk Bladder Pump	24"	ID# 9987

Time (hh:mm)	Volume Removed (L)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm <sup>o</sup> )	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color
1707	1.25	~250	37.02	16.04	5.61	166	7.94	161.7	1.86	Clear
1712			37.04	15.28	5.62	181	7.65	170.6	1.12	"
1712			37.08	15.28	5.62	182	7.57	180.2	0.69	"
1722			37.08	15.05	5.62	182	7.48	183.5	0.54	"
1727			37.09	15.09	5.63	182	7.47	187.4	0.35	"
1732			37.10	15.15	5.65	182	7.46	188.8	0.28	"
1737			37.11	15.15	5.65	182	7.47	190.5	0.20	"

Acceptance Criteria: <0.3ft 3% ±0.1 3% 10% ±10mv 10%

2" Screen Volume = 0.16 gal/ft  
 4" Screen Volume = 0.64 gal/ft

6" Screen Volume = 1.46 gal/ft

### Sample Collection

Time	Sample ID	Container	# Bottles	Preservative	Analysis
1737	NWIRP-GM-38-GW-TP1-091415	40 mL CG	3	---	TCL VOCs (624)
		500 mL PL	1	HNO <sub>3</sub>	Hg (245.1)
	TP-1-	250 mL PL	1	---	TSS (SM2540D)
055	DUP → 091415				
	- MS				
	- MSD				

### Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

[Signature]  
 Signature

9/14/15  
 Date







### Instrument Calibration Log

Project/Site Name: NWIRP Bethpage – GM-38

Date: 09/14/15

Weather: Clear, breezy, ~70°F

Calibrated By: KA

Instrument: YSI 556

Serial Number: 06F1361AE

Parameters	Morning Calibration	Cal. Temperature °C	Afternoon Cal. Check	Comments
	Time: <u>0920</u>		Time: <u>1705</u>	
Conductivity 1413 (µS/cm <sup>2</sup> )	<u>1410</u>	<u>20.79</u>	<del>1410</del> <u>1.410</u>	
pH (7)	<u>7.00</u>	<u>20.88</u>	<u>7.01</u>	
pH (4)	<u>4.01</u>	<u>20.86</u>	<u>3.96</u>	
pH (10)	<u>10.00</u>	<u>20.85</u>	<u>10.01</u>	
ORP 240 (mv)	<u>240</u>	<u>20.83</u>	<u>238</u>	
Dissolved Oxygen (%)	<u>100</u>	<u>OK</u>	<u>100</u>	
Zero Dissolved Oxygen (mg/L)	<u>10</u>		<u>10</u>	
Barometric Pressure (mmHg)				

pH Check (Every 3 hrs): Time: \_\_\_\_\_  
 Standard: NA  
 Reading: \_\_\_\_\_  
 (NJ only)

Time: \_\_\_\_\_  
 Standard: NA  
 Reading: \_\_\_\_\_

Time: \_\_\_\_\_  
 Standard: NA  
 Reading: \_\_\_\_\_

Signature: [Handwritten Signature]

Date: 9/14/15  
9/15/15



### Instrument Calibration Log

Project/Site Name: NWIRP Bethpage GM-38

Calibrated By: KA

Instrument/Serial Number	Pre-Cal 1-AM (NTU)	Pre-Cal 1-PM (NTU)	Pre-Cal 10-AM (NTU)	Pre-Cal 10-PM (NTU)	Post-Cal 1-AM (NTU)	Post-Cal 1-PM (NTU)	Post-Cal 10-AM (NTU)	Post-Cal 10-PM (NTU)	Date
LaMotte 2020e 4684-3514	0.97	0.81	9.96	9.94	1.00	1.00	10.00	10.00	9/14/15 Time: 0920 & 1500
"	0.98	0.81	10.19	10.29	1.00	1.00	10.00	10.00	9/15/15 Time: 756 & 1540
									Time: &
									Time: &
									Time: &
									Time: &
									Time: &
									Time: &
									Time: &
									Time: &
									Time: &

Signature: Wesley M. ...

Date: 9/15/15





### Instrument Calibration Log

Project/Site Name: NWIRP Bethpage – GM-38

Date: 09/15/15

Weather: Clear, 60°F

Calibrated By: KGA

Instrument: YSI 556

Serial Number: 06F1361AE

Parameters	Morning Calibration Time: <u>0745</u>	Cal. Temperature °C	Afternoon Cal. Check Time: <u>1540</u>	Comments
Conductivity 1413 (µS/cm²)	<u>1413</u>	<u>20.95</u>	<del>242</del> <u>1311</u> / <u>1413</u>	
pH (7)	<u>7.00</u>	<u>24.84</u>	<del>7.10</del> / <u>7.00</u>	
pH (4)	<u>3.97</u>	<u>25.47</u>	<u>10.27</u> / <u>10.00</u> ↙	
pH (10)	<u>10.01</u>	<u>25.79</u>	<u>4.03</u> / <u>4.00</u> ↘	
ORP 240 (mv)	<u>240</u>	<u>27.28</u>	<u>239.2</u> / <u>240.0</u>	
Dissolved Oxygen (%)	<u>100</u>	<u>27.45</u>	<u>94.5</u> / <u>101.1</u>	
Zero Dissolved Oxygen (mg/L)	<u>10</u>			
Barometric Pressure (mmHg)				

pH Check (Every 3 hrs): Time: \_\_\_\_\_  
 Standard: NA  
 Reading: \_\_\_\_\_  
 (NJ only)

Time: \_\_\_\_\_  
 Standard: NA  
 Reading: \_\_\_\_\_

Time: \_\_\_\_\_  
 Standard: NA  
 Reading: \_\_\_\_\_

Signature: [Signature]

Date: 9/15/15

9/15/15

RW1 setpoint 88.9

Lower to 73 @ 1525  $\approx$  800 gpm

RW3 setpoint 0.0

Raise to 73 @ 1530  $\approx$  200 gpm

Return to normal @ 1650

After checking integrity of  
piping in both vaults

**CHAIN OF CUSTODY/  
REQUEST FOR ANALYSIS**

Courier: \_\_\_\_\_  
Tracking #: \_\_\_\_\_

**COC#** \_\_\_\_\_

34 Dogwood Lane • Middletown, PA 17057 • 717.944.5541 • Fax: 717.944.1430

**Co. Name:** H&S Environmental, Inc.  
**Contact (Report to):** Jen Good **Phone:** 508.366.7442  
**Address:** 160 E. Main St., Suite 2F  
Westborough, MA 01581

**Bill to (if different than Report to):** Same **PO#:** 2031-507

**Project Name#:** NWIRP Bethpage GM-38 Qtrly LTM **ALSI Quote #:** \_\_\_\_\_  
**TAT:**  Normal-Standard TAT is 10-12 business days. **Date Required:** \_\_\_\_\_  
 Rush-Subject to ALSI approval and surcharges. **Approved By:** \_\_\_\_\_

**Email?**  -Y lgood@hsenv.com  
**Fax?**  -Y No:

***Container Type	40 mL	500 mL	250 mL																	
***Container Size	CG	PL	PL																	
***Preservative	--	HNO3	--																	

**ANALYSES/METHOD REQUESTED**

*G or C	**Matrix	TCL VOCs (Method 624)	Mercury (Method 245.1)	TSS (SM2540D)	Enter Number of Containers Per Analysis									

Sample Description/Location <small>(as it will appear on the lab report)</small>	COC Comments	Sample Date	Military Time	*G or C	**Matrix	Enter Number of Containers Per Analysis															
1 BP-GM-38-GW-RW1-MW1-091515		9/15/15	1245	G	GW	3	1	1													
2 BP-GM-38-GW-RW1-MW3-091415		9/14/15	1252	G	GW	3	1	1													
3 BP-GM-38-GW-RW2-MW1-091415		9/14/15	1050	G	GW	3	1	1													
4 BP-GM-38-GW-RW3-MW1-091515		9/15/15	1500	G	GW	3	1	1													
5 BP-GM-38-GW-RW3-MW2-091415		9/14/15	1523	G	GW	3	1	1													
6 BP-GM-38-GW-RW3-MW3-091515		9/15/15	1047	G	GW	3	1	1													
7 BP-GM-38-GW-RW3-MW4-091515		9/15/15	0940	G	GW	3	1	1													
8 BP-GM-38-GW-TP1-091415 MS/MSD for VOCs, Hg		9/14/15	1737	G	GW	3	1	1													

**Receipt information**  
(completed by Sample)

Performed by: \_\_\_\_\_ INITIAL HERE

Cooler Temp: \_\_\_\_\_  
Therm. ID: \_\_\_\_\_  
No. of Coolers: \_\_\_\_\_

**Notes:**

Correct containers?	Correct sample volume?	Correct preservation?	Headspace/Volatiles?	Circle appropriate Y or N.
Y	Y	Y	Y	
N	N	N	N	

Custody seals Present? (if present) Seals intact? Received on ice? COC/Labets complete/accurate? Container in good condition?

**SAMPLED BY (Please Print):** J. Good, K. Anderson **LOGGED BY (signature):** \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

**REVIEWED BY (signature):** \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 <u>[Signature]</u> / H&S	9/15/15	1800	2		
3			4		
5			6		
7			8		
9			10		

**Data Deliverables**

Standard  CLP-like  NJ-Reduced  NJ-Full

If yes, format type: \_\_\_\_\_

**State Samples Collected In?**

SDWA Permit?  MD  NJ  NY  PA

Other: \_\_\_\_\_ PWSID: \_\_\_\_\_

**EDOs Required?** \_\_\_\_\_

**DOO Criteria Required?** \_\_\_\_\_

**ALSI FIELD SERVICES**

Pickup  Labor  Composite Sampling  Rental Equipment  Other: \_\_\_\_\_



**Analytical Laboratory Services, Inc.**

Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middletown, PA 17057 • 717 944 5541 • Fax: 717 944 1430

**CHAIN OF CUSTODY/  
REQUEST FOR ANALYSIS**

Page 2 of 2  
 Courier: \_\_\_\_\_  
 Tracking #: \_\_\_\_\_  
 COC# \_\_\_\_\_

**Co. Name:** H&S Environmental, Inc.  
**Contact (Report to):** Jen Good  
**Address:** 160 E. Main St., Suite 2F  
 Westborough, MA 01581  
**Phone:** 508.366.7442

**Bill to (if different than Report to):** Same  
**Project Name/ID:** NWIRP Bethpage GM-38 Qtrly LTM  
**PO#:** 2031-507  
**ALSI Quote #:**

**TAT:**  Normal-Standard TAT is 10-12 business days.  
 Rush-Subject to ALSI approval and surcharges.  
**Date Required:**  
**Approved By:**

**Email?**  -Y jgood@hsenv.com  
**Fax?**  -Y No:

***Container Type	40 mL	500 mL	250 mL																		
***Container Size	CG	PL	PL																		
Preservative	-	HNO3	-																		

**ANALYSES/METHOD REQUESTED**

*G or C	**Matrix	TCL VOCs (Method 624)																				
		Mercury (Method 245.1)																				
		TSS (SM2540D)																				

**Enter Number of Containers Per Analysis**

Sample Description/Location <small>(as it will appear on the lab report)</small>	COC Comments	Sample Date	Military Time	*G or C	**Matrix	Enter Number of Containers Per Analysis																
1 BP-GM-38-TP1-DUP-091415		9/14/15	0050	G	GW	3	1	1														
2 BP-GM-38-RW3-091515		9/15/15	1630	G	GW	3	1	1														
3 BP-GM-38-EB-091415		9/14/15	1115	G	GW	3	1															
4 BP-GM-38-TB-091515		9/15/15		G	GW	3																
5																						
6																						
7																						
8																						

**Receipt Information**  
 (completed by Sample)  
 Performed by: \_\_\_\_\_ INITIAL HERE  
 Cooler Temp: \_\_\_\_\_  
 Therm. ID: \_\_\_\_\_  
 No. of Coolers: \_\_\_\_\_

**Notes:**

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle appropriate Y or N.
Correct containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Correct sample volume?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Correct preservation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Headspace/Volatiles?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Custody seals Present? (if present) Seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Container in good condition?
Received on ice?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC Labels complete/accurate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**SAMPLED BY (Please Print):**  
 J. Good, K. Anderson

**LOGGED BY (signature):** \_\_\_\_\_  
**REVIEWED BY (signature):** \_\_\_\_\_

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
J. Good / H&S	9/15/15	1800			

**Data Deliverables**  
 Standard  
 CLP-like  
 NJ-Reduced  
 NJ-Full  
 Other: \_\_\_\_\_  
 PWSID: \_\_\_\_\_

**State Samples Collected In?**  
 MD   
 NJ   
 NY   
 PA

**ALSI FIELD SERVICES**  
 Pickup  
 Labor  
 Composite Sampling  
 Rental Equipment  
 Other: \_\_\_\_\_

\* G=Grab; C=Composite    \*\* Matrix: A=Air; DW=Drinking Water; GW=Groundwater; O=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater  
 \*\*\* Container Type: AG-Amber Glass; CG-Clear Glass; PL-Plastic. Container Size: 250ml, 500ml, 1L, 8oz., etc. Preservative: HCl, HNO3, NaOH, etc.  
 Copies: WHITE - ORIGINAL    CANARY - CUSTOMER COPY  
 Rev 08-2005

**APPENDIX D**

**DATA VALIDATION REPORTS**

**VOLATILE ORGANIC COMPOUNDS**  
USEPA Region II –Data Validation

**Project Name:** Naval Weapons Industrial Reserve Plant, GM-38 Area-LTM  
**Location:** 100 Broadway, Bethpage, NY  
**Project Number:** 2031-707  
**SDG #:** G2095961-HNW-097  
**Client:** H&S Environmental, Inc.  
**Date:** 12/07/2015  
**Laboratory:** ALS Environmental, Middletown, PA  
**Reviewer:** Sherri Pullar

**Summary:**

1. Data validation was performed on the data for ten (10) water samples, one (1) trip blank and one (1) field blank analyzed for Volatiles by EPA Method 624.
2. The samples were collected on 9/14 thru 15/2015. The samples were submitted to ALS Environmental, Middletown, PA on 9/16/2015 for analysis.
3. The USEPA Region II SOP HW-24, Revision No.: 2, 2008, Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, SW-846 Method 8260B; USEPA National Functional Guidelines for Organic Data Review, EPA 540/R-99/008, October 1999; EPA Method 624 and Quality Assurance Project Plan for GM-38 Area, Naval Weapons Industrial Reserve Plant, Bethpage, NY; September 3, 2009 were used in evaluating the Volatiles data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Collection Date</b>	<b>Matrix</b>	<b>Sample Status</b>
BP-GM-38-GW-RW1-MW1-091515	2095961001	9/15/2015	Water	
BP-GM-38-GW-RW1-MW3-091515	2095961002	9/14/2015	Water	
BP-GM-38-GW-RW2-MW1-091515	2095961003	9/14/2015	Water	
BP-GM-38-GW-RW3-MW1-091515	2095961004	9/15/2015	Water	
BP-GM-38-GW-RW3-MW2-091415	2095961005	9/14/2015	Water	
BP-GM-38-GW-RW3-MW3-091515	2095961006	9/15/2015	Water	
BP-GM-38-GW-RW3-MW4-091515	2095961007	9/15/2015	Water	
BP-GM-38-GW-TP1-091415	2095961008	9/14/2015	Water	
BP-GM-38-GW-TP1-DUP-091415	2095961009	9/14/2015	Water	Field Duplicate of sample BP-GM-38-GW-TP1-091415
BP-GM-38-RW3-091515	2095961010	9/15/2015	Water	
BP-GM-38-EB-091415	2095961011	9/14/2015	Water	Field Blank
BP-GM-38-TB-091515	2095961012	9/15/2015	Water	Trip Blank

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were analyzed within 14days from sample collection. No qualifications were required.
2. All water samples were properly preserved (pH<2.0). No qualifications were required.

### **GC/MS Tuning:**

1. All of the BFB tunes in the initial and continuing calibrations met the percent relative abundance criteria. No qualifications were required.



**Initial Calibration:**

1. Initial calibration curve analyzed on 8/27/2015 (ms03.i) exhibited acceptable %RSD and average RRF values for all compounds. No qualifications were required.

**Continuing Calibration Verification (CCV):**

1. CCV analyzed on 9/17/2015 @ 20:05 (ms03.i) exhibited acceptable %Ds ( $\leq 15.0\%$ ) for all compounds with the following exception(s):

Compound	%D
Bromoform	-27.5

Client Sample ID	Laboratory Sample ID	Compound	Action
BP-GM-38-GW-RW1-MW1-091515	2095961001	Bromoform	UJ
BP-GM-38-GW-RW1-MW3-091515	2095961002	Bromoform	UJ
BP-GM-38-GW-RW2-MW1-091515	2095961003	Bromoform	UJ
BP-GM-38-GW-RW3-MW1-091515	2095961004	Bromoform	UJ
BP-GM-38-GW-RW3-MW2-091415	2095961005	Bromoform	UJ
BP-GM-38-GW-RW3-MW3-091515	2095961006	Bromoform	UJ
BP-GM-38-GW-RW3-MW4-091515	2095961007	Bromoform	UJ
BP-GM-38-GW-TP1-091415	2095961008	Bromoform	UJ
BP-GM-38-GW-TP1-DUP-091415	2095961009	Bromoform	UJ
BP-GM-38-RW3-091515	2095961010	Bromoform	UJ
BP-GM-38-EB-091415	2095961011	Bromoform	UJ
BP-GM-38-TB-091515	2095961012	Bromoform	UJ

2. CCV analyzed on 9/21/2015 @ 10:04 (ms03.i) exhibited acceptable %Ds ( $\leq 15.0\%$ ) for all compounds. No qualifications were required.

**Surrogates:**

1. All surrogates %REC values for all water samples and associated QC were within the laboratory control limits. No qualifications were required.

**Internal Standard (IS) Area Performance:**

1. All samples exhibited acceptable area count for all three internal standards. No qualifications were required.



**Method Blank (MB), Storage Blank (SB), Trip Blank (TB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB):**

1. Method Blank (2234047) analyzed on 9/17/2015 was free of contamination. No qualifications were required.
2. Method Blank (2235742) analyzed on 9/21/2015 was free of contamination. No qualifications were required.
3. Field Blank (BP-GM-38-EB-091415) (2095961011) analyzed on 9/17/2015 was free of contamination with the exception of the following:

Sample ID	Compound	Result (µg/l)	Action Level (5x)* (µg/l)	Sample(s) Affected	Action
2095961011	Bromomethane	0.30	1.5	BP-GM-38-GW-RW2-MW1-091515 BP-GM-38-GW-RW3-MW1-091515 BP-GM-38-GW-RW3-MW4-091515 BP-GM-38-GW-RW1-MW1-091515 BP-GM-38-GW-RW1-MW3-091515 BP-GM-38-GW-RW3-MW2-091415 BP-GM-38-GW-RW3-MW3-091515 BP-GM-38-GW-TP1-091415 BP-GM-38-GW-TP1-DUP-091415 BP-GM-38-RW3-091515 BP-GM-38-GW-RW1-MW1-091515	U U U U U U U U U U U None

4. Trip Blank (BP-GM-38-TB-091515) (2095961012) analyzed on 9/17/2015 was free of contamination with the exception of the following:

Sample ID	Compound	Result (µg/l)	Action Level (5x)* (µg/l)	Sample(s) Affected	Action
2095961012	Bromomethane	0.29	1.45	BP-GM-38-GW-RW2-MW1-091515 BP-GM-38-GW-RW3-MW1-091515 BP-GM-38-GW-RW3-MW4-091515 BP-GM-38-GW-RW1-MW1-091515 BP-GM-38-GW-RW1-MW3-091515 BP-GM-38-GW-RW3-MW2-091415 BP-GM-38-GW-RW3-MW3-091515 BP-GM-38-GW-TP1-091415 BP-GM-38-GW-TP1-DUP-091415 BP-GM-38-RW3-091515 BP-GM-38-GW-RW1-MW1-091515	None None None None None None None None None None None None

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Laboratory Control Sample (2234048) was analyzed on 09/17/2015. All %RECs were within the laboratory control limits. No qualifications were required.
2. Laboratory Control Sample (2235743) was analyzed on 09/21/2015. All %RECs were within the laboratory control limits. No qualifications were required.

**Field Duplicate:**

1. Sample BP-GM-38-GW-TP1-DUP-091415 (2095961009) was collected as field duplicate for sample BP-GM-38-GW-TP1-091415 (2095961008). All RPDs were ≤50.0%. No qualifications were required.

Field Sample	Compound	Analytical Method	Result	Units	Field Duplicate	Result	Units	RPD	Qualifier
BP-GM-38-GW-TP1-091515	1,1-Dichloroethane	EPA 624	2.1	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	2	µg/l	4.9	None
BP-GM-38-GW-TP1-091515	1,1-Dichloroethene	EPA 624	0.77	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	0.83	µg/l	7.5	None
BP-GM-38-GW-TP1-091515	1,2-Dichloroethane	EPA 624	0.82	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	0.82	µg/l	0	None
BP-GM-38-GW-TP1-091515	Chloroform	EPA 624	1.3	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	1.3	µg/l	0	None
BP-GM-38-GW-TP1-091515	Cis-1,2-Dichloroethene	EPA 624	11.3	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	11.6	µg/l	2.6	None
BP-GM-38-GW-TP1-091515	Tetrachloroethene	EPA 624	0.82	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	0.88	µg/l	7.1	None
BP-GM-38-GW-TP1-091515	Trichloroethene	EPA 624	53	µg/l	BP-GM-38-GW-RW3-MW3-DUP-20150325	53.9	µg/l	1.7	None

**Matrix Spike (MS)/ Matrix Spike Duplicate (MSD):**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample BP-GM-38-GW-TP1-091415 (2095961008). All %RECs and RPDs were within the laboratory control limits with the following exception(s):

Compound	%REC/%REC/RPD	Action
2-Chloroethylvinyl ether	0/0/NC	R

NA= Not Applicable; A=Acceptable; NC=Not Calculated

**Compound Quantitation and Reported Contract Required Quantitation Limits (CROLs):**

1. All results were within the linear calibration range. No qualifications were required.

**Target Compound Identification:**

1. All Relative Retention Times (RRTs) of the reported compounds were within  $\pm 0.06$  RRT units of the standard (opening CCV).
2. Sample compound spectra were compared against the laboratory standard spectra.
3. No QC deviations were observed.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: 2095961-HNW-097.

**MERCURY**  
USEPA Region II – Data Validation

**Project Name:** Naval Weapons Industrial Reserve Plant, GM-38 Area-LTM  
**Location:** 100 Broadway, Bethpage, NY  
**Project Number:** 2031-707  
**SDG #:** G2095961-HNW-097  
**Client:** H&S Environmental, Inc.  
**Date:** 12/07/2015  
**Laboratory:** ALS Environmental, Middletown, PA  
**Reviewer:** Sherri Pullar

**Summary:**

1. Data validation was performed on the data for ten (10) water samples and one (1) field blank analyzed for Mercury by EPA Method 245.1.
2. The samples were collected on 3/25 thru 26/2015. The samples were submitted to ALS Environmental, Middletown, PA on 3/27/2015 for analysis.
3. The USEPA Region II SOP No. HW-2, Revision 13, September 2006, Validation of Metals for Contract Laboratory Program (CLP), SOW-ILM05.3 (SOP Revision 13); USEPA National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, October 2004 and Quality Assurance Project Plan for GM-38 Area, Naval Weapons Industrial Reserve Plant, Bethpage, NY; September 3, 2009 were used in evaluating the Mercury data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).

### Samples:

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Collection Date</b>	<b>Matrix</b>	<b>Sample Status</b>
BP-GM-38-GW-RW1-MW1-091515	2095961001	9/15/2015	Water	
BP-GM-38-GW-RW1-MW3-091515	2095961002	9/14/2015	Water	
BP-GM-38-GW-RW2-MW1-091515	2095961003	9/14/2015	Water	
BP-GM-38-GW-RW3-MW1-091515	2095961004	9/15/2015	Water	
BP-GM-38-GW-RW3-MW2-091415	2095961005	9/14/2015	Water	
BP-GM-38-GW-RW3-MW3-091515	2095961006	9/15/2015	Water	
BP-GM-38-GW-RW3-MW4-091515	2095961007	9/15/2015	Water	
BP-GM-38-GW-TP1-091415	2095961008	9/14/2015	Water	
BP-GM-38-GW-TP1-DUP-091415	2095961009	9/14/2015	Water	Field Duplicate of sample BP-GM-38-GW-TP1-091415
BP-GM-38-RW3-091515	2095961010	9/15/2015	Water	
BP-GM-38-EB-091415	2095961011	9/14/2015	Water	Field Blank

### Sample Conditions/Problems:

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### Holding Times:

1. All water samples were digested and analyzed within the 28 days holding times for Mercury. No qualifications were required.

**Initial and Continuing Calibration Verification (ICV and CCV):**

1. The correlation coefficient for Mercury calibration curve analyzed was  $\geq 0.995$ . No qualifications were required.
2. All ICVs and CCVs %REC values were within the QC limits (80-120%). No qualifications were required.

**Blanks (Method Blank, ICB and CCB):**

1. All ICBs and CCBs were free of contamination with the following exception(s):
2. Method Blank (247366) digested on 10/15/2015 was free of contamination. No qualifications were required.

**Field Blank (FB) and Equipment Blank (EB):**

1. Field Blank (BP-GM-38-EB-091415) (2095961011) analyzed on 4/03/2015 was free of contamination. No qualifications were required.

**Laboratory Control Sample (LCS)/ Laboratory Control Sample Duplicate (LCSD):**

1. Mercury %REC in Laboratory Control Sample (247366) analyzed on 10/16/2015 was within the laboratory control limits. No qualifications were required.

**Field Duplicate:**

1. Sample BP-GM-38-GW-TP1-DUP-091415 (2095961009) was collected as field duplicate for sample BP-GM-38-GW-TP1-091415 (2095961008). Both samples were reported as non-detects. No qualifications were required.

**Laboratory Duplicate:**

1. Laboratory Duplicate was performed on sample BP-GM-38-GW-TP1-091415 (2095961008). All RPDs were within the laboratory control limits. No qualifications were required.

**Matrix Spike (MS)/ Matrix Spike Duplicate (MSD) and Duplicate:**

1. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) were performed on sample BP-GM-38-GW-TP1-091415 (2095961008). All %RECs and RPD were within the laboratory control limits. No qualifications were required.

**Compound Quantitation and Reported Detection Limits:**

1. All sample results were reported within the linear calibration range.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: G2095961-HNW-097.

**GENERAL CHEMISTRY**  
USEPA Region II – Data Validation

**Project Name:** Naval Weapons Industrial Reserve Plant, GM-38 Area-LTM  
**Location:** 100 Broadway, Bethpage, NY  
**Project Number:** 2031-707  
**SDG #:** G2095961-HNW-097  
**Client:** H&S Environmental, Inc.  
**Date:** 12/07/2015  
**Laboratory:** ALS Environmental, Middletown, PA  
**Reviewer:** Sherri Pullar

**Summary:**

1. Data validation was performed on the data for ten (10) water samples analyzed for Solids, Total Suspended (TSS) by SM20<sup>th</sup> 2540D.
2. The samples were collected on 9/14 thru 15/2015. The samples were submitted to ALS Environmental, Middletown, PA on 9/16/2015 for analysis.
3. The USEPA Region II SOP No. HW-2, Revision 13, September 2006, Validation of Metals for Contract Laboratory Program (CLP), SOW-ILM05.3 (SOP Revision 13); USEPA National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, October 2004 and Quality Assurance Project Plan for GM-38 Area, Naval Weapons Industrial Reserve Plant, Bethpage, NY; September 3, 2009 were used in evaluating the Solids, Total Suspended data in this summary report.
4. In general, the data are valid as reported and may be used for decision making purposes. Selected data points were qualified due to nonconformance of certain Quality Control criteria (See discussion below).





### **Samples:**

The samples included in this review are listed below:

<b>Client Sample ID</b>	<b>Laboratory Sample ID</b>	<b>Collection Date</b>	<b>Matrix</b>	<b>Sample Status</b>
BP-GM-38-GW-RW1-MW1-091515	2095961001	9/15/2015	Water	
BP-GM-38-GW-RW1-MW3-091515	2095961002	9/14/2015	Water	
BP-GM-38-GW-RW2-MW1-091515	2095961003	9/14/2015	Water	
BP-GM-38-GW-RW3-MW1-091515	2095961004	9/15/2015	Water	
BP-GM-38-GW-RW3-MW2-091415	2095961005	9/14/2015	Water	
BP-GM-38-GW-RW3-MW3-091515	2095961006	9/15/2015	Water	
BP-GM-38-GW-RW3-MW4-091515	2095961007	9/15/2015	Water	
BP-GM-38-GW-TP1-091415	2095961008	9/14/2015	Water	
BP-GM-38-GW-TP1-DUP-091415	2095961009	9/14/2015	Water	Field Duplicate of sample BP-GM-38-GW-TP1-091415
BP-GM-38-RW3-091515	2095961010	9/15/2015	Water	

### **Sample Conditions/Problems:**

1. The Traffic Reports/Chain-of-Custody Records, Sampling Report and/or Laboratory Case Narrative did not indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data. No qualifications were required.

### **Holding Times:**

1. All water samples were analyzed within the 7 days holding times for Solids, Total Suspended. No qualifications were required.

**Method Blank (MB), Storage Blank (SB), Field Blank (FB), Rinsate Blank (RB) and Equipment Blank (EB):**

1. Method Blank (2234911) analyzed on 9/20/2015 was free of contamination. No qualifications were required.
2. Method Blank (2234916) analyzed on 9/20/2015 was free of contamination. No qualifications were required.

**Field Duplicate:**

1. Sample BP-GM-38-GW-TP1-DUP-091415 (2095961009) was collected as field duplicate for sample BP-GM-38-GW-TP1-091415 (2095961008). Both samples were reported as non-detects. No qualifications were required.

**Laboratory Duplicate:**

1. Sample Duplicate was performed on sample BP-GM-38-GW-TP1-091415 (2095961008). All RPDs were within the laboratory control limits. No qualifications were required.

**Compound Quantitation and Reported Detection Limits:**

1. All sample results were reported within the linear calibration range.

**Comments:**

1. Validation qualifiers (if required) were entered into the EDD for SDG: 2095961-HNW-097.



**NWIRP BETHPAGE GM-38  
 SEPTEMBER 2015 EVENT  
 DATA SUMMARY TABLE  
 AQUEOUS  
 SDG: 2095961, HNW-097**

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Tetrachloroethene	0.62	ug/L	J	0.26	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	cis-1,2-Dichloroethene	22	ug/L		0.26	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	trans-1,2-Dichloroethene	0.5	ug/L	J	0.12	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Bromomethane	2	ug/L	U	0.27	2
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,1-Dichloroethane	5.1	ug/L		0.19	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,1-Dichloroethene	1.9	ug/L		0.17	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	Trichloroethene	98.9	ug/L		0.21	1



**NWIRP BETHPAGE GM-38  
 SEPTEMBER 2015 EVENT  
 DATA SUMMARY TABLE  
 AQUEOUS  
 SDG: 2095961, HNW-097**

Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	624	9152015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW1-MW1-09151	2095961001	2540D	9152015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-RW1-MW1-09151	2095961001	7470A	9152015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Tetrachloroethene	0.5	ug/L	J	0.26	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	cis-1,2-Dichloroethene	0.49	ug/L	J	0.26	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,1,1-Trichloroethane	1.6	ug/L		0.27	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Bromomethane	0.4	ug/L	U	0.27	2
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,1-Dichloroethane	7.7	ug/L		0.19	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,1-Dichloroethene	2.3	ug/L		0.17	1



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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,1,2-Trichloroethane	0.44	ug/L	J	0.3	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	Trichloroethene	2.4	ug/L		0.21	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	624	9142015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW1-MW3-09151	2095961002	2540D	9142015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-RW1-MW3-09151	2095961002	7470A	9142015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,2-Dichloroethane	1.4	ug/L		0.22	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Tetrachloroethene	1	ug/L	U	0.26	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	cis-1,2-Dichloroethene	13.3	ug/L		0.26	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Chloroform	2.2	ug/L		0.15	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Bromomethane	0.7	ug/L	U	0.27	2
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Methylene Chloride	1	ug/L	U	0.32	1



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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,1-Dichloroethane	6.3	ug/L		0.19	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,1-Dichloroethene	2.6	ug/L		0.17	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	Trichloroethene	27.5	ug/L		0.21	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	624	9142015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW2-MW1-09151	2095961003	2540D	9142015	1	Total Suspended Solids	11	mg/L		5	5
BP-GM-38-GW-RW2-MW1-09151	2095961003	7470A	9142015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Tetrachloroethene	1.6	ug/L		0.26	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	cis-1,2-Dichloroethene	1	ug/L	U	0.26	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,1,1-Trichloroethane	0.36	ug/L	J	0.27	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Bromomethane	0.43	ug/L	U	0.27	2





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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,1-Dichloroethane	0.76	ug/L	J	0.19	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,1-Dichloroethene	0.41	ug/L	J	0.17	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	Trichloroethene	45.4	ug/L		0.21	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	624	9152015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW3-MW1-09151	2095961004	2540D	9152015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-RW3-MW1-09151	2095961004	7470A	9152015	1	Mercury	0.044	ug/L	J		0.1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Tetrachloroethene	0.52	ug/L	J	0.26	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	cis-1,2-Dichloroethene	1.4	ug/L		0.26	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1



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 DATA SUMMARY TABLE  
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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,1,1-Trichloroethane	0.41	ug/L	J	0.27	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Bromomethane	0.32	ug/L	U	0.27	2
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,1-Dichloroethane	0.47	ug/L	J	0.19	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,1-Dichloroethene	0.3	ug/L	J	0.17	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	Trichloroethene	169	ug/L		0.21	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	624	9142015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW3-MW2-09141	2095961005	2540D	9142015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-RW3-MW2-09141	2095961005	7470A	9142015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Tetrachloroethene	0.77	ug/L	J	0.26	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	cis-1,2-Dichloroethene	1.3	ug/L		0.26	1





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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,1,1-Trichloroethane	0.36	ug/L	J	0.27	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Bromomethane	0.31	ug/L	U	0.27	2
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,1-Dichloroethane	1.2	ug/L		0.19	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,1-Dichloroethene	1.1	ug/L		0.17	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	Trichloroethene	138	ug/L		0.21	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	624	9152015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW3-MW3-09151	2095961006	2540D	9152015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-RW3-MW3-09151	2095961006	7470A	9152015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Chlorobenzene	1	ug/L	U	0.11	1



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 DATA SUMMARY TABLE  
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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Tetrachloroethene	0.31	ug/L	J	0.26	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	cis-1,2-Dichloroethene	1	ug/L	U	0.26	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Bromomethane	0.31	ug/L	U	0.27	2
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,1-Dichloroethane	0.88	ug/L	J	0.19	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,1-Dichloroethene	0.21	ug/L	J	0.17	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	Trichloroethene	4.1	ug/L		0.21	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	624	9152015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-RW3-MW4-09151	2095961007	2540D	9152015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-RW3-MW4-09151	2095961007	7470A	9152015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,1-Dichloroethane	2.1	ug/L		0.19	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,1-Dichloroethene	0.77	ug/L	J	0.17	1



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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,2-Dichloroethane	0.82	ug/L	J	0.22	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	2-Chloroethylvinyl ether	2	ug/L	R	0.28	2
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Bromomethane	0.29	ug/L	U	0.27	2
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Chloroform	1.3	ug/L		0.15	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	cis-1,2-Dichloroethene	11.3	ug/L		0.26	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Tetrachloroethene	0.82	ug/L	J	0.26	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Trichloroethene	53	ug/L		0.21	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-TP1-091415	2095961008	624	9142015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-TP1-091415	2095961008	2540D	9142015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-TP1-091415	2095961008	7470A	9142015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Ethylbenzene	1	ug/L	U	0.16	1



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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,1-Dichloroethane	2	ug/L		0.19	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,1-Dichloroethene	0.83	ug/L	J	0.17	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,2-Dichloroethane	0.82	ug/L	J	0.22	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Chloroform	1.3	ug/L		0.15	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Bromomethane	0.32	ug/L	U	0.27	2
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	cis-1,2-Dichloroethene	11.6	ug/L		0.26	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Tetrachloroethene	0.88	ug/L	J	0.26	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1



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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-GW-TP1-DUP-09141	2095961009	624	9142015	1	Trichloroethene	53.9	ug/L		0.21	1
BP-GM-38-GW-TP1-DUP-09141	2095961009	2540D	9142015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-GW-TP1-DUP-09141	2095961009	7470A	9142015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Tetrachloroethene	0.68	ug/L	J	0.26	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	cis-1,2-Dichloroethene	1.6	ug/L		0.26	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,1,1-Trichloroethane	0.96	ug/L	J	0.27	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Bromomethane	0.27	ug/L	U	0.27	2
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,1-Dichloroethane	1.9	ug/L		0.19	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,1-Dichloroethene	1.9	ug/L		0.17	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1





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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,1,2-Trichloroethane	0.3	ug/L	J	0.3	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-RW3-091515	2095961010	624	9152015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-RW3-091515	2095961010	624	9152015	5	Trichloroethene	237	ug/L		1.1	5
BP-GM-38-RW3-091515	2095961010	2540D	9152015	1	Total Suspended Solids	5	mg/L	U	5	5
BP-GM-38-RW3-091515	2095961010	7470A	9152015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-EB-091415	2095961011	624	9142015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-EB-091415	2095961011	624	9142015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Tetrachloroethene	1	ug/L	U	0.26	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	cis-1,2-Dichloroethene	1	ug/L	U	0.26	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Bromomethane	0.3	ug/L	J	0.27	2
BP-GM-38-EB-091415	2095961011	624	9142015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Chloroethane	1	ug/L	U	0.24	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-EB-091415	2095961011	624	9142015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Bromoform	2	ug/L	UJ	0.21	2



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 DATA SUMMARY TABLE  
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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-EB-091415	2095961011	624	9142015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,1-Dichloroethane	1	ug/L	U	0.19	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,1-Dichloroethene	1	ug/L	U	0.17	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	Trichloroethene	1	ug/L	U	0.21	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-EB-091415	2095961011	624	9142015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1
BP-GM-38-EB-091415	2095961011	7470A	9142015	1	Mercury	0.1	ug/L	U		0.1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Ethylbenzene	1	ug/L	U	0.16	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	cis-1,3-Dichloropropene	1	ug/L	U	0.12	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	trans-1,3-Dichloropropene	1	ug/L	U	0.14	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,4-Dichlorobenzene	1	ug/L	U	0.15	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Acrolein	30	ug/L	U	2.4	30
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,2-Dichloroethane	1	ug/L	U	0.22	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Acrylonitrile	5	ug/L	U	0.89	5
BP-GM-38-TB-091515	2095961012	624	9152015	1	Toluene	1	ug/L	U	0.12	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Chlorobenzene	1	ug/L	U	0.11	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	2-Chloroethylvinyl ether	2	ug/L	U	0.28	2
BP-GM-38-TB-091515	2095961012	624	9152015	1	Chlorodibromomethane	1	ug/L	U	0.22	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Tetrachloroethene	1	ug/L	U	0.26	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	cis-1,2-Dichloroethene	1	ug/L	U	0.26	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	trans-1,2-Dichloroethene	1	ug/L	U	0.12	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,3-Dichlorobenzene	1	ug/L	U	0.14	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,3-Dichloropropene, Tota	1	ug/L	U	0.19	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Carbon Tetrachloride	1	ug/L	U	0.24	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Chloroform	1	ug/L	U	0.15	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Benzene	1	ug/L	U	0.16	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,1,1-Trichloroethane	1	ug/L	U	0.27	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Bromomethane	0.29	ug/L	J	0.27	2
BP-GM-38-TB-091515	2095961012	624	9152015	1	Chloromethane	1	ug/L	U	0.25	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Chloroethane	1	ug/L	U	0.24	1



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Sample Name	Lab ID	Analytical Method	Sample Date	Dilution Factor	Analyte	Result	Unit	Qualifier	DL	LOD
BP-GM-38-TB-091515	2095961012	624	9152015	1	Vinyl Chloride	2	ug/L	U	0.24	2
BP-GM-38-TB-091515	2095961012	624	9152015	1	Methylene Chloride	1	ug/L	U	0.32	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Bromoform	2	ug/L	UJ	0.21	2
BP-GM-38-TB-091515	2095961012	624	9152015	1	Bromodichloromethane	1	ug/L	U	0.13	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,1-Dichloroethane	1	ug/L	U	0.19	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,1-Dichloroethene	1	ug/L	U	0.17	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Trichlorofluoromethane	1	ug/L	U	0.21	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,2-Dichloropropane	1	ug/L	U	0.24	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,1,2-Trichloroethane	1	ug/L	U	0.3	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	Trichloroethene	1	ug/L	U	0.21	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,1,2,2-Tetrachloroethane	1	ug/L	U	0.22	1
BP-GM-38-TB-091515	2095961012	624	9152015	1	1,2-Dichlorobenzene	1	ug/L	U	0.2	1