SECOND FIVE-YEAR REVIEW REPORT FOR METALTEC/AEROSYSTEMS, INC. SUPERFUND SITE SUSSEX COUNTY, NEWJERSEY

Prepared by

U.S. Environmental Protection Agency
Region 2
New York , New York
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Contents

LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
ICs	Institutional Controls
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
ROD	Record of Decision
RPM	Remedial Project Manager
TBC	To be considereds

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the second FYR for the Metaltec/Aerosystems, Inc. Superfund Site (site). The triggering action for this policy review is the September 30, 2014 FYR. The FYR has been prepared due to the fact that the remedial action will not leave hazardous substances, pollutants or contaminants on site above levels that allow for unlimited use and unrestricted exposure, but requires five or more years to complete.

The site consists of two operable units (OUs). Operable unit 1 (OU1) addressed contaminated soils that presented an unacceptable risk and/or a source of contamination to the groundwater. Operable unit 2 (OU2) addressed contaminated groundwater. The OU1 remedy is complete and soils have been remediated to levels that allow for unrestricted use. Therefore, OU1 is not being evaluated in this FYR. The OU2 groundwater restoration remedy is ongoing and is the subject of this FYR.

The Metaltec/Aerosystems, Inc. Superfund site FYR was led by Brian Quinn, Remedial Project Manager (RPM). Participants included Sharissa Singh, hydrogeologist and Charles Nace, ecological and human health risk assessor.

Site Background

Physical Characteristics

The site is located in Franklin Borough, Sussex County on a 15.5 acre property in a rural/residential area. The site lies in a valley drained by a small unnamed stream that flows approximately 2,000 feet to the Wildcat Brook, a tributary of the Walkill River. Franklin Pond lies 3/4 of a mile northeast of the site. The now-closed Franklin Water Supply Well, which served as a secondary water supply source, is about 400 feet east of the property. Approximately 4,000 people live within 3 miles of the site. Local surface water is used for recreation, fishing, and swimming. Wildcat Brook is located approximately 1/4 of a mile northwest of the site in the middle of a broad flood plain. Surface water in the vicinity of the site is classified by the New Jersey Department of Environmental Protection (NJDEP) as fresh-water number two, non-trout (FW2-NT). Streams classified as FW2-NT are not used as potable supplies, nor are they maintained as trout fisheries.

Site Geology/Hydrogeology

The site geology consists of glacial deposits, gneiss, marble, and dolomite. The overburden geology consists of both stratified and unstratified glacial drift, with various mixtures of stiff sandy and silty

clay, and sand and gravel deposits. The thickness of the overburden varies greatly across the site, from 15 feet or less beneath the parking lot area to approximately 100 feet to the north of the site. A three-part aquifer system exists beneath the site, which includes glacial and marsh deposits, fractured granitic gneiss, and fractured dolomite.

Although the marble noted above is lithologically different from the granitic gneiss, it is not considered to be a different aquifer system. The overburden aquifer is variable in composition and includes sands, silts, and gravel beneath the parking lot areas, and clayey silts to the east and northwest. Fractures within the bedrock aquifer are the primary pathways for groundwater flow. Primary fractures in the granitic gneiss bedrock trend in a northeast to southwest direction, following the granitic gneiss/dolomite contact. Secondary fractures in the granitic gneiss trend northwest to southwest.

The plume configuration results from various pumping and geological features: (1) vertical migration of source material in the granitic gneiss hydrostratigraphic unit; (2) horizontal migration due to pumping of nearby residential wells, the former site facility production well, and the Franklin Borough pumping well; and (3) the natural groundwater flow gradient. The source material present in a former waste lagoon leached through the soil and entered the underlying granitic gneiss hydrostratigraphic unit. Chemical and hydrogeological data suggest that source material migrated along the bedrock fracture network and diffused into the lower, dolomite bedrock hydrostratigraphic system.

The migration of dissolved trichloroethene (TCE) concentrations in the groundwater follows the general groundwater flow direction in a north to northwest direction, with bias to the major flow channels. Therefore, the groundwater flow is directed along the highly fractured contact while some of the groundwater also continues flowing into the dolomite hydrostratigraphic unit. Dissolved TCE migrates along two flow paths, moving along the gneiss/dolomite contact and entering the dolomite hydrostratigraphic unit. The gneiss/dolomite contact appears to have been hydraulically controlling the spread of the plume by redirecting a portion of the contaminated groundwater from the granitic gneiss hydrostratigraphic unit along the contact and discharging into the unnamed tributary

Land and Resource Use

The site is the location of a former manufacturing facility that produced a variety of metal products. Currently, the site houses an office building that is mostly unoccupied except for a commercial linen cleaning company. The area surrounding the site is rural and residential.

History of Contamination

In 1980, the NJDEP began sampling the site's wastewater lagoon and surrounding soil as part of a site inspection. Results revealed the presence of volatile organic compounds (VOCs) and heavy metals. These contaminants leached from the lagoon into surrounding groundwater, and upon sampling residential wells, the NJDEP found VOCs at levels above federal standards for drinking water. The Franklin Water Supply Well and contaminated private wells were closed in 1980. Groundwater sampling results indicated that VOCs are present in both the surficial overburden and the underlying bedrock. The site was placed on the EPA National Priorities List (NPL) in September 1983.

From April 1980 through December 1983, remedial response activities undertaken by the property owner and supervised by the NJDEP occurred at the site. Known contaminant sources at the site

included a former unlined wastewater lagoon, a buried pile of green oxidized powder, and a subsurface septic field installed below the parking lot.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Metaltec/Aerosystems, Inc.		
EPA ID: NJD002517472		
Region: 2	**State:** NJ	**City/County:** Franklin Borough, Sussex County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**		
Author name (Federal or State Project Manager): Brian Quinn		
Author affiliation: USEPA		
Review period: 9/30/2014 - 6/26/2019		
Date of site inspection: 5/8/2019		
Type of review: Policy		
Review number: 2		
Triggering action date: 9/30/2014		
Due date *(five years after triggering action date)*: 9/30/2019		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

From June 1984 to May 1986, EPA performed the OU1 remedial investigation/feasibility study (OU1 RI/FS) to delineate the nature and extent of contamination at the site and to develop the remedial alternatives addressing the contamination found within the soils and groundwater. The investigation determined that an estimated 10,000 cubic yards (yd^3) of soil were contaminated with various VOCs in an area referred to as Parcel 1, which included the remaining contamination in a lagoon; in areas referred to as Parcels 2, 3 and 4 an estimated 4,000 yd^3 of soil contaminated with inorganic chemicals and semivolatile organic compounds (SVOCs); both the shallow and bedrock aquifers beneath the site were contaminated with elevated levels of the contaminants found in the soil on the site. A human health risk evaluation was performed as part of the RI, and the results identified high levels of VOCs, including

TCE, tetrachloroethene (PCE), trans-1,2-dichloroethene (trans-1,2-DCE), vinyl chloride, chloroform, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), chromium, zinc, lead, copper and manganese as contaminants of concern in the soil and groundwater. The risk assessment concluded that the potential risks to human health and the environment associated with the source material are direct contact with the contaminated soils and continued migration of contaminants to the groundwater. These results were finalized in the 1986 OU1 RI/FS Report.

The OU2 RI/FS was conducted between 1987 and 1990 to evaluate groundwater, surface water and sediment contamination. The risk assessment concluded that surface water and sediment contamination did not present an unacceptable risk to potential human receptors. Groundwater contamination for potential future users presented an unacceptable risk. The contaminants of concern identified included the same contaminants found to impact soils (referenced above).

Potential impacts associated with contaminants at the site were also evaluated for ecological risk. It was determined that aquatic life in the Wildcat Brook and its tributary were unlikely to be affected by contaminants present at the site.

Response Actions

Remedy Selection

OU1 (Source Area)

The ROD for OU1 was issued by EPA on June 30, 1986.

The remedy selected in the OU1 ROD included: :

- Parcel 1: Excavation, treatment and off-site disposal of VOC contaminated soils;
- Parcels 2, 3 and 4: Excavation and off-site disposal of VOC and metals contaminated soil;
- Preparation of a supplemental remedial investigation and feasibility study to identify the extent of groundwater contamination; and
- Provision of an alternate water supply by construction of a pipeline connection to the Hamburg public water system.

The Remedial Action Objectives were to address the soil contamination present at the site, restore the water resource lost when the Maple Road Municipal Supply Well was shut down in 1980 because of organic contamination, and to concurrently reduce the adverse public health and environmental impacts associated with the high levels of contamination found.

OU2 (Groundwater)

The ROD for OU2 was issued by EPA on September 27, 1990.

The remedy selected in the OU2 ROD includes the following: extraction of contaminated groundwater and restoration of the groundwater to drinking water standards; treatment of extracted groundwater to levels attaining New Jersey surface water discharge limitation requirements; discharge of treated

groundwater to a surface water body; and appropriate environmental monitoring to ensure the effectiveness of the remedy.

The remedial action objective for OU2 is to restore the groundwater to the more stringent of the federal or state maximum contaminant levels (MCLs).

Status of Implementation

OU1 (Source Area)

An alternate water supply pipeline extension was completed in February 1991.

Excavation and off-site disposal of approximately 4,800 yd^3 of contaminated soil from Parcels 2, 3, and 4 was completed in June 1991. The excavations were backfilled with clean fill.

For Parcel 1, approximately 5,600 yd^3 of contaminated soil was excavated and treated. A low temperature volatilization system (LTVS) was mobilized on site to treat VOCs from the excavated soil. Treated soil was sampled prior to off-site disposal to determine compliance with the performance criteria. Construction of the remedy began in December 1994 and was completed in January 1995.

OU2 (Groundwater)

Prior to the start of construction, it was discovered that the planned location for the groundwater treatment building would not comply with local property setback requirements. In addition, after determining a new location, the soil was found to be inadequate to support the treatment building. Because of structurally unsound soil for the building foundation, soil-stabilization efforts were performed to allow the construction of the treatment building to begin. The soil stabilization involved injecting grout to fill soil voids to produce a stable base for the treatment building foundation.

Following the soil stabilization, work began on the foundation and erection of a steel frame for the treatment building. Forcemain piping and associated electrical conduit had previously been installed during the pre-design investigation work for two groundwater extraction wells. A final inspection by EPA and Army Corps of Engineers (COE) was held on February 19, 2009. All equipment had been installed and a clean water test had been performed. Start-up and shake-down work began in January 2009.

System Operations/Operation and Maintenance

OU 1 - No operation and maintenance activities are required for OU1.

OU2 - The groundwater extraction and treatment system became operational on July 9, 2010. Groundwater influent from two extraction wells at a flow rate of approximately 18 gallons per minute is then collected in an equalization tank and then pumped to a flash-mixing tank where caustic soda is added for pH adjustment and to aid in metal removal. The mixture enters a flocculation tank via gravity and a polymer is added. The extracted water, caustic and polymer mixture is then transferred via gravity into a clarifier where solids are removed by settling. The extracted water is pumped from the clarifier to a shallow-tray air stripper to remove VOCs. Particulate filtration units are employed as two units in

parallel, with each capable of treating the maximum process flow rate. This allows maintenance to be performed on one filter unit while the treatment system continues to operate through the other unit. Liquid and vapor phase granular activated carbon (GAC) beds each operate as two adsorber units connected in series.

The groundwater is extracted and sent to an equalization tank, air stripper, and liquid and vapor phase granular activated carbon prior to discharge into the unnamed brook. Analytical results of the effluent samples collected from the groundwater extraction and treatment system indicate that VOCs, SVOCs and metals are either within or below New Jersey Pollution Discharge Elimination System (NJPDES) - Discharge to Surface Water effluent discharge limits.

Monitoring of the groundwater is accomplished by quarterly sampling of 51 monitoring wells. To date approximately more than 391 pounds of VOC mass has been removed from the groundwater since the treatment system was installed.

Potential site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate change in the region and near the site.

Summary Tables

Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	No		Maintaining the State of New Jersey groundwater use restrictions until such time as water quality standards are met	Classification Exception Area, (CEA).

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Protectiveness Determinations/Statements from the 2014 FYR

OU #	Protectiveness Determination	Protectiveness Statement
2	Protective	The remedy for OU2 remedy is protective of human health and the environment.
Sitewide	Protective	The remedies implemented at the site are protective of human health and the environment.

As noted in the previous FYR, one of the monitoring wells on-site has had elevated levels of TCE. Wells have since been installed to determine if a source area was missed leading to the elevated levels in the well with elevated TCE concentrations. Sampling shows that matrix diffusion is the cause of the elevated levels in the well.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On October 1, 2018, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 42 Superfund sites in New York, New Jersey, Puerto Rico and the U.S. Virgin Islands, including the Metaltec/Aerosystems, Inc. site. The announcement can be found at the following web address: https://www.epa.gov/aboutepa/fiscal-year-2019-five-year-reviews.

In addition to this notification, on September 23, 2019 a public notice "*Environmental Protection Agency Reviews Cleanup at Metaltec/Aerosystems, Inc. Superfund Site*" was posted on the Borough of Franklin official webpage. The results of the review and the report will be made available at the Site information repository located at the Sussex County Library Main Library at 125 Morris Turnpike, Newtown, New Jersey 07860 and on the following website: https://www.epa.gov/superfund/metaltec-aerosystems.

Data Review

Overburden Groundwater Monitoring Wells

Sampling of overburden monitoring wells indicates that concentrations of VOCs (TCE, cis-1,2-DCE, and vinyl chloride) generally remain below MCLs. Each year since 2014, VOCs were detected in one or more of the following overburden wells: OB-2, OB-3, OB-4, OB-6, OB-9, and OB-10. However, only TCE concentrations were detected above the current MCL of 1 microgram per liter (µg/L) in wells OB-2, OB-3, OB-4, and OB-10. VOC concentrations in the remaining wells were not detected above MCLs. During this FYR, the periodic fluctuation of VOC concentrations indicates seasonal variability. The maximum concentration of TCE was detected in well OB-3 at 18 micrograms per liter (µg/L) in December 2014.

Overburden monitoring wells were analyzed for 1,4-dioxane during this FYR period. Analytical results indicate that 1,4-dioxane was not detected above the laboratory method detection limit. However, the laboratory method detection limit of 2.0 µg/L slightly exceeds the NJDEP GWQS of 0.4 µg/L. Therefore, it is unknown if overburden wells exceeded the NJDEP GWQS for 1,4-dioxane during this FYR.

Since the previous FYR, chromium, arsenic, and antimony had been detected within overburden wells and piezometer PZ-1 in exceedance of their NJDEP MCLs. These metals may be naturally occurring at the site, although significant chromium contamination existed within on-site soils prior to remediation. The location of well OB-9, which is approximately 2000 feet northeast the groundwater treatment plant (GWTP) and within the overburden above the dolomite unit, is identified as a background sampling location in the 1990 ROD. The most recent sampling results for OB-9 in 2018 indicate that chromium was detected at a concentration of 85 µg/L. Arsenic, antimony, lead, and zinc were not detected above laboratory method detection limits. Manganese was detected at a concentration of 82 µg/L, above the NJDEP MCL of 50 µg/L.

Chromium has been detected in exceedance of its MCL within wells OB-2, OB-3, OB-4, and PZ-1, consistent with the previous FYR. In October 2017, chromium was detected in groundwater at a maximum concentration of 5,700 µg/L in PZ-1. Chromium levels continue to be mainly detected below background levels but is well below MCLs in discharge from the treatment system. Arsenic and antimony are not site

contaminants of concern (COCs), however they were detected above MCLs. In April 2016, arsenic was detected at a maximum concentration of 31 µg/L (OB-10), and in October 2017, antimony was detected at a maximum concentration of 80 µg/L (PZ-1).

Lead, manganese, copper, and zinc were identified in the ROD as site COC's. Lead, copper, and zinc were not detected in overburden wells above MCLs. Manganese has been detected above its MCL in eight overburden wells and PZ-1 since the previous FYR. The maximum observed concentration was 8,360 µg/L (OB-10) in 2014.

Bedrock Groundwater Monitoring Wells

Groundwater sampling results since the last FYR period indicate that the highest concentrations of VOCs exist in bedrock wells BR-4, BR6, BR-14(d)D, BR-16S, and BR-16D. TCE concentrations in these wells ranged from non-detect in wells BR-14(d)D to 1,400 µg/L in well BR-4 in April 2018. VOC concentrations within these wells exhibit seasonal fluctuations. Since the treatment system became operational in 2010, statistical trend analyses indicate that concentrations of TCE are decreasing within wells BR-4, BR-6, and BR-14d(D), probably decreasing in well BR-16D, and exhibiting no trend in well 16-S.

Concentrations of VOCs have consistently been the highest and above MCLs in well BR-4. Since the last FYR, concentrations of TCE have ranged from non-detect (October 2018) to 3,800 µg/L (December 2014). Cis-1,2-DCE concentrations have ranged from non-detect (April 2018) to 6,300 µg/L (December 2014). Vinyl chloride concentrations have ranged from 19.2 µg/L (April 2019) to 710 µg/L (December 2014).

In 2018, an investigation was completed to further characterize the BR-4 well location and determine if the observed highly variable VOC concentrations were a result of contaminants remaining in the soil following the OU1 remediation efforts. The investigation found that the variable concentrations likely result from contamination remaining within the bedrock fracture network and/or matrix material, as opposed to the overlying soil.

Since the previous FYR, chromium, lead, arsenic, and antimony have been detected within bedrock wells and piezometers in exceedance of their NJDEP MCLs. Chromium has been detected in exceedance of its MCL within wells BR-3, BR-6, BR-14(d)D, BR-15, and PZ-5. During this FYR period, chromium was detected in groundwater at a maximum concentration of 5,700 µg/L (PZ-1) in October 2017, lead was detected at a maximum concentration of 20 µg/L (PZ-5) in April 2018, arsenic was detected at a maximum concentration of 35 µg/L (PZ-5) in April 2018, and antimony was detected at a maximum concentration of 80 µg/L (PZ-1) in October 2017. Copper and zinc were not detected in bedrock wells above MCLs. Manganese has been detected above its MCL in ten bedrock wells and 3 piezometers since the previous FYR. The maximum observed concentration was 940 µg/L (PZ-5) in 2015.

Groundwater Treatment System

The groundwater treatment system extracts water from two extraction wells EW-1 and EW-2. EW-1 is located within the granitic gneiss unit, and EW-2 is located at the dolomite/gneiss contact. The combined average flow rate for the system was approximately 18 gallons per minute in 2018-2019, and the average monthly effluent flow totalizer volume was 838,441 gallons. The treatment system removed approximately 391 pounds (lbs) of VOCs from GWTP influent throughout its operational period between

December 2008 and April 2019. Since the last FYR in 2014, the GWTP removed approximately 104.25 lbs of VOCs. The monthly VOC mass removal rate during this period appears to be decreasing.

GWTP influent concentrations of TCE have decreased from a maximum of 320 µg/L during the 2014-2015 reporting period to a maximum of 87.1 µg/L during 2018-2019. GWTP influent concentrations of cis-1,2-DCE have decreased from a maximum of 270 µg/L during the 2014-2015 reporting period to a maximum of 62.4 µg/L during 2018-2019. GWTP influent concentrations of vinyl chloride have decreased from a maximum of 30 µg/L during the 2014-2015 reporting period to a maximum of 6.49 µg/L during 2018-2019. Analytical results of the effluent samples collected from the groundwater extraction and treatment system indicate that VOCs, SVOCs and metals are either within or below NJPDES - Discharge to Surface Water effluent discharge limits.

Site Inspection

The inspection of the site was conducted on May 8, 2019. In attendance were Brian Quinn, EPA RPM, and Charles Nace, EPA Human Health and Ecological Risk Assessor. The purpose of the inspection was to assess the protectiveness of the remedy. During the site visit the attendees toured the treatment plant and walked the site to ensure the remedy is operating as designed. All facilities appeared in good condition and are maintained in accordance with the O&M plans.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

Summary of Data Review

Sampling of overburden monitoring wells indicates that concentrations of VOCs (TCE, cis-1,2-DCE, and vinyl chloride) generally remain below MCLs in overburden wells, with the exception of OB-4, located adjacent to the extraction well EW-1, and OB-3, located on the capture zone boundary.

VOC concentrations remain above the MCLs in the bedrock in the vicinity of the extraction wells and in select downgradient off-site wells. VOC concentrations within the plume generally exhibit seasonal fluctuations with an overall decreasing or stable trend. The bedrock plume does not appear to be expanding. Contaminant mass removal rates from the groundwater treatment system indicate that VOC mass is effectively being removed, and the GWTP is operating as intended.

Metal concentrations are detected above the MCLs in both the overburden and bedrock wells. Although metal concentrations may be attributed to background levels, sampling results from the background wells indicate that concentrations of chromium, lead, and arsenic are higher on-site. Metals concentrations in the influent and effluent samples at the GWTP are generally below MCLs.

Based on the information above, the remedy continues to operate as intended by the ROD.

Opportunities for Optimization

Optimization studies of the long-term remedial action were completed by the EPA Office of Research and Development on July 13, 2012. There are four areas of recommendations that were presented to EPA: short-term, medium-term, long-term and sampling and analysis, see attached optimization recommendation table. EPA has evaluated the twelve recommendations and has already implemented or followed through on seven of the recommendations and two other recommendations are subject to NJDEP approval. The three long-term recommendations were not completed as they were deemed unnecessary by EPA.

Implementation of Institutional Controls and Other Measures

The Classification Exception Area (CEA) is the only institutional control that was to be implemented for the site. The CEA application was submitted to NJDEP and EPA is working with NJDEP to finalize the CEA.

Expected Progress Toward Meeting RAOs

As this is the second FYR and the system has been operating since July 2010, it was not expected that groundwater restoration would be achieved within this time period. The ROD estimated cleanup would take approximately 80 years. The annual operation and maintenance reports show that the groundwater contamination is contained on-site and that the remedy continues to remove VOCs and metals from the groundwater.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Human Health – The 1986 ROD identified evaluation of exposure to site-related contamination through soil ingestion, inhalation of vapors and ingestion of drinking water and the endangerment assessment associated with the 1990 ROD evaluated inhalation of vapors from surface water, direct contact with surface water and sediment, dermal absorption from surface water and sediment, and ingestion of groundwater. Vapor intrusion was evaluated prior to the last FYR. Since there are no buildings over the plume, vapor intrusion is not an issue. These exposure pathways and the assumptions utilized to evaluate the pathways are still valid. The previous FYR indicated that several toxicity values (i.e., TCE, 1,2-DCE, vinyl chloride, and 1,1,1-TCA) had changed since the decision documents were signed, however the values have become more stringent, and the use of the current toxicity values would still result in unacceptable risks, and would support the need for a remedial action. In this light, the results obtained from the older toxicity values are still valid. The cleanup values for the soil removals were based on NJ impact to groundwater values, which were back calculated from MCL values. The soil cleanup values used are still valid. The groundwater cleanup values that were chosen were the lower of the federal and state drinking water standards. As noted in the previous FYR, several MCLs have changed (i.e., toluene was 2,000 µg/L – now 1,000 µg/L, 1,1-DCA was 2 µg/L – now 50 µg/L, and xylenes was 44 µg/L – now 1,000 µg/L) with one value decreasing and two values increasing. Given that the exposure pathways have been eliminated by the closure of downgradient wells and the remediation of soil, the cleanup values remain valid. The remainder of the MCLs selected as cleanup goals are still valid. The RAOs selected in the two RODs are still valid.

Although the vapor intrusion pathway was not evaluated as part of the ROD investigations, it was addressed prior to the last FYR. Subslab vapor and indoor air samples were collected in nearby homes that lie over the plume. Results of the sampling were evaluated, and it was determined that no further action was necessary based on the results.

Ecological – An ecological evaluation was conducted for the 1990 ROD and the evaluation concluded that "it was determined that aquatic life in Wildcat Brook and its tributary were unlikely to be affected by contaminants released to the surface water." Given that the soils and the source material, which served as point sources to Wildcat Brook, have been remediated, the exposure pathways for ecological receptors have been eliminated. In addition, the discharge from the pump and treat system met applicable discharge levels. Thus, the conclusion that aquatic life is unlikely to be impacted is still valid.

QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU2

OTHER FINDINGS

In addition, the following are recommendations that were identified during the FYR, but do not affect current and/or future protectiveness:

- Recommend reducing the laboratory detection limit for 1,4-dioxane to below the NJDEP GWQS of 0.4 µg/L.
- Suggest confirming the limits of the capture zone since VOC concentrations in the bedrock and the overburden remain above or near regulatory standards at the boundary (OB-3, BR-3, PZ-6, OB-15), and
- Suggest filtering metals samples in the overburden and bedrock in order to confirm dissolved metal concentrations.
- Continue assisting NJDEP to complete the CEA for the site.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: 2	*Protectiveness Determination:* Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The remedy for OU2 remedy is protective of human health and the environment.		

Sitewide Protectiveness Statement	
Protectiveness Determination: Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The remedies implemented at the site are protective of human health and the environment.	

VIII. NEXT REVIEW

The next FYR report for the Metaltec/Aerosystems. Inc. Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Five-Year Review	September 2014
Annual Operation and Maintenance Reports	2013-2019
Long-Term Groundwater Optimization	June 2012
Hydrogeologic Summary Report	July 2006
OU2 Record of Decision	September 1990
OU1 Record of Decision	June 1986

APPENDIX B

Site Layout
TCE Isoconcentration Map
Groundwater Concentration Trend Tables
Optimization Recommendation Table

HGL—Annual Report
Metaltec/Aerosystems Superfund Site, NJ

Figure 1.2
Site Layout

Legend

- Monitoring Well (Overburden Well)
- Monitoring Well (Bedrock Well)
- Piezometer (Overburden Well)
- Piezometer (Bedrock Well)
- Residential Well (Bedrock Well)
- Extraction Well
- Effluent Line
- Influent Line

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(1-02)Site_Layout.mxd
7/17/2019 TH
Source: HGL, NJGIN, NJDEP, ECC,
ArcGIS Online World Imagery (Clarity)

HGL

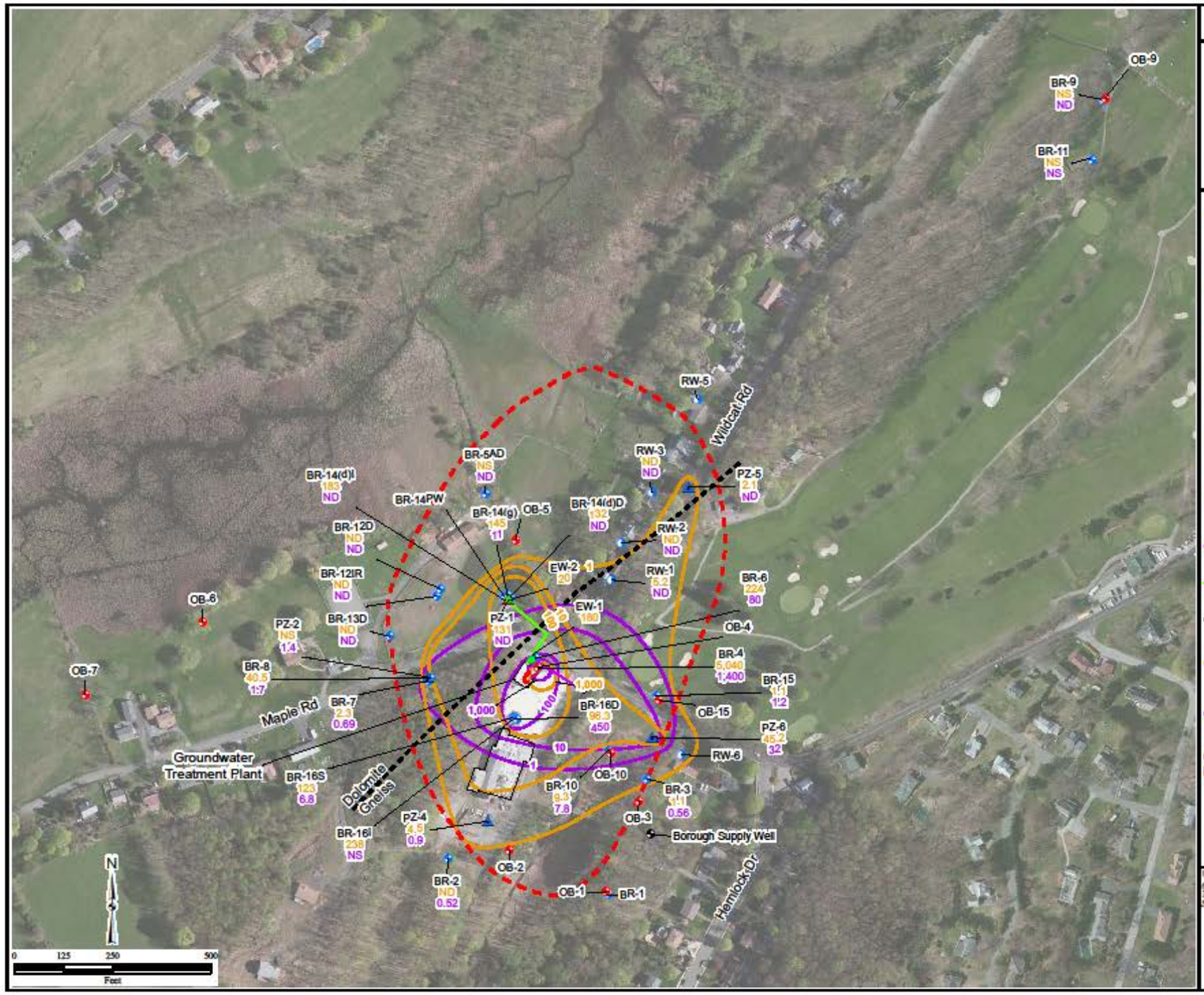

Figure 3.3a
Trichloroethene Plume in Bedrock Wells
March 2009 and April 2018

Legend

- Extraction Well
- Monitoring Well (Overburden Well)
- Monitoring Well (Bedrock Well)
- Piezometer (Overburden Well)
- Piezometer (Bedrock Well)
- Residential Well (Bedrock Well)
- Municipal Well
- RW-1 — Monitoring Well Identification
- 5.2 — March 2009 Trichloroethene Concentration (µg/L)
- ND — April 2018 Trichloroethene Concentration (µg/L)
- Effluent Line
- Influent Line
- Lithologic Contact (Dolomite/Gneiss)
- 10 — March 2009 Trichloroethene Contour (µg/L)
- 10 — April 2018 Trichloroethene Contour (µg/L)
- Approximate Pumping Drawdown (from the conceptual site model, Tetra Tech, 2006)

Notes:
µg/L=micrograms per liter
ND=nondetect
NS=not sampled

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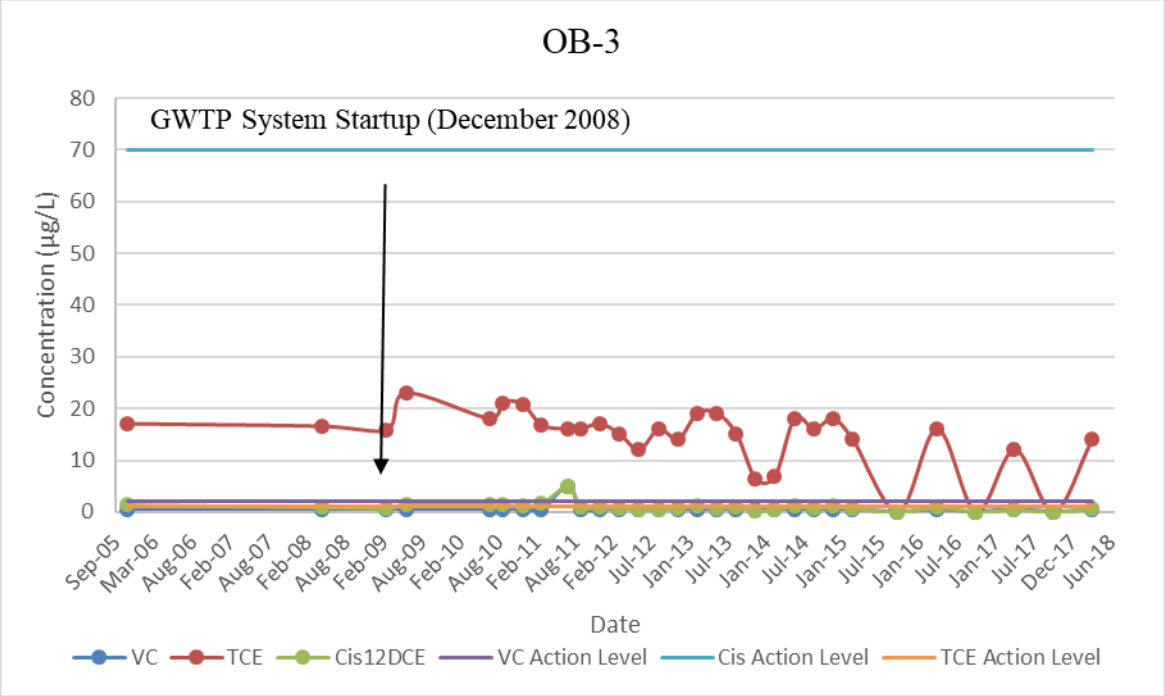
3-03a\PCE_BR_2009-3_2018-4.mxd
7/18/2019 TH
Source: HGL, NJGIN, NJDEP, ECC,
ArcGIS Online World Imagery (Clarity)


OB-3
GWTP System Startup (December 2008)
Concentration (µg/L)
80
70
60
50
40
30
20
10
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
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Feb-11
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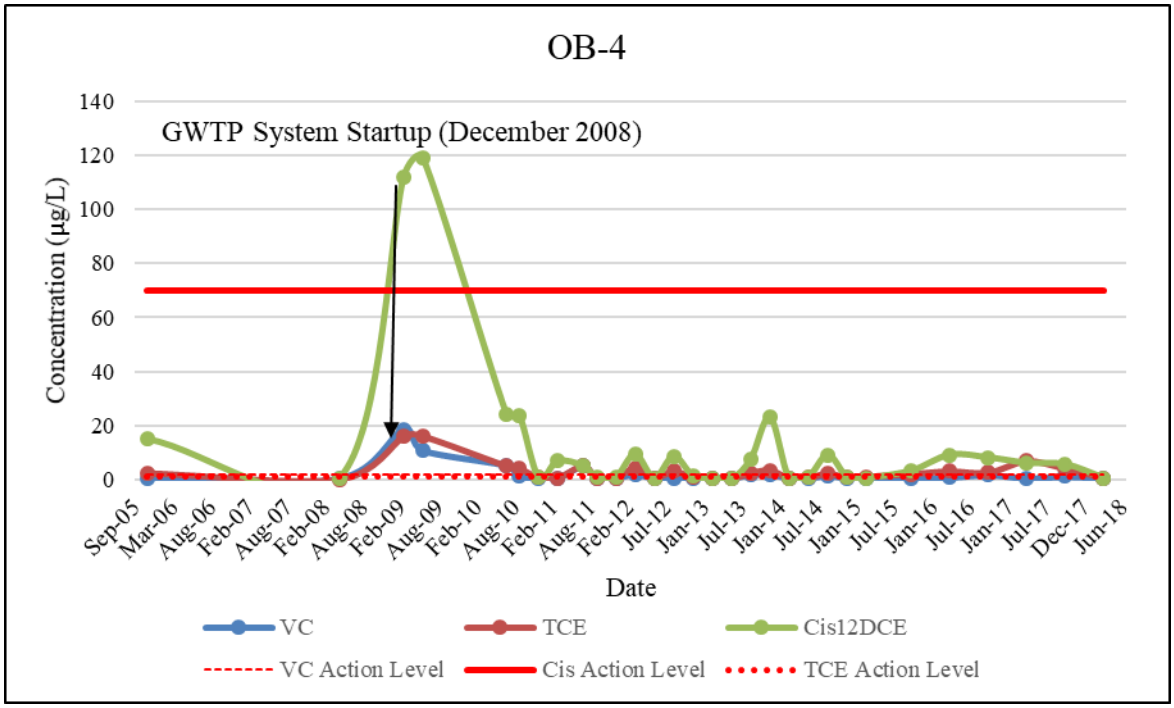
OB-4
GWTP System Startup (December 2008)
Concentration (µg/L)
140
120
100
80
60
40
20
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11
Aug-11
Feb-12
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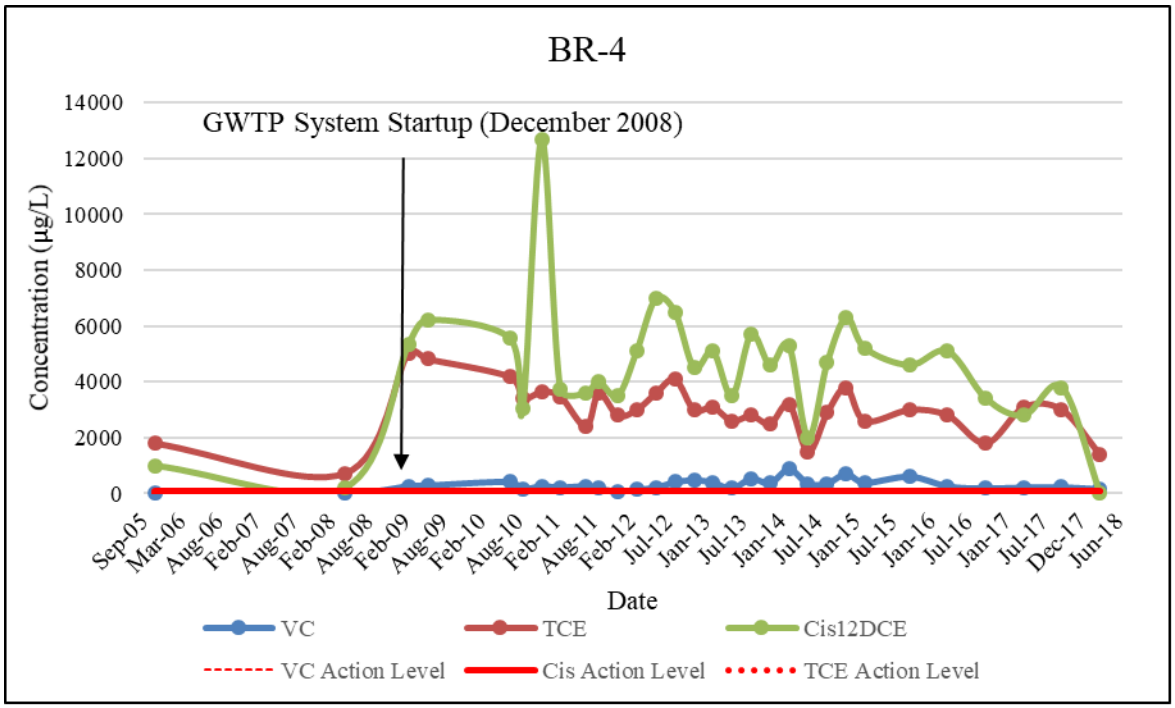
BR-4
GWTP System Startup (December 2008)
Concentration (µg/L)
14000
12000
10000
8000
6000
4000
2000
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11
Aug-11
Feb-12
Jul-12
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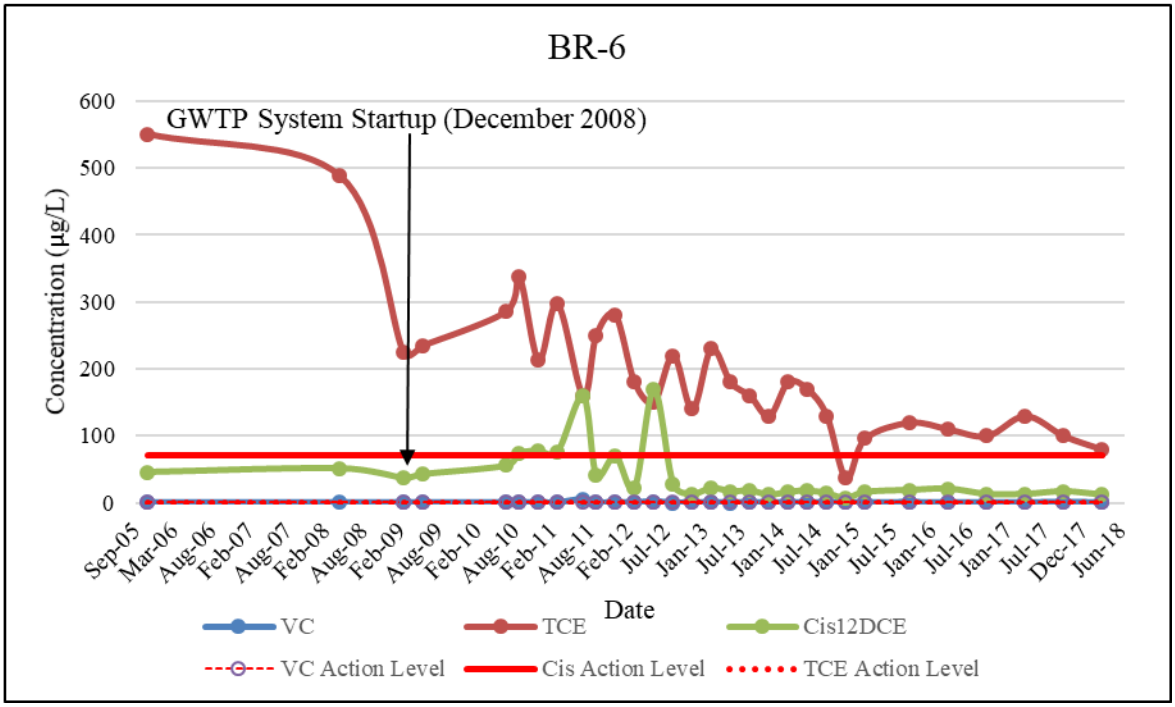
BR-6
GWTP System Startup (December 2008)
Concentration (µg/L)
600
500
400
300
200
100
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11
Aug-11
Feb-12
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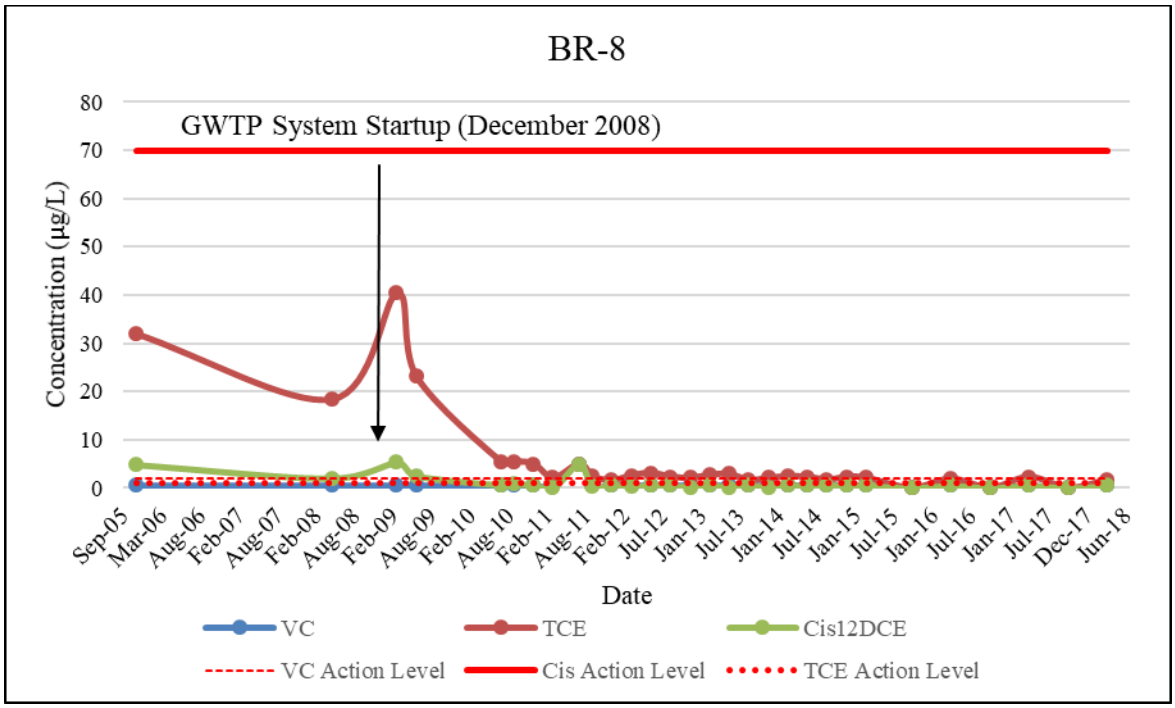
BR-8
GWTP System Startup (December 2008)
Concentration (µg/L)
80
70
60
50
40
30
20
10
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
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Aug-11
Feb-12
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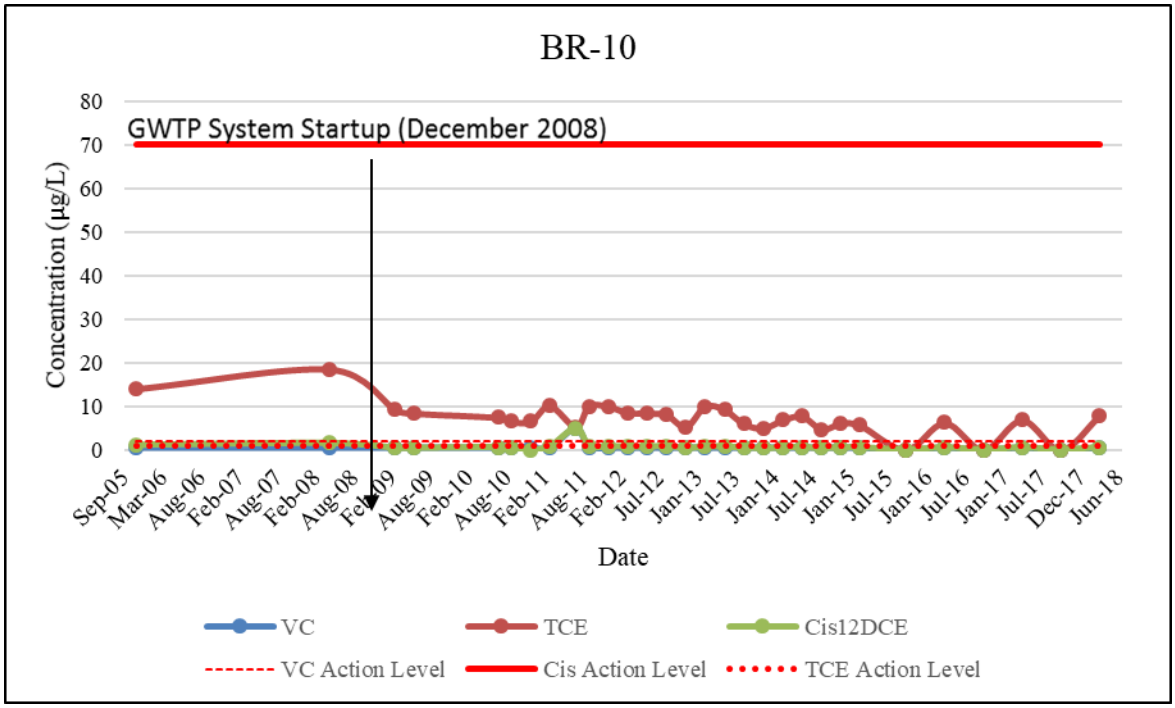
BR-10
GWTP System Startup (December 2008)
Concentration (µg/L)
80
70
60
50
40
30
20
10
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
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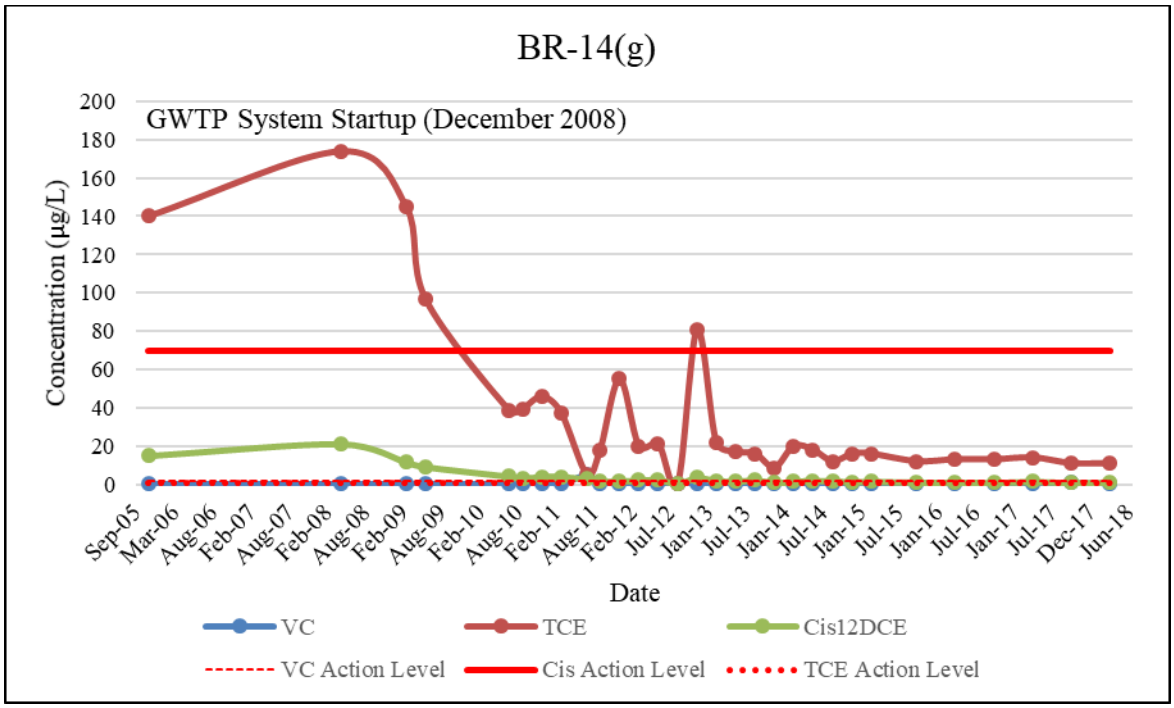
BR-14(g)
GWTP System Startup (December 2008)
Concentration (µg/L)
200
180
160
140
120
100
80
60
40
20
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11
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Feb-12
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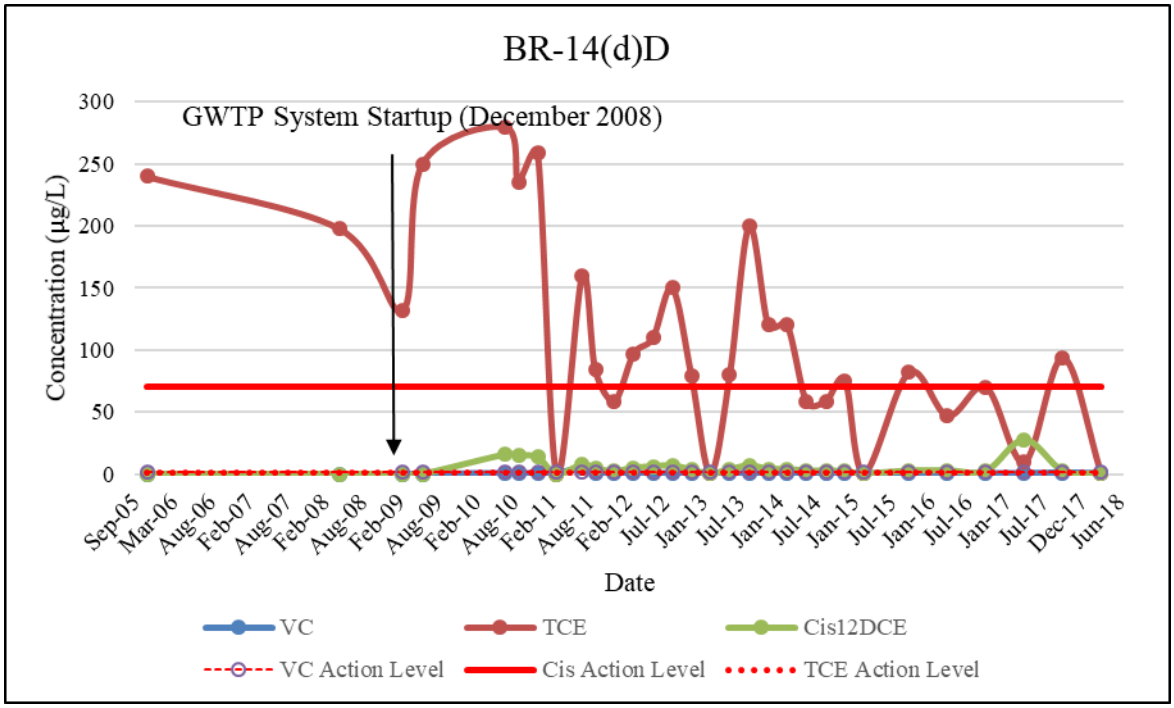
BR-14(d)D
GWTP System Startup (December 2008)
Concentration (µg/L)
300
250
200
150
100
50
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11
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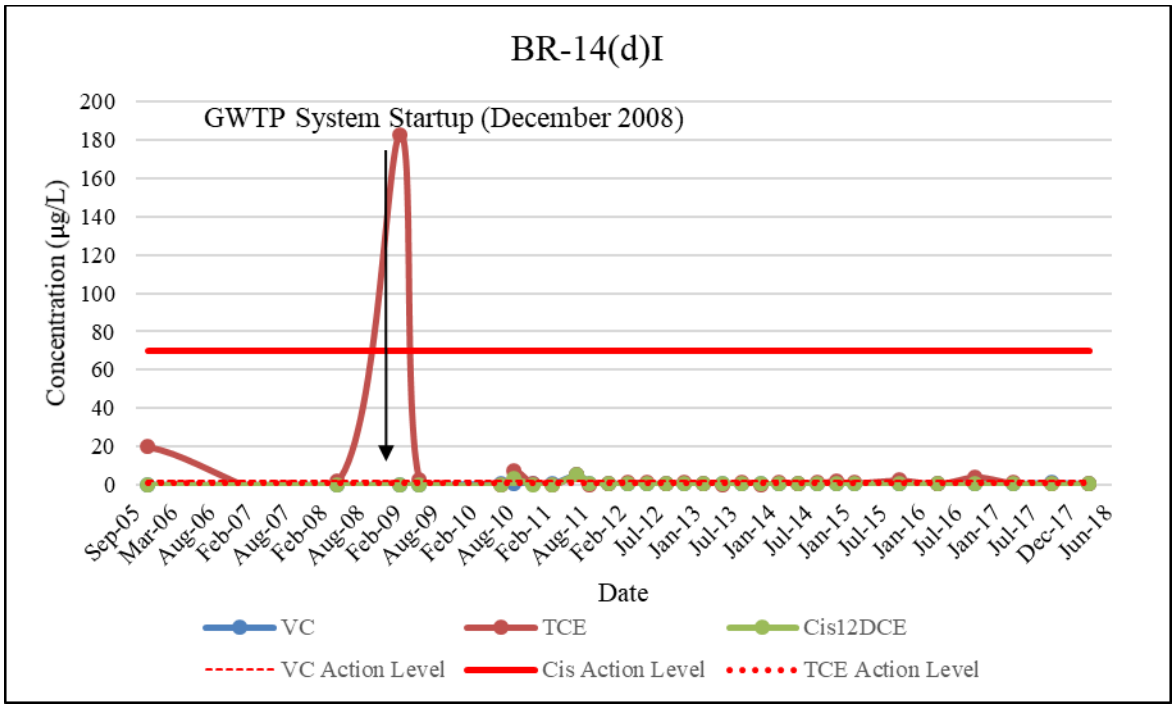
BR-14(d)I
GWTP System Startup (December 2008)
Concentration (µg/L)
200
180
160
140
120
100
80
60
40
20
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
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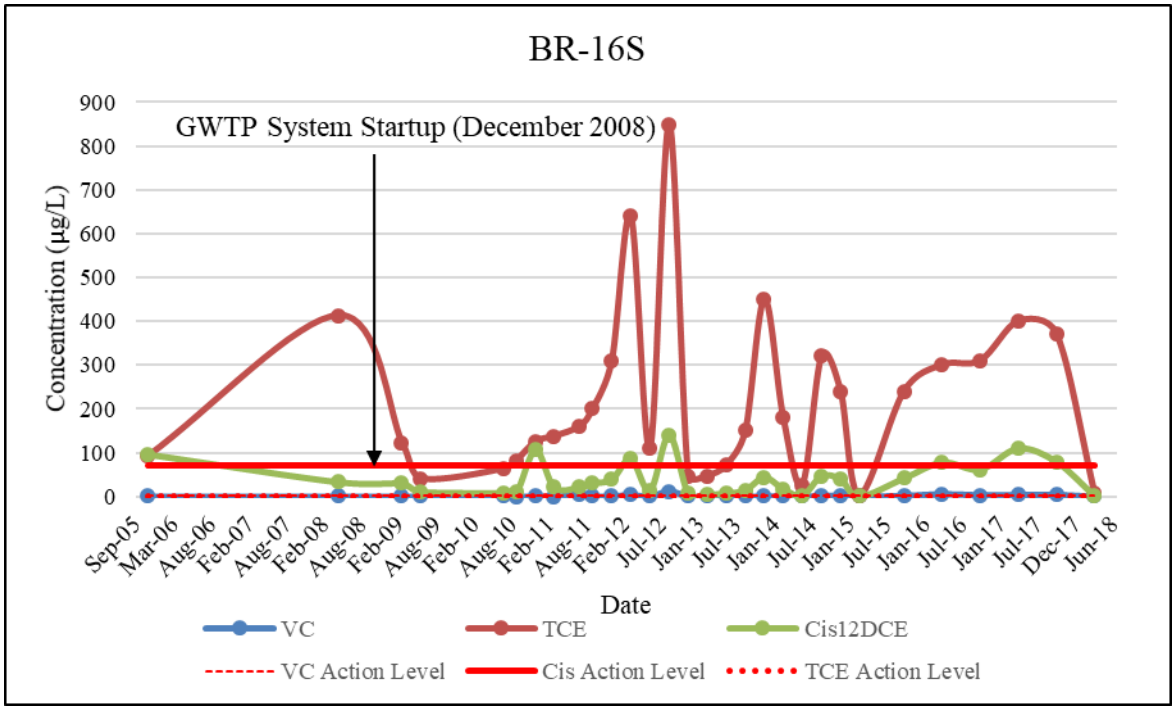
BR-16S
GWTP System Startup (December 2008)
Concentration (µg/L)
900
800
700
600
500
400
300
200
100
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
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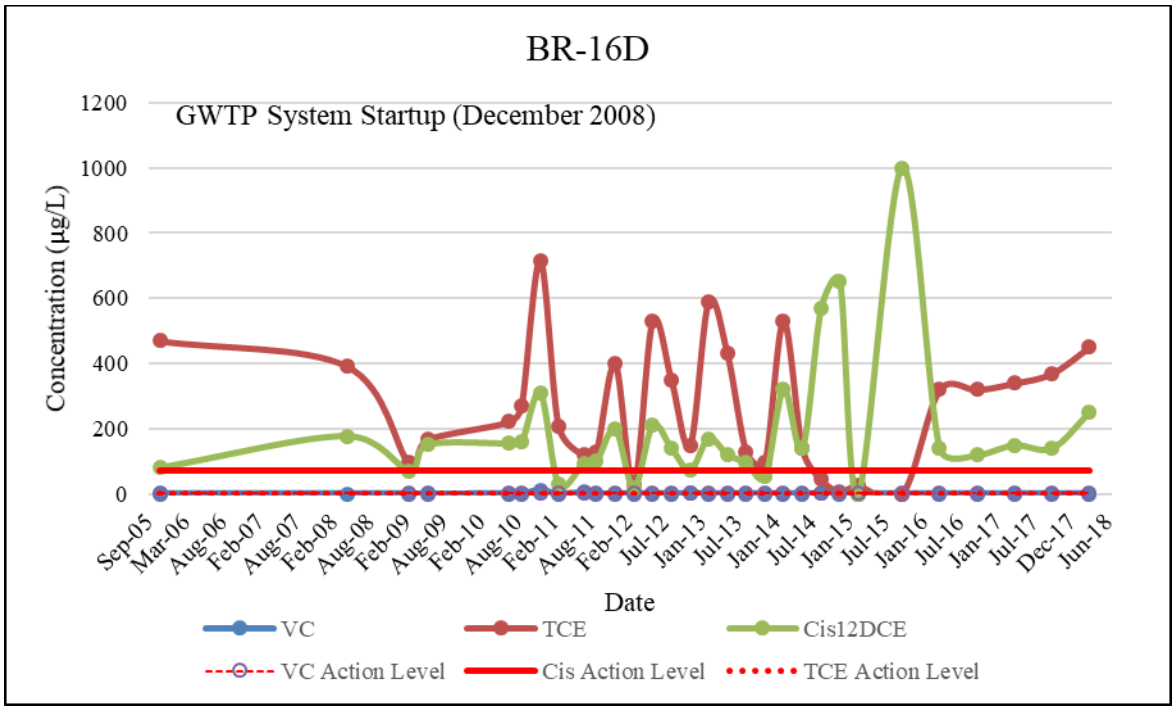
BR-16D
GWTP System Startup (December 2008)
Concentration (µg/L)
1200
1000
800
600
400
200
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
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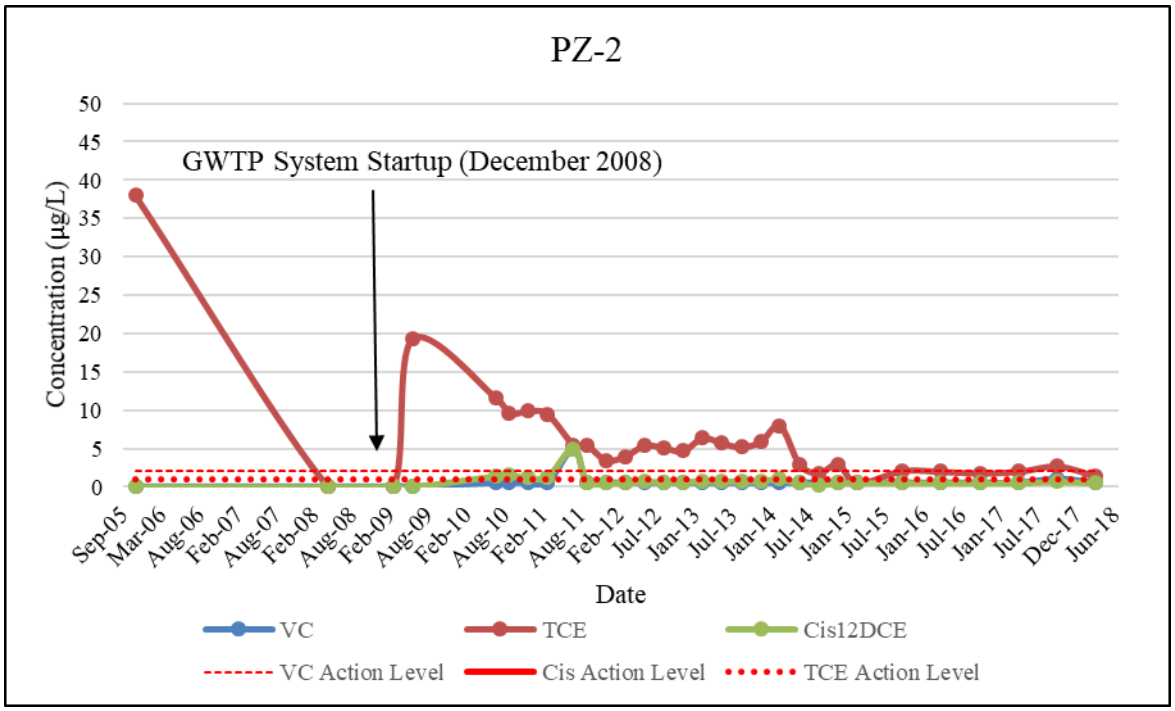
PZ-2
GWTP System Startup (December 2008)
Concentration (µg/L)
50
45
40
35
30
25
20
15
10
5
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
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Aug-09
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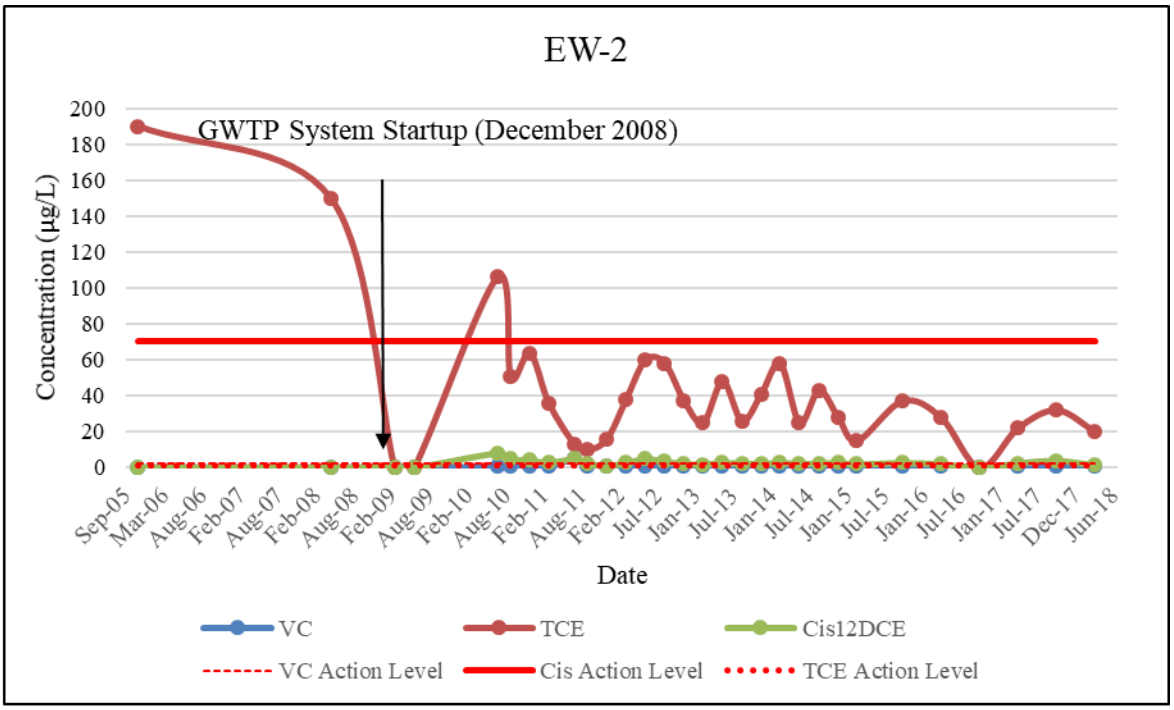
EW-2
GWTP System Startup (December 2008)
Concentration (µg/L)
200
180
160
140
120
100
80
60
40
20
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
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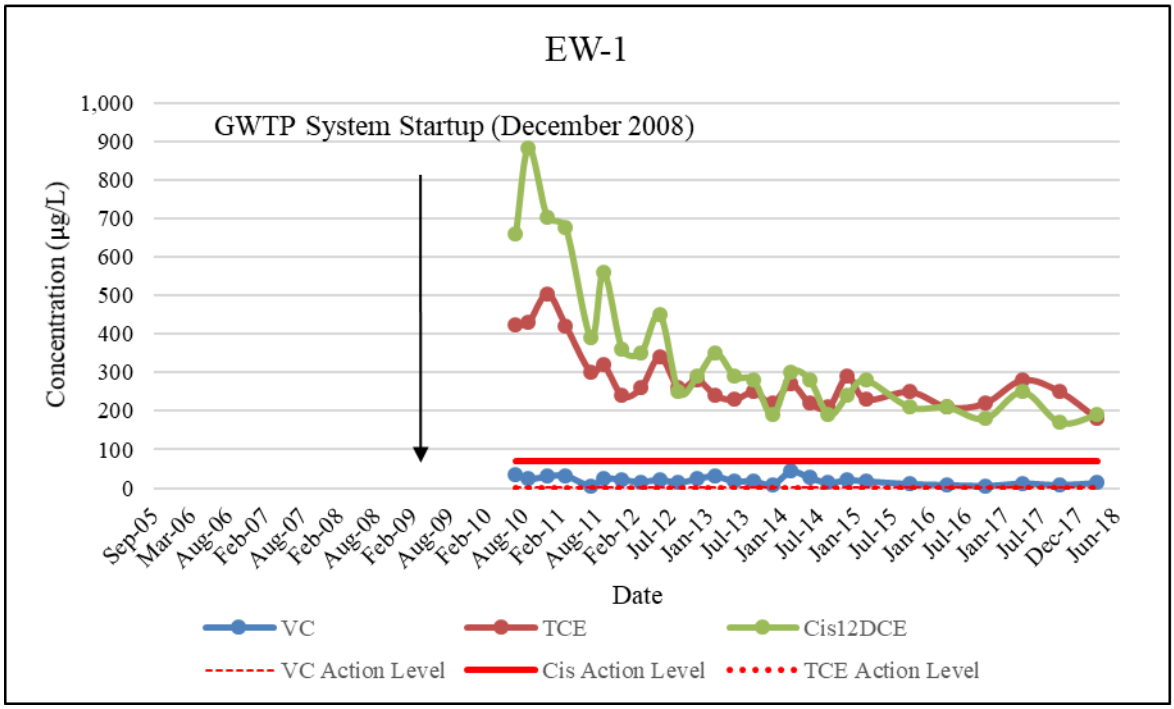
EW-1
GWTP System Startup (December 2008)
Concentration (µg/L)
1,000
900
800
700
600
500
400
300
200
100
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11
Aug-11
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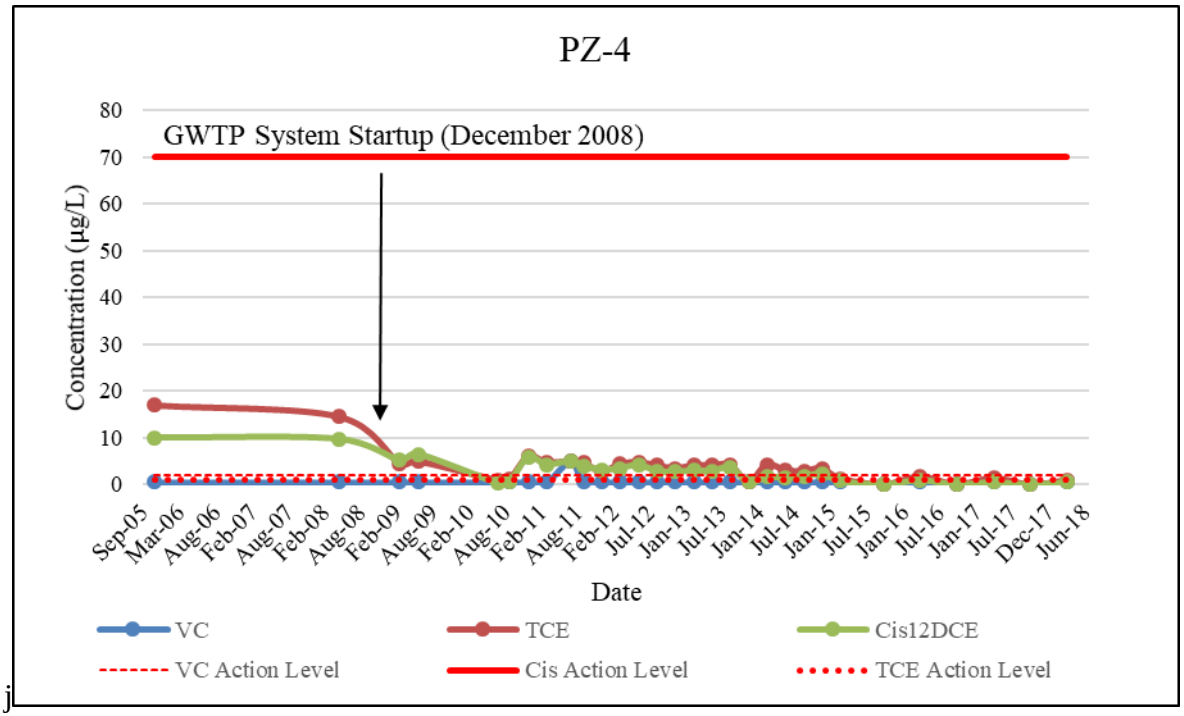
PZ-4
GWTP System Startup (December 2008)
Concentration (µg/L)
80
70
60
50
40
30
20
10
0
Sep-05
Mar-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
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OPTIMIZATION RECOMMENDATIONS FOR THE METALTEC/AEROSYSTEMS, INC. SUPERFUND SITE

	SHORT-TERM RECOMMENDATIONS	**STATUS**
S-1	Collect, review, and organize historical documents. Determine if any historical documents are missing that would assist in the site evaluation. In particular, the Soil Excavation Report from the 1990s soil removal activities should be located as it may contain information on a potential residual source in the area of the former lagoon.	Completed
S-2	Confirm that recent data are included in the site database, including TOC survey data from Environmental Chemical Corporation	Completed
S-3	Perform statistical trend analysis of site priority COC data annually. This is an ongoing item for each annual report.	Completed
S-4	Review historical site data, including the 2006 Hydrogeologic Summary Report (TetraTech), pump tests, boring logs, concentration trends, and geotechnical data to clarify the CSM around BR-4. Create detailed in the area.cross-sections and identify major and minor fractures	Completed
S-5	Develop a scope of work for further investigations at BR-4 to identify the location, potential migration pathways, and amount of mass remaining. Special note: The Government issued a request for proposal for investigative work near monitoring well BR-4 on Friday, August 18, 2017. A proposal for the investigation tasks was submitted to the government on Friday, September 15, 2017. Modification 7, for the focused investigation in the area of Well BR-4, was awarded on 6 December 2017. Outside of the reporting period, finalized planning documents are under final review in June/July 2018.	Completed
S-6	Metals analytical results should be evaluated and compiled into a package that can serve as the factual basis for a formal petition to eliminate metals sampling.	Once the lastest round of groundwater sampling results come in a formal request will be submitted. That request should go out in June.
	MEDIUM-TERM RECOMMENDATIONS	
M-1	Analytical data indicates there is a continuing source of COCs hydraulically connected to BR-4. Perform additional investigation at BR-4. Investigation may include tracer study, additional wells, pump tests, evaluation of ratios of chlorinated VOCs, etc. Special note:	Completed hydraulic connnectivty test, Direct Push Technology of site soils for VOCs. No new MW installed nor pump tests.

M-2	Review data from additional investigations; determine if an additional remedy should be considered. If necessary, bench or pilot-scale in situ amendment studies should be considered.	Completed
	LONG-TERM RECOMMENDATIONS	
L-1	Consider developing an exit strategy for termination of the pump and treat remedy.	Not Completed: determined unnecessary
L-2	Consider estimating how matrix or back diffusion of sorbed contamination effect the extent and persistence of the plume.	Not Completed: determined unnecessary
L-3	Groundwater modeling or 3-D visualization may be appropriate if sufficient site data are available and software tools have improved algorithms for dealing with fracture flow.	Not Completed: determined unnecessary
	SAMPLING AND ANALYSIS RECOMMENDATIONS	
SA-1	EPA attempted to reduce the quarterly chronic toxicity sampling to semi-annual by petitioning the NJDEP for a sampling reduction during the 2015-2016 reporting period. The NJDEP did not approve the request due to one exceedance of the mortality threshold during the previous 5-year period. The NJDEP requires five consecutive years of non-exceedances before they will consider a reduction. The chronic toxicity testing will remain quarterly for at least an additional year. The reduction in sampling frequency should be re-petitioned.	NJDEP Bureau of Environmental Measurements and Site Assessment.approved reduction in May 2019.