OPERATIONS AND MAINTENANCE REPORT
March 2019

United States Environmental Protection Agency
Lawrence Aviation Industries Superfund Site
Port Jefferson Station, Suffolk County, New York

Contract No. EP-W-09-009
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HDR

REMEDIAL ACTION CONTRACT (RAC) 2 PROGRAM

OPERATIONS AND MAINTENANCE REPORT

March 2019

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE

PORT JEFFERSON STATION, NEW YORK

April 30, 2019

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
bgs	below ground surface
btc	below top of reference point on casing
cf	cubic feet
cfm	cubic feet per minute
cis-1,2-DCE	cis-1,2-dichloroethene
CVOC	chlorinated volatile organic compound
d	day
°F	degrees Fahrenheit
D	diluted result
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
DESA	Division of Environmental Science and Assessment
DPA™	Dry Penetrating Agent
DQI	data quality indicator
EFF	effluent
EPA	United States Environmental Protection Agency
ERRS	Emergency Response and Removal Section
EW	extraction well
ft	feet
g	gram
g/mole	gram per mole
GAC	granular activated carbon
gal	gallon
gpm	gallons per minute
GPS	global positioning system
GWTF	groundwater treatment facility
HDR	Henningson, Durham & Richardson, Architecture and Engineering PC
hp	horse power
ID	identification
in H_2O	inches water column
INF	influent
ITP	Initial Testing Program
IW	injection well
K	reported value maybe biased high
kWh	kilowatt hour
L	lamber projections
l	liter
L	reported value maybe biased low
l/gal	liter per gallon

ACRONYMS AND ABBREVIATIONS (CONTINUED)

LAI	Lawrence Aviation Industries
<	less than
lb	pound
lb/d	pounds per day
lb/g	pounds per gram
LTRA	Long-term Response Action
mg/l	milligram per liter
µg/l	microgram per liter
µg	microgram
µg/m3	microgram per cubic meter
min/day	minutes per day
mol/l	mole per liter
N/A	not applicable
NA	result not available
NAD	North American Datum
NAVD	North American Vertical Datum
NC	not collected
NS	not sampled
NSF	National Sanitation Foundation
NY	New York
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
O&M	operations and maintenance
OMP	Old Mill Pond
PCE	tetrachloroethene
%	percentage
PLC	programmable logic controller
ppbv	parts per billion by volume
ppm	parts per million
psi	pounds per square inch
Q	quarter
QAPP	Quality Assurance Project Plan
RA	remedial action
RAC 2	Remedial Action Contract 2
RD	remedial design
ROD	record of decision
Site	LAI Superfund Site
SPC	State Plane Coordinates
SPDES	State Pollutant Discharge Elimination System
STP	standard temperature and pressure
SU	standard unit
1,1,1-TCA	1,1,1-trichloroethane

ACRONYMS AND ABBREVIATIONS (CONTINUED)

TCE	trichloroethene
U	not detected
VC	vinyl chloride
VFD	variable frequency drive
VOC	volatile organic compound
Y	year

1.0 OVERVIEW

This operations and maintenance (O&M) report for the Lawrence Aviation Industries (LAI) Superfund Site (Site) was prepared by Henningson, Durham & Richardson, Architecture and Engineering PC, in association with HDR Engineering, Inc. (HDR) under United States Environmental Protection Agency (EPA) Contract Number EP-W-09-009, EPA Work Assignment Number 049-LTRA-02NS. The O&M report was prepared pursuant to Subtask 9.3 of the Work Plan.

The Site includes LAI's manufacturing plant which totals about 40 acres and historically produced titanium sheeting for the aeronautics industry (hereinafter referred to as the "LAI industrial facility"). The LAI industrial facility consists of 10 buildings located in the southwestern portion of the property. Approximately 80 acres located to the northeast and east of the LAI industrial facility are referred to as the "Outlying Parcels," which are vacant, wooded areas. The Outlying Parcels are part of the Site. The groundwater at the Site has been impacted by chlorinated volatile organic compounds (CVOCs), specifically tetrachloroethene (PCE) and trichloroethene (TCE) due to past disposal practices. On September 29, 2006, EPA issued the record of decision (ROD) selecting the remedial action (RA) for the Site, which covered both soil and groundwater. The soil remedy has been addressed by others. The RA is being conducted to hydraulically-contain and to treat groundwater at the source area at the LAI Site and to prevent the migration of contaminated groundwater further downgradient into Old Mill Pond (OMP), Old Mill Creek and Port Jefferson Harbor. **Figure 1-1** shows the Site Location Map.

HDR has been conducting the long-term response action (LTRA) including operation, maintenance and monitoring of the groundwater treatment facility (GWTF) at the source area at the LAI Site and a GWTF at the downgradient contaminated groundwater plume, located to the north of the LAI industrial facility, near OMP since October 2012. **Figure 1-2** shows the LAI and OMP GWTF Locations.

The GWTF at the LAI Site was completed in September 28, 2010 and is currently in the eighth year of LTRA. The LAI GWTF layout is shown on **Figure 1-3**. Hydraulic plume control of the source area is achieved by extracting contaminated groundwater via two extraction wells (EW-01 and EW-02). Extracted groundwater is treated by an air stripper and discharged to groundwater via five upgradient injection wells (IW-01 through IW-05) under a New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) permit equivalent. The volatile organic compound (VOC)-rich air exiting the air stripper is treated by two vapor phase granular activated carbon (GAC) units before discharging to the air under a NYSDEC air permit equivalent. **Table 1-1** provides the well construction details.

The downgradient GWTF near OMP was completed in August 2011 and is currently in the seventh year of LTRA. The OMP GWTF layout is shown on **Figure 1-4**. Design, construction, and initial operation of this treatment system were completed by EPA Region 2 Emergency Response and Removal Section (ERRS) Removal Action Branch. The system includes five extraction wells (EW-1 through EW-4 and EW-6) which provide hydraulic control of the plume. Three of the extraction wells (EW-1, EW-2, and EW-6) are currently active. EW-3 and EW-4 are standby wells and are not utilized for the extraction of groundwater due to elevated iron levels. Extraction well EW-5 is not used for groundwater extraction and hydraulic control since the well is not of adequate size or depth for a pump. The extracted groundwater is treated by an air stripper which is followed by two liquid phase GAC units. The treated effluent is discharged

to OMP under a NYSDEC SPDES permit equivalent. The VOC-contaminated air is treated by three vapor phase GAC units in lead-lag phase before discharge to the air under a NYSDEC air permit equivalent. **Table 1-2** provides the well construction details.

1.1 Purpose of Report and LTRA Objectives

This document summarizes the monthly performance of the GWTF at the LAI Site and the downgradient GWTF near OMP during the O&M period from March 1 to March 31, 2019. Operation, maintenance, and monitoring of the facilities were performed by HDR.

The purpose of this O&M report is to present the results of the monthly operations and compliance sampling, and provide a summary of maintenance and operational problems encountered at both treatment facilities.

The detailed scope and objectives are included in the April 2016, Revision 3 LTRA Quality Assurance Project Plan (QAPP); the primary objectives are summarized below:

- To confirm achievement of remedial system performance requirements, as specified in the RA subcontract documents (i.e., specifications, drawings, approved RA Subcontractor submittals);
- To confirm compliance with the NYSDEC SPDES and Air Pollution Control permit equivalents; and
- To obtain data for assessing LTRA progress and to support decisions regarding treatment system O&M and optimization.

A process flow schematic for the LAI and OMP treatment systems, including system sample locations, is provided as **Figure 1-5** and **Figure 1-6**, respectively.

A data usability evaluation was performed to verify conformance with the LTRA QAPP requirements and confirm data usability as per the data quality indicators (DQIs) specified in the LTRA QAPP. Sample data were evaluated for precision, accuracy, representativeness, comparability, sensitivity, and completeness. The data usability analysis report is included as **Appendix A**. Samples for the monthly treatment system performance and compliance sampling were analyzed for VOCs, metals, and/or wet chemistry parameters. No data were rejected for the samples, so all data are usable. The results indicate that sufficient data were collected to obtain a complete and usable data set.

2.0 LAWRENCE AVIATION INDUSTRIES GROUNDWATER TREATMENT SYSTEM PERFORMANCE AND COMPLIANCE SAMPLING RESULTS

Groundwater treatment system performance and compliance monitoring activities were conducted at the LAI GWTF from March 1 to March 31, 2019. The results are presented below. The primary site-related VOCs are PCE and TCE. The following CVOCs have also been included for monitoring purposes as they have been detected site wide at low concentrations historically: 1,1,1-trichloroethane (1,1,1,-TCA), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), chloroform and vinyl chloride (VC).

2.1 Extraction Well Performance

The results of extraction well performance are summarized in the following tables and figures:

- **Table 2-1** - Summary of monthly operations
- **Table 2-2** - Summary of extraction well influent CVOC data and estimated mass removal rate
- **Table 2-3** - Summary of facility process sampling for CVOCs, metals, and wet chemistry
- **Table 2-4** - Summary of SPDES Permit Equivalent compliance data
- **Figures 2-1 and 2-2** - Illustration of extraction well influent CVOC data and mass removal rate estimates for extraction wells EW-01 and EW-02, respectively. Backup calculations for Figures 2-1 and 2-2 are included in **Appendix E**. Only mass that was removed from the ground and treated via the air-stripper was included in the mass removal totals.
- Extraction well performance for the LAI GWTF for March 2019 is provided in **Table 2-1** and summarized below. **Appendix B1** provides the system runtime log for the month. Monthly data from October 2012 to September 2018 is provided in **Appendix F1**.
- Both extraction wells operated in a flow control mode during the reporting period where the speed of the extraction well pump is set at a constant rate by the facility programmable logic controller (PLC).
- For the reporting period, EW-01 operated at an average flow rate of approximately 80 gallons per minute (gpm). A total of 3,543,568 gallons were extracted from EW-01 and treated via the air stripper with discharge to the effluent injection well field.
- For the reporting period, EW-02 operated at an average flow rate of approximately 77 gpm. A total of 3,409,248 gallons were extracted from EW-02 and treated via the air stripper with discharge to the effluent injection well field.
- Each extraction well is designed to operate at a minimum flow rate of 75 gpm. The facility operated under this configuration with a total average flow rate of approximately 157 gpm.

- Approximately 6.9 million gallons of groundwater were extracted, and approximately 3.9 pounds (lbs.) of CVOC mass were extracted and treated during the reporting period. A total of approximately 256 lbs. of CVOC mass have been extracted to date since October 2012. **Table 2-2** provides a summary of extraction well groundwater influent CVOC data and estimated mass removal rates.

- **Figure 2-1** indicates total site-related CVOC concentrations in EW-01 were detected at 251 µg/l during ITP and 197 µg/l in October 2012 when HDR took over the operations of the LAI facility. CVOC concentrations in EW-01 have decreased to approximately 100.6 µg/l in March 2019. This is a reduction of approximately 60% since ITP. Concentrations in EW-01 have generally been stable since HDR took over operations.

- **Figure 2-2** indicates total site-related CVOC concentrations in EW-02 were detected at 154 µg/l during ITP and 37 µg/l in October 2012 when HDR took over the operations of the LAI facility. CVOC concentrations in EW-02 are approximately 31.7 µg/l in March 2019. This is a reduction of approximately 79% since ITP. Concentrations in EW-02 have generally been stable since HDR took over operations.

- The decrease in CVOC concentrations in both extraction wells since ITP is likely attributable to reduction of CVOC concentrations in the source area due to in situ chemical oxidation (ISCO) treatment during the RA, pump-and-treat system operations and volume of water being extracted from each well during the reporting period, which would account for more dilution.

2.2 Treatment System Performance and Compliance

System performance data and observations (e.g., functionality, uptime) are detailed in **Table 2-1** and summarized below.

- A total system uptime of approximately 99% was achieved for the reporting period, which is above the minimum remedial design (RD) performance criterion of 90%.

- A total of 1 hour of planned overall system downtime was reported duing the March 2019 reporting period.

- A total of 5 hours of unplanned overall system downtime was reported duing the March 2019 reporting period.

- **Appendix C1** provides a summary of alarms that resulted in system shutdown.

- Facility process samples were collected on March 12, 2019 to assist with evaluating the facility operations. **Table 2-3** shows the analytical results for extracted water samples collected throughout the treatment system.

- Total CVOC influent mass removal rate of approximately 99% was achieved by the air stripper.

- Aluminum precipitation continued to be observed within the air stripper during the March 2019 reporting period. **Table 2-3** shows that aluminum in EW-01 was

detected at a concentration of 1,200 µg/l. Aluminum concentrations in EW-01 have decreased since the ITP, when aluminum concentrations in EW-01 averaged approximately 2,700 µg/l. Aluminum concentrations in EW-01 have been relatively stable since January 2013 and observed to decrease gradually since August 2014. Aluminum concentrations in EW-02 have remained relatively stable and at low levels since facility startup. Aluminum in EW-02 was detected at a concentration of 120 µg/l during the March 2019 reporting period.

- **Table 2-3** shows that potassium in EW-01 was detected at a concentration of 13,000 µg/l during the March reporting period. Overall, it appears that the residual potassium permanganate oxidant present near EW-01 has been generally decreasing since August 2014.

- Monthly maintenance activities consisted of changing bag filters, greasing the blower and pump motors and cleaning the air stripper.

- No injuries occurred during the reporting period.

- The results of the groundwater treatment system compliance sampling are summarized in **Table 2-4**. Detailed data summary tables are included in **Appendix D**. Effluent samples were collected on March 12, 2019. The NYSDEC SPDES permit equivalent criteria were met for groundwater effluent discharges to groundwater for all criteria.

- Operating parameters not monitored by the PLC were collected on a weekly basis with data summarized in **Table 2-5**.

- Off-gas treatment system performance and compliance is discussed in Section 4.0.

2.3 Injection Well Performance

Based on the sampling results for this period, aluminum continues to precipitate in the air stripper and is expected to continually foul the injection well screens. The injection wells were originally being reconditioned with DPA™ and standard mechanical pump and surge methods. In the fall of 2014 a new method, that included use of DPA™ in combination with a nitrogen burst technology, was tested. The new method resulted in a fair improvement in well capacity but due to lower than originally designed capacity, the effluent is being distributed amongst multiple injection wells to accommodate the flow. Last well cleaning was performed during the summer of 2018, as follows: Injection wells IW-04 and IW-05 were rehabilitated from August 16 to 30, 2018; Injection wells IW-01, IW-02 and IW-03 were rehabilitated from September 4 to 20, 2018.

3.0 OLD MILL POND GROUNDWATER TREATMENT SYSTEM PERFORMANCE AND COMPLIANCE SAMPLING RESULTS

Groundwater treatment system performance and compliance monitoring activities were conducted at the downgradient OMP facility during the reporting period from March 1 to March 31, 2019. The results are presented below.

3.1 Extraction Well Performance

The results of extraction well performance are summarized in the following tables and figures:

- **Table 3-1** - Summary of monthly operations
- **Table 3-2** - Summary of extraction well influent CVOC data and estimated mass removal rate
- **Table 3-3** - Summary of facility process sampling for CVOCs, metals, and wet chemistry
- **Table 3-4** - Summary of SPDES Permit Equivalent compliance data
- **Figures 3-1, 3-2 and 3-3** - Illustration of extraction well influent CVOC data and mass removal rate estimates for extraction wells EW-1, EW-2 and EW-6, respectively. Backup calculations for Figures 3-1, 3-2 and 3-3 are included in **Appendix E**. Only mass that was removed from the ground and treated via the air-stripper was included in the mass removal totals.
- Extraction well performance for the GWTF at OMP for March2019 is detailed in **Table 3-1** and summarized below. **Appendix B2** provides the system runtime logs for the two months. The data presented for the OMP facility in **Table 3-1** is based on the operator's field notes and available data recorded by the PLC. Monthly data from October 2012 to September 2018 are provided in **Appendix F2**.
- The three extraction wells operated in a flow control mode during the reporting period where the speed of the extraction well pump is set at a constant rate by the facility PLC.
- For the reporting period, EW-1 operated at an average flow rate of approximately 62 gpm. A total of 2,746,224 gallons were extracted from EW-1 for the reporting period and treated via the air stripper with discharge to OMP.
- For the reporting period, EW-2 operated at an average flow rate of approximately 77 gpm. A total of 3,432,784 gallons were extracted from EW-2 for the reporting period and treated via the air stripper with discharge to OMP.
- For the reporting period, EW-6 operated at an average flow rate of approximately 77 gpm. A total of 3,432,816 gallons were extracted from EW-6 for the reporting period and treated via the air stripper with discharge to OMP.

- The facility operated under this configuration for the remainder of the reporting period with a total average flow rate of approximately 216 gpm.

- Approximately 9.6 million gallons of groundwater were extracted, and approximately 12.5 lbs. of CVOC mass were extracted and treated during the reporting period. Approximately 1,004 lbs. of CVOC mass have been extracted and treated to date since October 2012. **Table 3-2** provides a summary of extraction well groundwater influent CVOC data and estimated mass removal rates.

- **Figure 3-1** indicates the site-wide CVOC influent concentrations in EW-1 have decreased from 313 µg/l since system startup in August 2011 to 85 µg/l in March 2019.

- **Figure 3-2** indicates the site-wide CVOC influent concentrations in EW-2 have decreased since system startup from 454 µg/l in August 2011 to 68 µg/l in March 2019.

- **Figure 3-3** indicates the site-wide CVOC influent concentrations in EW-6 have decreased since startup from 934 µg/l in September 2013 to 302 µg/l in March 2019.

- The overall decrease in CVOC concentrations observed in all three extraction wells is attributed to the operation of EW-6, which appears to be providing more hydraulic control to the plume since its startup in September 2013. These concentrations will continue to be monitored on a monthly basis to establish performance trends. Slight variations in trends are expected due to fluctuations in site-wide groundwater elevations.

3.2 Treatment System Performance and Compliance

System performance data and observations (e.g., functionality, uptime) are detailed in **Table 3-1** and summarized below. Data presented in the table and below is based on operator's field notes and available PLC data.

- A total system uptime of 99.3% was achieved for the reporting period, which is above the minimum RD performance criterion of 90%.

- There was 5 hours of planned system downtime during the reporting period.

- Facility process samples were collected on March 12, 2019 to assist with analyzing the facility operations. **Table 3-3** shows the analytical results for extracted water samples collected throughout the treatment system.

- A total CVOC influent mass removal rate of approximately 97% was achieved by the air stripper. The TCE concentration was approximately 3.9 µg/l after the air stripper and 4.5 µg/l after the first liquid activated carbon unit. TCE was present in the facility effluent, at 3.8 µg/l, which does not exceed the SPDES permit limit.

- Metals concentrations remained stable throughout the treatment system for the reporting period.

- No injuries or reported incidents occurred during the reporting period.
- The results of groundwater treatment system compliance sampling are summarized in **Table 3-4**. Detailed data summary tables are included in **Appendix D**. SPDES effluent samples were collected on March 12, 2019. The NYSDEC SPDES permit equivalent criteria were met for groundwater effluent discharges to groundwater.
- Operating parameters not monitored by the PLC were collected on a weekly basis with data summarized in **Table 3-5**.

4.0 FACILITY OFF-GAS TREATMENT SYSTEM PERFORMANCE AND COMPLIANCE MONITORING RESULTS

4.1 LAI GWTF

The off-gas treatment system performance and compliance monitoring activities were completed at the LAI GWTF during this reporting period from March 1 to March 31, 2019. The testing results and air calculations are summarized in **Table 4-1**.

System performance data and observations (e.g., functionality, uptime) discussed in Section 2.0 support that the treatment system is operating in accordance with RD requirements. Detailed data summary tables are included in **Appendix D**. Off-gas system performance for the GWTF is summarized below.

- Samples were collected from influent, intermediate, and effluent sample ports of the vapor-phase GAC system for VOC analysis via EPA method TO-15 (see **Table 4-1**) on March 12, 2019 in accordance with NYSDEC Air Pollution Control permit equivalency requirements.
- Very low concentrations of TCE and PCE were detected in the effluent samples from GAC-1 and GAC-2 for the reporting period. The treatment system effluent vapor concentrations were below the permit equivalent limits.
- Operating parameters not monitored by the PLC were collected on a weekly basis with data summarized in **Table 2-5**.

4.2 OMP GWTF

The off-gas system performance and compliance monitoring activities were completed at the OMP GWTF during this reporting period from March 1 to March 31, 2019. The testing results are summarized in **Table 4-2**.

System performance data and observations (e.g., functionality, uptime) discussed in Section 3.0 support that the treatment system is operating in accordance with RD requirements. Detailed data summary tables are included in **Appendix D**. Off-gas system performance for the GWTF is summarized below.

- Vapor phase GAC at all carbon units was replaced on March 4, 2019.
- Samples were collected from influent, intermediate, and effluent sample ports of the vapor-phase GAC system for VOC analysis via EPA method TO-15 (see Table 4-2) on March 12, 2019 in accordance with NYSDEC Air Pollution Control permit equivalency requirements.
- TCE and PCE were detected in the effluent samples from GAC-3, GAC-1, and GAC-2 for the reporting period. However, the treatment system effluent vapor concentrations were below the permit equivalent limits.
- Operating parameters not monitored by the PLC were collected on a weekly basis with data summarized in **Table 3-5**.

5.0 SUMMARY AND RECOMMENDATIONS

A summary of the monthly compliance and monitoring program results is provided below, along with corresponding recommendations for on-going O&M activities at both GWTFs.

5.1 LAI GWTF

- The treatment system at the LAI Site should continue to operate in flow control mode to maintain hydraulic control of the plume with groundwater flow from EW-01 and EW-02 operating at a total design flow rate of approximately 150 gpm. Flow rates may need to be adjusted to extend the life of the bag filters.
- Aluminum precipitation continued to be observed within the air-stripper at the LAI GWTF during the reporting period. Aluminum concentrations in EW-01 and EW-02 will continue to be monitored.
- CVOC concentrations observed in EW-01 and EW-02 have decreased by approximately 60% and 79%, respectively, since facility startup. Such trends will continue to be tracked and discussed as part of future monthly progress reports.
- SPDES permit equivalent criteria and Air Pollution Control permit equivalent criteria were met at the LAI GWTF. The treatment system will continue to be monitored for compliance with NYSDEC SPDES and air permit equivalents.

5.2 OMP GWTF

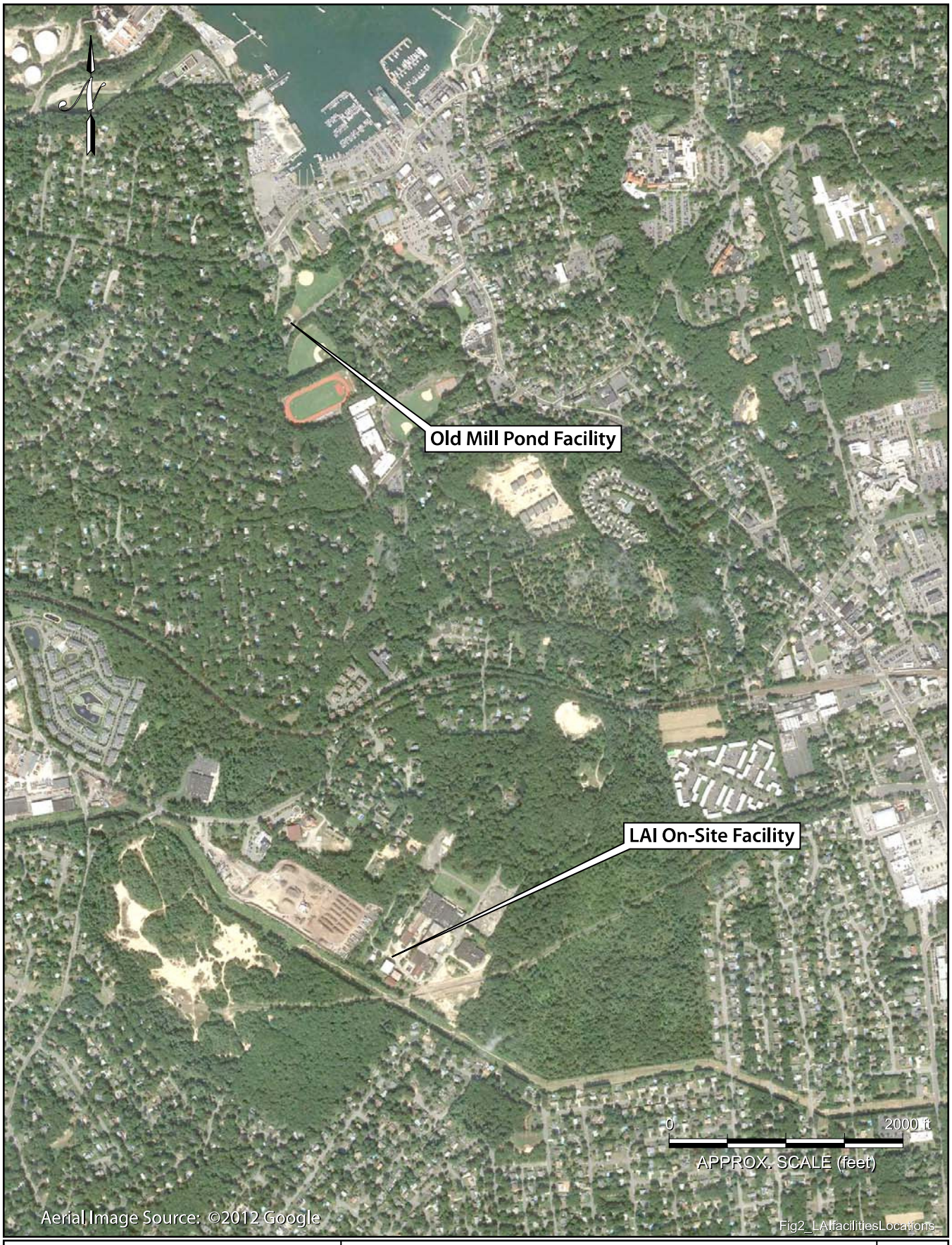
- The treatment system at OMP should continue to operate in flow control mode to capture the plume with groundwater flow from EW-1, EW-2, and EW-6. The operating total average flow rate is approximately 216 gpm.
- CVOC concentrations observed in EW-1, EW-2, and EW-6 have decreased gradually since startup. Such trends will continue to be tracked and discussed as part of future monthly progress reports.
- SPDES permit equivalent criteria were met at the OMP treatment facility. The treatment system will continue to be monitored for compliance with NYSDEC SPDES permit equivalent.
- Current sampling results indicate that TCE and PCE were discharged to the atmosphere from the off-gas system. The discharged concentrations are monitored against the OMP facility permit equivalent and are within the allowable limits.

FIGURES

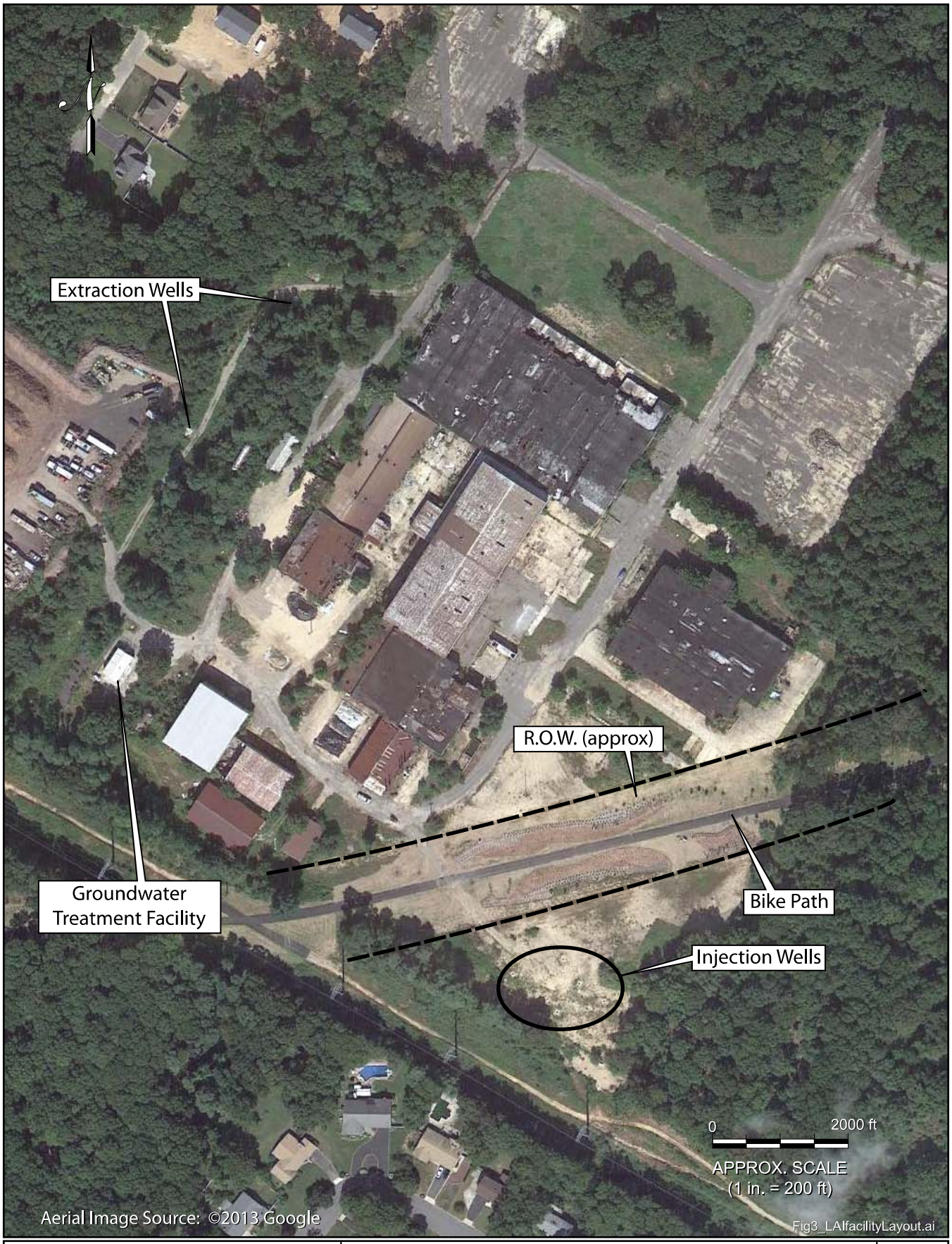
Map source: Adapted from NYSDEC Interactive Mapping Gateway: http://www.nysgis.state.ny.us/gateway/index.html

Fig1_LAIsiteLocation.ai

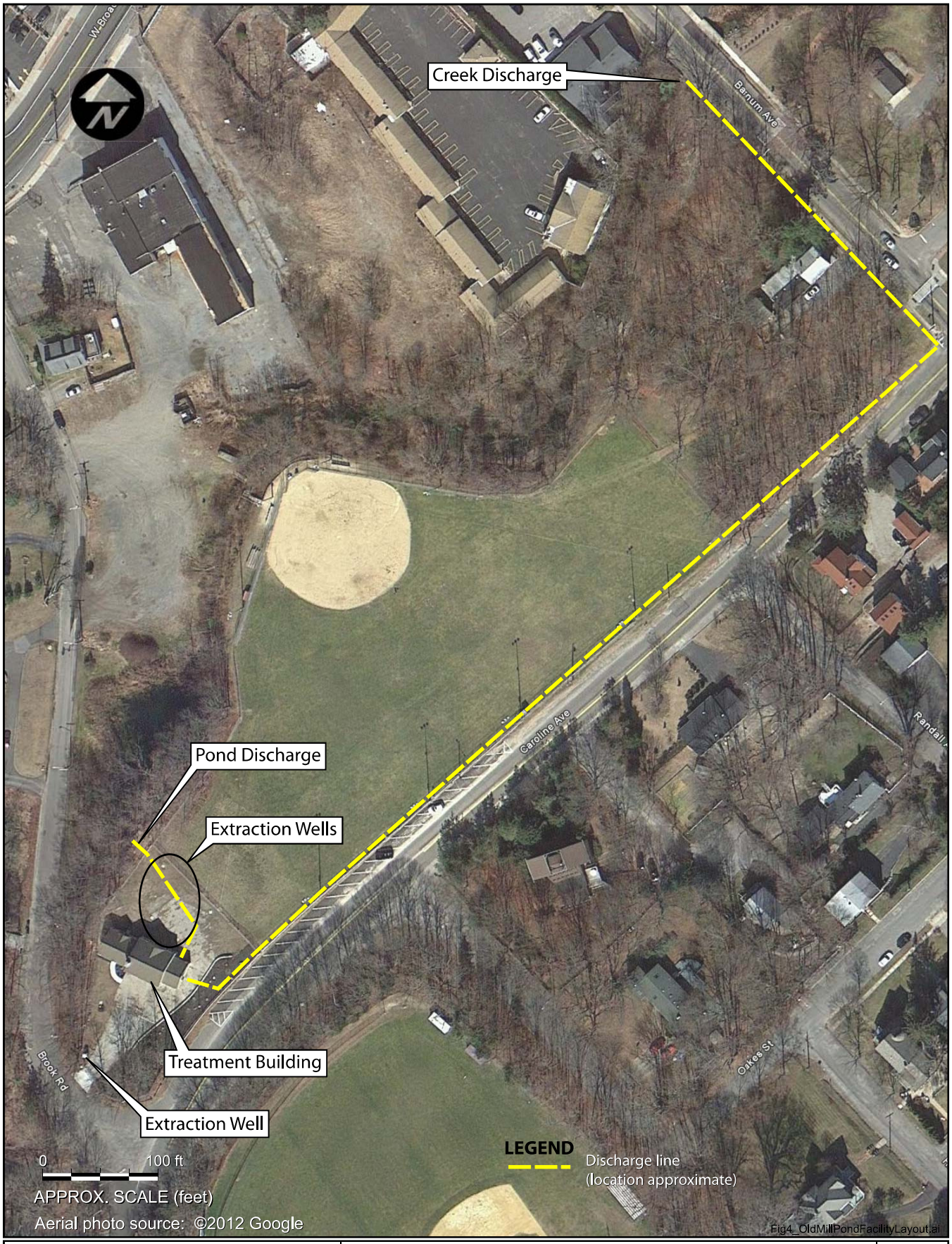
Henningson, Durham & Richardson Architecture and Engineering, P.C. 1 International Blvd, 10th Floor Mahwah, NJ 07495	**Site Location Map** **Lawrence Aviation Industries Superfund Site** — **Port Jefferson Station, New York**	**Figure** **1-1**



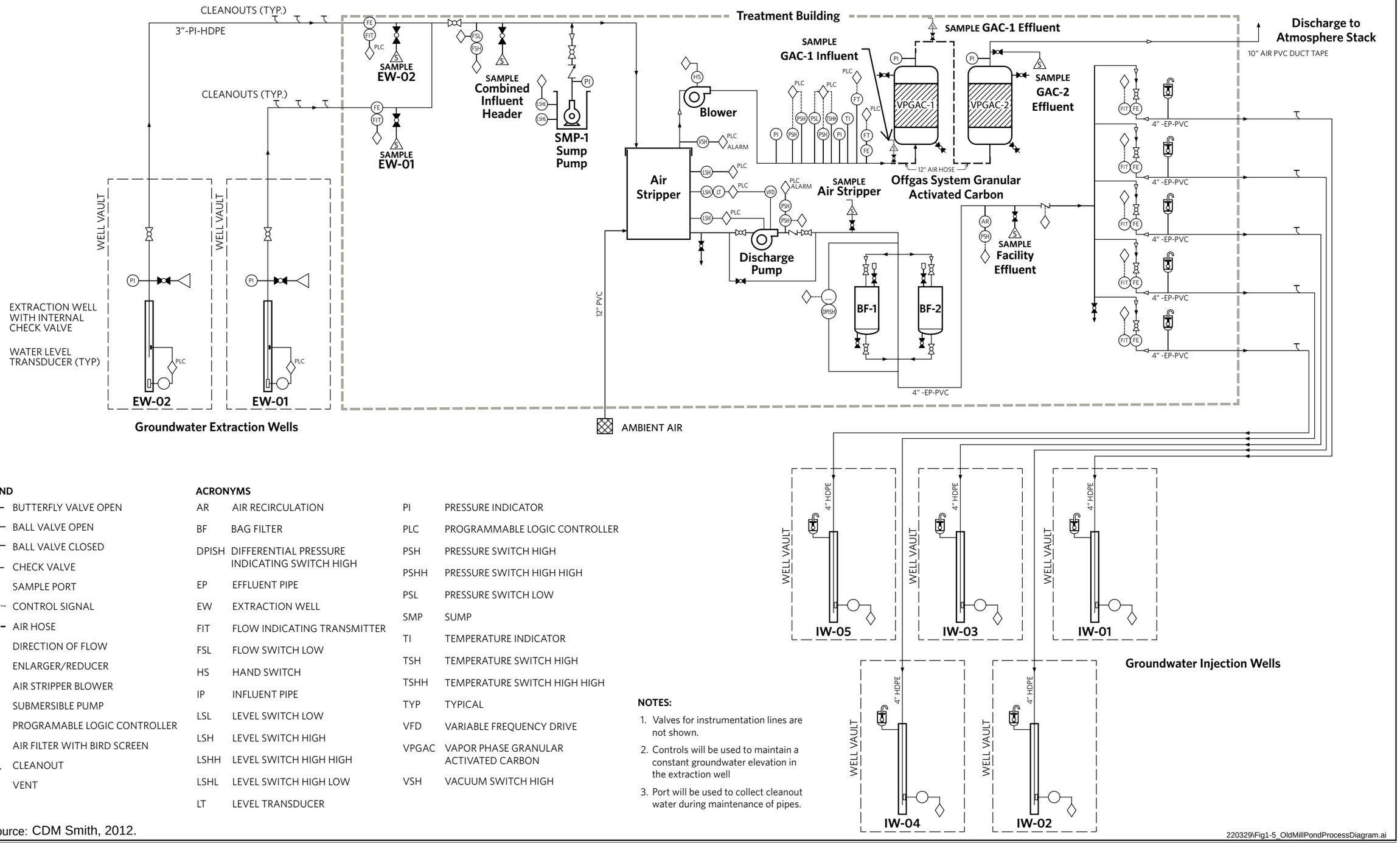
HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C. 1 International Blvd, 10th Floor Mahwah, NJ 07495	**LAI Facilities Locations** **Lawrence Aviation Industries Superfund Site** **Port Jefferson Station, New York**	**Figure 1-2**



Henningson, Durham & Richardson Architecture and Engineering, P.C. 1 International Blvd, 10th Floor Mahwah, NJ 07495	**LAI GWTF Layout** **Lawrence Aviation Industries Superfund Site** **Port Jefferson Station, New York**	**Figure** **1-3**



Henningson, Durham & Richardson Architecture and Engineering, P.C. 1 International Blvd, 10th Floor Mahwah, NJ 07495	**Old Mill Pond GWTF Layout** **Lawrence Aviation Industries Superfund Site** **Port Jefferson Station, New York**	**Figure 1-4**



LEGEND

- BUTTERFLY VALVE OPEN
- BALL VALVE OPEN
- BALL VALVE CLOSED
- CHECK VALVE
- SAMPLE PORT
- CONTROL SIGNAL
- AIR HOSE
- DIRECTION OF FLOW
- ENLARGER/REDUCER
- AIR STRIPPER BLOWER
- SUBMERSIBLE PUMP
- PROGRAMABLE LOGIC CONTROLLER
- AIR FILTER WITH BIRD SCREEN
- CLEANOUT
- VENT

ACRONYMS

AR	AIR RECIRCULATION
BF	BAG FILTER
DPISH	DIFFERENTIAL PRESSURE INDICATING SWITCH HIGH
EP	EFFLUENT PIPE
EW	EXTRACTION WELL
FIT	FLOW INDICATING TRANSMITTER
FSL	FLOW SWITCH LOW
HS	HAND SWITCH
IP	INFLUENT PIPE
LSL	LEVEL SWITCH LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSHL	LEVEL SWITCH HIGH LOW
LT	LEVEL TRANSDUCER
PI	PRESSURE INDICATOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
PSH	PRESSURE SWITCH HIGH
PSHH	PRESSURE SWITCH HIGH HIGH
PSL	PRESSURE SWITCH LOW
SMP	SUMP
TI	TEMPERATURE INDICATOR
TSH	TEMPERATURE SWITCH HIGH
TSHH	TEMPERATURE SWITCH HIGH HIGH
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
VPGAC	VAPOR PHASE GRANULAR ACTIVATED CARBON
VSH	VACUUM SWITCH HIGH

NOTES:

1. Valves for instrumentation lines are not shown.
2. Controls will be used to maintain a constant groundwater elevation in the extraction well
3. Port will be used to collect cleanout water during maintenance of pipes.

Source: CDM Smith, 2012.

220329\Fig1-5_OldMillPondProcessDiagram.ai

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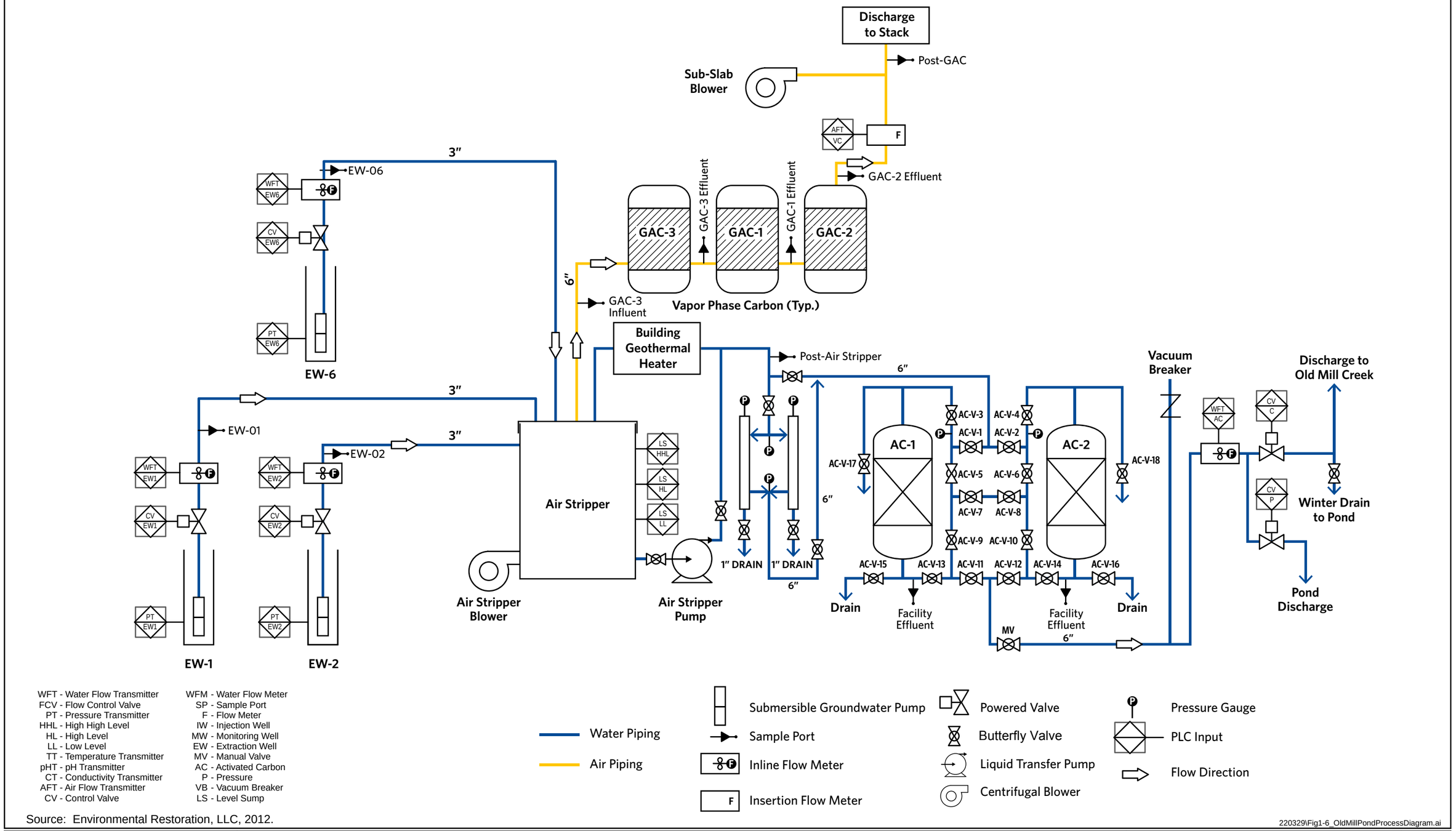
1 International Blvd.
Mahwah, NJ 07495

Lawrence Aviation Industries Superfund Site
Port Jefferson Station, New York

LAI GWTF Process Diagram and Sample Locations

Figure 1-5

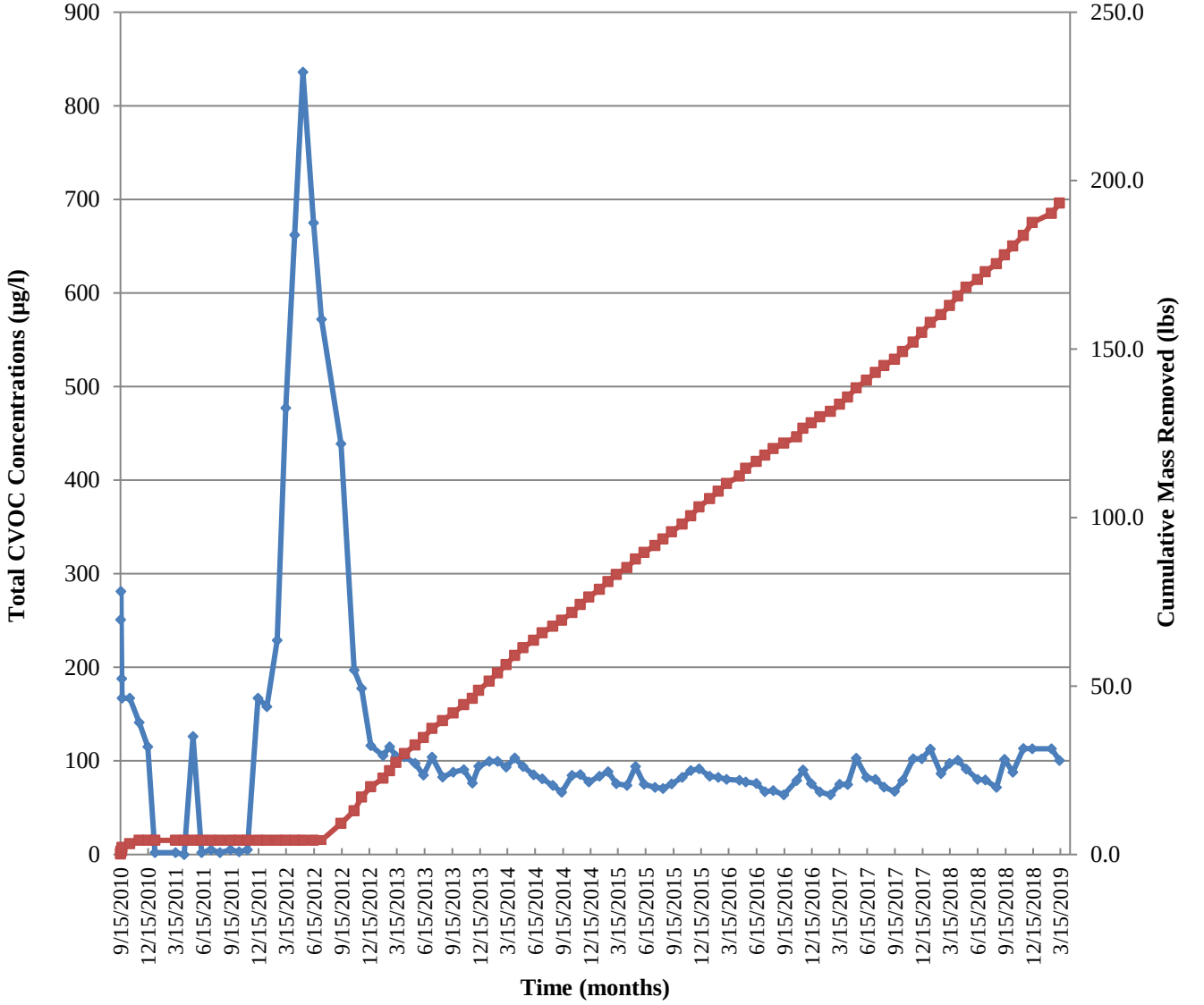


Source: Environmental Restoration, LLC, 2012.

220329\Fig1-6_OldMillPondProcessDiagram.ai

HDR Engineering, Inc. 1 International Blvd. Mahwah, NJ 07495	Lawrence Aviation Industries Superfund Site Port Jefferson Station, New York	OMP GWTF Process Diagram and Sample Locations	Figure 1-6

Figure 2-1
Influent CVOC Concentrations and Mass Removed vs. Time- EW-01
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, NY



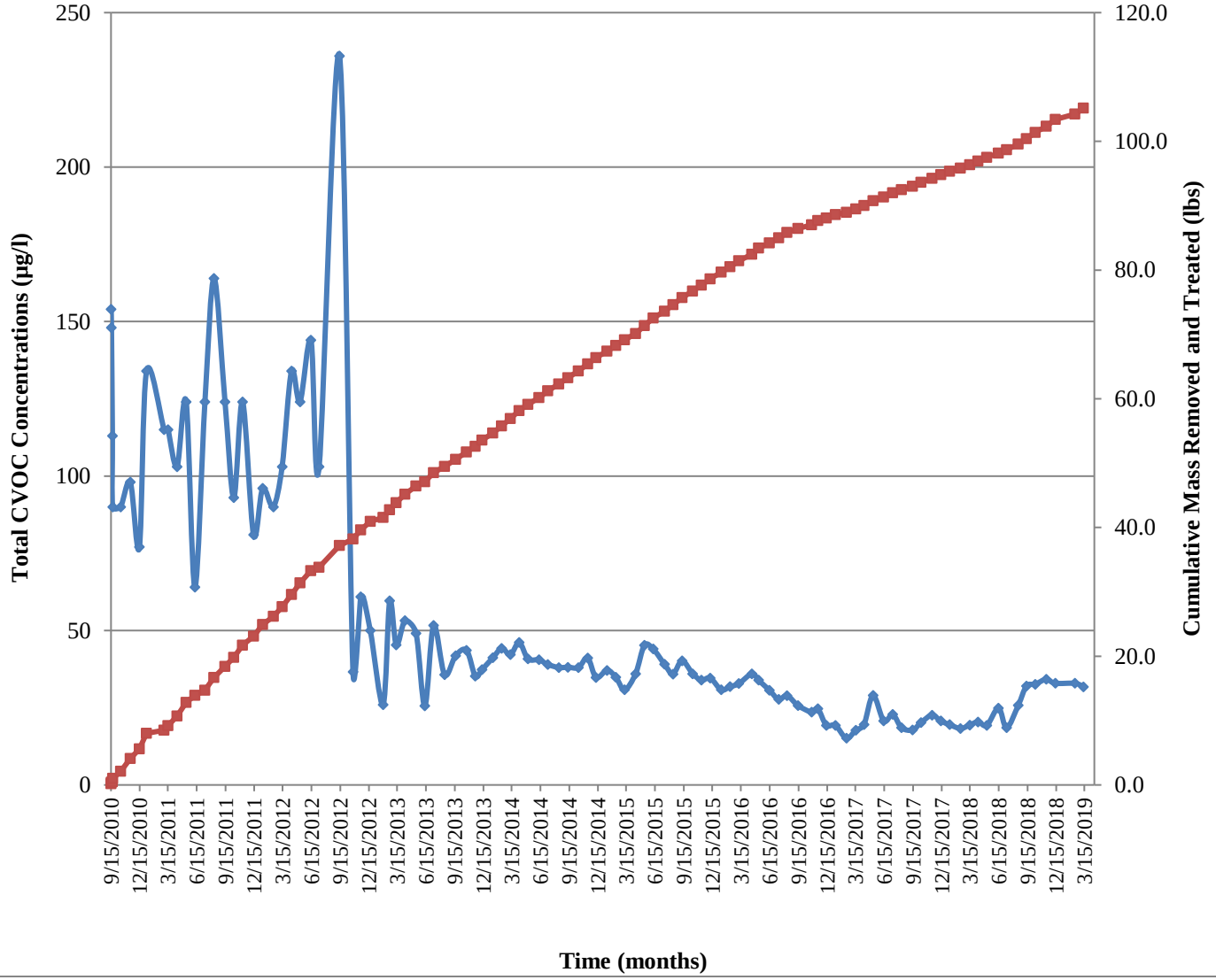
Total CVOC Concentration (µg/l)

Cumulative Mass Removed and Treated (lbs)

Note 1: EW-01 was directed to the re-circulation system from December 2010 to November 2011. EW-01 was not in operation from January 16 to March 20, 2011 due to pump failure. EW-01 was offline from November 8, 2011 to September 11, 2012. Flow from EW-01 was routed to the air stripper since September 12, 2012. Cumulative mass removed only includes mass removed and treated via the air stripper. Data gaps are indicative of samples not collected.

Note 2: Data from September 2010 to September 2012 provided by CDM Smith/USEPA.

Figure 2-2
Influent CVOC Concentrations and Mass Removed vs. Time- EW-02
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, NY



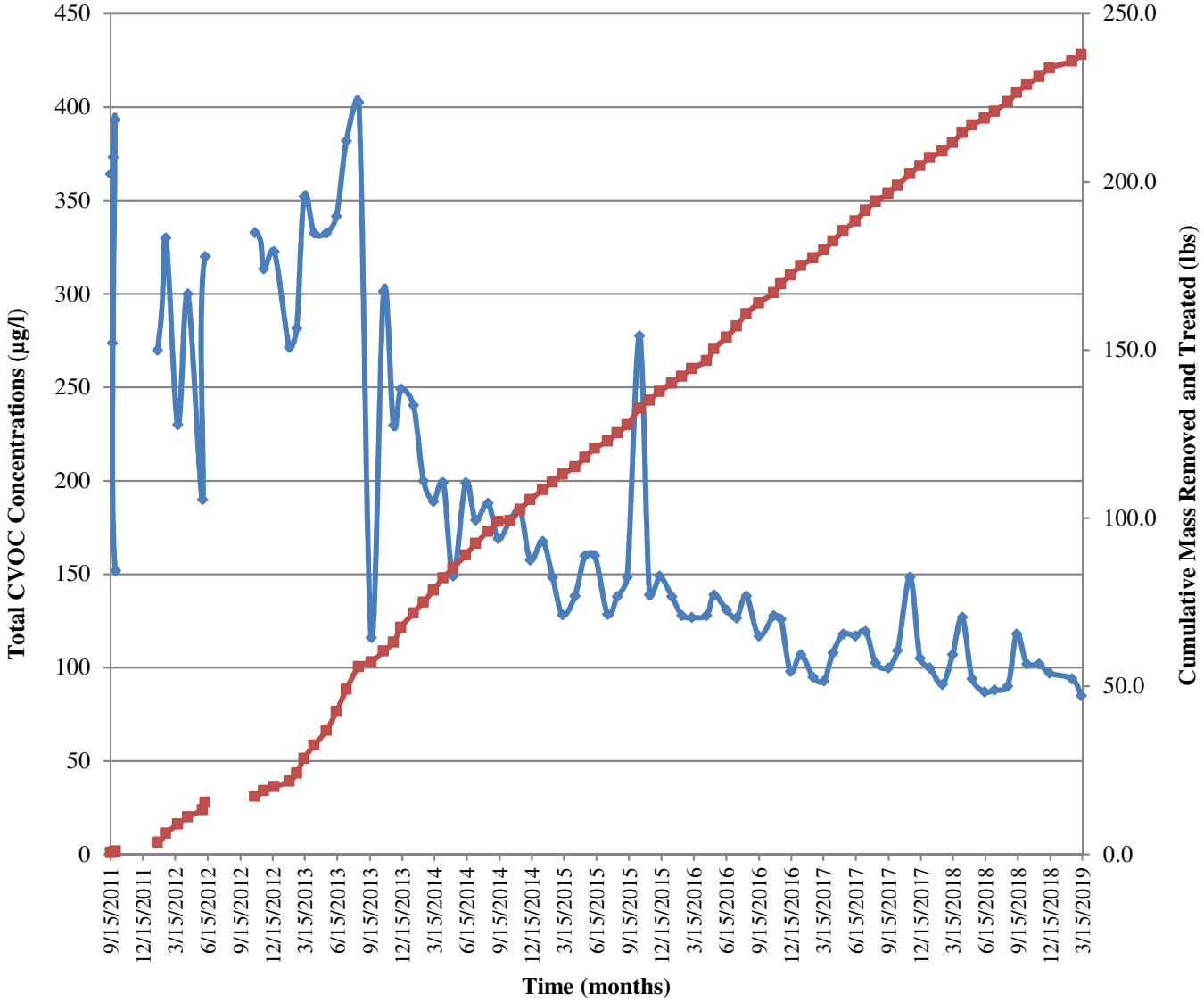
Total CVOC Concentration (µg/l)

Cumulative Mass Removed and Treated (lbs)

Note 1: EW-02 was directed to the re-circulation system from February 10 to March 20, 2011 and from July 12 to August 4, 2011. EW-02 was offline from July 13, 2012 to September 9, 2012 during injection well redevelopment activities. Flow from EW-02 was treated via the air stripper since September 10, 2012. Cumulative mass removed only includes mass removed and treated via the air stripper.

Note 2: Data from September 2010 to September 2012 provided by CDM Smith/USEPA.

Figure 3-1
Influent CVOC Concentrations and Mass Removed vs. Time- EW-1
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, NY

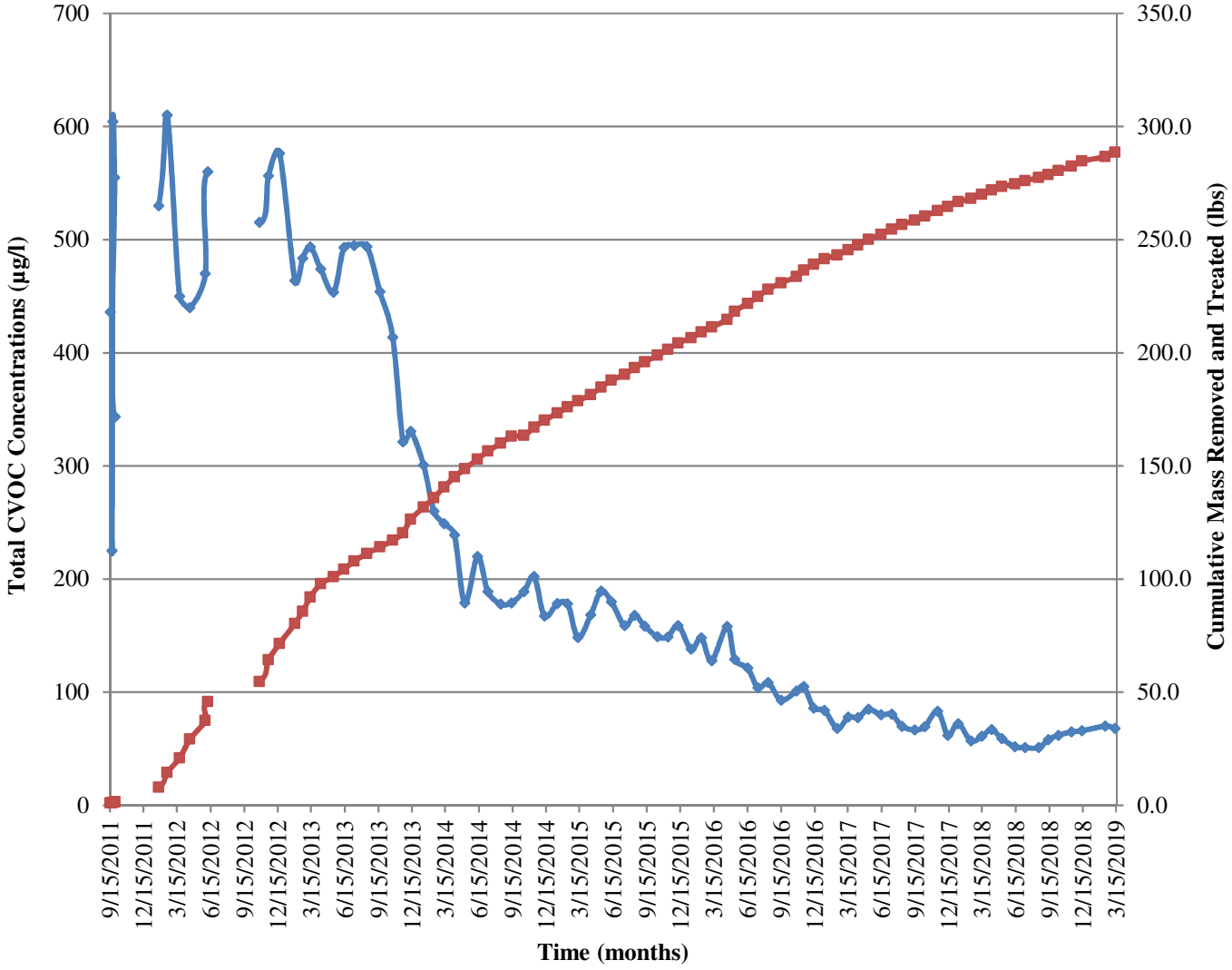


Note 1: No samples were collected from October to December 2011 due to change in sampling strategy. Cumulative mass removed only includes mass removed and treated via the air stripper. No sample was collected in September 2013 due to laboratory constraints. Total CVOC concentrations for September 2013 was estimated.

Note 2: Data from August 2011 to June 2012 provided by USEPA/ERT. Data for July to September 2012 will be updated when received.

Total CVOCs Concentrations (µg/l)

Figure 3-2
Influent CVOC Concentrations and Mass Removed vs. Time- EW-2
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, NY



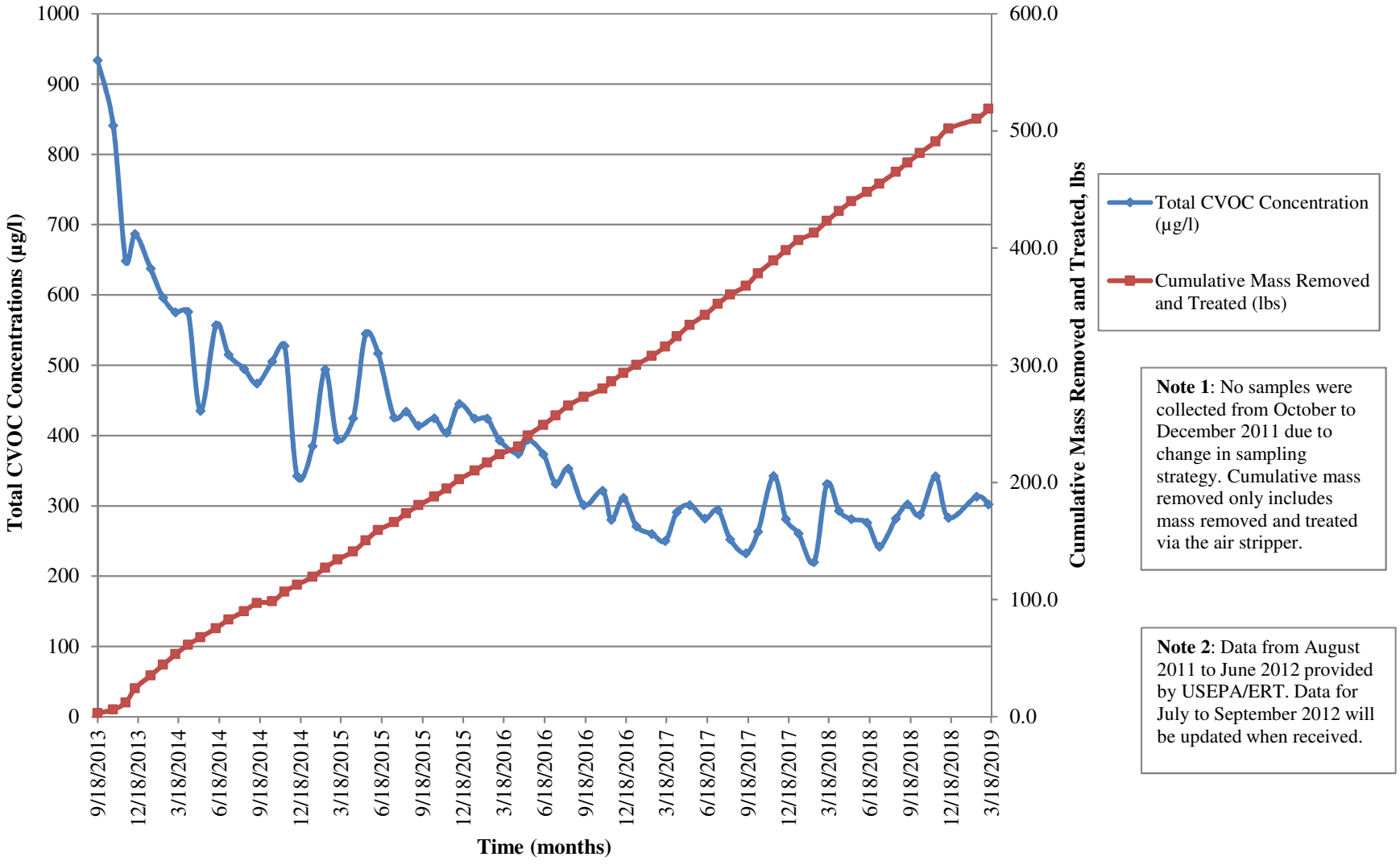
Note 1: No samples were collected from October to December 2011 due to change in sampling strategy. Cumulative mass removed only includes mass removed and treated via the air stripper.

Note 2: Data from August 2011 to June 2012 provided by USEPA/ERT. Data for July to September 2012 will be updated when received.

Total CVOC Concentration (µg/l)

Cumulative Mass Removed and Treated (lbs)

Figure 3-3
Influent CVOC Concentrations and Mass Removed vs. Time- EW-6
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, NY



Note 1: No samples were collected from October to December 2011 due to change in sampling strategy. Cumulative mass removed only includes mass removed and treated via the air stripper.

Note 2: Data from August 2011 to June 2012 provided by USEPA/ERT. Data for July to September 2012 will be updated when received.

TABLES

Table 1-1
Summary of Well Construction Details
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Well ID	Surface Elevation (ft amsl)	Top of Casing (ft amsl)	Total Depth (ft bgs)	Diameter of Well (inches)	Top of Screened Interval (ft bgs)	Bottom of Screened Interval (ft bgs)	Top of Screened Interval (ft amsl) [1]	Bottom of Screened Interval (ft amsl) [1]
EW-01	220.8 *	219.30	252	10	182 * 238 *	222 * 248 *	38.8 * -17.2 *	-1.2 * -27.2 *
EW-02	224.1 *	222.61	250	10	182 * 229 *	214 * 240 *	42.1 * -4.9 *	10.1 * -15.9 *
IW-01	226.3 *	225.99	258	6	183	248	43.3 *	-21.7 *
IW-02	225.6 *	225.27	258	6	183	248	42.6 *	-22.4 *
IW-03	225.3 *	224.99	258	6	183	248	42.3 *	-22.7 *
IW-04	226.0 *	225.68	258	6	183	248	43.0 *	-22.0 *
IW-05	224.8 *	224.48	258	6	183	248	41.8 *	-23.2 *

Notes:
1. Coordinates based on Horizontal Datum : NAD 1983, SPC (3104 NY L); Vertical Datum: NAVD 1988
* Elevations are estimated.

Acronyms:
ID - identification
ft - feet
amsl- above mean sea level
NY - New York
NAVD - North American Vertical Datum
NAD - North American Datum
SPC - State Plane Coordinates
L - lamber projections
bgs - below ground surface
EW- extraction well
IW - injection well

Table 1-2
Summary of Well Construction Details
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Well ID	Top of Casing Elevation [1] (ft amsl)	Total Depth (ft btc)	Diameter of Well (inches)	Top of Screened Interval (ft btc)	Bottom of Screened Interval (ft btc)
EW-1[2]	22.58	139.7	6	120	140
EW-2[2]	22.76	109.4	6	90	110
EW-3[3]	22.88	109.8	6	90	110
EW-4[3]	22.56	79.5	6	60	80
EW-5[4]	22.84	39.6	4	20	40
EW-6[2]	18.97	127	6	90	120

Notes:
1. Measured by a licensed surveyor.
2. Currently being pumped for plume hydraulic control.
3. EW-3 and EW-4 are standby wells and are not used for groundwater extraction due to elevated iron levels.
4. EW-5 is not used for groundwater extraction since the well is not of adequate size or depth for a pump.

Acronyms:
ID - identification
ft - feet
amsl- above mean sea level
btc - below top of reference point on casing
EW - extraction well

Table 2-1
Summary of Monthly Operations
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Cumulative Year 2[1]	Cumulative Year 3[1]	Cumulative Year 4[1]	Cumulative Year 5[1]	Cumulative Year 6[1]	Cumulative Year 7[1]	Oct. 2018	Nov. 2018	Dec. 2018	Jan. 2019	Feb. 2019	Mar. 2019	Notes
Calendar Days in Period	365	365	365	366	365	365	31	30	31	31	28	31	
Treatment System Runtime (hours)													
EW-01 Runtime	8,026	8,486	8,592	8,219	8,398	8,253	699	709	708	741	635	741	Estimated based on Operator's notes and PLC logs.
EW-02 Runtime	8,035	8,490	8,600	8,574	8,420	8,217	695	709	708	741	627	739	
Treatment System Downtime (hours)													
Planned	173	92	49	19	169	65	0.00	0.00	36.00	3.00	45.00	1.00	
Unplanned	554	177	95	90	171	188	21.00	0.50	0.00	0.00	0.00	5.00	
System Uptime	91.7%	96.9%	98.3%	98.8%	96.2%	97.1%	97.2%	99.9%	95.2%	99.6%	93.3%	99.2%	
Treatment Summary													
Gallons extracted from EW-01	35,092,444	37,425,150	39,360,108	37,911,184	38,807,936	38,526,144	3,480,128	3,316,000	3,999,340	3,441,984	2,956,288	3,543,568	Estimated based on Operator's notes and PLC logs.
Average flow rate from EW-01 (gpm)	73	73	76	77	77	78	83	78	94	77	78	80	
Gallons extracted from EW-02	36,103,992	37,304,570	39,182,852	39,850,976	38,342,384	37,753,568	3,402,115	3,272,672	3,955,430	3,397,888	2,921,888	3,409,248	
Average flow rate from EW-02 (gpm)	75	73	76	77	76	77	82	77	93	76	78	77	
Total gallons treated	71,196,436	74,729,720	78,542,960	77,762,160	77,150,320	76,279,712	6,882,243	6,588,672	7,954,770	6,839,872	5,878,176	6,952,816	

Acronyms:
gpm - gallons per minute
% - percentage

Notes:
1. Monthly data from October 2012 through September 2018 collected by HDR provided in Appendix F.

Table 2-2
Summary of Extraction Well Groundwater Influent CVOC Data and Estimated Mass Removal Rates
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Sampling Month	Extraction Well	Sample ID	Average Flow Rate (gpm)	Concentrations of CVOCs (µg/l)																Total CVOCs[1] (µg/l)	Mass Removal Rate (lb/d)[2]	No. of Days in the period	% System Uptime to GWTF	Total Mass Removed and Treated (lb)
				1,1,1-Trichloroethane		1,1-Dichloroethane		1,1-Dichloroethene		Chloroform		Chloromethane		cis-1,2-Dichloroethene		Tetrachloroethene		Trichloroethene		Vinyl Chloride						
2019-03	EW-01	01-EW01-20190312	80	0.5	U	0.5	U	0.5	U	0.5	U	1	UL	0.5	U	2.6		98		1	UJ	100.6	0.0968	31	99.2%	2.98
	EW-02	01-EW02-20190312	77	0.5	U	0.5	U	0.5	U	0.5	U	1	UL	0.5	U	1.7		30		1	UJ	31.7	0.0294			0.90
																								Total		3.88
																								Total since October 2012		256.30

Notes:
1. Non detects assumed to be 0
2. Mass removal rate calculated:
Mass removal rate (lb/d)^2 = Groundwater Influent Concentration (µg/l) x groundwater flow rate (gpm) x 1440 min/day x 3.79 l/gal x 1 lb/453,600,000 µg

Acronyms:
ID - identification
gpm - gallons per minute
CVOCs - chlorinated volatile organic compounds
µg/l - microgram per liter
lb/d - pounds per day
U - not detected
J - estimated value
% - percentage
lb -pounds
min/day - minute per day
l/gal - liter per gallon
lb/µg - pounds per microgram

Table 2-3
Summary of Facility Process Sampling - CVOCs, Metals and Wet Chemistry Parameters
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Facility Location		Lawrence Aviation Industries											
Sample ID		01-EW01		01-EW02		01-EW02		01-CINF		01-AS		01-EFF	
Sample Name		01-EW01-20190312		01-EW02-20190312		11-EW02-20190312		01-INF-20190312		01-AS-20190312		01-EFF-20190312	
Location Code		Extraction Well 1		Extraction Well 2		Extraction Well 2 Duplicate		Combined Influent		Post-Air Stripper		Facility Effluent	
Sample Date		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019	
Analyte	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	ug/l	1	UL	1	UL	1	UL	1	UL	1	UL	1	UL
cis-1,2-Dichloroethylene	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene (PCE)	ug/l	2.6		1.7		1.7		2.3		0.5	U	0.5	U
Trichloroethene (TCE)	ug/l	98		30		30		66		0.5	U	0.5	U
Vinyl Chloride	ug/l	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ
METALS													
Aluminum	ug/l	1200		120		110		730		810		690	
Antimony	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Arsenic	ug/l	8	U	8	U	8	U	8	U	8	U	8	U
Barium	ug/l	100	U	100	U	100	U	100	U	100	U	100	U
Beryllium	ug/l	3	U	3	U	3	U	3	U	3	U	3	U
Cadmium	ug/l	3	U	3	U	3	U	3	U	3	U	3	U
Calcium	ug/l	13000		13000		12000		13000		13000		12000	
Chromium, Total	ug/l	17		8.3		8		13		12		12	
Cobalt	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Copper	ug/l	10	U	13		10	U	10	U	10	U	44	
Iron	ug/l	50	U	50	U	50	U	50	U	50	U	50	U
Lead	ug/l	8	U	8	U	8	U	8	U	8	U	8	U
Magnesium	ug/l	6900		6800		6400		7000		6800		6500	
Manganese	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Mercury	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Potassium	ug/l	13000		3800		3700		9000		8500		8300	
Selenium	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Silver	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Sodium	ug/l	20000		18000		18000		20000		20000		19000	
Thallium	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Vanadium	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Zinc	ug/l	29		66		24		200		40		180	
WET CHEMISTRY													
Fluoride	mg/l	6		0.73		0.7		3		3		3	

Acronyms:
ID - Identification
U - Non-Detect Value
J - Estimated Value
µg/l - microgram per liter
mg/l - milligram per liter
01 - Lawrence Aviation Industries Facility Sample

Table 2-4
Summary of SPDES Permit Equivalent Compliance Data
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Sampling Month			March 2019	
Sample Location			01-EFF	
Sample Name			01-EFF-20190312	
Compound	**SPDES Discharge Criteria**		3/12/2019	
1,1,1-Trichloroethane	5	µg/l	0.5	U
1,1-Dichloroethane	5	µg/l	0.5	U
cis-1,2-Dichloroethene	5	µg/l	0.5	U
Tetrachloroethene	5	µg/l	0.5	U
Trichloroethene	5	µg/l	0.5	U
Aluminum	monitor	µg/l	690	
Chromium, total	100	µg/l	12	
Fluoride	monitor	mg/l	3.0	
Iron	600	µg/l	50	U
Lead	50	µg/l	8	U
Manganese	600	µg/l	5	U
Nickel	200	µg/l	20	U
Sum of Iron & Manganese	<1000	µg/l	55	
pH (3/6/19)*	5.8 to 8.5	SU	6.39	
pH (3/14/19)*	5.8 to 8.5	SU	6.44	
pH (3/22/19)*	5.8 to 8.5	SU	6.37	
pH (3/29/2019)*	5.8 to 8.5	SU	6.26	

Acronyms:
EFF - effluent
µg/l - microgram per liter
mg/l - milligram per liter
SU - standard units
SPDES - State Pollutant Discharge Elimination System
U - not detected
< - less than
* - value from field measurement

Notes:
Highlighted values indicate exceedances

Table 2-5
Summary of Operating Values
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Parameter	Date:	3/6/19	Date:	3/14/19	Date:	3/22/19	Date:	3/29/19
	Reading		Reading		Reading		Reading	
EW-01 inlet line pressure	7.0	psi	7.0	psi	7.0	psi	7.0	psi
EW-02 inlet line pressure	7.0	psi	7.0	psi	7.0	psi	7.0	psi
Combined influent line pressure	5.0	psi	6.0	psi	6.0	psi	6.0	psi
Effluent line pressure	15.0	psi	16.0	psi	15.0	psi	17.0	psi
Air stripper blower discharge temp	85	°F	85	°F	85	°F	85	°F
Air stripper blower vacuum	-12	in H_2O	-12	in H_2O	-12	in H_2O	-12	in H_2O
VOC screening								
- Prior to GAC vessels	0.0	ppm	0.0	ppm	0.0	ppm	0.0	ppm
- Between GAC vessels	0.0	ppm	0.0	ppm	0.0	ppm	0.0	ppm
- Discharge to atmosphere	0.0	ppm	0.0	ppm	0.0	ppm	0.0	ppm
Blower Pressure Values								
- Prior to GAC vessels	5.0	psi	2.0	psi	5.0	psi	3.0	psi
- Between GAC vessels	3.0	psi	2.0	psi	2.0	psi	2.5	psi
Kilowatt hours (meter reading x40) *	NC	kWh	NC	kWh	NC	kWh	NC	kWh

Acronyms:
NC - not collected
ppm - parts per million
psi - pounds per square inch
°F - degrees Fahrenheit
kWh - kilowatt hour
in H_2O - inches water column
GAC - granular activated carbon
VOC - volatile organic compound
*Spot reading multiplied by factor of 40 per manufacturer's direction

Table 3-1
Summary of Monthly Operations
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Cumulative Year 1[1]	Cumulative Year 2[1]	Cumulative Year 3[1]	Cumulative Year 4[1]	Cumulative Year 5[1]	Cumulative Year 6[1]	Oct. 2018	Nov. 2018	Dec. 2018	Jan. 2019	Feb. 2019	Mar. 2019	Notes
Calendar Days in Period	365	365	365	366	365	365	31	30	31	31	28	31	
Treatment System Runtime (hours)													
EW-1 Runtime	8,269	8,623	8,612	8,531	8,355	8586	744	720	708	739	671	739	Estimated based on Operator's notes and PLC logs.
EW-2 Runtime	8,269	8,623	8,612	8,531	8,523	8611	744	720	708	739	671	739	
EW-6 Runtime	349	8,623	8,612	8,531	8,518	8533	744	720	708	739	671	739	
Treatment System Downtime (hours)													
Planned	398	89	37	216	292	1	0	0	36	5	1	5	
Unplanned	93.5	48	111	38	113	30	0	0	0	0	0	0	
System Uptime	94.3%	98.4%	98.3%	97.1%	97.3%	99.64%	100.00%	100.00%	95.16%	99.33%	99.85%	99.33%	
Treatment Summary													
Gallons extracted from EW-1	15,768,246	24,257,650	24,705,902	30,394,120	35,180,416	33,698,436	2,747,296	2,750,464	3,162,278	2,840,000	2,575,872	2,746,224	Estimated based on Operator's logs.
Average flow rate from EW-1 (gpm)	31	47	48	60	70	65	62	64	74	64	64	62	
Gallons extracted from EW-2	17,993,299	23,737,308	24,757,273	32,641,496	40,404,000	38,450,462	3,476,096	3,456,080	4,256,056	3,550,000	3,220,096	3,432,784	
Average flow rate from EW-2 (gpm)	33	47	48	64	79	74	78	80	100	80	80	77	
Gallons extracted from EW-6	379,888	19,894,160	24,089,619	28,893,808	40,902,808	42,864,260	3,436,048	3,456,080	4,628,581	3,550,000	3,220,128	3,432,816	
Average flow rate from EW-6 (gpm)	19	39	47	57	80	84	77	80	109	80	80	77	
Total gallons treated	34,141,433	67,889,118	73,552,794	91,929,424	116,487,224	115,013,158	9,659,440	9,662,624	12,046,915	9,940,000	9,016,096	9,611,824	

Acronyms:
gpm - gallons per minute
% - percentage
PLC - programmable logic controller
GAC - granular activated carbon

Notes:
1. Monthly data from October 2012 to September 2013 collected by HDR provided in Appendix F.

Table 3-2
Summary of Extraction Well Groundwater Influent CVOC Data and Estimated Mass Removal Rates
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Sampling Month	Extraction Well	Sample ID	Average Flow Rate (gpm)	Concentrations of CVOCs (µg/l)																		Total CVOCs[1] (µg/l)	Mass Removal Rate (lb/d)[2]	No. of Days in the period	% System Uptime to GWTF	Total Mass Removed and Treated (lb)
				1,1,1-Trichloroethane		1,1-Dichloroethane		1,1-Dichloroethene		Chloroform		Chloromethane		cis-1,2-Dichloroethylene		Tetrachloroethene		Trichloroethene		Vinyl Chloride						
2019-03	EW-1	02-EW01-20190312	64	0.94		1.6		0.84		0.59		1	UL	0.99		1.9		78		1	UJ	85	0.06534489	31	99.3%	2.01
	EW-2	02-EW02-20190312	80	0.5	U	0.69		0.5	U	0.5	U	1	UL	1.2		4.7		61		1	UJ	68	0.06505806			2.00
	EW-6	02-EW06-20190312	80	0.5	U	0.65		0.5	U	0.5	U	1	UL	1.8		9.4		290		1	UJ	302	0.2905426			8.94
																									Total	12.96
																									Total since October 2012	1003.96

Notes:
1. Non detects assumed to be 0.
2. Mass removal rate calculated:
Groundwater Influent Concentration (µg/l) x groundwater flow rate (gpm) x 1440 min/day x 3.79 l/gal x 1 lb/453,600,000 µg

Acronyms:
ID - identification
gpm - gallons per minute
µg/l - microgram per liter
CVOCs - chlorinated volatile organic compounds
lb/d - pounds per day
U - not detected
% - percentage
lb - pounds
min/day- minute per day
l/gal- liter per gallon
lb/µg - pounds per microgram

Table 3-3
Summary of Facility Process Sampling - CVOCs, Metals, and Wet Chemistry Parameters
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Facility Location		Old Mill Road											
Sample ID		02-EW01		02-EW02		02-EW06		02-AS		02-GAC		02-EFF	
Sample Name		02-EW01-20190312		02-EW02-20190312		02-EW06-20190312		02-AS-20190312		02-GAC-20190312		02-EFF-20190312	
Location Code		Extraction Well 1		Extraction Well 2		Extraction Well 6		Post-Air Stripper		Post-GAC		Facility Effluent	
Sample Date		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019	
Analyte	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
VOLATILE ORGANIC COMPOUNDS													
1,1,1-Trichloroethane	ug/l	0.94		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	ug/l	1.6		0.69		0.65		0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	ug/l	0.84		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	ug/l	0.59		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	ug/l	1	UL	1	UL	1	UL	1	UL	1	UL	1	UL
cis-1,2-Dichloroethylene	ug/l	0.99		1.2		1.8		0.5	U	0.5	U	0.5	U
Tetrachloroethylene(PCE)	ug/l	1.9		4.7		9.4		0.5	U	0.5	U	0.5	U
Trichloroethene (TCE)	ug/l	78		61		290		3.9		4.5		3.8	
Vinyl Chloride	ug/l	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ
METALS													
Aluminum	ug/l	100	U	100	U	100	U	100	U	100	U	100	U
Antimony	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Arsenic	ug/l	8	U	8	U	8	U	8	U	8	U	8	U
Barium	ug/l	120		120		130		130		120		120	
Beryllium	ug/l	3	U	3	U	3	U	3	U	3	U	3	U
Cadmium	ug/l	3	U	3	U	3	U	3	U	3	U	3	U
Calcium	ug/l	16000		17000		18000		18000		17000		17000	
Chromium, Total	ug/l	5	U	5.3		5.5		5		5.1		5	U
Cobalt	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Copper	ug/l	10	U	10	U	10	U	10	U	10	U	10	U
Iron	ug/l	50	U	50	U	50	U	50	U	50	U	50	U
Lead	ug/l	8	U	8	U	8	U	8	U	8	U	8	U
Magnesium	ug/l	5800		7800		8300		7700		7600		7300	
Manganese	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Mercury	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Nickel	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Potassium	ug/l	1300		10000		9700		8000		7900		7500	
Selenium	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Silver	ug/l	5	U	5	U	5	U	5	U	5	U	5	U
Sodium	ug/l	13000		17000		22000		19000		18000		18000	
Thallium	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Vanadium	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
Zinc	ug/l	20	U	20	U	20	U	20	U	20	U	20	U
WET CHEMISTRY													
Fluoride	mg/l	0.067		0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

Acronyms:
ID - Identification
U - Non-Detect Value
J - Estimated Value
GAC - Granular Activated Carbon
µg/l - microgram per liter
mg/l - milligram per liter
02 - Old Mill Pond Facility Sample

Table 3-4
Summary of SPDES Permit Equivalent Compliance Data
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Sampling Month			March 2019	
Sample Location			02-EFF	
Sample Name			02-EFF-20190312	
Compound	**SPDES Discharge Criteria**		3/12/2019	
1,1,1-Trichloroethane	10	µg/l	0.5	U
1,1-Dichloroethane	10	µg/l	0.5	U
1,1-Dichloroethene	10	µg/l	0.5	U
Chloromethane	10	µg/l	1	UL
cis-1,2-Dichloroethene	10	µg/l	0.5	U
Tetrachloroethene	1	µg/l	0.5	U
Trichloroethene	10	µg/l	3.8	
Chromium, total	monitor	µg/l	5.0	U
Copper	13.4	µg/l	20	U
Iron	0.3	µg/l	50	U
Zinc	0.12	µg/l	20	U
pH (3/8/2019)*	5.8 to 8.5	SU	7.23	
pH (3/15/2019)*	5.8 to 8.5	SU	6.45	
pH (3/22/2019)*	5.8 to 8.5	SU	6.86	
pH (3/29/2019)*	5.8 to 8.5	SU	6.75	

Acronyms:
EFF - effluent
µg/l - microgram per liter
SU - standard units
SPDES - State Pollutant Discharge Elimination System
U - not detected
* - value from field measurement
Notes:
Highlighted values indicate exceedances

Table 3-5
Summary of Operating Values
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Parameter	Date:	3/8/19	Date:	3/15/19	Date:	3/22/19	Date:	3/29/19
	Reading		Reading		Reading		Reading	
EW-01 inlet line pressure	2.0	psi	2.0	psi	2.0	psi	3.0	psi
EW-02 inlet line pressure	3.0	psi	3.0	psi	3.0	psi	4.0	psi
EW-06 inlet line pressure	4.00	psi	3.0	psi	3.00	psi	4.00	psi
Combined influent line pressure	NC	psi	NC	psi	NC	psi	NC	psi
Effluent line pressure	3.0	psi	2.0	psi	2.0	psi	2.0	psi
Air stripper blower discharge temp	NC	°F	NC	°F	NC	°F	NC	°F
Air stripper blower vacuum	NC	in H_2O	NC	in H_2O	NC	in H2O	NC	in H2O
VOC screening								
- Prior to GAC 3 (influent)	1.0	ppm	1.0	ppm	1.2	ppm	1.1	ppm
- Between GAC 3 and GAC 1	0.6	ppm	0.0	ppm	0.0	ppm	0.0	ppm
- Between GAC 1 and GAC 2	0.8	ppm	0.0	ppm	0.0	ppm	0.0	ppm
- After GAC 2 (effluent to air)	0.6	ppm	0.0	ppm	0.0	ppm	0.0	ppm
Blower Differential Pressure Values	35	in H_2O	34	in H_2O	34	in H2O	34	in H2O
Blower Flowrates	2,475	cfm	2,264	cfm	2240	cfm	2,274	cfm
Kilowatt hours (meter reading x40)*	NC	kWh	NC	kWh	NC	kWh	NC	kWh

Acronyms:
NC - not collected
ppm - parts per million
psi - pounds per square inch
°F - degrees Fahrenheit
kWh - kilowatt hour
in H_2O - inches water column
GAC - granular activated carbon
VOC - volatile organic compound
cfm - cubic feet per minute
*Spot reading multiplied by factor of 40 per manufacturer's direction

Table 4-1
Summary of Air Pollution Control Permit Equivalent Compliance Data
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Sampling Month	Sampling Date	Compound	Influent GAC-1 Concentration (ppbv)		Effluent GAC-1 Concentration (ppbv)		Effluent GAC-2 Concentration (ppbv)		Molecular Weight (g/mole)	Air Flow Rate (cfm)	Emissions Rate from Stack (lb/d)[1]	Permit Equivalent Limit (lb/d)
March	3/12/2019	PCE	5.3		0.1	J	0.25	J	165.82	1,316	0.00020	0.0055
		TCE	190		1.8		4.2		131.38		0.00267	0.1320

Acronyms:

PCE - tetrachloroethene
TCE - trichloroethene
GAC - granular activated carbon
ppbv - parts per billion by volume
g/mole - gram per mole
cfm - cubic feet per minute
lb/d - pounds per day
min/day - minutes per day
lb/g - pounds per gram
mol/ l - mole per liter
STP - standard temperature and pressure
cf - cubic feet
l - liter
J - estimated
D - from dilution

Notes:

1. Emissions rate was calculated :

Emissions rate (lb/d)^2 = Effluent air concentration (ppbv) x Molecular Weight (g/mole) x Air flow rate (cfm) x 1440 min/day x (1 lb/453.6 g) x (1 mol/24.47 l at STP) x (1 l/0.0353 cf) x $1/10^9$

Table 4-2
Summary of Air Sampling Data
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Sampling Month	Sampling Date	Compound	Influent GAC-3 Concentration (ppbv)		Effluent GAC-3 Concentration (ppbv)		Effluent GAC-1 Concentration (ppbv)		Effluent GAC-2 Concentration (ppbv)		Molecular Weight (g/mole)	Air Flow Rate (cfm)	Emissions Rate from Stack (lb/d)[1]	OMP Permit Equivalent Limit (lb/d)
March 2019	3/12/2019	PCE	14		0.13	J	0.24	J	0.21	J	165.82	2,313	0.00030	0.0216
		TCE	370	D	1.6		3.3		3.0		131.38		0.00335	1.638

Acronyms:

PCE - tetrachloroethene
TCE - trichloroethene
GAC - granular activated carbon
ppbv - parts per billion by volume
g/mole - gram per mole
cfm - cubic feet per minute
lb/d - pounds per day
min/day - minutes per day
lb/g - pounds per gram
mol/ l - mole per liter
STP - standard temperature and pressure
cf - cubic feet
March
l - liter
U - not detected
D - from dilution

Notes:

1. Emissions rate was calculated :

Emissions rate (cfm) = Effluent air concentration (ppbv) x Molecular Weight (g/mole) x Air flow rate (cfm) x 1440 min/day x (1 lb/453.6 g) x (1 mol/24.47 l at STP) x (1 l/0.0353 cf) x $1/10^9$

APPENDIX A

Data Usability Analysis Report

DATA USABILITY ANALYSIS
LAWRENCE AVIATION INDUSTRIES SITE

To meet the primary objectives of the Long-Term Response Action (LTRA) program at the Lawrence Aviation Industries Site (LAI), in August 2012 the United States Environmental Protection Agency (EPA), Region 2 issued a work assignment to Henningson, Durham & Richardson, Architecture and Engineering PC, in association with HDR Engineering, Inc. (HDR) for the operation and maintenance of the groundwater treatment systems at the LAI Site. The system at the LAI facility was completed on September 28, 2010 and is currently in its 8th year of LTRA. Construction of the Old Mill Pond treatment facility was completed in August 2011 and is currently in its 7th year of LTRA. This data usability analysis is for samples collected in March 2019. Aqueous samples were collected from eleven locations and air samples from seven locations. In addition, quality assurance/quality control (QA/QC) samples were collected including one field duplicate and one trip blank associated with the aqueous samples only. QA/QC samples were not collected for the air samples in accordance with the EPA-approved Final QAPP (HDR, 2016). All analytical sample results were generated by the EPA Division of Environmental Science and Assessment (DESA) Region 2 laboratory or an EPA Contract Laboratory Program (CLP) laboratory for the following analyses and methods:

Laboratory	**Analysis**	**Method**	**Matrix**
DESA Region 2	Fluoride	EPA 300.0/SOP C-94 Rev 2.6	Aqueous
DESA Region 2	Mercury	EPA 245.1/SOP C-110 Rev 2.6	Aqueous
DESA Region 2	Metals ICP TAL	EPA 200.7/SOP C-109 Rev 3.5	Aqueous
DESA Region 2	VOA Trace/SF	EPA 524.2/SOP DW-1 Rev 2.6	Aqueous
CLP – Maxxam/Bureau Veritas	VOA	TO-15	Air

Note: TAL = Target Analyte List; VOA = Volatile Organic Analysis; SOP = Standard Operating Procedure; TO = Toxic Organic

The results provided by the DESA or CLP laboratories are considered definitive data and underwent a systematic data validation to provide assurance that the data were adequate for its intended use. The validation was performed based on an evaluation of project objectives, method-specific QA/QC information (such as holding times, calibration records, laboratory- and field-supplied blanks, duplicate precision, and surrogate and spike recovery), relevant sections of the EPA Region 2 Data Validation Standard Operating Procedures (SOPs), relevant sections of the EPA National Functional Guidelines for Organic and Inorganic Data Validation, and/or the best professional judgment of the validator. Validation was performed by EPA personnel with the appropriate training and/or experience in performing data validation for the analyses of interest associated with the project. Qualifiers (as appropriate) were added to the data based on the results of the validation.

Note that since this project is in the LTRA phase, the focus was placed on site-specific contaminants of concern with regard to the VOCs: 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), chloroform, cis-1,2-dichloroethene (cis-1,2-DCE), trichloroethene (TCE), tetrachloroethene (PCE), and vinyl chloride (VC). The attached results tables provide the sample number, sample location, sample collection date, and the result and qualifiers for these constituents.

As part of the data assessment by the DESA Region 2 laboratory, data qualifiers are presented along with the analytical results. Qualifiers used with regard to the assessment of the March 2019 samples for the site-specific contaminants of concern are highlighted in bold for clarity.

- **U- The analyte was not detected at or above the reporting limit.**
- **J- The identification of the analyte is acceptable; the reported value is an estimate.**
- K- The identification of the analyte is acceptable; the reported value may be biased high.
- **L- The identification of the analyte is acceptable; the reported value may be biased low.**
- NJ- There is presumptive evidence that the analyte is present; the analyte is reported as tentative identification. The reported value is estimated.

The data assessment for organic aqueous samples is typically performed for holding time, contract required quantitation limits (CRQLs), deuterated monitoring compounds (DMCs), blank contamination, mass spectrometer tuning, calibration, internal standards performance GC/MS, compound identification, contract problems non-compliance, and field documentation. The laboratory was able to achieve the CRQLs, where applicable, for each analyte requested with the exception of the trace VOCs chloromethane, vinyl chloride, bromomethane, and chloroethane. The CRQL for these compounds in water is 0.5 ug/l, respectively; the laboratory reporting limits were raised in all samples due to problems associated with the initial calibration curve. There were no other issues identified in the EPA narrative for the samples collected in March 2019.

The data assessment for inorganic aqueous samples is typically performed for the following criteria per the EPA Technical Direction Form (TDF): preservation, holding time, contract required detection limit (CRDL) standard, matrix spike/matrix spike duplicate (MS/MSD), Interference Check Sample (ICS), laboratory duplicate, field duplicate, ICP serial dilution, and field blank. There were no issues identified in the EPA narrative for the samples collected in March 2019.

As part of the data assessment by the CLP laboratory, data qualifiers are presented along with the analytical results. Qualifiers used with regard to the assessment of the March 2019 samples for the site-specific contaminants of concern are highlighted in bold for clarity.

- **U- The analyte analyzed for, but was not detected at a level greater than or equal to the level of the adjusted CRQL.**
- **J- The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).**
- UJ- The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- R- The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- N- The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ- The analysis indicated the presence of an analyte that has been "tentatively identified" and the associated numerical value represent its approximate concentration.
- D – Although the definition for this qualifier is not included in the data narrative, it indicates a diluted value.

The data assessment for organic air samples was performed for the following criteria per the EPA SOW: holding time, leak test evaluation, canister certification, laboratory control/laboratory control duplicate recovery (LCS/LCSD), blank contamination, mass spectrometer tuning, calibration, internal standards

performance, compound identification, dilutions, re-extractions & reanalysis, field duplicate, contract problems - non-compliance, field documentation, and other considerations.

A minor finding is one where the level of uncertainty is acceptable and no significant bias is observed. One minor finding noted in the EPA validation narrative was that one or more analytes in one or more samples were qualified "J" due to results detected above the method detection limit (MDL) but below the CRQL. A second minor finding was that there were no [air] QC samples; which as mentioned previously is in accordance with the EPA-approved Final QAPP (HDR, 2016).

Samples may be re-analyzed after dilution, re-extraction and for other QC reasons. In such cases, the best result values are consolidated in one single report or Form 1 and in the EDDs.

The following samples were analyzed at dilution.

BF6J3, BF6J7.

The following was also noted under other considerations:

- SDG does not contain any field QC samples.
- Laboratory should provide details of their ppbv to µg/m3 conversion ensuring that it is consistent with EPA guidelines. Laboratory should include this information in their SDG narrative.
- There is time gap between canister cleaning date (08/15/2018), date checked (11/06/2018), analysis date (11/15/2018) and the date used (03/12/2019).
- Clean canister data does not include all compounds analyzed.

There were no other issues identified in the EPA validation narrative for the samples collected in March 2019. The above do not impact the usability of the data. All data are usable as reported.

The following sections provide an evaluation of the usability of the data for the Site, as compared to the site-specific QA/QC requirements outlined in the EPA-approved Final QAPP (HDR, 2016).

Precision

Precision is the measurement of agreement in repeated tests of the same or identical samples, under prescribed conditions. Precision data indicate how consistent and reproducible the field sampling or analytical procedures have been. For the Site data, precision was determined through replicate measurements of the same or identical samples, i.e., a field duplicate sample. The acceptance criterion for the duplicate is a relative percent difference (RPD) of less than 25 percent (for fluoride and VOCs) or 20 percent (for TAL metals and mercury) for aqueous samples. The RPD was not calculated for any set of sample pairs where concentrations were not detected in both of the data sets; agreement between the original sample and the duplicate can be inferred when both of the results are non-detects. All of the sample pairs that contained detections in both of the data sets were within the RPD limits prescribed with the exception of zinc (93%). The results indicate the sampling program achieved overall good reproducibility.

Accuracy

Accuracy is the degree of agreement of a measured sample result or average of results with an accepted

reference or true value. It is the quantitative measurement of the bias of a system, and is expressed in terms of percent recovery (%R). Accuracy of the data can be determined through the use of surrogate compounds, internal standard compounds, matrix spike samples, and laboratory control spike samples. No issues were identified in the EPA narrative for DESA laboratory. The CLP laboratory provided results for the method blank, laboratory control sample and duplicate analyzed with regard to the air samples. The results were within acceptable limits. Based on the information provided and available results, the laboratories achieved a good degree of accuracy.

Representativeness

Representativeness is the degree to which the results of the analyses accurately and precisely represent a characteristic of a population, a process condition, or an environmental condition. In this case, representativeness is the degree to which the data reflect the contaminants present and their concentration magnitudes in the sampled site areas. Representativeness of data occurs through the selection of appropriate sampling locations and the implementation of approved sampling procedures. The sampling locations for this round of sampling consisted solely of fixed sample locations/ports. In addition, field personnel followed the procedures outlined in the EPA-approved QAPP (HDR, 2016) for the Site.

Comparability

To increase the degree of comparability between data results and between past, present and future sampling events, standard environmental analytical methods were employed by the off-site laboratories. Routine Analytical Service (RAS) sample analyses available through the EPA CLP were utilized for the TCL VOCs, TAL metals, and inorganics analyses as specified in the CLP SOWs.

Completeness

Completeness is determined by the percentage of samples that meet or exceed all of the criteria objective levels (i.e., the number of usable sample results for the data set). All of the sample results were determined to be usable.

Sensitivity

Sensitivity is the ability of the analytical method or instrument to detect a target analyte at the level of interest. The method detection limit (MDL) is a statistically-derived value that represents a 99 percent confidence level that the reported instrument signal is different from a blank sample. The quantitation limit (QL) is the minimum concentration of an analyte that can be routinely identified by the laboratory, and is generally between three and ten times the MDL. Analytical methods are matrix-, moisture- and dilution-dependent. The sample quantitation limit (SQL) actually determined for a constituent for a specific sample may be higher than the QL due to these issues. The laboratory was able to achieve the CRQLs, where applicable, for each analyte requested with the exception of chloromethane, vinyl chloride, bromomethane, and chloroethane; the reporting limits were raised due to issues with the initial calibration curve. Of these analytes, vinyl chloride is a contaminant of concern for the site. The aqueous results were all noted to be estimated, non-detect at 1 µg/l. There were no other issues identified in the EPA narrative for the samples collected in March 2019.

Blank Contamination Elimination

Blanks were prepared to identify any contamination that may have been introduced into the samples. Validation determines the need for qualification of sampling analytical results based on blank contamination. One trip blank sample was submitted with the aqueous samples for the March 2019 sampling event. There were no detections in the trip blank sample.

Usability Summary

The definitive data for the LTRA March 2019 event fulfilled the site-specific QA/QC requirements, as all of the results were determined to be usable. Therefore, the results are acceptable for use to support Site decisions.

References

HDR, 2016. Uniform Federal Policy of Quality Assurance Project Plans, Region 2 Architect-Engineering Services Contract, Contract #EP-W-09-009, Project-Specific UFP-QAPP, Lawrence Aviation Industries Long-Term Response Action. Revised March 2016.

APPENDIX B

System Runtime Log

Appendix B1
System Runtime Log - March 2019
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, NY

Dates	ASB_FR	EFF_PH	EW1_RT	EW1_TOT*	EW1_WTE	EW2_RT	EW2_TOT*	EW2_WTE	IW1_WTE	IW2_WTE	IW3_WTE	IW4_WTE	IW5_WTE
	scfm	SU	hours	gallons	ft amsl	hours	gallons	ft amsl	ft amsl	ft amsl	ft amsl	ft amsl	ft amsl
3/1/2019	1,331	8.63	24	111,840	31.72	24	110,464	29.99	37.84	131.87	179.02	187.01	119.95
3/2/2019	1,313	8.64	24	111,872	31.82	24	110,400	30.03	37.73	135.63	180.43	182.10	149.12
3/3/2019	1,314	8.64	24	111,840	31.79	24	110,432	30.04	37.73	138.72	181.50	187.31	149.80
3/4/2019	1,289	8.65	24	111,872	31.84	24	110,432	30.07	37.79	141.99	182.24	183.60	153.79
3/5/2019	1,312	8.64	24	111,872	31.78	24	110,400	30.08	37.82	144.84	183.08	164.85	163.98
3/6/2019	1,320	8.64	24	111,840	31.77	24	110,464	30.09	37.80	147.53	182.00	164.91	169.55
3/7/2019	1,328	8.65	24	111,872	31.80	24	110,400	30.12	37.83	150.62	183.80	167.26	176.62
3/8/2019	1,336	8.64	24	111,840	31.86	24	110,432	30.14	37.90	152.85	184.35	169.39	178.47
3/9/2019	1,339	8.64	24	111,872	31.86	24	110,432	30.13	37.89	155.29	185.27	171.75	181.92
3/10/2019	1,317	8.65	23	106,432	32.01	23	105,024	30.22	38.01	157.69	186.53	176.48	185.78
3/11/2019	1,311	8.66	24	111,104	31.91	24	109,664	30.19	37.94	159.43	187.08	181.77	187.40
3/12/2019	1,318	8.66	24	111,840	31.87	24	110,432	30.23	37.92	161.29	187.75	187.40	190.46
3/13/2019	1,334	8.66	24	111,872	31.92	24	110,432	30.32	37.97	162.95	187.84	189.39	191.50
3/14/2019	1,327	8.67	24	111,840	32.02	24	110,432	30.28	38.05	164.77	188.62	191.54	192.98
3/15/2019	1,290	8.69	23	109,184	32.29	23	107,840	30.23	38.15	153.80	176.56	175.65	173.18
3/16/2019	1,283	8.68	24	111,872	32.10	24	110,400	30.07	38.02	150.79	170.26	163.52	157.51
3/17/2019	1,317	8.66	24	111,840	32.13	24	110,464	30.35	38.09	155.05	174.82	165.03	166.59
3/18/2019	1,329	8.65	24	111,872	32.14	24	110,400	30.42	38.10	160.63	177.85	167.68	175.47
3/19/2019	1,338	8.65	24	111,840	32.15	24	110,432	30.49	38.13	164.52	180.27	170.68	179.82
3/20/2019	1,337	8.65	24	111,872	32.22	24	110,432	30.55	38.17	167.62	182.31	174.01	183.83
3/21/2019	1,318	8.65	24	108,224	32.56	24	106,752	30.60	38.26	155.27	170.34	164.20	167.40
3/22/2019	1,263	8.65	24	111,872	32.50	24	110,400	30.12	38.49	154.59	169.45	161.23	159.33
3/23/2019	1,293	8.64	24	111,840	32.18	24	110,432	30.15	38.47	160.27	174.32	164.61	173.14
3/24/2019	1,315	8.64	24	111,872	32.30	24	110,432	30.55	38.60	162.46	177.22	168.07	176.35
3/25/2019	1,316	8.64	24	111,840	32.35	23	110,432	30.51	38.63	165.62	179.78	171.33	180.64
3/26/2019	1,325	8.63	24	111,872	32.29	24	110,400	30.55	38.60	161.96	181.77	172.81	184.54
3/26/2019	1,325	8.63	24	111,872	32.29	24	110,400	30.55	38.60	161.96	181.77	172.81	184.54
3/27/2019	1,344	8.63	24	111,872	32.30	24	110,432	30.75	38.65	165.93	182.25	176.29	185.25
3/28/2019	1,334	8.63	24	111,072	32.44	23	109,664	30.81	38.76	168.45	184.28	180.53	188.20
3/29/2019	1,313	8.64	23	111,072	32.45	23	109,664	30.63	38.79	170.64	185.51	184.48	190.13
3/30/2019	1,296	8.64	24	111,872	32.45	24	110,432	30.56	38.82	172.45	187.12	189.44	192.45
3/31/2019	1,283	8.62	20	95,552	33.07	20	94,304	30.97	38.75	139.34	152.03	152.14	149.20
Averages	1,316	8.65	N/A	N/A	32.13	N/A	N/A	30.34	38.20	156.15	180.23	174.35	173.72
Totals	N/A	N/A	741	3,453,568	N/A	739	3,409,248	N/A	N/A	N/A	N/A	N/A	N/A

Acronyms:

ASB_FR - air stripper blower flow rate
EFF_PH - effluent pH
EW1_RT - extraction well 1 run time
EW1_TOT - extraction well 1 flow non-resetting totalizer
EW1_WTE - extraction well 1 water table elevation
EW2_RT - extraction well 2 run time
EW2_TOT - extraction well 2 flow non-resetting totalizer
EW2_WTE - extraction well 2 water table elevation
IW1_WTE - injection well 1 water table elevation
IW2_WTE - injection well 2 water table elevation
IW3_WTE - injection well 3 water table elevation
IW4_WTE - injection well 4 water table elevation
IW5_WTE - injection well 5 water table elevation
scfm - standard cubic feet per minute
SU - standard units
gpm - gallons per minute
ft amsl - feet above mean sea level
N/A - not applicable
PLC - programmable logic controller

Notes:

* - Values retrieved from operator's logs and may not match data presented in Table 2-1 due to periodic flow fluctuations
** - System down for unknown reason

Appendix B2
System Runtime Log - March 2019
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, NY

Date	EW1_FLOW_TOTAL *	EW2_FLOW_TOTAL *	EW3_FLOW_TOTAL	EW4_FLOW_TOTAL	EW6_FLOW_TOTAL *
	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)
3/1/2019	92,160	115,200	0	0	115,200
3/2/2019	92,096	115,120	0	0	115,120
3/3/2019	92,096	115,120	0	0	115,120
3/4/2019	73,328	91,664	0	0	91,696
3/5/2019	92,096	115,120	0	0	115,120
3/6/2019	92,096	115,120	0	0	115,120
3/7/2019	92,096	115,120	0	0	115,120
3/8/2019	92,096	115,120	0	0	115,120
3/9/2019	92,096	115,120	0	0	115,120
3/10/2019	92,160	115,200	0	0	115,200
3/11/2019	92,096	115,120	0	0	115,120
3/1/2019	92,160	115,200	0	0	115,200
3/12/2019	92,096	115,120	0	0	115,120
3/13/2019	92,096	115,120	0	0	115,120
3/14/2019	92,096	115,120	0	0	115,120
3/15/2019	92,096	115,120	0	0	115,120
3/16/2019	92,096	115,120	0	0	115,120
3/17/2019	92,096	115,120	0	0	115,120
3/18/2019	92,032	115,040	0	0	115,040
3/19/2019	92,160	115,200	0	0	115,200
3/20/2019	92,096	115,120	0	0	115,120
3/21/2019	92,096	115,120	0	0	115,120
3/22/2019	92,096	115,120	0	0	115,120
3/23/2019	92,096	115,120	0	0	115,120
3/24/2019	92,096	115,120	0	0	115,120
3/25/2019	92,096	115,120	0	0	115,120
3/26/2019	92,096	115,120	0	0	115,120
3/27/2019	92,096	115,120	0	0	115,120
3/28/2019	92,096	115,120	0	0	115,120
3/29/2019	92,160	115,200	0	0	115,200
3/30/2019	92,096	115,120	0	0	115,120
3/31/2019	92,096	115,120	0	0	115,120
TOTAL **	**2,838,384**	**3,547,984**	**0**	**0**	**3,548,016**

Acronyms:
EW- extraction well
Flow - totalizer flow
NA - not available
* - Values retrieved from operator's logs and may not match data presented in Table 3-1 due to periodic flow fluctuations.
** - Totals for EW1_FLOW_TOTAL, EW2_FLOW_TOTAL, and EW6_FLOW_TOTAL are the difference of the final and first totalizer readings of March for EW1, EW2, and EW6, respectively.

APPENDIX C

System Alarm Log

Appendix C1
System Alarm Logs - March 2019
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, NY

Date	Time	TagName	Alarm Description[1]	Restart		System Shutdown Reason
				Date	Time	
3/15/2019	11:06	P1_PAH	Transfer pump high pressure alarm	3/15/2019	11:16	Transfer pump shut down. Extraction wells disabled. Local alarm display
3/15/2019	11:06	P1_SD	Pump shut down	3/15/2019	11:16	Complete system shutdown. Local alarm display
3/15/2019	11:06	ASS_LAH	Air stripper sump high level alarm	3/15/2019	11:16	Complete system shutdown. Local alarm display
3/15/2019	11:06	EW2_SD	Extraction well 2 shut down	3/15/2019	11:16	Complete system shutdown. Local alarm display
3/15/2019	11:06	ASB_SD	Air stripper blower shut down	3/15/2019	11:16	Complete system shutdown. Local alarm display
3/15/2019	11:06	EW1_SD	Extraction well 1 shut down	3/15/2019	11:16	Complete system shutdown. Local alarm display
3/15/2019	11:58	P1_PAH	Transfer pump high pressure alarm	3/15/2019	12:03	Transfer pump shut down. Extraction wells disabled. Local alarm display
3/15/2019	11:59	P1_SD	Pump shut down	3/15/2019	12:03	Complete system shutdown. Local alarm display
3/15/2019	11:59	ASS_LAH	Air stripper sump high level alarm	3/15/2019	12:03	Complete system shutdown. Local alarm display
3/15/2019	11:59	EW2_SD	Extraction well 2 shut down	3/15/2019	12:03	Complete system shutdown. Local alarm display
3/15/2019	11:59	ASB_SD	Air stripper blower shut down	3/15/2019	12:03	Complete system shutdown. Local alarm display
3/15/2019	11:59	EW1_SD	Extraction well 1 shut down	3/15/2019	12:03	Complete system shutdown. Local alarm display
3/15/2019	2:33	P1_PAH	Transfer pump high pressure alarm	3/15/2019	14:53	Transfer pump shut down. Extraction wells disabled. Local alarm display
3/15/2019	2:33	P1_SD	Pump shut down	3/15/2019	14:53	Complete system shutdown. Local alarm display
3/15/2019	2:34	ASS_LAH	Air stripper sump high level alarm	3/15/2019	14:53	Complete system shutdown. Local alarm display
3/15/2019	2:34	EW2_SD	Extraction well 2 shut down	3/15/2019	14:53	Complete system shutdown. Local alarm display
3/15/2019	2:34	ASB_SD	Air stripper blower shut down	3/15/2019	14:53	Complete system shutdown. Local alarm display
3/15/2019	2:34	EW1_SD	Extraction well 1 shut down	3/15/2019	14:53	Complete system shutdown. Local alarm display
3/21/2019	11:28	P1_SD	Pump shut down	3/21/2019	11:28	Complete system shutdown. Local alarm display
3/21/2019	11:30	P1_SD	Pump shut down	3/21/2019	11:32	Complete system shutdown. Local alarm display
3/21/2019	11:34	P1_SD	Pump shut down	3/21/2019	11:35	Complete system shutdown. Local alarm display
3/21/2019	11:35	P1_SD	Pump shut down	3/21/2019	11:42	Complete system shutdown. Local alarm display
3/21/2019	11:40	ASS_LAH	Air stripper sump high level alarm	3/21/2019	11:45	Complete system shutdown. Local alarm display
3/21/2019	11:40	EW2_SD	Extraction well 2 shut down	3/21/2019	11:45	Complete system shutdown. Local alarm display
3/21/2019	11:40	ASB_SD	Air stripper blower shut down	3/21/2019	11:45	Complete system shutdown. Local alarm display
3/21/2019	11:40	EW1_SD	Extraction well 1 shut down	3/21/2019	11:45	Complete system shutdown. Local alarm display
3/31/2019	5:59	ASS_LAH	Air stripper sump high level alarm	3/31/2019	9:26	Complete system shutdown. Local alarm display
3/31/2019	5:59	EW2_SD	Extraction well 2 shut down	3/31/2019	9:26	Complete system shutdown. Local alarm display
3/31/2019	5:59	ASB_SD	Air stripper blower shut down	3/31/2019	9:26	Complete system shutdown. Local alarm display
3/31/2019	5:59	EW1_SD	Extraction well 1 shut down	3/31/2019	9:26	Complete system shutdown. Local alarm display

Note:
1. Only alarms resulting in system shutdown have been listed.

Appendix C2
System Alarm Logs - March 2019
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, NY

Date	Time In	Alarm Description[1]	System Shutdown Reason
3/4/2019	8:34:06 AM	Airstripper Blower alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	8:34:16 AM	Airstripper Blower alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	8:35:02 AM	Airstripper Blower Sump high level alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	1:20:10 PM	Airstripper Blower Sump high level alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	1:20:39 PM	Airstripper Blower alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	1:27:35 PM	Airstripper Blower Sump high level alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	1:27:36 PM	Airstripper Blower alarm	Blower shutdown due to high water level in the air stripper sump
3/4/2019	1:29:57 PM	Airstripper Blower alarm	Blower shutdown due to high water level in the air stripper sump

Note:
1. Only alarms resulting in system shutdown have been listed.

APPENDIX D

Data Summary Tables

Appendix D1
March 2019 - Water Sample Results
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Facility Location				Lawrence Aviation Industries												Old Mill Pond											
Sample ID				01-EW01		01-EW02		01-EW02		01-CINF		01-AS		01-EFF		02-EW01		02-EW02		02-EW06		02-AS		02-GAC		02-EFF	
Sample Name				01-EW01-20190312		01-EW02-20190312		11-EW02-20190312		01-INF-20190312		01-AS-20190312		01-EFF-20190312		02-EW01-20190312		02-EW02-20190312		02-EW06-20190312		02-AS-20190312		02-GAC-20190312		02-EFF-20190312	
Location Code				Extraction Well 1		Extraction Well 2		Extraction Well 2 Duplicate		Combined Influent		Post-Air Stripper		Facility Effluent		Extraction Well 1		Extraction Well 2		Extraction Well 6		Post-Air Stripper		Post-GAC		Facility Effluent	
Sample Date				3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019	
Analyte		Cas No.	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
VOLATILE ORGANIC COMPOUNDS																											
	USEPA SOP DW-1	1,1,1-Trichloroethane	71-55-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.94		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,1,2-Trichloroethane	79-00-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,1-Dichloroethane	75-34-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.6		0.69		0.65		0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,1-Dichloroethene	75-35-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.84		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2,3-Trichlorobenzene	87-61-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2,4-Trichlorobenzene	120-82-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2-Dibromo-3-Chloropropane	96-12-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2-Dibromoethane	106-93-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2-Dichlorobenzene	95-50-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2-Dichloroethane	107-06-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,2-Dichloropropane	78-87-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,3-Dichlorobenzene	541-73-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	1,4-Dichlorobenzene	106-46-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	2-Butanone	78-93-3	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	USEPA SOP DW-1	2-Hexanone	591-78-6	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	USEPA SOP DW-1	4-Methyl-2-Pentanone	108-10-1	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	USEPA SOP DW-1	Acetone	67-64-1	ug/l	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	USEPA SOP DW-1	Benzene	71-43-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Bromochloromethane	74-97-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Bromodichloromethane	75-27-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Bromoform	75-25-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Bromomethane	74-83-9	ug/l	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	USEPA SOP DW-1	Carbon Disulfide	75-15-0	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Carbon Tetrachloride	56-23-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Chlorobenzene	108-90-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Chloroethane	75-00-3	ug/l	1.0	U	1	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	USEPA SOP DW-1	Chloroform	67-66-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.59		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Chloromethane	74-87-3	ug/l	1.0	UL	1	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL	1.0	UL
	USEPA SOP DW-1	cis-1,2-Dichloroethylene	156-59-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.99		1.2		1.8		0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	cis-1,3-Dichloropropene	10061-01-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Cyclohexane	110-82-7	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Dibromochloromethane	124-48-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Dichlorodifluoromethane	75-71-8	ug/l	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL	0.5	UL
	USEPA SOP DW-1	Ethylbenzene	100-41-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Isopropylbenzene	98-82-8	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	M, P Xylenes	179601-23-1	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Methyl Acetate	79-20-9	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Methyl tert-Butyl Ether	1634-04-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.54		0.97		0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Methylcyclohexane	108-87-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Methylene Chloride	75-09-2	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	o-Xylene (1,2-Dimethylbenzene)	95-47-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Styrene	100-42-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Tetrachloroethylene(PCE)	127-18-4	ug/l	2.6		1.7		1.7		2.3		0.5	U	0.5	U	1.9		4.7		9.4		0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Toluene	108-88-3	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	trans-1,2-Dichloroethene	156-60-5	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	trans-1,3-Dichloropropene	10061-02-6	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Trichloroethene (TCE)	79-01-6	ug/l	98		30		30		66		0.5	U	0.5	U	78		61		290		3.9		4.5		3.8	
	USEPA SOP DW-1	Trichlorofluoromethane	75-69-4	ug/l	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
	USEPA SOP DW-1	Vinyl Chloride	75-01-4	ug/l	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ

Appendix D1
March 2019 - Water Sample Results
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Facility Location				Lawrence Aviation Industries												Old Mill Pond											
Sample ID				01-EW01		01-EW02		01-EW02		01-CINF		01-AS		01-EFF		02-EW01		02-EW02		02-EW06		02-AS		02-GAC		02-EFF	
Sample Name				01-EW01-20190312		01-EW02-20190312		11-EW02-20190312		01-INF-20190312		01-AS-20190312		01-EFF-20190312		02-EW01-20190312		02-EW02-20190312		02-EW06-20190312		02-AS-20190312		02-GAC-20190312		02-EFF-20190312	
Location Code				Extraction Well 1		Extraction Well 2		Extraction Well 2 Duplicate		Combined Influent		Post-Air Stripper		Facility Effluent		Extraction Well 1		Extraction Well 2		Extraction Well 6		Post-Air Stripper		Post-GAC		Facility Effluent	
Sample Date				3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019	
Analyte		Cas No.	Units	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
METALS																											
E200.7	Aluminum	7429-90-5	ug/l	1200		120		110		730		810		690		100	U	100	U	100	U	100	U	100	U	100	U
E200.7	Antimony	7440-36-0	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
E200.7	Arsenic	7440-38-2	ug/l	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
E200.7	Barium	7440-39-3	ug/l	100	U	100	U	100	U	100	U	100	U	100	U	120		120		130		130		120		120	
E200.7	Beryllium	7440-41-7	ug/l	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
E200.7	Cadmium	7440-43-9	ug/l	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
E200.7	Calcium	7440-70-2	ug/l	13000		13000		12000		13000		13000		12000		16000		17000		18000		18000		17000		17000	
E200.7	Chromium, Total	7440-47-3	ug/l	17		8.3		8		13		12		12		5.0	U	5.3		5.5		5.0		5.1		5.0	U
E200.7	Cobalt	7440-48-4	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
E200.7	Copper	7440-50-8	ug/l	10	U	13		10	U	10	U	10	U	44		10	U	10	U	10	U	10	U	10	U	10	U
E200.7	Iron	7439-89-6	ug/l	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U
E200.7	Lead	7439-92-1	ug/l	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U
E200.7	Magnesium	7439-95-4	ug/l	6900		6800		6400		7000		6800		6500		5800		7800		8300		7700		7600		7300	
E200.7	Manganese	7439-96-5	ug/l	5.0	U	5	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
E245.1	Mercury	7439-97-6	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
E200.7	Nickel	7440-02-0	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
E200.7	Potassium	7440-09-7	ug/l	13000		3800		3700		9000		8500		8300		1300		10000		9700		8000		7900		7500	
E200.7	Selenium	7782-49-2	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
E200.7	Silver	7440-22-4	ug/l	5.0	U	5	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
E200.7	Sodium	7440-23-5	ug/l	20000		18000		18000		20000		20000		19000		13000		17000		22000		19000		18000		18000	
E200.7	Thallium	7440-28-0	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
E200.7	Vanadium	7440-62-2	ug/l	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
E200.7	Zinc	7440-66-6	ug/l	29		66		24		200		40		180		20	U	20	U	20	U	20	U	20	U	20	U
WET CHEMISTRY																											
EPA 300.0	Fluoride	16984-48-8	mg/l	6.0		0.73		0.7		3.0		3.0		3.0		0.067		0.05	U	0.05	U	0.05	U	0.05	U	0.05	U

Acronyms:
ID - Identification
U - Non-Detect Value
J - Estimated Value
L - Value may be biased low
GAC - Granular Activated Carbon
µg/l - microgram per liter
mg/l - milligram per liter
01 - Lawrence Aviation Industries Facility Sample
02 - Old Mill Pond Facility Sample

Appendix D2
March 2019 - Trip blank results
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Facility Location			Lawrence Aviation Industries	
Sample ID			01-TB-20190312	
Sample Name			01-TB-20190312	
Sample Date			3/12/2019	
Analyte	Cas No.	Units	Results	Qual
VOLATILE ORGANIC COMPOUNDS				
1,1,1-Trichloroethane	71-55-6	ug/l	0.5	U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	0.5	U
1,1,2-Trichloro-1,2,2-Trifluoroeth	76-13-1	ug/l	0.5	U
1,1,2-Trichloroethane	79-00-5	ug/l	0.5	U
1,1-Dichloroethane	75-34-3	ug/l	0.5	U
1,1-Dichloroethene	75-35-4	ug/l	0.5	U
1,2,3-Trichlorobenzene	87-61-6	ug/l	0.5	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	0.5	U
1,2-Dibromo-3-Chloropropane	96-12-8	ug/l	0.5	U
1,2-Dibromoethane	106-93-4	ug/l	0.5	U
1,2-Dichlorobenzene	95-50-1	ug/l	0.5	U
1,2-Dichloroethane	107-06-2	ug/l	0.5	U
1,2-Dichloropropane	78-87-5	ug/l	0.5	U
1,3-Dichlorobenzene	541-73-1	ug/l	0.5	U
1,4-Dichlorobenzene	106-46-7	ug/l	0.5	U
2-Butanone	78-93-3	ug/l	5	U
2-Hexanone	591-78-6	ug/l	5	U
4-Methyl-2-Pentanone	108-10-1	ug/l	5	U
Acetone	67-64-1	ug/l	5	U
Benzene	71-43-2	ug/l	0.5	U
Bromochloromethane	74-97-5	ug/l	0.5	U
Bromodichloromethane	75-27-4	ug/l	0.5	U
Bromoform	75-25-2	ug/l	0.5	U
Bromomethane	74-83-9	ug/l	1	U
Carbon Disulfide	75-15-0	ug/l	0.5	U
Carbon Tetrachloride	56-23-5	ug/l	0.5	U
Chlorobenzene	108-90-7	ug/l	0.5	U
Chloroethane	75-00-3	ug/l	1	U
Chloroform	67-66-3	ug/l	0.5	U
Chloromethane	74-87-3	ug/l	1	UL
cis-1,2-Dichloroethylene	156-59-2	ug/l	0.5	U
cis-1,3-Dichloropropene	10061-01-5	ug/l	0.5	U
Cyclohexane	110-82-7	ug/l	0.5	U
Dibromochloromethane	124-48-1	ug/l	0.5	U
Dichlorodifluoromethane	75-71-8	ug/l	0.5	UL
Ethylbenzene	100-41-4	ug/l	0.5	U
Isopropylbenzene	98-82-8	ug/l	0.5	U
M, P Xylenes	179601-23-1	ug/l	0.5	U
Methyl Acetate	79-20-9	ug/l	0.5	U
Methyl tert-Butyl Ether	1634-04-4	ug/l	0.5	U
Methylcyclohexane	108-87-2	ug/l	0.5	U
Methylene Chloride	75-09-2	ug/l	0.5	U
o-Xylene (1,2-Dimethylbenzene)	95-47-6	ug/l	0.5	U
Styrene	100-42-5	ug/l	0.5	U
Tetrachloroethylene(PCE)	127-18-4	ug/l	0.5	U
Toluene	108-88-3	ug/l	0.5	U
trans-1,2-Dichloroethene	156-60-5	ug/l	0.5	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.5	U
Trichloroethene (TCE)	79-01-6	ug/l	0.5	U
Trichlorofluoromethane	75-69-4	ug/l	0.5	U
Vinyl Chloride	75-01-4	ug/l	1	UJ

Acronyms:
ID - Identification
U - Non-Detect Value
J - Estimated value
L - Reported Value may be biased low
µg/l - microgram per liter
01 - Lawrence Aviation Industries Facility Sample

Appendix D3
March 2019 - Air Sample results
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Facility Location		Lawrence Aviation Industries						Old Mill Pond							
Sample ID		01-INF-GAC01		01-EFF-GAC01		01-EFF-GAC02		02-INF-GAC03		02-EFF-GAC03		02-EFF-GAC01		02-EFF-GAC02	
Sample Name		BF6J3		BF6J1		BF6J2		BF6J7		BF6J6		BF6J4		BF6J5	
Location Code		Influent GAC-01		Effluent GAC-01		Effluent GAC-02		Influent		Post GAC-03		Post GAC-01		Effluent	
Sample Date		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019		3/12/2019	
Analyte	Cas No.	Results (ppbv)	Qual	Results (ppbv)	Qual	Results (ppbv)	Qual	Results (ppbv)	Qual	Results (ppbv)	Qual	Results (ppbv)	Qual	Results (ppbv)	Qual
VOLATILE ORGANIC COMPOUNDS															
1,1,1-Trichloroethane	71-55-6	0.1	J	0.5	U	0.5	U	1.9	J	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	75-34-3	0.16	J	0.23	J	0.5	U	4.3		0.5		0.5	U	0.5	U
1,1-Dichloroethene	75-35-4	1	U	0.06	J	0.5	U	1.5	J	0.21	J	0.5	U	0.5	U
Chloroform	67-66-3	0.42	J	0.37	J	0.5	U	2	J	0.05	J	0.5	U	0.5	U
cis-1,2-Dichloroethylene	156-59-2	0.32	J	0.41	J	0.06	J	6.2		0.5	U	0.5	U	0.5	U
Tetrachloroethylene(PCE)	127-18-4	5.3		0.1	J	0.25	J	14		0.13	J	0.24	J	0.21	J
Trichloroethene (TCE)	79-01-6	190		1.8		4.2		370		1.6		3.3		3	
Vinyl Chloride	75-01-4	1	U	0.5	U	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U

Acronyms:
ID - identification
U - Non-Detect Value
J - Estimated Value
GAC - Granular Activated Carbon
ppbv - parts per billion
01 - Lawrence Aviation Industries Facility Sample
02 - Old Mill Pond Facility Sample

APPENDIX E

Backup Calculations

Appendix E1 - Backup Calculations
Figure 2-1 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-01
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
ITP [2]	ITP EW-01 Day 1	9/15/2010	47	251	1	0.17	0.2
	ITP EW-01 Day 2	9/16/2010	27	281	3	0.75	0.9
	ITP EW-01 Day 4	9/19/2010	28	188	1	0.17	1.1
	ITP EW-01 Day 5	9/20/2010	75	167	6	1.0	2.1
October [2,3]	N/A	10/15/2010	N/A	167	31	1.1	3.2
November [2,4]	N/A	11/15/2010	N/A	141	30	1.0	4.2
December [2,5]	EW-01-101214	12/14/2010	N/A	115	31	0.0	4.2
January [2,5,6]	EW-01-110106	1/6/2011	N/A	2	31	0.0	4.2
February [2,6]	NS		N/A				
March [2,5,6]	N/A	3/15/2011	N/A	2	31	0.0	4.2
April [2,5]	EW-01-110413	4/13/2011	N/A	0	30	0.0	4.2
May [2,5]	EW-01-110512	5/12/2011	N/A	126	31	0.0	4.2
June [2,5]	EW-01-110609	6/9/2011	N/A	2	30	0.0	4.2
July [2,5]	EW-01-110711	7/11/2011	N/A	5	31	0.0	4.2
August [2,5]	EW-01-110809	8/9/2011	N/A	2	31	0.0	4.2
September [2,5]	EW-01-110913	9/13/2011	N/A	5	30	0.0	4.2
October [2,5]	EW-01-111011	10/11/2011	N/A	3	30	0.0	4.2
November [2,7]	EW-01-111108	11/8/2011	N/A	5	31	0.0	4.2
December [2,7]	EW-01-111213	12/13/2011	N/A	167	30	0.0	4.2
January [2,7]	EW-01-120111	1/11/2012	N/A	158	31	0.0	4.2
February [2,7]	EW-01-120214	2/14/2012	N/A	229	29	0.0	4.2
March [2,7]	EW-01-120313	3/13/2012	N/A	477	31	0.0	4.2
April [2,7]	EW-01-120412	4/12/2012	N/A	662	30	0.0	4.2
May [2,7]	EW-01-120509	5/9/2012	N/A	836	31	0.0	4.2
June [2,7]	EW-01-120613	6/13/2012	N/A	675	30	0.0	4.2
July [2,7]	EW-01-120709	7/9/2012	N/A	572	31	0.0	4.2
August [2,7]	NS		N/A				
September [2,7]	EW-01-120912	9/12/2012	N/A	439	30	5.0	9.2
October	NYD002041531-0006	10/25/2012	59	197	31	3.75	12.9
November	NYD002041531-0027	11/19/2012	74	177	30	4.13	17.1
December	NYD002041531-0047	12/19/2012	74	116	31	3.04	20.1
January	NYD002041531-0069	1/29/2013	74	106	31	2.49	22.6
February	01-EW01-20130219	2/19/2013	75	115	28	2.25	24.9
March	01-EW01-20130312	3/12/2013	71	105	31	2.46	27.3
April	01-EW01-20130409	4/9/2013	73	104	30	2.61	29.9
May	01-EW01-20130514	5/14/2013	75	97	31	2.55	32.5
June	01-EW01-20130611	6/11/2013	74	85	30	2.19	34.7
July	01-EW01-20130709	7/9/2013	74	104	31	2.77	37.4
August	01-EW01-20130813	8/13/2013	73	83	31	2.24	39.7
September	01-EW01-20130917	9/17/2013	74	88	30	2.31	42.0
October	01-EW01-102213	10/22/2013	75	91	31	2.44	44.4
November	01-EW01-20131119	11/19/2013	74	76	30	1.91	46.3
December	01-EW01-20131210	12/10/2013	74	94	31	2.42	48.8
January	01-EW01-20140114	1/14/2014	75	100	31	2.71	51.5
February	01-EW01-20140211	2/11/2014	75	99	28	2.44	53.9
March	01-EW01-20140311	3/11/2014	73	93	31	2.48	56.4
April	01-EW01-20140408	4/8/2014	74	103	30	2.72	59.1
May	01-EW01-20140506	5/6/2014	67	94	31	2.22	61.3
June	01-EW01-20140610	6/10/2014	74	85	30	2.22	63.5
July	01-EW01-20140708	7/8/2014	74	81	31	2.21	65.8
August	01-EW01-20140812	8/12/2014	74	74	31	2.01	67.8
September	01-EW01-20140910	9/10/2014	73	67	30	1.72	69.5
October	01-EW01-20141014	10/14/2014	76	85	31	2.36	71.8
November	01-EW01-20141111	11/11/2014	74	85	30	2.36	74.2
December	01-EW01-20141209	12/9/2014	78	78	31	2.17	76.4
January	01-EW01-20150113	1/13/2015	78	84	31	2.35	78.7
February	01-EW01-20150210	2/10/2015	77	89	28	2.27	81.0
March	01-EW01-20150310	3/10/2015	76	76	31	2.14	83.1
April	01-EW01-20150414	4/14/2015	75	74	30	1.97	85.1
May	01-EW01-20150512	5/12/2015	75	94	31	2.59	87.7
June	01-EW01-20150609	6/9/2015	75	75	30	1.99	89.7
July	01-EW01-20150715	7/15/2015	77	72	31	2.03	91.7
August	01-EW01-20150811	8/11/2015	77	71	31	1.94	93.7
September	01-EW01-20150908	9/8/2015	78	76	30	2.11	95.8
October	01-EW01-20151013	10/13/2015	77	83	31	2.32	98.1

Appendix E1 - Backup Calculations
Figure 2-1 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-01
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
November	01-EW01-20151110	11/10/2015	76	90	30	2.44	100.5
December	01-EW01-20151208	12/8/2015	77	92	31	2.64	103.2
January	01-EW01-20160112	1/12/2016	78	84	31	2.40	105.6
February	01-EW01-20160209	2/9/2016	78	82	29	2.23	107.8
March	01-EW01-20160308	3/8/2016	78	80	31	2.32	110.1
April	01-EW01-20160419	4/19/2016	78	79	30	2.22	112.3
May	01-EW01-20160510	5/10/2016	78	77	31	2.23	114.6
June	01-EW01-20160614	6/14/2016	76	76	30	2.03	116.6
July	01-EW01-20160712	7/12/2016	78	67	31	1.94	118.5
August	01-EW01-20160809	8/9/2016	76	68	31	1.92	120.5
September	01-EW01-20160913	9/13/2016	75	64	30	1.60	122.1
October	01-EW01-20161025	10/25/2016	71	79	31	1.90	124.0
November	01-EW01-20161115	11/15/2016	78	90	30	2.52	126.5
December	01-EW01-20161212	12/12/2016	76	76	31	1.61	128.1
January	01-EW01-20170110	1/10/2017	78	67	31	1.77	129.9
February	01-EW01-20170214	2/14/2017	78	64	28	1.65	131.5
March	01-EW01-20170316	3/16/2017	78	75	31	2.13	133.6
April	01-EW01-20170411	4/11/2017	78	75	30	2.08	135.7
May	01-EW01-20170510	5/10/2017	78	103	31	2.71	138.4
June	01-EW01-20170613	6/13/2017	78	82	30	2.29	140.7
July	01-EW01-20170712	7/12/2017	78	80	31	2.32	143.0
August	01-EW01-20170809	8/9/2017	77	72	31	2.03	145.1
September	01-EW01-20170913	9/13/2017	78	68	30	1.89	147.0
October	01-EW01-20171010	10/10/2017	78	79	31	2.30	149.3
November	01-EW01-20171114	11/14/2017	78	102	30	2.81	152.1
December	01-EW01-20171212	12/12/2017	77	102	31	2.90	155.0
January	01-EW01-20180109	1/9/2018	77	113	30	2.97	158.0
February	01-EW01-20180213	2/13/2018	77	86	28	2.23	160.2
March	01-EW01-20180314	3/14/2018	77	97	31	2.79	163.0
April	01-EW01-20180410	4/10/2018	77	101	30	2.79	165.8
May	01-EW01-20180508	5/8/2018	77	91	31	2.62	168.4
June	01-EW01-20180614	6/14/2018	78	80	30	2.26	170.6
July	01-EW01-20180710	7/10/2018	78	80	31	2.30	172.9
August[8]	01-EW01-20180816	8/16/2018	89	72	31	2.37	175.3
September	01-EW01-20180911	9/11/2018	77	102	30	2.62	177.9
October	01-EW01-20181009	10/9/2018	83	88	31	2.64	180.6
November	01-EW01-20181113	11/13/2018	78	113	30	3.19	183.8
December	01-EW01-20181212	12/12/2018	94	113	31	3.77	187.5
January	NS		N/A				
February	01-EW01-20190213	2/13/2019	78	113	28	2.77	190.3
March	01-EW01-20190312	3/12/2019	80	101	31	2.99	193.3

Notes:

1. The mass removal rate was calculated using the following formula. Only flow going to the GWTF was included.
Total CVOC Concentration (µg/l) x Groundwater Extracted (gal) x 3.79 (l/gal) x 1(lb)/453,600,000 (µg)
2. Data provided by CDM Smith/USEPA.
3. The sample results for ITP Day 5 were used for October. A representative date of October 15, 2011 was used.
4. The Total CVOC concentration was calculated as an average of the October and December results. A representative date of November 15, 2011 was used.
5. Discharge from EW-01 was routed to the permanganate re-circulation system during this period.
6. EW-01 was not in operation from January 16 to March 20, 2011 due to pump failure. No sample was collected from EW-01 in February or March. The EW-01 January sample results were used for the March calculations. A representative date of March 15, 2011 was used.
7. EW-01 was offline from November 8, 2011 to September 11, 2012. Flow from EW-01 was routed to the air stripper since September 12, 2012.
8. EW-01 was offline from August 9 to 15, 2018 due to well cleaning.

Acronyms:

CVOC - chlorinated volatile organic compound
ITP - initial testing program
EW- extraction well
GWTF - groundwater treatment facility
lb - pound
µg/l - microgram per liter
gal- gallons
l - liter
ID - identification
N/A - not available
NS - no sample

Appendix E2 - Backup Calculations
Figure 2-2 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-02
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
ITP [2]	ITP EW-02 Day 1	9/15/2010	47	154	1	0.17	0.2
	ITP EW-02 Day 2	9/16/2010	27	148	3	0.25	0.4
	ITP EW-02 Day 4	9/19/2010	26	113	1	0.08	0.5
	ITP EW-02 Day 5	9/20/2010	75	90	6	0.5	1.0
October [2,3]	N/A	10/15/2010	N/A	90	31	1.1	2.1
November [2,4]	EW-02-101105	11/15/2010	N/A	98	30	2.0	4.1
December [2,5]	EW-02-101214	12/14/2010	N/A	77	31	1.5	5.6
January [2,5]	EW-02-110106	1/6/2011	N/A	134	31	2.4	8.0
February [2,6]	EW-02-110303	3/3/2011	N/A	115	28	0.5	8.5
March [2,6]	N/A	3/15/2011	N/A	115	31	0.7	9.2
April [2,5]	EW-02-110413	4/13/2011	N/A	103	30	1.5	10.7
May [2,5]	EW-02-110512	5/12/2011	N/A	124	31	2.1	12.8
June [2,5]	EW-02-110609	6/9/2011	N/A	64	30	1.1	13.9
July [2,7]	EW-02-110711	7/11/2011	N/A	124	31	0.8	14.7
August [2,7]	EW-02-110809	8/9/2011	N/A	164	31	2.0	16.7
September [2,5]	EW-02-110913	9/13/2011	N/A	124	30	1.7	18.4
October [2,5]	EW-02-111011	10/11/2011	N/A	93	30	1.4	19.8
November [2,5]	EW-02-111108	11/8/2011	N/A	124	31	1.9	21.7
December [2,5]	EW-02-111213	12/13/2011	N/A	81	30	1.4	23.1
January [2,7]	EW-02-120111	1/11/2012	N/A	96	31	1.8	24.9
February [2,7]	EW-02-120214	2/14/2012	N/A	90	29	1.3	26.2
March [2,7]	EW-02-120313	3/13/2012	N/A	103	31	1.5	27.7
April [2,7]	EW-02-120412	4/12/2012	N/A	134	30	1.9	29.6
May [2,7]	EW-02-120509	5/9/2012	N/A	124	31	1.8	31.4
June [2,7]	EW-02-120613	6/13/2012	N/A	144	30	1.9	33.3
July [2,7]	EW-02-120709	7/9/2012	N/A	103	31	0.5	33.8
August [2,8]	NS		N/A				
September [2,7]	EW-02-120912	9/12/2012	N/A	236	30	3.4	37.2
October	NYD002041531-0007	10/25/2012	87	37	31	1.03	38.2
November	NYD002041531-0028	11/19/2012	74	61	30	1.41	39.6
December	NYD002041531-0048	12/19/2012	74	50	31	1.31	41.0
January	NYD002041531-0070	1/29/2013	74	26	31	0.61	41.6
February	01-EW02-20130219	2/19/2013	74	60	28	1.17	42.7
March	01-EW02-20130312	3/12/2013	74	45	31	1.12	43.9
April	01-EW02-20130409	4/9/2013	73	53	30	1.33	45.2
May	01-EW02-20130514	5/14/2013	74	49	31	1.28	46.5
June	01-EW02-20130611	6/11/2013	74	26	30	0.66	47.1
July	01-EW02-20130709	7/9/2013	74	52	31	1.39	48.5
August	01-EW02-20130813	8/13/2013	73	36	31	0.96	49.5
September	01-EW02-20130917	9/17/2013	74	42	30	1.1	50.6
October	01-EW02-102213	10/22/2013	75	44	31	1.17	51.7
November	01-EW02-20131119	11/19/2013	74	35	30	0.88	52.6
December	01-EW02-20131210	12/10/2013	74	37	31	0.96	53.6
January	01-EW02-20140114	1/14/2014	75	41	31	1.11	54.7
February	01-EW02-20140211	2/11/2014	74	44	28	1.09	55.8
March	01-EW02-20140311	3/11/2014	74	42	31	1.15	56.9
April	01-EW02-20140408	4/8/2014	74	46	30	1.22	58.2
May	01-EW02-20140506	5/6/2014	67	41	31	0.97	59.1
June	01-EW02-20140610	6/10/2014	73	41	30	1.05	60.2
July	01-EW02-20140708	7/8/2014	74	39	31	1.06	61.2
August	01-EW02-20140812	8/12/2014	74	38	31	1.04	62.3
September	01-EW02-20140910	9/10/2014	72	38	30	0.97	63.2
October	01-EW02-20141014	10/14/2014	75	38	31	1.06	64.3
November	02-EW02-20141112	11/12/2014	74	41	30	1.10	65.4
December	01-EW02-20141209	12/9/2014	77	35	31	0.96	66.4
January	01-EW02-20150113	1/13/2015	77	37	31	1.03	67.4
February	01-EW02-20150210	2/10/2015	77	35	28	0.89	68.3
March	01-EW02-20150310	3/10/2015	77	31	31	0.88	69.2
April	01-EW02-20150414	4/14/2015	77	36	30	0.98	70.1
May	01-EW02-20150512	5/12/2015	74	45	31	1.23	71.4
June	01-EW02-20150609	6/9/2015	74	44	30	1.16	72.5
July	01-EW02-20150715	7/15/2015	76	39	31	1.10	73.6
August	01-EW02-20150811	8/11/2015	76	36	31	0.97	74.6
September	01-EW02-20150909	9/9/2015	77	40	30	1.11	75.7
October	01-EW02-20151013	10/13/2015	76	36	31	1.00	76.7
November	01-EW02-20151110	11/10/2015	78	34	30	0.95	77.7
December	01-EW02-20151208	12/8/2015	76	35	31	0.98	78.6
January	01-EW02-20160112	1/12/2016	90	31	31	1.03	79.7

Appendix E2 - Backup Calculations
Figure 2-2 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-02
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
February	01-EW02-20160209	2/9/2016	76	32	29	0.85	80.5
March	01-EW02-20160308	3/8/2016	77	33	31	0.94	81.5
April	01-EW02-20160419	4/19/2016	77	36	30	0.99	82.4
May	01-EW02-20160510	5/10/2016	77	34	31	0.96	83.4
June	01-EW02-20160614	6/14/2016	76	31	30	0.82	84.2
July	01-EW02-20160713	7/13/2016	77	28	31	0.79	85.0
August	01-EW02-20160809	8/9/2016	75	29	31	0.80	85.8
September	01-EW02-20160913	9/13/2016	74	26	30	0.63	86.4
October	01-EW02-20161026	10/26/2016	70	24	31	0.56	87.0
November	01-EW02-20161115	11/15/2016	77	25	30	0.68	87.7
December	01-EW02-20161212	12/12/2016	75	19	31	0.40	88.1
January	01-EW02-20170110	1/10/2017	77	19	31	0.50	88.6
February	01-EW02-20170214	2/14/2017	77	15	28	0.39	89.0
March	01-EW02-20170316	3/16/2017	77	18	31	0.50	89.5
April	01-EW02-20170411	4/11/2017	77	20	30	0.54	90.0
May	01-EW02-20170510	5/10/2017	77	29	31	0.75	90.8
June	01-EW02-20170613	6/13/2017	77	21	30	0.57	91.3
July	01-EW02-20170712	7/12/2017	77	23	31	0.65	92.0
August	01-EW02-20170809	8/9/2017	76	19	31	0.52	92.5
September	01-EW02-20170913	9/13/2017	76	18	30	0.49	93.0
October	01-EW02-20171010	10/10/2017	73	20	31	0.55	93.6
November	01-EW02-20171114	11/14/2017	77	23	30	0.61	94.2
December	01-EW02-20171212	12/12/2017	76	21	31	0.58	94.8
January	01-EW02-20180109	1/9/2018	76	20	30	0.51	95.3
February	01-EW02-20180213	2/13/2018	76	18	28	0.47	95.8
March	01-EW02-20180314	3/14/2018	76	19	31	0.55	96.4
April	01-EW02-20180410	4/10/2018	76	20	30	0.56	96.9
May	01-EW02-20180508	5/8/2018	79	19	31	0.57	97.5
June	01-EW02-20180614	6/14/2018	77	25	30	0.69	98.2
July	01-EW02-20180710	7/10/2018	77	19	31	0.53	98.7
August[9]	01-EW02-20180816	8/16/2018	91	26	31	0.88	99.6
September	01-EW02-20180911	9/11/2018	76	32	30	0.82	100.4
October	01-EW02-20181009	10/9/2018	82	33	31	0.97	101.4
November	01-EW02-20181113	11/13/2018	77	34	30	0.95	102.3
December	01-EW02-20181212	12/12/2018	93	33	31	1.09	103.4
January	NS		N/A				
February	01-EW02-20190213	2/13/2019	78	33	28	0.81	104.2
March	01-EW02-20190312	3/12/2019	77	32	31	0.91	105.1

Notes:
1. The mass removal rate was calculated using the following formula. Only flow going to the GWTF was included.
Total CVOC Concentration (µg/l) x Groundwater Extracted (gal) x 3.79 (l/gal) x 1(lb)/453,600,000 (µg)
2. Data provided by CDM Smith/USEPA.
3. The sample results for ITP Day 5 were used for October. A representative date of October 15, 2011 was used.
4. The Total CVOC concentration was calculated as an average of the October and December results. A representative date of November 15, 2011 was used.
5. Discharge from EW-02 was treated via the air stripper.
6. Discharge from EW-02 was routed to the permanganate re-circulations system from February 10 to March 20, 2011.
No sample was collected from EW-02 in March. The EW-02 February sample results were used for the March calculations.
A representative date of March 15, 2011 was used.
7. Discharge from EW-02 routed to the permanganate re-circulation system from July 12 to August 4, 2011.
Flow from EW-02 was treated via the air stripper on all other days of the reporting period. EW-02 was offline from July 13, 2012 to September 9, 2012 during injection well redevelopment activities. Flow from EW-02 was treated via the air stripper since September 10, 2012.
8. No sample was collected since the plant was offline during injection well redevelopment activities.
9. EW-01 was offline from August 1 to 8, 2018 due to well cleaning.

Acronyms:
CVOC - chlorinated volatile organic compound
ITP - initial testing program
EW- extraction well
GWTF - groundwater treatment facility
ID - identification
N/A - not available
lb - pound
µg/l - microgram per liter
gal- gallons
l - liter
NS - no sample

Appendix E3 - Backup Calculations
Figure 3-1 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-1
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOCs Concentrations (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
August	N/A	8/23/2011	8	313	1	0.03	0.03
	N/A	8/25/2011	8	332	2	0.06	0.1
	N/A	8/30/2011	8	182	5	0.10	0.2
September	N/A	9/13/2011	6	274	14	0.28	0.5
	N/A	9/15/2011	6	364	2	0.06	0.5
	N/A	9/20/2011	6	274	5	0.10	0.6
	N/A	9/22/2011	7	373	2	0.06	0.7
	N/A	9/27/2011	8	393	5	0.20	0.9
	N/A	9/29/2011	8	152	2	0.02	0.9
October [2,3]	N/A						
November [2,3]	N/A						
December [2,3]	N/A						
January [2]	N/A	1/25/2012	30	270	30	2.69	3.6
February [2]	N/A	2/17/2012	26	330	30	2.69	6.3
March [2]	N/A	3/22/2012	26	230	30	2.69	9.0
April [2]	N/A	4/19/2012	37	300	28	2.16	11.1
May [2]	N/A	5/31/2012	17	190	28	2.16	13.3
June [2]	N/A	6/7/2012	16	320	28	2.16	15.5
July [2,4]							
August [2,4]							
September [2,4]							
October	NYD002041531-0012	10/25/2012	16	333	31	1.78	17.2
November	NYD002041531-0033	11/19/2012	16	314	30	1.67	18.9
December [5]	NYD002041531-0053	12/19/2012	10	323	31	1.20	20.1
January	NYD002041531-0080	1/30/2013	16	271	31	1.61	21.7
February	01-EW01-20130219	2/20/2013	30	282	28	2.44	24.2
March	02-EW01-20130313	3/13/2013	33	352	31	4.37	28.5
April	02-EW01-20130410	4/10/2013	33	333	30	3.90	32.4
May	02-EW01-20130515	5/15/2013	39	333	31	4.42	36.9
June	02-EW01-20130612	6/12/2013	48	342	30	5.59	42.4
July	02-EW01-20130710	7/10/2013	48	382	31	6.65	49.1
August	02-EW01-20130814	8/14/2013	48	403	31	6.74	55.8
September	02-EW01-20130918	9/18/2013	38	116	30	1.42	57.3
October	02-EW01-102313	10/23/2013	30	301	31	3.18	60.4
November	02-EW01-20131120	11/20/2013	34	230	30	2.64	63.1
December	02-EW01-20131211	12/11/2013	49	249	31	4.45	67.5
January	02-EW01-20140115	1/15/2014	48	241	31	4.28	71.8
February	02-EW01-20140212	2/12/2014	48	200	28	3.15	75.0
March	02-EW01-20140312	3/12/2014	51	189	31	3.57	78.5
April	02-EW01-20140409	4/9/2014	53	199	30	3.72	82.2
May	02-EW01-20140507	5/7/2014	54	149	31	2.97	85.2
June	02-EW01-20140611	6/11/2014	53	199	30	3.83	89.0
July	02-EW01-20140709	7/9/2014	51	179	31	3.41	92.5
August	02-EW01-20140813	8/13/2014	51	188	31	3.59	96.0
September	02-EW01-20140911	9/11/2014	49	169	30	2.97	99.0
October	02-EW01-20141015	10/15/2014	49	179	31	3.27	99.3
November	02-EW01-20141112	11/12/2014	50	184	30	3.30	102.6
December	02-EW01-20141210	12/10/2014	49	158	31	2.87	105.5
January	02-EW01-20150114	1/14/2015	48	167	31	2.96	108.4
February	02-EW01-20150211	2/11/2015	48	148	28	2.30	110.7
March	02-EW01-20150311	3/11/2015	48	128	31	2.28	113.0
April	02-EW01-20150415	4/15/2015	47	138	30	2.23	115.3
May	02-EW01-20150513	5/13/2015	47	160	31	2.77	118.0
June	02-EW01-20150610	6/10/2015	48	160	30	2.77	120.8
July	02-EW01-20150716	7/16/2015	46	129	31	2.10	122.9
August	02-EW01-20150812	8/12/2015	47	138	31	2.41	125.3
September	02-EW01-20150909	9/9/2015	46	148	30	2.45	127.8
October	02-EW01-20151014	10/14/2015	48	278	31	4.90	132.7
November	02-EW01-20151111	11/11/2015	48	139	30	2.38	135.0

Appendix E3 - Backup Calculations
Figure 3-1 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-1
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOCs Concentrations (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
December	02-EW01-20151209	12/9/2015	48	149	31	2.64	137.7
January	02-EW01-20160113	1/13/2016	48	138	31	2.40	140.1
February	02-EW01-20160210	2/10/2016	48	128	29	2.11	142.2
March	02-EW01-20160309	3/9/2016	48	127	31	2.27	144.5
April	02-EW01-20160420	4/20/2016	71	128	30	2.34	146.8
May	02-EW01-20160511	5/11/2016	69	139	31	3.57	150.4
June	02-EW01-20160615	6/15/2016	72	131	30	3.39	153.7
July	02-EW01-20160713	7/13/2016	72	127	31	3.36	157.1
August	02-EW01-20160810	8/10/2016	72	138	31	3.68	160.8
September	02-EW01-20160914	9/14/2016	74	117	30	3.20	164.0
October	02-EW01-20161026	10/26/2016	71	128	31	3.09	167.1
November	02-EW01-20161115	11/15/2016	58	126	30	2.62	169.7
December	02-EW01-20161212	12/12/2016	71	98	31	2.57	172.3
January	02-EW01-20170110	1/10/2017	72	107	31	2.80	175.1
February	02-EW01-20170214	2/14/2017	73	95	28	2.30	177.4
March	02-EW01-20170316	3/16/2017	70	93	31	2.43	179.8
April	02-EW01-20170411	4/11/2017	71	108	30	2.58	182.4
May	02-EW01-20170510	5/10/2017	72	118	31	3.12	185.5
June	02-EW01-20170613	6/13/2017	72	117	30	2.88	188.4
July	02-EW01-20170712	7/12/2017	72	119	31	3.11	191.5
August	02-EW01-20170809	8/9/2017	71	103	31	2.65	194.1
September	02-EW01-20170913	9/13/2017	67	100	30	2.39	196.5
October	02-EW01-20171010	10/10/2017	62	109	31	2.47	199.0
November	02-EW01-20171114	11/14/2017	64	148	30	3.43	202.4
December	02-EW01-20171212	12/12/2017	62	105	31	2.43	204.9
January	02-EW01-20180109	1/9/2018	63	100	31	2.35	207.2
February	02-EW01-20180213	2/13/2018	64	91	28	1.96	209.2
March	02-EW01-20180314	3/14/2018	64	107	31	2.56	211.7
April	02-EW01-20180410	4/10/2018	64	127	30	2.93	214.7
May	02-EW01-20180508	5/8/2018	36	94	31	2.21	216.9
June	02-EW01-20180612	6/12/2018	64	87	30	2.02	218.9
July	02-EW01-20180710	7/10/2018	62	88	31	2.07	221.0
August	02-EW01-20180816	8/16/2018	85	90	31	2.85	223.8
September	02-EW01-20180911	9/11/2018	67	118	30	2.75	226.6
October	02-EW01-20181009	10/9/2018	62	102	31	2.36	228.9
November	02-EW01-20181113	11/13/2018	64	102	30	2.36	231.3
December	02-EW01-20181212	12/12/2018	74	97	31	2.55	233.8
January	No sample collected						
February	02-EW01-20190213	2/13/2019	64	94	28	2.03	235.9
March	02-EW01-20190312	3/12/2019	64	85	31	1.95	237.8

Notes:
1. The mass removal rate was calculated using the following formula. Only flow going to the GWTF was included.
Total CVOC Concentration (µg/l) x Groundwater Extracted (gal) x 3.79 (l/gal) x 1(lb)/453,600,000 (µg)
2. Data provided by USEPA/ERT.
3. No October to December 2011 data due to change in sampling strategy.
4. Data for July to September 2012 will be updated when received.
5. Spent vapor GAC unit was turned offline for change-out. All influent water was treated via the liquid phase GAC and the air stripper was turned off.

Acronyms:
CVOC - chlorinated volatile organic compounds
EW- extraction well
GWTF - groundwater treatment facility
ID - identification
N/A - not available
gpm - gallons per minute
lb - pound
µg/l - microgram per liter
gal- gallons
l - liter
GAC - granular activated carbon

Appendix E4 - Backup Calculations
Figure 3-2 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-2
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
August [2]	N/A	8/23/2011	7	454	0	0.00	0.0
	N/A	8/25/2011	7	443	2	0.08	0.1
	N/A	8/30/2011	7	323	5	0.15	0.2
September [2]	N/A	9/13/2011	8	565	14	0.70	0.9
	N/A	9/15/2011	8	436	2	0.08	1.0
	N/A	9/20/2011	8	225	5	0.10	1.1
	N/A	9/22/2011	7	604	2	0.10	1.2
	N/A	9/27/2011	7	555	5	0.25	1.5
	N/A	9/29/2011	8	343	2	0.06	1.5
October [2,3]	N/A						
November [2,3]	N/A						
December [2,3]	N/A						
January [2]	N/A	1/25/2012	36	530	30	6.47	8.0
February [2]	N/A	2/17/2012	32	610	30	6.47	14.5
March [2]	N/A	3/22/2012	34	450	30	6.47	20.9
April [2]	N/A	4/19/2012	40	440	28	8.29	29.2
May [2]	N/A	5/31/2012	53	470	28	8.29	37.5
June [2]	N/A	6/7/2012	56	560	28	8.29	45.8
July [2,4]							
August [2,4]							
September [2,4]							
October	NYD002041531-0013	10/25/2012	52	515	31	8.93	54.7
November	NYD002041531-0034	11/19/2012	52	557	30	9.62	64.3
December [5]	NYD002041531-0054	12/19/2012	33	576	31	7.09	71.4
January	NYD002041531-0081	1/30/2013	52	464	31	8.96	80.4
February	01-EW02-20130219	2/20/2013	38	484	28	5.30	85.7
March	02-EW02-20130313	3/13/2013	35	494	31	6.39	92.1
April	02-EW02-20130410	4/10/2013	35	474	30	5.83	97.9
May	02-EW02-20130515	5/15/2013	20	454	31	3.09	101.0
June	02-EW02-20130612	6/12/2013	20	493	30	3.33	104.3
July	02-EW02-20130710	7/10/2013	20	495	31	3.55	107.9
August	02-EW02-20130814	8/14/2013	20	494	31	3.41	111.3
September	02-EW02-20130918	9/18/2013	20	454	30	2.87	114.2
October	02-EW02-102313	10/23/2013	20	414	31	2.97	117.1
November	02-EW02-20131120	11/20/2013	29	321	30	3.21	120.3
December	02-EW02-20131211	12/11/2013	50	331	31	6.05	126.4
January	02-EW02-20140115	1/15/2014	48	301	31	5.35	131.7
February	02-EW02-20140212	2/12/2014	50	260	28	4.21	135.9
March	02-EW02-20140312	3/12/2014	52	249	31	4.75	140.7
April	02-EW02-20140409	4/9/2014	52	239	30	4.45	145.1
May	02-EW02-20140507	5/7/2014	54	179	31	3.59	148.7
June	02-EW02-20140611	6/11/2014	54	220	30	4.25	153.0
July	02-EW02-20140709	7/9/2014	51	189	31	3.59	156.6
August	02-EW02-20140813	8/13/2014	51	178	31	3.40	160.0
September	02-EW02-20140911	9/11/2014	49	179	30	3.13	163.1
October	02-EW02-20141015	10/15/2014	49	189	31	3.46	163.4
November	02-EW02-20141112	11/12/2014	50	202	30	3.64	167.1
December	02-EW02-20141210	12/10/2014	50	167	31	3.07	170.1
January	02-EW02-20150114	1/14/2015	49	178	31	3.22	173.4
February	02-EW02-20150211	2/11/2015	47	178	28	2.76	176.1
March	02-EW02-20150311	3/11/2015	48	148	31	2.64	178.8
April	02-EW02-20150415	4/15/2015	47	168	30	2.72	181.5
May	02-EW02-20150513	5/13/2015	47	189	31	3.28	184.8
June	02-EW02-20150610	6/10/2015	48	180	30	3.11	187.9
July	02-EW02-20150716	7/16/2015	45	159	31	2.56	190.4
August	02-EW02-20150812	8/12/2015	47	168	31	2.92	193.4
September	02-EW02-20150909	9/9/2015	46	158	30	2.62	196.0
October	02-EW02-20151014	10/14/2015	53	149	31	2.94	198.9
November	02-EW02-20151111	11/11/2015	48	149	30	2.55	201.5
December	02-EW02-20151209	12/9/2015	48	159	31	2.81	204.3
January	02-EW02-20160113	1/13/2016	48	138	31	2.40	206.7

Appendix E4 - Backup Calculations
Figure 3-2 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-2
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
February	02-EW02-20160210	2/10/2016	48	148	29	2.44	209.1
March	02-EW02-20160309	3/9/2016	48	128	31	2.28	211.4
April	02-EW02-20160420	4/20/2016	79	158	30	3.23	214.6
May	02-EW02-20160511	5/11/2016	77	129	31	3.69	218.3
June	02-EW02-20160615	6/15/2016	80	121	30	3.49	221.8
July	02-EW02-20160713	7/13/2016	80	104	31	3.06	224.9
August	02-EW02-20160810	8/10/2016	80	109	31	3.21	228.1
September	02-EW02-20160914	9/14/2016	82	93	30	2.84	230.9
October	02-EW02-20161026	10/26/2016	79	101	31	2.74	233.7
November	02-EW02-20161115	11/15/2016	77	105	30	2.90	236.6
December	02-EW02-20161212	12/12/2016	78	86	31	2.52	239.1
January	02-EW02-20170110	1/10/2017	78	84	31	2.38	241.5
February	02-EW02-20170214	2/14/2017	79	68	28	1.79	243.2
March	02-EW02-20170316	3/16/2017	78	78	31	2.26	245.5
April	02-EW02-20170411	4/11/2017	79	78	30	2.06	247.6
May	02-EW02-20170510	5/10/2017	80	85	31	2.50	250.1
June	02-EW02-20170613	6/13/2017	80	80	30	2.19	252.3
July	02-EW02-20170712	7/12/2017	80	81	31	2.34	254.6
August	02-EW02-20170809	8/9/2017	80	70	31	2.03	256.6
September	02-EW02-20170913	9/13/2017	80	67	30	1.90	258.5
October	02-EW02-20171010	10/10/2017	73	70	31	1.86	260.4
November	02-EW02-20171114	11/14/2017	80	83	30	2.41	262.8
December	02-EW02-20171212	12/12/2017	77	62	31	1.79	264.6
January	02-EW02-20180109	1/9/2018	80	72	31	2.15	266.7
February	02-EW02-20180213	2/13/2018	80	57	28	1.52	268.3
March	02-EW02-20180314	3/14/2018	80	61	31	1.81	270.1
April	02-EW02-20180410	4/10/2018	77	67	30	1.86	271.9
May	02-EW02-20180508	5/8/2018	68	59	31	1.48	273.4
June	02-EW02-20180612	6/12/2018	68	52	30	1.27	274.7
July	02-EW02-20180710	7/10/2018	74	51	31	1.42	276.1
August	02-EW02-20180816	8/16/2018	68	51	31	1.29	277.4
September	02-EW02-20180911	9/11/2018	68	58	30	1.36	278.7
October	02-EW02-20181009	10/9/2018	78	62	31	1.79	280.5
November	02-EW02-20181113	11/13/2018	80	65	30	1.87	282.4
December	02-EW02-20181212	12/12/2018	100	66	31	2.34	284.7
January	No sample collected						
February	02-EW02-20190213	2/13/2019	80	70	28	1.89	286.6
March	02-EW02-20190312	3/12/2019	80	68	31	1.93	288.6

Notes:

1. The mass removal rate was calculated using the following formula. Only flow going to the GWTF was included.
Total CVOC Concentration (µg/l) x Groundwater Extracted (gal) x 3.79 (l/gal) x 1(lb)/453,600,000 (µg)
2. Data provided by USEPA/ERT.
3. No October to December 2011 data due to change in sampling strategy.
4. Data for July to September 2012 will be updated when received.
5. Spent vapor GAC unit was turned offline for change-out. All influent water was treated via the liquid phase GAC and the air stripper was turned off.

Acronyms:

CVOC- chlorinated volatile organic compound
EW- extraction well
GWTF - groundwater treatment facility
ID - identification
N/A - not available
gpm - gallons per minute
lb - pound
µg/l - microgram per liter
gal- gallons
l - liter
GAC - granular activated carbon

Appendix E5 - Backup Calculations
Figure 3-3 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-6
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
September[2]	02-EW06-20130918	9/18/2013	19	934	30	3.05	3.1
October	02-EW06-102313	10/23/2013	18	841	31	2.97	6.0
November	02-EW06-20131120	11/20/2013	28	649	30	6.12	12.1
December	02-EW06-20131211	12/11/2013	47	687	31	11.93	24.1
January	02-EW06-20140115	1/15/2014	47	637	31	11.14	35.2
February	02-EW06-20140212	2/12/2014	47	596	28	9.14	44.4
March	02-EW06-20140312	3/12/2014	43	575	31	9.02	53.4
April	02-EW06-20140409	4/9/2014	39	576	30	7.93	61.3
May	02-EW06-20140507	5/7/2014	39	435	31	6.35	67.7
June	02-EW06-20140611	6/11/2014	39	557	30	7.86	75.5
July	02-EW06-20140709	7/9/2014	39	515	31	7.37	82.9
August	02-EW06-20140813	8/13/2014	39	495	31	7.09	90.0
September	02-EW06-20140911	9/11/2014	41	474	30	6.93	96.9
October	02-EW06-20141015	10/15/2014	46	505	31	8.51	98.5
November	02-EW06-201411112	11/12/2014	44	527	30	8.26	106.7
December	02-EW06-20141210	12/10/2014	46	342	31	5.88	112.6
January	02-EW06-20150114	1/14/2015	48	385	31	6.78	119.4
February	02-EW06-20150211	2/11/2015	46	494	28	7.65	127.1
March	02-EW06-20150311	3/11/2015	48	394	31	7.01	134.1
April	02-EW06-20150415	4/15/2015	47	425	30	6.85	140.9
May	02-EW06-20150513	5/13/2015	47	545	31	9.43	150.3
June	02-EW06-20150610	6/10/2015	48	517	30	8.95	159.3
July	02-EW06-20150716	7/16/2015	44	426	31	6.70	166.0
August	02-EW06-20150812	8/12/2015	48	434	31	7.64	173.6
September	02-EW06-20150909	9/9/2015	46	414	30	6.84	180.5
October	02-EW06-20151014	10/14/2015	47	424	31	7.32	187.8
November	02-EW06-20151111	11/11/2015	48	404	30	6.93	194.7
December	02-EW06-20151209	12/9/2015	48	445	31	7.87	202.6
January	02-EW06-20160113	1/13/2016	48	424	31	7.37	209.9
February	02-EW06-20160210	2/10/2016	48	424	29	7.00	216.9
March	02-EW06-20160309	3/9/2016	48	393	31	7.02	224.0
April	02-EW06-20160420	4/20/2016	67	374	30	6.51	230.5
May	02-EW06-20160511	5/11/2016	64	394	31	9.42	239.9
June	02-EW06-20160615	6/15/2016	68	373	30	9.11	249.0
July	02-EW06-20160713	7/13/2016	66	331	31	8.13	257.1
August	02-EW06-20160810	8/10/2016	64	353	31	8.35	265.5
September	02-EW06-20160914	9/14/2016	66	301	30	7.37	272.9
October	02-EW06-20161026	10/26/2016	64	321	31	7.03	279.9
November	02-EW06-20161115	11/15/2016	61	280	30	6.16	286.0
December	02-EW06-20161212	12/12/2016	63	311	31	7.30	293.3
January	02-EW06-20170110	1/10/2017	70	271	31	6.87	300.2
February	02-EW06-20170214	2/14/2017	89	260	28	7.68	307.9
March	02-EW06-20170316	3/16/2017	86	250	31	8.02	315.9
April	02-EW06-20170411	4/11/2017	88	291	30	8.63	324.5
May	02-EW06-20170510	5/10/2017	88	301	31	9.76	334.3
June	02-EW06-20170613	6/13/2017	89	282	30	8.61	342.9
July	02-EW06-20170712	7/12/2017	88	294	31	9.38	352.3
August	02-EW06-20170809	8/9/2017	88	252	31	8.06	360.4
September	02-EW06-20170913	9/13/2017	88	232	30	7.30	367.7
October	02-EW06-20171010	10/10/2017	85	263	31	8.18	378.4
November	02-EW06-20171114	11/14/2017	88	342	30	10.87	389.3
December	02-EW06-20171212	12/12/2017	85	281	31	8.88	398.1
January	02-EW06-20180109	1/9/2018	88	261	31	8.51	406.7
February	02-EW06-20180213	2/13/2018	87	220	28	6.47	413.1
March	02-EW06-20180314	3/14/2018	81	331	31	10.00	423.1
April	02-EW06-20180410	4/10/2018	80	293	30	8.45	431.6
May	02-EW06-20180508	5/8/2018	79	281	31	8.28	439.9
June	02-EW06-20180612	6/12/2018	80	276	30	7.96	447.8
July	02-EW06-20180710	7/10/2018	79	242	31	7.12	454.9
August	02-EW06-20180816	8/16/2018	95	282	31	9.99	464.9

Appendix E5 - Backup Calculations
Figure 3-3 - Influent CVOC Concentrations and Mass Removed vs. Time - EW-6
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Site, Port Jefferson Station, New York

Month	Sample ID	Sample Date	Average Flow Rate (gpm)	Total CVOC Concentration (µg/l)	No. of Pumping Days in Period	Mass Removed and Treated[1] (lbs)	Cumulative Mass Removed and Treated (lbs)
September	02-EW06-20180911	9/11/2018	76	302	30	7.92	472.8
October	02-EW06-20181009	10/9/2018	77	287	31	8.24	481.1
November	02-EW06-20181113	11/13/2018	80	342	30	9.87	491.0
December	02-EW06-20181212	12/12/2018	109	283	31	10.93	501.9
January	No sample collected						
February	02-EW06-20190213	2/13/2019	80	313	28	8.42	510.3
March	02-EW06-20190312	3/12/2019	80	302	31	8.61	518.9

Notes:

1. The mass removal rate was calculated using the following formula. Only flow going to the GWTF was included.
Total CVOC Concentration (µg/l) x Groundwater Extracted (gal) x 3.79 (l/gal) x 1(lb)/453,600,000 (µg)
2. Installation and startup of EW-6 was completed by August 31, 2013.

Acronyms:

CVOC - chlorinated volatile organic compound
EW- extraction well
GWTF - groundwater treatment facility
lb - pound
µg/l - microgram per liter
gal- gallons
ID - identification
GAC - granular activated carbon
l - liter
gpm - gallons per minute

APPENDIX F

Summary of Monthly Operations from

October 2012 to September 2018

Appendix F1
Summary of Monthly Operations from October 2012 to September 2018
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2012	Nov. 2012	Dec. 2012	Jan. 2013	Feb. 2013	Mar. 2013	Apr. 2013	May 2013	Jun. 2013	Jul. 2013	Aug. 2013	Sep. 2013	Cumulative Year 2[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-01 Runtime	644	628	704	634	521	657	682	699	697	719	737	704	8,026
EW-02 Runtime	647	624	706	635	524	662	682	699	695	719	737	705	8,035
Treatment System Downtime (hours)													
Planned	79	57	0	0	0	19	0	0	1	15	0	2	173
Unplanned	18	35	38	110	148	68	38	45	24	10	7	13	554
System Uptime	86.96%	87.22%	94.89%	85.35%	77.97%	88.98%	94.72%	93.95%	96.81%	96.64%	99.06%	97.92%	91.71%
Treatment Summary													
Gallons extracted from EW-01	2,297,748	2,789,848	3,155,268	2,838,708	2,341,080	2,949,936	2,982,040	3,128,604	3,076,344	3,173,404	3,225,336	3,134,128	35,092,444
Average flow rate from EW-01 (gpm)	59	74	74.4	74.3	74.6	71	73.2	74.7	74	73.9	73.3	74.4	72.6
Gallons extracted from EW-02	3,398,856	2,803,508	3,138,300	2,825,020	2,321,688	2,938,988	2,978,928	3,117,764	3,066,004	3,169,072	3,217,712	3,128,152	36,103,992
Average flow rate from EW-02 (gpm)	87	74	74	74	74.5	74.4	73.1	74.3	73.7	73.8	73.1	74.3	75.1
Total gallons treated	5,696,604	5,593,356	6,293,568	5,663,728	4,662,768	5,888,924	5,960,968	6,246,368	6,142,348	6,342,476	6,443,048	6,262,280	71,196,436

Acronyms:
gpm - gallons per minute
% - percentage

Notes:
1. Monthly data from September 2010 to September 2012 collected by CDM Smith has not been included herein. Refer to individual monthly reports for appropriate notes.

Appendix F1
Summary of Monthly Operations from October 2012 to September 2018
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2013	Nov. 2013	Dec. 2013	Jan. 2014	Feb. 2014	Mar. 2014	Apr. 2014	May 2014	Jun. 2014	Jul. 2014	Aug. 2014	Sep. 2014	Cumulative Year 3[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-01 Runtime	715	676	692	722	656	727	709	708	704	738	733	706	8,486
EW-02 Runtime	715	677	692	722	660	726	709	708	704	738	733	706	8,490
Treatment System Downtime (hours)													
Planned	4	7	17	6	1	5	3	17	9	0	10.5	13.5	92
Unplanned	25	37	35	16	11	12	8	19	7	6	0.5	0.5	177
System Uptime	96.10%	94.03%	93.01%	97.04%	98.21%	97.72%	98.47%	95.16%	97.78%	99.19%	98.52%	98.06%	96.94%
Treatment Summary													
Gallons extracted from EW-01	3,202,168	3,010,928	3,059,608	3,250,064	2,928,160	3,234,224	3,160,550	2,833,544	3,116,864	3,262,176	3,273,424	3,093,440	37,425,150
Average flow rate from EW-01 (gpm)	75	73.7	73.9	75.3	74.7	72.9	74.3	66.7	73.8	73.7	74.4	73.0	73
Gallons extracted from EW-02	3,191,552	3,006,376	3,064,520	3,217,176	2,924,040	3,232,128	3,158,330	2,832,176	3,102,968	3,262,096	3,272,208	3,041,000	37,304,570
Average flow rate from EW-02 (gpm)	74.8	74	74	74.5	74.2	74.5	74.2	66.7	73.5	73.7	74.4	71.8	73
Total gallons treated	6,393,720	6,017,304	6,124,128	6,467,240	5,852,200	6,466,352	6,318,880	5,665,720	6,219,832	6,524,272	6,545,632	6,134,440	74,729,720

Acronyms:
gpm - gallons per minute
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Notes:
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Appendix F1
Summary of Monthly Operations from October 2012 to September 2018
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2014	Nov. 2014	Dec. 2014	Jan. 2015	Feb. 2015	Mar. 2015	Apr. 2015	May 2015	Jun. 2015	Jul. 2015	Aug. 2015	Sep. 2015	Cumulative Year 4[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-01 Runtime	736	717	716.25	725	666	742	707	734	707	711	711	719	8,592
EW-02 Runtime	737	717	716	725	669	742	707	736	708	711	712	720	8,600
Treatment System Downtime (hours)													
Planned	2.0	3.0	27.5	0.0	0.0	0.0	12.0	0.0	0.0	4.5	0.0	0.0	49
Unplanned	3.5	0.0	0.75	19.00	9.00	2.00	0.75	10.00	13.00	2.5	33.0	1.0	95
System Uptime	98.9%	99.6%	96.3%	97.4%	98.7%	99.7%	98.2%	98.7%	98.2%	99.1%	95.6%	99.9%	98.3%
Treatment Summary													
Gallons extracted from EW-01	3,334,832	3,188,970	3,506,200	3,261,210	3,085,096	3,391,200	3,201,808	3,288,136	3,194,336	3,274,400	3,283,072	3,350,848	39,360,108
Average flow rate from EW-01 (gpm)	75.5	74.1	77.9	78.0	77.2	76.2	75.5	74.7	75.3	76.8	77.0	77.7	76
Gallons extracted from EW-02	3,328,600	3,194,130	3,461,230	3,222,900	3,085,656	3,436,448	3,246,528	3,261,472	3,157,808	3,232,384	3,243,584	3,312,112	39,182,852
Average flow rate from EW-02 (gpm)	75.3	74.2	76.9	77.0	76.9	77.2	76.5	73.9	74.3	75.8	75.9	76.7	76
Total gallons treated	6,663,432	6,383,100	6,967,430	6,484,110	6,170,752	6,827,648	6,448,336	6,549,608	6,352,144	6,506,784	6,526,656	6,662,960	78,542,960

Acronyms:
gpm - gallons per minute
% - percentage

Notes:
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Appendix F1
Summary of Monthly Operations from October 2012 to September 2018
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2015	Nov. 2015	Dec. 2015	Jan. 2016	Feb. 2016	Mar. 2016	Apr. 2016	May 2016	Jun. 2016	Jul. 2016	Aug. 2016	Sep. 2016	Cumulative Year 5[1]
Calender Days in Period	31	30	31	31	29	31	30	31	30	31	31	30	366
Treatment System Runtime (hours)													
EW-01 Runtime	728	718	743	384	694	695	694	740	700	739	741	644	8,219
EW-02 Runtime	728	718	743	740	696	694	695	740	699	739	741	643	8,574
Treatment System Downtime (hours)													
Planned	0.0	0.0	0.0	2.0	0.0	0.8	0.0	2.8	12.3	0.5	0.0	0.5	19
Unplanned	16.5	2.0	1.25	2.50	0.50	0.00	1.00	0.25	6.00	2.0	2.8	55.0	90
System Uptime	97.8%	99.7%	99.8%	99.4%	99.9%	99.9%	99.9%	99.6%	97.5%	99.7%	99.6%	92.3%	98.8%
Treatment Summary													
Gallons extracted from EW-01	3,367,072	3,254,352	3,448,304	1,786,272	3,233,568	3,235,664	3,236,144	3,445,744	3,192,080	3,439,664	3,368,224	2,904,096	37,911,184
Average flow rate from EW-01 (gpm)	77.1	75.5	77.4	77.5	77.7	77.6	77.7	77.6	76.0	77.6	75.8	75.2	77
Gallons extracted from EW-02	3,329,584	3,350,272	3,403,680	4,014,368	3,190,496	3,193,440	3,190,416	3,397,856	3,200,784	3,393,856	3,320,112	2,866,112	39,850,976
Average flow rate from EW-02 (gpm)	76.3	77.8	76.4	90.5	76.5	76.7	76.5	76.5	76.3	76.5	74.7	74.3	77
Total gallons treated	6,696,656	6,604,624	6,851,984	5,800,640	6,424,064	6,429,104	6,426,560	6,843,600	6,392,864	6,833,520	6,688,336	5,770,208	77,762,160

Acronyms:
gpm - gallons per minute
% - percentage

Notes:
1. Monthly data from September 2010 to September 2012 collected by CDM Smith has not been included herein. Refer to individual monthly reports for appropriate notes.

Appendix F1
Summary of Monthly Operations from October 2012 to September 2018
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2016	Nov. 2016	Dec. 2016	Jan. 2017	Feb. 2017	Mar. 2017	Apr. 2017	May 2017	Jun. 2017	Jul. 2017	Aug. 2017	Sept. 2017	Cumulative Year 6[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-01 Runtime	677	719	666	677	662	726	696	675	709	738	733	720	8,398
EW-02 Runtime	676	714	677	678	662	727	712	674	710	739	733	718	8,420
Treatment System Downtime (hours)													
Planned	63.00	1.00	46.00	23.00	9.00	15.00	6.00	2.75	1.00	1.00	1.00	0.25	169
Unplanned	4.50	5.00	21.00	43.00	1.00	2.00	2.00	67.25	9.00	4.00	10.00	1.75	171
System Uptime	90.9%	99.2%	91.0%	91.1%	98.5%	97.7%	98.9%	90.6%	98.6%	99.3%	98.5%	99.7%	96.2%
Treatment Summary													
Gallons extracted from EW-01	2,890,096	3,356,208	3,032,576	3,164,192	3,082,992	3,387,456	3,240,896	3,144,064	3,308,560	3,441,120	3,404,032	3,355,744	38,807,936
Average flow rate from EW-01 (gpm)	71	78	76	78	78	78	78	78	78	78	77	78	77
Gallons extracted from EW-02	2,855,392	3,286,608	3,045,808	3,117,296	3,044,720	3,344,336	3,272,576	3,100,560	3,265,232	3,394,880	3,343,232	3,271,744	38,342,384
Average flow rate from EW-02 (gpm)	70	77	75	77	77	77	77	77	77	77	76	76	76
Total gallons treated	5,745,488	6,642,816	6,078,384	6,281,488	6,127,712	6,731,792	6,513,472	6,244,624	6,573,792	6,836,000	6,747,264	6,627,488	77,150,320

Acronyms:
gpm - gallons per minute
% - percentage

Notes:
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Summary of Monthly Operations from October 2012 to September 2018
Lawrence Aviation Industries Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2017	Nov. 2017	Dec. 2017	Jan. 2018	Feb. 2018	Mar. 2018	Apr. 2018	May. 2018	Jun. 2018	Jul. 2018	Aug. 2018	Sept. 2018	Cumulative Year 7[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-01 Runtime	742	704	734	681	671	743	718	741	619	739	592	569	8,253
EW-02 Runtime	743	704	734	681	671	739	717	743	614	739	566	566	8,217
Treatment System Downtime (hours)													
Planned	2.00	0.00	8.50	44.50	1.25	0.50	0.00	0.25	0.75	4.75	0.00	2.25	65
Unplanned	0.00	16.50	1.00	20.00	0.00	0.00	3.00	0.75	100.25	0.25	1.00	45.00	188
System Uptime	99.7%	97.7%	98.7%	91.3%	99.8%	99.9%	99.6%	99.9%	86.0%	99.3%	99.9%	93.4%	97.1%
Treatment Summary													
Gallons extracted from EW-01	3,463,040	3,283,328	3,387,552	3,147,024	3,116,464	3,425,984	3,313,920	3,437,552	2,875,760	3,445,984	2,987,248	2,642,288	38,526,144
Average flow rate from EW-01 (gpm)	78	78	77	77	77	77	77	77	77	78	84	77	78
Gallons extracted from EW-02	3,233,168	3,237,872	3,342,576	3,105,312	3,068,144	3,381,024	3,266,288	3,388,432	2,837,616	3,401,136	2,900,672	2,591,328	37,753,568
Average flow rate from EW-02 (gpm)	73	77	76	76	76	76	76	76	77	77	85	76	77
Total gallons treated	6,696,208	6,521,200	6,730,128	6,252,336	6,184,608	6,807,008	6,580,208	6,825,984	5,713,376	6,847,120	5,887,920	5,233,616	76,279,712

Acronyms:
gpm - gallons per minute
% - percentage

Notes:
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Appendix F2
Summary of Monthly Operations from October 2012 to September 2018
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2012	Nov. 2012	Dec. 2012	Jan. 2013	Feb. 2013	Mar. 2013	Apr. 2013	May 2013	Jun. 2013	Jul. 2013	Aug. 2013	Sep. 2013	Cumulative Year 1[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-1 Runtime	665	663	744	741	575	744	709	682.5	680	723	696	646	8,269
EW-2 Runtime	665	663	744	741	575	744	709	682.5	680	723	696	646	8,269
EW-6 Runtime	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	349	349
Treatment System Downtime (hours)													
Planned	79	57	0	3	97	0	0	54.5	29	0	13	65.5	398
Unplanned	0	0	0	0	0	0	11	7	11	21	35	8.5	93.5
System Uptime	89.38%	92.08%	100.00%	99.59%	85.56%	100.00%	98.47%	91.73%	94.44%	97.18%	93.55%	89.72%	94.31%
Treatment Summary													
Gallons extracted from EW-1	622,080	668,160	446,400	1,305,138	864,230	1,435,678	1,322,059	1,597,751	1,933,018	2,038,214	2,059,064	1,476,454	15,768,246
Average flow rate from EW-1 (gpm)	16	16	10	16	30	33	33	38.7	48	48	48	37.9	31.3
Gallons extracted from EW-2	2,021,760	2,171,520	1,473,120	4,221,765	1,027,086	1,519,756	1,438,736	826,196	815,192	855,960	857,944	764,264	17,993,299
Average flow rate from EW-2 (gpm)	52	52	33	52	38	34.7	34.6	19.8	20	20	20	19.5	33.0
Gallons extracted from EW-6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	379,888	379,888
Average flow rate from EW-6 (gpm)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.7	18.7
Total gallons treated	2,643,840	2,839,680	1,919,520	5,526,903	1,891,316	2,955,434	2,760,795	2,423,947	2,748,210	2,894,174	2,917,008	2,620,606	34,141,433

Acronyms:
gpm - gallons per minute
% - percentage
PLC - programmable logic controller

Notes:
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Appendix F2
Summary of Monthly Operations from October 2012 to September 2018
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2013	Nov. 2013	Dec. 2013	Jan. 2014	Feb. 2014	Mar. 2014	Apr. 2014	May 2014	Jun. 2014	Jul. 2014	Aug. 2014	Sep. 2014	Cumulative Year 2[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-1 Runtime	712	677	733	742	652	736	710	743	718	740	744	716	8,623
EW-2 Runtime	712	677	733	742	652	736	710	743	718	740	744	716	8,623
EW-6 Runtime	712	677	733	742	652	736	710	743	718	740	744	716	8,623
Treatment System Downtime (hours)													
Planned	12	39	5	0	19	5	7	0	0	0	0	2	89
Unplanned	20	4	6	2	1	3	3	1	2	4	0	2	48
System Uptime	95.70%	94.03%	98.52%	99.73%	97.02%	98.92%	98.61%	99.87%	99.72%	99.46%	100.00%	99.44%	98.42%
Treatment Summary													
Gallons extracted from EW-1	1,181,304	1,340,866	2,108,928	2,135,224	1,876,720	2,231,848	2,239,568	2,322,368	2,236,496	2,281,056	2,200,424	2,102,848	24,257,650
Average flow rate from EW-1 (gpm)	29.6	33.9	48.6	48.3	48.2	51.2	52.6	53.7	53.4	51.4	49.3	48.9	47.4
Gallons extracted from EW-2	835,992	1,159,930	2,138,678	2,135,224	1,876,728	2,212,808	2,224,852	2,344,796	2,244,336	2,279,628	2,181,824	2,102,512	23,737,308
Average flow rate from EW-2 (gpm)	20.1	29.4	49.8	49.5	49.5	51.6	52.2	53.8	53.7	51.3	48.9	48.9	46.6
Gallons extracted from EW-6	757,007	1,078,611	2,058,836	2,070,261	1,814,709	1,805,363	1,647,036	1,734,432	1,674,106	1,712,433	1,792,928	1,748,438	19,894,160
Average flow rate from EW-6 (gpm)	18.4	27.8	47.3	47	47	42.5	38.7	39.2	39.2	38.6	40.2	40.7	38.9
Total gallons treated	2,774,303	3,579,407	6,306,442	6,340,709	5,568,157	6,250,019	6,111,456	6,401,596	6,154,938	6,273,117	6,175,176	5,953,798	67,889,118

Acronyms:
gpm - gallons per minute
% - percentage
PLC - programmable logic controller

Notes:
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Appendix F2
Summary of Monthly Operations from October 2012 to September 2018
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2014	Nov. 2014	Dec. 2014	Jan. 2015	Feb. 2015	Mar. 2015	Apr. 2015	May 2015	Jun. 2015	Jul. 2015	Aug. 2015	Sep. 2015	Cumulative Year 3[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-1 Runtime	738	712	724	744	647	743	680	743	720	709	739	714	8,612
EW-2 Runtime	738	712	724	744	647	743	680	743	720	709	739	714	8,612
EW-6 Runtime	738	712	724	744	647	743	680	743	720	709	739	714	8,612
Treatment System Downtime (hours)													
Planned	4	0	0	0	0	1	0.50	1.00	0	30.75	0	0	37
Unplanned	2	7.75	20.5	0	25.5	0	40	0	0	4	5.5	6	111
System Uptime	99.2%	98.9%	97.2%	100.0%	96.2%	99.9%	94.4%	99.9%	100.0%	95.3%	99.3%	99.2%	98.3%
Treatment Summary													
Gallons extracted from EW-1	2,149,232	2,139,350	2,268,679	2,073,921	1,853,776	2,129,088	1,930,520	2,072,000	2,072,304	1,954,272	2,084,640	1,978,120	24,705,902
Average flow rate from EW-1 (gpm)	48.5	50.1	49.1	47.8	47.8	47.8	47.4	46.5	48.0	45.9	47.0	46.2	47.7
Gallons extracted from EW-2	2,152,480	2,149,530	2,293,146	2,114,797	1,853,776	2,129,108	1,930,668	2,072,008	2,072,304	1,931,744	2,079,408	1,978,304	24,757,273
Average flow rate from EW-2 (gpm)	48.6	50.3	49.6	48.8	47.8	47.8	47.4	46.5	48.0	45.4	46.9	46.2	47.8
Gallons extracted from EW-6	2,002,356	1,869,801	2,141,084	2,050,988	1,853,228	2,127,246	1,930,448	2,072,000	2,071,724	1,883,200	2,109,272	1,978,272	24,089,619
Average flow rate from EW-6 (gpm)	45.2	43.8	46.4	47.6	47.8	47.7	47.3	46.5	48.0	44.3	47.6	46.2	46.5
Total gallons treated	6,304,068	6,158,681	6,702,909	6,239,706	5,560,780	6,385,442	5,791,636	6,216,008	6,216,332	5,769,216	6,273,320	5,934,696	73,552,794

Acronyms:
gpm - gallons per minute
% - percentage
PLC - programmable logic controller

Notes:
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Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2015	Nov. 2015	Dec. 2015	Jan. 2016	Feb. 2016	Mar. 2016	Apr. 2016	May 2016	Jun. 2016	Jul. 2016	Aug. 2016	Sep. 2016	Cumulative Year 4[1]
Calender Days in Period	31	30	31	31	29	31	30	31	30	31	31	30	366
Treatment System Runtime (hours)													
EW-1 Runtime	740	717	743	728	687	743	519	744	718	738	739	717	8,531
EW-2 Runtime	740	717	743	728	687	743	519	744	718	738	739	717	8,531
EW-6 Runtime	740	717	743	728	687	743	519	744	718	738	739	717	8,531
Treatment System Downtime (hours)													
Planned	3	0	1	6	0	1	200.75	0.25	0	0	4.5	0.25	216
Unplanned	1	3	0.25	11	9	0.5	0.5	0.25	2.5	6.5	0.5	3	38
System Uptime	99.5%	99.6%	99.9%	97.8%	98.7%	99.9%	72.0%	99.9%	99.7%	99.1%	99.3%	99.5%	97.1%
Treatment Summary													
Gallons extracted from EW-1	2,110,712	2,049,248	2,115,840	2,082,888	1,976,320	2,138,064	2,197,984	3,085,976	3,094,992	3,172,544	3,184,776	3,184,776	30,394,120
Average flow rate from EW-1 (gpm)	47.5	47.6	47.5	47.7	47.9	48.0	70.6	69.2	71.9	71.7	71.8	74.1	59.6
Gallons extracted from EW-2	2,358,520	2,051,192	2,116,224	2,082,944	1,976,624	2,138,240	2,452,752	3,428,808	3,438,848	3,524,992	3,536,176	3,536,176	32,641,496
Average flow rate from EW-2 (gpm)	53.1	47.7	47.5	47.7	48.0	48.0	78.8	76.9	79.9	79.7	79.8	82.2	64.1
Gallons extracted from EW-6	2,062,800	2,051,144	2,116,208	2,082,936	1,976,604	2,138,196	2,087,168	2,860,672	2,919,300	2,936,636	2,831,072	2,831,072	28,893,808
Average flow rate from EW-6 (gpm)	46.5	47.7	47.5	47.7	48.0	48.0	67.1	64.1	67.8	66.4	63.8	65.8	56.7
Total gallons treated	6,532,032	6,151,584	6,348,272	6,248,768	5,929,548	6,414,500	6,737,904	9,375,456	9,453,140	9,634,172	9,552,024	9,552,024	91,929,424

Acronyms:
gpm - gallons per minute
% - percentage
PLC - programmable logic controller

Notes:
1. Monthly data from August 2011 to September 2012 collected by Environmental Restoration, LLC has not been included herein. Refer individual monthly reports for appropriate notes.

Appendix F2
Summary of Monthly Operations from October 2012 to September 2018
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2016	Nov. 2016	Dec. 2016	Jan. 2017	Feb. 2017	Mar. 2017	Apr. 2017	May 2017	Jun. 2017	Jul. 2017	Aug. 2017	Sept. 2017	Cumulative Year 5[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-1 Runtime	681	550	744	724	662	743	672	736	685	723	725	712	8,355
EW-2 Runtime	681	718	744	724	662	743	672	736	685	723	725	712	8,523
EW-6 Runtime	681	718	744	719	662	743	672	736	685	723	725	712	8,518
Treatment System Downtime (hours)													
Planned	63	168	0	19	9	0	31.5	0	0.5	1	0	0.25	292
Unplanned	0.5	2	0	1	1	1	17	8	35	20.5	19.5	7.75	113
System Uptime	91.5%	99.7%	100.0%	97.3%	98.5%	99.9%	93.3%	98.9%	95.1%	97.1%	97.4%	98.9%	97.3%
Treatment Summary													
Gallons extracted from EW-1	2,889,688	1,913,496	3,164,544	3,123,496	2,888,152	3,136,608	2,862,984	3,173,712	2,977,144	3,110,944	3,093,704	2,845,944	35,180,416
Average flow rate from EW-1 (gpm)	71	58	71	72	73	70	71	72	72	72	71	67	70
Gallons extracted from EW-2	3,239,056	3,311,528	3,500,992	3,368,408	3,131,712	3,489,528	3,180,984	3,527,136	3,306,112	3,456,624	3,476,464	3,415,456	40,404,000
Average flow rate from EW-2 (gpm)	79	77	78	78	79	78	79	80	80	80	80	80	79
Gallons extracted from EW-6	2,617,344	2,635,616	2,811,392	3,019,856	3,539,656	3,838,032	3,532,296	3,881,464	3,642,816	3,802,608	3,824,768	3,756,960	40,902,808
Average flow rate from EW-6 (gpm)	64	61	63	70	89	86	88	88	89	88	88	88	80
Total gallons treated	8,746,088	7,860,640	9,476,928	9,511,760	9,559,520	10,464,168	9,576,264	10,582,312	9,926,072	10,370,176	10,394,936	10,018,360	116,487,224

Acronyms:
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% - percentage
PLC - programmable logic controller

Notes:
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Appendix F2
Summary of Monthly Operations from October 2012 to September 2018
Old Mill Pond Groundwater Treatment Facility
Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Item	Oct. 2017	Nov. 2017	Dec. 2017	Jan. 2018	Feb. 2018	Mar. 2018	Apr. 2018	May 2018	Jun. 2018	Jul. 2018	Aug. 2018	Sept. 2018	Cumulative Year 6[1]
Calender Days in Period	31	30	31	31	28	31	30	31	30	31	31	30	365
Treatment System Runtime (hours)													
EW-1 Runtime	729	720	744	744	672	744	720	744	719	601	744	706	8586
EW-2 Runtime	729	720	744	744	672	744	720	744	719	627	744	706	8611
EW-6 Runtime	729	720	744	744	672	744	720	744	719	548	744	706	8533
Treatment System Downtime (hours)													
Planned	0	0	0.25	0.25	0	0.25	0	0.17	0.25	0	0	0	1
Unplanned	15	0	0.25	0	0	0	0	0	0.75	0	0	14.25	30
System Uptime	98.0%	100.0%	99.9%	99.97%	100.00%	99.97%	100.00%	99.98%	99.86%	100.00%	100.00%	98.02%	99.64%
Treatment Summary													
Gallons extracted from EW-1	2,701,472	2,762,960	2,762,961	2,816,560	2,579,824	2,856,256	2,764,224	2,833,440	2,760,000	2,254,656	3,776,371	2,829,712	33,698,436
Average flow rate from EW-1 (gpm)	62	64	62	63	64	64	64	63	64	62	85	67	65
Gallons extracted from EW-2	3,194,160	3,443,664	3,443,665	3,559,904	3,224,736	3,570,480	3,319,760	3,014,416	2,957,776	2,800,224	3,051,197	2,870,480	38,450,462
Average flow rate from EW-2 (gpm)	73	80	77	80	80	80	77	68	69	74	68	68	74
Gallons extracted from EW-6	3,714,528	3,798,544	3,798,545	3,908,160	3,515,288	3,631,640	3,455,440	3,542,128	3,450,144	2,603,360	4,243,411	3,203,072	42,864,260
Average flow rate from EW-6 (gpm)	85	88	85	88	87	81	80	79	80	79	95	76	84
Total gallons treated	9,610,160	10,005,168	10,005,171	10,284,624	9,319,848	10,058,376	9,539,424	9,389,984	9,167,920	7,658,240	11,070,979	8,903,264	115,013,158

Acronyms:
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% - percentage
PLC - programmable logic controller

Notes:
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