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ACTIVE INDUSTRIAL UNIFORM SITE GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

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REPORT TITLE

Site Management Quarterly Report No. 27

REPORTING PERIOD

July 1, 2011 through September 30, 2011

CLIENT

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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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). However, as per NYSDEC direction, extraction well RW-2 was shut-down in April 2010 due to low historic VOC concentrations. Note that 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. However, 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. However, 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 to homes from high groundwater.

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

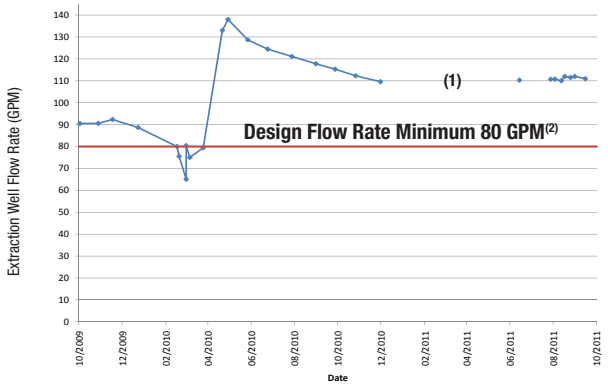
	RW-1 (1)	RW-2 (2)	System Effluent
Average Pumping Rate - Current Reporting Period	111 gpm	NA	111 gpm
Average Pumping Rate - Previous Reporting Period	0 gpm	NA	0 gpm
Average Pumping Rate to Date	71 gpm	80 gpm	104 gpm
Total Flow Volume - Current Reporting Period	8,781,682 gal.	NA	8,813,216 gal.
Total Flow Volume to Date	286,703,091 gal.	129,900,729 gal.	414,414,370 gal.

NA: Not applicable
1. Extraction well RW-1 did not operate the vast majority of the previous reporting period due to a carbon vessel bed screen failure and a continuous loud noise emitted by the GWE&TS exhaust piping.
2. As described above, extraction well RW-2 was shut down in April 2010 based on low historic VOC concentrations, as per NYSDEC direction.

The GWE&TS was not operational during a portion of this reporting period due to the following system malfunctions and activities:

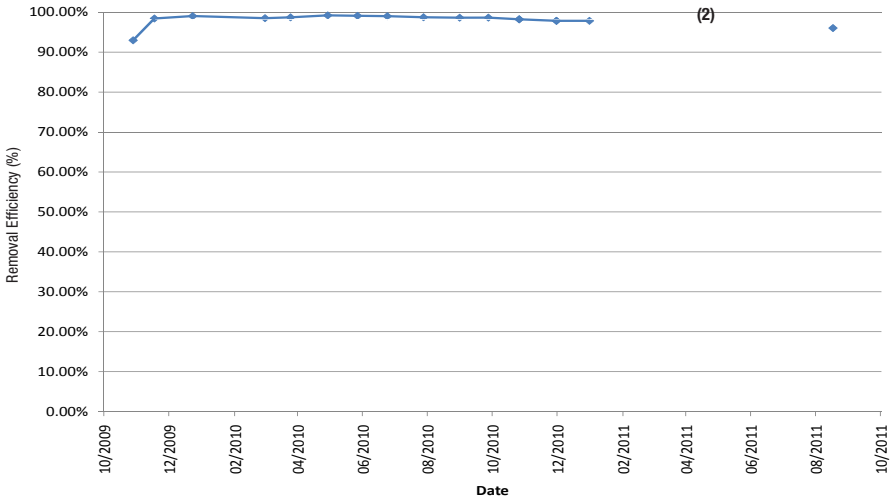
- As detailed in the Quarterly Report No. 26, following the rerouting of the effluent piping to bypass the GAC vessels, several noise complaints resulting from a loud exhaust resonance were received and the GWE&TS was shut-down while a means to reduce the loud noise was evaluated. In order to decrease the system exhaust stack airflow, and therefore the loud noise, while at the same time reducing the electrical consumption of the GWE&TS, D&B recommended a variable frequency drive (VFD) be installed as a means to modulate the output of the pressure blower. The VFD was installed on July 18, 2011 and the GWE&TS was restarted on July 21, 2011. Note that the loud exhaust noise was limited by the VFD, but not eliminated.
- Due to further noise complaints pertaining to the loud exhaust resonance, the GWE&TS was shut-down on September 22, 2011 and remained off for the remainder of this reporting period while the NYSDEC evaluated further means to reduce the exhaust resonance. As detailed in the next Quarterly Report, an exhaust silencer was ultimately installed on October 25, 2011, eliminating the exhaust loud noise.

Extraction Well RW-1 Flow Rate Trend Line



1. As previously detailed, 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)



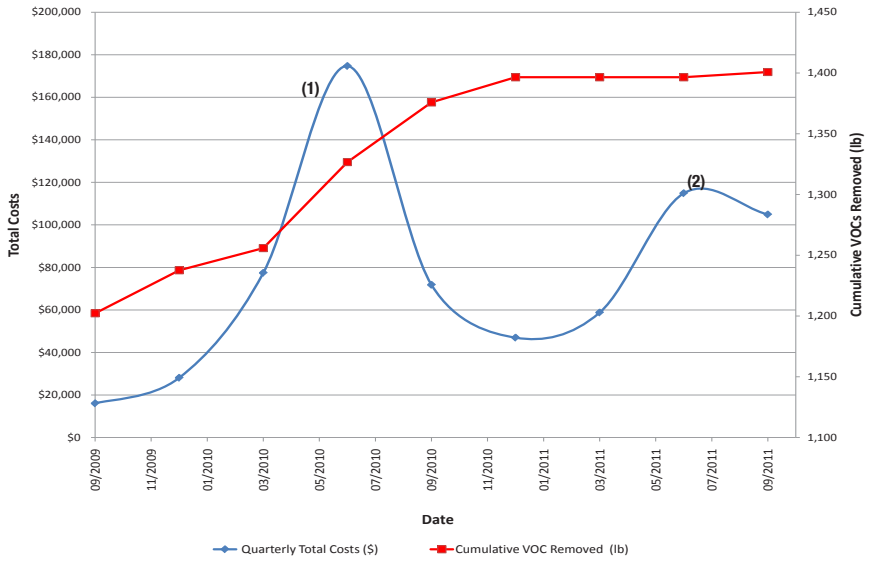
1. The packed-tower air strippers have operated at an approximate efficiency ranging from 92.65% to 99.47% since D&B assumed O&M duties in February 2005.
2. As previously detailed, the GWE&TS did not operate the majority of the time from December 2010 through July 2011 and September 2011 through October 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.

VOC Removal Assessment [1]	
VOC Removal - Current Reporting Period [2]	4.30 lbs.
VOC Removal - Previous Reporting Period [3]	0.00 lbs.
Average VOC Removal to Date	25.70 lbs.
Total VOC Removal to Date	1,401 lbs.

VOC Removal Costs [1]	
VOC Removal Cost - Current Reporting Period [2]	$24,968 per lb.
VOC Removal Cost - Previous Reporting Period [3]	NA
Average VOC Removal Cost to Date [4]	$1,969 per lb.

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. The GWE&TS did not operate a portion of this reporting period due to a complaint regarding a continuous loud noise emitted by the GWE&TS exhaust stack. Note, an exhaust silencer was ultimately installed on October 25, 2011, eliminating the loud noise.
3. The GWE&TS did not operate the vast majority of the previous two reporting periods due to a carbon vessel bed screen failure and a continuous loud noise emitted by the GWE&TS exhaust stack upon start-up.
4. Average calculated from when D&B assumed O&M duties in February 2005 through this reporting period.

VOC Removal/Operational Cost Trend Line [1]



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 completed by the NYSDEC "call-out" contractor, 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 treatment system 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		
				Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
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	Magnatex Pumps, Inc.	MTA-A10-P-F20-2-FE	Quarterly						

##/##/## **Activity Completed** **Planned Activity**

1. Note that blower maintenance was not completed during this reporting period.

Non-Routine System Maintenance:

- Installation and programming of a variable frequency drive (VFD) to control the air flow rate generated by the pressure blower on July 18, 19 and 20, 2011;
- Adjust pressure blower VFD settings and collect effluent samples at varying flow rates on July 21, 2011;
- Following complaints of a loud noise emitted by the GWE&TS, decibel level readings were recorded in the vicinity of the blower and residential area immediately south of the Site on August 25, 2011 to gauge sound levels;
- Site evaluation following hurricane Irene;
- Replacement of extraction well RW-1's influent high-pressure switch on September 9, 2011;
- Modification of the building heater exhaust stacks on September 12, 2011 in an effort to prevent the heater pilot lights from being extinguished by wind gusts;
- Hertz lift, which was used for the modification of the building heater exhaust stacks during the previous reporting period, was removed from the Site on September 15, 2011; and
- The GWE&TS was shut down on September 22, 2011 due to further complaints regarding a "loud noise" emitted by the GWE&TS.

System Runtime/Downtime Summary		
Runtime - Current Reporting Period (1)	1,429 hours	64.7%
Downtime - Current Reporting Period (1)	779 hours (3)	35.3%
Total Runtime to Date (2)	43,532 hours	76.7%
Total Downtime to Date (2)	13,223 hours	23.3%

1. Total elapsed runtime for current reporting period is 2,208 hours (July 1, 2011 through September 30, 2011).
2. Based on the start of D&B's O&M duties in February 2005.
3. The GWE&TS did not operate during the majority of the time between 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. Note, an exhaust silencer was ultimately installed on October 25, 2011, eliminating the loud noise.

Alarm Conditions

One alarm condition occurred during this monitoring period resulting from an "under-voltage" condition at transfer pump #2. Note that the GWE&TS autodialer failed to notify technicians of this alarm condition and the GWE&TS was restarted during a Site evaluation on August 29, 2011.

System Modifications

Several system modifications were completed during this reporting period in order to improve the overall efficiency and effectiveness of the GWE&TS. These system modifications were detailed in a November 7, 2011 letter and are summarized below:

Packed-tower Air Stripper Tower Bypass

Based on review of current and historical aqueous-phase effluent analytical sampling results, one air stripping tower has effectively been removing approximately 99% of all aqueous phase influent VOC contaminants to concentrations below their respective site-specific effluent limits. Given this information and in order to reduce the electrical consumption of the GWE&TS, one of the two air stripping towers (AS-1) was bypassed on July 21, 2011.

Aqueous-phase system effluent samples were collected immediately following the system reconfiguration. As summarized below, all site contaminants were either non-detect or detected at concentrations well below their site-specific effluent limits.

Pressure Blower VFD

Following the bypassing of stripping tower AS-1, a dramatic reduction in static pressure was observed in the effluent vapor piping, resulting in an increase of the pressure blower airflow by approximately 200 cubic feet per minute (cfm) from its operating set-point of 1,100 cfm. Additionally, the increased effluent vapor flow caused a loud resonance in the vapor-phase discharge piping, resulting in several complaints from the residential neighbors to the south of the Site.

In order to maintain efficient and effective aqueous-phase contaminant removal, as well as mitigate the vapor-phase discharge piping resonance, D&B recommended installing a VFD on the blower motor to allow for modulation of the pressure blower airflow.

Prior to the installation of the VFD, and as summarized in a July 15, 2011 email to the NYSDEC, D&B contacted the air stripper manufacturer (RVT Process Equipment, Inc.), and obtained a copy of their packed tower air stripper modeling program in order to evaluate the overall removal efficiency of a "one-stripper" scenario utilizing various flow scenarios and contaminant loading rates. Based on the results of this evaluation, D&B recommended the pressure blower continue to be operated at a minimum airflow rate of 1,100 cfm.

Aqueous-phase system effluent samples were collected immediately following the installation of the VFD. As summarized below, all site contaminants were either non-detect or detected at concentrations well below their site-specific effluent limits. Based on the analytical results, the blower was ultimately set to 1,100 cfm.

System Modification Sampling Results

The table below summarizes the results from the sampling performed immediately following the bypassing of air stripping tower AS-1 and the installation of the VFD on the pressure blower. As summarized on the table below, three effluent samples were collected at blower airflow rates of 1,000 cfm, 1,100 cfm and 1,200 cfm, and based on the analytical results, the blower was ultimately set to 1,100 cfm.

System Modification Aqueous-Phase Air Stripper Effluent Concentrations

Discharge Permit Parameters	1,000 CFM	1,100 CFM	1,210 CFM	Site-Specific Effluent Limit
PCE	1.6 ug/l	1.3 ug/l	1.4 ug/l	4.0 ug/l
TCE	1.7 ug/l	1.2 ug/l	1.3 ug/l	10.0 ug/l
cis-1,2-DCE	- -	- -	- -	10.0 ug/l
trans-1,2-DCE	ND	ND	ND	10.0 ug/l
VC	ND	ND	ND	10.0 ug/l
1,1,1-TCA	ND	ND	ND	5.0 ug/l

--: Not analyzed

IRM Activities

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).

In order to limit waste disposal costs, the NYSDEC decided to remediate the excavated soil on-site utilizing an ex-situ SVE system. As detailed above, soil vapor generated from the SVE system was initially routed through two 55-gallon GAC units; however, based on low VOC concentrations detected in the SVE system effluent and based on direction from the NYSDEC, the two GAC units were removed from the system in August 2011. The following bullets summarize the IRM activities completed during this reporting period:

- Soil excavation (and community air monitoring) was completed on July 1, 5, 6 and 7, 2011;
- Site meeting between the NYSDEC "call-out" contractor, D&B project manager and NYSDEC project manager to discuss remedial activities on July 7, 2011;
- Stockpile and tarp soil from excavation activities, installation of SVE system piping within the soil pile and community air monitoring on July 8, 2011;
- Partial backfilling (and community air monitoring) of excavation utilizing soil previously remediated as part of a separate IRM (completed in June 2010) on July 11, 12, 13 and 14, 2011;
- Installation of sample ports within the SVE system piping on July 14, 2011;
- Decontamination of equipment and materials utilizied as part of the IRM on July 15, 2011;
- Installation of a knock-out tank in the SVE system piping on July 19, 2011;
- Installation of two 55-gallon granular activated carbon (GAC) vessels within the ex-situ SVE system vapor-phase discharge piping on July 20, 2011;
- PID readings were collected from "pre, mid and post" sample ports in the SVE GAC vessels on July 21, 22 and 26, 2011;
- On July 27, 2011, exhausted carbon in the SVE GAC vessels was removed and replaced, PID readings were collected from the SVE system and ex-situ soil pile;
- SVE system was shutdown on July 28, 2011 due to high temperatures detected within the SVE vapor-phase discharge piping;

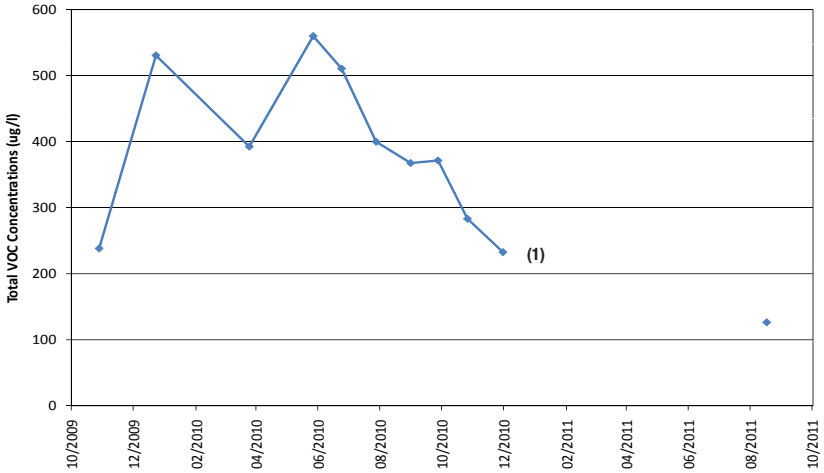
- Removal of the GAC vessels from the SVE vapor-phase discharge piping, restart SVE system and repair of the building sump pump discharge piping on August 4, 2011;
- The ex-situ SVE system knock-out tank was drained to the building sump on August 29, 2011;
- Ex-situ SVE system knock-out tank was drained to the building sump and the sump was pumped-out on September 8, 2011; and
- Ex-situ SVE system knock-out tank was drained to the building sump on September 21 and 29, 2011.

Following remediation, the excavated soil will be utilized to backfill the excavation area and regrade areas of the Site to the west of the GWE&TS building. The SVE system is still operating at this time. Further details, including a figure depicting the excavation area and all associated sample locations and a summary of all endpoint and sidewall sample results, are provided in the Final Engineering Report for the Active Industrial Uniform Site, dated January 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.

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

Contaminant	Current Reporting Period (2)	Previous Reporting Period (3)	Average to Date	Class GA Groundwater Standard
Tetrachlorothene (PCE)	53 ug/l	--	230 ug/l	5.0 ug/l
Trichlorothene (TCE)	18 ug/l	--	63 ug/l	5.0 ug/l
cis-1,2-Dichloroethene (cis-1,2-DCE)	53 ug/l	--	101 ug/l	5.0 ug/l
trans-1,2-Dichloroethene (trans-1,2-DCE)	0.36 ug/l	--	0.09 ug/l	5.0 ug/l
Vinyl chloride (VC)	1.9 ug/l	--	0.70 ug/l	2.0 ug/l
1,1,1-Trichloroethane (1,1,1-TCA)	ND	--	0.14 ug/l	5.0 ug/l
Iron	154 ug/l	--	164 ug/l	300 ug/l
Manganese	3,650 ug/l	--	1,232 ug/l	300 ug/l
Sodium	29,500 ug/l	--	25,258 ug/l	20,000 ug/l
pH	6.2	--	6.2	6.5-8.5

- - : Not analyzed. NA: Not applicable.

Red font denotes an exceedance of the applicable standard.

1. Only includes constituents historically detected in exceedance of their respective Class GA Groundwater Standard.
2. Note only one round of samples was collected during this monitoring period (August 17, 2011).
3. The GWE&TS did not operate during the vast majority of the previous reporting period due to a carbon vessel bed screen failure and a continuous loud noise emitted by the GWE&TS exhaust stack.
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 RW-1 above the Class GA Groundwater Standards for this and/or the previous reporting periods.

Aqueous-Phase Air Stripper Effluent Concentration Ranges (1)

Discharge Permit Parameters	Current Reporting Period (2)	Previous Reporting Period (3)	Site-Specific Effluent Limit
PCE	0.45 ug/l	- -	4.0 ug/l
TCE	ND	- -	10.0 ug/l
cis-1,2-DCE	1.9 ug/l	- -	10.0 ug/l
trans-1,2-DCE	ND	- -	10.0 ug/l
VC	ND	- -	10.0 ug/l
1,1,1-TCA	ND	- -	5.0 ug/l
Iron	85.2 ug/l	- -	4,000 ug/l
Manganese	861 ug/l	- -	2,000 ug/l
Sodium	29,600 ug/l	- -	NA
pH	7.83	- -	6-9

- - : Not analyzed. NA: Not applicable.

Red font denotes an exceedance of the applicable standard.

1. Only includes constituents historically detected in exceedance of their respective Class GA Groundwater Standard.
2. Only one round of samples was collected during this monitoring period (August 17, 2011), due to system downtime.
3. 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.

Vapor-Phase Air Stripper Effluent Concentrations (1)	System Effluent	Site-Specific Limits
PCE	- -	0.007 lbs/hr
TCE	- -	0.006 lbs/hr
Xylene	- -	0.001 lbs/hr
1,2-DCE (total)	- -	0.003 lbs/hr
VC	- -	0.014 lbs/hr
1,1,1-TCA	- -	0.001 lbs/hr
Maximum Total VOC Emissions	- -	0.5 lbs/hr (2)

- - : Not analyzed. NA: Not applicable.
1. Vapor-phase effluent samples for laboratory analysis are collected on a semi-annual basis, and were not collected during this 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 treatment system.

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 nine on-site groundwater monitoring wells (MW-101 through MW-108 and MW-5S) and three off-site groundwater monitoring wells (MW-109, MW-111 and MW-2S). 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 twelve groundwater monitoring wells were found to be accessible during the groundwater monitoring sampling event conducted on September 8, 2011. Although all groundwater monitoring wells were located as indicated on the Site map, none had visible well IDs. All groundwater monitoring well concrete well pads (where applicable), protective casings, surface seals, PVC well risers, well plugs and locks were observed to be present and in good condition, with the following exceptions:

- As final restoration/grading has not yet been completed in the vicinity of monitoring well locations MW-104 and MW-5S, these wells do not have concrete well pads;
- Broken eyelets were observed on the monitoring well manholes at monitoring well locations MW-109 and MW-111;
- A small crack on the top of the well casing was observed at monitoring well location MW-2S.

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 in well headspace ranging from 0.0 ppm to a maximum concentration of 16.9 ppm, detected in groundwater monitoring well MW-107. VOCs were not detected in the headspace of any off-site monitoring well.

Below is a detailed summary of the site-specific contaminant of concern concentrations in on-site and off-site groundwater. Refer to *Attachment C* for analytical data results.

Site-Specific Contaminant of Concern Concentrations

Monitoring Well [1]	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	1.5 ug/l	1.0 ug/l	0.52 ug/l	0.74 ug/l	ND	ND	ND	ND	Stable
MW-102	2.2 ug/l	2.6 ug/l	0.72 ug/l	0.45 ug/l	ND	ND	ND	ND	Stable
MW-103	1.1 ug/l	4.9 ug/l	ND	0.58 ug/l	0.37 ug/l	1.5 ug/l	ND	0.38 ug/l	Stable
MW-104	79 ug/l	62.0 ug/l	5.1 ug/l	4.9 ug/l	0.29 ug/l	0.33 ug/l	ND	ND	Decreasing
MW-105	0.49 ug/l	9.1 ug/l	ND	20.0 ug/l	0.57 ug/l	1,000 ug/l	ND	77.0 ug/l	Increasing
MW-106	9.0 ug/l	80 ug/l	5.9 ug/l	63.0 ug/l	120 ug/l	50.0 ug/l	43 ug/l	0.31 ug/l	Stable
MW-107	8.7 ug/l	7.3 ug/l	1.3 ug/l	0.96 ug/l	1.3 ug/l	0.33 ug/l	0.15 ug/l	ND	Decreasing
MW-108	1.4 ug/l	5.6 ug/l	ND	1.1 ug/l	ND	2.2 ug/l	ND	ND	Increasing
MW-5S	ND	0.60 ug/l	ND	ND	ND	ND	ND	ND	Decreasing
Off-Site Monitoring Wells									
MW-109	1.1 ug/l	0.97 ug/l	1.3 ug/l	1.1 ug/l	1.8 ug/l	1.4 ug/l	ND	ND	Decreasing
MW-111	0.56 ug/l	0.54 ug/l	ND	ND	ND	ND	ND	ND	Stable
MW-2S [2]	460 ug/l	38.0 ug/l	93.0 ug/l	14.0 ug/l	300 ug/l	34.0 ug/l	6.3 ug/l	2.0 ug/l	Decreasing
RW-2 [3]	0.87 ug/l	1.0 ug/l	ND	0.66 ug/l	0.27 ug/l	0.72 ug/l	ND	ND	Decreasing

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

1. Click on monitoring well IDs 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. In addition to the site-specific contaminants of concern exceedances summarized above, trans-1,2-dichloroethene, at a concentration of 11 ug/l, was detected in exceedance of its Class GA Groundwater Standard of 5.0 ug/l in off-site monitoring well MW-2S.
3. Extraction well RW-2 is now sampled on a quarterly basis in order to better monitor off-site contaminant concentrations.

The 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 & 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 on-site monitoring wells, and slightly increased in off-site monitoring well MW-109.

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 analysis: bromomethane was detected in the method blank and was qualified as non-detect in samples MW-103 and MW-108.

Findings and Recommendations

Findings:

- General: The GWE&TS was not operational for the majority of the time from December 2010 through July 2011 and September 2011 through October 2011 due to a "loud noise" emitted by the GWE&TS. Following a system shut-down on September 22, 2011 due to the loud noise (as per NYSDEC direction), the GWE&TS remained off for the remainder of this reporting period. Note, an exhaust silencer was ultimately installed on October 25, 2011, eliminating the loud noise;
- SVE System: As detailed above, an IRM consisting of the excavation of contaminated soil was completed in the southwest area of the Site. The excavated soil is currently being remediated on-site utilizing a SVE system and will be utilized as backfill following remediation. Based on PID readings collected throughout this monitoring period, the GAC within the GAC vessels was replaced and, based on low VOC concentrations, ultimately removed from the SVE system on August 4, 2011;
- Monitoring Well Conditions: All groundwater monitoring wells were observed to be in good condition, with the following exceptions:
  - No monitoring wells had visible well IDs;
  - As final restoration/grading has not yet been completed in the vicinity of monitoring wells MW-104 and MW-5S, these wells do not have concrete well pads;
  - Broken eyelets were observed on the manholes at MW-109 and MW-111; and
  - A small crack on the top of the well casing was observed at MW-2S;
- Monitoring Well Headspace: Total VOC concentrations in on-site monitoring well headspace ranged from 0.0 ppm to a maximum concentration of 16.9 ppm, detected in on-site monitoring well MW-107. VOCs were not detected in the headspace of any off-site monitoring well; and
- Monitoring Well Contaminant Concentrations: Three on-site groundwater monitoring wells (MW-104, MW-106 and MW-107) and one 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. However, contaminant concentrations in these monitoring wells have generally remained similar to or have decreased compared to the previous reporting period, with the exception of monitoring well MW-2S.

Recommendations:

- General GWE&TS: Continued operation of GWE&TS and repair and update appropriate GWE&TS components in order to reduce GWE&TS downtime and increase overall efficiency;
- GWE&TS Routine Maintenance: Due to several deficiencies described above, the GWE&TS did not operate throughout the vast majority of the previous reporting period and throughout portions of this reporting period. As such, routine maintenance items were not completed during those times. D&B recommends that the NYSDEC "call-out" contractor adhere to the routine maintenance schedule now that these deficiencies have been rectified and the GWE&TS has again been placed into routine operation.
- Vapor-phase Discharge Monitoring: Monitor vapor-phase discharge utilizing a PID on a routine basis in order to monitor instantaneous VOC concentrations within the vapor-phase effluent;
- Groundwater Sampling: Continue to collect routine groundwater samples from off-site extraction well RW-2, in order to better monitor off-site contamination concentrations and to determine whether the extraction well should be re-started;
- Monitoring Well Measuring Points: Well IDs should be permanently fixed and clearly marked on each groundwater monitoring well for identification purposes;
- Monitoring Well Casings: Repair the well casing eyelets at monitoring wells MW-109 and MW-111 and repair the well casing at monitoring well MW-2S in order to maintain the security of the monitoring wells;

- Property Regrading: Restore the area to the west of the GWE&TS building to final grade and replace the well pads at monitoring wells MW-104 and MW-5S; 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 on-site monitoring wells and off-site moniroting well MW-2S, D&B recommends performing a Remedial Site Optimization (RSO) evaluation to further investigate residual on-site soil contamination, areal plume extents, 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 an annual radius of influence (ROI) analysis for the extraction well; and
  - Temporary Geoprobe Wells: Based on the elevated contaminant concentrations detected in on-site monitoring well MW-106 and off-site monitoring well MW-2S, it may be warranted to install and sample several temporary geoprobe wells in the southeastern area of the Site and downgradient of the Site to more accurately define the current location of the groundwater plume in these areas. 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	06/2010
Phase II Contaminated Soil Removal	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. However, as detailed in several previous Quarterly Reports, several USTs, below-grade drainage structures and contaminated soil have been identified and were removed from the Site, which will likely 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: _____ 6.6.12
Richard M. Walka — **Date**
Senior Vice President

Project Manager: _____ 6/5/12
Stephen E. Tauss — **Date**
Geologist II