

FRANKLIN CLEANERS GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

Latitude 40.688°, Longitude 73.627°

REPORT TITLE

Site Management Quarterly Report No. 52

REPORTING PERIOD

June 2017 through August 2017

CLIENT

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION *Division of Environmental Remediation* 625 Broadway, 12th Floor, Albany, New York 12233

Site

NYSDEC Site No. 130050, Franklin Cleaners Site Groundwater Extraction and Treatment System Village of Rockville Centre, Town of Hempstead, Nassau County, New York



Project Background and Site Description

The Franklin Cleaners groundwater extraction and treatment system (GWE&TS) was installed to recover and treat the "leading edge" of a chlorinated solventcontaminated groundwater plume emanating from the former Franklin Cleaners dry cleaner site, located approximately one mile upgradient of the GWE&TS, in the Village of Hempstead, Nassau County, New York. The groundwater plume is primarily composed of tetrachloroethene (PCE). The Franklin Cleaners GWE&TS was put into operation in September 2004. Refer to *Figure 1* for a site location map depicting the treatment system location.

Groundwater Extraction and Treatment System Overview





The GWE&TS consists of two 6-inch diameter wells screened approximately 75 to 90 feet below grade. Extracted groundwater is conveyed via underground piping to a low-profile stacked-tray air stripper located in the GWE&TS building. The treated groundwater is discharged from the air stripper to a wet well equipped with two series-configured submersible pumps, which convey the treated water via underground piping to a Nassau County Department of Public Works storm sewer manhole in accordance with all applicable discharge standards. Exhaust gas from the air stripper was treated utilizing two series-configured granular activated carbon (GAC) vessels; however, based on historic low contaminant concentrations detected in the air stripper exhaust gas, the air stripper exhaust piping was reconfigured to bypass the GAC vessels

and discharge exhaust gas 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 startup and operation, and an auto dial alarm notification system. Refer to *Figure 2* for an "as-built" treatment system layout diagram. In accordance with recommendations in Site Management Quarterly Reports and the 2016 Periodic Review Report for the site the NYSDEC directed that the GWE&TS be shutdown in July of this reporting period to evaluate if continued operation of the GWE&TS is necessary. Refer to *Attachment A* for a memorandum regarding the prolonged system shutdown.

Regulatory Requirements/Cleanup Goals

Site-specific remedial goals have been established through the remedy selection process as defined in 6 NYCRR Part 375-1.10, and are documented in the Record of Decision (ROD), dated March 1998. The site-specific remedial goals outlined in the March 1998 ROD are provided in <u>Attachment B</u>. The overall goal is to meet

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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 potential for exposure to contaminated groundwater.
- Provide for attainment of SCGs for groundwater, soil and indoor air within the limits of the affected area, to the extent practical.

Remedial System Optimization (RSO) Plume Redelineation

A plume redelineation program was completed in June and July 2014 as part of an overall larger and ongoing Remedial System Optimization (RSO) evaluation undertaken to improve the efficiency, effectiveness and net environmental benefit of the current GWE&TS. The plume redelineation program was completed in order to identify the current horizontal and vertical extents of the remaining groundwater plume associated with the Site.

The results of the plume redelineation program were documented in the July 2015 Plume Redelineation Summary Report. Based on the plume redelineation program and given that the greatest current PCE exceedances were identified upgradient of the Site, the groundwater plume may have, in part, resulted from an off-site "source area" located upgradient of the site. It should be noted that the November 1998 RI/FS identified at least three former dry cleaners known to have existed in an upgradient arrangement with respect to the Site.

Treatment System Operational Status

The GWE&TS was operating for the majority of this reporting period; however, based on operational and performance data sets discussed above for the GWE&TS, the NYSDEC determined the system, as configured may be approaching asymptotic conditions. As such, the NYSDEC directed that the GWE&TS be shutdown to perform an evaluation of the system as configured. Accordingly, on July 17, 2017, the NYSDEC Remedial Services Contractor conducted a complete round of O&M activities and subsequently shutdown the system.



Treatment System Performance Summary

The GWE&TS performance during the current reporting period and since inception in September 2004 is summarized below. System monitoring and sampling results are further detailed below in the following subsection.

Treatment System Performance Summary					
Parameter	Quarter 52 (June 1, 2017 through August 31, 2017)	Quarter 51 (March 1, 2017 through May 31, 2017)	Totals to Date (2004 through current Quarter)		
Influent					
EW-1 Average Pumping Rate (gal per min)	21.5	22.0	33.7		
EW-1 Total Flow Volume (gal) ⁽¹⁾	1,427,317	2,751,236	202,815,439		
EW-1 Maximum Influent PCE Concentration $(ug/l)^{\scriptscriptstyle (2)(3)}$	3.8	4.5	44		
EW-2 Average Pumping Rate (gal per min)	4.5	4.4	5.3		
EW-2 Total Flow Volume (gal)	416,140	591,095	32,090,564		
EW-2 Maximum Influent PCE Concentration $(ug/l)^{\scriptscriptstyle (2)(3)}$	110	100	370		
Influent Total Flow Volume (gal)	1,843,457	3,342,332	234,906,003		
Effluent					
Effluent Total Flow Volume (gal) ⁽¹⁾	2,109,367	3,906,481	282,223,095		
Maximum Effluent PCE Concentration (ug/I) ⁽³⁾	2.1	Nondetect	1.0		
VOC Removal Summary					
Total PCE Removal (lbs)	0.23	0.39	58.60		
Average PCE Removal Rate (lbs/hr)	2.78 E-04	2.62 E-04	4.48 E-04		
PCE Removal Efficiency Range (%)	90.14 - 99.06	99.35 - 99.43	89.67 - 99.84		

Notes:

1. System influent and effluent pumping rates and volumes are monitored on a bi-weekly basis. Due to total flow volume inconsistencies, replacement of the influent flow meters was performed on June 23, 2011. Total flow volume inconsistencies remained with respect to influent/effluent flow; therefore, the effluent flow meter was replaced on May 2, 2012. Although the system influent total flow volumes have been more consistent since the effluent flow meter replacement, system influent and effluent total flow volumes remain dissimilar.

2. More detailed contaminant concentration information is provided below.

3. As the GWE&TS was shutdown on July 17, 2017, aqueous-phase influent and effluent samples were collected in June 2017 and July 2017 prior to system shutdown; however, no samples were collected in August 2017.





Extraction Well Flow Rate Trends

- 1. Based on the results of capture zone design modeling, containment of the Franklin Cleaners chlorinated plume (at an approximate 450-foot width) would be achieved with the GWE&TS operating at a minimum required pumping rate of 20 gpm, in a one or two extraction well scenario. Extraction well EW-1 has been operating at an average flow rate of approximately 35 gpm since system start-up to provide for a greater factor of safety and ensure the full width of the plume is captured. Extraction well EW-2 has been operating at an average flow rate of approximately 5 gpm since system start-up due to the elevated VOC concentrations present within this well. It should be noted that the maximum yield for EW-2 has historically been limited to a range of 5 to 7 gpm due to a high silty/clay component in the screened interval of this extraction well.
- 2. After a system shutdown that occurred on May 31, 2015, the system was restarted by the NYSDEC Remedial Services Contractor on June 10, 2015 at a slightly lower VFD frequency setting (approximately 60 to 63 Hz.) than prior to the shutdown (approximately 66 to 68 Hz.)
- 3. The flow rate for EW-2 was slightly decreased in July of 2016 and has remained at this level throughout previous reporting periods due to several low-level alarm conditions reported.
- 4. After a system shutdown that occurred on December 24, 2016, the system was restarted by the NYSDEC Remedial Services Contractor on December 27, 2016 at a slightly lower VFD frequency setting (approximately 50 Hz.) than prior to the shutdown (approximately 60 to 63 Hz.)
- 5. On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS per direction of the NYSDEC.





→ Quarterly Total Costs (\$) ----Cumulative VOC Removed (Ib) On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS per direction of the NYSDEC. 1.



6

4 Air

2

Aug-17 -

Feb-17

Apr-17

Jun-17

The approximate PCE removal efficiency for the low-profile stacked-tray air stripper ranged from 90.14% to 99.06% during this reporting period. Additionally, 1. the average differential pressure across the low-profile air stripper was well below 45 inches of water (manufacturer's recommended threshold for equipment maintenance) during this reporting period.

lun-16

Aug-16

Date

0ct-16

bec-16

Air Stripper Differential Pressure (inches H2O)

2. On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS per direction of the NYSDEC.

pr-16



89.00

87.009

un-15

Aug-15

Oct-15

Dec-15

----Air Stripper PCE Removal Efficiency

eb-16



Treatment System Operation and Maintenance

Routine and non-routine system maintenance activities are discussed below. A table summarizing the required routine equipment maintenance, as well as a summary of the alarm conditions and associated system runtime/downtime for this reporting period, are provided below. Refer to <u>Attachment C</u> for operation and maintenance logs, as prepared by the NYSDEC Remedial Services Contractor for this reporting period.

Routine Treatment System Monitoring and Equipment Maintenance Schedule Summary

					Ма	<i>intenance</i> S	Summary		
INSPECTION/ Maintenance Item	Manufacturer	Model Number	Frequency	Curren	t Reporting	Period	Next R	eporting	Period
mannenance nem		Number		Jun-17	Jul-17 ⁽¹⁾	Aug-17 ⁽²⁾	Sept-17	0ct-17	Nov-17
System Monitoring			Bi-Weekly	6/8/17 6/23/17	7/5/17 7/17/17				
Extraction Well Pumps	Grundfos Pump Corp.	Redi-Flo-4 Model 25E3	As needed based on flow trends						
Air Stripper	Carbonair	STAT Model 180	As needed based on differential pressure readings		7/17/17 7/18/17				
Pressure Blower Maintenance	New York Blower Company	Model 2506A	Bi-Monthly	6/8/17 6/23/17	7/5/17 7/17/17				
Vapor Carbon Vessels	Tetrasolv Filtration Inc.	Model VF-1000	As needed based on PID screening results						
Wet Well Submersible Pump Maintenance	Flygt Corporation	Model CP3085	Annual		7/24/17				
Sump Pump	Grundfos Pump Corp.	Model KP-350	As needed		7/24/17				
Blower Vent Screen Cleaning/Maintenance			As needed	6/8/17 6/23/17	7/5/17 7/17/17				
Flow Meter Vault Effluent Screen Cleaning/Maintenance			Annually		7/24/17				
Wet Well Strainer Cleaning/Maintenance			Annually		7/24/17				

Notes:

1. As per NYSDEC direction a full round of O&M activities were completed from July 17 through July 24, 2017, as part of the system shutdown activities.

 On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS, as such routine maintenance work was not completed throughout August 2017 and is not scheduled for following reporting periods.

Non-Routine Treatment System Maintenance

- On July 5, 2017, the NYSDEC Remedial Services Contractor was on-site to clear the Air Stripper Blower intake screen.
- On July 17, 2017, the NYSDEC Remedial Services Contractor was on-site to complete GWE&TS lubrication and maintenance per the 2003 Operational and Monitoring Manual and began disassembly and cleaning of the air stripper.
- On July 18, 2017, the NYSDEC Remedial Services Contractor was on-site to complete repairs to the building exhaust fan and cleaning of the air stripper.
- On July 24, 2017, the NYSDEC Remedial Services Contractor was on-site to complete repair and replacement of the air stripper.





Facility Maintenance

- On June 8, 2017, the NYSDEC Remedial Services Contractor was on-site to complete landscaping activities.
- On June 23, 2017, the NYSDEC Remedial Services Contractor was on-site to complete landscaping activities.
- On July 19, 2017, the NYSDEC Remedial Services Contractor was on-site to complete landscaping activities.

Alarm Conditions

Alarm conditions did not occur throughout this reporting period.

Treatment System Runtime/Downtime Summary				
Runtime - Current Reporting Period ⁽¹⁾	1,113 hours	50.4%		
Downtime - Current Reporting Period ⁽¹⁾	1,095 hours	49.6%		
Total Runtime to Date ⁽²⁾	102,029 hours	90.0%		
Total Downtime to Date	11,289 hours	10.0%		

1. Total elapsed time for current reporting period, 2,208 hours (June 1, 2017 through August 31, 2017). Per the NYSDEC the GWE&TS was shutdown on July 17, 2017.

2. Based on a system start-up date of September 20, 2004.

Treatment System Monitoring and Sampling Results

Per the requirements of the NYSDEC-approved schedule, monthly, quarterly and semi-annual system sampling was completed by the NYSDEC Remedial Services Contractor, as follows:

Treatment System and Groundwater Sampling Summary							
Sampling Location	Monthly VOC (EPA Method 8260) ⁽¹⁾	Semi-Annual VOC (EPA Method T0-15)	Quarterly Iron & Manganese (EPA Methods 6010)	Semi-Monthly Effluent pH (3) (Field Screening)			
Extraction Well EW-1 and EW-2 Influent	6/8/17, 7/5/17	NA	NA	NA			
Air Stripper Aqueous-phase Effluent	6/8/17, 7/5/17	NA	(2)	6/23/17, 7/5/17			
Air Stripper Vapor-phase Effluent	NA	NA	NA	NA			

NA: Not a routine sample collection location.

1. As a result of the GWE&TS system shutdown, extraction well and air stripper aqueous phase effluent samples were not collected in August 2017 of this reporting period.

2. As directed by the NYSDEC in December 2016, effluent samples will be analyzed for total Iron and Manganese once on a quarterly basis. Inadvertently, the NYSDEC Remedial Services Contractor did not collect quarterly iron and manganese samples.

3. pH readings were recorded on only two occasions throughout this reporting period as the NYSDEC Remedial Services Contractor did not have functioning equipment.





Extraction Wells - Treatment System Influent PCE Concentration Ranges/Averages ⁽¹⁾					
	Curront	Provioue	Average for Most	Avorago to	
Sample Location	Reporting Period	Reporting Period	Period	Date	Groundwater Standard
Extraction Well EW-1 ⁽²⁾	3.3 ug/l - 3.8 ug/l	4.0 ug/l - 4.5 ug/l	4.2 ug/l	15 ug/l	5.0 ug/l (Class GA)
Extraction Well EW-2 ⁽²⁾	110 -110 ug/l	97 ug/l - 100 ug/l	104 ug/l	91 ug/l	5.0 ug/l (Class GA)

1. It should be noted that chloroform and methyl tert-butyl ether (MTBE) were detected in one or more influent samples collected from extraction well EW-2; however, these compounds were detected at concentrations well below their respective Class GA Groundwater Standards.

2. On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS, per direction of the NYSDEC. As such, only two aqueous-phase influent samples were collected this reporting period on June 8, 2017 and July 5, 2017.

Extraction Well EW-1 Influent PCE Concentration Trend Line

Extraction Well EW-2 Influent PCE Concentration Trend Line



1. On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS, per direction of the NYSDEC. As such, only two aqueousphase influent samples were collected this reporting period on June 8, 2017 and July 5, 2017.

Aqueous-Phase Air Stripper Effluent Concentration Ranges						
Discharge Permit Parameters	Current Reporting Period	Previous Reporting Period	Site-Specific Effluent Limit			
PCE	0.22 ug/l - 2.1 ug/l	ND	5.0 ug/l			
TCE	ND	ND	10.0 ug/l			
1,1-DCE	ND	ND	10.0 ug/l			
Cis-1,2-DCE	ND	ND	10.0 ug/l			
1,1,1-TCA	ND	ND	10.0 ug/l			
Iron		ND	1,000 ug/l			
Manganese		10.1	1,000 ug/l			
pH (Field Screening Results) ⁽¹⁾	6.12 - 6.45	6.33 - 7.38	6.5 - 8.5			

Notes:

ND: Constituent concentration below the analytical detection limit.

Site-specific effluent limits, per the SPDES permit equivalency. Red font denotes an exceedances of the site-specific effluent limits.

1. In addition to the pH readings collected on a monthly basis, as provided on the analytical data tables in <u>Attachment D</u>, the NYSDEC Remedial Services Contractor collects pH readings on a semi-monthly basis during routine system monitoring events. The provided pH screening results incorporate both sets of data.

2. On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS, per direction of the NYSDEC. Only two aqueousphase effluent samples were collected this reporting period on June 8, 2017 and July 5, 2017.



Treatment System Vapor-Phase Discharge		
	Current Reporting Period ⁽⁵⁾	Site-Specific Discharge Limit
Total VOC Concentrations (field screening with $\mbox{PID})^{(i)}$	0.0	NA
Total VOC Concentrations (laboratory analysis) $^{\!\!\!\!(2)}$		NA
Average Pressure Blower Flow Rate	475	NA
Maximum Total VOC Emissions ⁽³⁾	0.0	0.5 lbs/hr ⁽⁴⁾

--: Not analyzed

NA: Not applicable

ppm: parts per million

1. The PID screening is utilized as a means to instantaneously monitor total vapor-phase VOC discharge concentrations, however due to equipment failure only five PID screenings were collected this reporting period.

- 2. Vapor-phase discharge samples for laboratory analysis via Method TO-15 are collected on a semi-annual basis and were collected on April 18, 2017 of the previous reporting period.
- 3. Total VOC emissions were calculated utilizing the "worst-case" scenario data obtained with a PID.
- 4. The site-specific effluent limit of 0.5 lbs/hr was developed in consultation with the NYSDEC as a means to monitor the vapor-phase VOCs discharged by the GWE&TS.
- 5. On July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS, per direction of the NYSDEC.

Groundwater Monitoring Summary

As per the NYSDEC-approved sampling frequency, seven groundwater monitoring wells were sampled during this reporting period. Groundwater monitoring wells ASMW-1 through ASMW-7 were sampled on July 5, 2017, July 7, 2017 and July 10, 2017. These groundwater monitoring wells were sampled to determine groundwater quality at and in the vicinity of the leading edge of the groundwater contaminant plume associated with the Site. Groundwater samples were collected from three groundwater monitoring wells located in close proximity to the leading edge of the Franklin Cleaners plume (ASMW–1 through ASMW–3), and four groundwater monitoring wells located downgradient of the leading edge of the plume (ASMW–4 through ASMW–7).

Note that groundwater monitoring well ASMW-4 acts as an early warning or "sentinel" well for a cluster of Village of Rockville Centre public supply wells located downgradient of the treatment system building. The locations of the groundwater monitoring wells are depicted on *Figure 3*.

Groundwater Monitoring Well Condition Summary:

All of the sampled groundwater monitoring wells were found to be accessible during the groundwater monitoring/sampling event conducted on July 7, 2017 and July 10, 2017. All groundwater monitoring wells were located as indicated on the site map and the concrete well pads (where applicable), protective casings, surface seals, well IDs, PVC well risers, well plugs and locks were observed to be present and in good condition, with the exception of the following;

• A lock is not present at monitoring well ASMW-2, ASMW-4 and ASMW-5.

Field inspection logs for remaining groundwater monitoring wells assessed during this period are provided in <u>Attachment</u> <u>E</u>. The NYSDEC Remedial Services Contractor inadverthently did not complete a monitoring well field inspection log for ASMW-7.

Groundwater Monitoring Results Summary:

A headspace reading was collected at each of the sampled groundwater monitoring wells immediately after the removal of the well plugs utilizing a PID. VOCs were not detected in the headspace of any monitoring wells.

Below is a detailed summary of PCE concentrations in site groundwater. Refer to <u>Attachment D</u> for analytical data results.



Groundwater Monitoring Wells - PCE Concentrations								
	Leading Edge Monitoring Wells Sentinel Monitoring Wells				Class GA			
Monitoring Well ⁽¹⁾	ASMW-1	ASMW-2	ASMW-3	ASMW-4	ASMW-5	ASMW-6	ASMW-7	Standard
Current Reporting Period	28 ug/l	0.53 ug/l	0.19 ug/l	ND	ND	ND	ND	5.0 ug/l
Previous Reporting Period	47 ug/l	0.69 ug/l	NS	ND	NS	NS	NS	5.0 ug/l
2-Year PCE Trend Analysis ⁽²⁾	Decreasing	Stable	Stable	Stable	Stable	Stable	Stable	

ND: Constituent concentration below the analytical detection limit.

NS: Not sampled

Red font denotes an exceedances of the Class GA Groundwater Standard.

In addition to PCE, 1,4-Dioxane and MTBE were detected in one or more groundwater monitoring well during this reporting period; however, these compounds were detected at concentrations well below their respective Class GA Standards.

1. Click on monitoring well IDs with blue text for graphs depicting PCE concentrations over the last 2 years in wells exhibiting exceedances of the Class GA Groundwater Standard for this and the previous reporting period.

2. Trend analysis is calculated based on an increase or decrease of 5.0 ug/l over a 2-year time frame.

A figure depicting the current PCE concentrations in groundwater is provided as *Figure 4*.

Additionally, per the request of the NYSDEC, all on-site and off-site groundwater monitoring wells (ASMW-1, ASMW-2, ASMW-3, ASMW-4, ASMW-5, ASMW-6, and ASMW-7) were sampled for polyfluoroalkyl substances (PFAS) and 1,4-dioxane during the site-wide groundwater sampling event. <u>Attachment D</u> presents tabulated analytical results for 1,4-dioxane and tabulated analytical results for PFAS.

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 <u>Attachment F</u>. Based on D&B's review, qualification of the data was necessary for the following analyses:

- The percent recovery (%R) was below the quality control (QC) limit for 4-methyl-2-pentanone (MIBK) in the laboratory control sample (LCS) and the matrix spike duplicate (MSD). 4-Methyl-2-pentanone (MIBK) was not detected and qualified as an estimated detection limit (UJ) in all system samples collected on June 8, 2017. The %R was above the QC limit for toluene the matrix spike (MS) and MSD. Toluene was not detected therefore qualification of the data was not necessary for system effluent samples collected on June 8, 2017.
- The %R was above the QC limit for chloromethane in the LCS. Chloromethane was not detected therefore qualification
 of the data was not necessary for system samples collected on July 5, 2017. The %R was below the QC limit for cis1,2-dichloroethene the MS and MSD. Cis-1,2-dichloroethene was not detected and qualified as an estimated detection
 limit (UJ) in all system samples.
- Perfluorobutanesulfonic acid (PFBS) was detected in the method blank. Perfluorobutanesulfonic acid (PFBS) was qualified as non-detect (UB) in samples ASMW-6 and ASMW-7 collected on July 5, 2017. The %R was above the QC limit for chloromethane in the LCS and 1,2,4-trichlorobenzene in the MSD. These compounds were not detected in samples ASMW-6 and ASMW-7, therefore qualification of the data was not necessary for groundwater samples collected on July 5, 2017. The surrogate was above the QC limit in the samples associated with 1,4-dioxane. 1,4-Dioxane was qualified as estimated bias high (J+) in samples ASMW-6 and ASMW-7.
- For groundwater monitoring samples collected on July 10, 2017, carbon disulfide was detected in the method blank. It was not detected in the associated samples therefore, qualification of the data was not necessary. The %R was above the QC limit for bromomethane in the LCS. The %R was below the QC limit for 1,1,2-trichloro-1,2,2-trifluoroethane in the MS duplicate. 1,1,2-Trichloro-1,2,2-trifluoroethane was qualified as an estimated detection limit (UJ) in all samples The surrogate was above the QC limit in the samples associated with 1,4-dioxane. 1,4-Dioxane was not detected in the samples collected from ASMW-2, ASMW-3, and ASMW-5 therefore qualification of the data was not necessary.

All analytical data have been submitted to the NYSDEC in the required EQuIS format upon receipt of the data from the NYSDEC Remedial Services Contractor.





Treatment System Operational Costs

The total cost of operation of the GWE&TS from June 1, 2017 through August 31, 2017 was approximately \$39,142. This total includes engineering and subcontractor costs, as well as utility costs associated with the operation of the GWE&TS (electric). It should be noted that this total does not include any administrative costs incurred by the NYSDEC in support of this project throughout this reporting period. A review of these costs is provided below.

Reporting Period Cost Summary ⁽¹⁾						
COST ITEM	CURRENT REPORTING PERIOD BUDGET EXPENDED (June 1, 2017 through August 31, 2017)	PREVIOUS REPORTING PERIOD BUDGET EXPENDED (March 1, 2017 through May 31, 2017)				
ENGINEERING SUPPORT						
D&B Engineers and Architects, P.C.	\$15,425	\$15,105				
SUBCONTRACTORS						
NYSDEC Remedial Services Contractor ⁽²⁾ (Routine/Non-Routine Maintenance Activities)	\$16,542	\$4,466				
Test America (Analytical Laboratory)	\$3,848	\$1,153				
SUB-TOTAL	\$20,390	\$5,619				
UTILITIES						
Electric	\$3,327	\$4,936				
SUB-TOTAL	\$3,327	\$4,936				
TOTAL COSTS	\$39,142	\$25,660				
AVERAGE COST/MONTH	\$13,047	\$8,553				
COST/POUND OF VOC REMOVED	\$170,183 ⁽³⁾	\$65,795 ⁽⁴⁾				

1. The treatment system costs include monthly utility charges, maintenance costs and engineering costs. Capital construction costs and NYSDEC project management effort are not included in this evaluation. Total costs to date since July 2006 are approximately \$1,877,359.

- 2. All expenses and labor are incorporated into the NYSDEC Remedial Services Contractor overall costs, excluding electric costs.
- 3. Based on a total of approximately 0.23 lbs of total VOCs removed during this reporting period. It should be noted that on July 17, 2017, of this reporting period the NYSDEC Remedial Services Contractor shutdown the GWE&TS, per direction of the NYSDEC.
- 4. Based on a total of approximately 0.39 lbs of total VOCs removed during the previous reporting period.

Findings and Recommendations

Findings:

- General: Routine monitoring is conducted on a bi-weekly basis per the NYSDEC-approved schedule for the months of June and July 2017; however, as directed by the NYSDEC the GWE&TS was shutdown on July 17, 2017.
- Extraction Well Contaminants and Flow: The operational and performance analytical results of the system influent samples demonstrate that groundwater extraction wells EW-1 and EW-2 may be approaching asymptotic conditions. As a result the GWE&TS was shutdown to allow for the evaluation of the GWE&TS in the future. Throughout this reporting period extraction well EW-1 operated at an average flow rate of 21.5 gpm and extraction well EW-2 operated at an average flow rate of 4.5 gpm throughout this reporting period.
- GWE&TS Routine Maintenance and Monitoring: Routine monitoring during this reporting period was conducted in accordance with the bi-monthly schedule for the months of June and July 2017; however, due to system shutdown on July 17, 2017, maintenance and monitoring activities were not completed throughout August 2017. Maintenance of the pressure blower during this monitoring period was not completed in accordance with the routine bi-monthly schedule. This item was completed on four occasions during this reporting period, rather than the one required time.





NYSDEC Site No. 130050, Franklin Cleaners Site Groundwater Extraction and Treatment System

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- Non-Routine Maintenance: On July 5, 2017, the NYSDEC Remedial Services Contractor was on-site to clear the air stripper blower intake screen to the drop vacuum and increase flow. On July 17, 2017, the NYSDEC Remedial Services Contractor was on-site to complete GWE&TS lubrication and maintenance per the 2003 Operational and Monitoring Manual and began disassembling and decontaminating of shallow tray prior to system shutdown. On July 18, 2017, the NYSDEC Remedial Services Contractor was on-site to complete repairs to building exhaust fan and decontaminate shallow tray and shallow tray effluent flaps. On July 24, 2017, the NYSDEC Remedial Services Contractor was on-site to complete repair and replacement of shallow tray gasket, shallow tray reassembly, and completed decontamination and removal of Flygt pumps.
- Treatment System Runtime: The treatment system was operational for approximately 50.4% of this reporting period (approximately 1,113 hours). The downtime observed during this reporting period (1,095 hours or 49.6%) as a result of the GWE&TS shutdown per the direction of NYSDEC.
- Air Stripper Discharge Parameters (Aqueous-phase): All aqueous-phase discharge analytes were non-detect or detected at concentrations below their respective site-specific effluent limits.
- Air Stripper Discharge Parameters (Vapor-phase): The vapor-phase discharge piping outlet exhibited VOC non-detect concentrations, as detected utilizing a PID. Total VOC concentrations were well below the site-specific total VOC effluent limit of 0.5 lbs/hr.
- Groundwater Monitoring Well Inspection/Sampling Summary:
 - All of the sampled groundwater monitoring wells were found to be accessible during the groundwater monitoring/ sampling event conducted on July 5, July 7 and July 10, 2017. All groundwater monitoring wells were located as indicated on the site map and the concrete well pads (where applicable), protective casings, surface seals, well IDs, PVC well risers, well plugs and locks were observed to be present and in good condition with the exception of the following;
 - A lock is not present at monitoring wells ASMW-2, ASMW-4 and ASMW-5.
- Monitoring Well PCE Exceedances: PCE was detected at a concentration of 28 ug/l in groundwater monitoring well ASMW-1, exceeding the Class GA Standard of 5.0 ug/l. PCE concentrations in ASMW-1 have been slightly irregular, over the last 2 years (ranging from a minimum of 19 ug/l in October, 2015 to a maximum of 57 ug/l, detected in July 2015). Additionally, PCE concentrations are exhibiting a decreasing trend over the last two years.

Recommendations:

- General Treatment System:
 - It is recommended that the GWE&TS continue to be shutdown to monitor the effect on contaminant concentrations within the existing monitoring well network located in the vicinity and downgradient of the GWE&TS. To assist in this evaluation it is further recommended that all wells be sampled on a quarterly basis (EW-1, EW-2 and ASMW-1 through 7).
 - D&B recommends that the NYSDEC Remedial Services Contractor record more clear and detailed descriptions of completed field activities and issues encountered.





Reclassification/Delisting Evaluation

The Site was originally listed as a Class 2 Inactive Hazardous Waste Site by the NYSDEC on June 17, 1993. 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	03/1998
Remedial Design	02/2001
Groundwater Extraction and Treatment System Construction	07/2003 (2)
Remedial Action (Source Area Remediation)	03/2007 (1)

1. Source area contaminated soil and groundwater were remediated with the Air Sparge/Soil Vapor Extraction (AS/SVE) system beginning in September 2003. The on-site AS/SVE system has successfully removed the contaminants from the vadose zone and greatly diminished groundwater contaminants to below detectable limits. Although confirmation soil samples met the required remedial goals, a subslab depressurization system replaced the on-site AS/SVE system in 2006 due to the detection of elevated vapor phase VOC concentrations in the basement level and below the basement floor slab.

2, Construction of the GWE&TS was completed in July 2003. The GWE&TS was placed into routine operation in September 2004 and currently continues to meet remedial objectives as originally designed.

Given the above, NYSDEC reclassified the Franklin Cleaners GWE&TS Site on December 11, 2012, pursuant to the requirements identified in 6 NYCRR §375-2.7, as a Class 4 Site since the NYSDEC determined that the site no longer presents a significant threat to public health and/or the environment based on remedial efforts performed to date and implementation of the July 2012 Site Management Plan (SMP). In addition, the NYSDEC has implemented a post-remedial indoor air study within the source area structures/buildings to verify current site conditions. Site delisting is not feasible at this time, as all remediation and post-remediation activities have not been satisfactorily completed.

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:	Him M. Waller	2.27.18
	Richard M. Walka	Date
	Senior Vice President	
	Andr	
Project Manager:		2.27.2018
	🖉 James Van Horn	Date
	Project Manager	

