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A Division of D&B Engineers and Architects, P.C.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation
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ACTIVE INDUSTRIAL UNIFORM SITE GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

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REPORT TITLE

Site Management Quarterly Report No. 30

REPORTING PERIOD

April 1, 2012 through June 30, 2012

CLIENT

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Site

NYSDEC Site No. 152125, Active Industrial Uniform Site Groundwater Extraction and Treatment System, Village of Lindenhurst, Town of Babylon, Suffolk County, New York.

Project Background and Site Description

The Active Industrial Uniform (the Site) groundwater extraction and treatment system (GWE&TS) was designed to recover and treat a chlorinated solvent-contaminated groundwater plume emanating from the Site, a former dry cleaning and laundry facility. Dry cleaning activities were conducted at the Site from the 1980's to 1987. The GWE&TS has been in operation since December 2001; however, D&B assumed site management duties for the Site in February 2005. Refer to *Figure 1* for a Site location map depicting the GWE&TS location.

Groundwater Extraction and Treatment System Overview

The GWE&TS consists of two, 8-inch diameter extraction wells, with one located on-site in the southwest portion of the Site (RW-1), and one located off-site, approximately 1,500 feet southwest of the Site (RW-2). As per NYSDEC direction, extraction well RW-2 was shut-down in April 2010 due to low historic VOC concentrations. This well is now being monitored on a quarterly basis. Extracted groundwater is conveyed to the GWE&TS building via underground piping to two series-configured packed-tower air strippers. Based on an evaluation of each of the packed-tower air stripper's performance over the last several years of operation and in order to reduce the electrical consumption of the overall GWE&TS, one of the two air stripper towers was taken out of service in May 2011. Treated groundwater is pumped via underground piping to a storm water basin located approximately 1,000 feet west of the Site, which subsequently discharges into Little Neck Creek, in accordance with all applicable discharge standards. Exhaust gas from each air stripper tower was treated utilizing two granular activated carbon (GAC) vessels in series. Based on low historic contaminant concentrations detected in the air stripper exhaust gas, the air stripper exhaust piping was reconfigured to bypass the GAC vessels and discharge directly to the atmosphere in June 2011, per the direction of the NYSDEC. The GWE&TS is equipped with instrumentation and controls which allow for automated start-up and operation, and an autodial alarm notification system. Refer to *Figure 2* for an "as-built" system layout diagram.

Regulatory Requirements/Cleanup Goals

Site-specific remedial goals have been established through the remedy selection process and are documented in the Record of Decision (ROD), dated March 1997. The overall goal is to meet all appropriate Standards, Criteria, and Guidance (SCGs) and to be protective of human health and the environment. Implementation of the GWE&TS is specifically focused on the following goals:

- Reduce, control, or eliminate contaminated media to the extent practicable;

- Eliminate the threat to surface waters by remediating groundwater to the extent practicable;
- Mitigate the impacts of contaminated groundwater to the environment;
- Prevent, to the extent possible, migration of contaminants;
- Provide for attainment of SCGs for groundwater, soil and indoor air within the limits of the affected area, to the extent practical; and
- Reduce the threat of inhalation of site-related vapor-phase contaminants to residents within homes downgradient of the Site.

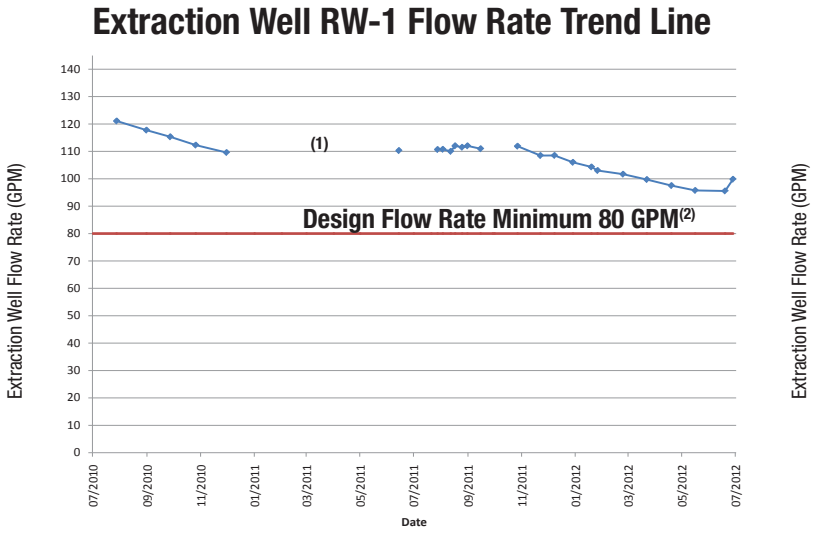
Treatment System Performance Summary

The GWE&TS performance during the current reporting period and since D&B assumed O&M duties in February 2005 is summarized below.

System Extraction Rates and Total Flow Volumes

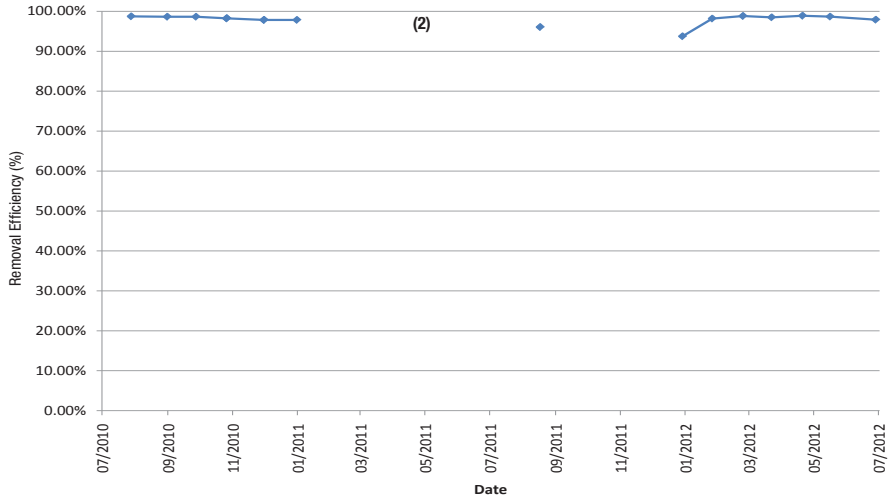
	RW-1	RW-2 (1)	System Effluent
Average Pumping Rate - Current Reporting Period	97 gpm	NA	94 gpm
Average Pumping Rate - Previous Reporting Period	102 gpm	NA	104 gpm
Average Pumping Rate to Date	75 gpm	80 gpm	104 gpm
Total Flow Volume - Current Reporting Period	11,687,574 gal.	NA	11,633,079 gal.
Total Flow Volume to Date	321,566,562 gal.	129,900,729 gal.	449,346,323 gal.

NA: Not applicable
1. As described above, extraction well RW-2 was shut down in April 2010 based on low historic VOC concentrations, as per NYSDEC direction.



1. The GWE&TS did not operate the majority of the time from December 2010 through July 2011 and September 2011 through October 2011 due to a carbon vessel bed screen failure and residential neighbor complaints pertaining to a loud noise being emitted by the GWE&TS exhaust piping.
2. Based on design information presented in the Active Industrial design documents, containment of the Active Industrial chlorinated plume could be achieved with on-site extraction well RW-1 operating at a minimum of 80% of the design flow rate of 100 GPM (80 GPM).

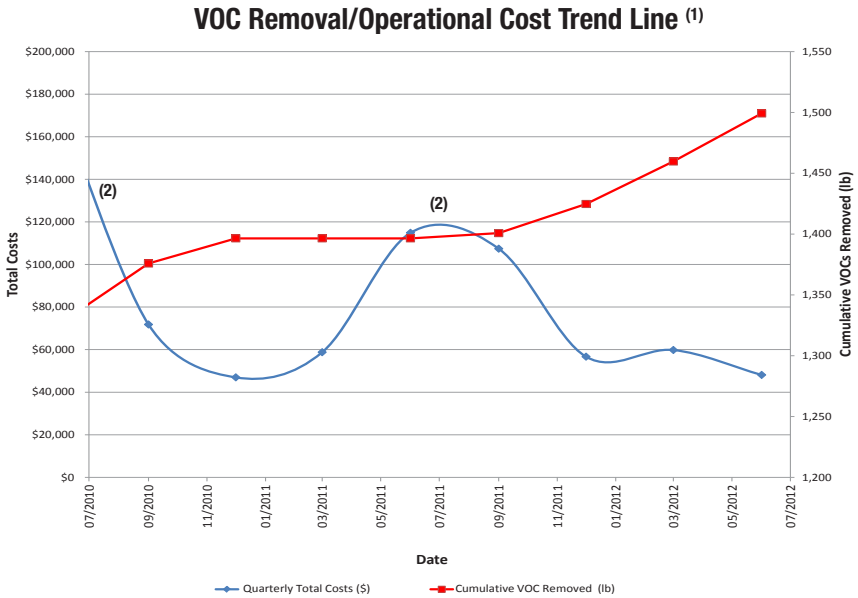
Air Stripper VOC Removal Efficiency [1]



VOC Removal Assessment [3]	
VOC Removal - Current Reporting Period	39.49 lbs.
VOC Removal - Previous Reporting Period	34.92 lbs.
Average VOC Removal to Date	26.49 lbs.
Total VOC Removal to Date	1,499 lbs.

VOC Removal Costs [3]	
VOC Removal Cost - Current Reporting Period [4]	$1,218 per lb.
VOC Removal Cost - Previous Reporting Period	$1,713 per lb.
Average VOC Removal Cost to Date [4]	$1,958 per lb.

1. The packed-tower air strippers have operated at an approximate efficiency ranging from 92.65% to 99.47% since D&B assumed O&M duties in February 2005.
2. The GWE&TS did not operate the majority of the time from December 2010 through July 2011 and September 2011 through October 2011 due to a shut down related to a carbon vessel bed screen failure and residential neighbor complaints pertaining to a loud noise being emitted by the GWE&TS exhaust piping.
3. The VOC removal costs include monthly utility charges, maintenance costs and engineering costs. Capital construction costs and NYSDEC project management effort are not included in this evaluation.
4. Average calculated from when D&B assumed O&M duties in February 2005 through this reporting period.



1. The VOC removal costs include monthly utility charges, maintenance costs and engineering costs. Capital construction costs and NYSDEC project management effort are not included in this evaluation.
2. Costs reflected for these reporting periods are primarily the result of contaminated soil excavation activities and NYSDEC-approved system modifications, per the approval of the NYSDEC.

System Operation and Maintenance

Routine and non-routine maintenance completed during this reporting period and a summary of the alarm conditions and associated GWE&TS runtime/downtime for this reporting period are summarized below. Refer to *Attachment A* for operation and maintenance logs, as prepared by the NYSDEC "call-out" contractor for this reporting period.

Routine Equipment Maintenance Schedule Summary

Major System Component	Manufacturer	Model Number	Maintenance Frequency	Maintenance Summary					
				Current Reporting Period			Next Reporting Period		
				Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
Extraction Well Pump RW-1	Grundfos Pump Corp.	150550-2	As needed based on flow trends						
Extraction Well Pump RW-2	Grundfos Pump Corp.	1505100-5	As needed based on flow trends						
Pressure Blower (1)	Cincinnati Fan	PB-18	Bi-Monthly						
Vapor Carbon Vessels	Cameron Great Lake	VS7.2x6.7x8.6-5000-DUAL	As needed based on analytical results						
Air Strippers	Branch Environmental	48T-25H	As needed based contaminant concentrations						
Air Stripper Transfer Pumps (1)	Magnatex Pumps, Inc.	MTA-A10-P-F20-2-FE	Quarterly						

Planned Activity

1. Note that the pressure blower and air stripper transfer pump maintenance items were not completed during this reporting period, nor the previous reporting period.

Non-Routine System Maintenance:

- None.

System Runtime/Downtime Summary		
Runtime - Current Reporting Period (1)	2,109 hours	96.6%
Downtime - Current Reporting Period (1)	75 hours	3.4%
Total Runtime to Date (2)	49,354 hours	77.9%
Total Downtime to Date (2)	13,977 hours	22.1%

1. Total elapsed runtime for current reporting period is 2,184 hours (April 1, 2012 through June 30, 2012).
2. Based on when D&B assumed O&M duties in February 2005.

Alarm Conditions

- A high stripper alarm caused the GWE&TS to shut-down on June 2, 2012. The alarm was reset and the GWE&TS was restarted on June 4, 2012;
- An undervoltage alarm caused the GWE&TS to shutdown on June 4, 2012. The variable frequency drive (VFD) for transfer pump 2 was reset and the GWE&TS was restarted on June 4, 2012;
- Upon arrival at the Site for a routine system monitoring event on June 19, 2012, the GWE&TS was observed to be shut-down. Following diagnosis of the shut-down, the "call-out" contractor determined that a temporary pressure blower failure caused this shut-down condition. The GWE&TS was restarted on June 19, 2012.

Site Restoration

As detailed in the past several Quarterly Reports, an area of contaminated soil was delineated and excavated from the Site in June and July 2011 as part of an Interim Remedial Measure (IRM). Per the NYSDEC's request, the excavated soil was remediated on-site utilizing an ex-situ SVE system, which was completed in January 2012 and the SVE system was subsequently dismantled.

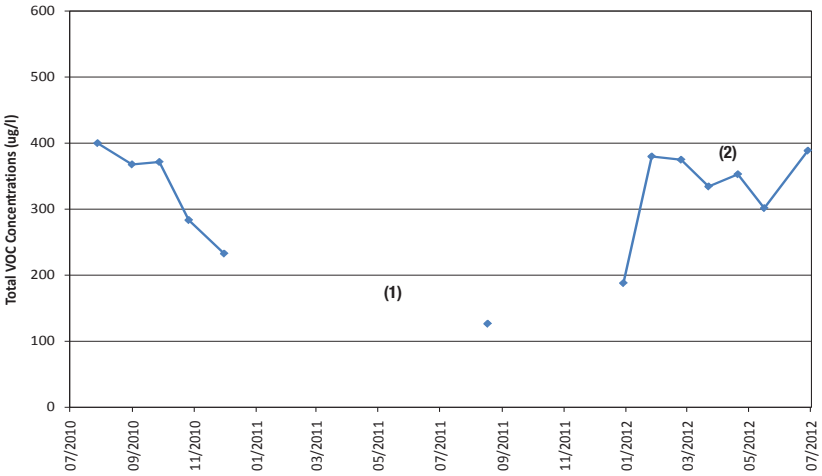
The following bullets summarize the IRM-related site restoration activities completed during this reporting period:

- The concrete debris excavated during the IRM, as well as several jersey barriers were removed from the site on April 4, 2012;
- Additional debris excavated during the IRM was removed from the site on April 23, 2012;
- The site was regraded in preparation of hydroseeding on April 23, 24 and 26, 2012;
- Outside faucets, timers and sprinklers were installed in preparation of hydroseeding on April 24, 2012;
- The site was hydroseeded on April 27, 2012;
- Landscaping activities were performed on June 5, 2012;
- The site was regraded and raked to fill in a large depression where storm water was pooling on June 13, 2012;
- Hay bales and silt fencing were installed at the south gate and property line. In addition, cleanup of silt which accumulated in the roadway at the south side of the Site from Site runoff was performed on June 14, 2012; and
- Hay bales were installed and the roadway to the south of the Site was pressure washed on June 15, 2012.

System Monitoring and Sampling Results

A summary of the pertinent routine treatment system monitoring and sampling results are provided below.

Extraction Well RW-1 Total VOC Concentration Trend Line



1. The GWE&TS did not operate during the majority of the time from December 2010 through July 2011 and September 2011 through October 2011 due to a carbon vessel bed screen failure and a continuous loud noise emitted by the GWE&TS exhaust piping.
2. This increase in total VOC concentration in extraction well RW-1 influent may be attributable to a lagging effect of the disturbance of the subsurface and contaminants during the latest soil removal IRM completed in June and July 2011.

Extraction Well RW-1 - System Influent Contaminant Concentration Ranges/Averages (3)

Contaminant (4)	Current Reporting Period	Previous Reporting Period	Average to Date	Class GA Groundwater Standard
Tetrachlorothene (PCE)	200 ug/l - 260 ug/l	210 ug/l - 230 ug/l	226 ug/l	5.0 ug/l
Trichlorothene (TCE)	38 ug/l - 44 ug/l	42 ug/l - 53 ug/l	63 ug/l	5.0 ug/l
cis-1,2-Dichloroethene (cis-1,2-DCE)	61 ug/l - 87 ug/l	71 ug/l - 120 ug/l	96 ug/l	5.0 ug/l
trans-1,2-Dichloroethene (trans-1,2-DCE)	0.47 ug/l - 0.7 ug/l	0.59 ug/l - 1.1 ug/l	0.18 ug/l	5.0 ug/l
Vinyl chloride (VC)	1.1 ug/l - 2 ug/l	0.65 ug/l - 0.94 ug/l	0.75 ug/l	2.0 ug/l
1,1,1-Trichloroethane (1,1,1-TCA)	ND - 0.25 ug/l	ND	0.13 ug/l	5.0 ug/l
Iron	95.7 ug/l - 630 ug/l	115 ug/l - 268 ug/l	174 ug/l	300 ug/l
Manganese	1,010 ug/l - 1,040 ug/l	1,010 ug/l - 1,080 ug/l	1,247 ug/l	300 ug/l
Sodium	23,700 ug/l - 23,900 ug/l	23,300 ug/l - 26,100 ug/l	25,112 ug/l	20,000 ug/l
pH (5)	--	--	6.2	6.5-8.5

ND: Constituent concentration below the analytical detection limit. - - : Not analyzed.

Red font denotes an exceedance of the applicable standard.

3. Only includes constituents historically detected in exceedance of their respective Class GA Groundwater Standard.
4. Click on the blue-colored contaminants for graphs of VOC concentrations over the last 2 years. These graphs were developed for VOCs detected in extraction well RW-1 above the Class GA Groundwater Standards for this and/or the previous reporting periods.
5. The "call-out" contractor inadvertently did not perform field analysis of pH during this and the previous reporting periods.

Aqueous-Phase Air Stripper Effluent Concentration Ranges (1)			
Discharge Permit Parameters	Current Reporting Period	Previous Reporting Period (2)	Site-Specific Effluent Limit
PCE	1.3 - 2.9 ug/l	1.4 - 1.8 ug/l	4.0 ug/l
TCE	0.44 - 0.85 ug/l	0.61 - 0.68 ug/l	10.0 ug/l
cis-1,2-DCE	2.0 - 4.4 ug/l	2.4 - 4.5 ug/l	10.0 ug/l
trans-1,2-DCE	ND	ND	10.0 ug/l
VC	ND	ND	10.0 ug/l
1,1,1-TCA	ND	ND	5.0 ug/l
Iron	ND	418 ug/l	4,000 ug/l
Manganese	612 ug/l	749 ug/l	2,000 ug/l
Sodium	23,900 ug/l	25,800 ug/l	NA

ND: Constituent concentration below the analytical detection limit. NA: Not applicable.

1. Only includes constituents historically detected in exceedance of their respective Class GA Groundwater Standard in influent water.

Vapor-Phase Air Stripper Effluent Concentrations (1,3)			
	Current Reporting Period	Previous Reporting Period	Site-Specific Limits
PCE	0.008 lbs/hr	--	0.007 lbs/hr
TCE	0.001 lbs/hr	--	0.006 lbs/hr
Xylene	ND	--	0.001 lbs/hr
1,2-DCE (total)	0.003 lbs/hr	--	0.003 lbs/hr
VC	ND	--	0.014 lbs/hr
1,1,1-TCA	ND	--	0.001 lbs/hr
Maximum Total VOC Emissions	0.088 lbs/hr	--	0.5 lbs/hr (2)

ND: Constituent concentration below the analytical detection limit. NA: Not applicable. - - : Not analyzed.

Red font denotes an exceedance of the applicable site-specific limit.

1. Vapor-phase effluent samples for laboratory analysis are collected on a semi-annual basis and were not collected during the previous reporting period.
2. The site-specific effluent limit of 0.5 lbs/hr was developed in consultation with the NYSDEC and is utilized as a means to monitor total vapor-phase VOCs emitted by the GWE&TS.
3. In addition to the listed constituents, isopropyl alcohol and a trace concentration of 1,3-Dichlorobenzene were also detected. Note that isopropyl alcohol is a common laboratory contaminant and the detected concentration is likely due to cross contamination in the laboratory or in the field. Site-specific limits have not been established for these compounds.

Upon review of the vapor-phase effluent data, the NYSDEC was immediately notified of the PCE exceedance detailed above. Based on direction from the NYSDEC and as the maximum total VOC emissions were detected at concentrations well below the site-specific discharge limit, the GWE&TS was not shut-down. PCE concentrations in vapor-phase effluent will be closely monitored in the future to ensure site-specific discharge limits are not exceeded on a consistent basis. If vapor-phase discharge exceedances are noted on a consistent basis, this may warrant reconfiguration of the GWE&TS or other means to reduce the contaminant concentrations in the vapor-phase discharge.

Quarterly Groundwater Monitoring Summary

The network of groundwater monitoring wells was sampled to determine groundwater quality at, and in the vicinity of, the Site. Samples were collected from 11 on-site groundwater monitoring wells (MW-101 through MW-108, MW-4D, MW-4S and MW-5S), four off-site groundwater monitoring wells (MW-109, MW-111, MW-1S and MW-2S) and off-site extraction well RW-2.

Note that the "call-out" contractor uncovered several historic monitoring wells at the Site during routine landscaping activities conducted in June 2012, which were sampled during this reporting period. Off-site groundwater monitoring well MW-1S (screened at 14 to 24 feet below grade) was uncovered to the north of the Site across Montauk Highway and on-site groundwater monitoring wells MW-4S and MW-4D (screened at 12 to 22 feet below grade and 60 to 70 feet below grade, respectively) were uncovered in the southern portion of the Site property. These monitoring wells were sampled during this reporting period in order to determine contaminant concentrations in these areas.

The locations of the on-site groundwater monitoring wells are depicted in *Figure 3*, and the locations of the off-site groundwater monitoring wells are depicted on *Figure 4*.

Groundwater Monitoring Well Condition Summary:

All 15 groundwater monitoring wells and extraction well RW-2 were found to be accessible during the groundwater monitoring sampling event conducted on June 14 and 15, 2012. Although all groundwater monitoring wells were located as indicated on the Site map, not all wells had visible well IDs. All monitoring well concrete well pads, protective casings, surface seals, PVC well risers, well plugs and locks were observed to be present and in good condition, with the following exceptions:

- Monitoring wells MW-101, MW-103, MW-104, MW-106 through MW-108, MW-4S and MW-4D did not have visible IDs;
- One bolt and the well lock at monitoring well MW-4D were missing;
- Broken eyelets and missing bolts were observed at monitoring well MW-111; and
- Concrete well pads and protective casings are not present at monitoring well locations MW-104 and MW-5S.

A summary of the field inspection logs for all groundwater monitoring wells assessed during this reporting period are provided in *Attachment B*.

Groundwater Monitoring Results Summary:

A headspace reading was collected utilizing a PID at each groundwater monitoring well immediately after the removal of the well caps and plugs. The on-site groundwater monitoring wells exhibited concentrations of total VOCs ranging from 0.0 ppm to a maximum concentration of 77.8 ppm detected in groundwater monitoring well MW-4D. The off-site groundwater monitoring wells exhibited concentrations of total VOCs ranging from 0.0 ppm to a maximum concentration of 3.9 ppm detected in groundwater monitoring well MW-109.

Below is a table summarizing the site-specific contaminants of concern in on-site and off-site groundwater. Refer to *Attachment C* for analytical data results.

Site-Specific Contaminant of Concern Concentrations

Monitoring Well (1,2,4)	PCE		TCE		cis-1,2-DCE		Vinyl Chloride		Site-Specific 2-Year Contaminant Trend Analysis
	Current Reporting Period	Previous Reporting Period	Current Reporting Period	Previous Reporting Period	Current Reporting Period	Previous Reporting Period	Current Reporting Period	Previous Reporting Period	
On-Site Monitoring Wells									
MW-101	2.2 ug/l	NS	0.57 ug/l	NS	ND	NS	ND	NS	Stable
MW-102	3.2 ug/l	NS	0.83 ug/l	NS	ND	NS	ND	NS	Stable
MW-103	1.2 ug/l	ND	ND	ND	ND	ND	ND	ND	Decreasing
MW-104	78 ug/l	4.5 ug/l	7.2 ug/l	0.44 ug/l	12 ug/l	0.23 ug/l	ND	ND	Decreasing
MW-105	0.5 ug/l	ND	ND	ND	ND	ND	ND	ND	Decreasing
MW-106	6.0 ug/l	2.8 ug/l	4.0 ug/l	4.1 ug/l	22 ug/l	22.0 ug/l	7.9 ug/l	5.4 ug/l	Decreasing
MW-107	2.5 ug/l	3.6 ug/l	1.2 ug/l	1.3 ug/l	0.73 ug/l	0.78 ug/l	ND	ND	Stable
MW-108	6.9 ug/l	NS	0.53 ug/l	NS	ND	NS	ND	NS	Decreasing
MW-4S	0.43 ug/L	NA	ND	NA	ND	NA	ND	NA	NA
MW-4D	110,000 ug/l	NA	8,500 ug/l	NA	ND	NA	ND	NA	NA
MW-5S	0.52 ug/l	ND	ND	0.19 ug/l	ND	ND	ND	ND	Increasing
Off-Site Monitoring Wells									
MW-109	1.1 ug/l	NS	2.2 ug/l	NS	1.6 ug/l	NS	ND	NS	Increasing
MW-111	0.41 ug/l	NS	ND	NS	0.39 ug/l	NS	ND	NS	Stable
MW-1S	ND	NA	1.1 ug/L	NA	0.40 ug/L	NA	ND	NA	NA
MW-2S	19 ug/l	39.0 ug/l	13 ug/l	24.0 ug/l	51 ug/l	450 ug/l	2.5 ug/l	0.77 ug/l	Increasing
RW-2 (3)	1.5 ug/l	ND	1.1 ug/l	0.59 ug/l	1.1 ug/l	0.50 ug/l	ND	ND	Stable

ND: Constituent concentration below the analytical detection limit. NS: Not sampled. NA: Not applicable

Red font denotes an exceedance of the constituents Class GA Groundwater Standard (5.0 ug/l for PCE, TCE and cis-1,2-DCE, and 2.0 ug/l for VC).

In addition to the contaminants listed in the table, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,1,1-trichloroethane, chlorobenzene, chloroform and trans-1,2-dichloroethene were detected in one or more monitoring well sample; however, these analytes were detected at concentrations well below their respective Class GA Groundwater Standards.

1. Click on monitoring well IDs, with the exception of monitoring well MW-4D, for graphs depicting contaminant concentrations over the last 2 years in wells exhibiting exceedances of the Class GA Groundwater Standards for this and the previous reporting period.
2. Groundwater monitoring wells MW-101, MW-102, MW-108, MW-109 and MW-111 are now sampled on a semi-annual basis. As such, samples were not collected during the previous reporting period.
3. Extraction well RW-2 is now sampled on a quarterly basis in order to better monitor off-site contaminant concentrations.
4. As noted above, groundwater monitoring wells MW-1S, MW-4S and MW-4D were recently uncovered and sampled during this reporting period.

The vast majority of the groundwater monitoring wells exhibit overall decreasing or stable concentrations of the site-specific contaminants over the past 2-year period. A figure depicting total VOC concentrations in on-site and off-site wells is provided as *Figure 5*. In comparison to the previous reporting period, total VOC concentrations have decreased in the majority of the monitoring wells, with the exception of slight to moderate increases within on-site monitoring wells MW-103 through MW-106, off-site monitoring well MW-5S and extraction well RW-2.

As detailed above, newly uncovered on-site monitoring well MW-4D exhibited extremely high concentrations of PCE and TCE. Note monitoring well MW-4D is screened at a depth approximately 30 feet deeper than on-site extraction well RW-1 and the on-site monitoring wells. As such and as recommended below, further investigation of these high contaminant concentrations in deeper areas both on and off-site is warranted.

Arsenic, iron, manganese and sodium were detected above their respective Class GA Groundwater Standards. As extraction well RW-2 is sampled via operation of its extraction pump for a short duration to purge the well and associated piping of any accumulated sediment, it is likely that these exceedances are attributable to an insufficient purge time prior to sample collection.

Data Validation:

All sample results have been reviewed by D&B and deemed valid and usable for environmental assessment purposes. Data Validation Checklists are presented in *Attachment D*. Based on D&B's review, qualification of the data was necessary for the following anayses:

- Tetrachloroethene was below QC limits in the matrix spike and was qualified as estimated in samples MW-105, MW-109, MW-111, MW-1S, MW-2S, MW-4D and RW-2; and
- Isopropyl alcohol exceeded the calibration range for the vapor phase effluent sample collected on June 28, 2012 and the secondary dilution was reported.

Findings and Recommendations

Findings:

- General: The GWE&TS was operational for the vast majority of this reporting period;
- GWE&TS Maintenance: Routine maintenance of the pressure blower and transfer pump were not completed as per the requirements of the April 2002 O&M Plan;
- Vapor-Phase PCE: PCE in vapor-phase discharge was detected at a concentration slightly in exceedance of the site-specific effluent limit;
- Influent pH: pH in influent water was not monitored during this reporting period;
- RW-2 Metals: TAL metals analysis was performed by the analytical laboratory for extraction well RW-2. Several metals including arsenic, iron, manganese and sodium were detected at concentrations in exceedance of their respective Class GA Groundwater Standards, which is likely attributable to improper purging of this well prior to sampling;
- Monitoring Well Conditions: All groundwater monitoring wells were observed to be in good condition, with the following exceptions:
  - Monitoring wells MW-101, MW-103, MW-104, MW-106 through MW-108, MW-4S and MW-4D did not have visible IDs;
  - One bolt and the well lock at monitoring well MW-4D were missing;
  - Broken eyelets and missing bolts were observed at monitoring well MW-111; and
  - Concrete well pads and protective casings are not present at monitoring wells MW-104 and MW-5S.
- Monitoring Well Contaminant Concentrations: On-site groundwater monitoring well MW-104, MW-106, MW-108 and MW-4D and off-site monitoring well MW-2S exhibited one or more of the site-specific VOCs at concentrations exceeding their respective Class GA Groundwater Standards during this reporting period.

- As detailed above, newly uncovered on-site monitoring well MW-4D exhibited extremely high concentrations of PCE and TCE. Note monitoring well MW-4D is screened at a depth of approximately 60 to 70 feet below grade, approximately 30 feet deeper than on-site extraction well RW-1 and the site-wide monitoring well network. It should be noted that, according to several geological references, the Gardiners Clay is located below the Site at a depth of approximately 80 to 100 feet below grade and is likely acting as a "confining unit" for the groundwater plume. Based on the relatively dense nature of chlorinated solvents, the groundwater plume may be migrating along the top of the Gardiners Clay.

Recommendations:

- General GWE&TS: Continued operation of GWE&TS;
- GWE&TS Routine Maintenance: D&B recommends that the NYSDEC "call-out" contractor adhere to the routine maintenance schedule in order to reduce the GWE&TS downtime and premature equipment failure, and perform the required pressure blower and transfer pump maintenance as soon as possible;
- Vapor-Phase PCE: Closely monitor PCE concentrations in vapor-phase effluent. If vapor-phase discharge exceedances are noted on a consistent basis, this may warrant reconfiguration of the GWE&TS or other means to reduce the contaminant concentrations in the vapor-phase discharge;
- Vapor-phase Discharge Monitoring: Monitor vapor-phase discharge utilizing a PID on a routine basis in order to monitor instantaneous VOC concentrations within vapor-phase discharge;
- pH Influent Sampling: D&B recommends that the NYSDEC "call-out" contractor adhere to the sample analysis schedule and monitor influent pH on a monthly basis;
- Groundwater Sampling: Based on the elevated contaminant concentrations detected in on-site monitoring well MW-4D, D&B recommends that monitoring wells MW-4S and MW-4D be sampled on a quarterly basis;
- RW-2 Influent Sampling: Prior to sampling extraction well RW-2, the well and associated piping should be sufficiently purged such that a representative sample, clear and free of sediments, may be collected. As such, D&B recommends that turbidity measurements be collected from RW-2 prior to sampling to ensure a turbiity of 50 NTUs or lower in sample water. In addition, D&B recommends to discontinue sampling of TAL metals from RW-2;
- Sample Schedule: D&B recommends that the NYSDEC "call-out" contractor adheres to the sample analyis schedule;
- Monitoring Well Conditions: Well IDs should be permanently fixed and clearly marked on each groundwater monitoring well for identification purposes. In addition, it is recommended to install protective casings and well pads at monitoring wells MW-104 and MW-5S in order to ensure these wells are properly protected; and
- RSO Evaluation: Based on the identification of several below grade structures and contaminated soil to the west of the GWE&TS in 2010 and 2011 and consistently elevated contaminant concentrations detected in several monitoring wells and extraction well RW-1, as well as the extremely high contaminant concentrations identified in monitoring well MW-4D, D&B recommends performing a Remedial Site Optimization (RSO) evaluation to further investigate residual on-site contamination, GWE&TS equipment efficiency and operation, and possibly consider alternative remedial technologies, such as monitored natural alternation (MNA) and/or in-situ chemical injections. It is further recommended that the RSO include the following:
    - Extraction Well ROI Analysis: In order to ensure on-site extraction RW-1 well is operating at an optimal and efficient flow rate, D&B recommends performing a radius of influence (ROI) analysis for the extraction well.
    - Plume Re-delineation: Based on the elevated contaminant concentrations detected in on-site monitoring well MW-104, MW-106, MW-108 and MW-4D and off-site monitoring well MW-2S, it may be warranted to install and sample several temporary geoprobe wells at and downgradient of the Site to more accurately define the current location and depth of the groundwater plume. Based on the results of the temporary well sampling, it may be warranted to

install additional permanent monitoring wells in these areas and/or modify the current extraction well configuration in order to optimize and accelerate the recovery and treatment of the entire groundwater plume.

Reclassification/Delisting Evaluation

The Site was originally listed as a Class 2 Inactive Hazardous Waste Site by the NYSDEC in November 1990. Since this time, completion of the following project phases has occurred, as summarized below:

Project Phases and Completion Dates

Project Phase	Completion Date
Remedial Investigation	04/1994
Phase II Remedial Design Investigation	12/1998
Remedial Design	06/2000
Groundwater Extraction and Treatment System Construction	12/2001 (1)
UST Removal and Phase I Contaminated Soil Removal IRM	06/2010
Phase II Contaminated Soil Removal IRM	07/2011

1. Construction of the GWE&TS was completed in December 2001. The GWE&TS was placed into routine operation in December 2001 and D&B assumed O&M duties in February 2005.

Given the above, it does not appear that the Active Industrial Uniform Site can be reclassified at this time, pursuant to the requirements identified in 6 NYCRR §375-2.7, as site-related contamination has not been fully remediated and continues to constitute a significant threat to public health and the environment. As such, Site delisting is not recommended at this time, as all remediation and post-remediation activities have not been satisfactorily completed. Work continues to address residual on-site contamination and system optimization to expedite overall remediation and site closure.

Report Certification:

I have personally examined and am familiar with the information submitted in the referenced report. To the best of my knowledge and belief, and based upon my inquiry of those individuals immediately responsible for obtaining the information reported therein, I certify that the submitted information is true, accurate, and complete.

Project Director: Richard M. Walka — 11·13·12
Richard M. Walka — **Date**
Senior Vice President

Project Manager: Stephen Tauss — 11/13/12
Stephen E. Tauss — **Date**
Geologist II