www.hydro-terra.com

GROUNDWATER EXTRACTION AND TREATMENT SYSTEM ANNUAL OPERATIONS REPORT FOR THE PERIOD JANUARY 1 THROUGH DECEMBER 31, 2017 FORMER YORK NAVAL ORDNANCE PLANT

Prepared for:

Harley-Davidson Motor Company Operations, Inc.

York, PA

March 2018

7420 Derry Street, Harrisburg, PA 17111 717.980.5150 fax 717.980.5937

Groundwater Extraction and Treatment System
Annual Operations Report
for the Period
January 1 through December 31, 2017
Former York Naval Ordnance Plant

Prepared for:

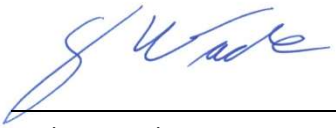
Harley-Davidson Motor Company Operations, Inc.
York, PA

By:

Hydro-Terra Group
7420 Derry Street
Harrisburg, PA 17111
(717) 901-8100

March 2018

Respectfully submitted,



Emily M. Wade
Project Environmental Scientist

Rodney G. Myers, CHMM
Senior Program Manager

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ACRONYMS

cfm	-	cubic feet per minute
cis-1,2-DCE	-	cis-1,2-dichloroethene
EPA	-	United States Environmental Protection Agency
ERLC	-	Eden Road Logistics Center
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.
HTG	-	Hydro-Terra Group
lbs/day	-	pounds per day
Leidos	-	Leidos, Inc.
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
PVC	-	polyvinyl chloride
RACY	-	Redevelopment Authority of the County of York
SGWRI	-	Supplemental Groundwater Remedial Investigation, Part 2
SRBC	-	Susquehanna River Basin Commission
TCA	-	1,1,1-trichloroethane
TCE	-	trichloroethene
µg/L	-	micrograms per liter
VOCs	-	volatile organic compounds
WPL	-	West Parking Lot
YCIDA	-	York County Industrial Development Authority

EXECUTIVE SUMMARY

This report is a summary of the groundwater extraction and treatment system (GWTS) operations and maintenance (O&M) and groundwater extraction well monitoring that occurred during calendar year 2017 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, and has been in operation for over 27 years (since November 1990).

The West Parking Lot (WPL) collection wells, including WPL pumping well (CW-20), located in the southwest corner of the WPL, along with the other WPL pumping wells (CW-9, CW-13, CW-15A, and CW-17) were operational during 2017. The Northeast Property Boundary Area (NPBA) collection wells and the Building 3 Dewatering Area/lift station system were shut down in mid-2013 during part of the Supplemental Groundwater Remedial Investigation (SGWRI) and work plans approved by the United States Environmental Protection Agency (EPA) and Pennsylvania Department of Environmental Protection (PADEP) and remained off during 2017 pending completion of shutdown monitoring studies. Approval to abandon the Building 3 Dewatering Area/lift station was received from the EPA on May 16, 2017. The toe and deep drains of the lift station were then capped with hydraulic cement on September 11, 2017.

Approximately 1,041 pounds of volatile organic compounds (VOCs) were removed by the GWTS in 2017. The total amount of groundwater extracted during 2017 was approximately 113 million gallons. Cumulatively, approximately 46,342 pounds of VOCs have been removed by the GWTS since 1990.

Site-wide groundwater elevation data were collected in October 2017. Site-wide groundwater sampling was also conducted in October 2017 but is not presented in this report.

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 2017. The fYNOP facility consists of the current Harley-Davidson Motor Company Operations, Inc. (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, 2017. Leidos Inc. (Leidos) operated the GWTS during January 2017. Hydro-Terra Group (HTG) began O&M activities on February 1, 2017, and continued operations throughout the remainder of 2017.

Harley-Davidson sold 58 acres of the western portion of the fYNOP (i.e. the West Campus) to the York County Industrial Development Authority (YCIDA) in June 2012. Transfer of this property from YCIDA to the Redevelopment Authority of the County of York (RACY) was completed in November 2015. Property transfer was completed between RACY and NP York 58, LLC (NP York) in early January 2017, when NP York completed construction of a 755,000 square-foot warehouse, known as the Eden Road Logistic Center (ERLC). 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 West Campus area encompasses the WPL and former 1,1,1-trichloroethane (TCA) tank area systems. Harley-Davidson 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.

At the fYNOP, groundwater can be extracted from 15 pumping wells (CW-1, CW-1A, CW-2 through CW-7, CW-7A, CW-9, CW-13, CW-15A, CW-17, CW-19, and CW-20) and a lift station operating in three (3) separate areas designated as the NPBA, the WPL Area (which includes the former North Building 4 [NB4] Area), and the Building 3 Dewatering System. The collection systems are shown on Figure 1-2. WPL pumping (CW-20) located in the southwest corner of the WPL was tested and brought on-line during 2014. CW-20, along with four other previously operating WPL pumping wells (CW-9, CW-13, CW-15A, and CW-17) were operational during 2017. The former TCA Tank area collection wells and extraction system were abandoned in 2016. The NPBA and Building 3 Dewatering System were not active during 2017. The Building 3 Dewatering System will be abandoned during early 2018.

As part of the SGWRI investigation work, the NPBA collection wells and the Building 3 Dewatering Area/lift station system were shut down in mid-2013 and remained off during 2017 pending completion of shutdown monitoring studies. EPA and PADEP approved shutdown and monitoring of the NPBA system for five years, and shutdown and monitoring of the Building 3 Dewatering Area for three years. Groundwater Sciences Corporation (GSC) has been conducting the NPBA and Building 3 Dewatering monitoring. During 2017, a third-year progress report of the NPBA shutdown monitoring was prepared in April (GSC, 2017a), and a letter report was issued regarding the final year of required monitoring and sampling results of the Building 3 Dewatering Area (GSC, 2017b). The report for the Bldg3 Footer Drain Lift Station shutdown monitoring indicated conditions had remained substantially the same since shutdown, and that the system eliminates the potential for the water table to rise upward due to precipitation to elevations that could impact Bldg3. Therefore, the report 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.

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). A rerouted conveyance pipe for WPL collection well CW-9 (using some of the former conveyance utility for former TCA collection well CW-8) was installed and connected during construction of the new ERLC during late 2016 and is also shown on Figure 1-2.

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 2017. 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].

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 report entitled "Supplemental Remedial Investigation Groundwater Report (Part 2)." (GSC 2016).

3.0 SITE-WIDE GROUNDWATER MONITORING

The groundwater monitoring program at the fYNOP site for 2017 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 2017, the GWTS remediated groundwater containing dissolved VOCs recovered from the WPL Area of the site. This groundwater extraction portion of the system consists of 5 active pumping wells (CW-9, CW-13, CW-15A, CW-17, and CW-20). Ten (10) inactive pumping wells from two groundwater pumping areas are undergoing shut down monitoring. The inactive areas include the NPBA and the Building 3 Dewatering Area.

4.1 System Description

Collection wells within the WPL groundwater extraction area and the NPBA (when in operation) remove groundwater by means of electric submersible pumps. At Building 3, a lift station pump removes water from a series of collection trenches. The pumping water level within each collection well is maintained by liquid level probes and control circuitry between the "on" and "off" probes. This produces an area of drawdown and groundwater capture. The extracted groundwater is conveyed via underground piping to the treatment system where the dissolved VOCs are removed from the groundwater. Note that the NPBA and Building 3 Lift Station were not in operation during 2017 and the that the Building 3 Lift Station is scheduled for abandonment during early 2018.

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 a patented software package called RSView®. Remote computer terminals are used to monitor collection well pumping rates and treatment processes, and the WPL wells may be remotely adjusted. System operational data, recorded in an Access® data base during 2017, are 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 2017, except for the following interruptions:

- A brief shutdown on January 9 and October 17 occurred to remove an effluent pump for annual maintenance.
- Brief shut downs for a few hours per day for several days in early March for CW-9 conveyance line piping reroute and line testing.
- A shut down during a scheduled plant-wide power outage on June 28, 2017.
- The GWTS was shut down during scheduled granular activated carbon (GAC) change-outs on April 20, July 25, and November 7, 2017.
- The GWTS was shut down for a brief period on October 31, 2017 to calibrate collection well flow meters.

Several noteworthy treatment system maintenance, repairs, or modifications were identified and addressed during 2017. 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 pump flow meter calibrations were completed.
- Modifications to the lift station piping were made in August to connect a temporary discharge pipe to the lift station force main. The temporary pipe was installed to facilitate conveyance and treatment of impacted groundwater during installation and testing of several new wells in the southeast corner of the Harley-Davidson property (southern property boundary area).
- The deep drain and toe drain inlets to the lift station were sealed in September.
- GWTS communications were migrated from the Harley-Davidson internal network on November 9, 2017. GWTS communications are now facilitated via a cellular phone system, with radio communications between the main control panel/PLC and remote Lift Station controls. Radios and antennas were also installed in November.

4.3 Groundwater Withdrawal and VOC Removal

Table 4-1 presents recorded groundwater withdrawal and total VOC removal accomplished through operation of the GWTS. A system-wide total of approximately 46,342 pounds of VOCs have been removed since the GWTS began operation in November 1990.

The total amount of groundwater extracted during the period from January 1 through December 31, 2017, was approximately 113 million gallons (an average of 309,244 gallons per day [gpd] or 215 gpm). The 2017 extraction volumes are similar to the previous year (2016) when the flows were approximately 312,258 gpd (or 217 gpm). Approximately 30,000 gallons of impacted groundwater was treated as a result of drilling, well installations and investigations in the southern property boundary area. This volume was accounted 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, essentially all treated groundwater was extracted from the WPL system during 2017.

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 2017, 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 923 micrograms per liter (µg/L) to 1,277 µg/L during 2017. Using these data, the total estimated mass of VOCs removed from January through December 2017 was 1,041 pounds. This mass removal rate is slightly lower than the value calculated during 2016 (approximately 1,058 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:

- 2017 – 2.9 lbs/day
- 2016 – 4.0 lbs/day
- 2015 – 5.7 lbs/day
- 2014 – 2.2 lbs/day [from 118 total days of pumping from CW-20 and 16 days from CW-9]

The predominant VOCs in the PTA influent have historically been trichloroethene (TCE), TCA, and tetrachloroethene (PCE) [see Figure 4-2]. Levels of influent total VOCs have been somewhat stable over the last few years. 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-dichloroethene (cis-1,2-DCE) was noted during 2015 and early 2016. The predominant GWTS influent VOCs during 2017 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 2017. Analytical testing results for the 2017 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. A SRBC inspection was conducted of the GWTS on October 17, 2017. In follow-up, HTG provided SRBC with copies of pumping well flow meter calibration records, prior well abandonment records, and EPA approval of shutdown of the Softail Dewatering Area (SDA) associated with Docket No. 19980910-1.

5.0 NPBA GROUNDWATER EXTRACTION SYSTEM

Groundwater extraction at the NPBA commenced in November 1990. Nine groundwater collection wells (CW-1, CW-1A, CW-2, CW-3, CW-4, CW-5, CW-6, CW-7, and CW-7A) located on the Harley-Davidson property pump to the NPBA control building where individual pumping rates are controlled and measured. The groundwater from each well is combined and transmitted a distance of approximately 2,000 feet to the groundwater treatment 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 2017 reporting period. The third year (2016) shutdown status of the NPBA extraction system was reported to EPA and PADEP in an annual monitoring report (GSC, 2017a). The NPBA wells were started for a short duration in October 2017 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 2017. 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 2017), which included the inactive NPBA collection wells and several surrounding monitoring wells, will be provided in the Year 4 Shutdown monitoring report.

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) is located near the exterior northwest corner of former Building 4 (also known as NB4 area). These five wells are referred to as the WPL wells. Collection wells CW-9, CW-13, CW-14, and CW-15A began operation in May 1994. Collection well CW-17 began operation in September 1995 and was a replacement extraction well for CW-14, which was discontinued due to excessive sediment buildup in the well. Collection well CW-20 became operational in April 2014.

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 113 million gallons of groundwater were extracted from the WPL Area during 2017 (see Table 6-1).

6.1 System Modifications and Operational Conditions

As part of the West Campus construction activities, underground conveyance piping from CW-9, and CW-20 were rerouted in late 2016 into early 2017. Highlights of the modifications are as follows:

- Cut, extended and rerouted CW-20 conveyance pipe (3" HDPE) beneath a newly installed 42-inch diameter stormwater pipe in the WPL. A flange fitting was used, along with butt welded connections, and all connections were pressure tested prior to restarting the CW-20 pump.
- Rerouted wiring for CW-9/CW-20 over top of the new 42" SW pipe in WPL, without splicing.
- Cut/capped existing (2" HDPE) CW-9 conveyance pipe near the new WPL stormwater pipe intersection; and butt welded to new 4" HDPE reroute pipe via reducer and flange connection. The reroute goes east towards the old Gate 3 guardhouse, and then follows the former CW-8 conveyance pipeline path to Building 41A (see Figure 1-2). Use of the new larger diameter piping allowed increased pumping rates at CW-9 from approximately 30 gpm to a maximum of approximately 60 gpm during 2017. High level probe alarms were active at this well for most of the reporting period, although pumping levels were measured near the design drawdown level.

6.2 Maintenance

A brief summary of maintenance actions addressed for the WPL Area in 2017 is presented below:

- Cleaning and rehabilitation of the well screen at CW-20 was conducted in early May and mid December 2017 due to observed decreased pumping rates below 50 gpm (normally 60-90 gpm). The well pump was pulled and returned before and after each rehabilitation event, and normal pumping operations resumed.

- An overload fault at collection well CW-17 occurred on February 1, 2017 and was shut off in response to the fault. A faulty pump and motor were replaced, and pumping resumed at WPL collection well CW-17 on February 23, 2017.
- CW-15A overload faults occurred in June and August 2017. The pump end and motor were replaced on June 8, and the motor was also replaced on September 13, 2017.
- Well CW-9 was shut down due to construction activity in the area from January 1 through March 12, 2017. CW-9 was restarted after rerouted piping passed the pressure/leak test. During the same period, CW-20 was also shutdown periodically to complete the work.

6.3 Groundwater Chemistry

The groundwater quality analysis data from the 2017 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 wells during 2017. The highest concentration of VOCs continue to be found at CW-15A, with the level of cis-1,2-DCE (up to 4,400 µg/L) being the highest VOC detected, followed closely by TCA with levels around 4,000 µg/L. TCA is not significant in any of the other WPL extraction wells. Extraction well CW-20 had the second highest levels of VOCs, dominated by PCE at concentrations of approximately 900 µg/L, and TCE with a concentration around 400 µg/L. Extraction well CW-9 is also dominated by PCE; whereas extraction well CW-13 has nearly equal concentrations of PCE and TCE, with increasing concentrations of cis 1,2-DCE. The concentration of VOCs detected in extraction well CW-17 was the lowest of the WPL extraction wells.

7.0 BUILDING 3 DEWATERING SYSTEM

The Building 3 Dewatering System was constructed in 2002 and consists of approximately 800 feet of deep interceptor trench, approximately 600 feet of shallow interceptor trench (toe drain), a collection well CW-19 (inactive since installation), and a lift station. All three components of the groundwater collection system are designed to flow to a pumping station (Lift Station). From the pumping station, the groundwater is transported via underground piping to the groundwater treatment facility in Building 41A (see Figure 1-2). Groundwater collection via this system was initiated in March 2002.

7.1 System Shutdown Conditions

The Building 3 Dewatering System was shut down on June 19, 2013, and has remained off for the monitored shutdown study, including during the 2017 reporting period. The 2016 shutdown status of the Building 3 dewatering system was reported to EPA and PADEP in an annual (Third Year) monitoring report (GSC, 2017b). 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 was pumped on a few occasions during 2017 to remove water from the sump and in preparation for sealing the inlet pipes. The toe and deep drains were plugged with hydraulic cement on September 11, 2017. CW-19 is a dry well and did not operate in 2017 due to the continued lack of any groundwater in this well. The Building 3 Lift Station is scheduled for abandonment during early 2018.

7.2 Groundwater Chemistry

There were no groundwater samples collected from the lift station during 2017.

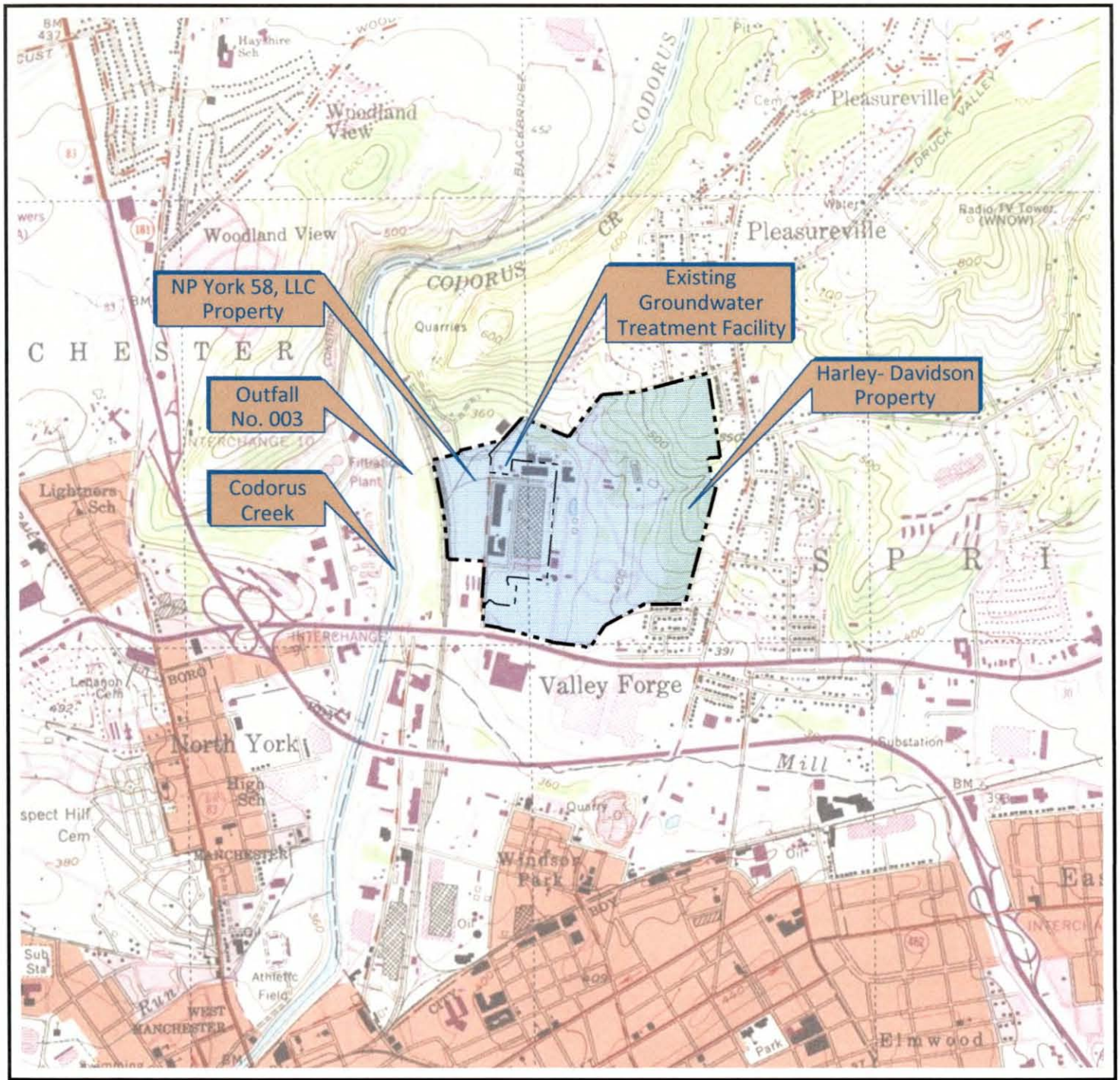
8.0 REFERENCES

GSC, 2016. Supplemental Remedial Investigation Groundwater Report (Part 2), Former York Naval Ordnance Plant, August.

GSC, 2017a. 2016 Annual Monitoring Progress Report for the NPBA Extraction System Shutdown, Former York Naval Ordnance Plant, April.

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

FIGURES



H:\Projects\Harley-Davidson_CADD\GWTS-Discharge.dwg

LEGEND

Property Boundary
(Former York Naval Ordnance Plant)

Quadrangle Location

2000' 0 2000'

SCALE IN FEET

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

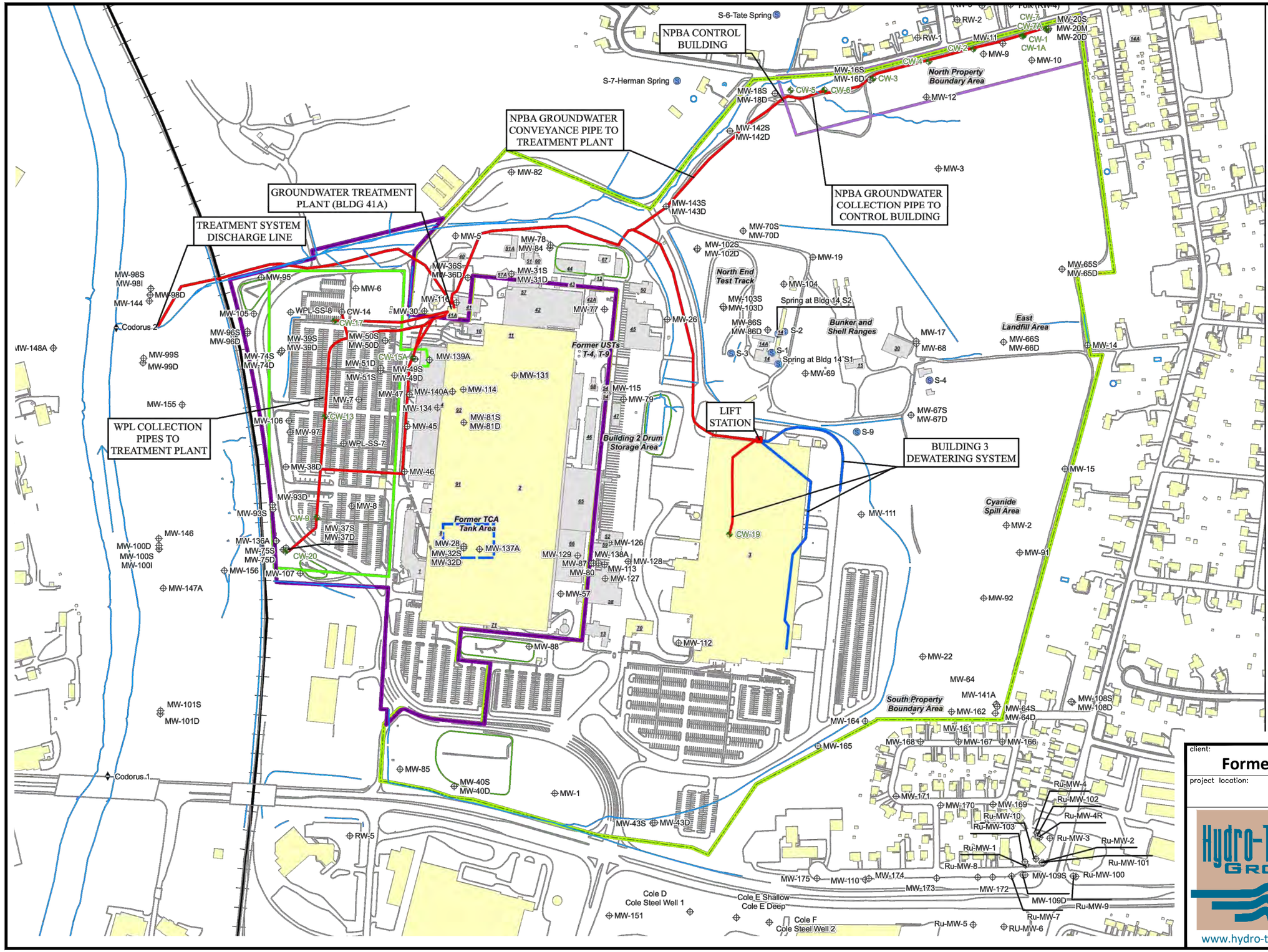
Hydro-Terra GROUP
www.hydro-terra.com

project: GWTS Discharge

Site Location Map

file no.	GWTS-Discharge.dwg	
drawn M. Swam	date 01/23/18	figure: 1-1
checked E. Wade	date 01/23/18	
approved R. Myers	date 01/23/18	

Plotted on: January 23, 2018



Legend

- Stream Gauge and Designation
- Extraction Well and Designation
- Monitoring Well and Designation
- Spring
- Stream and Ponds
- Abandoned Piping
- Treatment System Features
- Harley-Davidson (East Campus) Boundary
- West Campus Boundary
- Groundwater Interceptor Trenches
- NPBA Area
- Former TCA Area
- WPL Area
- Stormwater Basin
- Existing Building
- Removed Building
- Roads Curb Boundary
- Railroad

Note:

Base map information obtained from leidos "GROUNDWATER TREATMENT SYSTEM LOCATION" figure no. 1-2, job no. 313271.00.00.2000.100, dated 01/05/17.

N

0 205 410 820

SCALE IN FEET

NOTE:

1. Base data (Buildings, Building Boundaries, Roads and Curbs) from NuTec Survey conducted in 2006.

client: **Former York Naval Ordnance Plant**

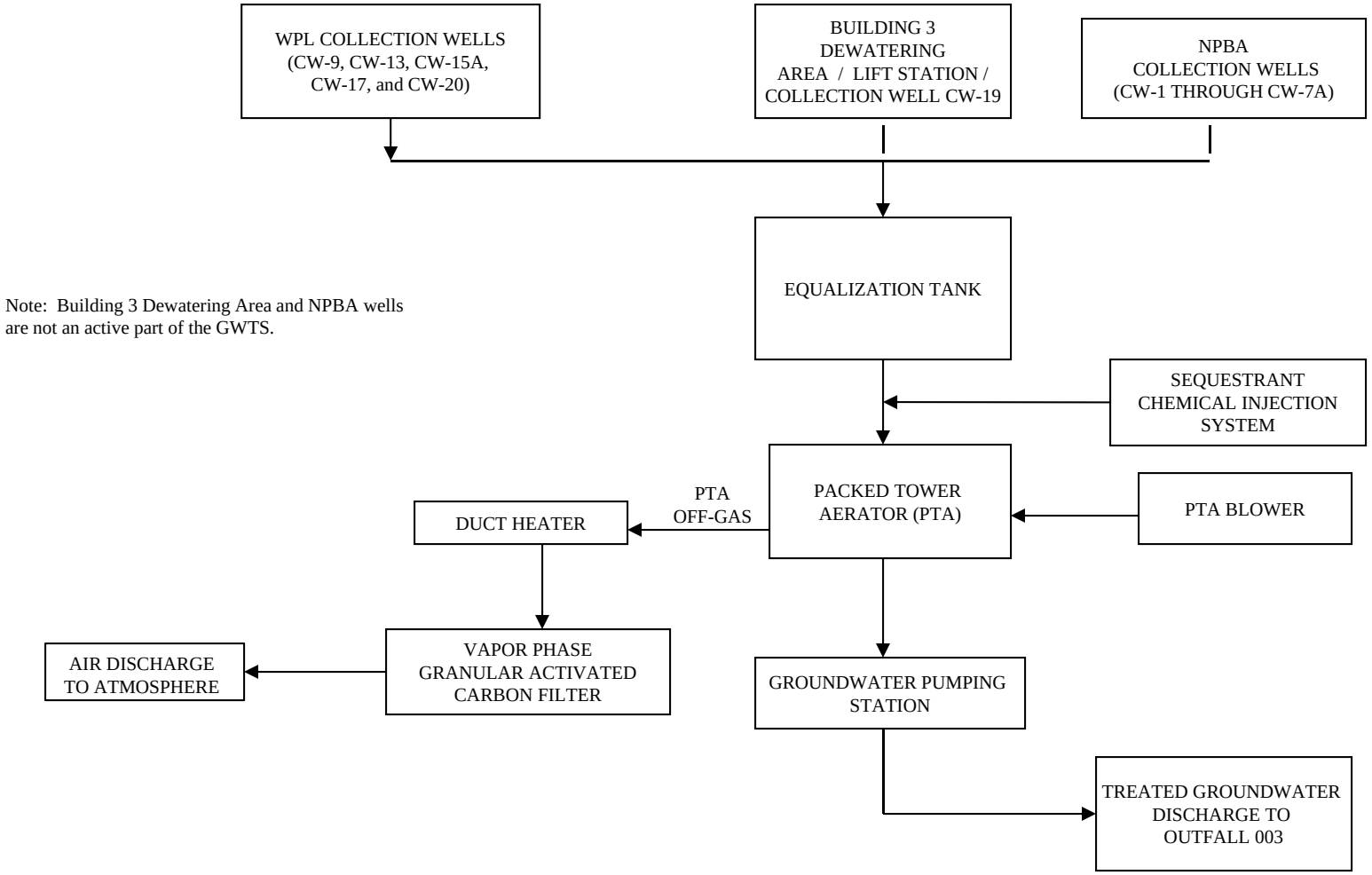
project location: 1425 Eden Road, York, Pennsylvania 17402

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: 02/20/18
checked: E. Wade	date: 02/20/18
approved: R. Myers	date: 02/20/18
figure:	1-2

H:\Projects\Harley-Davidson_CADD\fYNOP-O-M-Site.dwg

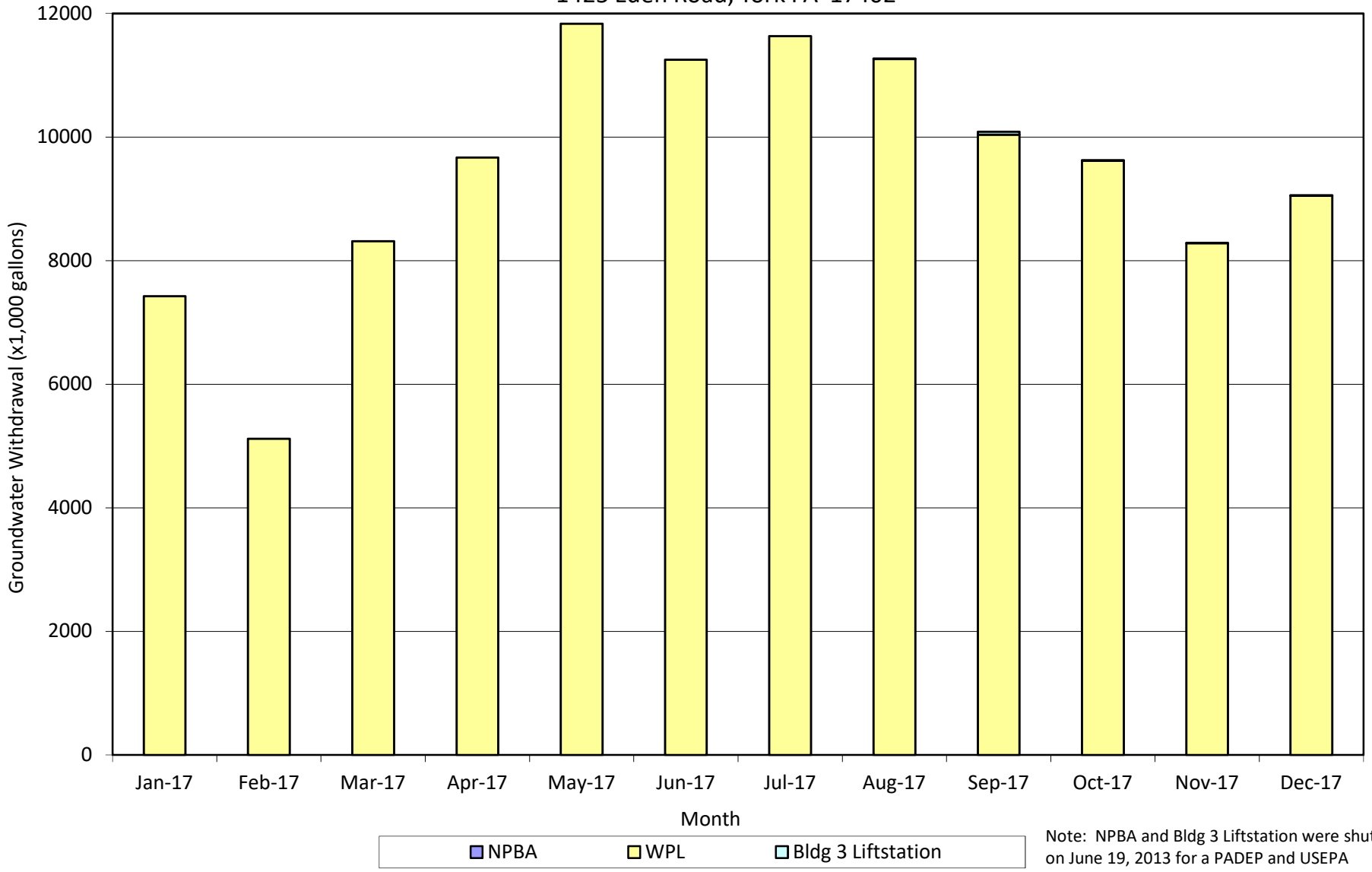
FIGURE 1-3
GROUNDWATER TREATMENT SYSTEM FLOW DIAGRAM
Former York Naval Ordnance Plant



Note: Building 3 Dewatering Area and NPBA wells are not an active part of the GWTS.

Figure 4-1
2017 Groundwater Withdrawals
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

Data represents gallons per month for each extraction area.



Note: NPBA and Bldg 3 Liftstation were shutdown on June 19, 2013 for a PADEP and USEPA approved shutdown monitoring study.

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

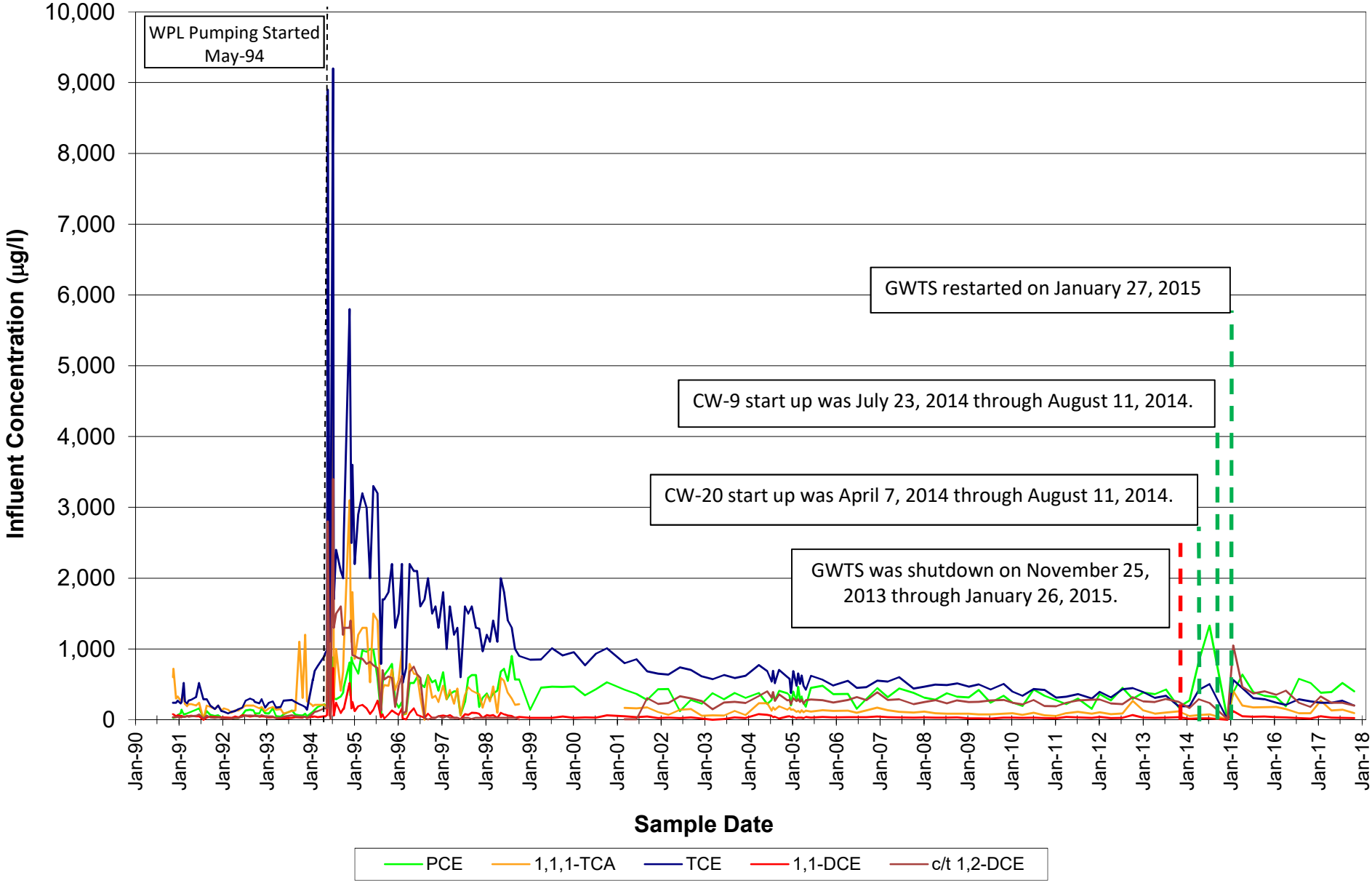


Figure 6-1
Predominant VOC Concentrations - Collection Well CW-9
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

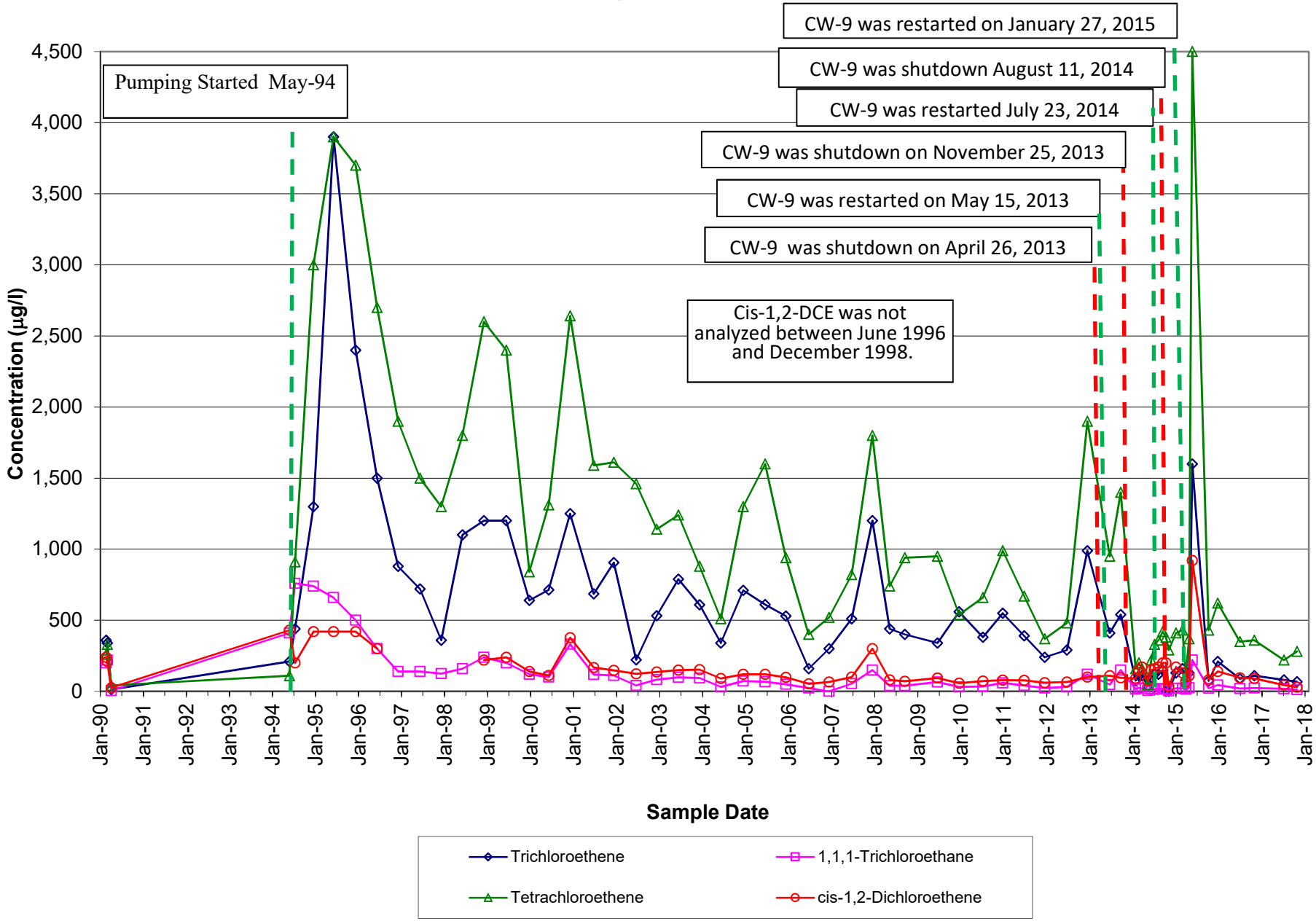


Figure 6-2
Predominant VOC Concentrations - Collection Well CW-13
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

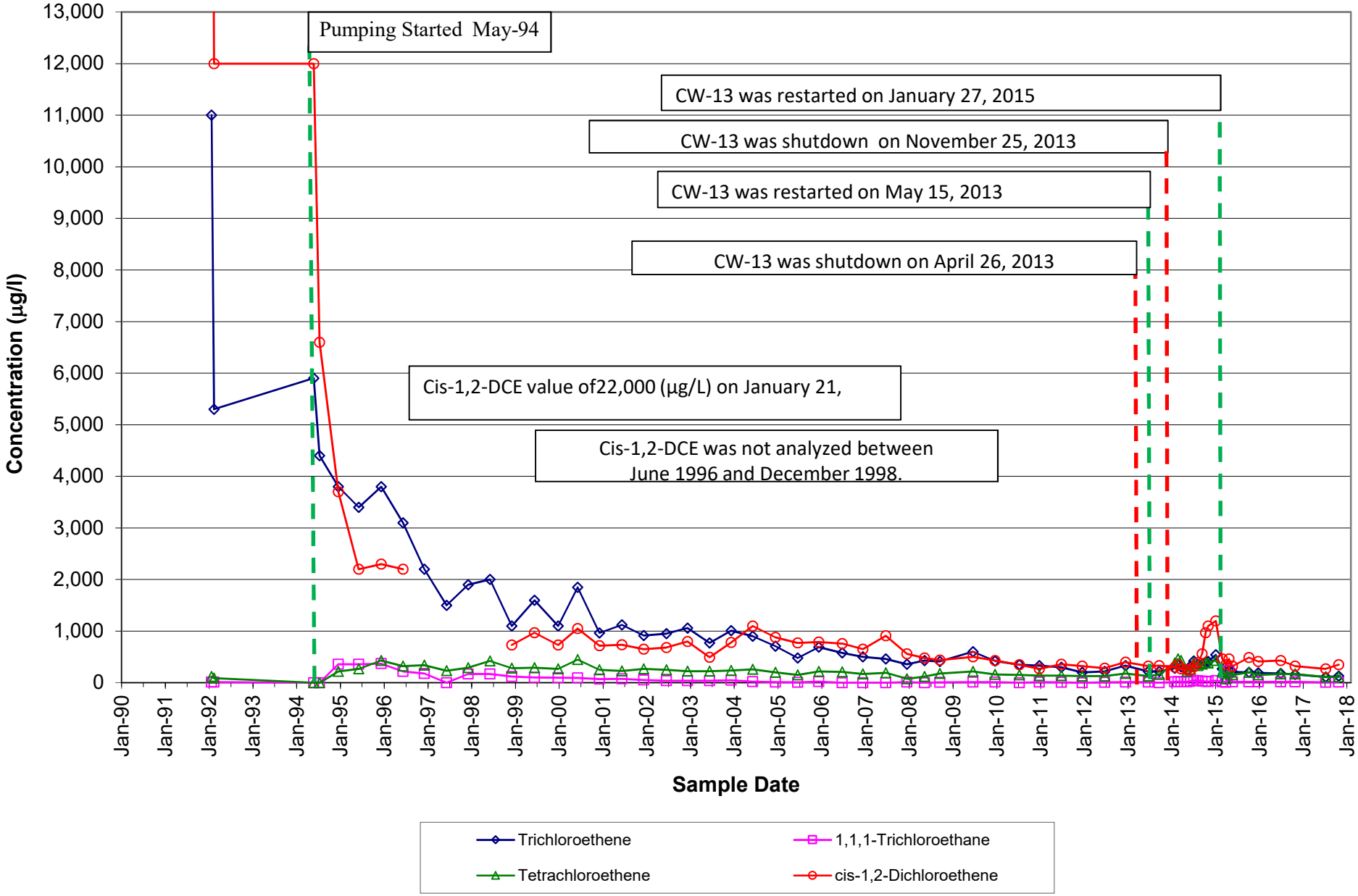


Figure 6-3
Predominant VOC Concentrations - Collection Well CW-15A
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

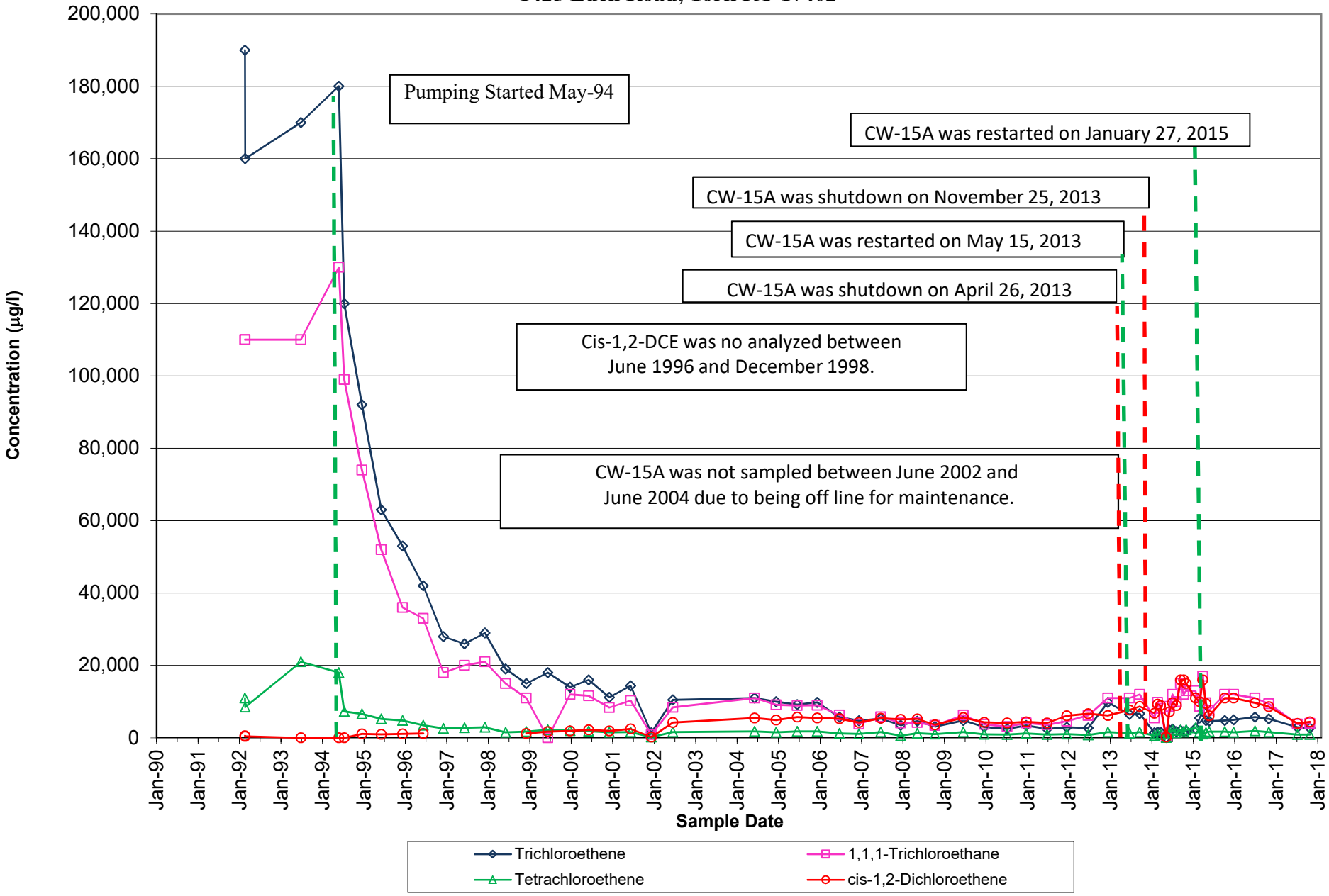


Figure 6-4
Predominant VOC Concentrations
Collection Well CW-17
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

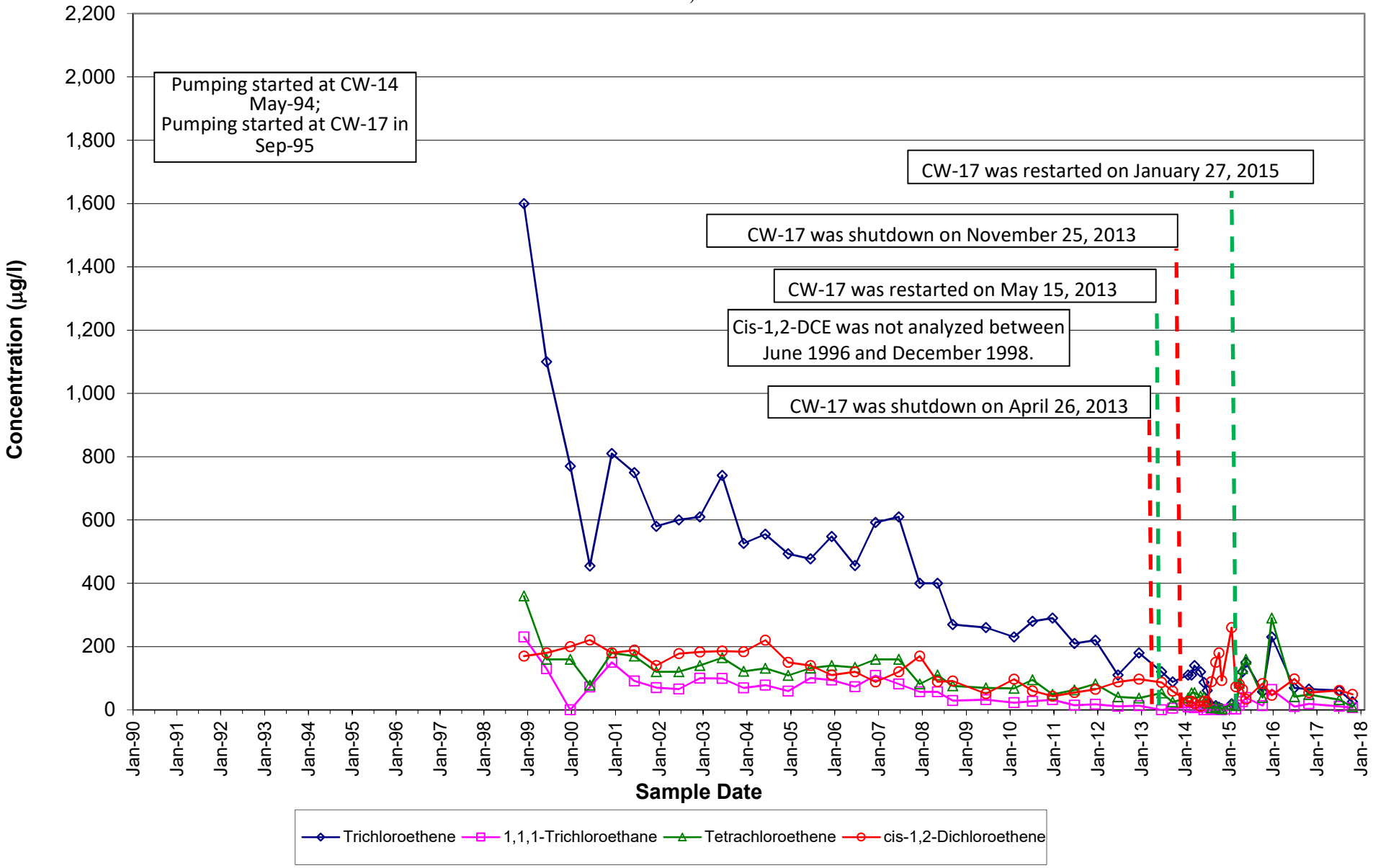
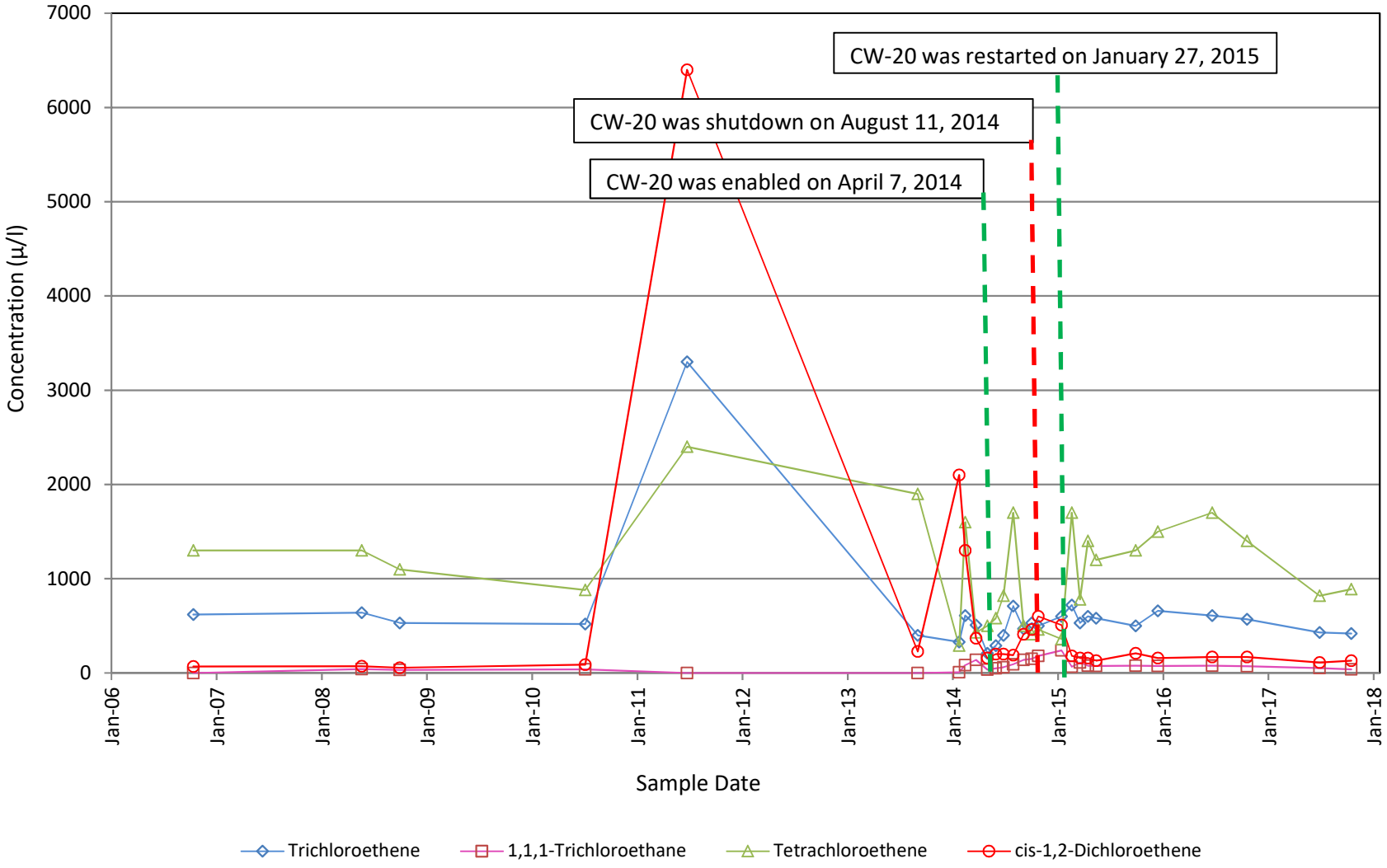


Figure 6-5
Predominate VOC Concentrations
Collection Well CW-20
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402



TABLES

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

JANUARY 1, 2017 - DECEMBER 31, 2017			
DATE	MONTHLY GROUNDWATER WITHDRAWAL (AST Totalizer, gallons)	AVERAGE MONTHLY TOTAL VOCs (ppb)	ESTIMATED MONTHLY VOC REMOVAL (pounds)
Jan-17	7,634,981	1277	81
Feb-17	5,288,160	1277 *	56
Mar-17	8,321,794	1277 *	89
Apr-17	9,524,707	1039	83
May-17	11,520,629	1039 *	100
Jun-17	11,103,397	1039 *	96
Jul-17	11,604,174	1204	117
Aug-17	11,258,486	1204 *	113
Sep-17	10,067,833	1204 *	101
Oct-17	9,702,903	923	75
Nov-17	8,120,090	923 *	63
Dec-17	8,726,729	923 *	67
TOTAL	**112,873,883**	**NA**	**1,041**

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
Total	**3,200,653,392**	**46,342**

TABLE c-1
RECORD OF GROUNDWATER WITHDRAWALS
JANUARY 1, 2017 - DECEMBER 31, 2017
Former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

MONTH	NPBA WELLS (gallons)										WPL WELLS (gallons)						Building 3 De-Watering System	Miscellaneous GW Treatment	MONTHLY TOTAL
	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			
Jan-17	0	0	0	0	0	0	0	0	0	0	0	2,477,323	105,174	2,013,865	2,830,121	7,426,483	0	0	7,426,483
Feb-17	0	0	0	0	0	0	0	0	0	0	0	2,312,925	92,937	374,220	2,335,894	5,115,976	0	0	5,115,976
Mar-17	0	0	0	0	0	0	0	0	0	0	1,559,154	2,490,022	109,462	1,935,707	2,220,465	8,314,810	0	0	8,314,810
Apr-17	0	0	0	0	0	0	0	0	0	0	2,573,054	2,538,720	132,358	2,603,921	1,820,785	9,668,838	0	0	9,668,838
May-17	0	0	0	0	0	0	0	0	0	0	2,730,426	2,645,429	119,489	2,667,549	3,671,163	11,834,056	0	0	11,834,056
Jun-17	0	0	0	0	0	0	0	0	0	0	2,363,285	2,490,917	92,846	2,504,302	3,801,015	11,252,365	0	0	11,252,365
Jul-17	0	0	0	0	0	0	0	0	0	0	2,526,619	2,614,573	109,958	2,614,159	3,770,052	11,635,361	0	0	11,635,361
Aug-17	0	0	0	0	0	0	0	0	0	0	2,576,469	2,645,389	95,799	2,500,800	3,444,348	11,262,805	7,162	5,367	11,275,334
Sep-17	0	0	0	0	0	0	0	0	0	0	2,495,274	2,542,443	70,183	2,560,041	2,372,214	10,040,155	46,929	21,638	10,108,722
Oct-17	0	0	0	0	0	0	0	0	0	0	2,494,337	2,526,433	91,656	2,635,552	1,869,299	9,617,277	8,848	3,445	9,629,570
Nov-17	0	0	0	0	0	0	0	0	0	0	2,191,916	2,395,773	138,827	1,814,251	1,740,311	8,281,078	5,893	0	8,286,971
Dec-17	0	0	0	0	0	0	0	0	0	0	2,287,131	2,532,652	131,564	1,244,038	2,855,838	9,051,223	6,390	0	9,057,613
TOTALS	0	0	0	0	0	0	0	0	0	0	23,797,665	30,212,599	1,290,253	25,468,405	32,731,505	113,500,427	75,222	30,450	113,575,649

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.
--CW-8 pumping was discontinued in November 2013. The extraction well was abandoned in early 2016.
--Miscellaneous GW Treatment includes treated water from SPBA investigation stored in a frac tank and direct discharge from SPBA area wells.

APPENDIX A

Data Tables

Table A-1.
Groundwater Data Summary - CW-2017
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	MSC UA R (ug/L)	MSC UA NR (ug/L)	Federal MCL (ug/L)	EPA RSL Tap Water (ug/L)	CW-9 7/6/2017	Qual	CW-9 10/24/2017	Qual	CW-13 7/6/2017	Qual	CW-13 10/24/2017	Qual	CW-15A 7/6/2017	Qual	CW-15A 10/24/2017	Qual	CW-17 7/6/2017	Qual	CW-17 10/24/2017	Qual	CW-20 7/6/2017	Qual	CW-20 10/24/2017	Qual
1,1,1,2-Tetrachloroethane	70	70		0.57	4.9	U	10	U	4.9	U	1	U	4.9	U	250	U	4.9	U	2	U	0.49	U	25	U
1,1,1-Trichloroethane	200	200	200	8000	18		12	H	7	J	12		3800		4000		3.4	J	3.9		53		39	H
1,1,2,2-Tetrachloroethane	0.84	4.3		0.076	3.7	U	10	U	3.7	U	1	U	3.7	U	250	U	3.7	U	2	U	0.37	U	25	U
1,1,2-Trichloroethane	5	5	5	0.28	3.1	U	10	U	3.1	U	1	U	3.1	U	250	U	3.1	U	2	U	0.31	U	25	U
1,1-Dichloroethane	31	160		2.8	3.4	U	2.5	H	3.4	U	4.8		3.4		250	U	3.4	U	3.2		13		11	H
1,1-Dichloroethene	7	7	7	280	3.2	U	10	U	5.6	J	8.4		770	J	760		3.2	U	3.1		18		25	U
1,2-Dibromoethane	0.05	0.05	0.05	0.0075	5.1	U	10	U	5.1	U F1	1	U	5.1	U	250	U	5.1	U	2	U	0.51	U	25	U
1,2-Dichloroethane	5	5	5	0.17	2.4	U	10	U	2.4	U	1	U	3.7	J	250	U	2.4	U	2	U	0.24	U	25	U
1,2-Dichloropropane	5	5	5	0.44	3.5	U	10	U	3.5	U F1 *	1	U	3.5	U *	250	U	3.5	U *	2	U	0.35	U	25	U
1,4-Dioxane	6.4	32		0.46	160	U ^c	2000	U	160	U ^c	200	U	160	U ^c	36		160	U ^c	400	U	16	U	5000	U
2-Butanone	4000	4000		5600	26	U	50	U ^c	26	U	5	U	26	U	1300	U ^c	26	U	10	U ^c	2.6	U	130	U ^c
2-Hexanone	63	260		38	20	U	50	U	20	U	5	U	20	U	1300	U	20	U	10	U	2	U	130	U
4-Methyl-2-Pentanone	3300	9300		6300	22	U	50	U	22	U	5	U	22	U	1300	U	22	U	10	U	2.2	U	130	U
Acetone	38000	110000		14000	31	U	50	U ^c	31	U ^c	5	U ^c	31	U ^c	1300	U ^c	31	U ^c	10	U ^c	3.1	U	130	U ^c
Acrylonitrile	0.72	3.7		0.052	33	U	200	U ^c	33	U	20	U	33	U	5000	U ^c	33	U	40	U ^c	3.3	U	500	U ^c
Benzene	5	5	5	0.46	1.8	U	10	U	1.8	U F1	1	U	1.8	U	250	U	1.8	U	2	U	0.18	U	25	U
Bromochloromethane	90	90		83	3.6	U	10	U	3.6	U	1	U	3.6	U	250	U	3.6	U	2	U	0.36	U	25	U
Bromodichloromethane	80	80		0.13	5.7	U	10	U	5.7	U	1	U	5.7	U	250	U	5.7	U	2	U	0.57	U	25	U
Bromoform	80	80		3.3	7.6	U	10	U	7.6	U	1	U	7.6	U	250	U	7.6	U	2	U	0.76	U	25	U
Bromomethane	10	10		7.5	5.9	U	10	U	5.9	U ^c	1	U	5.9	U ^c	250	U	5.9	U ^c	2	U	0.59	U	25	U
Carbon Disulfide	1500	6200		810	5.3	U	10	U	5.3	U	1	U	5.3	U	250	U	5.3	U	2	U	0.53	U ^c	25	U
Carbon Tetrachloride	5	5	5	0.46	5.6	U	10	U	5.6	U	1	U	5.6	U	250	U	5.6	U	2	U	0.56	U	25	U
Chlorobenzene	100	100	100	78	1.5	U	10	U	1.5	U	1	U	1.5	U	250	U	1.5	U	2	U	0.15	U	25	U
Chlorodibromomethane	80	80		0.87	4.4	U	10	U	4.4	U	1	U	4.4	U	250	U	4.4	U	2	U	0.44	U	25	U
Chloroethane	250	1200		21000	5.8	U	10	U	5.8	U	1	U	5.8	U	250	U	5.8	U	2	U	0.58	U	25	U
Chloroform	80	80		0.22	2.7	U	10	U	2.7	U	1	U	2.7	U	250	U	2.7	U	2	U	0.43	J	25	U
Chloromethane	30	30		190	3.8	U ^c	10	U ^c *	3.8	U F1	1	U ^c	3.8	U	250	U ^c *	3.8	U	2	U ^c *	0.38	U ^c	25	U ^c *
cis-1,2-Dichloroethene	70	70	70	36	44		30		270	F1	350		4000		4400		61		49		110		130	
cis-1,3-Dichloropropene	7.3	34		0.47	3.2	U	10	U	3.2	U ^c	1	U	3.2	U ^c	250	U	3.2	U ^c	2	U	0.32	U	25	U
Ethylbenzene	700	700	700	1.5	2.5	U	10	U	2.5	U F1	1	U	2.5	U	250	U	2.5	U	2	U	0.25	U	25	U
Methyl tert-butyl ether	20	20		14	2	U	10	U	2	U	1	U	2	U	250	U	2	U	2	U	0.2	U	25	U
Methylene chloride	5	5		11	9.4	U	10	U	9.4	U	1	U	9.4	U	250	U	9.4	U	2	U	0.94	U	25	U
Styrene	100	100	100	1200	2.2	U	10	U	2.2	U	1	U	2.2	U	250	U	2.2	U	2	U	0.22	U	25	U
Tetrachloroethene	5	5	5	11	220		280		110	F1	110		920	J	900		30		26		820		890	
Toluene	1000	1000	1000	1100	1.6	U	10	U	1.6	U F1	1	U	1.6	U	250	U	1.6	U	2	U	0.16	U	25	U
trans-1,2-Dichloroethene	100	100	100	360	2	U	10	U	2	U F1	1.8		3.7	J	250	U	2	U	2	U	0.46	J	25	U
trans-1,3-Dichloropropene	7.3	34		0.47	2.2	U	10	U	2.2	U ^c	1	U	2.2	U ^c	250	U	2.2	U ^c	2	U	0.22	U	25	U
Trichloroethene	5	5	5	0.49	80		68		110	F1	130		2900		2700		38		35		430	E	420	
Vinyl Chloride	2	2	2	0.019	1.7	U	10	U ^c	1.7	U F1	2.8		6.7	J	250	U ^c	1.7	U	2	U ^c	0.24	J	25	U ^c
Xylenes (Total)	10000	10000	10000	190	2.7	U	20	U	2.7	U F1	2	U	2.7	U	500	U	2.7	U	4	U	0.27	U	50	U

Total VOC

TABLE A-2

WATER QUALITY ANALYSES

PACKED TOWER AERATOR SAMPLES (January 1, 2017 - December 31, 2017)

Former York Naval Ordnance Plant

1425 Eden Road, York PA 17402

Sample ID Lab ID Sample Date Parameter	Units	Outfall #003 GWTS WW 8796277 1/19/2017 Result	Outfall #003 GWTS WW 8946707 4/19/2017 Result	Outfall #003 GWTS WW 9112285 7/20/2017 Result	Outfall #003 GWTS WW 9284737 10/26/2017 Result
1,1-DICHLOROETHENE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
TETRACHLOROETHENE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
TRICHLOROETHENE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
METHYLENE CHLORIDE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
VINYL CHLORIDE	ug/l	N.D.@0.5	N.D.@0.5	N.D.@0.5	N.D.@0.5
TOTAL VOCs	ug/l	0	0	0	0

Sample ID Lab ID Sample Date Parameter	Units	Influent to #003 GWTS WW 8796276 1/19/2017 Result	Influent to #003 GWTS WW 8946708 4/19/2017 Result	Influent to #003 GWTS WW 9112286 7/20/2017 Result	Influent to #003 GWTS WW 9284736 10/26/2017 Result
1,1,1-TRICHLOROETHANE	ug/l	270	130	140	93
1,1-DICHLOROETHANE	ug/l	8.1	8.1	7.8	6.8
1,1-DICHLOROETHENE	ug/l	49	30	26	23
1,2-DICHLOROETHANE	ug/l	N.D.@1	N.D.@0.2	N.D.@1	N.D.@0.5
CHLOROBENZENE	ug/l	N.D.@1	N.D.@0.2	N.D.@1	N.D.@0.5
CHLOROFORM	ug/l	N.D.@1	0.4 J	N.D.@1	N.D.@0.5
METHYLENE CHLORIDE	ug/l	N.D.@2	N.D.@0.2	N.D.@2	N.D.@0.5
TETRACHLOROETHENE	ug/l	380	390	520	400
TRICHLOROETHENE	ug/l	240	240	270	200
VINYL CHLORIDE	ug/l	1.5 J	1	N.D.@1	1.0 J
CIS 1,2-DICHLOROETHENE	ug/l	330	240	240	200
TRANS 1,2-DICHLOROETHENE	ug/l	N.D.@1	1.0 J	N.D.@1	1.6 J
TOTAL VOCs	ug/l	1277	1039	1204	923

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

2017 Access® Database Summary
Groundwater Treatment Plant Operations

Groundwater Treatment Plant Operations

From: 1/1/2017
To: 12/31/2017

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
1/1/2017	1	23.90	1	23.90	233176	0	0.00	1	23.90	1417	6.9	0		
1/2/2017	1	23.90	1	23.90	235570	0	0.00	1	23.90	1601	6.9	0		
1/3/2017	1	23.90	1	23.90	237372	0	0.00	1	23.90	1591	7.0	0		
1/4/2017	1	23.90	1	23.90	242335	0	0.00	1	23.90	1439	6.9	0		
1/5/2017	1	23.90	1	23.90	247369	0	0.00	1	23.90	1670	6.9	0		
1/6/2017	2	22.80	2	22.80	236287	7	6.60	10	15.90	1569	6.8	0		
1/7/2017	1	23.90	1	23.90	249116	27	21.60	1	0.20	1651	6.8	0		
1/8/2017	1	23.90	1	23.90	249264	25	22.00	0	0.00	1721	6.8	0		
1/9/2017	2	22.50	2	22.50	232727	13	14.60	4	7.10	1649	6.9	0		
1/10/2017	1	23.90	1	23.90	247969	24	12.00	6	10.30	1686	6.9	0		
1/11/2017	1	23.90	1	23.90	247422	27	11.50	5	10.50	1472	6.9	0		
1/12/2017	1	23.90	1	23.90	247624	22	10.70	3	12.00	1290	6.9	0		
1/13/2017	1	23.90	1	23.90	247813	25	10.30	5	12.00	1354	6.9	0		
1/14/2017	1	23.90	1	23.90	248054	25	11.30	5	10.90	1650	6.9	0		
1/15/2017	1	23.90	1	23.90	248290	27	12.00	4	10.20	1608	6.9	0		
1/16/2017	1	23.90	1	23.90	248253	25	11.30	7	10.70	1602	6.9	0		
1/17/2017	1	23.90	1	23.90	247737	26	10.10	6	12.00	1505	6.9	0		
1/18/2017	1	23.90	1	23.90	247517	24	10.40	9	11.50	1409	6.9	0		
1/19/2017	1	23.90	1	23.90	247685	25	12.00	10	9.90	1378	6.9	0		
1/20/2017	1	23.90	1	23.90	246715	27	11.20	8	10.50	1540	6.9	0		
1/21/2017	1	23.90	1	23.90	247989	23	10.10	9	12.00	1333	6.9	0		
1/22/2017	1	23.90	1	23.90	246548	24	10.50	10	11.30	1325	6.9	0		
1/23/2017	1	23.90	1	23.90	246519	27	12.00	10	9.70	1519	6.9	0		
1/24/2017	1	23.90	1	23.90	248602	25	11.20	7	10.80	1490	6.9	0		
1/25/2017	1	23.90	1	23.90	251088	21	10.50	5	12.00	1312	6.9	0		
1/26/2017	1	23.90	1	23.90	252826	21	10.60	4	12.00	1331	6.9	0		
1/27/2017	2	22.70	2	22.60	239257	21	11.50	3	9.70	1439	6.9	0		
1/28/2017	1	23.90	1	23.90	253743	21	12.00	4	10.60	1563	6.8	0		
1/29/2017	1	23.90	1	23.90	253730	20	11.10	3	11.50	1535	6.9	0		
1/30/2017	1	23.90	1	23.90	253829	20	10.80	3	12.00	1591	6.8	0		
1/31/2017	1	23.90	1	23.90	252555	21	10.40	6	12.00	1486	6.8	0		
2/1/2017	1	23.90	1	23.90	197891	40	8.60	32	8.00	1231	6.9	0		
2/2/2017	1	23.90	1	23.90	179630	42	10.80	20	8.30	1374	6.9	0		
2/3/2017	1	23.90	1	23.90	179215	33	8.10	29	11.60	1527	6.9	0		
2/4/2017	1	23.90	1	23.90	179238	45	9.90	26	9.00	1449	6.9	0		
2/5/2017	1	23.90	1	23.90	179238	45	9.90	27	9.00	1449	6.9	0		
2/6/2017	1	23.90	1	23.90	178786	41	8.70	33	9.90	1255	6.9	0		
2/7/2017	1	23.90	1	23.90	177565	48	10.80	24	8.00	1159	6.9	0		
2/8/2017	1	23.90	1	23.90	175654	41	8.30	33	10.40	1121	6.9	0		
2/9/2017	1	23.90	1	23.90	175747	45	8.60	35	9.50	1487	6.9	0		
2/10/2017	1	23.90	1	23.90	177650	48	10.50	27	8.00	1545	6.9	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
2/11/2017	1	23.90	1	23.90	178610	37	8.80	33	10.30	1298	6.9	0		
2/12/2017	1	23.90	1	23.90	177972	40	9.10	34	9.60	1302	6.9	0		
2/13/2017	1	23.90	1	23.90	178074	49	10.40	28	8.00	1529	6.9	0		
2/14/2017	1	23.90	1	23.90	177613	38	8.30	35	10.40	1406	6.9	0		
2/15/2017	1	23.90	1	23.90	176708	43	9.30	30	9.50	1402	6.9	0		
2/16/2017	1	23.90	1	23.90	177831	50	10.40	27	8.00	1526	6.9	0		
2/17/2017	1	23.90	1	23.90	176207	37	8.10	36	10.60	1404	6.9	0		
2/18/2017	1	23.90	1	23.90	175543	42	9.40	30	9.30	1266	6.9	0		
2/19/2017	1	23.90	1	23.90	174277	48	10.40	28	8.00	1115	6.9	0		
2/20/2017	1	23.90	1	23.90	172616	40	8.00	36	10.30	1120	6.9	0		
2/21/2017	1	23.90	1	23.90	172291	43	9.00	31	9.50	1245	6.9	0		
2/22/2017	1	23.90	1	23.90	172283	48	10.70	24	8.00	1140	6.9	0		
2/23/2017	1	23.90	1	23.90	212942	27	9.40	14	12.00	1203	6.9	0		
2/24/2017	1	23.90	1	23.90	240548	23	10.60	9	11.30	1245	6.9	0		
2/25/2017	1	23.90	1	23.90	230615	31	12.00	11	9.00	1234	6.9	0		
2/26/2017	1	23.90	1	23.90	231387	31	8.80	20	11.50	1507	6.9	0		
2/27/2017	1	23.90	1	23.90	231138	36	11.10	16	9.20	1436	6.9	0		
2/28/2017	1	23.90	1	23.90	230891	28	10.70	11	10.70	1310	6.9	0		
3/1/2017	1	23.90	1	23.90	230785	25	10.10	7	12.00	1254	6.9	0		
3/2/2017	2	13.30	2	13.30	128438	11	7.00	7	5.10	855	6.9	0		
3/3/2017	2	14.30	2	14.20	138224	7	7.10	2	6.80	1150	6.9	0		
3/4/2017	1	23.90	1	23.90	232882	21	10.80	3	12.00	1652	6.9	0		
3/5/2017	1	23.90	1	23.90	232369	21	10.70	3	12.00	1650	6.9	0		
3/6/2017	2	21.60	2	21.50	205319	22	11.20	7	8.40	1325	6.9	0		
3/7/2017	2	17.00	2	17.00	164024	11	8.00	4	8.20	968	6.9	0		
3/8/2017	2	19.30	2	19.20	185846	7	8.00	4	10.80	1061	6.9	0		
3/9/2017	1	23.90	1	23.90	232097	22	12.00	4	10.60	1270	6.9	0		
3/10/2017	1	23.90	1	23.90	234410	26	12.00	6	10.10	1553	6.9	0		
3/11/2017	1	23.90	1	23.90	234954	28	9.40	18	11.50	1680	6.9	0		
3/12/2017	1	23.90	1	23.90	234954	28	9.40	18	11.50	1680	6.9	0		
3/13/2017	2	20.20	2	20.10	230381	12	8.30	8	10.70	1510	6.9	0		
3/14/2017	1	23.90	1	23.90	303424	16	11.60	3	11.20	1761	6.9	0		
3/15/2017	1	23.90	1	23.90	303778	15	12.00	4	10.90	1816	6.9	0		
3/16/2017	1	23.90	1	23.90	304551	12	12.00	4	11.20	1761	6.9	0		
3/17/2017	1	23.90	1	23.90	304454	12	12.00	4	11.20	1599	6.9	0		
3/18/2017	1	23.90	1	23.90	303985	12	11.80	3	11.30	1618	6.9	0		
3/19/2017	1	23.90	1	23.90	305880	11	11.30	3	12.00	1543	6.9	0		
3/20/2017	1	23.90	1	23.90	312076	10	11.40	3	12.00	1498	6.9	0		
3/21/2017	1	23.90	1	23.90	315326	12	11.20	3	12.00	1383	6.9	0		
3/22/2017	1	23.90	1	23.90	317573	13	11.10	3	12.00	1520	6.9	0		
3/23/2017	1	23.90	1	23.90	315580	16	10.80	3	12.00	1596	6.9	0		
3/24/2017	1	23.90	1	23.90	321849	9	11.80	3	11.60	1545	6.9	0		
3/25/2017	1	23.90	1	23.90	320822	9	12.00	4	11.40	1354	6.9	0		
3/26/2017	1	23.90	1	23.90	320457	9	12.00	4	11.40	1403	6.9	0		
3/27/2017	1	23.90	1	23.90	320262	9	12.00	4	11.40	1389	6.9	0		
3/28/2017	1	23.90	1	23.90	317054	12	12.00	4	11.00	1372	6.9	0		
3/29/2017	1	23.90	1	23.90	317885	12	12.00	4	11.10	1370	6.9	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
3/30/2017	1	23.90	1	23.90	316504	13	11.50	3	11.50	1439	6.9	0		
3/31/2017	1	23.90	1	23.90	315651	13	11.10	3	12.00	1542	6.9	0		
4/1/2017	1	23.90	1	23.90	318865	10	11.40	3	12.00	1419	6.9	0		
4/2/2017	1	23.90	1	23.90	327575	5	11.80	3	12.00	1418	6.9	0		
4/3/2017	1	23.90	1	23.90	330219	4	11.90	3	12.00	1373	6.9	0		
4/4/2017	1	23.90	1	23.90	328953	5	11.80	3	12.00	1329	6.9	0		
4/5/2017	1	23.90	1	23.90	327874	5	11.80	3	12.00	1337	6.9	0		
4/6/2017	1	23.90	1	23.90	327866	7	11.70	3	12.00	1396	6.9	0		
4/7/2017	1	23.90	1	23.90	332077	5	11.80	3	12.00	1440	6.9	0		
4/8/2017	1	23.90	1	23.90	335604	4	11.90	3	12.00	1462	6.9	0		
4/9/2017	1	23.90	1	23.90	335267	4	11.90	3	12.00	1428	6.9	0		
4/10/2017	1	23.90	1	23.90	335336	4	11.90	3	12.00	1342	6.9	0		
4/11/2017	1	23.90	1	23.90	332296	7	11.60	3	12.00	1319	6.9	0		
4/12/2017	1	23.90	1	23.90	319839	18	10.60	3	11.70	1310	6.9	0		
4/13/2017	1	23.90	1	23.90	320037	18	12.00	4	10.50	1348	6.9	0		
4/14/2017	1	23.90	1	23.90	319766	17	12.00	4	10.60	1353	6.9	0		
4/15/2017	1	23.90	1	23.90	319089	15	11.70	3	11.00	1337	6.9	0		
4/16/2017	1	23.90	1	23.90	318586	14	11.00	3	12.00	1326	6.9	0		
4/17/2017	1	23.90	1	23.90	318682	12	11.20	3	12.00	1312	6.9	0		
4/18/2017	1	23.90	1	23.90	317632	13	11.10	3	12.00	1337	6.9	0		
4/19/2017	1	23.90	1	23.90	317134	13	11.10	3	12.00	1354	6.9	0		
4/20/2017	2	17.90	2	17.90	236758	6	9.50	3	8.00	1010	6.9	0		
4/21/2017	1	23.90	1	23.90	314033	11	11.30	3	12.00	1298	6.9	0		
4/22/2017	1	23.90	1	23.90	313526	16	10.80	3	12.00	1310	6.9	0		
4/23/2017	1	23.90	1	23.90	313645	18	11.70	3	10.80	1322	6.9	0		
4/24/2017	1	23.90	1	23.90	310871	20	12.00	4	10.30	1325	6.9	0		
4/25/2017	1	23.90	1	23.90	310710	16	12.00	4	10.70	1328	6.9	0		
4/26/2017	1	23.90	1	23.90	310883	14	11.00	3	11.90	1313	6.9	0		
4/27/2017	1	23.90	1	23.90	311237	15	11.00	3	12.00	1327	6.9	0		
4/28/2017	1	23.90	1	23.90	310140	15	11.00	3	12.00	1300	6.9	0		
4/29/2017	1	23.90	1	23.90	305656	16	10.80	4	11.80	1295	6.9	0		
4/30/2017	1	23.90	1	23.90	304551	18	12.00	4	10.60	1305	6.9	0		
5/1/2017	1	23.90	1	23.90	266278	31	9.60	21	9.50	1166	6.9	0		
5/2/2017	1	23.90	1	23.90	249247	24	10.30	17	10.60	1114	6.9	0		
5/3/2017	1	23.90	1	23.90	328867	10	12.00	6	11.20	1300	6.9	0		
5/4/2017	1	23.90	1	23.90	372046	3	12.00	4	11.90	1396	6.9	0		
5/5/2017	1	23.90	1	23.90	366770	3	12.00	4	11.90	1370	6.9	0		
5/6/2017	1	23.90	1	23.90	367291	3	12.00	4	11.90	1380	6.9	0		
5/7/2017	1	23.90	1	23.90	367262	3	12.00	4	11.90	1397	6.9	0		
5/8/2017	1	23.90	1	23.90	375254	3	12.00	4	11.90	1435	6.9	0		
5/9/2017	1	23.90	1	23.90	376413	3	12.00	4	11.90	1400	6.9	0		
5/10/2017	1	23.90	1	23.90	380022	3	12.00	4	11.90	1385	6.9	0		
5/11/2017	1	23.90	1	23.90	381676	3	12.00	4	11.90	1414	6.9	0		
5/12/2017	1	23.90	1	23.90	381792	3	12.00	4	11.90	1410	6.9	0		
5/13/2017	1	23.90	1	23.90	382864	3	12.00	4	11.90	1434	6.9	0		
5/14/2017	1	23.90	1	23.90	383464	3	12.00	4	11.90	1419	6.9	0		
5/15/2017	1	23.90	1	23.90	385472	3	12.00	4	11.90	1388	6.9	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
5/16/2017	1	23.90	1	23.90	384633	3	12.00	4	11.90	1379	6.9	0		
5/17/2017	1	23.90	1	23.90	384587	3	12.00	4	11.90	1391	6.9	0		
5/18/2017	1	23.90	1	23.90	385595	3	12.00	4	11.90	1379	6.9	0		
5/19/2017	1	23.90	1	23.90	386356	3	12.00	4	11.90	1375	6.9	0		
5/20/2017	1	23.90	1	23.90	386236	3	12.00	4	11.90	1394	6.9	0		
5/21/2017	1	23.90	1	23.90	385365	3	12.00	4	11.90	1396	6.9	0		
5/22/2017	1	23.90	1	23.90	385286	3	12.00	4	11.90	1380	6.9	0		
5/23/2017	1	23.90	1	23.90	385401	3	12.00	4	11.90	1381	6.9	0		
5/24/2017	1	23.90	1	23.90	384837	3	12.00	4	11.90	1379	7.0	0		
5/25/2017	1	23.90	1	23.90	384766	3	12.00	4	11.90	1373	7.0	0		
5/26/2017	1	23.90	1	23.90	384681	3	12.00	4	11.90	1368	7.0	0		
5/27/2017	1	23.90	1	23.90	384792	3	12.00	4	11.90	1372	6.9	0		
5/28/2017	1	23.90	1	23.90	384072	3	12.00	4	11.90	1371	6.9	0		
5/29/2017	1	23.90	1	23.90	383309	3	12.00	4	11.90	1379	7.0	0		
5/30/2017	1	23.90	1	23.90	382982	3	12.00	4	11.90	1402	7.0	0		
5/31/2017	1	23.90	1	23.90	383013	3	12.00	4	11.90	1362	7.0	0		
6/1/2017	1	23.90	1	23.90	382658	3	12.00	4	11.90	1395	7.0	0		
6/2/2017	1	23.90	1	23.90	382356	3	12.00	4	11.90	1378	7.0	0		
6/3/2017	1	23.90	1	23.90	382063	3	12.00	4	11.90	1379	7.0	0		
6/4/2017	1	23.90	1	23.90	381962	3	12.00	4	11.90	1380	7.0	0		
6/5/2017	1	23.90	1	23.90	381542	3	12.00	4	11.90	1357	6.9	0		
6/6/2017	1	23.90	1	23.90	376806	3	12.00	4	11.90	1340	7.0	0		
6/7/2017	1	23.90	1	23.90	376333	3	12.00	4	11.90	1368	6.9	0		
6/8/2017	1	23.90	1	23.90	379434	3	12.00	4	11.90	1386	6.9	0		
6/9/2017	1	23.90	1	23.90	380557	3	12.00	4	11.90	1395	7.0	0		
6/10/2017	1	23.90	1	23.90	380361	3	12.00	4	11.90	1374	7.0	0		
6/11/2017	1	23.90	1	23.90	380662	3	12.00	4	11.90	1371	7.0	0		
6/12/2017	1	23.90	1	23.90	380927	3	12.00	4	11.90	1364	7.0	0		
6/13/2017	1	23.90	1	23.90	379405	3	12.00	4	11.90	1361	7.0	0		
6/14/2017	1	23.90	1	23.90	379572	3	12.00	4	11.90	1389	7.0	0		
6/15/2017	1	23.90	1	23.90	380951	3	12.00	4	11.90	1390	7.0	0		
6/16/2017	1	23.90	1	23.90	381278	3	12.00	4	11.90	1383	7.0	0		
6/17/2017	1	23.90	1	23.90	382148	3	12.00	4	11.90	1383	6.9	0		
6/18/2017	1	23.90	1	23.90	380405	3	12.00	4	11.90	1377	6.9	0		
6/19/2017	1	23.90	1	23.90	379784	3	12.00	4	11.90	1382	7.0	0		
6/20/2017	1	23.90	1	23.90	380132	3	12.00	4	11.90	1383	7.0	0		
6/21/2017	1	23.90	1	23.90	379780	3	12.00	4	11.90	1372	6.9	0		
6/22/2017	1	23.90	1	23.90	379112	3	12.00	4	11.90	1371	7.0	0		
6/23/2017	1	23.90	1	23.90	378777	3	12.00	4	11.90	1370	7.0	0		
6/24/2017	1	23.90	1	23.90	380072	3	12.00	4	11.90	1382	7.0	0		
6/25/2017	1	23.90	1	23.90	381290	3	12.00	4	11.90	1388	7.0	0		
6/26/2017	1	23.90	1	23.90	380689	3	12.00	4	11.90	1389	7.0	0		
6/27/2017	1	23.90	1	23.90	380962	3	12.00	4	11.90	1381	6.9	0		
6/28/2017	2	4.60	2	4.50	71485	2	2.20	1	2.00	294	6.9	0		
6/29/2017	1	23.90	1	23.90	381813	4	11.90	3	12.00	1380	6.9	0		
6/30/2017	1	23.90	1	23.90	380081	4	11.90	3	12.00	1373	7.0	0		
7/1/2017	1	23.90	1	23.90	379777	4	11.90	3	12.00	1375	6.9	0		

DATE	Tower Blower		Tower Pump		Discharge	Effluent P1		Effluent P2				De-Water	SVE Blower	
	Cycles	Hours	Cycles	Hours	Flow	Cycles	Hours	Cycles	Hours	KWH	pH	Flow	Cycles	Hours
7/2/2017	1	23.90	1	23.90	379541	4	11.90	3	12.00	1374	7.0	0		
7/3/2017	1	23.90	1	23.90	379607	4	11.90	3	12.00	1375	7.0	0		
7/4/2017	1	23.90	1	23.90	380670	4	11.90	3	12.00	1387	7.0	0		
7/5/2017	1	23.90	1	23.90	380075	4	11.90	3	12.00	1388	7.0	0		
7/6/2017	1	23.90	1	23.90	379038	4	11.90	3	12.00	1372	6.9	0		
7/7/2017	1	23.90	1	23.90	378386	4	11.90	3	12.00	1366	7.0	0		
7/8/2017	1	23.90	1	23.90	378609	4	11.90	3	12.00	1372	7.0	0		
7/9/2017	1	23.90	1	23.90	378463	4	11.90	3	12.00	1378	7.0	0		
7/10/2017	1	23.90	1	23.90	377993	4	11.90	3	12.00	1369	6.9	0		
7/11/2017	1	23.90	1	23.90	377257	4	11.90	3	12.00	1369	6.9	0		
7/12/2017	1	23.90	1	23.90	376893	4	11.90	3	12.00	1369	6.9	0		
7/13/2017	1	23.90	1	23.90	376483	4	11.90	3	12.00	1361	6.9	0		
7/14/2017	1	23.90	1	23.90	376003	4	11.90	3	12.00	1368	6.9	0		
7/15/2017	1	23.90	1	23.90	376383	4	11.90	3	12.00	1366	7.0	0		
7/16/2017	1	23.90	1	23.90	375561	4	11.90	3	12.00	1374	6.9	0		
7/17/2017	1	23.90	1	23.90	375885	4	11.90	3	12.00	1371	6.9	0		
7/18/2017	1	23.90	1	23.90	377191	4	11.90	3	12.00	1374	6.9	0		
7/19/2017	1	23.90	1	23.90	377315	4	11.90	3	12.00	1374	6.9	0		
7/20/2017	1	23.90	1	23.90	377811	4	11.90	3	12.00	1371	7.0	0		
7/21/2017	1	23.90	1	23.90	377853	4	11.90	3	12.00	1372	7.0	0		
7/22/2017	1	23.90	1	23.90	376325	4	11.90	3	12.00	1377	7.0	0		
7/23/2017	1	23.90	1	23.90	375282	4	11.90	3	12.00	1376	6.9	0		
7/24/2017	1	23.90	1	23.90	376842	4	11.90	3	12.00	1377	7.0	0		
7/25/2017	2	16.10	2	16.00	253791	4	7.90	2	8.00	964	6.9	0		
7/26/2017	2	23.30	2	23.20	368416	5	11.00	3	12.00	1351	6.7	0		
7/27/2017	1	23.90	1	23.90	379529	4	11.90	3	12.00	1371	6.7	0		
7/28/2017	1	23.90	1	23.90	382951	4	11.90	3	12.00	1371	6.7	0		
7/29/2017	1	23.90	1	23.90	384890	4	11.90	3	12.00	1382	6.7	0		
7/30/2017	1	23.90	1	23.90	384489	4	11.90	3	12.00	1389	6.7	0		
7/31/2017	1	23.90	1	23.90	384865	4	11.90	3	12.00	1378	6.7	0		
8/1/2017	1	23.90	1	23.90	384046	4	11.90	3	12.00	1383	6.7	0		
8/2/2017	1	23.90	1	23.90	381634	4	11.90	3	12.00	1379	6.7	0		
8/3/2017	1	23.90	1	23.90	379975	4	11.90	3	12.00	1389	6.8	0		
8/4/2017	1	23.90	1	23.90	380504	4	11.90	3	12.00	1380	6.8	0		
8/5/2017	1	23.90	1	23.90	378842	4	11.90	3	12.00	1384	6.7	0		
8/6/2017	1	23.90	1	23.90	378887	4	11.90	3	12.00	1382	6.7	0		
8/7/2017	1	23.90	1	23.90	378298	4	11.90	3	12.00	1369	6.7	0		
8/8/2017	1	23.90	1	23.90	377712	4	11.90	3	12.00	1365	6.8	0		
8/9/2017	1	23.90	1	23.90	378042	4	11.90	3	12.00	1374	6.7	0		
8/10/2017	1	23.90	1	23.90	378030	4	11.90	3	12.00	1376	6.7	0		
8/11/2017	1	23.90	1	23.90	376470	4	11.90	3	12.00	1362	6.8	0		
8/12/2017	1	23.90	1	23.90	375516	4	11.90	3	12.00	1361	6.8	0		
8/13/2017	1	23.90	1	23.90	375554	4	11.90	3	12.00	1373	6.7	0		
8/14/2017	1	23.90	1	23.90	370635	4	11.90	3	12.00	1354	6.7	0		
8/15/2017	1	23.90	1	23.90	376906	4	11.90	3	12.00	1360	6.7	0		
8/16/2017	1	23.90	1	23.90	373592		11.90	3	12.00	1356	6.7	0		
8/17/2017	1	23.90	1	23.90	370277	4	11.90	3	12.00	1352	6.8	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
8/18/2017	1	23.90	1	23.90	365521	4	11.90	3	12.00	1341	6.7	0		
8/19/2017	1	23.90	1	23.90	337733	11	10.70	10	10.60	1288	6.8	0		
8/20/2017	1	23.90	1	23.90	269741	11	12.00	6	11.10	1155	6.8	0		
8/21/2017	1	23.90	1	23.90	325403	4	12.00	4	11.90	1264	6.7	0		
8/22/2017	1	23.90	1	23.90	355146	3	12.00	4	11.90	1312	6.7	0		
8/23/2017	1	23.90	1	23.90	357565	3	12.00	4	11.90	1342	6.7	0		
8/24/2017	1	23.90	1	23.90	358964	3	12.00	4	11.90	1359	6.7	0		
8/25/2017	1	23.90	1	23.90	355632	3	12.00	4	11.90	1347	6.7	0		
8/26/2017	1	23.90	1	23.90	354486	3	12.00	4	11.90	1346	6.7	0		
8/27/2017	1	23.90	1	23.90	354129	3	12.00	4	11.90	1340	6.7	0		
8/28/2017	1	23.90	1	23.90	353572	3	12.00	4	11.90	1345	6.7	0		
8/29/2017	1	23.90	1	23.90	353662	3	12.00	4	11.90	1341	6.7	0		
8/30/2017	1	23.90	1	23.90	351806	3	12.00	4	11.90	1340	6.7	0		
8/31/2017	1	23.90	1	23.90	350206	3	12.00	4	11.90	1342	6.7	0		
9/1/2017	1	23.90	1	23.90	345537	5	12.00	4	11.70	1345	6.7	0		
9/2/2017	1	23.90	1	23.90	347741	4	12.00	4	11.80	1344	6.7	0		
9/3/2017	1	23.90	1	23.90	347158	4	12.00	4	11.80	1333	6.7	0		
9/4/2017	1	23.90	1	23.90	342692	9	12.00	4	11.30	1327	6.7	0		
9/5/2017	1	23.90	1	23.90	353762	7	12.00	4	11.50	1320	6.7	45		
9/6/2017	1	23.90	1	23.90	360587	3	12.00	4	11.90	1333	6.7	51		
9/7/2017	1	23.90	1	23.90	342458	11	11.30	3	11.70	1317	6.7	0		
9/8/2017	1	23.90	1	23.90	338398	8	11.50	3	12.00	1311	6.7	0		
9/9/2017	1	23.90	1	23.90	335427	8	11.50	3	12.00	1314	6.7	0		
9/10/2017	1	23.90	1	23.90	335546	6	11.70	3	12.00	1312	6.7	0		
9/11/2017	1	23.90	1	23.90	332927	7	11.70	3	12.00	1319	6.7	0		
9/12/2017	1	23.90	1	23.90	333575	6	11.70	3	12.00	1310	6.7	0		
9/13/2017	1	23.90	1	23.90	338771	5	11.80	3	12.00	1313	6.7	0		
9/14/2017	1	23.90	1	23.90	332646	9	11.40	3	12.00	1297	6.7	0		
9/15/2017	1	23.90	1	23.90	336299	5	11.80	3	12.00	1304	6.7	0		
9/16/2017	1	23.90	1	23.90	334891	7	11.60	3	12.00	1305	6.7	0		
9/17/2017	1	23.90	1	23.90	333156	7	11.70	3	12.00	1302	6.7	0		
9/18/2017	1	23.90	1	23.90	331729	7	11.70	3	12.00	1305	6.7	0		
9/19/2017	1	23.90	1	23.90	334769	6	11.80	3	12.00	1304	6.7	0		
9/20/2017	1	23.90	1	23.90	335795	5	11.70	3	11.90	1307	6.7	2		
9/21/2017	1	23.90	1	23.90	337078	5	11.90	3	11.80	1319	6.7	3		
9/22/2017	1	23.90	1	23.90	332154	8	12.00	4	11.50	1321	6.7	0		
9/23/2017	1	23.90	1	23.90	328306	6	12.00	4	11.70	1308	6.7	0		
9/24/2017	1	23.90	1	23.90	326226	6	12.00	4	11.70	1303	6.7	0		
9/25/2017	1	23.90	1	23.90	326340	6	12.00	4	11.70	1306	6.7	0		
9/26/2017	1	23.90	1	23.90	328368	4	12.00	4	11.80	1305	6.7	0		
9/27/2017	1	23.90	1	23.90	327610	6	12.00	4	11.70	1306	6.7	0		
9/28/2017	1	23.90	1	23.90	325396	6	12.00	4	11.70	1309	6.7	0		
9/29/2017	1	23.90	1	23.90	321946	8	12.00	4	11.50	1317	6.7	0		
9/30/2017	1	23.90	1	23.90	320545	6	12.00	4	11.70	1327	6.7	0		
10/1/2017	1	23.90	1	23.90	321151	5	12.00	4	11.80	1343	6.7	0		
10/2/2017	1	23.90	1	23.90	320006	6	12.00	4	11.70	1326	6.7	0		
10/3/2017	1	23.90	1	23.90	319842	5	12.00	4	11.80	1316	6.7	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
10/4/2017	1	23.90	1	23.90	323045	6	12.00	4	11.70	1320	6.7	0		
10/5/2017	1	23.90	1	23.90	318653	6	12.00	4	11.70	1308	6.7	0		
10/6/2017	1	23.90	1	23.90	319204	6	11.90	3	11.70	1305	6.7	0		
10/7/2017	1	23.90	1	23.90	315098	6	11.60	3	12.00	1300	6.7	0		
10/8/2017	1	23.90	1	23.90	315549	6	11.80	3	12.00	1293	6.7	0		
10/9/2017	1	23.90	1	23.90	315236	8	11.60	3	12.00	1285	6.7	0		
10/10/2017	1	23.90	1	23.90	313827	7	11.70	3	12.00	1295	6.7	0		
10/11/2017	1	23.90	1	23.90	313521	7	11.70	3	12.00	1295	6.7	0		
10/12/2017	1	23.90	1	23.90	314447	10	11.40	3	12.00	1308	6.7	0		
10/13/2017	1	23.90	1	23.90	313735	6	11.80	3	12.00	1309	6.7	0		
10/14/2017	1	23.90	1	23.90	314243	6	11.70	3	12.00	1302	6.7	0		
10/15/2017	1	23.90	1	23.90	313518	6	11.80	3	12.00	1293	6.7	0		
10/16/2017	1	23.90	1	23.90	313230	7	11.70	3	12.00	1309	6.7	0		
10/17/2017	2	22.80	2	22.70	294823	15	9.70	5	12.10	1280	6.7	0		
10/18/2017	1	23.90	1	23.90	312385	10	11.40	3	12.00	1333	6.7	0		
10/19/2017	1	23.90	1	23.90	314263	8	11.60	3	12.00	1327	6.7	0		
10/20/2017	1	23.90	1	23.90	314663	8	11.60	3	12.00	1316	6.7	0		
10/21/2017	1	23.90	1	23.90	314001	8	11.60	3	12.00	1319	6.7	0		
10/22/2017	1	23.90	1	23.90	313653	8	11.60	3	12.00	1321	6.7	0		
10/23/2017	1	23.90	1	23.90	313801	8	11.60	3	12.00	1327	6.7	0		
10/24/2017	1	23.90	1	23.90	313250	8	11.60	3	11.80	1310	6.7	0		
10/25/2017	1	23.90	1	23.90	311150	9	12.00	4	11.40	1316	6.7	0		
10/26/2017	1	23.90	1	23.90	313732	7	12.00	4	11.60	1355	6.7	0		
10/27/2017	1	23.90	1	23.90	315970	7	12.00	4	11.60	1394	6.7	0		
10/28/2017	1	23.90	1	23.90	315994	9	12.00	4	11.40	1320	6.7	0		
10/29/2017	1	23.90	1	23.90	316782	8	12.00	4	11.50	1309	6.7	29		
10/30/2017	1	23.90	1	23.90	315904	12	12.00	4	11.10	1366	6.7	0		
10/31/2017	5	20.40	5	20.30	258227	8	8.60	5	10.90	1167	6.7	0		
11/1/2017	1	23.90	1	23.90	295724	11	11.40	3	12.00	1390	6.8			
11/2/2017	1	23.90	1	23.90	295343	10	11.80	3	11.50	1317	6.7	0		
11/3/2017	1	23.90	1	23.90	297983	9	12.00	4	11.50	1296	6.7	0		
11/4/2017	1	23.90	1	23.90	299397	9	12.00	4	11.40	1323	6.7	0		
11/5/2017	1	23.90	1	23.90	299435	10	12.00	4	11.30	1319	6.7	0		
11/6/2017	1	23.90	1	23.90	302604	11	12.00	4	11.30	1305	6.7	0		
11/7/2017	2	18.10	2	18.00	231424	5	8.00	4	9.60	1177	6.6	0		
11/8/2017	1	23.90	1	23.90	307668	7	11.90	3	11.60	1510	6.7	0		
11/9/2017	2	17.00	2	16.90	221317	5	8.30	4	8.30	1110	6.7	0		
11/10/2017	1	23.90	1	23.90	256513	15	10.15	5	8.50	1394	6.7	0		
11/11/2017	1	23.90	1	23.90	291708	25	12.00	6	8.80	1677	6.7	0		
11/12/2017	1	23.90	1	23.90	239162	22	9.60	11	11.60	1413	6.7	0		
11/13/2017	1	23.90	1	23.90	273014	7	11.70	3	12.00	1500	6.7	0		
11/14/2017	1	23.90	1	23.90	271032	15	11.00	3	12.00	1455	6.7	0		
11/15/2017	1	23.90	1	23.90	264136	23	11.50	5	10.50	1447	6.7	0		
11/16/2017	1	23.90	1	23.90	265348	24	12.00	5	10.10	1339	6.7	0		
11/17/2017	1	23.90	1	23.90	259542	26	10.80	3	11.20	1385	6.7	0		
11/18/2017	1	23.90	1	23.90	263247	15	11.00	3	12.00	1441	6.7	0		
11/19/2017	1	23.90	1	23.90	259262	21	10.50	3	12.00	1343	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
11/20/2017	1	23.90	1	23.90	261246	24	11.50	3	10.70	1522	6.7	0		
11/21/2017	1	23.90	1	23.90	262938	21	12.00	4	10.50	1465	6.7	0		
11/22/2017	1	23.90	1	23.90	265337	21	11.80	3	10.60	1408	6.7	0		
11/23/2017	1	23.90	1	23.90	266272	22	10.40	3	12.00	1578	6.7	0		
11/24/2017	1	23.90	1	23.90	268397	22	10.50	3	12.00	1476	6.7	0		
11/25/2017	1	23.90	1	23.90	268787	23	11.00	3	11.20	1443	6.7	0		
11/26/2017	1	23.90	1	23.90	271007	25	12.00	5	9.90	1411	6.7	0		
11/27/2017	1	23.90	1	23.90	268582	24	11.50	3	10.60	1479	6.7	0		
11/28/2017	1	23.90	1	23.90	266365	22	10.30	3	12.00	1450	6.7	0		
11/29/2017	1	23.90	1	23.90	264147	22	10.40	3	12.00	1361	6.7	0		
11/30/2017	1	23.90	1	23.90	263153	20	11.60	3	10.90	1454	6.7	0		
12/1/2017	1	23.90	1	23.90	261673	21	12.00	4	10.50	1466	6.7	0		
12/2/2017	1	23.90	1	23.90	260209	22	12.00	3	10.40	1484	6.6	0		
12/3/2017	1	23.90	1	23.90	259719	18	10.60	4	11.90	1488	6.6	0		
12/4/2017	1	23.90	1	23.90	252538	21	10.40	5	12.00	1465	6.7	0		
12/5/2017	1	23.90	1	23.90	250412	20	10.80	3	11.70	1329	6.7	0		
12/6/2017	1	23.90	1	23.90	250305	21	12.00	4	10.50	1441	6.7	0		
12/7/2017	1	23.90	1	23.90	249858	21	12.00	4	10.50	1505	6.7	0		
12/8/2017	1	23.90	1	23.90	250869	20	11.60	3	10.90	1650	6.7	0		
12/9/2017	1	23.90	1	23.90	251344	21	10.60	3	12.00	1661	6.7	0		
12/10/2017	1	23.90	1	23.90	249890	23	10.40	3	12.00	1670	6.7	0		
12/11/2017	1	23.90	1	23.90	249751	21	11.00	4	11.30	1537	6.7	0		
12/12/2017	1	23.90	1	23.90	249739	22	12.00	4	10.50	1588	6.7	0		
12/13/2017	1	23.90	1	23.90	215550	28	9.80	23	10.00	1570	6.6	0		
12/14/2017	1	23.90	1	23.90	203361	27	10.10	13	11.10	1501	6.6	0		
12/15/2017	1	23.90	1	23.90	268221	13	12.00	9	10.70	1669	6.7	0		
12/16/2017	1	23.90	1	23.90	312684	10	12.00	4	11.20	1654	6.7	0		
12/17/2017	1	23.90	1	23.90	310361	15	12.00	4	10.70	1570	6.7	0		
12/18/2017	1	23.90	1	23.90	309565	16	10.70	3	11.90	1491	6.7	0		
12/19/2017	1	23.90	1	23.90	308679	15	10.90	3	12.00	1362	6.7	0		
12/20/2017	1	23.90	1	23.90	309985	14	11.00	3	12.00	1454	6.7	0		
12/21/2017	1	23.90	1	23.90	314999	13	11.10	3	11.80	1628	6.7	0		
12/22/2017	1	23.90	1	23.90	312061	12	12.00	4	11.10	1536	6.7	0		
12/23/2017	1	23.90	1	23.90	313611	9	12.00	4	11.40	1409	6.7	0		
12/24/2017	1	23.90	1	23.90	313512	12	12.00	4	11.10	1634	6.7	0		
12/25/2017	1	23.90	1	23.90	314257	11	12.00	4	11.20	1780	6.7	0		
12/26/2017	1	23.90	1	23.90	313719	12	12.00	4	11.10	1761	6.7	0		
12/27/2017	1	23.90	1	23.90	314107	11	11.30	3	11.80	1772	6.7	0		
12/28/2017	1	23.90	1	23.90	313817	12	11.10	3	12.00	1798	6.7	0		
12/29/2017	1	23.90	1	23.90	313888	11	11.30	3	12.00	1780	6.7	0		
12/30/2017	1	23.90	1	23.90	314003	9	11.50	3	12.00	1773	6.7	0		
12/31/2017	1	23.90	1	23.90	314042	10	11.40	3	12.00	1816	6.7	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	385	8631.10	385	8629.90	112873883	4455	4103.75	2090	4186.00	507387		123		
Max	5	23.90	5	23.90	386356	50	22.00	36	23.90	1816	7.0	51		
Average	1	23.65	1	23.64	309244	12	11.24	6	11.47	1390	6.8	0		

APPENDIX C

2017 Operation and Maintenance Data Summary

Table C-1
2017 OPERATION AND MAINTENANCE DATA SUMMARY
former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

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		1/12/2017	1/19/2017	2/24/2017	2/27/2017	3/8/2017	3/22/2017	4/6/2017	4/19/2017	5/11/2017	5/25/2017	6/8/2017	6/26/2017	7/10/2017	7/20/2017	8/10/2017	8/31/2017	9/7/2017	9/21/2017	10/12/2017	10/26/2017	11/2/2017	11/22/2017	12/5/2017	12/20/2017
PTA INFL. PUMP																									
Full Load = 17	AMPS	NM	8.3	NM	NM	NM	NM	NM	9.70	NM	NM	NM	NM	NM	9.71	NM	NM	NM	NM	NM	9.70	NM	NM	NM	NM
	FLOW RATE gpm	179	191	175	168	163	232	233	234	272	277	283	264	291	266	271	234	235	240	218	222	201	188	183	228
PTA BLOWER																									
Full Load = 24	AMP READINGS	NM	21.44	NM	NM	NM	NM	NM	21.52	NM	NM	NM	NM	NM	21.55	NM	NM	NM	NM	NM	21.35	NM	NM	NM	NM
	PRESSURE inches water	15.1	15.6	14.9	16.0	15.2	15.8	15.3	15.7	15.4	15	15.4	14.9	14.9	14.6	15.2	15.1	14.6	14.8	15.4	15.4	15.4	15.3	15.2	15.6
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	7.73	NM	7.84	NM	7.8	NM	7.83	NM	7.8	NM	7.8	NM	7.85	NM	7.7	NM	7.9	NM	7.8	NM	7.7	NM	7.8	NM
	AST INFLUENT pH	6.39	6.88	6.34	6.87	6.33	6.88	6.32	6.87	6.30	6.9	6.2	6.93	6.21	6.92	6.5	6.71	6.6	6.71	6.4	6.68	6.4	6.65	6.5	6.67
REDUX CHEMICAL INJECTION																									
	LMI PUMP SPEED (%)	35	29	35	30	25	39	39	42	48	48	42	46	46	50	48	48	43	41	40	39	37	33	35	40
	LMI INJECTION RATE (milis/min)	9	9.4	9.4	9	9.3	12.2	12.2	11.1	14.1	14.6	14.1	13.3	14.3	13.9	13.7	13.7	13.8	13.8	12.3	11.6	11.4	9.7	9.7	11.2
WPL WELLS																									
	TOTAL FLOW RATE gpm	168	166	168	158	165	224	321	224	266	271	266	271	263	264	262	238	237	231	218	216	215	188	179	228
CW-9; Full Load = 5.5	AMPS	NM	OL	NM	NM	NM	NM	NM	3.45	NM	NM	NM	NM	NM	3.43	NM	NM	NM	NM	NM	3.53	NM	NM	NM	NM
CW-9	FLOW RATE gpm	OL	OL	OL	OL	OL	60	61.2	60.5	61.2	61	57.4	57.4	57.9	57.5	58.6	58.6	57.3	58.0	57.7	55.6	52.6	51.7	51.3	51.5
CW-9	PRESSURE psi	OL	OL	OL	OL	OL	6	6	6	6	6	6	6	5	5	6	6	6	6	6	6	6	6	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	9.32	NM	NM	NM	NM	NM	15.71	NM	NM	NM	NM	NM	12.11	NM	NM	NM	NM	NM	9.38	NM	NM	NM	NM
CW-13	FLOW RATE gpm	56.0	56.2	58.5	58.6	56.5	59.8	59.2	59.3	58.6	58.5	60.4	59.6	60.0	60.0	58.6	58.6	59.1	60.2	57.7	58.2	58.5	56.6	58.5	56.1
CW-13	PRESSURE psi	82	62	60	60	62	60	60	78	60	79	59	59	58	58	58	58	57	58	58	80	60	60	60	60
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	Y	N	N	N	N	N	N	N	N	N	N
CW-17; Full Load = 11.5	AMPS	NM	8.63	NM	NM	NM	NM	NM	9.02	NM	NM	NM	NM	NM	9.02	NM	NM	NM	NM	NM	9.12	NM	NM	NM	NM
CW-17	FLOW RATE gpm	45.1	45.1	52.1	43.3	43.7	49	59.4	62	57.6	58.3	59.4	58.3	58.3	61.6	59.6	58.5	59.0	59.6	59.0	59.6	58.8	34.1	29.1	27.0
CW-17	PRESSURE psi	67	67	65	70	70	66	60	56	61	60	60	60	60	59	59	59	60	60	56	57	60	72	74	75
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	N	N	N
CW-17	HIGH LEVEL ALARM?	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
CW-15A; Full Load = 1.6	AMPS	NM	1.35	NM	NM	NM	NM	NM	1.39	NM	NM	NM	NM	NM	1.41	NM	NM	NM	NM	NM	1.37	NM	NM	NM	NM
CW-15A	FLOW RATE gpm	2.2	2.7	2.5	2.2	2.3	2.7	3.4	2.9	2.9	2.5	2.4	2.5	2.2	2.8	2.6	2.2	OL	2.2	2.0	2.0	3.0	3.4	3.0	3.0
CW-15A	PRESSURE psi	80	73	78	79	66	58	47	54	70	56	84	76	75	62	60	60	OL	62	58	52	78	47	50	40
CW-15A	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-15A	HIGH LEVEL ALARM?	Y	Y	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	OL	N	N	N	Y	N	N	N
CW-20 Full Load = 17.3	AMPS	NM	12.83	NM	NM	NM	NM	NM	12.13	NM	NM	NM	NM	NM	12.14	NM	NM	NM	NM	NM	12.51	NM	NM	NM	NM
CW-20	FLOW RATE gpm	64.9	64.6	54.7	53	52.9	53.1	48.36	39.9	87.6	92.8	92.2	90.3	88.6	85.8	82.6	64.9	63.4	50.7	41.5	41.4	40.9	41.7	36.5	91.8
CW-20	PRESSURE psi	45	47	54	57	58	55	60	68	25	20	19	20	18	17	19	19	42	55	65	65	76	74	71	40
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?	N	N	N	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	Y
AST influent pressure	inches of water	9.8	10.1	9.7	10.4	10.0	10.4	9.9	10.1	9.7	10.1	9.7	9.2	9.0	9.1	9.4	9.4	8.8	9.1	9.2	9.4	9.4	9.4	10.1	10
GAC influent pressure	inches of water	8.4	8.6	8.2	8.9	8.6	8.9	8.5	8.7	8.3	8.2	8.4	8.0	7.9	7.9	8.1	8.1	7.8	8.0	8.0	8.2	8.3	8.3	8.5	8.5
AST pitot pressure	inches of water	0.27	0.27	0.27	0.3	0.29	0.3	0.27	0.29	0.28	0.26	0.28	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.27	0.3	6.42	0.29	0.29	0.29

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

Table C-1
2017 OPERATION AND MAINTENANCE DATA SUMMARY
former York Naval Ordnance Plant
1425 Eden Road, York PA 17402

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		1/12/2017	1/19/2017	2/24/2017	2/27/2017	3/8/2017	3/22/2017	4/6/2017	4/19/2017	5/11/2017	5/25/2017	6/8/2017	6/26/2017	7/10/2017	7/20/2017	8/10/2017	8/31/2017	9/7/2017	9/21/2017	10/12/2017	10/26/2017	11/2/2017	11/22/2017	12/5/2017	12/20/2017
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 NA - Not Applicable
N - No NM - Not Measured