GROUNDWATER EXTRACTION AND TREATMENT SYSTEM ANNUAL OPERATIONS REPORT FOR THE PERIOD JANUARY 1 THROUGH DECEMBER 31, 2018 FORMER YORK NAVAL ORDNANCE PLANT

Prepared for:

former York Naval Ordnance Plant Remediation Team

March 2019

Groundwater Extraction and Treatment System
Annual Operations Report
for the Period
January 1 through December 31, 2018
Former York Naval Ordnance Plant

Prepared for:

former York Naval Ordnance Plant Remediation Team

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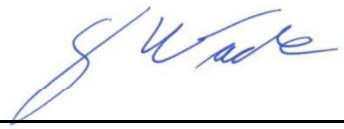
March 2019

Respectfully submitted,



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1,1-DCE	-	1,1-dichloroethene
cfm	-	cubic feet per minute
cis-1,2-DCE	-	cis-1,2-dichloroethene
EPA	-	United States Environmental Protection Agency
fYNOP	-	former York Naval Ordnance Plant
GAC	-	granular-activated carbon
gpd	-	gallons per day
gpm	-	gallons per minute
GSC	-	Groundwater Sciences Corporation
GWTS	-	groundwater extraction and treatment system
Harley-Davidson	-	Harley-Davidson Motor Company Operations, Inc.
HDPE	-	high density polyethylene
HTG	-	Hydro-Terra Group
lbs/day	-	pounds per day
NB4	-	North Building 4
NPBA	-	Northeast Property Boundary Area
NPDES	-	National Pollutant Discharge Elimination System
NP York	-	NP York 58, LLC
O&M	-	operation and maintenance
PADEP	-	Pennsylvania Department of Environmental Protection
PCE	-	tetrachloroethene
PLC	-	programmable logic controller
ppm	-	parts per million
PTA	-	packed tower aerator
SPBA	-	Southern Property Boundary Area
SRBC	-	Susquehanna River Basin Commission
TCA	-	1,1,1-trichloroethane
TCE	-	trichloroethene
µg/L	-	micrograms per liter
VFD	-	variable frequency drive
VOCs	-	volatile organic compounds
WPL	-	West Parking Lot

EXECUTIVE SUMMARY

This report presents a summary of the groundwater extraction and treatment system (GWTS) operations and maintenance (O&M) and groundwater extraction well monitoring during 2018 at the former York Naval Ordnance Plant (fYNOP). The fYNOP-GWTS is located at the Harley-Davidson Motor Company Operations, Inc. (Harley-Davidson) facility in York, Pennsylvania. The fYNOP-GWTS and has been in operation for over 28 years (since November 1990) and consists of numerous collection wells in three areas (the West Parking Lot (WPL), Northeast Property Boundary Area (NPBA), and Southern Property Boundary Area (SPBA)) of fYNOP.

The WPL collection wells, (CW-9, CW-13, CW-15A, CW-17, and CW-20) were operational during 2018. The NPBA collection wells were shut down in mid-2013 in accordance with a work plan approved by the United States Environmental Protection Agency (EPA) and Pennsylvania Department of Environmental Protection (PADEP) and remained off during 2018 pending completion of shutdown monitoring studies.

Ongoing site-wide groundwater investigations identified an additional area along the southeast property boundary, referred to as the SPBA, where groundwater remediation was considered necessary. A work plan and conceptual design were submitted to EPA and PADEP for groundwater investigation and interim remedial action in the SPBA. The work plan and conceptual design were approved by the regulators in November 2017. Three SPBA collection wells (CW-21, CW-22, CW-23) were installed, and the SPBA collection wells began operation on October 31, 2018. Groundwater is now pumped from the three wells to the fYNOP-GWTS.

Approximately 856 pounds of volatile organic compounds (VOCs) were removed by the GWTS during 2018. The total amount of groundwater extracted during 2018 was approximately 122 million gallons. Cumulatively, approximately 47,198 pounds of VOCs have been removed by the GWTS since 1990.

Site-wide groundwater elevation and sampling data were collected in October 2018. The data will be presented in the 2018 fYNOP Annual Groundwater Quality Report (in preparation by Groundwater Sciences Corporation [GSC]).

1.0 INTRODUCTION

This report presents a summary of the operating record for the fYNOP GWTS and includes collection well water quality data obtained during 2018. The fYNOP facility consists of the current Harley-Davidson York facility and the West Campus property (as described below). The fYNOP is located in Springettsbury Township, York County, Pennsylvania, as shown on Figure 1-1. This report covers the 12-month period from January 1 through December 31, 2018. Hydro-Terra Group (HTG) operated the GWTS during the reporting period (January 1, 2018 through December 31, 2018).

Harley-Davidson sold 58 acres of the western portion of the fYNOP in June 2012. NP York 58, LLC (NP York) currently owns the property and constructed a 755,000 square-foot warehouse. The parcel—now addressed as 1445 Eden Road, York, Pennsylvania —extends from west of the current motorcycle manufacturing operations through the WPL and is identified as the "West Campus". The fYNOP retains responsibility for the cleanup of the West Campus and maintains an easement agreement with the new owners to continue remediation, monitoring, and maintenance activities.

The fYNOP GWTS was designed to treat groundwater containing VOCs of concern that consist of trichloroethene (TCE), tetrachloroethene (PCE), 1,1,1-trichloroethane (TCA), and their degradation products, including cis-1,2-dichloroethene (cis-1,2-DCE) and 1,1-dichloroethene (1,1-DCE). At the fYNOP, groundwater can be extracted from 18 pumping wells (CW-1, CW-1A, CW-2 through CW-7, CW-7A, CW-9, CW-13, CW-15A, CW-17, CW-19, CW-20, CW-21, CW-22, and CW-23) operating in three (3) separate areas designated as the NPBA, the WPL Area (which includes the former North Building 4 [NB4] Area), and the new SPBA. The collection systems are shown on Figure 1-2. WPL collection wells (CW-9, CW-13, CW-15A, CW-17, and CW-20) were all operational during 2018. The NPBA was not active during 2018. The SPBA collection wells (CW-21, CW-22, and CW-23) began operation October 31, 2018.

The NPBA collection wells and the Building 3 Dewatering Area/lift station system were shut down in mid-2013, per a work plan submitted to, and approved by, the EPA and PADEP, and have remained off pending completion of shutdown monitoring studies. EPA approved abandoning the Building 3 Dewatering System on May 16, 2017 and the system components have been abandoned. GSC has been conducting the NPBA monitoring. During 2018, a four-year progress report of the NPBA shutdown monitoring was prepared in April (GSC, 2018a).

All extracted groundwater is piped to a treatment system located in the groundwater treatment building (Building 41A) for processing through a packed tower aerator (PTA) prior to discharge to the Codorus Creek, designated as Outfall No. 003 (see Figures 1-1 and 1-2). Conveyance piping from the SPBA transfer building to the GWTS was installed in February 2018.

Figure 1-3 presents a schematic flow diagram for this treatment system. A chemical sequestering agent (Redux 525) injection system was installed in June 2010 to reduce mineral fouling of the GWTS PTA, effluent discharge pumps, and components. This sequestrant chemical injection system continued to operate throughout 2018. PTA off-gases are treated by a vapor phase, granular-activated carbon (GAC) filter system for removal of VOCs before being discharged to the atmosphere. Treated groundwater is collected in a wet well located immediately northwest of Building 41A and is pumped through a force main to Outfall 003 located near the confluence of Johnsons Run and Codorus Creek (refer to Figure 1-2).

The treatment system operates and discharges under a National Pollutant Discharge Elimination System (NPDES) permit No. PA0085677 issued by PADEP. The current permit was issued on November 22, 2010 and expired on November 30, 2015. Harley-Davidson submitted the renewal application in May 2015 in accordance with the PADEP guidelines, therefore, the permit extends as is until a renewed permit is issued by PADEP [pending]. A permit modification was submitted to the PADEP on February 9, 2018 for the addition of the SPBA collection wells [pending].

2.0 GEOLOGY AND HYDROGEOLOGY

Two geologic rock formations underlie the site. Solution-prone (karst) gray carbonate bedrock (limestone and dolostone) underlies the flat lowland (western) portion of the site. Quartzitic sandstone underlies the more steeply sloping hills or upland area present on the eastern part of the site. Groundwater flow is generally westward, from the upland area at the eastern part of the site toward Codorus Creek. A detailed discussion of the geology and hydrogeology is included in the revised report entitled "Supplemental Remedial Investigation Groundwater Report (Part 2)." (GSC, 2018b).

3.0 SITE-WIDE GROUNDWATER MONITORING

The groundwater monitoring program at the fYNOP site for 2018 consisted of:

- Measuring depth to water in all available monitoring and observation wells once during the year.

- Sampling and chemical analysis of groundwater from the collection wells throughout the year (see results summary in Table A-1 in Appendix A).

- Sampling and chemical analysis of GWTS influent from the combined active collection wells throughout the year (see results summary in Table A-2 in Appendix A).

- A comprehensive site-wide groundwater sampling event (wells onsite and offsite) was conducted during October (data to be provided in separate report).

4.0 GROUNDWATER TREATMENT SYSTEM

During 2018, the GWTS treated groundwater containing dissolved VOCs recovered from the WPL and SPBA Areas of the site. This groundwater extraction portion of the system consists of eight (8) active wells (CW-9, CW-13, CW-15A, CW-17, CW-20, CW-21, CW-22, and CW-23).

4.1 System Description

Collection wells within the WPL groundwater extraction area and the SPBA remove groundwater by means of electric submersible pumps. The pumping water level within each collection well in the WPL is maintained by liquid level probes and control circuitry between the "on" and "off" probes. The pumping water level is controlled by a transducer in the SPBA wells. The extracted groundwater is conveyed via underground piping to the treatment system where the dissolved VOCs are removed from the groundwater.

The GWTS is housed in Building 41A. The process flow diagram for the system is presented on Figure 1-3. The treatment system consists of a 2,600-gallon equalization tank; a PTA capable of treating up to 400 gallons per minute (gpm) of groundwater; and a 10,000-pound vapor-phase GAC unit for PTA off-gas treatment.

Extracted groundwater is pumped from the equalization tank to the top of the PTA. Redux 525 sequestering agent is injected into this flow at an approximate rate of 20 parts per million (ppm) to prevent calcium scale deposits on the packing material and effluent pump system. Simultaneous with the downward flow of contaminated water, a 4,000-cubic-foot-per-minute (cfm) centrifugal blower directs fresh air into the lower section of the tower, and up through the packing material. VOCs present in the influent groundwater are "stripped" from the water, transferred into the air, and then adsorbed to the GAC in the air-phase. The treated groundwater flows by gravity to a wet well (effluent pump station) located on the north side of Building 41A. It is then pumped approximately 1,600 feet via an 8-inch underground force main to Outfall No. 003 and discharged to Codorus Creek (see Figure 1-2).

Automated monitoring and control of the GWTS are facilitated through a series of control panels, Allen-Bradley programmable logic controllers (PLCs) and patented operator software packages called RSView® and Factory Talk®. Remote computer terminals are used to monitor collection well pumping rates and treatment processes, and the collection wells may be remotely adjusted. System operational data, recorded in an Access® data base during 2018, are provided in Appendix B.

4.2 System Maintenance and Modifications

Twice a month, preventive maintenance inspections are performed on the GWTS when the system is operating. The purpose of these inspections is to ensure effective operation of the system. A summary of O&M data recorded during these visits is included in Appendix C. Inspections include the following:

- Check for system alarms and address as required.
- Inspect control panels for proper conditions and settings.
- Check water conveyance line pressures.
- Check pressure differential across the stripping tower.
- Check piping and pumps for leaks.
- Clean Y-strainers of buildup, etc., as necessary.
- Check and record amperage draws on all motors (quarterly).
- Record flow rates on recovery wells and transfer pump.

The GWTS operated under normal conditions during 2018, except for the following interruptions:

- A brief shutdown on March 3 and November 6 occurred to remove an effluent pump for annual maintenance.
- Brief shut downs for PTA blower maintenance occurred on April 12 and during installation of new bearing pillow blocks and sheaves on May 24.
- A shut down occurred on May 29 for a planned site wide power outage and June 5 for a brief power outage for the GWTS, Fire Pumphouse, and Gate 5 areas. Site wide power shut downs for plant maintenance activities occurred on July 3, July 14, and November 17.
- The GWTS was shut down for a brief period on July 16 to reprogram the effluent pump variable frequency drives (VFDs) to operate at low flow conditions.
- A brief shut down occurred on November 5 due to a construction accident causing the GWTS to lose power, and November 22 due to a power outage [cause unknown].
- The GWTS was shut down during scheduled granular activated carbon (GAC) change-outs on March 5, July 12, and November 6.

Several noteworthy treatment system maintenance, repairs, or modifications were identified and addressed during 2018. A brief summary is presented below:

- Each of the two GWTS discharge effluent pumps were removed for annual inspection, cleaning and repair (if needed). The repairs included general pump maintenance and replacing damaged parts.
- Annual pH meter calibration was completed.
- The lift Station and CW-19 were abandoned on March 1, 2018.

- PTA blower inspection, balancing, and repairs were completed.
- An anti-siphon valve was installed on the effluent piping on December 26, 2018.

4.3 Groundwater Withdrawal and VOC Removal

Table 4-1 presents recorded groundwater withdrawal and total VOC mass removal by the GWTS. A system-wide total of approximately 47,198 pounds of VOCs have been removed since the GWTS began operation in November 1990.

The total amount of groundwater extracted during 2018 was approximately 122 million gallons (an average of 333,845 gallons per day [gpd] or 232 gpm) using the PTA totalizer. The 2018 extraction volumes are higher than the previous year (2017) when the flows were approximately 309,244 gpd (or 215 gpm). Approximately 111,000 gallons of impacted groundwater was treated during the SPBA conveyance line installation and groundwater encountered during the Building 3 north expansion construction activities. This volume was accounted for in the system totalizer. A graphical comparison of the volumes of groundwater treated from the various site extraction systems is presented on Figure 4-1. With exception of the impacted groundwater identified above and small quantities removed from the Lift Station and SPBA, essentially all treated groundwater was extracted from the WPL system during 2018.

Quarterly PTA influent analyses (shown in Table A-2, Appendix A), along with the measured extraction volumes, are used to calculate the mass of VOCs removed from site groundwater during the reporting period. The quarterly influent samples collected in January, April, July, and October 2018, represent combined flow-weighted sampling of the five active collection wells (CW-9, CW-13, CW-15A, CW-17, and CW-20). The untreated influent samples contained VOCs ranging in concentrations from 668 micrograms per liter (µg/L) to 940 µg/L during 2018. Using these data, the total estimated mass of VOCs removed from January through December 2018 was 856 pounds. The calculated VOC mass removal rates (pounds per day [lbs/day]) extracted by the GWTS for the last four calendar years are shown below:

- 2018 – 2.3 lbs/day
- 2017 – 2.9 lbs/day
- 2016 – 4.0 lbs/day
- 2015 – 5.7 lbs/day

The predominant VOCs in the PTA influent have historically been TCE, TCA, and PCE [see Figure 4-2]. Levels of influent total VOCs have been somewhat stable over the last few years but have decreased during this reporting period. The predominant influent VOC changed from TCE to PCE during the spring of 2013, and the concentration of PCE further increased upon startup of CW-20 during 2014. Concurrent with the GWTS shutdown and restart, a spike in the influent concentration of cis-1,2-DCE was noted during 2015 and early 2016. The predominant GWTS influent VOCs during 2018 were PCE, TCE/cis-1,2-DCE, and TCA (see Figure 4-2).

4.4 Groundwater System Inspection and Reporting

Groundwater system compliance reporting includes routine monthly and quarterly NPDES permit reports – Discharge Monitoring Reports, quarterly Susquehanna River Basin Commission (SRBC) reporting, and an annual operations report for the GWTS. PADEP Chapter 110 (formerly Act 220) also requires an annual groundwater withdrawal report from this facility.

The PTA effluent was sampled and reported four times during 2018. Analytical testing results for the 2018 PTA effluent and influent sampling is presented in Table A-2 (Appendix A). The treatment system effluent has maintained non-detectable concentrations of target VOCs during this reporting period.

On a quarterly basis, groundwater withdrawal data are submitted to the SRBC regarding non-consumptive groundwater withdrawal associated with the GWTS in accordance with docket Nos. 19900715-1 and 19980901-1. Information provided to the SRBC includes daily groundwater withdrawal totals (i.e., groundwater volumes extracted) from all collection wells and the overall system influent groundwater quality. The SPBA collection wells (CW-21, CW-22, and CW-23) were included in the 2018 fourth quarter SRBC reporting.

5.0 NPBA GROUNDWATER EXTRACTION SYSTEM

5.1 System Shutdown Conditions

The NPBA extraction wells were shut down on June 19, 2013, as part of a the five-year NPBA Extraction System Monitored shutdown study. All NPBA extraction wells have remained off through the 2018 reporting period. The fourth year (2017) shutdown status of the NPBA extraction system was reported to EPA and PADEP in an annual monitoring report (GSC, 2018a). The NPBA wells were started for a short duration in October 2018 to conduct sampling during the site-wide comprehensive sampling event but were not operated during the remainder of the year.

5.2 Maintenance

There was no maintenance activity for the NPBA collection wells during 2018. However, packers were installed and monitored in artesian monitoring wells (MW-18D and MW-16S/D).

5.3 Groundwater Chemistry

The groundwater quality analysis data from the comprehensive well sampling (October 2018), which included the inactive NPBA collection wells and several surrounding monitoring wells, will be provided in the Year 5 Shutdown monitoring report to be issued by GSC during the second quarter of 2019.

6.0 WEST PARKING LOT GROUNDWATER EXTRACTION SYSTEM

Four (4) groundwater collection wells (CW-9, CW-13, CW-17, and CW-20) are now operable in the WPL Area of the West Campus. One additional collection well (CW-15A) was located near the exterior northwest corner of former Building 4 (also known as NB4 area) and is now located in a trailer parking area of the West Campus.

Groundwater extraction from the WPL wells is conducted via underground piping to the GWTS in Building 41A. The wells are individually piped to the GWTS so that flow control, flow measurements, and water samples may be obtained for each well at this central location. Water is piped the following distances from the wells to the treatment plant: CW-20 (1,600 feet), CW-9 (1,400 feet), CW-13 (890 feet), CW-15A (310 feet), and CW-17 (590 feet). Approximately 126 million gallons of groundwater were extracted from the WPL Area during 2018 (see Table 6-1).

6.1 Maintenance

A brief summary of maintenance actions addressed for the WPL Area in 2018 is presented below:

- Cleaning and rehabilitation of the well screen at CW-20 was conducted in early May 2018 due to observed decreased pumping rates below 50 gpm (normally 60-90 gpm). The well pump was pulled and returned before and after the rehabilitation event, and CW-20 was set to operate at 60 gpm.
- An overload fault at collection well CW-17 occurred on November 19, 2018 and the pump was shut off in response to the fault. The faulty motor was replaced, and pumping resumed at WPL collection well CW-17 on November 29, 2018.
- CW-15A overload faults occurred in January and March 2018. Wiring connections were re-secured in January, and the pump end and motor were replaced on March 6, 2018. Collection Well CW-15A pump was pulled and cleaned on September 24 and December 26, 2018.

6.2 Groundwater Chemistry

The groundwater quality analysis data from the 2018 collection well sampling is presented in Table A-1 (Appendix A). The historical concentrations and trends of the dominant VOCs (TCE, PCE, TCA, and cis-1,2-DCE) are illustrated in Figures 6-1 through 6-5 for CW-9, CW-13, CW-15A, CW-17, and CW-20, respectively. Decreasing or nearly stable VOC trends were observed in all of the active WPL collection wells during 2018. The highest concentration of VOCs continues to be found at CW-15A, with the level of 1,1,1-TCA (up to 6,000 µg/L) being the highest VOC detected, followed closely by cis-1,2-DCE with levels around 5,300 µg/L. TCA is not significant in any of the other WPL extraction wells. Extraction well CW-13 had the second highest levels of

VOCs, dominated by cis-1,2-DCE at concentrations of approximately 660 µg/L, and PCE with a concentration around 200 µg/L. Extraction well CW-9 is also dominated by PCE; whereas extraction well CW-20 has elevated concentrations of PCE and TCE in the October round of sampling (520 µg/L and 160 µg/L, respectively) and decreased concentrations in December (160 µg/L and 49 µg/L). The concentration of VOCs detected in extraction well CW-17 was the lowest of the WPL extraction wells.

7.0 BUILDING 3 DEWATERING SYSTEM

7.1 System Shutdown Conditions

The Building 3 Dewatering System was shut down on June 19, 2013, as part of a three-year monitored shutdown study. The results of the three-year shut-down study were reported to EPA and PADEP (GSC, 2017a). The report indicated conditions had remained substantially the same since shutdown. Therefore, it was recommended that the system remain deactivated, and further water level monitoring, groundwater sampling and reporting be discontinued. EPA approved this recommendation via e-mail on May 16, 2017.

The Lift Station and CW-19 were abandoned in March 2018, and an abandonment report was issued to the Pennsylvania Bureau of Topographic and Geologic Survey (HTG, 2018).

8.0 SPBA GROUNDWATER EXTRACTION SYSTEM

The SPBA groundwater extraction system captures shallow groundwater containing PCE and TCE from the fine-grained residual soil and bedrock along the eastern-most portion of the south fYNOP property boundary. In July 2017, a work plan was prepared to test, design and construct the SPBA interim groundwater extraction system. A conceptual groundwater system design was then prepared in August 2017 (GSC, 2017b). The work plan and conceptual design were submitted and reviewed with EPA and PADEP, and were approved in November 2017. A monitored startup plan was then prepared in March 2018 (GSC, 2018c) to evaluate the effectiveness of the system. Three SPBA collection wells (CW-21, CW-22, CW-23) were installed, and the SPBA collection wells began operation on October 31, 2018.

Each SPBA collection well is fitted with electric submersible pumps controlled by VFDs and a submersible level transducer to maintain design drawdown conditions. Groundwater extracted from the SPBA wells is conducted via underground piping from the well heads to the SPBA control building (located in the SPBA) and the combined effluent is transferred to the GWTS in Building 41A. The SPBA control building houses the PLC, control panel, and separate pressure and flow transmitters, piping and valves for each of the extraction wells. The wells are individually piped to the SPBA control building so that flow control, flow measurements, and water samples may be obtained for each well at this central location. Water is piped the following approximate distances from the wells to the SPBA transfer building: CW-21 (550 feet), CW-22 (400 feet), and CW-23 (300 feet). The SPBA transfer building is approximately 2,500 feet from the GWTS Building 41A. Approximately 687,000 gallons of groundwater were extracted from the SPBA Area during 2018 (see Table 6-1).

8.1 System Installation and Operational Controls

A transfer building was installed in the SPBA area for the addition of the SPBA collection well network. Each well is pipped to the SPBA transfer building via 2-inch high density polyethylene (HDPE) underground conveyance piping. Two (2) 3-inch diameter HPDE conveyance pipes (active and spare) were installed from the SPBA transfer building and tied into the existing GWTS conveyance piping near Gate 5 in February 2018. There is a level transducer in each well that controls the pumping rate. The pumping rates range from 0.5 to 6 gpm.

8.2 Maintenance

No maintenance activities were completed in 2018. The system began operation on October 31, 2018 and ran for the remainder of 2018. The SPBA was shut down on November 17 and 18 for a planned power outage for maintenance activities that affected the GWTS.

8.3 Groundwater Chemistry

The groundwater quality analysis data from the 2018 collection well sampling is presented in Table A-1 (Appendix A). The highest concentration of VOCs in the SPBA area are at CW-21 with a concentration of PCE (550 µg/L) being the highest VOC detected, followed by TCE with a concentration of 190 µg/L. Extraction well CW-22 had the second highest levels of VOCs, dominated by PCE at a concentration 200 µg/L. The concentration of VOCs detected in extraction well CW-23 was the lowest of the SPBA extraction wells with a PCE concentration of 28 µg/L.

9.0 REFERENCES

GSC, 2017a. Third Year Progress Report of the Building 3 Footer Drain System Shutdown Monitoring, Former York Naval Ordnance Plant, April 21 letter.

GSC, 2017b. Southern Property Boundary Area Conceptual Groundwater System Design. August.

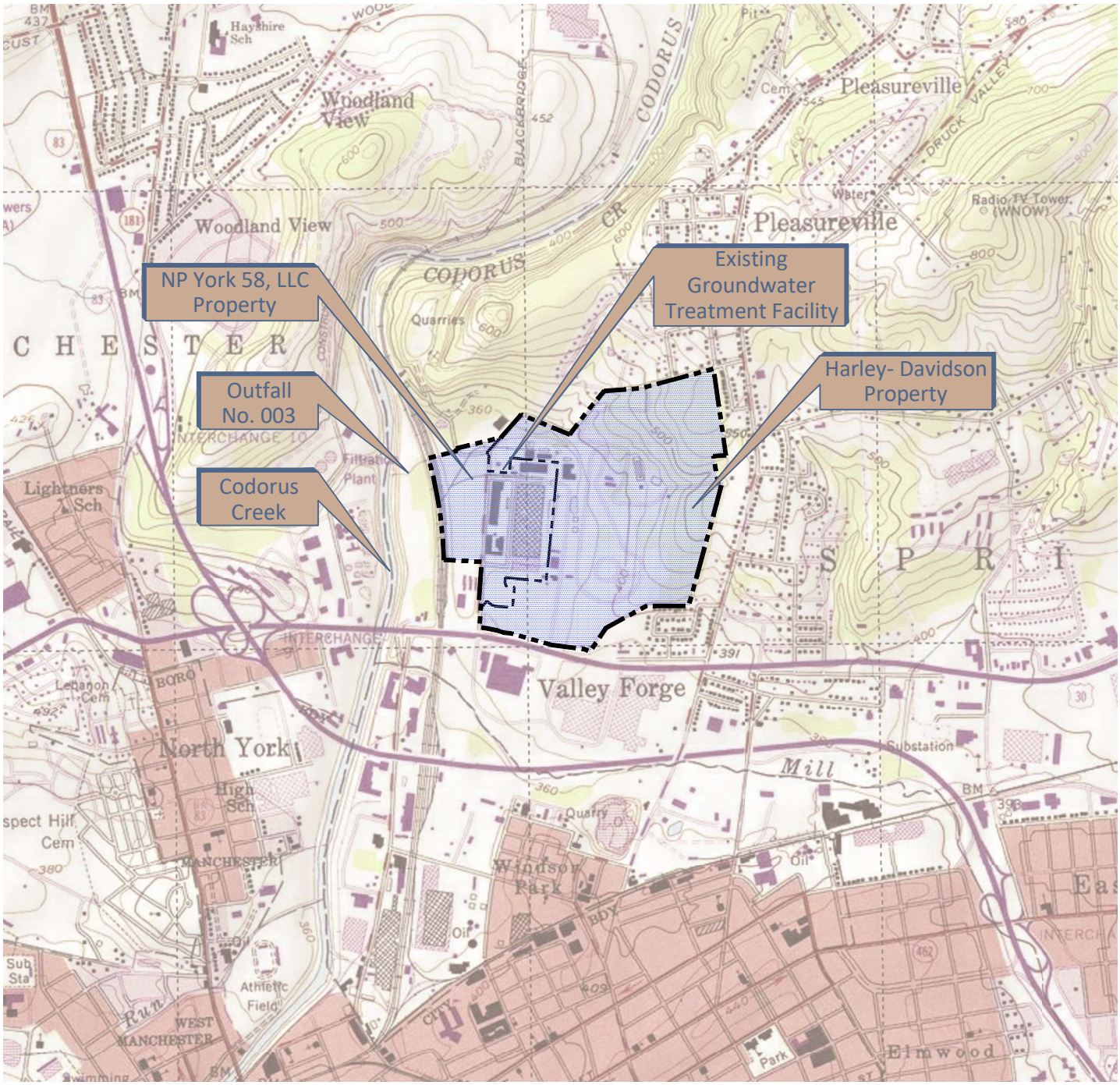
GSC, 2018a. 2017 Annual Monitoring Progress Report for the NPBA Extraction System Shutdown, Former York Naval Ordnance Plant, April.

GSC, 2018b. Supplemental Remedial Investigation Groundwater Report (Part 2), Former York Naval Ordnance Plant, March (Revised).

GSC, 2018c. Monitored Startup Plan for the Southern Property Boundary Area (SPBA) Groundwater extraction System. March 9.

HTG, 2018. Building 3 Dewatering Area Well Abandonment Report, Former York Naval Ordnance Plant, March 27 letter to Pennsylvania Bureau of Topographic and Geologic Survey.

FIGURES



LEGEND

Property Boundary
(Former York Naval Ordnance Plant;
Approximately 230 Acres)

NOTE:

Base map is from the USGS 7.5 min. Topographic Quadrangle of York, PA; as compiled by National Geographic's TOPO! software version 6.2.4.

client: FORMER YORK NAVAL ORDNANCE PLANT

project location: 1425 Eden Road
York, Pennsylvania

Hydro-Terra GROUP
www.hydro-terra.com

title: Site Location Map

file no.	SLM.dwg		
drawn	M. Swam	date	01/23/18
checked	E. Wade	date	01/23/18
approved	R. Myers	date	01/23/18

figure: 1-1

Plotted on: March 6, 2019

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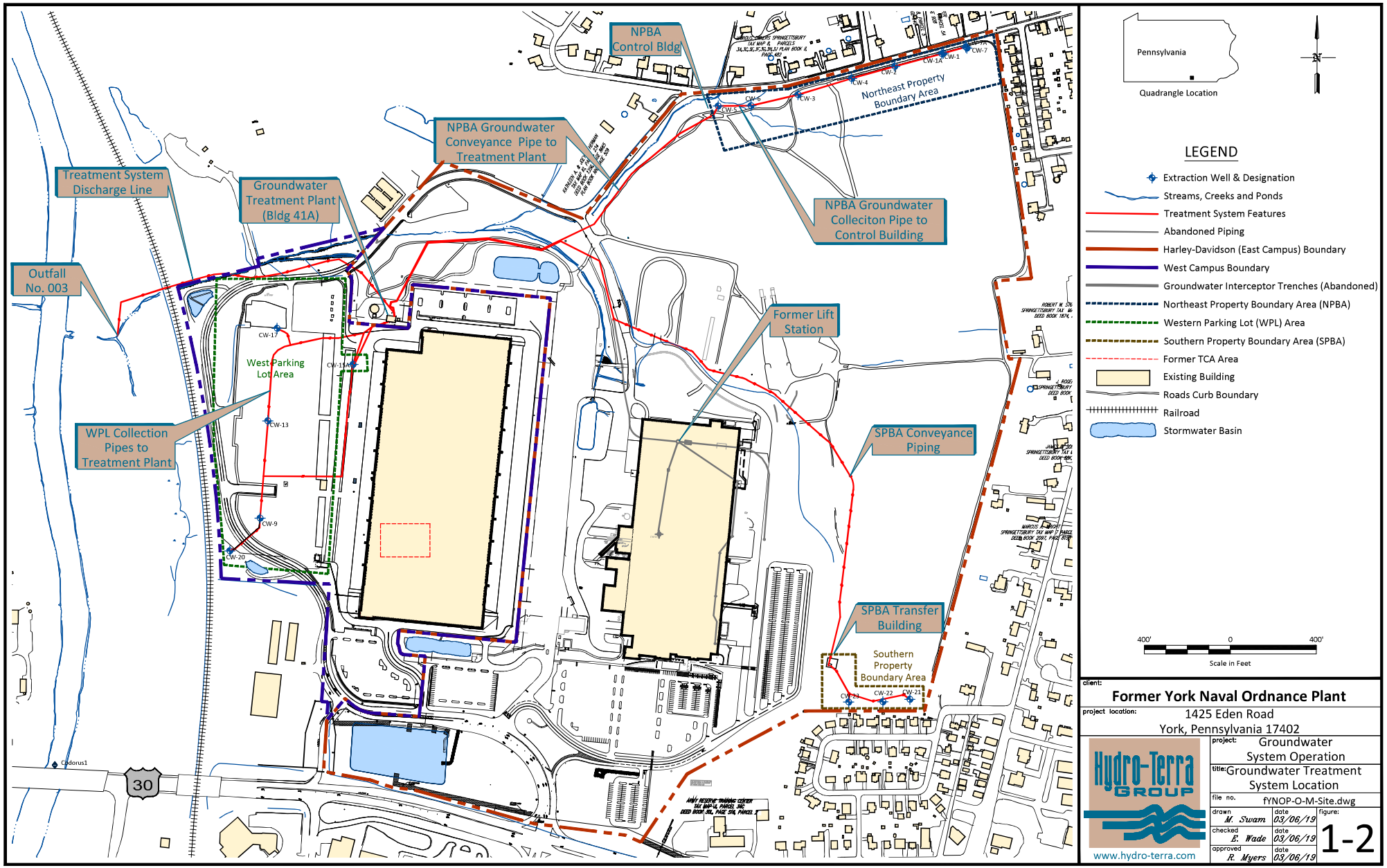

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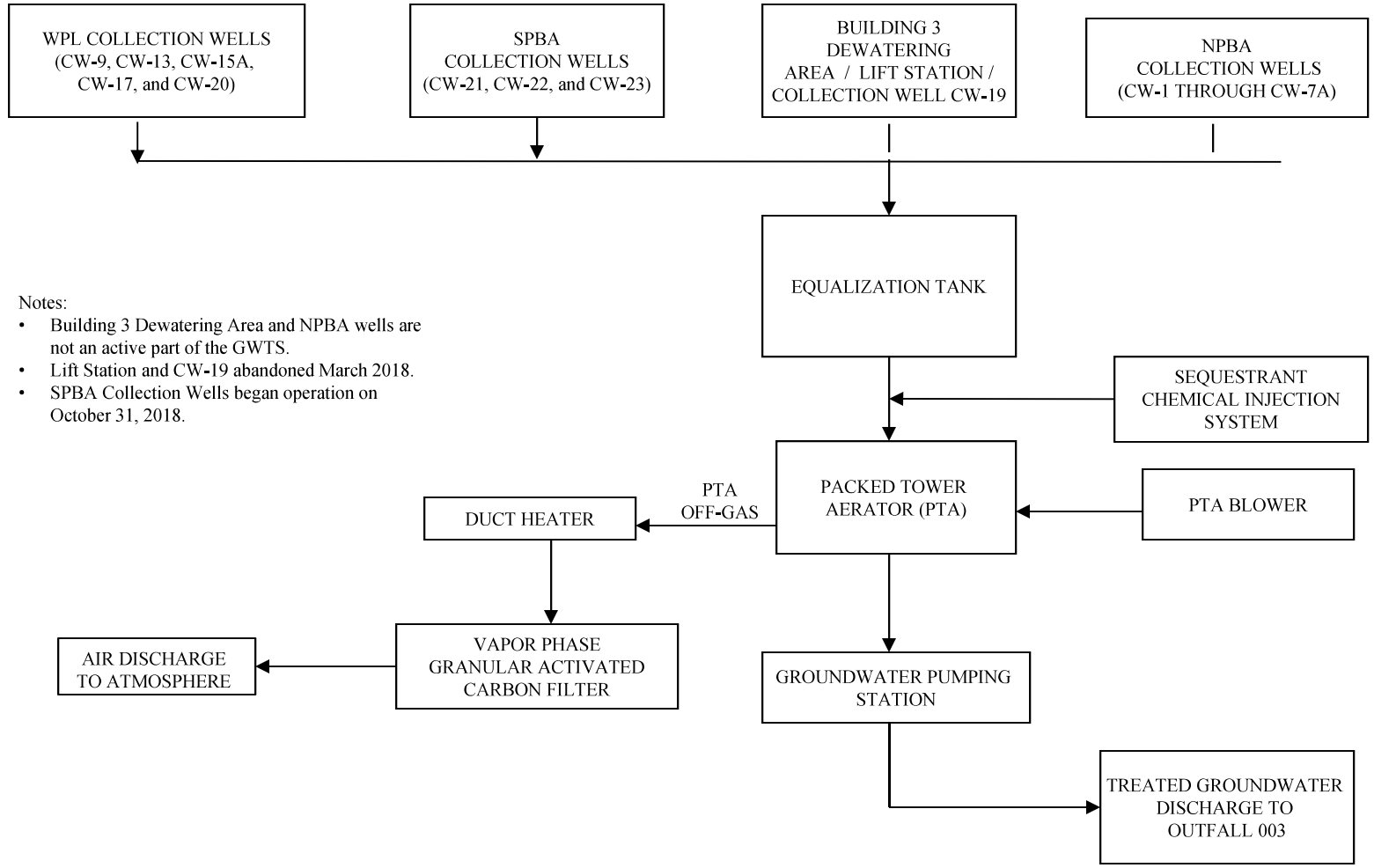
client: **Former York Naval Ordnance Plant**

project location: 1425 Eden Road
York, Pennsylvania 17402

Hydro-Terra GROUP
www.hydro-terra.com

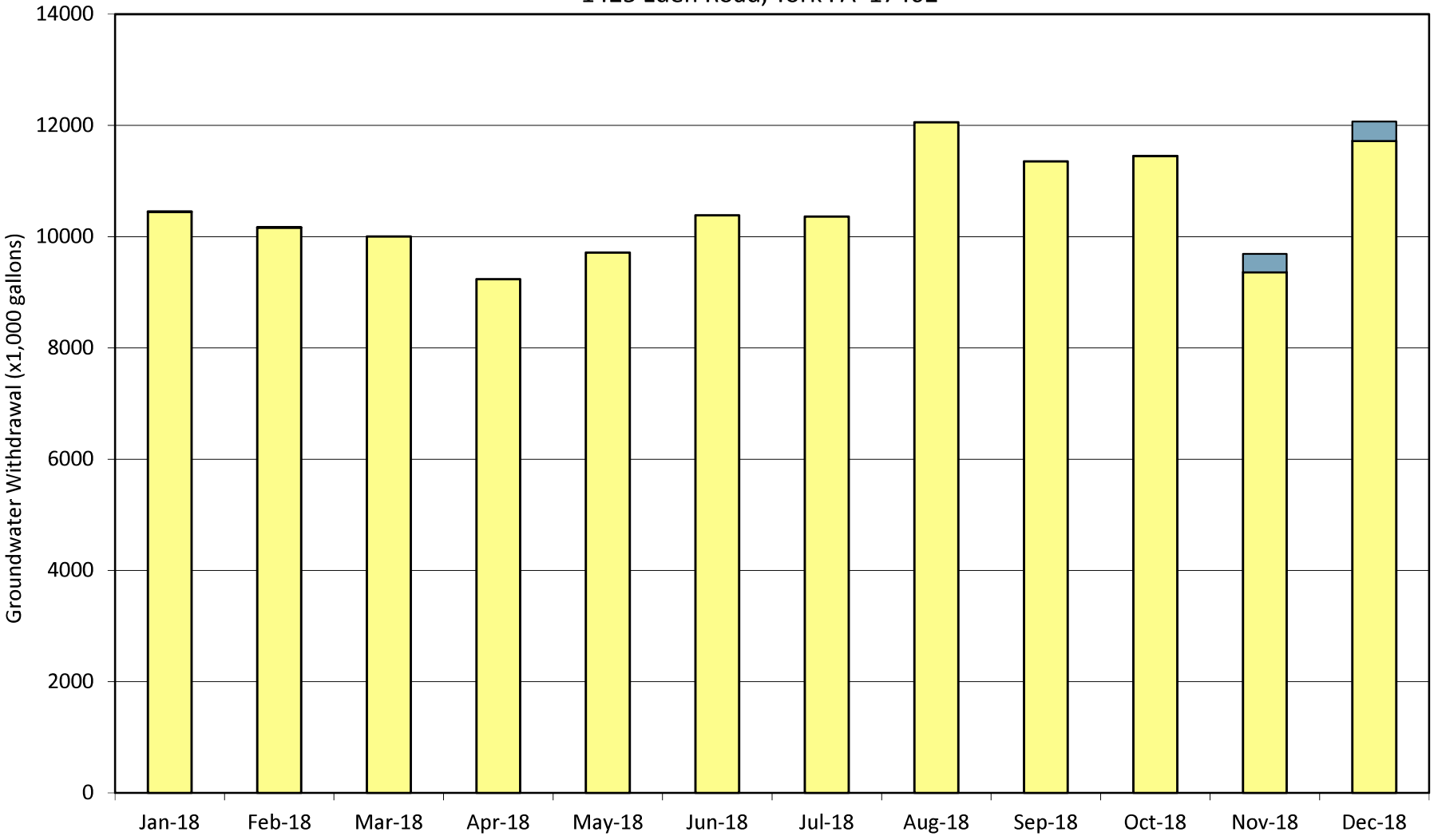
project:	Groundwater System Operation	
title:	Groundwater Treatment System Location	
file no.	fYNOP-O-M-Site.dwg	
drawn	M. Swam	date 03/06/19
checked	E. Wade	date 03/06/19
approved	R. Myers	date 03/06/19
figure:	1-2	

FIGURE 1-3
GROUNDWATER TREATMENT SYSTEM FLOW DIAGRAM
former York Naval Ordnance Plant



Notes:
- Building 3 Dewatering Area and NPBA wells are not an active part of the GWTS.
- Lift Station and CW-19 abandoned March 2018.
- SPBA Collection Wells began operation on October 31, 2018.

Figure 4-1
2018 Groundwater Withdrawals
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402



Data represents gallons per month for each extraction area.

Notes: -TCA was abandoned January 2016; NPBA and Bldg. 3 Liftstation were shutdown on June 19, 2013 for a PADEP and USEPA approved shutdown monitoring study.
-Liftstation abandoned March 2018.
-SPBA began operation on October 31, 2018.

Figure 4-2
Packed Tower Aerator Influent Chemistry
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

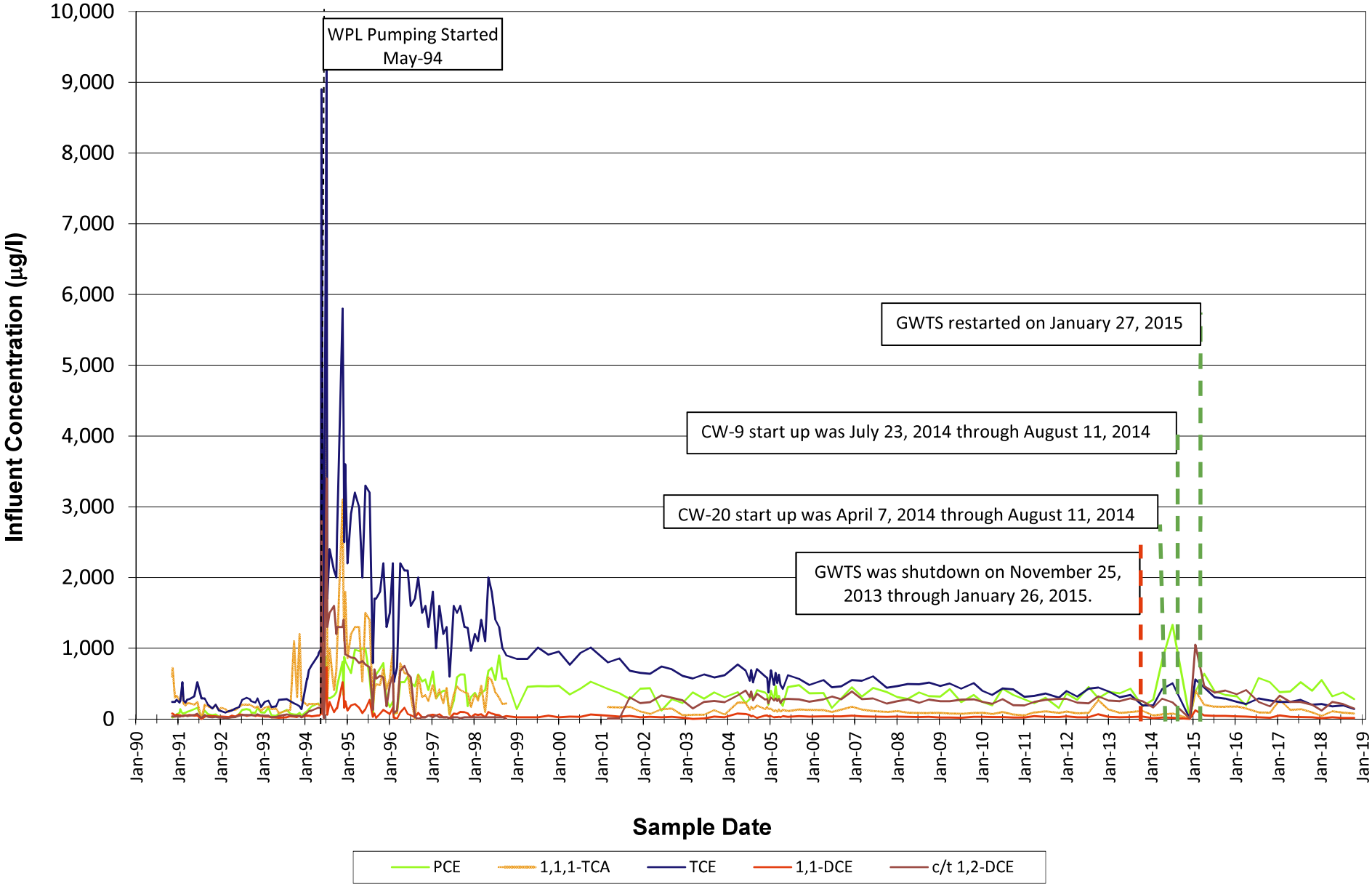


Figure 6-1
Predominant VOC Concentrations - Collection Well CW-9
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

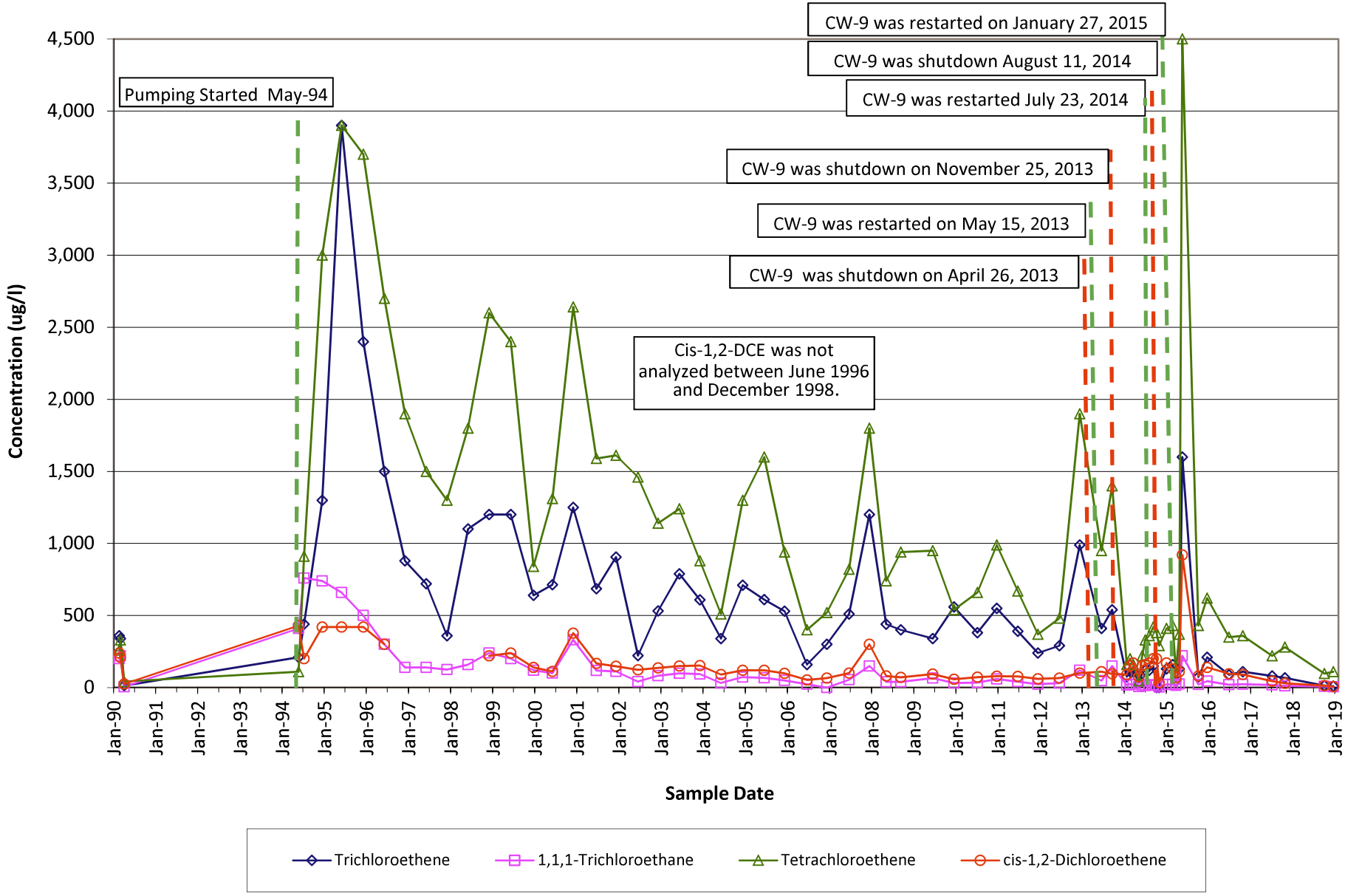


Figure 6-2
Predominant VOC Concentrations - Collection Well CW-13
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

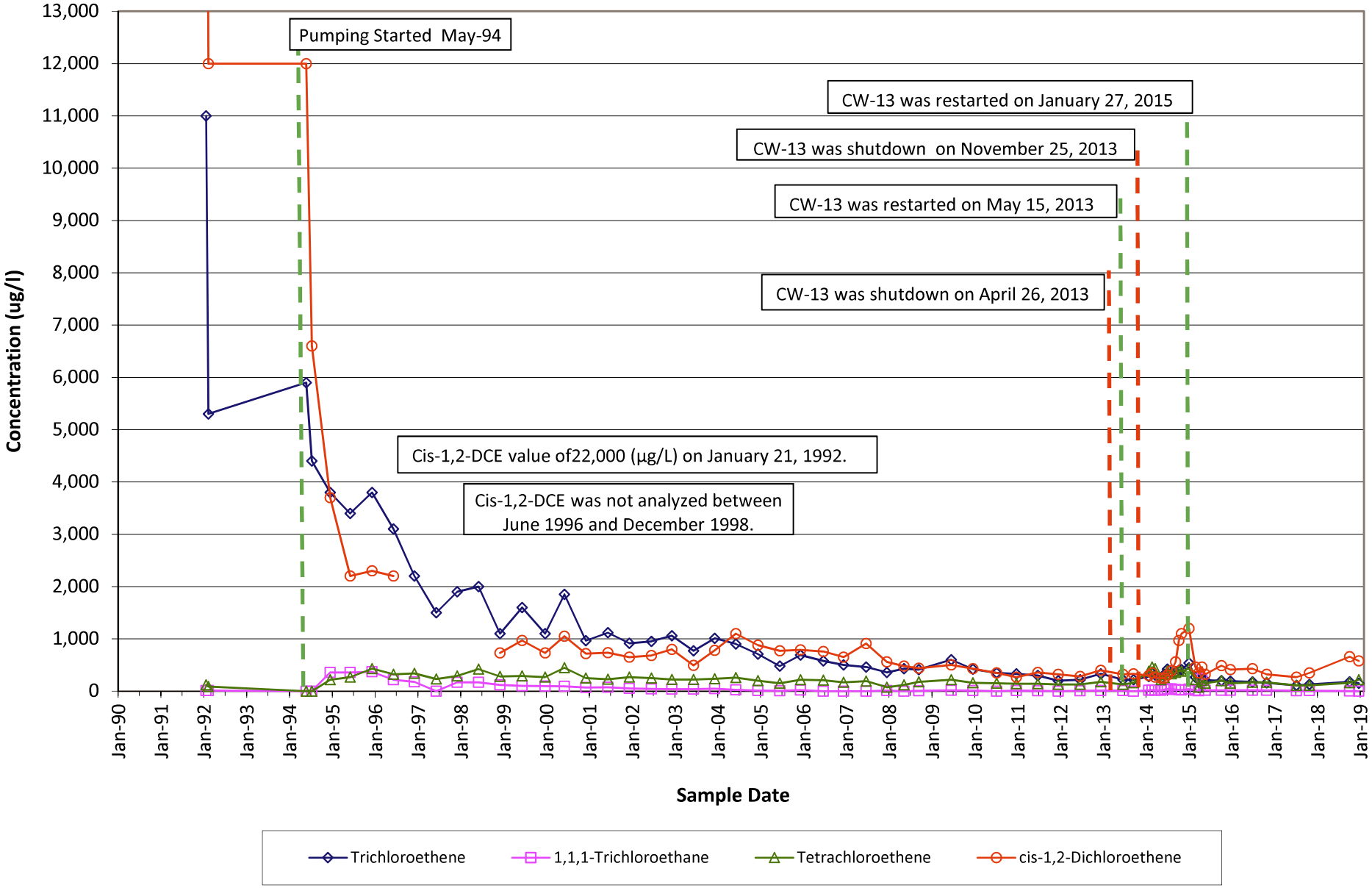


Figure 6-3
Predominant VOC Concentrations - Collection Well CW-15A
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

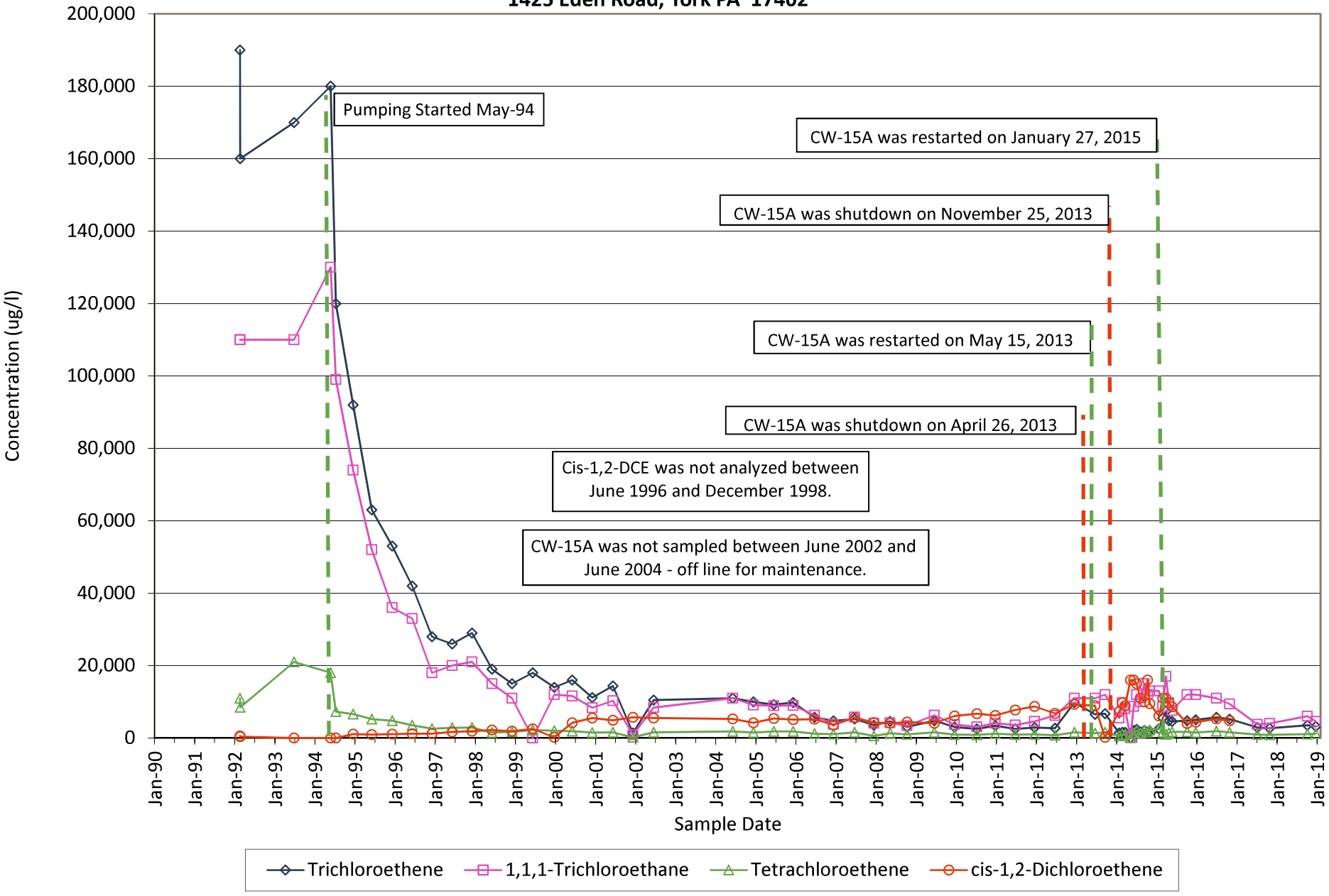


Figure 6-4
Predominant VOC Concentrations
Collection Well CW-17
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

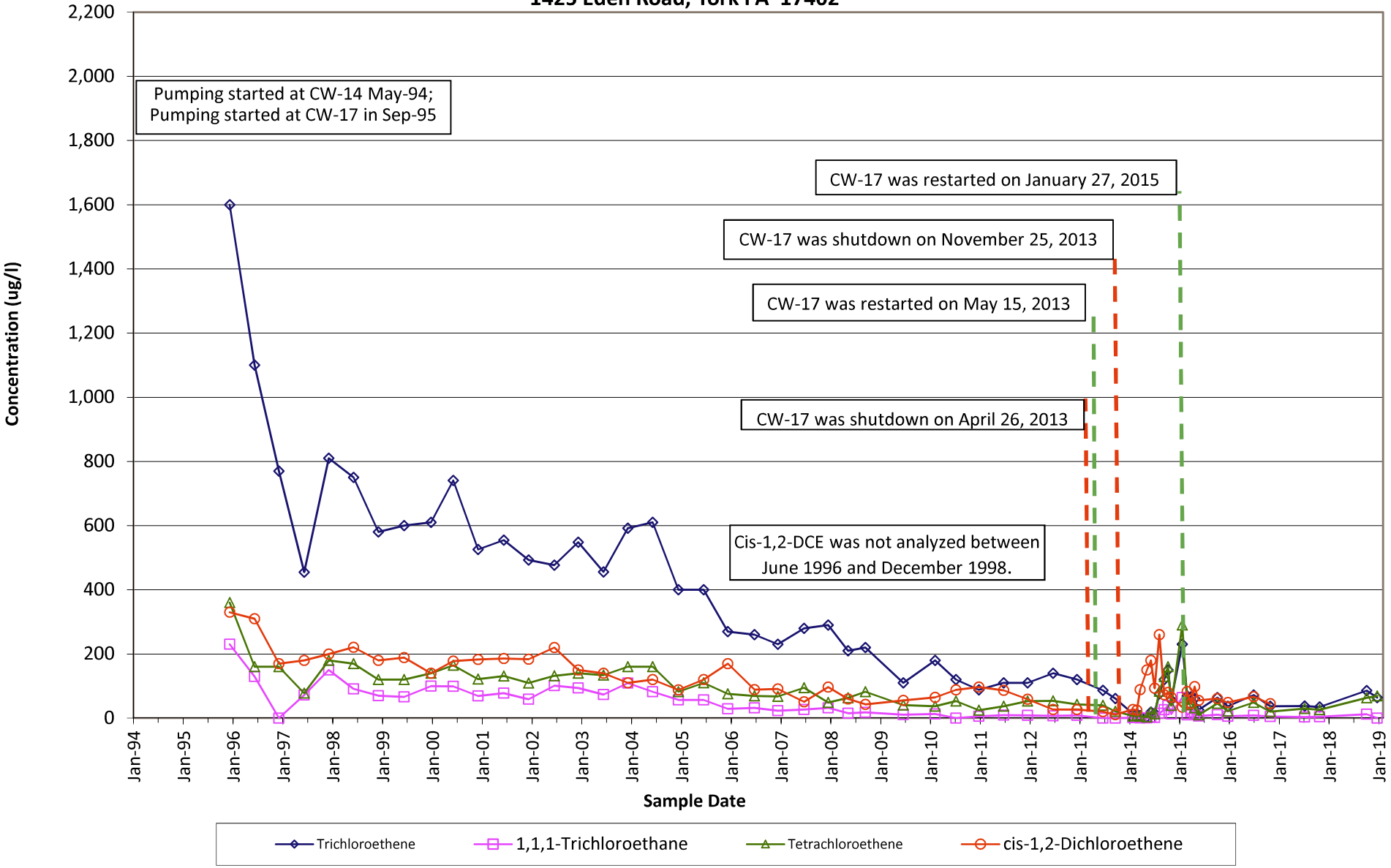
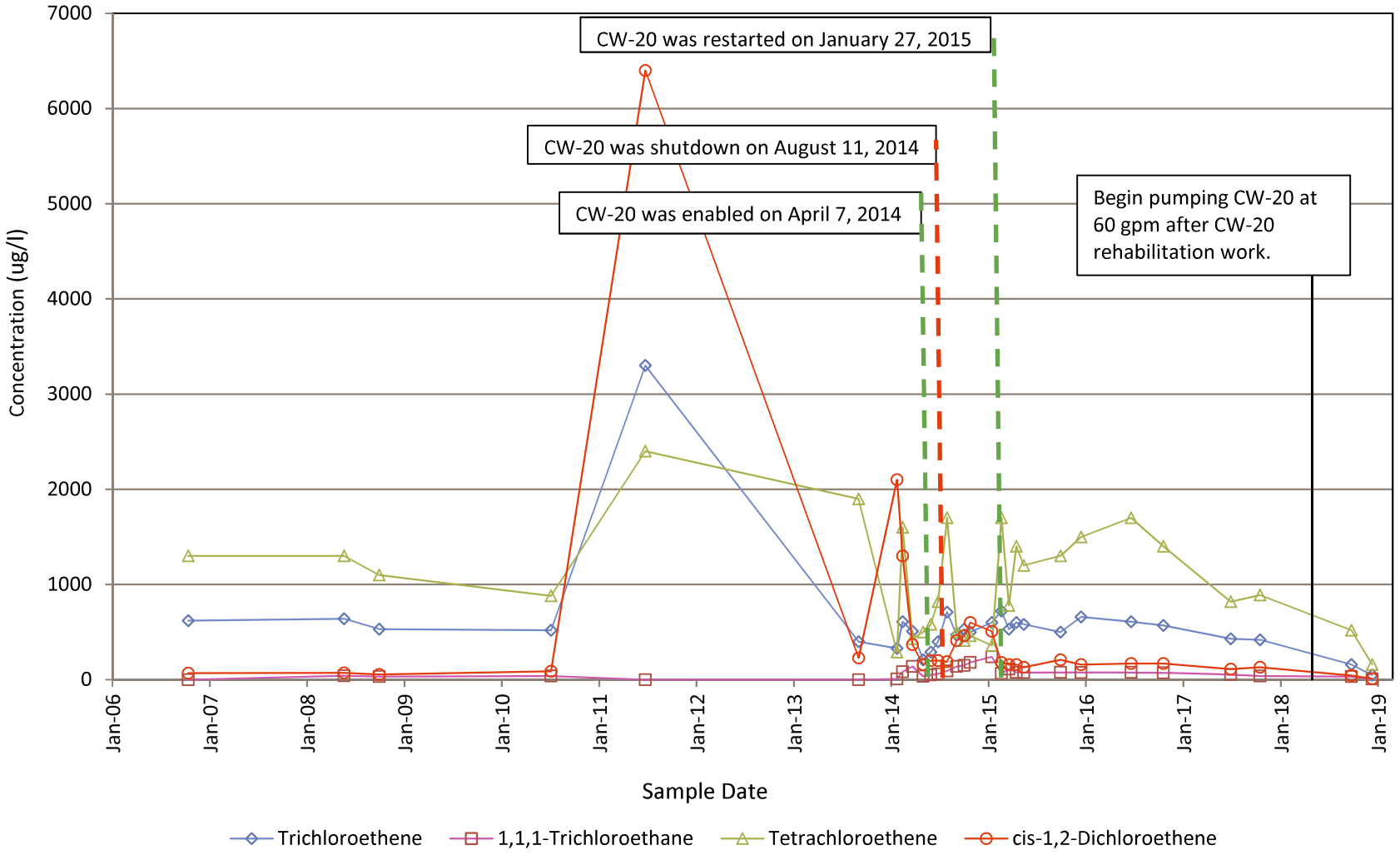


Figure 6-5
Predominate VOC Concentrations
Collection Well CW-20
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402



TABLES

TABLE 4-1
VOCs REMOVED FROM COLLECTED GROUNDWATER
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

JANUARY 1, 2018 - DECEMBER 31, 2018			
DATE	MONTHLY GROUNDWATER WITHDRAWAL (AST Totalizer, gallons)	AVERAGE MONTHLY TOTAL VOCs (ppb)	ESTIMATED MONTHLY VOC REMOVAL (pounds)
Jan-18	9,963,508	940	78
Feb-18	9,726,718	940 *	76
Mar-18	9,692,831	940 *	76
Apr-18	9,001,434	879	66
May-18	9,583,067	879 *	70
Jun-18	10,290,048	879 *	76
Jul-18	10,084,763	883	74
Aug-18	11,451,589	883 *	84
Sep-18	11,000,420	883 *	81
Oct-18	10,889,237	668	61
Nov-18	9,054,615	668 *	51
Dec-18	11,115,172	668 *	62
TOTAL	**121,853,402**	**NA**	**856**

NOTES:

1. * - No sample collected this month; concentration is the most recent
2. NA - Not Applicable

ANNUAL TOTALS		
YEAR	GROUNDWATER WITHDRAWAL (gallons)	ESTIMATED VOC REMOVAL (pounds)
1990 (NOV & DEC)	12,954,886	92
1991	62,458,393	357
1992	66,081,120	322
1993	72,198,940	421
1994	88,387,251	3,905
1995	141,357,856	5,572
1996	152,168,899	3,631
1997	150,246,400	2,675
1998	157,461,800	2,795
1999	133,687,100	1,464
2000	152,839,477	1,785
2001	134,557,249	1,659
2002	121,290,897	1269
2003	153,097,508	1,599
2004	140,725,167	1,786
2005	134,503,508	1,550
2006	125,192,364	1,295
2007	149,331,940	1,734
2008	155,341,655	1,560
2009	161,171,721	1,584
2010	159,042,802	1,388
2011	154,368,351	1,196
2012	153,624,656	1,519
2013	145,516,783	1,321
2014	17,300,548	262
2015	105,746,121	1,501
2016	113,974,022	1,058
2017	112,873,883	1,041
2018	121,853,402	856
Total	**3,549,354,699**	**47,198**

TABLE 6-1
RECORD OF GROUNDWATER WITHDRAWALS
JANUARY 1, 2018 - DECEMBER 31, 2018
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

	NPBA WELLS (gallons)										WPL WELLS (gallons)						SPBA WELLS (gallons)				Building 3 De-	Miscellaneous	MONTHLY
MONTH	CW-1	CW-1A	CW-2	CW-3	CW-4	CW-5	CW-6	CW-7	CW-7A	SUBTOTAL	CW-9	CW-13	CW-15A	CW-17	CW-20	SUBTOTAL	CW-21	CW-22	CW-23	SUBTOTAL	Watering System	GW Treatment	TOTAL
Jan-18	0	0	0	0	0	0	0	0	0	0	2,286,145	2,660,649	115,739	1,169,015	4,210,663	10,442,211	0	0	0	0	9,318	0	10,451,529
Feb-18	0	0	0	0	0	0	0	0	0	0	2,124,714	2,466,115	110,275	2,103,526	3,359,463	10,164,093	0	0	0	0	1,996	43,432	10,209,521
Mar-18	0	0	0	0	0	0	0	0	0	0	2,354,484	2,711,179	122,596	2,210,475	2,602,737	10,001,471	0	0	0	0	0	1,500	10,002,971
Apr-18	0	0	0	0	0	0	0	0	0	0	2,265,706	2,671,363	151,255	2,182,745	1,965,979	9,237,048	0	0	0	0	0	0	9,237,048
May-18	0	0	0	0	0	0	0	0	0	0	2,277,281	2,584,906	144,941	2,563,586	2,145,213	9,715,927	0	0	0	0	0	0	9,715,927
Jun-18	0	0	0	0	0	0	0	0	0	0	2,305,620	2,501,989	140,191	2,873,786	2,562,472	10,384,058	0	0	0	0	0	47,112	10,431,170
Jul-18	0	0	0	0	0	0	0	0	0	0	2,337,492	2,339,737	115,982	3,039,603	2,529,966	10,362,780	0	0	0	0	0	6,518	10,369,298
Aug-18	0	0	0	0	0	0	0	0	0	0	2,533,579	2,594,085	111,551	4,159,129	2,659,850	12,058,194	0	0	0	0	0	0	12,058,194
Sep-18	0	0	0	0	0	0	0	0	0	0	2,432,775	2,195,744	105,476	4,048,769	2,572,509	11,355,273	0	0	0	0	0	5,698	11,360,971
Oct-18	0	0	0	0	0	0	0	0	0	0	2,456,674	2,220,510	123,559	3,988,885	2,659,345	11,448,973	4,873	2,076	1,096	8,045	0	6,832	11,463,850
Nov-18	0	0	0	0	0	0	0	0	0	0	2,348,843	2,089,422	97,600	2,378,912	2,447,634	9,362,411	191,279	82,747	54,561	328,587	0	0	9,690,998
Dec-18	0	0	0	0	0	0	0	0	0	0	2,557,900	2,389,413	97,849	4,007,901	2,667,166	11,720,229	213,739	75,441	61,026	350,206	0	0	12,070,435
TOTALS	0	0	0	0	0	0	0	0	0	0	28,281,213	29,425,112	1,437,014	34,726,332	32,382,997	126,252,668	409,891	160,264	116,683	686,838	11,314	111,092	127,061,912

VALUES ARE IN GALLONS FOR EACH EXTRACTION WELL

Notes: Monthly groundwater withdrawal value from Table 4-1 differs slightly from the monthly total in the last column above. The value in Table 4-1 is taken directly from the PTA totalizer, while the value in the last column of this table is the sum of the individual well totalizers.
--NPBA wells were temporarily disabled on June 19, 2013 for the FSP Addendum No. 6 study.
--Building 3 De-Watering System as temporarily disabled on June 19, 2013 for the FSP Addendum No. 7 study.
--Building 3 Dewatering Systems (Lift Station and CW-19) abandoned in March 2018.
--Miscellaneous GW Treatment includes water from SPBA conveyance piping installation excavation water and water from Building 3 expansion construction activities.
--SPBA collection wells began operation on October 31. 2018.

APPENDIX A

Data Tables

Table A-1.
Groundwater Data Summary - CW-2018
Former York Naval Ordnance Plant - York, PA

Location/ID	MSC	MSC	Federal	EPA RSL	CW-9		CW-9		CW-13		CW-13		CW-15A		CW-15A		CW-17		CW-17		CW-20		CW-20		CW-21		CW-22		CW-23	
Sample Date	UA R	UA NR	MCL	Tap Water	10/3/2018	Qual	12/20/2018	Qual	10/3/2018	Qual	12/20/2018	Qual	10/3/2018	Qual	12/20/2018	Qual	10/3/2018	Qual	12/20/2018	Qual	10/3/2018	Qual	12/20/108	Qual	11/1/2018	Qual	11/1/2018	Qual	11/1/2018	Qual
Parameter	(ug/L)	(ug/L)	(ug/L)	(ug/L)																										
1,1,1,2-Tetrachloroethane	70	70		0.57	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
1,1,1-Trichloroethane	200	200	200	8000	8.5		4.8	J	4.3		50	U	6000		4600		12		5	U	33		7.2		50	U	25	U	1	U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	1	U	5	U ^c	1	U	50	U ^c	50	U	500	U ^c	5	U	5	U ^c	5	U	5	U ^c	50	U	25	U	1	U
1,1,2-Trichloroethane	5	5	5	0.28	1	U	5	U ^c	1	U	50	U ^c	50	U	500	U ^c	5	U	5	U ^c	5	U	5	U ^c	50	U	25	U	1	U
1,1-Dichloroethane	31	160		2.8	2.2		5	U	1.6		50	U	95		500	U	6.5		3.3	J	7.1		5	U	50	U	25	U	1	U
1,1-Dichloroethene	7	7	7	280	1.4		5	U	3.3		50	U	980		1000		9		4.7	J	6.7		5	U	50	U	25	U	1	U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	1	U	5	U ^c	1	U	50	U ^c	50	U	500	U ^c	5	U	5	U ^c	5	U	5	U ^c	50	U	25	U	1	U
1,2-Dichloroethane	5	5	5	0.17	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
1,2-Dichloropropane	5	5	5	0.44	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
1,4-Dioxane	6.4	32		0.46	200	R	1000	U	200	R	10000	U	10000	R	100000	U	1000	R	1000	U	1000	R	1000	U	10000	R	5000	R	200	R
2-Butanone	4000	4000		5600	5	U	25	U	5	U	250	U	250	U	2500	U	25	U	25	U	25	U	25	U	250	U	130	U	5	U
2-Hexanone	63	260		38	5	U	25	U ^c	5	U	250	U ^c	250	U	2500	U ^c	25	U	25	U ^c	25	U	25	U ^c	250	U	130	U	5	U
4-Methyl-2-Pentanone	3300	9300		6300	5	U	25	U ^c	5	U	250	U ^c	250	U	2500	U ^c	25	U	25	U ^c	25	U	25	U ^c	250	U	130	U	5	U
Acetone	38000	110000		14000	5	U	25	U	5	U	250	U	250	U	2500	U	25	U	25	U	25	U	25	U	250	U	130	U	5	U
Acrylonitrile	0.72	3.7		0.052	20	U	100	U ^c	20	U	1000	U ^c	1000	U	10000	U ^c	100	U	100	U ^c	100	U	100	U ^c	1000	U	500	U	20	U
Benzene	5	5	5	0.46	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Bromochloromethane	90	90		83	1	U	5	U ^c *	1	U	50	U ^c *	50	U	500	U ^c *	5	U	5	U ^c *	5	U	5	U ^c *	50	U	25	U	1	U
Bromodichloromethane	80	80		0.13	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Bromoform	80	80		3.3	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Bromomethane	10	10		7.5	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Carbon Disulfide	1500	6200		810	1	U	5	U ^c	1	U	50	U ^c	50	U	500	U ^c	5	U	5	U ^c	5	U	5	U ^c	50	U	25	U	1	U
Carbon Tetrachloride	5	5	5	0.46	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Chlorobenzene	100	100	100	78	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Chlorodibromomethane	80	80		0.87	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Chloroethane	250	1200		21000	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Chloroform	80	80		0.22	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Chloromethane	30	30		190	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
cis-1,2-Dichloroethene	70	70	70	36	13		7.8		660		580		5300	J	4800		67		45		45		11		50	U	25	U	1	U
cis-1,3-Dichloropropene	7.3	34		0.47	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Ethylbenzene	700	700	700	1.5	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Methyl tert-butyl ether	20	20		14	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Methylene chloride	5	5		11	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Styrene	100	100	100	1200	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Tetrachloroethene	5	5	5	11	97		110	^c	160		220	^c	1100		1200	^c	63		69	^c	520		160	^c	550		200		28	
Toluene	1000	1000	1000	1100	1	U	5	U	1	U	50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
trans-1,2-Dichloroethene	100	100	100	360	1	U	5	U	3.1		50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
trans-1,3-Dichloropropene	7.3	34		0.47	1	U	5	U ^c	1	U	50	U ^c	50	U	500	U ^c	5	U	5	U ^c	5	U	5	U ^c	50	U	25	U	1	U
Trichloroethene	5	5	5	0.49	14		9.4		180		150		3500		3200		86		64		160		49		190		25	U	1.4	
Vinyl Chloride	2	2	2	0.019	1	U	5	U	3.9		50	U	50	U	500	U	5	U	5	U	5	U	5	U	50	U	25	U	1	U
Xylenes (Total)	10000	10000	10000	190	2	U	10	U	2	U	100	U	100	U	1000	U	10	U	10	U	10	U	10	U	100	U	50	U	2	U

Total VOC

TABLE A-2
WATER QUALITY ANALYSES
PACKED TOWER AERATOR SAMPLES (January 1, 2018 - December 31, 2018)
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

Sample ID Lab ID Sample Date Parameter	Units	Outfall #003 GWTS WW 9407158 1/15/2018 Result	Outfall #003 GWTS WW 9564859 4/18/2018 Result	Outfall #003 GWTS WW 9711432 7/19/2018 Result	Outfall #003 GWTS WW 9866121 10/24/2018 Result
1,1-DICHLOROETHENE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.2
TETRACHLOROETHENE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.3
TRICHLOROETHENE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.2
METHYLENE CHLORIDE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.2
VINYL CHLORIDE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.3
TOTAL VOCs	ug/l	0	0	0	0

Sample ID Lab ID Sample Date Parameter	Units	Influent to #003 GWTS WW 9407157 1/15/2018 Result	Influent to #003 GWTS WW 9564858 4/18/2018 Result	Influent to #003 GWTS WW 9711431 7/19/2018 Result	Influent to #003 GWTS WW 9866120 10/24/2018 Result
1,1,1-TRICHLOROETHANE	ug/l	45	110	88	78
1,1-DICHLOROETHANE	ug/l	5.7	6	5.8	4.9
1,1-DICHLOROETHENE	ug/l	9.3	23	14	15
1,2-DICHLOROETHANE	ug/l	N.D.@1	N.D.@1	N.D.@1	N.D.@0.1
CHLOROBENZENE	ug/l	N.D.@1	N.D.@1	N.D.@1	N.D.@0.1
CHLOROFORM	ug/l	N.D.@1	N.D.@1	N.D.@1	0.4 J
METHYLENE CHLORIDE	ug/l	N.D.@2	N.D.@2	N.D.@2	N.D.@0.1
TETRACHLOROETHENE	ug/l	550	320	370	280
TRICHLOROETHENE	ug/l	210	180	190	140
VINYL CHLORIDE	ug/l	N.D.@1	1.1 J	N.D.@1	0.6 J
CIS 1,2-DICHLOROETHENE	ug/l	120	240	210	150
TRANS 1,2-DICHLOROETHENE	ug/l	N.D.@1	N.D.@1	5.1	0.7 J
TOTAL VOCs	ug/l	940	879	883	668

All Analysis Performed by Eurofins Lancaster Laboratories Environmental (ELLE) - Lancaster, PA

ug/l - micrograms per liter

J - Estimated value ≥ the Method Detection Limet (MDL) and < the Limit of Quanitation (LOQ or RL)

N.D.@1 - not detected at indicated concentration

PTA Infl. - Official sample name is "influent to #003 GWTS"

PTA Effl. - Official sample name is "outfall #003 GWTS"

APPENDIX B

2018 Access® Database Summary
Groundwater Treatment Plant Operations

Groundwater Treatment Plant Operations

From: 1/1/2018
To: 12/31/2018

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
1/1/2018	1	23.90	1	23.90	313788	10	11.40	3	12.00	1837	6.7	0		
1/2/2018	1	23.90	1	23.90	312414	10	11.50	3	11.80	1817	6.7	0		
1/3/2018	1	23.90	1	23.90	308417	14	12.00	4	10.90	1788	6.7	0		
1/4/2018	1	23.90	1	23.90	308243	12	12.00	4	11.10	1798	6.7	0		
1/5/2018	1	23.90	1	23.90	308624	12	12.00	4	11.10	1908	6.7	0		
1/6/2018	1	23.90	1	23.90	308263	13	12.00	4	11.00	1880	6.7	0		
1/7/2018	1	23.90	1	23.90	308488	12	11.40	3	11.60	1814	6.7	0		
1/8/2018	1	23.90	1	23.90	308370	12	11.20	3	12.00	1773	6.7	0		
1/9/2018	1	23.90	1	23.90	308733	11	11.30	3	12.00	1628	6.7	0		
1/10/2018	1	23.90	1	23.90	312435	9	11.50	3	12.00	1700	6.7	0		
1/11/2018	1	23.90	1	23.90	313349	10	11.40	3	12.00	1512	6.7	0		
1/12/2018	1	23.90	1	23.90	313439	10	11.40	3	12.00	1353	6.7	0		
1/13/2018	1	23.90	1	23.90	317642	14	11.30	3	11.40	1678	6.7	0		
1/14/2018	1	23.90	1	23.90	320274	11	12.00	4	11.10	1779	6.7	0		
1/15/2018	1	23.90	1	23.90	329779	4	12.00	4	11.80	1813	6.7	0		
1/16/2018	1	23.90	1	23.90	323693	10	12.00	5	10.90	1755	6.7	0		
1/17/2018	1	23.90	1	23.90	329419	4	12.00	4	11.80	1786	6.7	0		
1/18/2018	1	23.90	1	23.90	331036	4	12.00	4	11.70	1781	6.7	0		
1/19/2018	1	23.90	1	23.90	332065	4	12.00	4	11.80	1678	6.7	0		
1/20/2018	1	23.90	1	23.90	327083	12	12.00	4	10.70	1588	6.7	0		
1/21/2018	1	23.90	1	23.90	322664	11	11.00	3	11.90	1549	6.7	0		
1/22/2018	1	23.90	1	23.90	323052	11	11.10	3	12.00	1406	6.7	0		
1/23/2018	1	23.90	1	23.90	327380	9	11.30	4	12.00	1402	6.7	0		
1/24/2018	1	23.90	1	23.90	328473	10	11.30	3	12.00	1543	6.7	0		
1/25/2018	1	23.90	1	23.90	332171	10	11.30	3	12.00	1724	6.7	0		
1/26/2018	1	23.90	1	23.90	332620	8	11.50	3	11.80	1667	6.7	0		
1/27/2018	1	23.90	1	23.90	332468	9	12.00	4	11.30	1549	6.7	0		
1/28/2018	1	23.90	1	23.90	332308	9	12.00	4	11.30	1425	6.7	0		
1/29/2018	1	23.90	1	23.90	332310	9	12.00	4	11.30	1573	6.7	0		
1/30/2018	1	23.90	1	23.90	332379	9	12.00	4	11.30	1765	6.7	0		
1/31/2018	1	23.90	1	23.90	332129	9	12.00	4	11.30	1778	6.7	0		
2/1/2018	1	23.90	1	23.90	332771	9	12.00	4	11.30	1626	6.7	0		
2/2/2018	1	23.90	1	23.90	332480	9	11.40	3	11.80	1854	6.7	0		
2/3/2018	1	23.90	1	23.90	332615	11	11.10	3	12.00	1815	6.7	0		
2/4/2018	1	23.90	1	23.90	330710	13	10.80	3	12.00	1777	6.7	0		
2/5/2018	1	23.90	1	23.90	328531	15	10.60	3	12.00	1769	6.7	0		
2/6/2018	1	23.90	1	23.90	332364	11	11.70	3	11.20	1773	6.7	0		
2/7/2018	1	23.90	1	23.90	339349	5	12.00	4	11.70	1790	6.7	0		
2/8/2018	1	23.90	1	23.90	344762	6	12.00	4	11.60	1815	6.6	0		
2/9/2018	1	23.90	1	23.90	346176	5	12.00	4	11.60	1789	6.6	0		
2/10/2018	1	23.90	1	23.90	346953	4	12.00	4	11.70	1590	6.6	0		

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
2/11/2018	1	23.90	1	23.90	348836	3	12.00	4	11.90	1468	6.6	0		
2/12/2018	1	23.90	1	23.90	354557	3	12.00	4	11.90	1542	6.6	0		
2/13/2018	1	23.90	1	23.90	357338	3	12.00	4	11.90	1709	6.6	0		
2/14/2018	1	23.90	1	23.90	358846	4	12.00	4	11.80	1580	6.6	0		
2/15/2018	1	23.90	1	23.90	353105	3	12.00	4	11.90	1413	6.6	0		
2/16/2018	1	23.90	1	23.90	354444	3	12.00	4	11.90	1434	6.6	0		
2/17/2018	1	23.90	1	23.90	353623	4	12.00	4	11.80	1717	6.6	0		
2/18/2018	1	23.90	1	23.90	354409	3	12.00	4	11.90	1639	6.6	0		
2/19/2018	1	23.90	1	23.90	368998	3	12.00	4	11.90	1614	6.6	0		
2/20/2018	1	23.90	1	23.90	364901	4	12.00	4	11.80	1418	6.6	0		
2/21/2018	1	23.90	1	23.90	360832	6	12.00	4	11.50	1375	6.6	0		
2/22/2018	1	23.90	1	23.90	345057	6	12.00	4	11.50	1430	6.6	0		
2/23/2018	1	23.90	1	23.90	352022	5	12.00	4	11.60	1572	6.6	0		
2/24/2018	1	23.90	1	23.90	343918	7	12.00	4	11.30	1436	6.6	0		
2/25/2018	1	23.90	1	23.90	344866	9	12.00	4	12.00	1448	6.6	0		
2/26/2018	1	23.90	1	23.90	345814	10	11.10	3	12.00	1459	6.6	0		
2/27/2018	1	23.90	1	23.90	355681	6	11.60	3	12.00	1536	6.6	0		
2/28/2018	1	23.90	1	23.90	342760	9	11.20	3	12.00	1382	6.6	0		
3/1/2018	1	23.90	1	23.90	333409	16	10.90	3	11.00	1377	6.6	0		
3/2/2018	1	23.90	1	23.90	339859	13	12.00	4	10.50	1678	6.6	0		
3/3/2018	1	23.90	1	23.90	334439	16	11.80	3	10.20	1539	6.6	0		
3/4/2018	1	23.90	1	23.90	333803	16	10.00	3	12.00	1542	6.6	0		
3/5/2018	3	16.90	5	16.70	242793	6	8.10	3	8.00	1243	6.6	0		
3/6/2018	1	23.90	1	23.90	351930	5	11.70	3	12.00	1593	6.6	0		
3/7/2018	1	23.90	1	23.90	340254	11	10.80	3	12.00	1696	6.6	0		
3/8/2018	2	22.90	3	22.80	326315	9	10.50	5	12.00	1583	6.6	0		
3/9/2018	1	23.90	1	23.90	336648	3	12.00	4	11.90	1697	6.6	0		
3/10/2018	1	23.90	1	23.90	329817	6	12.00	7	10.90	1593	6.6	0		
3/11/2018	1	23.90	1	23.90	324586	7	12.00	5	12.00	1612	6.6	0		
3/12/2018	1	23.90	1	23.90	324586	7	12.00	5	12.00	1612	6.6	0		
3/13/2018	1	23.90	1	23.90	319354	8	11.40	3	12.00	1630	6.6	0		
3/14/2018	2	23.30	2	23.20	304746	7	11.20	4	11.40	1676	6.6	0		
3/15/2018	1	23.90	1	23.90	313083	5	12.00	4	11.60	1562	6.6	0		
3/16/2018	1	23.90	1	23.90	310148	6	12.00	4	11.60	1616	6.6	0		
3/17/2018	1	23.90	1	23.90	306122	6	12.00	4	11.60	1571	6.6	0		
3/18/2018	1	23.90	1	23.90	297937	8	12.00	4	11.40	1487	6.6	0		
3/19/2018	1	23.90	1	23.90	296862	3	12.00	4	11.90	1475	6.6	0		
3/20/2018	1	23.90	1	23.90	296583	3	12.00	4	11.90	1672	6.6	0		
3/21/2018	1	23.90	1	23.90	296917	3	12.00	4	11.90	1681	6.6	0		
3/22/2018	1	23.90	1	23.90	299943	3	12.00	4	11.90	1502	6.6	0		
3/23/2018	1	23.90	1	23.90	298537	3	12.00	4	11.90	1529	6.6	0		
3/24/2018	2	23.80	2	23.75	298239	3	12.00	5	11.65	1516	6.6	0		
3/25/2018	2	23.80	2	23.75	298239	3	12.00	5	11.65	1516	6.6	0		
3/26/2018	3	23.70	3	23.60	297941	3	12.00	7	11.40	1503	6.6	0		
3/27/2018	1	23.90	1	23.90	304581	3	12.00	4	11.90	1533	6.6	0		
3/28/2018	1	23.90	1	23.90	307665	3	12.00	4	11.90	1398	6.6	0		
3/29/2018	1	23.90	1	23.90	308928	3	12.00	4	11.90	1344	6.6	0		

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
3/30/2018	1	23.90	1	23.90	311723	3	12.00	4	11.90	1349	6.6	0		
3/31/2018	1	23.90	1	23.90	306844	5	12.00	4	11.70	1431	6.6	0		
4/1/2018	1	23.90	1	23.90	304176	4	12.00	4	11.80	1374	6.6	0		
4/2/2018	1	23.90	1	23.90	304512	4	12.00	4	11.85	1398	6.6			
4/3/2018	1	23.90	1	23.90	304848	3	12.00	4	11.90	1422	6.6			
4/4/2018	1	23.90	1	23.90	309747	3	12.00	4	11.90	1416	6.6			
4/5/2018	1	23.90	1	23.90	311747	3	12.00	4	11.90	1537	6.6			
4/6/2018	1	23.90	1	23.90	312947	3	12.00	4	11.90	1392	6.6			
4/7/2018	1	23.90	1	23.90	312211	3	12.00	4	11.90	1465	6.6			
4/8/2018	1	23.90	1	23.90	309744	4	12.00	4	11.80	1539	6.6			
4/9/2018	1	23.90	1	23.90	304498	5	12.00	4	11.60	1589	6.6			
4/10/2018	1	23.90	1	23.90	302011	3	12.00	4	11.90	1471	6.6			
4/11/2018	1	23.90	1	23.90	298961	5	12.00	4	11.60	1461	6.6			
4/12/2018	11	21.60	2	21.30	263976	3	9.90	4	11.20	1198	6.6			
4/13/2018	1	23.90	1	23.90	296251	4	11.90	3	12.00	1267	6.6			
4/14/2018	1	23.90	1	23.90	291536	6	11.60	3	12.00	1267	6.6			
4/15/2018	1	23.90	1	23.90	287526	5	11.60	4	12.00	1395	6.6			
4/16/2018	1	23.90	1	23.90	290436	4	11.90	3	12.00	1441	6.6			
4/17/2018	1	23.90	1	23.90	294477	4	11.90	3	12.00	1438	6.6			
4/18/2018	1	23.90	1	23.90	298334	4	11.90	3	12.00	1480	6.6			
4/19/2018	1	23.90	1	23.90	300916	4	11.90	3	12.00	1384	6.6			
4/20/2018	1	23.90	1	23.90	302735	4	11.90	3	12.00	1452	6.6			
4/21/2018	1	23.90	1	23.90	299714	4	11.90	3	12.00	1433	6.6			
4/22/2018	1	23.90	1	23.90	299579	4	11.90	3	12.00	1333	6.6			
4/23/2018	1	23.90	1	23.90	298275	5	11.70	3	12.00	1302	6.6			
4/24/2018	1	23.90	1	23.90	296248	4	11.90	3	12.00	1319	6.6			
4/25/2018	1	23.90	1	23.90	294567	4	11.90	3	12.00	1301	6.6			
4/26/2018	1	23.90	1	23.90	297408	4	11.90	3	12.00	1304	6.6			
4/27/2018	1	23.90	1	23.90	299854	4	11.90	3	12.00	1299	6.6			
4/28/2018	1	23.90	1	23.90	304134	4	11.90	3	12.00	1322	6.6			
4/29/2018	1	23.90	1	23.90	306786	4	11.90	3	12.00	1369	6.6			
4/30/2018	1	23.90	1	23.90	303280	4	11.90	3	12.00	1388	6.6			
5/1/2018	1	23.90	1	23.90	299698	5	11.80	3	12.00	1306	6.6			
5/2/2018	1	23.90	1	23.90	294852	6	11.70	3	12.00	1276	6.6			
5/3/2018	1	23.90	1	23.90	295270	4	11.90	3	12.00	1272	6.6			
5/4/2018	1	23.90	1	23.90	294733	4	11.90	3	12.00	1261	6.6			
5/5/2018	1	23.90	1	23.90	294429	4	11.90	3	12.00	1289	6.6			
5/6/2018	1	23.90	1	23.90	294448	4	11.90	3	12.00	1300	6.6			
5/7/2018	1	23.90	1	23.90	252197	18	10.90	17	10.00	1148				
5/8/2018	1	23.90	1	23.90	244312	21	11.80	11	9.80	1115				
5/9/2018	1	23.90	1	23.90	244294	17	10.60	6	12.00	1122				
5/10/2018	1	23.90	1	23.90	289316	10	11.40	3	12.00	1222	6.6			
5/11/2018	1	23.90	1	23.90	317241	4	11.90	3	12.00	1301	6.6			
5/12/2018	1	23.90	1	23.90	318042	4	11.90	3	12.00	1321	6.6			
5/13/2018	1	23.90	1	23.90	316595	4	11.90	3	12.00	1335	6.6			
5/14/2018	1	23.90	1	23.90	316330	4	11.90	3	12.00	1315	6.6			
5/15/2018	1	23.90	1	23.90	318653	4	11.90	3	12.00	1301	6.7			

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
5/16/2018	1	23.90	1	23.90	318653	4	11.90	3	12.00	1301	6.7			
5/17/2018	1	23.90	1	23.90	327562	4	11.90	3	12.00	1306	6.6			
5/18/2018	1	23.90	1	23.90	331477	4	11.90	3	12.00	1311	6.6			
5/19/2018	1	23.90	1	23.90	335062	4	11.90	3	12.00	1339	6.6			
5/20/2018	1	23.90	1	23.90	338438	4	11.90	3	12.00	1307	6.6			
5/21/2018	1	23.90	1	23.90	341457	4	11.90	3	12.00	1319	6.6			
5/22/2018	1	23.90	1	23.90	341987	4	11.90	3	12.00	1323	6.6			
5/23/2018	1	23.90	1	23.90	342952	4	11.90	3	12.00	1323	6.6			
5/24/2018	2	21.70	2	21.60	310584	4	10.00	3	11.40	1215	6.6			
5/25/2018	1	23.90	1	23.90	343607	3	12.00	4	11.90	1317	6.6			
5/26/2018	1	23.90	1	23.90	343029	3	12.00	4	11.90	1318	6.6			
5/27/2018	1	23.90	1	23.90	342718	3	12.00	4	11.90	1318	6.6			
5/28/2018	1	23.90	1	23.90	342579	3	12.00	4	11.90	1325	6.6			
5/29/2018	1	14.40	1	14.30	205561	2	7.40	3	6.90	805	6.6			
5/30/2018	2	19.80	2	19.80	283871	3	10.20	3	9.50	1112	6.6			
5/31/2018	1	23.90	1	23.90	343120	4	11.90	3	12.00	1312	6.6			
6/1/2018	1	23.90	1	23.90	342908	4	11.90	3	12.00	1303	6.6			
6/2/2018	1	23.90	1	23.90	342955	4	11.90	3	12.00	1304	6.6			
6/3/2018	1	23.90	1	23.90	344135	4	11.90	3	12.00	1323	6.6			
6/4/2018	1	23.90	1	23.90	344797	4	11.90	3	12.00	1319	6.6			
6/5/2018	2	22.10	2	22.10	318850	4	10.30	3	11.60	1235	6.6			
6/6/2018	1	23.90	1	23.90	344700	3	12.00	4	11.90	1324	6.6			
6/7/2018	1	23.90	1	23.90	344463	3	12.00	4	11.90	1320	6.6			
6/8/2018	1	23.90	1	23.90	344071	3	12.00	4	11.90	1324	6.6			
6/9/2018	1	23.90	1	23.90	345557	3	12.00	4	11.90	1317	6.6			
6/10/2018	1	23.90	1	23.90	345868	3	12.00	4	11.90	1327	6.6			
6/11/2018	1	23.90	1	23.90	345860	3	12.00	4	11.90	1329	6.6			
6/12/2018	3	22.10	3	22.00	317754	3	12.00	5	9.90	1239	6.6			
6/13/2018	1	23.90	1	23.90	343877	3	12.00	4	11.90	1304	6.6			
6/14/2018	1	23.90	1	23.90	343552	3	12.00	4	11.90	1313	6.6			
6/15/2018	1	23.90	1	23.90	343327	3	12.00	4	11.90	1316	6.6			
6/16/2018	1	23.90	1	23.90	343303	3	12.00	4	11.90	1324	6.6			
6/17/2018	1	23.90	1	23.90	343038	3	12.00	4	11.90	1321	6.6			
6/18/2018	1	23.90	1	23.90	345593	3	12.00	4	11.90	1321	6.6			
6/19/2018	1	23.90	1	23.90	358647	3	12.00	4	11.90	1330	6.6			
6/20/2018	1	23.90	1	23.90	344866	3	12.00	4	11.90	1313	6.6			
6/21/2018	1	23.90	1	23.90	350467	3	12.00	4	11.90	1314	6.6			
6/22/2018	1	23.90	1	23.90	343445	3	12.00	4	11.90	1314	6.6			
6/23/2018	1	23.90	1	23.90	343271	3	12.00	4	11.90	1320	6.6			
6/24/2018	1	23.90	1	23.90	342690	3	12.00	4	11.90	1309	6.6			
6/25/2018	1	23.90	1	23.90	341665	3	12.00	4	11.90	1319	6.6			
6/26/2018	1	23.90	1	23.90	341665	3	12.00	4	11.90	1319	6.6			
6/27/2018	1	23.90	1	23.90	354789	3	12.00	4	11.90	1330	6.6			
6/28/2018	1	23.90	1	23.90	341336	3	12.00	4	11.90	1310	6.6			
6/29/2018	1	23.90	1	23.90	341363	3	12.00	4	11.90	1315	6.6			
6/30/2018	1	23.90	1	23.90	341236	3	12.00	4	11.90	1317	6.6			
7/1/2018	1	23.90	1	23.90	340996	3	12.00	4	11.90	1318	6.6			

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
7/2/2018	1	23.90	1	23.90	340150	3	12.00	4	11.90	1320	6.6			
7/3/2018	2	12.00	2	12.00	169598	3	5.50	2	6.20	676	6.5			
7/4/2018	1	23.90	1	23.90	337431	4	11.90	3	12.00	1315	6.6			
7/5/2018	1	23.90	1	23.90	343503	4	11.90	3	12.00	1323	6.6			
7/6/2018	1	23.90	1	23.90	337133	4	11.90	3	12.00	1312	6.6			
7/7/2018	1	23.90	1	23.90	337349	4	11.90	3	12.00	1321	6.6			
7/8/2018	1	23.90	1	23.90	337145	4	11.90	3	12.00	1321	6.6			
7/9/2018	1	23.90	1	23.90	336752	4	11.90	3	12.00	1313	6.6			
7/10/2018	1	23.90	1	23.90	335689	4	11.90	3	12.00	1300	6.6			
7/11/2018	1	23.90	1	23.90	335269	4	11.90	3	12.00	1312	6.6			
7/12/2018	2	16.40	2	16.30	229969	3	8.20	3	8.00	936	6.6			
7/13/2018	1	23.90	1	23.90	336165	4	11.90	3	12.00	1311	6.6			
7/15/2018	1	5.90	1	5.90	83460	1	2.00	1	3.90	335	6.7			
7/15/2018	2	25.70	2	25.60	362091	4	13.50	4	12.00	1470	6.6			
7/16/2018	2	23.30	2	23.20	308133	5	10.00	5	11.90	1258	6.6			
7/17/2018	1	23.90	1	23.90	341322	4	11.90	3	12.00	1316	6.6			
7/18/2018	1	23.90	1	23.90	341463	4	11.90	3	12.00	1310	6.6			
7/19/2018	1	23.90	1	23.90	341265	4	11.90	3	12.00	1312	6.6			
7/20/2018	1	23.90	1	23.90	341152	4	11.90	3	12.00	1306	6.6			
7/21/2018	1	23.90	1	23.90	341488	4	11.90	3	12.00	1315	6.6			
7/22/2018	1	23.90	1	23.90	342728	4	11.90	3	12.00	1314	6.6			
7/23/2018	1	23.90	1	23.90	343232	4	11.90	3	12.00	1304	6.6			
7/24/2018	1	23.90	1	23.90	344876	4	11.90	3	12.00	1303	6.6			
7/25/2018	1	23.90	1	23.90	345686	4	11.90	3	12.00	1303	6.6			
7/26/2018	1	23.90	1	23.90	350013	4	11.90	3	12.00	1321	6.6			
7/27/2018	1	23.90	1	23.90	353116	4	11.90	3	12.00	1325	6.6			
7/28/2018	1	23.90	1	23.90	357407	4	11.90	3	12.00	1332	6.6			
7/29/2018	1	23.90	1	23.90	357233	4	11.90	3	12.00	1335	6.6			
7/30/2018	1	23.90	1	23.90	356629	4	11.90	3	12.00	1322	6.6			
7/31/2018	1	23.90	1	23.90	356320	4	11.90	3	12.00	1318	6.6			
8/1/2018	1	23.90	1	23.90	356471	4	11.90	3	12.00	1322	6.6			
8/2/2018	1	23.90	1	23.90	356708	4	11.90	3	12.00	1323	6.6			
8/3/2018	1	23.90	1	23.90	356922	4	11.90	3	12.00	1318	6.6			
8/4/2018	1	23.90	1	23.90	358177	4	11.90	3	12.00	1333	6.6			
8/5/2018	1	23.90	1	23.90	358883	4	11.90	3	12.00	1330	6.6			
8/6/2018	1	23.90	1	23.90	360064	4	11.90	3	12.00	1327	6.5			
8/7/2018	1	23.90	1	23.90	360321	4	11.90	3	12.00	1327	6.6			
8/8/2018	1	23.90	1	23.90	360726	4	11.90	3	12.00	1326	6.5			
8/9/2018	1	23.90	1	23.90	360798	4	11.90	3	12.00	1334	6.5			
8/10/2018	1	23.90	1	23.90	366736	4	11.90	3	12.00	1334	6.5			
8/11/2018	1	23.90	1	23.90	383556	4	11.90	3	12.00	1356	6.5			
8/12/2018	1	23.90	1	23.90	378262	4	11.90	3	12.00	1358	6.5			
8/13/2018	1	23.90	1	23.90	377639	4	11.90	3	12.00	1351	6.5			
8/14/2018	1	23.90	1	23.90	377715	4	11.90	3	12.00	1353	6.5			
8/15/2018	1	23.90	1	23.90	377066	4	11.90	3	12.00	1353	6.5			
8/16/2018	1	23.90	1	23.90	377404	4	11.90	3	12.00	1343	6.5			
8/17/2018	1	23.90	1	23.90	376913	4	11.90	3	12.00	1342	6.5			

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
8/18/2018	1	23.90	1	23.90	376745	4	11.90	3	12.00	1347	6.5			
8/19/2018	1	23.90	1	23.90	376617	4	11.90	3	12.00	1356	6.5			
8/20/2018	1	23.90	1	23.90	376264	4	11.90	3	12.00	1354	6.5			
8/21/2018	1	23.90	1	23.90	374542	4	11.90	3	12.00	1353	6.5			
8/22/2018	1	23.90	1	23.90	374777	4	11.90	3	12.00	1341	6.5			
8/23/2018	1	23.90	1	23.90	374686	4	11.90	3	12.00	1353	6.5			
8/24/2018	1	23.90	1	23.90	374525	4	11.90	3	12.00	1363	6.5			
8/25/2018	1	23.90	1	23.90	374566	4	11.90	3	12.00	1356	6.6			
8/26/2018	1	23.90	1	23.90	372618	4	11.90	3	12.00	1353	6.5			
8/27/2018	1	23.90	1	23.90	363993	4	11.90	3	12.00	1330	6.5			
8/28/2018	1	23.90	1	23.90	367375	4	11.90	3	12.00	1338	6.5			
8/29/2018	1	23.90	1	23.90	366879	4	11.90	3	12.00	1339	6.5			
8/30/2018	1	23.90	1	23.90	367190	4	11.90	3	12.00	1336	6.5			
8/31/2018	1	23.90	1	23.90	366451	4	11.90	3	12.00	1344	6.5			
9/1/2018	1	23.90	1	23.90	367963	4	11.90	3	12.00	1351	6.5			
9/2/2018	1	23.90	1	23.90	366833	4	11.90	3	12.00	1350	6.5			
9/3/2018	1	23.90	1	23.90	362650	4	11.90	3	12.00	1339	6.5			
9/4/2018	1	23.90	1	23.90	368321	4	11.90	3	12.00	1346	6.5			
9/5/2018	1	23.90	1	23.90	365563	4	11.90	3	12.00	1330	6.5			
9/6/2018	1	23.90	1	23.80	365335	4	11.90	3	12.00	1331	6.5			
9/7/2018	1	23.90	1	23.90	365218	4	11.90	3	12.00	1336	6.5			
9/8/2018	1	23.90	1	23.80	365753	4	11.90	3	12.00	1354	6.6			
9/9/2018	1	23.90	1	23.80	366188	4	11.80	3	12.00	1376	6.6			
9/10/2018	1	23.90	1	23.80	373697	4	11.90	3	12.00	1368	6.6			
9/11/2018	1	23.90	1	23.80	367858	4	11.80	3	12.00	1347	6.6			
9/12/2018	1	23.90	1	23.80	368319	4	11.90	3	12.00	1333	6.6			
9/13/2018	1	23.90	1	23.80	367845	4	11.80	3	12.00	1337	6.5			
9/14/2018	1	23.90	1	23.80	367967	4	11.80	3	12.00	1339	6.5			
9/15/2018	1	23.90	1	23.80	366891	4	11.80	3	12.00	1343	6.5			
9/16/2018	1	23.90	1	23.80	366672	4	11.80	3	12.00	1348	6.5			
9/17/2018	1	23.90	1	23.80	366272	4	11.80	3	12.00	1332	6.5			
9/18/2018	1	23.90	1	23.90	366310	4	11.90	3	12.00	1332	6.5			
9/19/2018	1	23.90	1	23.90	365898	4	11.90	3	12.00	1339	6.5			
9/20/2018	1	23.80	1	23.80	365828	4	11.90	3	12.00	1338	6.5			
9/21/2018	1	23.90	1	23.90	365594	4	11.90	3	12.00	1338	6.5			
9/22/2018	1	23.90	1	23.90	365450	4	11.90	3	12.00	1348	6.5			
9/23/2018	1	23.90	1	23.80	365053	4	11.90	3	12.00	1353	6.5			
9/24/2018	1	23.90	1	23.90	365462	4	11.90	3	12.00	1351	6.5			
9/25/2018	1	23.80	1	23.80	366296	4	11.80	3	12.00	1343	6.5			
9/26/2018	1	23.90	1	23.80	366725	4	11.80	3	12.00	1336	6.6			
9/27/2018	1	23.90	1	23.80	366687	4	11.80	3	12.00	1356	6.6			
9/28/2018	1	23.90	1	23.80	367205	4	11.80	3	12.00	1352	6.6			
9/29/2018	1	23.90	1	23.80	367272	4	11.80	3	12.00	1359	6.6			
9/30/2018	1	23.90	1	23.80	367295	4	11.80	3	12.00	1357	6.5			
10/1/2018	1	23.90	1	23.80	366682	4	11.80	3	12.00	1340	6.5			
10/2/2018	1	23.90	1	23.80	368645	4	11.80	3	12.00	1373	6.5			
10/3/2018	1	23.80	1	23.80	366594	4	11.80	3	12.00	1349	6.5			

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
10/4/2018	1	23.80	1	23.80	365601	4	11.80	3	12.00	1340	6.5			
10/5/2018	1	23.80	1	23.80	366594	4	11.80	3	12.00	1340	6.5			
10/6/2018	1	23.80	1	23.80	366318	4	11.80	3	12.00	1340	6.6			
10/7/2018	1	23.80	1	23.80	365865	4	11.80	3	12.00	1331	6.5			
10/8/2018	1	23.80	1	23.80	365200	4	11.80	3	12.00	1313	6.5			
10/9/2018	1	23.80	1	23.80	365032	4	11.80	3	12.00	1310	6.5			
10/10/2018	1	23.80	1	23.80	365273	4	11.90	3	12.00	1308	6.5			
10/11/2018	1	23.80	1	23.80	365314	4	11.90	3	12.00	1311	6.6			
10/12/2018	1	23.80	1	23.80	365527	4	11.80	3	12.00	1333	6.6			
10/13/2018	1	23.80	1	23.80	365533	4	11.80	3	12.00	1351	6.6			
10/14/2018	1	23.80	1	23.80	365559	4	11.80	3	12.00	1358	6.6			
10/15/2018	1	23.80	1	23.80	365518	4	11.80	3	12.00	1330	6.6			
10/16/2018	1	23.80	1	23.80	365581	4	11.80	3	12.00	1345	6.6			
10/17/2018	1	23.80	1	23.80	364075	4	11.80	3	12.00	1342	6.6			
10/18/2018	2	23.80	2	23.80	353039	4	11.80	3	12.00	1362	6.5			
10/19/2018	1	23.80	1	23.80	342237	4	11.80	3	12.00	1392	6.6			
10/20/2018	1	23.80	1	23.80	342481	4	11.80	3	12.00	1356	6.5			
10/21/2018	1	23.80	1	23.80	342500	4	11.80	3	12.00	1375	6.5			
10/22/2018	1	23.80	1	23.80	343124	4	11.80	3	12.00	1368	6.5	0		
10/23/2018	1	23.80	1	23.80	341910	4	11.80	3	12.00	1346	6.5	0		
10/24/2018	1	23.90	1	23.90	349434	4	11.90	3	12.00	1369	6.5	0		
10/25/2018	1	23.90	1	23.90	342336	4	11.90	3	12.00	1450	6.5	0		
10/26/2018	1	23.90	1	23.90	342459	4	11.90	3	12.00	1387	6.6	0		
10/27/2018	1	23.90	1	23.90	342489	4	11.90	3	12.00	1384	6.6	0		
10/28/2018	1	23.90	1	23.90	343431	4	11.90	3	12.00	1376	6.6	0		
10/29/2018	1	23.90	1	23.90	290730	4	11.90	3	12.00	1315	6.6	0		
10/30/2018	1	23.90	1	23.90	271072	4	11.90	3	12.00	1313	6.6	0		
10/31/2018	1	23.90	1	23.90	323084	4	11.90	3	12.00	1355	6.5	0		
11/1/2018	1	23.90	1	23.90	347149	4	11.90	3	12.00	1348	6.6	0		
11/2/2018	1	23.90	1	23.90	348640	4	11.90	3	12.00	1351	6.5	0		
11/3/2018	1	23.90	1	23.90	349891	4	11.90	3	12.00	1392	6.6	0		
11/4/2018	1	23.90	1	23.90	350062	4	11.90	3	12.00	1435	6.5	0		
11/5/2018	1	18.50	1	18.50	270877	6	22.60	7	20.80	1110	6.5	0		
11/6/2018	1	24.00	1	24.00	351408	4	7.90	5	8.20	1440	6.5	0		
11/7/2018	1	23.90	1	23.90	352663	3	12.00	4	11.90	1373	6.5	0		
11/8/2018	1	23.90	1	23.90	352315	3	12.00	4	11.90	1384	6.5	0		
11/9/2018	1	23.90	1	23.90	352223	3	12.00	4	11.90	1411	6.5	0		
11/10/2018	1	23.90	1	23.90	352339	3	12.00	4	11.90	1636	6.6	0		
11/11/2018	1	23.90	1	23.90	352338	3	12.00	4	11.90	1647				
11/12/2018	1	23.90	1	23.90	353014	3	12.00	4	11.90	1535	6.6	0		
11/13/2018	1	23.90	1	23.90	354995	3	12.00	4	11.90	1437	6.6	0		
11/14/2018	1	23.90	1	23.90	355086	3	12.00	4	11.90	1582	6.5	0		
11/15/2018	1	23.90	1	23.90	354789	3	12.00	4	11.90	1756	6.5	0		
11/16/2018	1	23.90	1	23.90	355565	3	12.00	4	11.90	1597	6.5	0		
11/17/2018	1	5.00	1	5.00	74319	2	6.00	2	6.00	321	6.5	0		
11/18/2018	1	20.20	1	20.20	300250	2	6.00	2	7.00	1296	6.5	0		
11/19/2018	1	23.90	1	23.90	305390	3	12.00	4	11.90	1366	6.6	0		

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
11/20/2018	1	23.90	1	23.90	245294	3	12.00	4	11.90	1262	6.6	0		
11/21/2018	1	23.90	1	23.90	242201	3	12.00	4	11.90	1377	6.6	0		
11/22/2018	4	21.60	2	21.60	219320	3	11.60	4	9.80	1477	6.6	0		
11/23/2018	1	23.90	1	23.90	240888	4	11.90	3	12.00	1598	6.6	0		
11/24/2018	1	23.90	1	23.90	239980	4	11.90	3	12.00	1515	6.6	0		
11/25/2018	1	23.90	1	23.90	241387	4	11.90	3	12.00	1338	6.6	0		
11/26/2018	1	23.90	1	23.90	224028	4	11.90	3	12.00	1214	6.6	0		
11/27/2018	1	23.90	1	23.90	245355	4	11.90	3	12.00	1459	6.6	0		
11/28/2018	1	23.90	1	23.90	246551	4	11.90	3	12.00	1677	6.6	0		
11/29/2018	1	24.00	1	24.00	313846	4	12.00	3	12.00	1619	6.5	0		
11/30/2018	1	23.90	1	23.90	362452	4	11.90	3	12.00	1698	6.5	0		
12/1/2018	1	23.90	1	23.90	363240	4	11.90	3	12.00	1590	6.5	0		
12/2/2018	1	23.90	1	23.90	363074	4	11.90	3	12.00	1439	6.5	0		
12/3/2018	1	23.90	1	23.90	362329	4	11.90	3	12.00	1456	6.5	0		
12/4/2018	1	23.90	1	23.90	361924	4	11.90	3	12.00	1573	6.5	0		
12/5/2018	1	23.90	1	23.90	361515	4	11.90	3	12.00	1782	6.5	0		
12/6/2018	1	23.90	1	23.90	361202	4	11.90	3	12.00	1647	6.5	0		
12/7/2018	1	23.90	1	23.90	360454	4	11.90	3	12.00	1721	6.5	0		
12/8/2018	1	23.90	1	23.90	360133	4	11.90	3	12.00	1785	6.5	0		
12/9/2018	1	23.90	1	23.90	359836	4	11.90	3	12.00	1789	6.5	0		
12/10/2018	1	23.90	1	23.90	359590	4	11.90	3	12.00	1792	6.5	0		
12/11/2018	1	23.90	1	23.90	359088	4	11.90	3	12.00	1712	6.5	0		
12/12/2018	1	23.90	1	23.90	357609	4	11.90	3	12.00	1655	6.5	0		
12/13/2018	1	23.90	1	23.90	355561	4	11.90	3	12.00	1650	6.5	0		
12/14/2018	1	23.90	1	23.90	354657	4	11.90	3	12.00	1583	6.5	0		
12/15/2018	1	23.90	1	23.90	355499	4	11.90	3	12.00	1471	6.5	0		
12/16/2018	1	23.90	1	23.90	356718	4	11.90	3	12.00	1495	6.5	0		
12/17/2018	1	23.90	1	23.90	357434	4	11.90	3	12.00	1513	6.5	0		
12/18/2018	1	23.90	1	23.90	357419	4	11.90	3	12.00	1596	6.5	0		
12/19/2018	1	23.90	1	23.90	357122	4	11.90	3	12.00	1649	6.5	0		
12/20/2018	1	23.90	1	23.90	356920	4	11.90	3	12.00	1708	6.5	0		
12/21/2018	1	23.90	1	23.90	357722	4	11.90	3	12.00	1396	6.6	0		
12/22/2018	1	23.90	1	23.90	357721	4	11.90	3	12.00	1469	6.6	0		
12/23/2018	1	23.90	1	23.90	357673	4	11.90	3	12.00	1500	6.5	0		
12/24/2018	1	23.90	1	23.90	357403	4	11.90	3	12.00	1537	6.5	0		
12/25/2018	1	23.90	1	23.90	357203	4	11.90	3	12.00	1689	6.5	0		
12/26/2018	1	23.90	1	23.90	356795	4	11.90	3	12.00	1657	6.5	0		
12/27/2018	1	23.90	1	23.90	356832	4	11.90	3	12.00	1588	6.5	0		
12/28/2018	1	23.90	1	23.90	357627	4	11.90	3	12.00	1486	6.5	0		
12/29/2018	1	23.90	1	23.90	358354	4	11.90	3	12.00	1475	6.5	0		
12/30/2018	1	23.90	1	23.90	358366	4	11.90	3	12.00	1631	6.5	0		
12/31/2018	1	23.90	1	23.90	358152	4	11.90	3	12.00	1638	6.5	0		

DATE	Tower Blower Cycles	Tower Blower Hours	Tower Pump Cycles	Tower Pump Hours	Discharge Flow	Effluent P1 Cycles	Effluent P1 Hours	Effluent P2 Cycles	Effluent P2 Hours	KWH	pH	De-Water Flow	SVE Blower Cycles	SVE Blower Hours
Sum	396	8624.20	388	8620.80	121853402	1775	4285.10	1256	4297.85	519854		-8		
Max	11	25.70	5	25.60	383556	21	22.60	17	20.80	1908	6.7	0		
Average	1	23.63	1	23.62	333845	5	11.74	3	11.77	1424	6.6	0		

APPENDIX C

2018 Operation and Maintenance Data Summary

Table C-1
2018 OPERATION AND MAINTENANCE DATA SUMMARY
Former York Naval Ordnance Plant

TECHNICIAN		SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL
Date		1/3/2018	1/15/2018	2/8/2018	2/22/2018	3/6/2018	3/20/2018	4/4/2018	4/18/2018	5/3/2018	5/21/2018	6/14/2018	6/25/2018	7/9/2018	7/19/2018	8/2/2018	8/15/2018	9/13/2018	9/26/2018	10/11/2018	10/29/2018	11/15/2018	11/27/2018	12/17/2018	12/31/2018
PTA INFL. PUMP																								
Full Load = 17	AMPS	NM	10.1	NM	NM	NM	NM	NM	9.70	NM	NM	NM	NM	NM	10.20	NM	NM	NM	NM	NM	11.30	NM	NM	NM	NM
	FLOW RATE gpm	229	234	237	242	246	217	217	216	210	234	247	312	235	238	257	277	262	261	253	247	245	176	254	251
PTA BLOWER																									
Full Load = 24	AMP READINGS	NM	23.09	NM	NM	NM	NM	NM	22.04	NM	NM	NM	NM	NM	21.52	NM	NM	NM	NM	NM	21.79	NM	NM	NM	NM
	PRESSURE inches water	17.1	17.2	16.8	16.0	16.8	16.1	15.3	16.2	15.3	15.5	15.2	15.2	15.4	15.3	14.8	15.1	14.9	14.8	14.5	15.3	16.3	15.7	16.2	16.6
TOWER PANEL																									
	VISUAL INSPECT	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA
	WARWICK SECURE	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA	NA	OK	NA	NA	NA	NA
TOWER SAMPLING																									
	AST EFFLUENT pH	7.69	NM	7.86	NM	7.8	NM	7.77	NM	7.67	NM	7.8	NM	7.84	NM	7.7	NM	7.6	NM	7.6	NM	7.7	NM	7.6	NM
	AST INFLUENT pH	6.57	6.55	6.63	6.61	6.54	6.62	6.57	6.62	6.54	6.6	6.6	6.62	6.56	6.61	6.2	6.52	6.4	6.54	6.2	6.55	6.3	6.56	6.2	6.53
REDUX CHEMICAL INJECTION																									
	LMI PUMP SPEED (%)	41	42	42	43	46	35	37	39	38	42	42	56	42	43	45	45	48	45	42	41	41	29	43	44
	LMI INJECTION RATE (milis/min)	10.4	10.6	10.8	11.1	11.2	10.5	10.8	11	11.2	13.0	12.8	16.8	12.5	12.5	13.5	13.9	14.8	13.8	13.6	12.9	12.7	9.3	13.8	13.6
WPL WELLS																									
	TOTAL FLOW RATE gpm	228	244	248	235	252	219	221	213	210	240	244	242	235	242	272	272	264	255	265	260	255	176	256	272
CW-9; Full Load = 5.5	AMPS	NM	3.52	NM	NM	NM	NM	NM	3.52	NM	NM	NM	NM	NM	3.50	NM	NM	NM	NM	NM	3.55	NM	NM	NM	NM
CW-9	FLOW RATE gpm	52.1	52.3	52.3	53.8	55.1	53.5	50.3	52.9	53.2	53	55.1	53.2	53.1	57.1	57.9	56.6	57.4	57.3	56.6	53.4	58.4	57.6	57.3	58.2
CW-9	PRESSURE psi	6	6	6	6	6	6	6	5	6	6	6	6	5	5	5	5	6	5	5	5	6	4.5	6	6
CW-9	CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-9	HIGH LEVEL ALARM?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CW-13; Full Load = 11.5	AMPS	NM	9.22	NM	NM	NM	NM	NM	9.2	NM	NM	NM	NM	NM	15.86	NM	NM	NM	NM	NM	9.12	NM	NM	NM	NM
CW-13	FLOW RATE gpm	57.7	63.1	60.8	60.0	61.8	61.9	63.4	63.2	60.9	59.2	58.9	58.1	53.9	56.3	58.5	60.1	51.2	51.0	50.3	48.8	48.4	55.1	52.3	53.6
CW-13	PRESSURE psi	58	54	55	56	56	54	65	54	70	60	58	58	60	59	60	56	60	61	60	62	64	60	60	59
CW-13	CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-13	HIGH LEVEL ALARM?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-17; Full Load = 11.5	AMPS	NM	8.78	NM	NM	NM	NM	NM	8.91	NM	NM	NM	NM	NM	9.59	NM	NM	NM	NM	NM	9.47	NM	NM	NM	NM
CW-17	FLOW RATE gpm	21.1	31.2	40.5	63.6	69.4	39.9	51	48.4	53.8	63.6	66.3	67.1	67.2	68.7	93.6	90.2	98.4	95.2	94.6	97.6	93.1	OL	83.4	98.0
CW-17	PRESSURE psi	75	75	70	60	50	69	65	65	62	50	50	50	47	47	42	30	20	20	25	40	42	OL	42	40
CW-17	CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	OL	N	N
CW-17	HIGH LEVEL ALARM?	N	N	Y	N	N	N	Y	Y	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	OL	Y	Y
CW-15A: Full Load = 1.6	AMPS	NM	1.47	NM	NM	NM	NM	NM	1.61	NM	NM	NM	NM	NM	1.12	NM	NM	NM	NM	NM	1.14	NM	NM	NM	NM
CW-15A	FLOW RATE gpm	2.8	2.5	2.8	2.7	OL	3.2	3.8	3.7	3.4	3.5	3.4	3.1	2.8	2.7	2.7	2.5	2.3	3.1	2.9	2.6	2.3	2.4	2.1	2.5
CW-15A	PRESSURE psi	39	53	36	36	OL	51	50	51	58	46	42	39	36	35	38	38	32	47	44	40	40	40	36	43
CW-15A	CLEAN "Y" STRAINER	N	N	N	N	OL	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-15A	HIGH LEVEL ALARM?	N	Y	Y	Y	OL	N	N	Y	N	Y	N	N	N	N	Y	Y	Y	N	N	N	Y	Y	Y	Y
CW-20 Full Load = 17.3	AMPS	NM	10.62	NM	NM	NM	NM	NM	11.95	NM	NM	NM	NM	NM	12.87	NM	NM	NM	NM	NM	12.56	NM	NM	NM	NM
CW-20	FLOW RATE gpm	94.8	95.3	92.9	76	64.8	55.9	50.3	44.9	60.9	60.4	59.1	60.3	60	59.9	59.8	60.1	60	60.4	59.9	59.7	60.6	59.9	59.8	59.4
CW-20	PRESSURE psi	30	26	25	45	54	60	65	70	71	80	60	59	80	75	80	80	80	80	59	75	79	81	80	80
CW-20	CLEAN "Y" STRAINER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CW-20	HIGH LEVEL ALARM?	Y	Y	N	N	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
AST influent pressure	inches of water	11.0	11.0	10.8	10.2	11.0	10.7	10.1	10.6	9.9	9.8	9.7	9.5	9.8	9.5	9.0	9.1	8.7	9.4	9.1	9.8	10.5	10.3	10.3	10.4
GAC influent pressure	inches of water	9.3	9.3	9.1	8.7	9.3	9	8.6	9	8.5	8.4	8.5	8.3	8.6	8.3	8.1	8.3	8.1	8.1	7.9	8.5	8.8	8.5	8.7	8.9
AST pitot pressure	inches of water	0.32	0.32	0.32	0.3	0.3	0.3	0.28	0.7	0.27	0.27	0.27	0.26	0.27	0.28	0.25	0.28	0.26	0.24	0.26	0.28	0.3	0.3	0.3	0.32
SPBA WELLS																									
	TOTAL FLOW RATE gpm																						8.6	7.5	8.3
CW-21; Full Load = 5	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-21	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	5.2	4.7	4.7
CW-21	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	10.0	9.4	9.2
CW-21	TARGET LEVEL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	95	95	95.0
CW-21	TRANSDUCER READING	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	95	95	95.0
CW-21	PUMP SPEED %	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	78	76	76.0
CW-21	CLEAN TRANSDUCER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	NA	NA	NA
CW-21	WATER CLARITY	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	TURBID	TURBID	CLEAR
CW-21	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	N	N	N
CW-22; Full Load = 3.9	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-22	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1.6	1.7	1.9
CW-22	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	10.0	9.5	9.2
CW-22	TARGET LEVEL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	97	97	97
CW-22	TRANSDUCER READING	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	97	97	97
CW-22	PUMP SPEED %	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	70	69	70.0
CW-22	CLEAN TRANSDUCER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	NA	NA	NA
CW-22	WATER CLARITY	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	TURBID	TURBID	CLEAR
CW-22	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	N	N	N
CW-23; Full Load = 3.9	AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-23	FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	1.7	1.1	1.6
CW-23	PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	9.8	9.3	9.2
CW-23	TARGET LEVEL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	57	57	57.0
CW-23	TRANSDUCER READING	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	57	57	57.0
CW-22	PUMP SPEED %	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	72	69	70.0
CW-23	CLEAN TRANSDUCER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	NA	NA	NA
CW-23	WATER CLARITY	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	TURBID	TURBID	CLEAR
CW-23	HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	N	N	N

Notes: Y - Yes N - No OL - Off Line NA - Not Applicable NM - Not Measured

Table C-1
2018 OPERATION AND MAINTENANCE DATA SUMMARY
Former York Naval Ordnance Plant

TECHNICIAN	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL	SRL
Date	1/3/2018	1/15/2018	2/8/2018	2/22/2018	3/6/2018	3/20/2018	4/4/2018	4/18/2018	5/3/2018	5/21/2018	6/14/2018	6/25/2018	7/9/2018	7/19/2018	8/2/2018	8/15/2018	9/13/2018	9/26/2018	10/11/2018	10/29/2018	11/15/2018	11/27/2018	12/17/2018	12/31/2018
NPBA WELLS																								
VIS. INSP. CONTR. PANEL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WARWICK SECURE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUMP PUMP OPR. CHK	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MANIFOLD PRESS. psi	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-1; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-1 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-1A FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-1A HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-2 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-2 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-3 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-3 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-4 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-4 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5; Full Load = 6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-5 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-5 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-6 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-6 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-7 FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7 PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7 CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7 CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7 CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7 HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A; Full Load = 1.6 AMPS	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
CW-7A FLOW-RATE gpm	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A PRESSURE psi	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A CLEAN "Y" STRAINER	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A CLEAN CK. VALVE	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A CLEAN FLOWSENSOR	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
CW-7A HIGH LEVEL ALARM?	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

Notes: Y - Yes N - No OL - Off Line NA - Not Applicable NM - Not Measured