FINAL

SECOND FIVE-YEAR REVIEW REPORT FOR FORMER AIR FORCE PLANT 59 JOHNSON CITY, NEW YORK

Prepared for:

Department of the Air Force Air Force Civil Engineer Center

Prepared by:

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14. ABSTRACT

This report presents the SECOND Five-Year Review of Former Air Force Plant 59. The report encompasses on-site inspections, interviews, historical document reviews, data review, and recommendations for the ongoing remedial oversight of the former plant.

15. SUBJECT TERMS
Five-Year Review, Former Air Force Plant 59

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ACRONYMS AND ABBREVIATIONS

AFI	Air Force Institute
AFP 59	Air Force Plant 59
AOC	Area of concern
ARARs	Applicable or Relevant and Appropriate Requirement
BCIDA	Broome County Industrial Development Agency
bgs	below ground surface
CB&I	Chicago Bridge & Iron
CERCLA	Comprehensive Environment Response, Compensation, and Liability Act
COC	Constituent of Concern
CVOC	Chlorinated volatile organic compound
CYs	cubic yards
DD	Decision Document
DER	Department of Environmental Restoration
cis-1,2-DCE	*cis*-1,2-Dichloroethene
trans-1,2-DCE	*trans*-1,2-Dichloroethene
FS	Feasibility Study
GE	General Electric
GWQS	Groundwater Quality Standard
ICs	Institutional Controls
IRP	Installation Restoration Program
ISS	Installation Support Section
LTM	Long-Term Monitoring
LUCs	Land Use Controls
MCL	Maximum Contaminant Level
MeCl	Methylene chloride
MOU	Memorandum of Understanding
µg/L	micrograms per liter
µg/kg	micrograms per kilogram
NCP	National Contingency Plan
NPL	National Priorities List
NYCRR	New York Code, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department Occupational Heath
OWS	Oil-water separator
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
PCE	Tetrachloroethene (perchlorethene)

ACRONYMS AND ABBREVIATIONS

PID	Photoionization Detector
RAB	Restoration Advisory Board
RAO	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
SDWA	Safe Drinking Water Act
SCO	Soil Cleanup Objectives
SMP	Site management plan
TCA	1,1,1-Trichloroethane
TCE	Trichloroethylene
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tank
VI	Vapor Intrusion
VOC	Volatile organic compounds

EXECUTIVE SUMMARY

This SECOND Five-Year Review for Former Air Force Plant 59 (AFP 59), located in Johnson City, New York, has been prepared by the United States Air Force (USAF). The remedial activities at AFP 59 are governed by the Record of Decision (ROD) (Earth Tech, 1999) for treating groundwater contamination originating at the site. The ROD for AFP 59 covers ex-situ treatment of groundwater (via air stripper) at the Johnson City Camden Street Well Field prior to distribution to City Residents. The selected remedy was an upgrade to a treatment system that had been operating effectively since 1993. The purpose of this review is to evaluate the implementation and performance of this remedy, groundwater treatment system at the Camden Street Well Field, to determine if and the remedy is still protective of human health and the environment. After 1999, the treatment system became the responsibility of Johnson City, and the USAF discontinued any involvement in its operation. Johnson City maintains the treatment system and performed groundwater monitoring of the influent waters and the treated waters. The former plant itself is currently owned and maintained by the Broome County Industrial Development Agency (BCIDA) and the USAF continues to perform the annual groundwater monitoring.

In conjunction with the ex-situ treatment of groundwater contamination at the Camden Street Well Field, the USAF conducts quarterly, semi-annual, and annual groundwater monitoring on site and within the neighboring residential area to evaluate the effectiveness of the remedy. It should be noted, however, that the prior FIRST Five-Year Review was completed in 2012 and ten years of remedial activity has occurred at the site since the completion of that five-year review. Remedial activities completed at Former AFP 59 since 2011 include the following:

- Ten (10) years of groundwater monitoring;
- Completion of a Supplemental Remedial Investigation and Feasibility Study (RI/FS) for Vapor Intrusion (VI) at the former plant in 2012;
- Decontamination and demolition of the structures on site from 2015 through 2017;
- Execution of a soils removal action at site SS005 in 2017 following the building demolition; and,
- Preparation of a Proposed Plan (PP) and Decision Document (DD) in 2019 and 2020 related to cover for the remaining soils on site to return the site to beneficial reuse.

The 2020 DD has yet to be implemented and this SECOND Five-Year Review does not cover actions or recommendations associated with this DD.

According to the data review, site inspection, and interviews conducted with the current and former Remedial Program Managers (RPMs) for Former AFP 59 and the New York State Department of Environmental Conservation (NYSDEC) RPM, this SECOND Five-Year Review finds that the **remedy at Former AFP 59 related to groundwater contamination currently protects human health** because long-term monitoring confirms that the groundwater treatment system removes contamination associated with the former plant to below Applicable or Relevant and Appropriate Requirements (ARARs) as specified under the 1999 ROD.

Based upon the available data from the Johnson City Camden Street Well Field from the Post-Treatment samples collected since 2016, the current remedy for groundwater treatment provides protection to human health and the environment. While trace levels of COCs are reaching the well field at monitoring

well URS-3D and also present in the supply well waters, the air stripper on site removes those COCs to below reporting limits.

While 1,4-dioxane is not a COC under the 1999 ROD, it does reach the edge of the Camden Street Well Field at concentrations exceeding the NYSDEC MCL of 1 µg/L, the concentrations reported in the municipal supply well and the Post-Treatment water samples are below the MCL.

Although no issues were identified that affect the protectiveness of the remedy during the SECOND Five-Year Review, the review did identify three minor items associated with the remedy that do not affect the protectiveness. These items were:

1. Slowly increasing 1,4-dioxane in well URS-3D at Camden Street Well Field. The 1,4-dioxane results have slowly increasing at this well located in the northeast corner of the Camden Street Well Field for Johnson City and have been above the NYSDEC Maximum Contaminant Level (MCL) of1 µg/L established in 2020. The concentrations of 1,4-dioxane, however, did not exceed the MCL in either of the two active municipal wells on site, JC-2 and JC-3, or the treated waters entering the Johnson City public water supply.
2. Ruts are present in the northern and western areas of the former plant. The ruts are the result of vehicular traffic on the site when the soils are saturated.
3. Completeness of historical monitoring results. The historical results tables in the later annual LTM reports are not complete.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Former Air Force Plant 59		
USEPA ID: NYSDEC #704020; NY5570024641		
Region: 1	**State:** NY	**City/County:** Johnson City, Broome County, NY
SITE STATUS		
NPL Status: NA		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: Other Federal Agency **If "Other Federal Agency" was selected above, enter Agency name:** U.S. Air Force		
Author name (Federal or State Project Manager): Mr. David Iacovone		
Author affiliation: U.S. Air Force, AFP 59 Remedial Project Manager		
Review period: 7/29/21 – 5/10/22		
Date of site inspection: 9/29/2021		
Type of review: Other, AFI 32-7020		
Review number: 2		
Triggering action date: NA		
Due date *(five years after triggering action date)*: NA		

Five-Year Review Summary Form (cont.)

Issues/Recommendations

Issues and Recommendations Identified in the Five-Year Review: Item #1				
OU(s): NA **SS005**	**Issue Category:** Long-Term Monitoring			
	Issue: Slowly increasing 1,4-dioxane in well URS-3D at Camden Street Well Field.			
	Recommendation: Track 1,4-dioxane levels at well URS-3D.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
N	N	USAF	USAF	2023

Issues and Recommendations Identified in the Five-Year Review: Item #1				
OU(s): NA **SS005**	**Issue Category:** Remedial Operation			
	Issue: Ruts present in the northern and western areas of the site from vehicle traffic.			
	Recommendation: Repair ruts when they occur. The responsibility for the repair of ruts lies with either the USAF or BCIDA depending on whose contractors or parties caused the ruts. For instance, should the USAF groundwater monitoring leave ruts on the site from an annual sampling event, that contractor, as an agency of the USAF would be responsible for the repairs. Should BCIDA's mowing or other contactors cause the rust, the BCIDA or their contractor would be responsible for the repairs.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
N	N	USAF	USAF	2023

Five-Year Review Summary Form (cont.)

Issues/Recommendations

Issues and Recommendations Identified in the Five-Year Review: Item #1				
OU(s): NA **SS005**	**Issue Category:** Long-Term Monitoring			
	Issue: Completeness of historical monitoring results			
	Recommendation: Review historical reports and data to update historical data tables.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
N	N	USAF	USAF	2023

1.0 INTRODUCTION

1.1 Purpose of Review

The purpose of this SECOND Five-Year Review is to evaluate the status of the remedy selected in a 1999 Record of Decision (ROD) (voluntary, off-site treatment of public drinking water supplies in Johnson City adjacent to Air Force Plant 59 [AFP 59]) to determine whether the selected remedy continues to meet the remedial goals and perform as anticipated. The methods, findings, and conclusions are documented in this five-year review report. Also evaluated are the results of a separate review of groundwater monitoring conducted on-site and adjacent to Former AFP 59.

1.2 Authorities

The United States Air Force (USAF) conducted this five-year review pursuant to Section 16.4 of Department of Air Force Instruction (AFI) 32-7020. While the historical and current actions have been conducted to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the applicable regulatory framework at AFP 59 is Title 6 of the New York Code, Rules and Regulations (NYCRR) Part 375 Environmental Remediation Programs. The New York State Department of Environmental Conservation (NYSDEC) applies the rules under the Division of Environmental Remediation (DER) 10 *Technical Guidance for Site Investigation and Remediation*.

The governing guidance for conducting this SECOND Five-Year Review is Air Force Instruction 32-7020 Section 16.4 since contaminants remain on site at levels that do not allow for unlimited use and unrestricted exposure. In addition, Former AFP 59 is not owned or operated by the USAF. The property was transferred to the Broome County Industrial Development Agency (BCIDA) in 2018 under two separate Quit Claim Deeds: one for the former plant itself and another for the parking lot serving the plant. Under AFI 32-7020 Section 16.4.5, the former USAF property is still subject to five-year reviews.

It should be noted that, while this report is labeled as a five-year review, the actions and results discussed herein actually cover the period from 2012 through annual monitoring completed in summer 2021. As such, this report covers ten (10) years of activity since the FIRST Five-Year Review.

The review is based on site-specific considerations, including the nature of the response action, the status of response activities, and the proximity to populated areas and sensitive environmental areas. Information considered in this review includes the original Remedial Investigation (RI), ROD, Long-Term Monitoring (LTM) Reports, Supplemental RI and Feasibility Study (FS) for Vapor Intrusion (VI) Report, building decontamination and demolition, and on-site soils removal.

1.3 Lead Agency

The lead agency is the Air Force Civil Engineering Center, Installation Support Section, Wright- Patterson Air Force Base, Ohio.

1.4 Review Number

This is the SECOND Five-Year Review and covers 1 January 2012 through 1 December 2021. The FIRST Five-Year Review was completed in April 2012.

1.5 Trigger Action/Date

Based on Section 11 of the FIRST Five-Year Review, the next five-year review would be triggered when soils removal action would be executed to address soil vapor risks. This was an erroneous trigger date as a five-year review should have been conducted for the 2012 to 2016 period under AFI 32-7020 Section 16.4.5. The implementation of the removal action for soil vapor and soil vapor intrusion occurred in 2017 following the decontamination of the former plant in 2015 and 2016 and the demolition of the plant in 2016 and 2017.

This five-year review has been initiated by the USAF to assess the effectiveness of the drinking water treatment system as well as the results of the LTM program at AFP 59. This review also includes a discussion of the period from 2012 through 2021. The period covered includes long-term monitoring (LTM) of groundwater under the 1999 ROD; additional soils, soil vapor, and indoor air investigation; the decontamination and demolition of the former plant; and removal of contaminated soils from beneath the former plant.

It should be noted that the USAF also developed a separate Decision Document (DD) in 2020 for the physical site at the former plant. This DD addresses soils cover and land-use controls (LUCs) and institutional controls (ICs) at the former plant property. This DD has yet to be implemented and would be a cooperative effort between the BCIDA and the USAF when implemented. As of 2021, this DD had not been implemented and this five-year review does not cover any aspects related to the 2020 DD.

1.6 Number, Description and Status of Other Installation Restoration Program Sites at AFP 59

Nine former sites or areas of concern where past activities at AFP 59 could have resulted in releases to the environment were identified prior to the 1996 RI. Because the numbering of these sites varied throughout the Installation Restoration Program (IRP) process, the sites are identified by name, without reference to site numbers. In addition to the nine (9) IRP sites and areas of concern, two additional sites were identified, including an area of trichloroethene (TCE)-contaminated soil discovered in 2002 and polychlorinated biphenyls (PCBs) in the rafters of Building 2. The following is a list of the 11 sites. Section 3.3 provides a more detailed description of these sites.

- Underground Waste Oil Storage Tanks – Closed
- Drum Storage Area – Closed
- Little Choconut Creek – Closed
- Plating Building – Closed
- Storage Tank and Settling Pond – Closed
- Former Gasoline Underground Storage Tank – Closed
- JP-4 Piping Area – Closed
- Oil/Water Separator – Closed
- Transformer Area – Closed
- East Basement TCE Soil Pile PCB Encapsulation – Closed

2.0 SITE CHRONOLOGY

Table 2-1 provides a general chronology of events at AFP 59.

Table 2-1: General Chronology of AFP 59 and Vicinity

Event	Date
Phase I Records Search (CH2M Hill)	October 1984
Phase II, Stage I Confirmation/Quantification Study Final Report (Hart Associates)	March 1988
Phase II, Stage II, Remedial Investigation/Feasibility Study (EA Engineering)	December 1988
Settling Tank/Spent Plating Storage Tank Soil Study (Marcor)	1991
Storage Tank Soil Investigation (OHM Remediation Services Corp.)	1992
Contaminant Source Investigation of the Johnson City Camden Street Well Field Final Report &Addendum (URS)	May, June 1992
Plating Room Soil Investigation (OHM Remediation Services Corp.)	1993
Storage Tank/Settling Pond Soil Investigation (OHM Remediation Services Corp.)	1993
Phase II Stage II Confirmation/Quantification Study, Supplemental Site Inspection (Argonne NationalLaboratory)	1994
Plating Room Soil Investigation (OHM Remediation Services Corp.)	1994
Plating Room Soil Investigation (Blasland, Bouck & Lee)	1994
Settling Pond Investigation (Blasland, Bouck & Lee)	1995
Environmental Baseline Survey (Earth Tech)	1995
Supplemental Site Inspection (Energy Systems, Division, Argonne National Laboratory)	August 1995
Final Remedial Investigation Report (Earth Tech)	April 1996
Baseline Human Health Risk Assessment for contaminated soil, groundwater, and surface water(Earth Tech)	April 1996
Remedial Alternatives Informal Technical Information Report	February 1996
Final Groundwater Monitoring Report: November 1998 Sampling Event (Earth Tech)	February 1999
Final Groundwater Monitoring Report: April 1999 Sampling Event (Earth Tech)	June 1999
Final Proposed Plan (Earth Tech)	July 1999
Record of Decision (Earth Tech), signed by the USAF.	September 1999
Camden Street Well Field treatment system upgrade completed	June 1999
Five-Year Groundwater Monitoring Program (Earth Tech)	1999 – 2004
Final Groundwater Monitoring Report: November 1999 Sampling Event (Earth Tech)	February 2000
Final Groundwater Monitoring Report: May 2000 Sampling Event (Earth Tech)	August 2000
Final Groundwater Monitoring Report: November 2000 Sampling Event (Earth Tech)	February 2001
Final Groundwater Monitoring Report: May 2001 Sampling Event (Earth Tech)	August 2001
Final Groundwater Monitoring Report: November 2001 Sampling Event (Earth Tech)	February 2002
Final Groundwater Monitoring Report: May 2002 Sampling Event (Earth Tech)	August 2002
Final Groundwater Monitoring Report: May 2003 Sampling Event (Earth Tech)	August 2003
Final Groundwater Monitoring Report: November 2003 Sampling Event (Earth Tech)	January 2004

Table 2-1: General Chronology of AFP 59 and Vicinity (cont.)

Event	Date
Final Groundwater Monitoring Report: June 2004 Sampling Event (Earth Tech)	August 2004
Final Groundwater Monitoring Report: November 2004 Sampling Event (Earth Tech)	February 2005
Manufacturing Building Basement Screening Level Characterization and Contaminant Delineation;Soil Excavation at the Manufacturing Building East Basement (Earth Tech)	December 2005
Final Groundwater Monitoring Report: October 2005 Sampling Event (Earth Tech)	January 2006
Final Soil-Gas and Groundwater Monitoring Report from the October/November 2006 SamplingEvent (Earth Tech)	August 2007
Vapor Intrusion Investigation Report (Earth Tech)	March 2008
Long-Term Monitoring Activities and Soil Gas Investigation Report	March 2009
Final Vapor Intrusion Remedial Investigation Report (AECOM)	April 2011
Major Flooding, Hurricane Irene and Tropical Storm Lee	August – September 2011
FIRST Five-Year Review (AECOM)	April 2012
Final Abbreviated 2014 Long-Term Monitoring Report (HydroGeologic)	March 2015
Supplemental Vapor Intrusion Remedial Investigation and Feasibility Study (AECOM)	July 2015
Environmental Baseline Survey Phase II, Hazardous Materials	Summer 2014
AFP 59 Former Plant Decontamination	July 2015 – June 2016
AFP 59 Former Plant Demolition	February 2016 – January 2017
AFP 59 Former Plant Soils Removal Action	February – April 2017
Final 2016 Annual Long-Term Monitoring Report (Verina)	March 2017
Final Decontamination and Demolition Report, Air Force Plant 59 (CB&I)	November 2017
Final Soil Removal Action Report, Air Force Plant 59 (CB&I)	November 2017
Quit Claim Deed AFP 59 Broome County Industrial Development Authority (BCIDA)	February 2018
Quit Claim Deed AFP 59 Parking Lot Broome County Industrial Development Authority (BCIDA)	March 2018
Final 2017 Annual Long-Term Monitoring Report, Site SS005, Air Force Plant 59 (FPM)	April 2018
March 2018 Quarterly Sampling Event at Air Force Plant 59 (FPM)	April 2018
May 2018 Quarterly Sampling Event at Air Force Plant 59 (FPM)	July 2018
September 2018 Quarterly Sampling Event at Air Force Plant 59 (FPM)	September 2018
Proposed Plan for Air Force Plant 59 (FPM)	February 2019
Decision Document for Air Force Plant 59 (FPM)	January 2020
Final 2019 Annual Long-Term Monitoring Report, Air Force Plan 59 (EA Engineering)	February 2020
Final Generic Environmental Impact Statement, Former BAE Systems Site at 600 Main Street Redevelopment, Johnson City, New York	
Final 2020 Annual Long-Term Monitoring Report, Air Force 59 (EA Engineering)	March 2021
Site Management Plan, Air Force Plant 59	June 2021
Final 2021 Annual Long-Term Monitoring Report, Air Force Plant 59 (EA Engineering)	February 2022

3.0 BACKGROUND

3.1 General Site Description

Former AFP 59 is located in south-central New York in the Westover area of the Town of Union, Broome County, immediately west of Johnson City (mailing address). The site is about 3 miles west of the Central Business District of the City of Binghamton and about 4 miles east of the center of the Village of Endicott (**Figure 3-1**). The plant occupies 29.6 acres (including Parking Lot #5 located north of Main Street) and is situated in a highly urbanized area.

The plant is bounded on the east and south by Little Choconut Creek. South of AFP 59, beyond Little Choconut Creek, is a power plant owned by New York State Electric and Gas. The power plant is no longer in operation. To the west and northwest of Former AFP 59 are residential areas. Nonresidential areas are located immediately north of the installation and also to the east, beyond Little Choconut Creek. Nonresidential land around the former plant is used for transportation, commercial enterprises, recreation, and industrial activity. The Camden Street Wellfield, an important source of water for Johnson City, is located approximately 1,000 feet southwest of the plant. **Figure 3-2** depicts the current site layout and surrounding vicinity of Former AFP 59. **Figure 3-3** depicts the site layout prior to plant demolition.

3.1.1 Physiography, Topography, and Site Geology

Former AFP 59 is located within the Appalachian Plateau physiographic province, which is characterized by relatively undisturbed, nearly horizontal sedimentary rocks bisected by stream and river valleys. The topography of the installation is nearly flat and ranges in elevation from 830 to 840 feet above mean sea level (USAF, 1993). The subsurface geology in the vicinity of AFP 59 generally consists of approximately 75 to 100 feet of stratified, unconsolidated glacial deposits overlying glacial till and shale and siltstone bedrock. The stratigraphy generally consists of 2 to 5 feet of artificial fill, 3 to 34 feet of glacial outwash deposits, 0 to 54 feet of fine-grained glacial deposits, and 15 to 64 feet of ice-contact deposits. The fine-grained glacial deposits are not present in the northeast portion of the site where glacial outwash deposits are in direct contact with ice-contact deposits. A thin layer of fine-grained alluvium overlies the glacial outwash deposits on the eastern portion of the site.

3.1.2 Hydrogeology

Former AFP 59 is located on the western edge of the Clinton Street-Ballpark Aquifer, which is a highly productive aquifer, yielding 400 to 2,290 gallons per minute, and underlies 3 square miles within the Greater Binghamton area (CH2M Hill, 1984). The formations that make up the aquifer are the glacial outwash deposits and the underlying ice-contact deposits, with occurrences of fine-grained glacial deposits that may locally restrict vertical groundwater movement. The aquifer is locally separated into two zones (shallow and deep) in areas where the fine-grained glacial deposits are present. In general, the shallow zone of the aquifer is comprised of glacial outwash deposits and the deep zone of the aquifer is compressed of ice- contact deposits.

The Johnson City Water Department maintains seven deep production wells that supply water to the Village of Johnson City, as well as to a portion of the town of Union that lies north of the village (URS, 1992). Three of the Johnson City Water Department municipal productions wells are southwest of AFP 59 at the Camden Street Wellfield, and one municipal production well is northeast of the site.

3.1.3 Surface Water

Little Choconut Creek and the Susquehanna River are within 1,000 feet of Former AFP 59. Little Choconut Creek borders the plant to the east and south. The creek flows to the west and converges with the Susquehanna River approximately 1,000 feet west of the southwest corner of the plant. No municipal users of the surface water occur within 3 miles downstream of AFP 59 (CH2M Hill, 1984).

3.2 Former, Current, and Future Land Use

AFP 59 was formerly a government-owned, contractor-operated facility, AFP 59 manufactured aircraft-related products since 1942. The plant was built in 1942 by the Defense Plant Corporation to produce aircraft propellers during World War II. Remington Rand, the first manufacturer to occupy the plant, produced aluminum aircraft propellers from 1942 to 1945. After World War II, the plant was only used as a warehouse and for reserve training. In 1948, the building was occupied by the Aeronautics and Ordnance Systems Division of General Electric (GE) to produce aircraft flight and fire control components. The plant had a limited work force for the next 3 years, but was fully operational by 1951. For the next 10 years, GE manufactured armament systems and engine controls. After the Korean conflict, manufacturing activity declined. From 1951 to 1958, the plant transitioned to the F-4 program. In 1958, the USAF planned deactivation of AFP 59. However, final disposal of the plant did not occur and GE continued to operate the facility without interruption.

Plant activity peaked in the late 1960s during the Vietnam War. In 1961, the transition to the F-111 began and, in 1970, to the F-15. During the 1970s and 1980s, production changed from manufacturing mechanical systems to producing electronic and computer systems, such as flight controls and internal navigation and guidance systems. As of the mid-1980s, the plant produced sophisticated avionic and electronic controls in support of the A-10, F-18, F-4, F-5, F-15, F-111, C-5, B-1, and V-22 programs. These systems included fire/flight control systems, displays and simulators, propulsion controls and condition monitors, and spacecraft controls. Most production was on subcontract to McDonnell Douglas, Lockheed, and Rockwell. In 1986, the plant was recommended for disposal.

In 1993, Martin Marietta acquired GE Aerospace and took over operation of AFP 59. Lockheed and Martin Marietta merged in 1995 and the plant was operated by Lockheed Martin Control Systems, producing highly sophisticated avionics and electronic controls. In April 2000, BAE Systems acquired Lockheed Martin Control Systems and took over operation of AFP 59.

During the operational history under BAE Systems, flooding occurred during 2006 and 2011. In 2006, the Susquehanna River flooded the plant site. The plant, however, was still able to remain in operation. In 2011, the site was severely flooded as a result of the remnants of Hurricane Irene and Tropical Storm Lee. The plant was so severely flooded that it was not practical to repair the plant (USAESCH, 2013). The plant was vacant and non-operational until its demolition in the 2016 as discussed in **Section 4.3.2**.

Currently, the former AFP 59 is a vacant parcel that was transferred to the Broome County Industrial Development Authority (BCIDA) in 2018 after completion of the demolition of the former plant and a soils removal action in 2016 and 2017.

3.3 History of Waste Disposal/Contamination

Nine (9) sites or areas of concern where past activities at AFP 59 could have resulted in releases to the environment were identified prior to the RI (Earth Tech, 1996). The numbering of these sites varied

throughout the IRP process; therefore, the sites discussed below are identified by name, without reference to site numbers. In addition to the nine sites and areas of concern, an area of TCE-contaminated soil was also discovered in 2002 and PCBs in wood along the catwalks was encapsulated. Each site is discussed below. **Figure 3-4** shows the locations of former IRP sites and areas of concern (AOCs).

3.3.1 Underground Waste Oil Storage Tanks

This site was located south of the Special Programs Facility at the southeastern corner of the former Manufacturing Building. Two interconnected 1,000-gallon underground storage tanks (USTs) were used to temporarily store waste cutting oils from the various machining areas of the plant until they were removed and disposed by a private contractor. Prior to 1969, non- chlorinated, kerosene-based degreasing solvents were used at the plant and stored along with the waste oils. Halogenated solvents, such as TCE, 1,1,1-trichloroethane (TCA), and Freon, were introduced in 1969. These waste solvents were drummed and recycled on-site or were transported off-site by a contractor. The USTs operated from 1953 to 1985, at which time they were removed (USAF, 1993). The tanks were reportedly inspected daily to prevent overtopping. However, spills reportedly occurred during the removal of oils from the tanks by an outside contractor. During the tank removal, stained gravel and soil were found and determined to be contaminated. This soil was reportedly excavated to a depth of 12 feet (approximately 6 feet below the bottom of the tanks). Soil at the bottom of the excavation below the removal area was reportedly sampled and found to be nonhazardous; the contaminated soil was then reportedly removed from the site (USAF, 1993).

3.3.2 Drum Storage Area

The Drum Storage Area was located in the maintenance area south of the Manufacturing Building, southeast of the former Plating Building, and west of the Special Programs Facility. The site was been used as a drum storage area from 1942 to 1970 when it was repaved. Waste paints, waste oils, and spent kerosene-based degreasers were stored at this area prior to off-site disposal by an outside contractor. In 1963, the top 8 inches of soil were removed from the Drum Storage Area, and the site was paved (USAF, 1993). Employees reported spills prior to the paving in 1963.

3.3.3 Little Choconut Creek

Little Choconut Creek is located on the Former AFP 59 eastern and southern borders. It was placed on the IRP list because three wastewater outfalls that were potential sources of contamination enter the creek south of AFP 59 (USAF, 1993).

3.3.4 Plating Building

The Plating Building was located south of the Manufacturing Building, between the Range Building and the Special Programs Facility. Operations in the Plating Building produced various wastes, including plating acids, caustic sludges, and chromium and cyanide solutions. The plating acid wastes were typically mixed sulfuric, nitric, muriatic, and chromic acids. Spent plating solutions included copper cyanide, nickel cyanide, and cadmium cyanide. The acid wastes were pumped to the plating waste storage tank and neutralized prior to removal by an outside contractor. The cyanide waste was drummed for off-site disposal (CH2M Hill, 1984). Degreasing activities also occurred in the Plating Building. Plating operations were discontinued in 1991 and the plating equipment was removed in 1992.

At the time of closure, 89 tanks of various sizes, mostly less than 250 gallons, were located in the Plating Building. The Plating Building was decommissioned in 1992 and 1993 (USAF, 1993).

3.3.5 Storage Tank and Settling Pond

The Storage Tank and Settling Pond were located adjacent to the southwestern corner of the Plating Building. The plating waste Storage Tank was an open-top, in-ground, rectangular tank. The walls of the tank were approximately 8 feet high. The tank was constructed of concrete, with an inner layer of acid brick and a fiberglass inner liner. The Storage Tank stored spent plating liquids prior to removal by an outside disposal contractor. Burnite was also stored in the tank from December 1990 to June 1991. Use of the Storage Tank was discontinued in June 1991 (USAF, 1993).

The Settling Pond was a brick-lined, open-top, in-ground tank. From 1952 to 1969, plating rinse water was discharged to the Settling Pond for metals precipitation and then discharged to Little Choconut Creek through Outfall 001. Between 1969 and 1984, ferrous sulfate was added to plating rinse waters before entering the Settling Pond to reduce hexavalent chromium to trivalent chromium and precipitate the metals. The treated rinse water was discharged to the creek through Outfall 001. The precipitate was periodically transferred to the adjoining storage tank for subsequent disposal by a contractor.

In July 1984, a new plating rinse water treatment and reuse system was installed. The plating rinse water passed through the Settling Pond and grease trap, and was treated by anion and cation exchange columns. It was then stored in an underground tank for reuse. The brine generated during this process was placed in the Storage Tank and removed from the site by a contractor. In 1988, the treatment system became contaminated, and the system was abandoned. From 1988 to 1991, plating rinse water was discharged into the sanitary sewer. Plating operations were discontinued in 1991, and the Storage Tank and Settling Pond have since been decommissioned and removed.

3.3.6 Former Gasoline Underground Storage Tank

The Gasoline Storage Tank was located north of the Manufacturing Building and east of the Office Building. The 1,000-gallon UST was removed in 1975. Other information on the history and condition of the site is not available (USAF, 1993).

3.3.7 JP-4 Piping Area

The Piping Area is located south of the Manufacturing Building. The underground pipeline leads from two 1,500-gallon above ground storage tanks containing JP-4 fuel to the Manufacturing Building. The fuel was used to test various aviation components (Earth Tech, 1996).

3.3.8 Oil/Water Separator

The former Oil-Water Separator (OWS) was located near the southeast corner of the Special Programs Facility adjacent to the former waste oil storage tanks. Waste oils and kerosene-based degreasing solvents were discharged to the Oil/Water Separator from 1942 to 1953. Effluent from the separator was discharged to the storm sewer system that emptied into Little Choconut Creek through Outfall 002. In the 1970s, the separator was filled with sand and capped with concrete (USAF, 1993).

3.3.9 Transformer Area

The transformer area was located about 50 feet from the northeast corner of the former manufacturing building. Between 1998 and 1992, all known PCB-containing equipment was eliminated from the buildings (Earth Tech, 1996).

3.3.10 East Basement TCE Soil Pile

The dimensions of the East Basement of the Manufacturing Building were approximately 300 feet (north to south) by 70 feet (east to west) with an average overhead clearance of approximately 8 feet. A grid of brick and concrete columns (10-foot-by- 10-foot spacing) supported the main floor of the plant with a concrete wall around the perimeter of the basement. The basement was used to store scrap material, and had an unfinished dirt floor. There was a single access point on the southeast end of the basement (with concrete stairs).

Two soil investigations were conducted in the East Basement to characterize the nature and extent of soil contamination: an initial soil screening investigation by BAE Systems between August 2002 and April 2003, and a soil investigation by Earth Tech in November 2004. These investigations identified TCE as the contaminant in soil at concentrations above the NYSDEC *Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC, 1994). Based on the findings of the soil investigations conducted between 2002 and 2004, a January 14, 2005 letter report (Earth Tech, 2005a) recommended excavating 78 linear feet of the TCE-contaminated soil pile.

3.3.11 PCB Encapsulation

In 1993, PCB-stained building rafters were discovered in eight locations in Building 2 where PCB-containing transformers had been located (Earth Tech, 1996). PCBs in the wooden structure along the catwalk areas were encapsulated during the 1990s and 2000s.

3.4 Initial Response

In 1984, the USAF conducted an IRP Records Search (CH2MHill, 1984) for AFP 59. An RI was conducted, with the Final RI Report (Earth Tech, 1996) and baseline human health risk assessment being completed in 1996. Potential remedial alternatives for the cleanup of VOC-contaminated groundwater were evaluated in the Final Remedial Alternatives Informal Technical Information Report (Earth Tech, 1996). The Proposed Plan (PP) was completed in July 1999, and the USAF signed the ROD for AFP 59 in September 1999. The ROD selected the upgrade of the current groundwater treatment system at the Camden Street Well Field as the preferred method for cleanup of the VOCs in groundwater related to historical activities at AFP 59.

3.5 Basis for Taking Action

Concentrations of constituents of concern (COCs) of VOCs in groundwater exceed Federal Drinking Water Standards (i.e., MCLs) and New York State Sanitary Code for Public Drinking Water. As a result, there exists an unacceptable risk to human health from a hypothetical future ingestion of groundwater in the shallow aquifer at former AFP 59. In conjunction with air stripping tower at the Johnson City Camden Street Wellfield, the USAF conducts long-term monitoring at the former plant, the wellfield, and in the neighborhood to the immediate west of the former plant.

4.0 REMEDIAL ACTION

Remedial actions associated with Former AFP 59 Site SS005 consisted of both off-site and on-site actions. The ROD, finalized in 1999, codified the use of an air stripper at the Johnson City Camden Street Wellfield to address groundwater contamination originating from the former plant. Subsequently, the USAF conducted removal actions at the former physical plant and underlying soils from July 2015 through April 2017. The sections below summarize the activities for the both off site and on site remedial and removal actions.

4.1 Off-Site Remedial Action

In June 1992, an air stripper was installed by Johnson City at the Camden Street Wellfield to reduce concentrations of TCA to below the New York maximum contaminant level (MCL) of 5 micrograms per liter (µg/L). In September 1998, the USAF entered into a Memorandum of Understanding (MOU) with the Village of Johnson City to pay for: 1) the design and engineering costs of a treatment system (i.e., air stripper) upgrade; 2) the operation and maintenance costs of the existing air stripper from 1 October 1997 through 30 September 1998 (as an extension of a September 1996 agreement); 3) a portion of the construction costs for the air stripper upgrade; and 4) a portion of the operational costs of the air stripper for a period of 1 year following completion of construction. The MOU was a voluntary undertaking by the USAF and did not constitute any finding by either Johnson City or the State of New York that Former AFP 59 was the source of TCA at the well field (Earth Tech, 1996). Once the treatment system was operating in June 1999, the remedy as described in the ROD was complete.

4.1.1 Regulatory Basis

The ROD was approved in May 1999 by the USAF. The ROD addresses groundwater contamination for VOCs.

4.1.2 Remedial Action Objective

As stated in Section 4 of the ROD, the remedial action goal is to protect human health from VOCs in groundwater. This goal, then, serves as the Remedial Action Objective (RAO) for the remedy. VOCs in groundwater are present in the shallow and deep zones of the surface aquifer, which is a result of historical activities and releases from Former AFP 59.

The cleanup criteria are based on Federal and New York State groundwater standards. These consist Federal Safe Drinking Water Act (SDWA) National Primary Drinking Water Regulation MCLS (40 CFR 141) and the New York State Sanitary Code, Chapter I, Subpart 5-1, Public Drinking Water Systems. For those constituents not covered by the New York Sanitary Code, groundwater standards and guidance were obtained from *Water Quality Regulations Surface and Groundwater Classifications and Standards*, NYCRR Title 6, Chapter X, Parts 700-705.

4.1.3 Remedy Description

The 1999 ROD for Former AFP 59 identified upgrading the Camden Street Well Field groundwater treatment system as the most appropriate remedial alternative for treating the VOCs in groundwater. An LTM program was also established as part of the requirements defined in the ROD. The monitoring program, as defined in the 27 April 1999 letter to the NYSDEC (Earth Tech, 1999a), consisted of semiannual sampling of the following monitoring wells: SW1, DW1, SW3, DW3, SW4, and SW7.

Monitoring wells SW1 and DW1 represent upgradient (background) wells; monitoring wells SW3 and DW3 represented downgradient wells; monitoring wells SW4 and SW7 (gradient is from SW4 to SW7) historically contained the highest concentrations of VOCs. Groundwater monitoring of VOCs was conducted semiannually as part of the LTM program from November 1998 until the program's conclusion with the November 2004 sampling event; however, groundwater monitoring continued due to the potential VI issue, as discussed in **Section 6**.

Currently, the LTM program in support of the remedy includes quarterly, semi-annual, and annual monitoring. The LTM program is conducted over the government's fiscal year period from October of each year through September the following year.

Quarterly Monitoring: Johnson City Camden Street Well Field

- JC-2 – Water supply well no. 1
- JC-3 – Water Supply well no. 2
- Post-treatment – Domestic water

Semi-Annual Monitoring:

- JC-2 – Water supply well no. 1
- JC-3 – Water Supply well no. 2
- Post-treatment – Domestic water
- URS-3D – Offsite neighborhood deep well

Annual Monitoring:

- JC-2 – Water supply well no. 1
- JC-3 – Water Supply well no. 2
- Post-treatment – Domestic water
- URS-2D – Neighborhood deep well
- URS-3D – Offsite neighborhood deep well
- URS-2S – Offsite neighborhood shallow well
- URS-5S – Offsite neighborhood shallow well
- DW-3 – Onsite deep well
- DW-5 – Onsite deep well
- SW-3 – Onsite shallow well (boundary)
- SW-4RE – Onsite shallow well
- SW-7RE – Onsite shallow well

In addition to the VOCs listed in Table 4-1 of the ROD, the groundwater monitoring also includes monitoring for 1,4-dioxane, an emerging contaminant that was used as a stabilizer for chlorinated solvents such as TCE and TCA.

4.2 East Basement 2005 Removal Action

As noted in Section 3.3.10, Earth Tech had recommended removing an estimated 78 linear feet of TCE-contaminated soils in January 2005 (Earth Tech 2005). BAE proceeded with a removal action in July 2005 and removed a total of 119 cubic yards of TCE-contaminated soil was removed from the East Basement.

The East Basement soil excavation removed all of the known VOC contamination above the NYSDEC *Technical and Administrative Guidance Memorandum (TAGM 4046): Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC, 1994) limits in basement soils except for TCE (48 milligrams per kilogram) identified at one location. The contaminated soil at this location and depth was not removed due to structural concerns (i.e., undermining the structural columns and wall). However, the lateral extent of this contamination was limited, and the contamination was covered with clean, compacted backfill (Earth Tech, 2005c).

4.3 Supplemental Vapor Intrusion Remedial Investigation and Feasibility Study

The investigation evaluated VI within the physical plant of AFP 59 and also the groundwater on site as well as off site in neighborhood to the west of the former plant.

Soil gas sampling had been conducted at Former AFP 59 in November 2004 (southwest corner of property) and again in October/November 2006 (building periphery). In both instances, VOCs were reported at elevated concentrations. Based on these results, NYSDEC requested indoor air and sub-slab sampling within the manufacturing building. These results indicated a potential risk pathway as five of six sampling locations exceeded concentrations for monitoring and/or mitigation in the guidance matrices for four compounds (TCE; tetrachloroethene [PCE]; TCA; and carbon tetrachloride) under New York State Department of Health (NYSDOH) *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006). The NYSDEC and NYSDOH then recommended further evaluation and a comprehensive VI investigation of the manufacturing building and the adjacent neighborhood and to include groundwater sampling to complete the nature and extent for VI.

The USAF conducted the field investigation in August and November 2010. The VI sampling consisted of collecting 60 indoor air samples paired with co-located sub-slab sampling. The investigation also included collecting ambient air samples outside of the manufacturing building. For the groundwater monitoring effort, samples were collected from six (6) onsite wells (shallow and deep zone) from the plant property and four (4) offsite wells (shallow and deep zone).

The results of the VI sampling indicated the following constituents from Decision Matrices 1 and 2 of the NYSDOH guidance were present samples:

Indoor Air

- TCE
- TCA
- PCE
- Carbon tetrachloride
- *cis*-1,2-Dichloroethene (*cis*-1,2-DCE)
- Methylene chloride (MeCl)

Sub-Slab Vapor

- TCE
- TCA
- Vinyl chloride (VC)
- PCE
- Carbon tetrachloride

- *cis*-1,2-DCE
- 1,1-DCE
- MeCl

External Ambient Air

- TCE
- VC
- PCE
- Carbon tetrachloride

Other VOCs were also reported, but the above constituents were the primary analytes of interest.

After evaluating the results, seven (7) constituents were identified from the two Decision Matrices of the NYSDOH guidance:

- Matrix 1: TCE, VC, carbon tetrachloride
- Matrix 2: TCA; PCE; *cis*-1,2-DCE; 1,1-DCE

The summary for recommended actions at the individual sampling locations within the manufacturing plant were:

- Mitigate: Recommended action at 25 of 60 locations.
- Monitoring/Mitigate: Recommended action at 4 of 60 locations.
- Monitor: Recommended action at 16 of 60 locations.
- Identify Sources/Reduce Exposure: Recommended action at 14 of 60 locations.

The defining activities associated with the above four categories are:

Mitigate: Minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system, and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Monitor: Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Monitor/Mitigate: Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site specific conditions.

Identify Sources/Reduce Exposure: The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

As such, the results of the Supplemental RI for VI indicated that unacceptable ranges of VOCs were present in either the sub-slab sample, the indoor air, or both and required an action to address potential inhalation exposure.

The investigation results moved forward into an FS, which evaluated four potential alternatives:

- Alternative 1 - No further action
- Alternative 2 – Long-Term Monitoring
- Alternative 3 – Sub-slab Depressurization
- Alternative 4 – Building Demolition with Soil Excavation and Disposal

Alternative 4 was selected as the preferred alternative. While Alternative 4 was more costly than the other alternatives, the property had undergone significant flooding from tropical cyclones in 2011 and the facility was no longer active or occupied.

4.4 On-Site Removal Actions

As the follow up to the RI/FS for VI, in 2015 through 2017, the USAF embarked on removal actions to decontaminate the former physical plant, demolish the plant, and excavate residual contaminated soils associated with the former plant. These actions commenced in July 2015 and were completed in April 2017. The detailed information related to the decontamination and demolition of the former plant can be found in *Final Decontamination and Demolition Report, Air Force Plant 59* (CB&I, 2017).

4.4.1 Building Decontamination

In July 2015, the USAF commenced with the decontamination of the existing structure through their contractor Chicago Bridge & Iron (CB&I). The tasks involved with the decontamination were:

- Mobilization and site preparation
- Recovery of scrap
- Interior (i.e., soft) Demolition
- Universal and miscellaneous waste removal
- Asbestos abatement
- Air monitoring
- Roofing material removal
- Recycling
- Waste disposal
- Demobilization

As part of the mobilization and site preparation, CB&I conducted a hazardous materials survey to identify all materials requiring special handling (e.g., asbestos, mercury containing materials, etc.). This

survey also provided the required information under USEPA Notification of Demolition and Renovation under National Emission Standards for Hazardous Air Pollutants.

The decontamination of the facility was completed in June 2016.

4.4.2 Building Demolition

CB&I commenced with building demolition in February 2016 and completed the demolition in January 2017. The major tasks included:

- Mobilization and site preparation
- Utility Abandonment
- Interior Demolition of non-structural features
- Demolition of structural components
- Demolition of the classified document incinerator stack
- Belowground demolition
- Capping of storm drains
- Abandonment of OWSs
- Recycle/disposal of building materials
- Backfill and grade site
- Restoration of the site (seeding)
- Demobilization of personnel and equipment

The work also included environmental control measures such as dust mitigation, spill prevention, and storm water management.

4.4.3 Soils Removal Action

Following the completion of the building demolition, CB&I proceeded with a soils removal action that commenced in February 2017 and lasting through April 2017. The purpose of the removal action was to remove and dispose soil contamination identified above New York State Department of Environmental Conservation (NYSDEC) residential Soil Cleanup Objectives (SCOs) during the Environmental Baseline Survey (EBS) Phase II investigation (CB&I, 2015a), and any additional contamination identified during the removal of the slab and subsurface features beneath the building. The objective was to remove soil contaminated as a result of historical activities conducted at AFP 59 to cleanup standards suitable for residential use. The tasks to accomplish the removal action:

- Removal of catch basins and oil/water separators (OWSs) associated with the subsurface storm sewer system
- Cutting and capping of piping, or abandonment of structures greater than 5 feet (ft.) below ground surface (bgs) to remain in place
- Soil sampling and analysis for the delineation of soil contamination identified in the EBS Phase II
- Systematic screening of the building footprint for VOCs using a photoionization detector (PID); plus continuous PID screening during removal of the building foundation, subsurface structures, and contaminated soil
- Soil sampling and analysis to investigate potential contaminant sources identified during building decontamination and demolition activities
- Site surveying of excavation areas prior to the removal action, and resurvey of the entire site following site restoration including final site grading

- Contaminated soil excavation, transport, and off-site disposal
- Post-excavation soil sampling and analysis
- Waste characterization sampling and analysis
- Site restoration

CB&I removed soils from four areas associated with the former plant:

- Area 1 – Former Degreaser Pit for metals barium and cadmium.
- Area 2 – South of the former Production Building for polycyclic aromatic hydrocarbons (PAHs).
- Area 4 – Adjacent (west of) of the internal east basement for PAHs in visibly stained soils.
- Area 4A – Co-located with Area 4 excavated for TCE-contaminated soils in the southeast boundary of Area 4.

A total of 7,788 cubic yards (CYs) and 10,296 tons of soils were removed and disposed as non-hazardous waste. Post-excavation sampling confirmed the removal of contaminated below the NYSDEC Restricted Residential SCOs. The site was restored with clean soil backfill and seeding leaving the site in its current state as an undeveloped parcel.

4.5 Proposed Plan (2019) and Decision Document (2020)

In 2018, Former AFP 59 was transferred as a property to the BCIDA under separate quit claim deeds for the former manufacturing plant proper and the former parking areas on the north side of the former plant. As a follow up to the property transfer, the USAF developed a PP in 2019 identifying a preferred alternative for the site to enable the former site to be beneficially redeveloped. The subsequent DD completed in 2020 presented the preferred remedy as the addition of several feet of additional soil over the site to cover soils contaminated with PAHs above the Residential Restricted SCOs. The remedy also includes LUCs and ICs to: (1) indicate that the site is acceptable for restricted residential use, (2) prohibit any usage of groundwater for any other purpose than monitoring, (3) require that potential soil VI concerns be evaluated or mitigated prior new building construction, and (4) develop a soil management plan that requires certain actions be taken when the soil cover is disturbed. Subsequently, the USAF and BCIDA developed the *Air Force Plant 59 Site Management Plan* (FPM Auxilio, 2021) to govern the site under the DD remedy once in place. The site management plan (SMP) establishes ICs and engineering controls (ECs) for the site based upon the DD. The ICs in the SMP incorporate the LUCs, including prohibition of groundwater use, from the DD. The BDICA, in conjunction with the USAF, is responsible for implementing the remedy. Section 2.12 of the 2020 DD delineates the roles of BCIDA and the USAF as follows:

> *"The AFP-59 property owner, currently BCIDA, in conjunction with the USAF, will be responsible for implementing, maintaining, and monitoring the remedial action identified herein for the duration of the remedy selected in this DD as required by NYSDEC requirements. The property owner will be responsible for the following:*
>
> - *Establishing an environmental easement with the NYSDEC.*
> - *All soil cover associated with the selected remedy. This will include placement of the soil cover as well as soil cover inspections and maintenance as required by the NYSDEC.*
> - *Notifying the Air Force regarding proposed construction at the site.*

- *Installation and operation of any soil vapor response action systems that ultimately may be required in the future.*
- *Annual site inspections, which will include site soil LUC inspections and reporting, soil cover inspections and soil vapor response action system inspections.*

The USAF is will be responsible for the following:

- *All groundwater monitoring and reporting.*
- *Groundwater LUC inspections and reporting.*
- *Soil vapor sampling and investigations following any new building construction. Soil vapor response action would be responsibility of the site owner.*
- *Periodic review reports as required by the NYSDEC. The reports will be required annually until otherwise agreed to by the NYDEC.*
- *Five-Year Reviews."*

As the DD remedy has not yet been implemented, there is no evaluation in this five-year review related to the DD remedy.

5.0 PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

Since the last five-year review, the LTM groundwater monitoring program has continued and the USAF conducted significant remedial actions and removal actions on site. The remedial actions were discussed in **Section 4** of this report.

5.1 Protectiveness Statement from FIRST Five-Year Review

The following protectiveness statement is from Section 10 of the FIRST Five-Year Review:

> "The treatment of off-site VOC-contaminated groundwater prior to discharge into the local public drinking water system was the remedy selected in the 1999 ROD for AFP 59 and has been and is expected to continue to be protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled. Current Johnson City monitoring data indicate that the groundwater treatment system upgrade selected in the 1999 ROD is functioning as required to achieve cleanup goals."

Since the FIRST Five-Year review, the treatment system for stripping VOCs from groundwater at the Johnson City Camden Street Well Field has continued to operate as designed.

5.2 Issues Identified from the FIRST Five-Year Review

There were no issues identified in the FIRST Five-Year Review for AFP 59 that affected to protectiveness. The five-year review did identify an issue within the then existing plant that was not evaluated as posing a current risk in 2012 or potentially affecting future protectiveness based upon the 1999 ROD.

Table 5-1 Issues Raised in FIRST Five-Year Review, AFP 59

Issue	Affected Current (2012) Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Subsequent investigations have revealed soil vapor exceedances within the main industrial building at AFP 59.	N	N

As noted in **Section 4.2** of this report, the USAF completed the *Supplemental Vapor Intrusion Remedial Investigation Report and Feasibility Study, Air Force Plant 59* (AECOM, 2012). The findings of the RI portion of the document noted concentrations of VOCs in the sub-slab pore space, indoor air, or both that posed human exposure. It should be noted that, while these findings indicated a potential risk to human health from VI within the former plant, the 1999 ROD relates to the groundwater contamination and not soil contamination at the former plant. The remedy, air stripping at the Johnson City Camden Street Well Field, does not address soil contamination at the former plant.

In addition, at the time of completion for the FIRST Five-Year Review, the government contractor operating the former plant, BAE Systems, had ceased operations at the plant and the plant was no longer occupied following the flooding from two tropical cyclones in August and September 2011.

5.3 Recommendations from the FIRST Five-Year Review

Based on the FIRST Five-Year Review identified above, the following recommendation for follow up was identified in Section 9 of that review. As noted above, however, that issue was not deemed to affect the

protectiveness of the remedy because the issue was related to VI issues associated with contaminated soils and inhalation within the former plant and not groundwater contamination.

Table 5-2 Recommendations and Follow-Up Actions FIRST Five-Year Review, AFP 59

Issue	Recommendations/ Follow-Up Action	Responsible Party	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
VI Exceedances not addressed in ROD and do not affect protectiveness of the current RA.	Develop RAs for VI if required	USAF	NYSDEC	NA	N	N

The *Supplemental Vapor Intrusion Remedial Investigation Report and Feasibility Study, Air Force Plant 59* (AECOM, 2012) evaluated four alternatives to address the VI issue at the former plant as related in **Section 4.2** to this report. Alternative 4 was subsequently proposed as the remedy in the PP (FPM Remediations, February 2019). The Alternative 4 consisted of Building Demolition with Soil Excavation and Disposal as the remedial action for the former plant. While this proposed remedy was the highest cost alternative, the physical plant was no longer operational, not occupied, and had been damaged by the tropical cyclones in August and September 2011. As such, the USAF deemed Alternative 4 the most appropriate remedial action.

As a follow up the development of the remedial action alternative, the USAF proceeded with the decontamination, demolition, and soils RA in 2015 through 2017 as summarized in **Sections 4.3** of this report.

6.0 FIVE-YEAR REVIEW PROCESS

This section describes the activities performed during the five-year review process and provides a summary of findings. While this review is deemed a five-year review, the review period actually covers the ten (10) years of remedial activities and LTM conducted since the completion of the FIRST Five-Year Review in 2012.

6.1 Administrative Components and Community Involvement

6.1.1 Administrative Components

The SECOND Five-Year Review of Former AFP 59 was kicked off between the USAF and its five-year review contractor, Versar, on 29 July 2021. The site inspection was conducted on 30 September 2021 and interviews were conducted in October 2021 and January 2022 with review team members and other stakeholders. Team members who participated in the five-year review interview process included the NYSDEC RPM, Brian Jankauskas; the USAF Installation Support Section (ISS) Program Manager, George Walters; and the current USAF RPM, David Iacovone. In addition, Versar visited the Johnson City Camden Street Well Field to inspect the stripping tower operation. Versar attempted to interview the current property owners with the BCIDA; however, the two individuals contacted declined to participate citing lack of knowledge of the environmental activities on site.

6.1.2 Community Involvement

As Former AFP 59 was not included on the NPL, the former plant does not have a Restoration Advisory Board (RAB) that meets with the local community. Prior to the issuance of the 1999 PP, a public notice was published in a local newspaper that announced the public availability of the PP and provided a brief description of the Proposed Action. Following the issuance of the PP, a public meeting and hearing was held 17 August 1999 at the Hilltop Retirement Community Center to discuss the remedy and proposed action. During the development of the 1999 PP to convey the remedy for groundwater to the public, minimal community response occurred and these were addressed in the 1999 ROD responsiveness summary. As part of the five-year review process for this review, Versar, Inc. placed a legal advertisement for the upcoming Five-Year Review in the Binghamton Press and Sun Bulletin on 27 February 2022.

6.2 Document Review

This five-year review process included a review of relevant documents including RODs, LTM reports, supplemental investigations, feasibility study, regulatory guidance, and removal and remedial action documents. **Attachment A – List of Documents Reviewed/References** lists the documents included in the preparation of this SECOND Five-Year Review.

6.3 Data Review

The following subsections summarize the annual LTM activities conducted under the 1999 ROD for groundwater since the completion of the FIRST Five-Year Review. While groundwater monitoring data was collected in each of the ten (10) years since the FIRST Five-Year Review, reports were not issued for all years. Annual reports were available for 2014, 2016, 2017, 2019, 2020, and 2021. For those years when annual LTM reports were not prepared, the historical data included in subsequent year reports were used. For 2018 data, the review includes the data from the three quarterly reports issued in 2018.

The locations of on site and off site monitoring wells are depicted on **Figure 6-1**. The full historical data set of groundwater monitoring is included in **Attachment B**. In addition, trend graphs for wells DW-3, URS-2D, SW-4/4RE, and SW-7/7RE are included as **Figures 6-2 through 6-5**.

The USAF ceased collecting groundwater samples from upgradient shallow well SW-1 in 2016 and upgradient deep well DW-1 in 2014. No COCs had been reported above standards and were primarily orders of magnitude below standards during any of the monitoring events including these upgradient wells. As noted in **Section 4.3.3**, the building demolition and subsequent soils removal action required the abandonment of wells SW-4 and SW-7 and their replacement with wells SW-4E and SW-7RE.

The Applicable or Relevant and Appropriate Requirements (ARARs) in the 1999 ROD for groundwater are based on Federal Drinking Water Standards (i.e., MCLs) and New York State Public Water Systems or New York State *Water Quality Regulations* where an analyte is not included in the latter sources. The groundwater chemical-specific ARARs from the ROD are included in **Attachment C**. The updates from the original values in the ROD are covered in **Section 7.2** to this report. It should be noted that 1,4-dioxane was not included as a specific target analyte under the 1999 ROD. 1,4-Dioxane was sampled originally in June 2008 in wells SW-3, DW-3, SW-4, and SW-7 and was reported in DW-3, SW-4, and SW-7. Subsequently, 1,4-dioxane has been included in the analytical suite since 2013. 1,4-Dioxane was used as a stabilizer for chlorinated solvents such as TCA, TCE, and PCE and was added as the result of the USAF investigating emerging contaminants in the early 2010s. Currently, the comparison of groundwater monitoring results is to the NYSDEC Class GA Groundwater Quality Standards (GWQSs) and guidance value while the treated water results from the Camden Street Wellfield are compared to the NYSDOH MCLs (Part 5, Subpart 5-1 Public Drinking Water Systems). The standard for 1,4-dioxane is the New York State MCL of 1 microgram per liter (µg/L) promulgated in 2020.

Regular monitoring of the influent waters from municipal wells JC-2 and JC-3 at the Camden Street Wellfield began in 2012. The USAF began sampling of the treated waters from the wellfield in 2016 and quarterly monitoring of the influent and treated waters began in 2018.

In general, the concentrations of chlorinated VOCs (CVOCs) and 1,4-dioxane are higher in the lower portion of the aquifer than the upper fraction of the aquifer. The primary contaminants of note are *cis*-1,2-DCE and 1,4-dioxane that exceed regulatory standards with occasional excursions above the NYSDEC GWQSs of TCE. Only trace concentrations of VC are reported on site. VC is the final dechlorinization step in the complete mineralization of CVOCs towards ethene or ethane. The trace levels of VC indicate that the demineralization is stalling at the *cis*-1,2-DCE step and the biological consortium in the local groundwater may not provide a viable mechanism for complete dechlorinization. The natural mineralization of CVOCs through VC to ethene and ethane is also known as natural attenuation.

Groundwater level measurements of the wells on site and off site were also collected during the LTM events. Groundwater direction in the vicinity of the former plant flows from northeast to southwest and the potentiometric surface of the aquifer is significantly affected by the pumping at the Camden Street Well Field. The groundwater potentiometric surface map from the 2021 Annual LTM event is included as **Figure 6-6** for reference.

6.3.1 2012 LTM

It should be noted that no groundwater monitoring was conducted in 2011 prior to the 2012 monitoring due to the flooding of the site in August and September 2011. In addition, no actual annual report was

available for the 2012 groundwater monitoring in the existing documentation provided or in the Administrative Record. The results discussed for 2012 were taken from historical data tables in the succeeding annual monitoring reports from 2014. Eight monitoring wells were included for the 2012 annual monitoring program plus an influent sample from the Camden Street Wellfield. The monitoring wells included five shallow wells (SW-1, SW-3, SW-4, SW-7, and URS-2S) and three deep wells (DW-1, DW-3, and USR-2D). Municipal well JC-3 was sampled from the wellfield. The USAF had not yet started analyzing for 1,4-dioxane in groundwater as of 2012.

In general, the results for the groundwater monitoring were consistent with historical results and where CVOCs were present in both the shallow and deeper fraction of the surface aquifer. Below is a summary of groundwater monitoring results from 2012:

On Site Monitoring Wells

- SW-1: COCs nondetect.
- DW-1: COCs nondetect.
- SW-3: Trace TCE and *cis*-1,2-DCE. No results exceeded NYSDEC Class GA GWQSs.
- DW-3: 1,1-DCA and *cis*-1,2-DCE. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS.
- SW-4: TCA, TCE, VC, 1,1-DCE, *trans*-1,2-DCE, DCA, and *cis*-1,2-DCE. TCE exceeded the NYSDEC Class GA GWQS.
- SW-7: TCA, TCE, DCA, and *cis*-1,2-DCE. TCE, DCA, and *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQSs.

Off Site Monitoring Wells

- URS-2S: Trace 1,1,1-TCA, TCE, DCA, and *cis*-1,2-DCE. No constituents exceeded the NYSDEC Class GA GWQSs.
- URS-2D: VC, DCA, and *cis*-1,2-DCE. *cis*-1,2-DCE exceeded the NYSDEC Class GQ GWQS.

Camden Street Well Field

- JC-3: Trace TCA, TCE, and *cis*-1,2-DCE. No constituents exceeded the NYSDEC Class GA GWQSs.

SW-1 and DW-1 are upgradient wells to the former plant and indicate no COCs migrating on to the site from upgradient sources. The highest concentrations of COCs exceeding standards were reported in the following wells:

- TCE - SW-4 at 11 µg/L
- DCA – SW-7 at 6.5 µg/L
- *cis*-1,2-DCE - URS-2D at 71 µg/L

6.3.2 2013 LTM

No annual 2013 LTM report was available for 2013 and the results for 2013 were taken from historical tables in the 2014 annual report. Eleven monitoring wells were sampled in 2013 and one Camden Street municipal well. Seven shallow aquifer wells (BM-121, SW-1, SW-3, SW-4, SW-7, URS-2S, and URS-5S) were, four deep aquifer wells (DW-1, DW-3, URS-2D, and URS-3D) were included in the monitoring and JC-2 as the municipal well at the Camden Street Well Field.

In 2013, the USAF began including 1,4-dioxane in the analytical suite as an emerging contaminant. In 2013, NYSDEC did not have standards for 1,4-dioxane. Subsequently, in 2020, NYSDEC did promulgate an MCL of 1 µg/L. While the standard was not in place until 2020, this report still uses that standard for comparison sake.

In general, the 2013 results were consistent with historical results and 1,4-dioxane was reported in numerous wells on site and in the neighborhood just west of the former AFP 59. Well SW-4 adjacent site SS005, however, exhibited a decreasing trend for TCE since 2010. 1,4-Dioxane exceeded the NYSDEC MCL at four locations (DW-3, URS-2S, URS-2D, and URS-3D).

As with prior years, COCs are present in both the shallow and deeper fraction of the surface aquifer. Below are the highlights of the 2013 LTM monitoring:

On Site Monitoring Wells

- SW-1: COCs and 1,4-dioxane nondetect.
- DW-1: COCs and 1,4-dioxane nondetect.
- SW-3: Trace TCA and *cis*-1,2-DCE. No results exceeded NYSDEC Class GA GWQSs.
- DW-3: 1,1-DCA and *cis*-1,2-DCE. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS.
- SW-4: TCA, TCE, 1,1-DCE, DCA, and *cis*-1,2-DCE. TCE exceeded the NYSDEC Class GA GWQS. 1,4-Dioxane also exceeded the 2020 NYSDEC MCL of 1 µg/L.
- SW-7: TCE, 1,1-DCE, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE decreased significantly over the 2012 and historical results but was still present above the NYSDEC Class GA GWQS.

Off Site Monitoring Wells

- BM-121: COCs and 1,4-dioxane nondetect.
- URS-2S: TCA, TCE, 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. No COCs exceeded standards while 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-2D: *trans*-1,2-DCE, 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No COCs exceeded NYSDEC standards while 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCE and TCA. Neither COC exceed NYSDEC Class GA standards.

Camden Street Well Field

- JC-2: Trace TCA, TCE, and *cis*-1,2-DCE. No COCs exceeded NYSDEC Class GA standards.

The highest concentrations of COCs and 1,4-dioxane exceeding standards were reported in the following wells:

- TCE: SW-7 at 7.8 µg/L
- *cis*-1,2-DCE: URS-2D at 62 µg/L
- 1,4-DIoxane: URS-2D at 7.4 µg/L

6.3.3 2014 LTM

The 2014 annual LTM was included in a written report (HGL, 2015). The 2014 annual LTM included eleven monitoring wells and municipal well JC-2. The groundwater monitoring included seven shallow

wells (BM-121, SW-1, SW-3, SW-4, SW-7, URS-2S, and URS-5S) and four deep wells (DW-1, DW-3, URS-2D, and URS-3D). **Figure 6-7** depicts the groundwater monitoring results for the 2014 annual LTM event.

In general, the results for the groundwater monitoring were consistent with historical results and where CVOCs were present in both the shallow and deeper fraction of the surface aquifer. The exception to this observation was 1,4-dioxane where matrix affects were noted in five of six wells and 1,4-dioxane was reported at significantly higher concentrations than observed in 2013. The reproducibility of results between matrix samples during laboratory quality control was above quality control limit of 20 percent. As such, the analytical results were qualified as estimated due to the poor reproducibility results of the matrix samples. Below are the highlights of the 2014 LTM:

On Site Wells

- SW-1: All COCs and 1,4-dioxane nondetect.
- SW-1: All COCs and 1,4-dioxane nondetect.
- SW-3: Trace TCE, TCA, and *cis*-1,2-DCE. No constituents exceeded standards.
- DW-3: DCA, VC, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- SW-4: DCA, VC, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and 1,4-dioxane. Acetone was also reported; however, acetone is not a COC at Former AFP 59. 1,4-Dioxane was reported above the NYSDEC 2020 MCL.
- SW-7: DCE, DCA, TCE, PCE, VC, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and 1,4-dioxane. TCE and *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQSs and 1,4-dioxane exceeded the 2020 MCL. The concentrations in SW-7 increased over 2013 results back towards historical norms pre-2013.

Off Site Wells

- URS-2S: TCA, TCE, DCA, DCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-2D: DCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCA and TCE. Neither COC exceeded the NYSDEC Class GA GWQSs.

Camden Street Well Field

- JC-2: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the 1,4-dioxane NYSDEC 2020 MCL.

The highest concentrations of COCs and 1,4-dioxane exceeding standards were reported in the following wells:

- TCE: SW-7 at 7.8 µg/L
- *cis*-1,2-DCE: URS-2D at 67 µg/L
- 1,4-DIoxane: URS-2D at 28 µg/L

As noted above, the 1,4-dioxane results were impaired by matrix effects. The effects resulted in substantially higher estimated 1,4-dioxane concentrations.

6.3.4 2015 LTM

As was the case with 2012 and 2013, no 2015 LTM report was available and the discussion with respect to the 2015 LTM was developed from historical data present in tables from the 2016 annual LTM report. The 2015 LTM included eleven (11) monitoring wells and one operation municipal wells (JC-2) at the Camden Street Well Field. The monitoring included seven shallow wells (SW-1, SW-3, SW-4, SW-7, BM-121, URS-2S, and URS-5S) and four deep wells (DW-3, DW-9, URS-2D, and URS-3D) within the aquifer.

In general, the results for the groundwater monitoring were consistent with historical results and where CVOCs were present in both the shallow and deeper fraction of the surface aquifer. BM-121 was sampled for the first time during this event and was installed adjacent to the intersection of Camden Street and Main Street. The results for 1,4-dioxane in 2015 appear to confirm the results from 2014 that were denoted as having matrix effects. Below are the highlights of the 2015 LTM:

On Site Wells

- SW-1: All COCs and 1,4-dioxane nondetect.
- DW-1: All COCs and 1,4-dioxane nondetect.
- SW-3: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. All results were below the NYSDEC Class GA GWQSs and the 1,4-dioxane NYSDEC 2020 MCL.
- DW-3: Trace DCA with *cis*-1,2-DCE and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- SW-4: Trace TCA, TCE, DCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- SW-7: TCA, TCE, VC, 1,1-DCE, *trans*-1,2-DCE, DCA, *cis*-1,2-DCE, and 1,4-dioxane. TCE, DCA, and *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQSs and 1,4-dioxane exceeded the NYSDEC 2020 MCL.

Off Site Wells

- BM-121: Trace 1,4-dioxane. Result below the NYSDEC 2020 MCL.
- URS-2S: TCA, TCE, DCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-2D: *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded the NYSDEC Class GA GWQSs or the 1,4-dioxane NYSDEC 2020 MCL.

Camden Street Well Field

- JC-2: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the 1,4-dioxane NYSDEC 2020 MCL.

The highest concentrations of COCs and 1,4-dioxane exceeding standards were reported in the following wells:

- TCE: SW-7 at 9.5 µg/L

- *cis*-1,2-DCE: URS-2D at 61 µg/L
- 1,4-Dioxane: URS-2D at 21 µg/L

MW URS-2D continued to exhibit the highest concentrations of *cis*-1,2-DCE, and 1,4-dioxane while SW-7 continued to exhibit the highest concentration of TCE.

6.3.5 2016 LTM

The 2016 LTM was included in an annual report (Verina, 2017). The 2016 LTM included nine (9) monitoring wells and both operation municipal wells (JC-2 and JC-3) at the Camden Street Well Field. In addition, the 2016 LTM report included post-treatment sampling results The monitoring included five shallow wells (SW-1, SW-3, BM-121, URS-2s, and URS-5S) and four deep wells (DW-3, DW-9, URS-2D, and URS-3D) within the aquifer.

As with the prior years covered under this report, the analytical results were consistent with historical results. MW DW-9 was sampled for the first time. This well is located near the southwest corner of the former plant. The deeper wells also continued to exhibit higher concentrations than in the shallow wells. The results for the 2016 Annual LTM event are shown in **Figure 6-8**. Below are the highlights from the 2016 annual LTM results:

On Site Wells

- SW-1: Trace 1,4-dioxane. Result below the NYSDEC 2020 MCL.
- SW-3: Trace TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded the NYSDEC Class GA GWQSs or the 1,4-dioxane NYSDEC 2020 MCL.
- DW-3: DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- DW-9: 1,4-Dioxane. Concentration exceeded the NYSDEC 2020 MCL.

Off Site Wells

- BM-121: Trace TCE and *cis*-1,2-DCE. Neither constituent exceeded a NYSDEC Class GA GWQSs.
- URS-2S: TCA, TCE, DCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-2D: *cis*-1,2-DCE and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.

Camden Street Wellfield

- JC-2: Trace TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- JC-3: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL for 1,4-dioxane.

The trace trihalomethanes in the Post-Treatment waters are a common phenomenon and a function of chlorination of the treated waters. It was not a function of pre-existing contamination at Former AFP 59.

MW URS-2D continued to exhibit the highest concentrations of *cis*-1,2-DCE and 1,4-dioxane above standards. TCE did not exceed the NYSDEC Class GA GWQS during the 2016 monitoring event. It should be noted, however, that SW-7 was not included in the monitoring event where TCE consistently exceeded the Class GA GWQS due to insufficient groundwater recharge:

- *cis*-1,2-DCE: URS-2D at 67 µg/L
- 1,4-Dioxane: URS-2D at 25 µg/L

6.3.6 2017 LTM

As discussed in **Section 4.3**, the former plant was demolished in 2016 and 2017 with the soils removal action following the demolition of the plant. As part of the soils removal action, wells SW-4 and SW-7 were replaced with wells SW-4RE and SW-7RE. The 2017 monitoring event included eleven (11) wells plus the two supply wells (JC-2 and JC-3) at the Camden Street Well Field and the treated waters (Verina, 2017). The wells included six wells on site (SW-3, DW-3, SW-4RE, SW-7RE, SW-9, and DW-9) and five (5) wells off site (BM-121, URS-2S, URS-2D, URS-3D, and URS-5S). SW-9 was included for the first time in the monitoring program.

The replacement wells SW-4RE and SW-7RE exhibited identifiable excursions from the historical results of SW-4 and SW-7. The deeper wells also continued to exhibit higher concentrations than in the shallow wells. The results for the 2017 Annual LTM event are shown in **Figure 6-9**. Below are the highlights from the 2017 annual LTM results:

On Site Wells

- SW-3: Trace TCE and 1,4-dioxane. Neither constituent exceeded the NYSDEC Class GA GWQS or the NYSDEC 2020 MCL.
- DW-3: DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL. *cis*-1,2-DCE decreased from above 50 µg/L to 32 µg/L.
- SW-4RE: TCA, TCE, 1,1-DCE, 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. TCE and *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQSs and 1,4-dioxane exceeded the NYSDEC 2020 MCL. Concentrations of TCE (140 µg/L), *cis*-1,2-DCE, and 1,4-dioxane spiked with respect to 2016 results and the spike was likely the result of soil disturbance associated with the soils RA.
- SW-7RE: TCA, TCE, VC, 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. TCE and *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQSs and 1,4-dioxane exceeded the NYSDEC 2020 MCL. *cis*-1,2-DCE more than doubled over 2016 and continued an increasing trend observed since 2013 in former well SW-7.
- SW-9: Trace TCA, TCE, 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- DW-9: Trace TCA and 1,4-dioxane were reported in the well. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.

Off Site Wells

- BM-121: Trace 1,4-dioxane. Result did not exceed the NYSDEC 2020 MCL.
- URS-2S: TCA, 1,1-DCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-2D: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCE and 1,4-dioxane. Neither exceeded the NYSDEC Class GA GWQS or the NYSDEC 2020 MCL.

Camden Street Well Field

- JC-2: Trace TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded standards.

The following maximum concentrations were noted in the wells for the 2017 monitoring event:

- TCE: SW-4RE at 140 µg/L.
- *cis*-1,2-DCE: SW-7RE at 92 µg/L
- 1,4-Dioxane: URS-2D at 21 µg/L

The historical high concentration of TCE in SW-7 was still present in SW-7RE; however, the soils removal action in 2017 likely attributed to the high concentration in SW-4RE as noted above. The historical norm of the highest concentration of *cis*-1,2-DCE and 1,4-dioxane in off-site well URS-2D was still present, but the abnormal presence of elevated *cis*-1,2-DCE in SW-7RE exceeded the concentration at URS-2D.

6.3.7 2018 LTM

No annual LTM was conducted for 2018. The USAF, however, commenced with quarterly monitoring of the two active municipal wells and the treated domestic water plus semi-annual monitoring of off-site wells URS-2D and URS-3D. For 2018, the monitoring also shifted from the apparent calendar basis in 2017 and prior years to a fiscal year basis as quarterly and annual monitoring was conducted in December 2018 but those results were reported in the 2019 Annual LTM report (EA, 2020). Three short quarterly and semi-annual letter reports were issued for the 2018 monitoring.

Camden Street Quarterly Monitoring

March 2018:

- JC-2: Trace TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- JC-3: Trace TCA, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL.

May 2018:

- JC-2: Trace TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.

- JC-3: Trace TCA, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL.

September 2018:

- JC-2: Trace TCA, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- JC-3: Trace TCA, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL.

May 2018 Semi-Annual Monitoring

- URS-2D: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL. The results for URS-2D were consistent with historical values reported in this well.
- URS-3D: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane were reported in the well. 1,4-Dioxane exceeded the NYSDEC 2020 MCL. The results for URS-3D were consistent with historical values reported in this well.

6.3.8 2019 LTM

The 2019 LTM reporting covered quarterly monitoring in December 2018, February 2019, and June 2019. Quarterly monitoring was also conducted in September 2019, but was included in the 2020 LTM report and discussed in the following section. The USAF also conducted semi-annual monitoring of off-site wells URS-2D and URS-3D in December 2018 and annual monitoring of on-site and off-site wells in June 2019. In the 2019 Annual LTM report (EA, 2020), the data tables use the USEPA's Integrated Risk Information System (IRIS) drinking water value of 0.35 µg/L as a comparative guidance value for the 1,4-dioxane monitoring results. For the purposes of this reporting, however, the comparison continues to use the 2020 NYSDEC MCL, which became an enforceable standard as of 2020. It should be noted that the vast majority of the 1,4-dioxane results in 2019 from the monitoring wells exceeded both the IRIS drinking water guidance and the subsequent promulgated NYSDEC 2020 MCL of 1 µg/L.

Camden Street Quarterly Monitoring

December 2018:

- JC-2: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- JC-3: TCA, TCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL.

February 2019:

- JC-2: Trace TCE and 1,4-dioxane. Neither constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL.

June 2019:

- JC-2: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the 2020 MCL.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- Post-Treatment: Trace trihalomethanes, MeCl (chloromethane) and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL. The presence of MeCl chloride is an anomaly not previously reported during monitoring of the treated domestic water supply from the Camden Street Well Field. MeCl is typically laboratory artifact but was not noted in other samples as is normally observed when batches of samples are analyzed together.

Semi-Annual Monitoring December 2018

- URS-2D: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.

Annual Monitoring June 2019

The annual monitoring event included ten (10) wells in addition to the Camden Street Wellfield monitoring covered above. The monitoring comprised of six (6) on-site wells (SW-3, DW-3, SW-4RE, SW-7RE, and DW-9) and four (4) off-site wells (BM-121, URS-2S, URS-2D, URS-2D, and URS-5S).

The spikes of TCE and *cis*-1,2-DCE concentrations reported in 2017 following the soils RA in large part dissipated for the 2019 annual monitoring. In addition, the monitoring results at DW-3 since 2008 show a gradual decreasing trend for *cis*-1,2-DCE. Likewise, there is a gradual decreasing trend for *cis*-1,2-DCE at off-site well URS-2D. Otherwise, the results from the 2019 annual event are consistent with historical results. Acetone was consistently reported in results from June 2019 monitoring. Acetone is not a COC for Former AFP 59 and the results were all below the NYSDEC Class GA GWQS. These results are not included in the discussions of the June 2019 monitoring below. The results for the 2019 Annual LTM event are shown in **Figure 6-10**. The highlights for monitoring are summarized below:

On Site Wells

- SW-3: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded NYSDEC Class GA GWQSs or the NYSDEC 2020 MCL.
- DW-3: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- SW-4RE: TCA, 1,1-DCA, 1,1-DCE, *cis*-1,2-DCE, PCE, TCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.

- SW-7RE: TCA, 1,1-DCA, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, TCE, VC, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- DW-9: Carbon disulfide, toluene, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL. Carbon disulfide presence was an anomaly.

Off Site Wells

- BM-121: Trace TCA and *cis*-1,2-DCE. No constituents exceeded standards.
- URS-2S: TCA, 1,1-DCA, *cis*-1,2-DCE, TCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-2D: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.

The following maximum concentrations of *cis*-1,2-DCE and 1,4-dioxane were reported in the annual monitoring:

- *cis*-1,2-DCE: URS-2D at 53 µg/L.
- 1,4-dioxane: URS-2D at 23 µg/L.

As has been the historical trend, well URS-2D continued to contain the highest concentrations of contaminants exceeding standards.

6.3.9 2020 LTM

The 2020 Annual LTM report (EA, 2021) included four quarterly monitoring events at the Camden Street Well Field, a semi-annual event, and an annual event. The four quarterly events were conducted September 2019, December 2019, March 2020, and June 2020. The semi-annual monitoring was conducted in conjunction with the December 2019 quarterly monitoring and the annual monitoring event was conducted in June 2020 along with quarterly monitoring. Of note, the current NYSDEC MCL for 1,4-dioxane became effective as of August 2020.

Camden Street Quarterly Monitoring

The quarterly monitoring consisted of sampling the two active municipal wells (JC-2 and JC-3) and the treated water at the Camden Street Well Field. The below summary covers the results from the quarterly monitoring:

September 2019:

- JC-2: Trace TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL.

December 2019:

- JC-2: Trace TCA, TCE, *cis*-1,2-DCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.

- Post-Treatment: Trace trihalomethanes, MeCl, and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC MCL for 1,4-dioxane. MeCl potentially a laboratory artifact as it was not present in the supply water from the municipal wells.

March 2020:

- JC-2: Trace TCE and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.
- Post-Treatment: Trace trihalomethanes, MeCl, and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC 2020 MCL for 1,4-dioxane. MeCl was not present in municipal supply wells.

June 2020:

- JC-2: Trace 1,1-DCA, TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.
- Post-Treatment: Trace trihalomethanes, methylene chloride, and 1,4-dioxane. No constituents exceeded Federal MCLs or the NYSDEC MCL.

The results from the treated water continue to show that the air stripping removes COCs in the groundwater contamination associated with SS005 at the former plant. It does not, however, remove 1,4-dioxane, which is not a COC associated with the 1999 ROD governing the current remedy.

Semi-Annual Monitoring December 2019

- URS-2D: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- URS-3D: TCE, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.

Annual Monitoring June 2020

The annual monitoring event included ten (10) monitoring wells comprised of five on-site wells (SW-3, SW-4RE, SW-7RE, SW-9, DW-3, and DW-9) and five off-site wells (BM-121, URS-2S, URS-2D, URS-3D, and URS-5S). Shallow well SW-9 was intended to be sampled; however, due to lack of groundwater at this location, it was not possible to collect a sample. In general, the shallow wells contained lower concentrations of COCs and 1,4-dioxane with the exception of SW-7RE where *cis*-1,2-DCE increased over the June 2019 results. SW-7RE had exhibited a significant increase in *cis*-1,2-DCE after the soils RA in 2017 but had decreased towards pre-RA concentrations in 2019. *cis*-1,2-DCE concentrations had not yet stabilized following the soils RA in 2017. TCE in SW-7RE remained stable and below the NYSDEC Class GA GWQS.

In the deeper wells, URS-2D off site continued to exhibit the highest concentrations of *cis*-1,2-DCE and 1,4-dioxane and well DW-3 exhibited the elevated concentrations of *cis*-1,2-DCE and 1,4-dioxane. At DW-3, *cis*-1,2-DCE continued to rebound towards concentrations reported prior to the soils RA in 2017. The decrease reported in 2017 was temporary. In general, 1,4-dioxane levels were reported higher in the deeper wells. The results for the 2020 Annual LTM event are shown in **Figure 6-11**. The highlights of the 2020 Annual LTM are provided below:

On Site Wells:

- SW-3: Trace *cis*-1,2-DCE, TCE, and 1,4-dioxane. No constituents exceeded standards.
- DW-3: 1,1-DCA, 1,1-DCE, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC MCL.
- SW-4RE: TCA, 1,1-DCA, 1,1-DCE, PCE, *cis*-1,2-DCE, TCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC MCL.
- SW-7RE: TCA, 1,1-DCA, 1,1-DCE, PCE, *cis*-1,2-DCE, TCE, VC, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC 2020 MCL.
- DW-9: Trace carbon disulfide and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC MCL. Carbon disulfide was not identified as a COC in the 1999 ROD and its reported concentration was estimated below the reporting limit.

Off Site Wells:

- BM-121: Trace 1,4-dioxane below the NYSDEC 2020 MCL.
- URS-2S: Trace TCA, 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020MCL.
- URS-2D: 1,1-DCA, *cis*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC MCL.
- URS-3D: TCA, *cis*-1,2-DCE, TCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC 2020 MCL.
- URS-5S: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.

The following maximum concentrations of cis-1,2-DCE and 1,4-dioxane were reported in the annual monitoring:

- *cis*-1,2-DCE: URS-2D at 53 µg/L.
- 1,4-dioxane: URS-2D at 23 µg/L.

As had been the historical trend, well URS-2D continued to contain the highest concentrations of contaminants exceeding standards.

6.3.10 2021 LTM

The 2021 Annual LTM Report (EA, 2022) covers quarterly monitoring at the Camden Street Well Field in September 2020, December 2020, and June 2021 and the annual monitoring in June 2021. No quarterly event was conducted in March 2021. The quarterly monitoring consisted of sampling the two active municipal wells (JC-2 and JC-3) plus the treated water (Post-Treatment). The December 2020 monitoring event also served as the semi-annual events with the inclusion well URS-3D, which is located within the Camden Street Well Field property. The annual event in June 2021 included eight (8) monitoring wells both on site (DW-3, SW-4RE, SW-7RE, and SW-9) and off site (URS-2S, URS-2D, and URS-3D) as well as the quarterly wells at the Camden Street Well Field.

Camden Street Quarterly Monitoring

September 2020:

- JC-2: Trace *cis*-1,2-DCE, TCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCE and 1,4-dioxane. No constituents exceeded standards.

- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal or NYSDEC MLCs.

December 2020 (Semi-Annual):

- URS-3D: Trace TCA, *cis*-1,2-DCE, TCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-2: Trace TCA, *cis*-1,2-DCE, TCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCA, TCE, and 1,4-dioxane. No constituents exceeded standards.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No exceedances of Federal or NYSDEC MLCs.

June 2021:

- JC-2: Trace *cis*-1,2-DCE, TCE, and 1,4-dioxane. No constituents exceeded standards.
- JC-3: Trace TCE and 1,4-dioxane. No constituents exceeded standards.
- Post-Treatment: Trace trihalomethanes and 1,4-dioxane. No constituents exceeded Federal or NYSDEC MLCs.

The air stripper continued to remove chlorinated COCs in groundwater associated for the contamination from the former plant. The 1,4-dioxane concentration in the treated waters is roughly similar to the concentration in the supply from the municipal wells.

Annual Monitoring June 2021

As noted above, the annual monitoring included eight (8) monitoring wells. In general, the concentrations of COCs in the shallower wells were lower than in the deeper wells with the exception of SW-7RE where *cis*-1,2-DCE continued to exceed the NYSDEC Class GA GWQS by an order of magnitude and similar to the concentration noted in well URS-2D. In well DW-3, *cis*-1,2-DCE continued its increasing concentration (57 µg/L) back to levels reported prior to the soils RA performed in 2017. The concentrations of *cis*-1,2-DCE also increased in well URS-2D to the highest concentration (78 µg/L) reported to date in this well. The results for the 2021 Annual LTM event are shown in **Figure 6-12**.

On Site Wells:

- DW-3: 1,1-DCA, *cis*-1,2-DCE, *trans*-1,2-DCE, and 1,4-dioxane. *cis*-1,2-DCE, exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC MCL.
- SW-4RE: Trace TCA, 1,1-DCA, 1,1-DCE, *cis*-1,2-DCE, PCE, *trans*-1,2-DCE, TCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC MCL.
- SW-7RE: TCA, 1,1-DCA, 1,1-DCE, VC, *cis*-1,2-DCE, PCE, *trans*-1,2-DCE, TCE, and 1,4-dioxane. *cis*-1,2-DCE, exceeded the NYSDEC Class GA GWQS and 1,4-dioxane exceeded the NYSDEC MCL.
- SW-9: 1,1-DCA, *cis*-1,2-DCE, TCE, and 1,4-dioxane plus several non-chlorinated compounds (see below). No constituents exceeded the NYSDEC Class GA GWQSs or NYSDEC MCL.
- DW-9: 1,4-dioxane, which exceeded the NYSDEC MCL.

2-Hexananone, acetone, methyl ethyl ketone, methyl isobutyl ketone, and toluene were also reported in SW-9. Acetone had been reported previously and suspected of being a laboratory contaminant. The acetone concentration also exceeded the NYSDEC Class GQ GWQS. The presence of these compounds was unexplained in the report; however, aside from acetone, these constituents had not previously been reported.

Off Site Wells:

- URS-2S: Trace TCA, 1,1-DCA, 1,1-DCE, *cis*-1,2-DCE, TCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC MCL.
- URS-2D: 1,1-DCA, VC, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC MCL.
- URS-3D: Trace TCA, *cis*-1,2-DCE, and 1,4-dioxane. 1,4-Dioxane exceeded the NYSDEC MCL.

Trace methyl ethyl ketone was also reported in well URS-3D below the NYSDEC Class GA GWQS.

1,4-Dioxane was present in every well sampled throughout the quarterly, semi-annual, and annual monitoring for the 2021 LTM. It is widespread throughout the impaired area and exceeded the NYSDEC MCL in nearly every sample except at SW-9 and the municipal wells at the Camden Street Well Field.

6.4 LTM Summary

The primary reported COC that exceeds the NYSDEC Class GA GWQS is *cis*-1,2-DCE. It is consistently reported above the GWQS at wells DW-3, SW-7/7RE, and URS-2D. 1,4-Dioxane, while not a COC under the ROD, is present across the downgradient areas at the former plant. It extends offsite into the neighboring residential area and over towards the Camden Street Well Field. 1,4-Dioxane consistently exceeds the NYSDEC MCL of 1 µg/L in the majority of wells included in the LTM network: DW-3, SW-4/4RE, SW-7/7RE, DW-9, URS-2S, URS-2D, and URS-3D. The reported concentrations of 1,4-dioxane in municipal wells at the Camden Street Well Field remain below the MCL. Of note, however, is that there is an upward trend in the 1,4-dioxane concentrate at URS-3D in the northeast corner of the well field property since 2019. The highest observed concentration of 8.7 µg/L was reported in the June 2021 annual monitoring event. As noted previously, **Attachment B** to this report contains the historical results from the 2021 LTM report. It should be noted, however, that this compiled historical table is not complete based on reviewing LTM reports dating back to the 2014 LTM.

The air stripping at the Camden Street Well Field removed chlorinated COCs from the groundwater prior to treat, but has little impact on the concentrations of 1,4-dioxane in the groundwater as the post-treatment waters contain equivalent concentrations as reported in the municipal supply wells.

6.5 Site Inspection

The inspection of the former AFP 59 was conducted on 30 September 2021. The inspection of the property consisted on walking the vacant property, observing the condition of the cover and vegetation on site, and attempting to locate monitoring wells on site. The site walk included photographing the condition of the former AFP 59 parcel, which are contained in **Attachment D**. The property had not been mowed prior to the site walk. Vegetation on site was between one to two feet high. Vegetation on the northern half of the site tended to be shorter than the southern portion of the site. Of note during the site walk, the northern and western portion of the former plant was more saturated with small pools of standing water and there were several areas of vegetation damage due to tire ruts on site. During the site inspection, well SW-4RE was not located due to vegetation overgrowth. All other wells were located during the site walk.

In addition to the site walk, the inspection included a visit to the Camden Street Well Field. Mr. Dennis Anderson of Johnson City Water Department provided a tour of the facility, air stripper, and chlorination treatment. According to Mr. Anderson, the air stripper has been operating without incident and is

functioning as intended in removing groundwater contamination. Photos of the Camden Street Well Field are also included in **Attachment D**.

6.6 Interviews

The Versar project manager conducted interviews with three parties associated with AFP 59:

- Mr. Brian Jankauskas, NSDEC RPM
- Mr. George Walters, former AFP 59 RPM
- Mr. David Iacovone, current AFP 59 RPM

The interview records are contained in **Attachment E.** A request was also posed to the Broome County Industrial Development Agency; however, those parties declined stating they did not possess sufficient knowledge of the site and its environmental condition. In general, the parties interviewed possessed a positive view of the remedy under the 1999 ROD. Highlights of the interviews are presented below:

- Brian Jankauskas, NYSDEC, notes that concentrations of groundwater contamination in the vicinity of the Camden Street Well Field. Mr. Jankauskas prompted that the NYSDEC would like to see movement on the implementation of the 2020 DD to install the cover system such that the site can be returned to productive reuse.
- George Walters, former RPM, notes that the groundwater concentrations have been observed to be at steady state conditions. Mr. Walters also expressed that groundwater concentrations on site were hoped to attenuate over time.

With respect to in the implementation of the 2020 DD, this five-year review does not cover the remedy detailed in that DD. This report deals with the remedy implemented under the 1999 ROD.

7.0 TECHNICAL ASSESSMENT

This section discusses the technical assessment of the remedies associated with Former AFP 59 by providing answers to the three questions posed in USEPA's Comprehensive Five-Year Review Guidance (OSWER 2001).

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Document?

Remedial Action Performance: The air stripping unit provided to the Johnson City Camden Street Well Field removes COCs (i.e., VOCs) identified in the 1999 DD to below the Federal Drinking Water standards as defined by MCLs. The supporting data presented in monitoring reports, specifically those reports including post-treatment data confirming no COCs associated with the 1999 ROD. Well URS-3D located in the northeast corner of the Camden Street Well Field and the two active municipal wells, JC-2 and JC-3, historically contain trace TCA, TCE, and *cis*-1,2-DCE; however, these COCs are not detected in the post-treatment waters. The post-treatment waters contain trihalomethanes; however, these constituents are not associated with the groundwater contamination from Former AFP 59 but the chlorination process post treatment.

The review does note that the air stripping had little effect on the concentration of 1,4-dioxane as this constituent is readily soluble in water and not a contaminant that can be removed via air stripping. The concentrations of 1,4-dioxane exhibited in the post-treatment water were generally equivalent to the concentrations noted in the municipal supply waters from JC-2 and JC-3. The concentrations of 1,4-dioxane nonetheless remain below the NYSDEC MCL of 1 µg/L. As noted in **Section 6.4**, 1,4-dioxane has shown an upward trend in URS-3D since 2019. This trend, however, did not result in an upward trend in the municipal wells or the treated water at the Camden Street Well Field.

7.2 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?

The original RI completed in 1996 (Earth, Tech) included migration pathways from soil, air, surface water, and groundwater with the following exposure pathways:

- Soil Exposure Pathways
  - Ingestion
  - Dermal absorption
- Surface Water Pathways
  - Dermal absorption
  - Fish consumption
- Air Exposure Pathways
  - Inhalation
- Groundwater Exposure Pathways
  - Ingestion
  - Inhalation
  - Dermal absorption

The exposure pathways from the 1996 RI, however, did not include soil VI as an exposure pathway. This pathway was later incorporated into the conceptual site model with the 2012 Supplemental RI-FS for VI. The 2012 Supplemental RI-FS identified that risks were present from VI within the former plant as

summarized in **Section 4.2** of this report. That RI-FS prompted the decontamination and demolition of the former plant in 2015 through 2017 and the subsequent soils RA in 2017 to remove contaminated soils associated with site SS005 at Former AFP 59.

Following the completion of the 2012 VI Supplemental RI-FS, the exposure assumptions, and RAOs at the time of the remedy selection and implementation remain valid. There have been minor changes to the cleanup levels since the development of the 1999 ROD (Earth Tech). **Table 7-1** compares the chemical specific ARARs presented in the 1999 ROD to current chemical specific ARARs for both Federal and New York State values.

Table 7-1 Comparison of SS005 1999 ROD ARARs and 2021 Standards

	1999 ROD ARARs (µg/L)		2021 Standards (µg/L)	
Constituent	**Federal MCL**	**NYSDEC Class GA Standard**	**Federal MCL**	**NYSDEC Class GA Standard**
Bromodichloromethane	100[a]	100	80[a]	50
Carbon tetrachloride	5	5	5	5
Chloroethane	--	5	--	5
Chloroform	100[a]	100	80[a]	7
Chloromethane	--	5	--	50
1,1-Dichloroethane	--	5	--	5
1,1-Dichloroethene	7	5	7	5
cis-1,2-Dichloroethene	70	5	70	5
trans-1,2-Dichloroethene	100	5	100	5
Ethylbenzene	700	5	700	5
Isopropylbenzene	--	5	--	5
Methylene chloride	5	5	5	5
Naphthalene	--	50	--	10
n-Propylbenzene	--	5	--	5
Toluene	1,000	5	1,000	5
1,2,4-Trichlorobenzene	70	5	70	5
1,1,1-Trichloroethane	200	5	200	5
Trichloroethene	5	5	5	5
Trichlorofluoromethane	--	5	--	5
1,2,4-Trimethylbenzene	--	5	--	5
1,3,5-Trimethylbenzene	--	5	--	5
Vinyl chloride	2	2	2	2
Xylenes(total)	10,000	5	10,000	15[b]

a – Sum for total trihalometanes.
b – Individual xylenes have 5 µg/L standards.

As noted previously, 1,4-dioxane is not identified as a COC in the 1999 ROD. It was added to the analytical suite for SS005 in 2013. At the time of addition to the analytical suite, 1,4-dioxane did not have either a Class GA Standard nor a Federal Drinking Standard. Subsequently, NYSDEC established the MCL of 1 µg/L in 2020, which is currently used for comparison purposes in evaluating 1,4-dioxane results.

7.3 Question C: Has Any Other Information Come to Light that Could Call Into Question the Protectiveness of the Remedy?

No, the review of the data and reports produced since the completion of the FIRST-Five-Review in 2012 does not indicate any other information that would call the remedy into question.

8.0 ISSUES

The SECOND Five-Year Review did not identify any issues that affect the current protectiveness of the remedy at SS005 AFP 59.

9.0 OTHER ITEMS

Table 9-1 presents other items and recommendations with follow up actions based on the current SECOND Five-Year Review. Based on this review, there are no issues or recommendations that potentially impact the groundwater remedy as implemented under the 1999 ROD.

Table 9-1: Recommendations and Follow-Up Actions at AFP 59

Other Items	Recommendations/ Follow Up Actions	Party Responsible	Oversight Agency	Anticipated Completion
Slowly increasing 1,4-dioxane in well URS-3D at Camden Street Well Field	Track 1,4-dioxane data at this well.	USAF	USAF	2023
Ruts present in the northern and western portion of the site	Repair ruts.	USAF/ BDICA	USAF/ BCIDA	2022
Completeness of historical monitoring results	Review historical reports and data back to 1999 for completeness.	USAF	USAF	2022

The slow increase of 1,4-dioxane at well URS-3D does not affect the remedy as this constituent is not a COC under the 1999 ROD. It should be noted that while 1,4-dioxane results at this well exceed the NYSDEC MCL of 1 µg/L, the concentrations reported in municipal supply wells JC-2 and JC-3 and the treated water (Post-Treatment) remain below the NYSDEC MCL and have never exceeded that benchmark with the historical monitoring at the Camden Street Well Field going back to 2013 when monitoring at JC-2 began for 1,4-dioxane.

As noted in **Section 6.5**, several ruts were observed in the northern portion of the site. Ruts should be repaired to maintain the vegetative cover of the site. The responsibility for the repair of ruts lies with either the USAF or BCIDA depending on whose contractors or parties caused the ruts. For instance, should the USAF groundwater monitoring leave ruts on the site from an annual sampling event, that contractor, as an agency of the USAF would be responsible for the repairs. Should BCIDA's mowing or other contactors cause the rust, the BCIDA or their contractor would be responsible for the repairs.

As noted in **Section 6.4**, the current historical results presented in the 2021 annual LTM report does not appear to be complete. Numerous instances exist where data from prior reports are not included in the table. For instance, data from wells SW-1 and DW-1 from 2012 and 2013 are missing as are all of the 2018 quarterly monitoring data except from December 2018.

10.0 PROTECTIVENESS STATEMENT

Based upon the available data from the Johnson City Camden Street Well Field from the Post-Treatment samples collected since 2016, the current remedy for groundwater treatment provides protection to human health and the environment. While trace levels of COCs are reaching the well field at monitoring well URS-3D and also present in the supply well waters, the air stripper on site removes those COCs to below reporting limits.

While 1,4-dioxane is not a COC under the 1999 ROD, it does reach the edge of the Camden Street Well Field at concentrations exceeding the NYSDEC MCL of 1 µg/L, the concentrations reported in the municipal supply well and the Post-Treatment water samples are below the MCL.

11.0 NEXT REVIEW

The next review will be required in five years from completion of the SECOND Five-year review as required under AFI 32-7020 Section 16.4.

FIGURES

Key Features

- Approximate Property Boundary
- Location of Johnson City Municipal Supply Well Field
- Site SS005

Air Force Plant 59
Site SS005
Johnson City, New York

FIGURE 1

AFP-59
Location

FPM Remediations Inc.

2018

Figure 3-1 Site Location Former AFP 59, Johnson City

Figure 3-2 Current Site Former AFP 59 and Vicinity, Johnson City

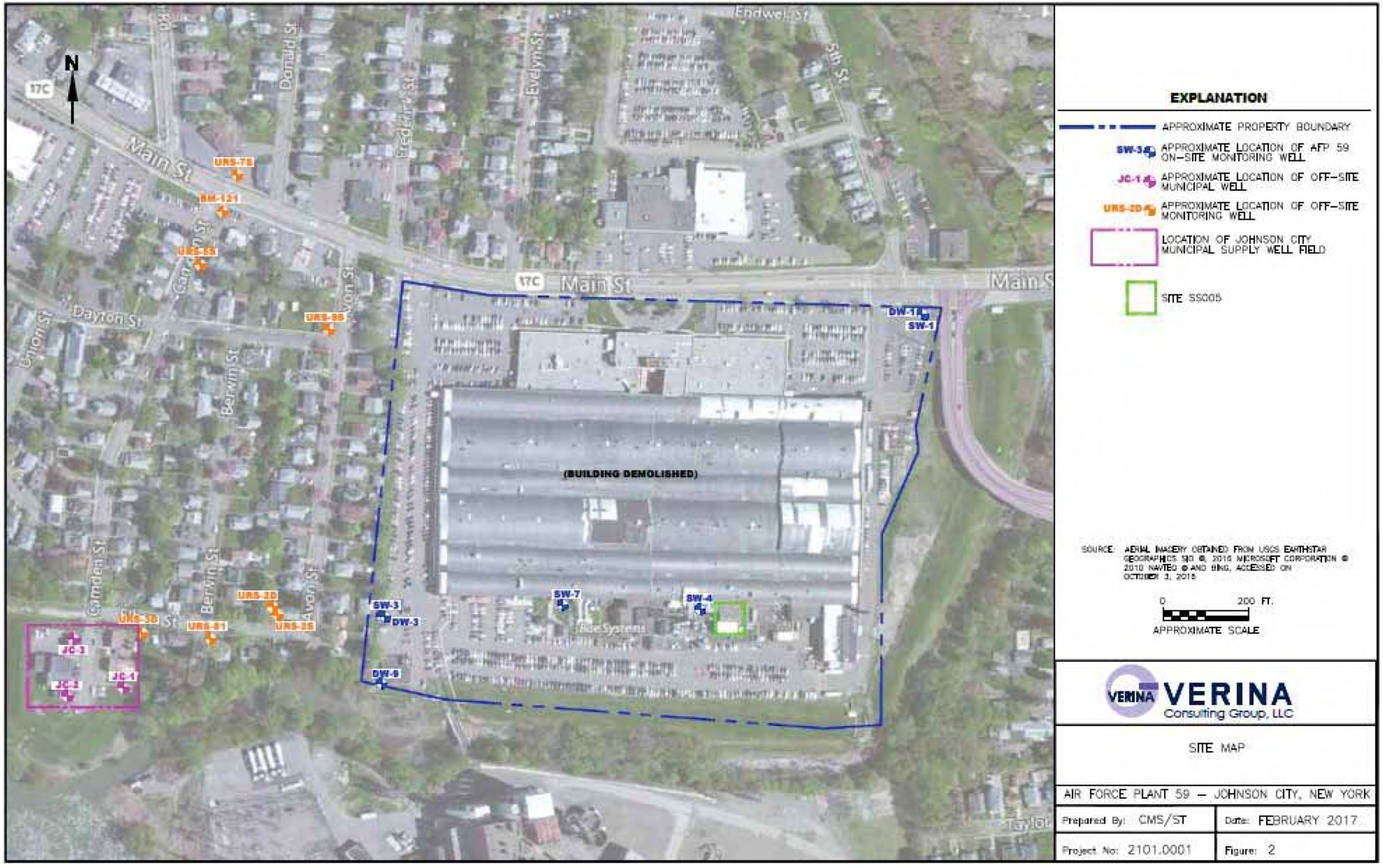


Figure 3-3 Plant Layout at Former AFP 59, Johnson City

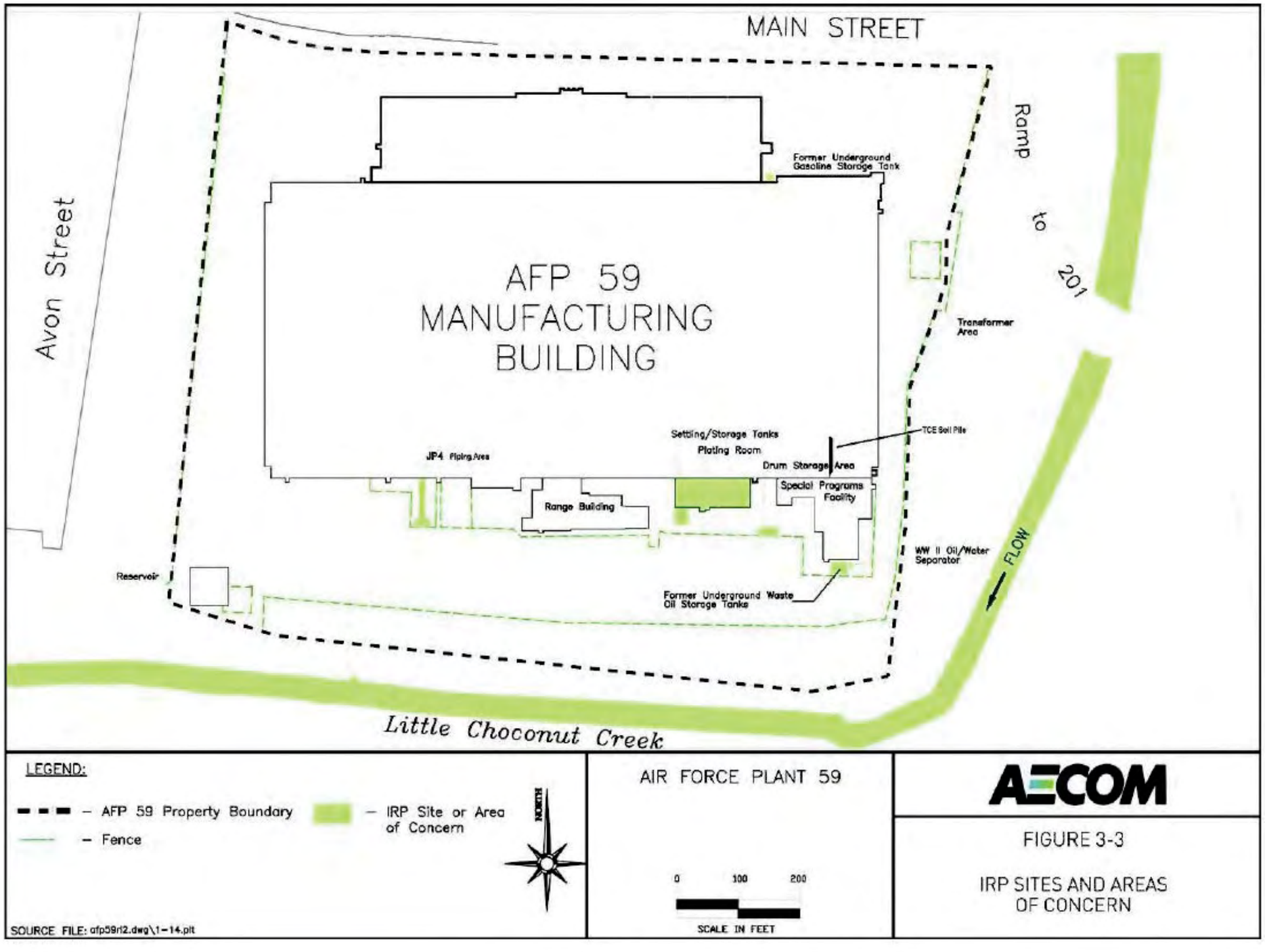


Figure 3-4 IRP Sites and Areas of Concern, Former AFP 59, Johnson City

Figure 6-1 Location of On-Site and Off-Site Wells

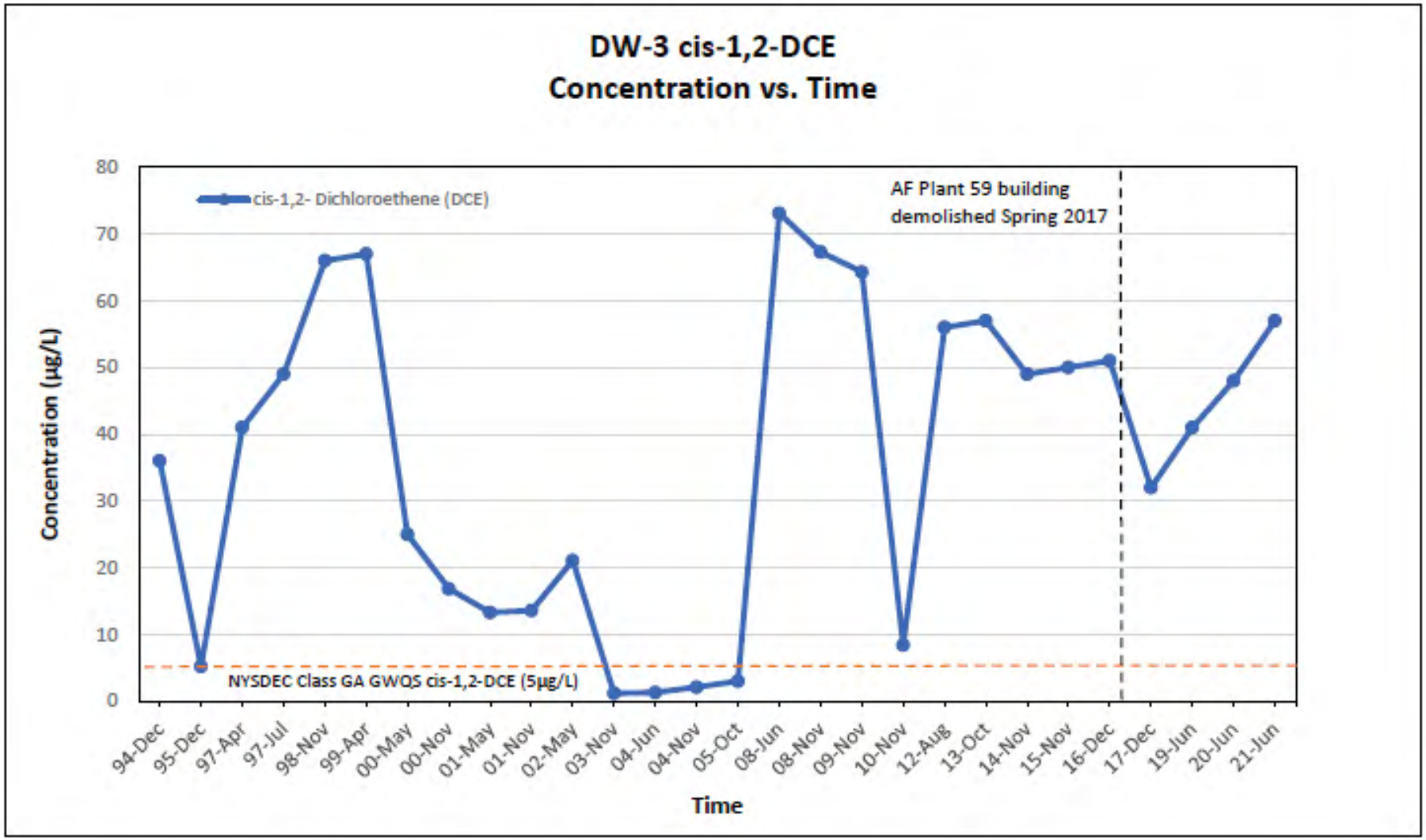


Figure 6-2 Concentration vs. Time, *cis*-1,2-DCE in Well DW-3, Former AFP 59

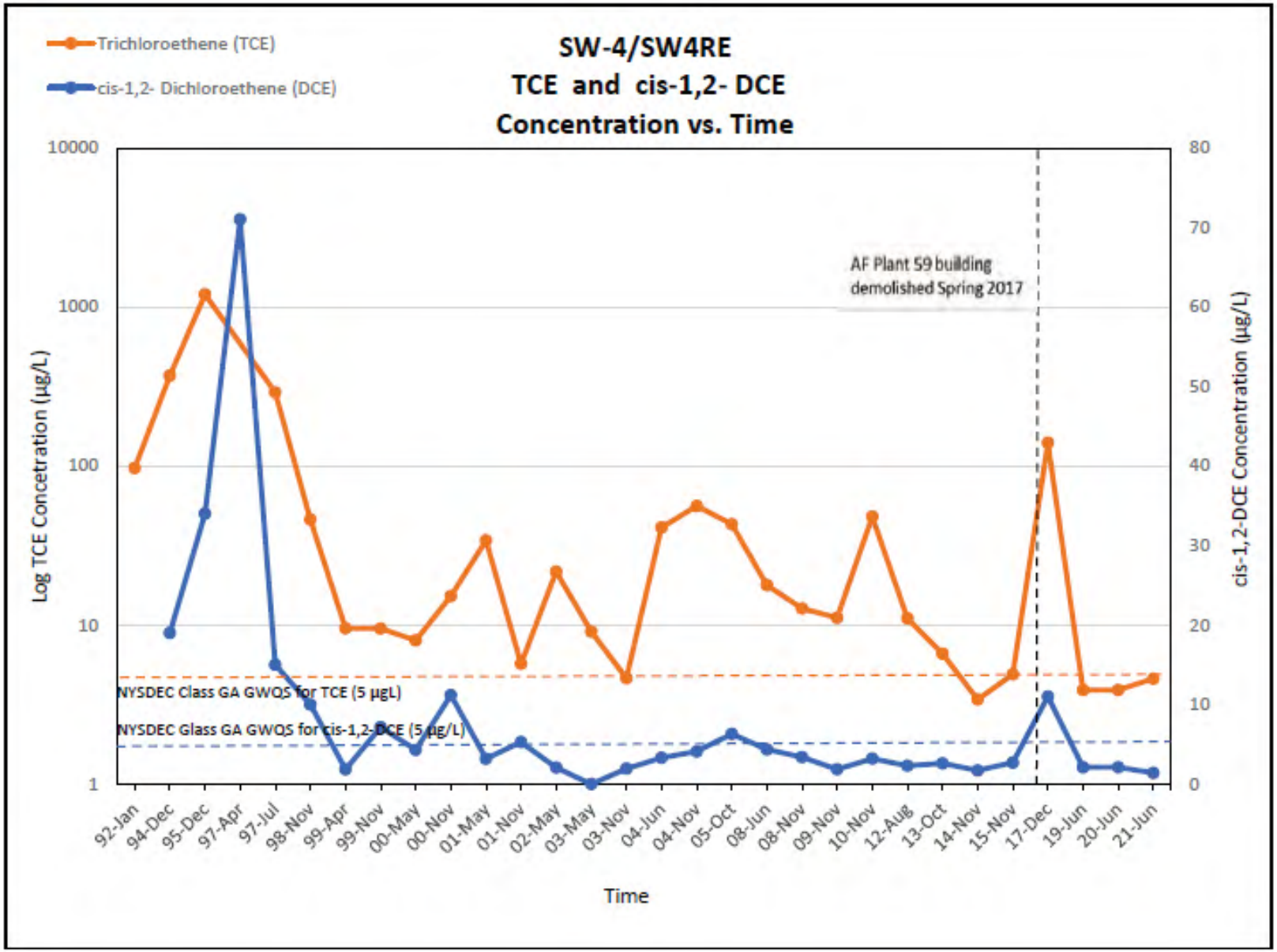


Figure 6-3 Concentration vs. Time, TCE and *cis*-1,2-DCE in Well SW-4/4RE, Former AFP 59

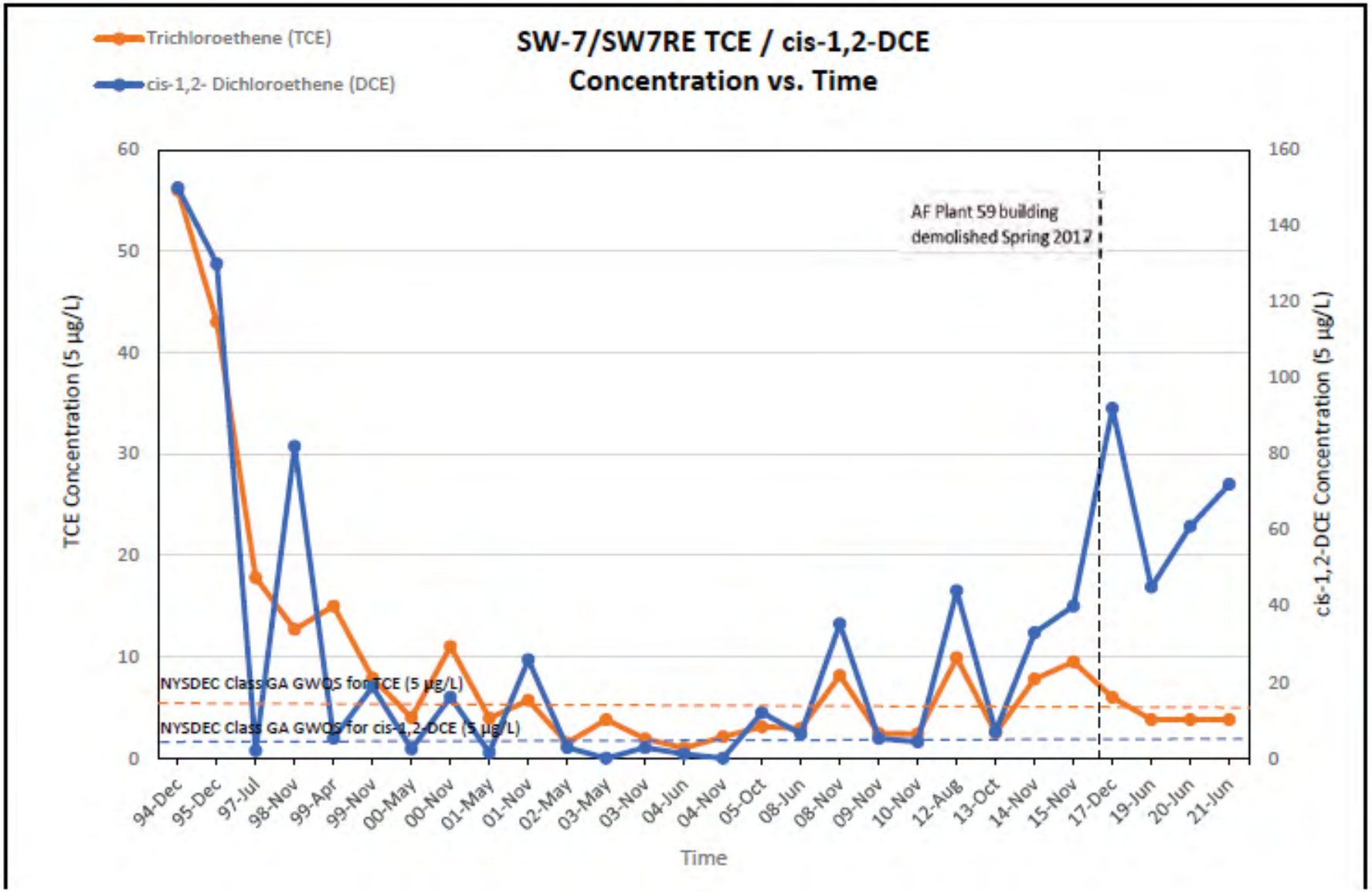


Figure 6-4 Concentration vs. Time, TCE and *cis*-1,2-DCE in Well SW-7/7RE, Former AFP 59

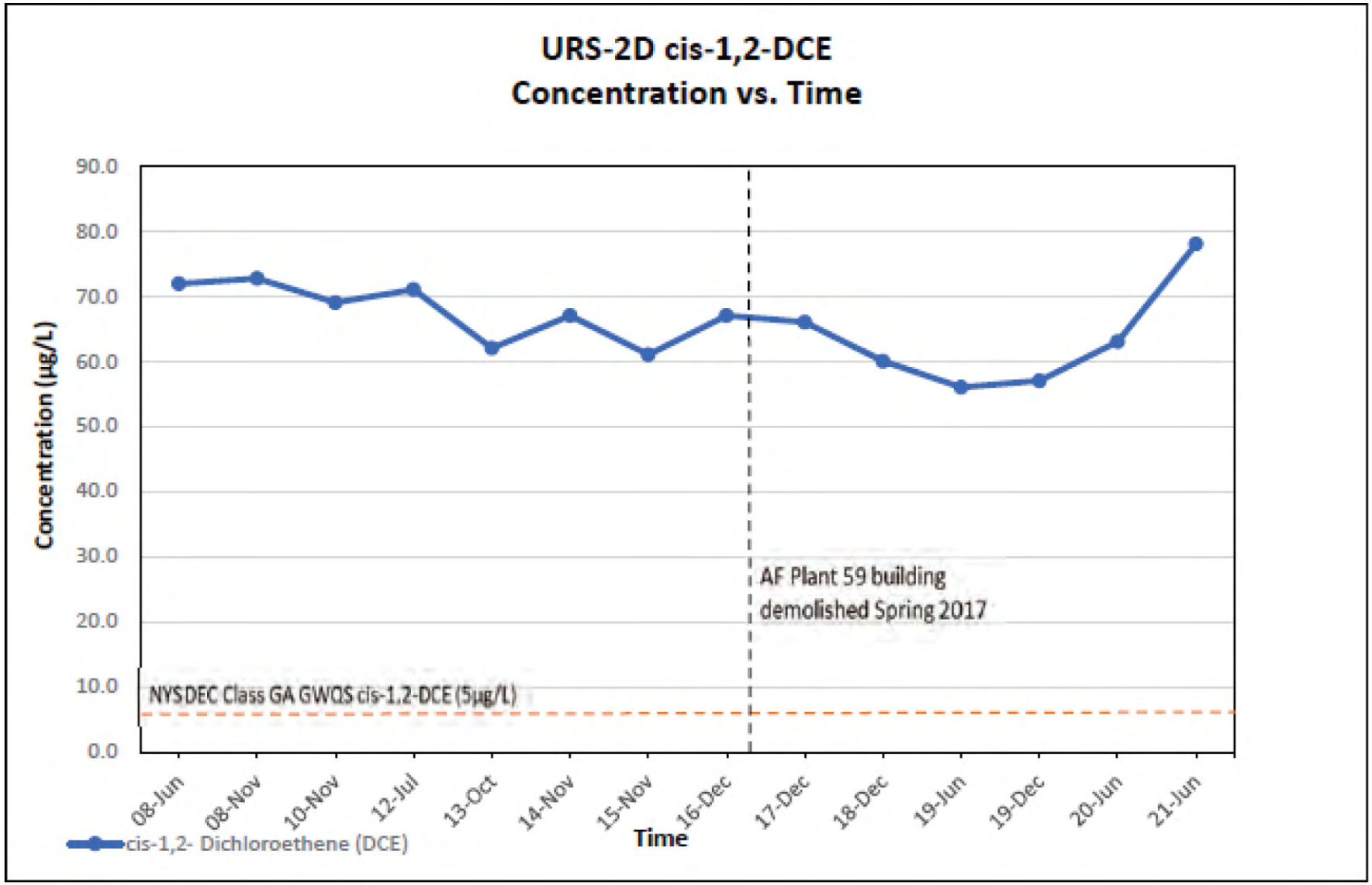
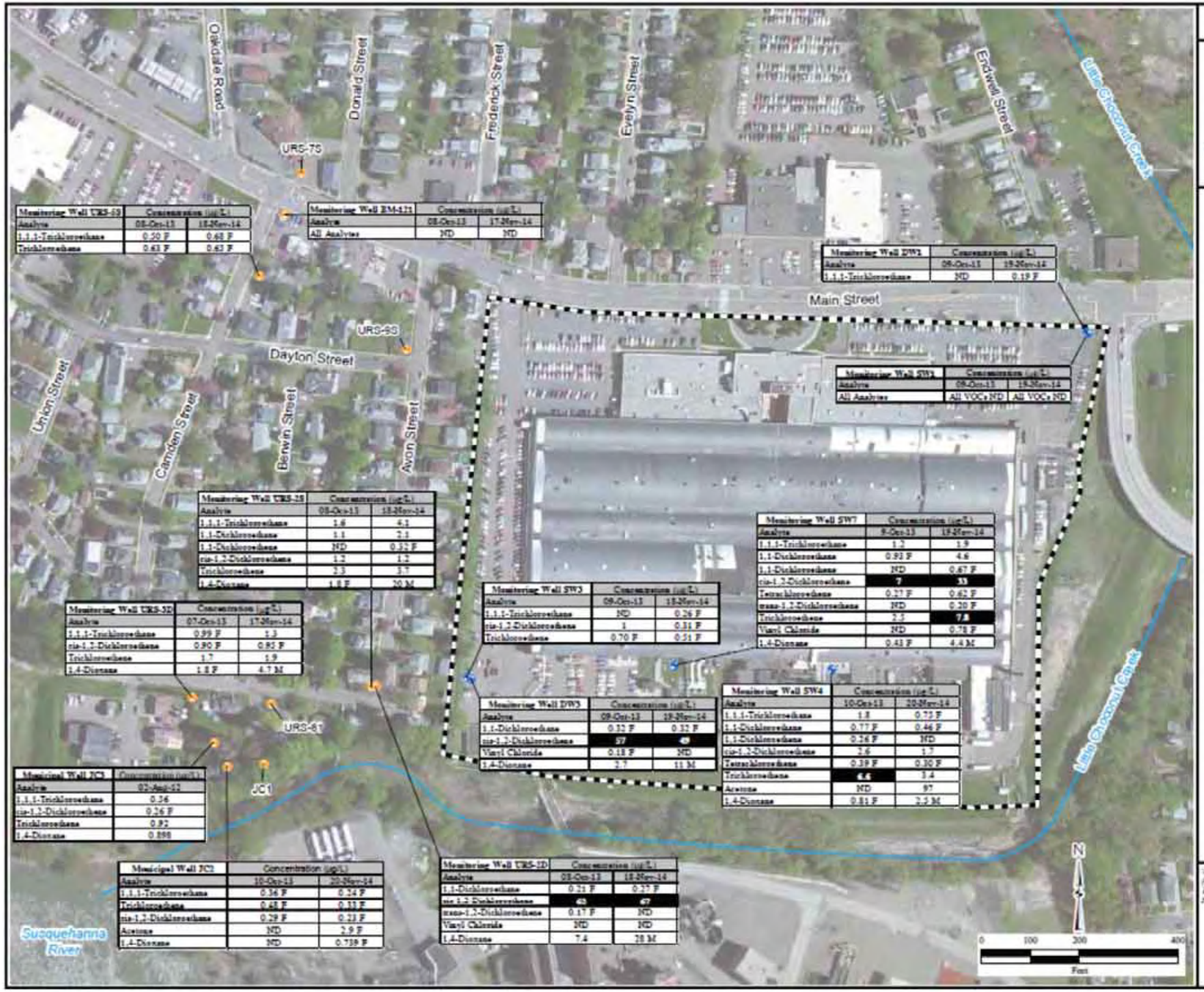


Figure 6-5 Concentration vs. Time, *cis*-1,2-DCE in Well URS-2d, Former AFP 59

Figure 6-6 Groundwater Potentiometric Surface Map, 2021 Annual LTM Event



Monitoring Well URS-9S	Concentration (µg/L)	
Analyte	08-Oct-13	18-Nov-14
1,1,1-Trichloroethane	0.50 F	0.68 F
Trichloroethene	0.63 F	0.63 F

Monitoring Well RM-17I	Concentration (µg/L)	
Analyte	08-Oct-13	17-Nov-14
All Analytes	ND	ND

Monitoring Well DW2	Concentration (µg/L)	
Analyte	08-Oct-13	19-Nov-14
1,1,1-Trichloroethane	ND	0.19 F

Monitoring Well SW1	Concentration (µg/L)	
Analyte	08-Oct-13	18-Nov-14
All Analytes	All VOCs ND	All VOCs ND

Monitoring Well URS-2S	Concentration (µg/L)	
Analyte	08-Oct-13	18-Nov-14
1,1,1-Trichloroethane	1.6	4.1
1,1-Dichloroethane	1.1	2.1
1,1-Dichloroethene	ND	0.32 F
cis-1,2-Dichloroethene	1.7	1.7
Trichloroethene	2.3	3.7
1,4-Dioxane	1.8 F	20 M

Monitoring Well SW7	Concentration (µg/L)	
Analyte	9-Oct-13	18-Nov-14
1,1,1-Trichloroethane	1.2	1.9
1,1-Dichloroethane	0.93 F	4.6
1,1-Dichloroethene	ND	0.67 F
cis-1,2-Dichloroethene	7	33
Tetrachloroethene	0.27 F	0.42 F
trans-1,2-Dichloroethene	ND	0.20 F
Trichloroethene	2.5	7.8
Vinyl Chloride	ND	0.78 F
1,4-Dioxane	0.43 F	4.4 M

Monitoring Well URS-3D	Concentration (µg/L)	
Analyte	07-Oct-13	17-Nov-14
1,1,1-Trichloroethane	0.99 F	1.3
cis-1,2-Dichloroethene	0.90 F	0.85 F
Trichloroethene	1.7	1.9
1,4-Dioxane	1.8 F	4.7 M

Monitoring Well SW3	Concentration (µg/L)	
Analyte	09-Oct-13	18-Nov-14
1,1,1-Trichloroethane	ND	0.26 F
cis-1,2-Dichloroethene	1	0.31 F
Trichloroethene	0.70 F	0.51 F

Monitoring Well SW4	Concentration (µg/L)	
Analyte	10-Oct-13	20-Nov-14
1,1,1-Trichloroethane	1.8	0.72 F
1,1-Dichloroethane	0.77 F	0.46 F
1,1-Dichloroethene	0.26 F	ND
cis-1,2-Dichloroethene	2.6	1.7
Tetrachloroethene	0.39 F	0.30 F
Trichloroethene	4.6	3.4
Acetone	ND	97
1,4-Dioxane	0.81 F	2.3 M

Monitoring Well DW3	Concentration (µg/L)	
Analyte	09-Oct-13	19-Nov-14
1,1-Dichloroethene	0.32 F	0.32 F
cis-1,2-Dichloroethene	57	49
Vinyl Chloride	0.18 F	ND
1,4-Dioxane	2.7	11 M

Municipal Well JC1	Concentration (µg/L)
Analyte	02-Apr-13
1,1,1-Trichloroethane	0.36
cis-1,2-Dichloroethene	0.26 F
Trichloroethene	0.92
1,4-Dioxane	0.898

Municipal Well JC1	Concentration (µg/L)	
Analyte	10-Oct-13	20-Nov-14
1,1,1-Trichloroethane	0.36 F	0.24 F
Trichloroethene	0.48 F	0.33 F
cis-1,2-Dichloroethene	0.29 F	0.23 F
Acetone	ND	2.9 F
1,4-Dioxane	ND	0.739 F

Monitoring Well URS-2D	Concentration (µg/L)	
Analyte	08-Oct-13	18-Nov-14
1,1-Dichloroethene	0.71 F	0.27 F
cis-1,2-Dichloroethene	43	47
trans-1,2-Dichloroethene	0.17 F	ND
Vinyl Chloride	ND	ND
1,4-Dioxane	7.4	28 M

HGL—Abbreviated 2014 Long-Term Monitoring Report for Air Force Plant 59—Johnson City, NY

Figure 2
Groundwater Sampling Results
October 2013 and November 2014
On-site and Off-site Monitoring Wells

Legend

- AFP 59 Monitoring Well
- Off-site Monitoring Well
- URS-9S Monitoring Well Identification
- Surface Water Course
- Air Force Plant 59

Notes:
45 M =Shaded values indicate a New York State (NYS) groundwater effluent Class GA exceedance.
J=The analyte was positively detected but the quantitation is an estimation
F= The analyte was positively identified but the associated numerical value is below the reporting limit.
M=Matrix Effect. The analyte concentration was estimated due to matrix effect and therefore estimated.
ND=Analyte not detected above laboratory method detection limits.
NS=Monitoring well "Not Sampled" during event.
VOC=volatile organic compound
µg/L=microgram per liter

\\hgl-srv-01\hgldata\AFP_59_MSW\LTM_2014\MXD\temp_result.mxd
1/30/2015 MB
Source: HGL, ESRI, ARCGIS, ArcGIS Online Imagery

HGL

Figure 6-7 2014 Annual LTM Event Results, Former AFP 59

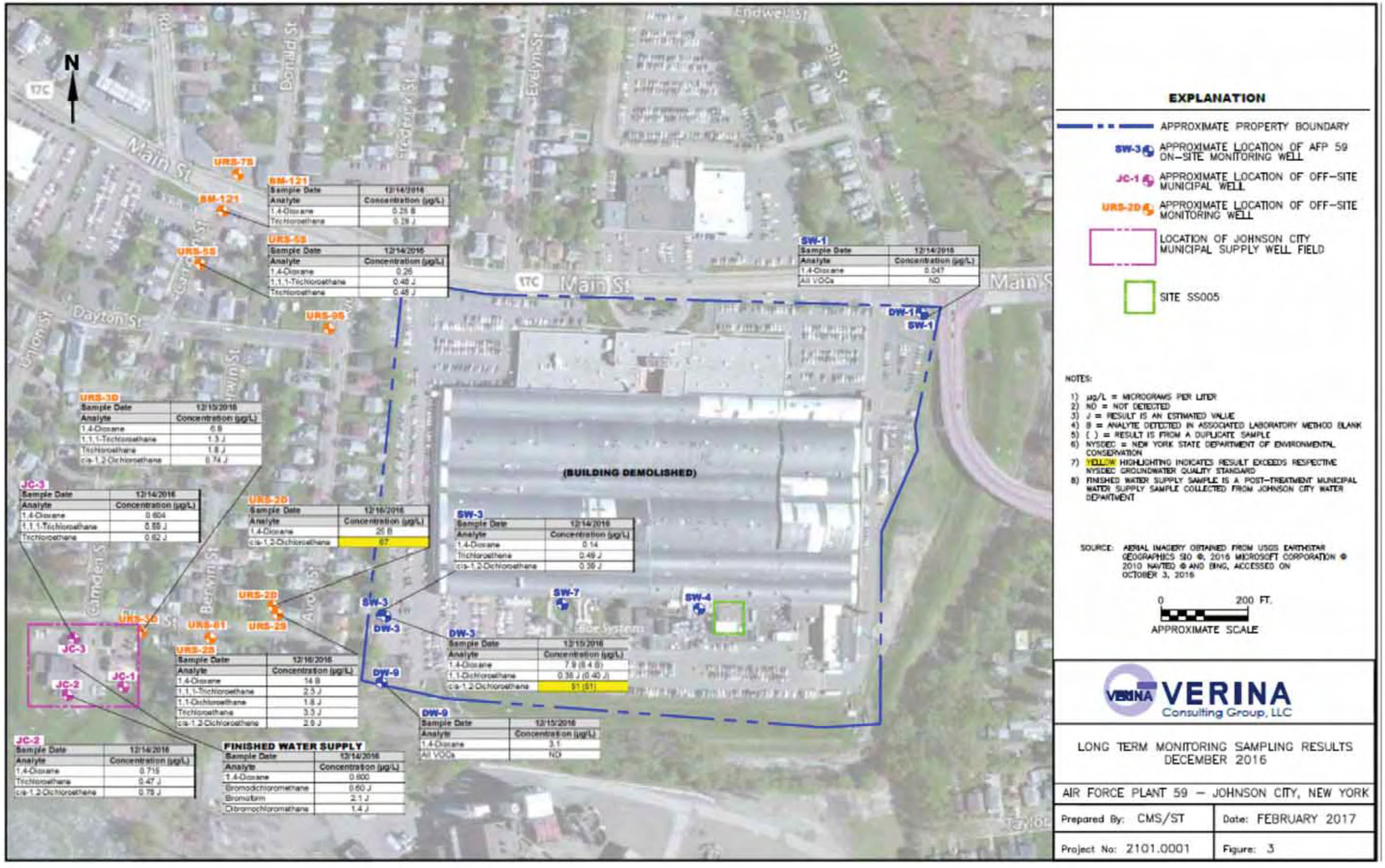
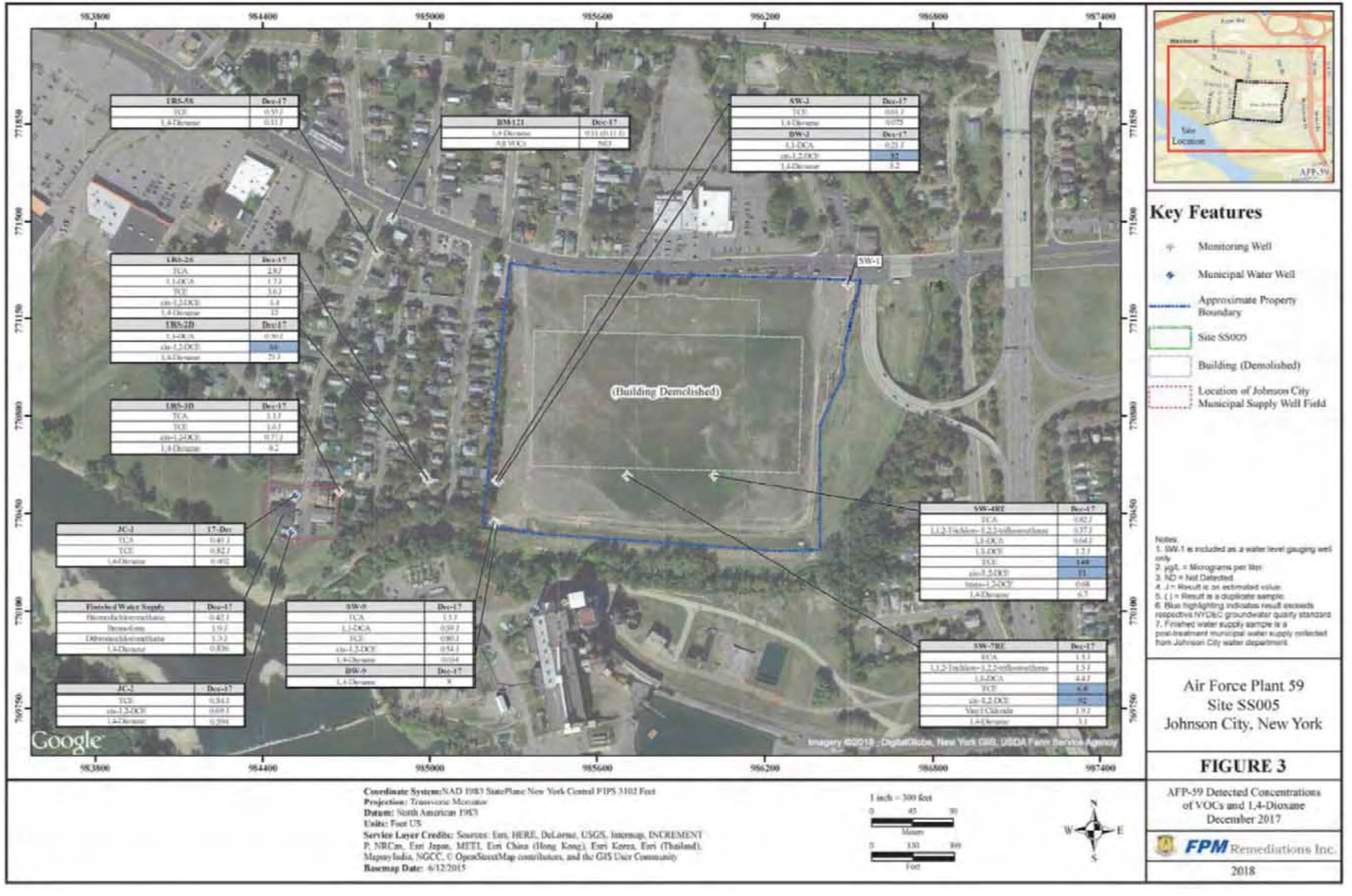


Figure 6-8 2016 Annual LTM Event Results, Former AFP 59



18S-5S	Dec-17
TCE	0.93 J
1,4-Dioxane	0.11 J

18S-12I	Dec-17
1,4-Dioxane	0.11 (0.11 J)
All VOCs	ND

SW-3	Dec-17
TCE	0.68 J
1,4-Dioxane	0.075
DW-3	Dec-17
1,1-DCA	0.21 J
cis-1,2-DCE	57
1,4-Dioxane	3.2

18S-2S	Dec-17
TCA	2.8 J
1,1-DCA	1.7 J
TCE	5.6 J
cis-1,2-DCE	1.8
1,4-Dioxane	12
18S-2D	Dec-17
1,1-DCA	0.30 J
cis-1,2-DCE	30
1,4-Dioxane	7.3 J

18S-3D	Dec-17
TCA	1.1 J
TCE	1.0 J
cis-1,2-DCE	0.77 J
1,4-Dioxane	0.2

SW-4RE	Dec-17
TCA	0.82 J
1,1,2-Trichloro-1,2,2-trifluoroethane	0.37 J
1,1-DCA	0.64 J
1,1-DCE	1.7 J
TCE	140
cis-1,2-DCE	11
trans-1,2-DCE	0.68
1,4-Dioxane	6.7

JC-1	17-Dec
TCA	0.40 J
TCE	0.82 J
1,4-Dioxane	0.092

SW-9	Dec-17
TCA	1.3 J
1,1-DCA	0.59 J
TCE	0.90 J
cis-1,2-DCE	0.54 J
1,4-Dioxane	0.034
DW-9	Dec-17
1,4-Dioxane	8

SW-7RE	Dec-17
TCA	1.5 J
1,1,2-Trichloro-1,2,2-trifluoroethane	1.5 J
1,1-DCA	4.4 J
TCE	6.6
cis-1,2-DCE	92
Vinyl Chloride	1.9 J
1,4-Dioxane	3.1

Finished Water Supply	Dec-17
Bromodichloromethane	0.42 J
Bromoform	1.9 J
Dibromochloromethane	1.3 J
1,4-Dioxane	0.036

JC-2	Dec-17
TCE	0.34 J
cis-1,2-DCE	0.69 J
1,4-Dioxane	0.094

Figure 6-9 2017 Annual LTM Event Results, Former AFP 59

Figure 3
Detected Concentrations of VOCs and 1,4-Dioxane
(June 2020)
Air Force Plant 59 (SS005)
Johnson City, Broome County, NY

Figure 6-10 2019 Annual LTM Event Results, Former AFP 59

Figure 3
Detected Concentrations of VOCs and 1,4-Dioxane (June 2020)
Air Force Plant 59 (SS005)
Johnson City, Broome County, NY

Figure 6-11 2020 Annual LTM Event Results, Former AFP 59

NOTE:
Concentrations presented in µg/L = Microgram(s) per liter or parts per billion
AWQS = Ambient Water Quality Standard by New York State Department of Environmental Conservation (NYSDEC) Class GA (groundwater for drinking water use) standards and guidance values, Technical and Operational Guidance Series 1.1.1
MCL = Maximum Contaminant Level for 1,4-Dioxane by Table 3, Subpart 5-1 of Title 10 (Health) of the Official Compilation of Codes, Rules and Regulations of the State of New York
Bolded concentrations exceed the AWQS or MCL.

URS-2S

Parameter List	Jun-21	AWQS/MCL
1,1,1-Trichloroethane	1.6 J	5
1,1-Dichloroethane	1.0 J	5
1,1-Dichloroethene	0.23 J	5
Cis-1,2-Dichloroethene	3.3 J	5
Trichloroethylene (TCE)	2.7 J	5
1,4-Dioxane (P-Dioxane)	4.9	1

URS-2D

Parameter List	Jun-21	AWQS/MCL
1,1-Dichloroethane	0.28 J	5
Cis-1,2-Dichloroethene	78	5
Chloroethene (Vinyl chloride)	0.20 J	2
1,4-Dioxane (P-Dioxane)	25	1

URS-3D

Parameter List	Jun-21	AWQS/MCL
1,1,1-Trichloroethane	1.1 J	5
Cis-1,2-Dichloroethene	0.82 J	5
Methyl Ethyl Ketone (2-Butanone)	0.84 J	50
Trichloroethene (TCE)	1.8 J	5
1,4-Dioxane (P-Dioxane)	8.7	1

JC-3

Parameter List	Jun-21	AWQS/MCL
1,1,1-Trichloroethane	0.500 J	5
Trichloroethene (TCE)	0.490 J	5
1,4-Dioxane (P-Dioxane)	0.568 J	1

JC-2

Parameter List	Jun-21	AWQS/MCL
1,1,1-Trichloroethane	0.320 J	5
Cis-1,2-Dichloroethene	0.410 J	5
Trichloroethene (TCE)	0.470 J	5
1,4-Dioxane (P-Dioxane)	0.445 J	1

POST TREATMENT

Parameter List	Jun-21	AWQS/MCL
Bromodichloromethane	1.14 J	50
Bromoform	4.27 J+	50
Chloroform	0.350 J	50
Dibromochloromethane	2.77 J	50
1,4-Dioxane (P-Dioxane)	0.574 J	1

DW-3

Parameter List	Jun-21	AWQS/MCL
1,1-Dichloroethane	0.42 J	5
Cis-1,2-Dichloroethylene	57	5
Trans-1,2-Dichloroethene	0.41 J	5
1,4-Dioxane (P-Dioxane)	8	1

SW-9

Parameter List	Jun-21	AWQS/MCL
1,1-Dichloroethane	1.2 J	5
2-Hexanone	0.97 J	50
Acetone	110 J	50
Cis-1,2-Dichloroethene	1.7 J	5
Methyl Ethyl Ketone (2-Butanone)	8.4 J	50
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	1.2 J	---
Toluene	0.54 J	5
Trichloroethene (TCE)	3.4 J	5
Chloroethene (Vinyl chloride)	0.71 J	2
1,4-Dioxane (P-Dioxane)	4.9	1

DW-9

Parameter List	Jun-21	AWQS/MCL
1,4-Dioxane (P-Dioxane)	11	1

SW-4RE

Parameter List	Jun-21	AWQS/MCL
1,1,1-Trichloroethane	1.6 J	5
1,1-Dichloroethane	0.99 J	5
1,1-Dichloroethene	0.38 J	5
Cis-1,2-Dichloroethene	1.4 J	5
Tetrachloroethene (PCE)	0.28 J	5
Trans-1,2-Dichloroethene	0.25 J	5
Trichloroethene (TCE)	4.6 J	5
1,4-Dioxane (P-Dioxane)	3.2	1

SW-7RE

Parameter List	Jun-21	AWQS/MCL
1,1,1-Trichloroethane	1.6 J	5
1,1-Dichloroethane	3.8 J	5
1,1-Dichloroethene	0.61 J	5
Cis-1,2-Dichloroethene	72	5
Trans-1,2-Dichloroethene	0.49 J	5
Trichloroethene (TCE)	3.8 J	5
Chloroethene (Vinyl chloride)	0.89 J	2
1,4-Dioxane (P-Dioxane)	3	1

BM-121
Not Sampled
URS-5S
Not Sampled
SW-1
Not Sampled
DW-1
Not Sampled
SW-3
Not Sampled
Main Street
Dayton Street
Camden Street
Berwin Street
Avon Street
Elton Street

VICINITY MAP
Chenango Bridge
Port Dickinson
Endicott
Johnson City
Binghamton
Vestal
Town of Vestal

Legend
- Air Force Plant 59 (Site SS005)
- Approximate Site Boundary
- Municipal Production Well
- Shallow Groundwater Monitoring W
- Deep Groundwater Monitoring Wel

Map Date: 10/13/2021
Source: ESRI, 2011
Projection: NAD 1983 State Plane New York East

N
0 250 500
Feet

Figure 3
Detected Concentrations of VOCs and 1,4-Dioxane (June 2021)
Air Force Plant 59 (SS005)
Johnson City, Broome County, NY

Figure 6-12 2021 Annual LTM Event Results, Former AFP 59

ATTACHMENTS

ATTACHMENT A

LIST OF DOCUMENTS AND REFERENCES

ATTACHMENT A
LIST OF DOCUMENTS AND REFERENCES

General:

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ATTACHMENT B

HISTORICAL LONG-TERM MONITORING

FORMER AIR FORCE 59

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (µg/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
SW-1	92-Jan	0.5	–	–	–	–	–	–	NA
	01-Nov	0.11 J	–	–	–	–	–	–	NA
	10-Nov	0.11	–	–	–	–	–	–	NA
	16-Dec	–	–	–	–	–	–	–	0.047
DW-1	92-Jan	0.6	–	–	–	–	–	–	NA
	94-Dec	–	–	–	–	–	–	1.8	NA
	10-Nov	0.18	–	–	–	–	–	–	NA
	14-Nov	0.19 F	–	–	–	–	–	–	–
SW-3	86-Sep	–	6	–	–	–	–	–	NA
	92-Jan	12	9	–	–	–	5	–	NA
	94-Dec	0.5	1.8	–	–	–	–	–	NA
	95-Dec	0.86	2.8	–	–	–	–	0.44	NA
	97-Jun	–	1	–	–	–	–	–	NA
	98-Nov	0.22	0.81	–	–	–	–	0.1	NA
	99-Apr	0.51	0.71	–	–	–	–	0.17	NA
	99-Nov	0.29	0.9	–	–	–	–	0.39	NA
	00-May	0.69	1	–	–	–	0.55	1.29	NA
	00-Nov	0.43	0.9	–	–	–	–	0.22	NA
	01-May	0.46	0.8	–	–	–	0.32	1.29	NA
	01-Nov	0.32 J	0.5 J	–	–	–	–	–	NA
	02-May	0.42 J	0.8 J	–	–	–	0.46 J	–	NA
	03-May	0.584 J	0.893 J	–	–	–	0.302 J	1.37 J	NA
	03-Nov	0.398 J	0.856 J	–	–	–	–	0.511 J	NA
	04-Jun	0.9 J	0.94 J	–	–	–	0.95 J	3.7	NA
	04-Nov	0.52 J	1	0.26 J	–	–	0.38 J	1.5	NA
	05-Oct	0.47 J	0.86 J	–	–	–	–	0.55 J	NA
	08-Jun	0.661 J	1.31	–	–	–	0.403 J	1.45	–
	08-Nov	0.345 J	0.759 J	–	–	–	–	–	NA
	09-Nov	0.367 J	0.62 J	–	–	–	–	0.539 J	NA
	43414	0.41	0.59	–	–	–	–	0.17	NA
	2011	NA	NA	NA	NA	NA	NA	NA	NA
	12-Aug	–	0.51	–	–	–	–	0.28 F	NA
	13-Oct	–	0.70 F	–	–	–	–	1	–
	14-Nov	0.26 F	0.51 F	–	–	–	–	0.31 F	–
	15-Nov	0.24 F	0.42 F	–	–	–	–	0.27 F	–
	16-Dec	–	0.49 J	–	–	–	–	0.39 J	0.14
	17-Dec	–	0.61 J	–	–	–	–	–	0.075
	19-Jun	0.37 J	0.59 J	–	–	–	–	1.2 J	0.37 B
	20-Jun	–	0.36 J	–	–	–	–	0.98 J	0.190

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (g/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
DW-3	92-Jan		–	–	–	–	0.3	–	NA
	94-Dec	–	–	0.28	–	–	0.26	36	NA
	95-Dec	–	–	–	–	–	–	5.2	NA
	97-Apr	–	–	–	–	–	–	41	NA
	97-Jul	–	–	–	–	–	–	4	NA
	98-Nov	–	–	–	–	–	0.34	66	NA
	99-Apr	–	–	0.28	0.11	–	0.35	67	NA
	00-May	–	–	–	–	0.25	0.16	24. 8	NA
	00-Nov	–	–	–	–	0.25	0.16	16.85	NA
	01-May	–	–	–	–	–	–	13.2	NA
	01-Nov	–	–	–	–	–	–	13.58	NA
	02-May	–	–	–	–	–	0.1 J	21.08	NA
	03-Nov	–	–	–	–	–	–	1.18 J	NA
	04-Jun	–	–	–	–	–	–	1.3	NA
	04-Nov	–	–	–	–	–	–	2.1	NA
	05-Oct	–	–	–	–	–	–	3	NA
	08-Jun	–	–	–	–	–	–	73.1	14.3
	08-Nov	–	–	–	–	–	0.41 J	67.3	NA
	09-Nov	–	–	–	–	–	0.369 J	64.3	NA
	10-Nov	–	–	–	–	–	–	8.4	NA
	12-Aug	–	–	–	–	–	0.32 F	56	NA
	13-Oct	–	–	0.18 F	0.32 F	–	–	57	2.7
	14-Nov	–	–	–	–	–	0.32 F	4	11 M
	15-Nov	–	–	–	–	–	0.31 F	50	6.7
	16-Dec	–	–	–	–	–	0.35 J	51	7.9
	17-Dec	–	–	–	–	–	0.21 J	32	5.2
	19-Jun	–	–	–	–	–	0.28 J	41	7.4
	20-Jun	–	–	–	–	–	0.33 J	48	8.0
	21-Jun	–	–	–	–	0.41 J	0.42 J	57	8.0

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (µg/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
SW-4	92-Jan	2	97	–	0.3	–	0.6	–	NA
	94-Dec	20	370	–	2.1	–	8.5	19	NA
	95-Dec	34	1200	–	4.9	2.1	6.9	34	NA
	97-Apr	–	–	–	–	–	7.1	71	NA
	97-Jul	23	290	–	–	–	–	15	NA
	98-Nov	8	46	0.42	0.82	–	9	10	NA
	99-Apr	1.9	9.53	–	–	–	0.87	1.85	NA
	99-Nov	2.13	9.5	–	0.18	–	7.7	7.15	NA
	00-May	2.88	8	0.11	0.21	0.49	1.67	4.3	NA
	00-Nov	1.14	15.2	1.49	0.29	–	15.25	11.18	NA
	01-May	3.35	34	–	0.36	0.38	1.3	3.19	NA
	01-Nov	0.88	5.7	0.43 J	0.12 J	–	7.18	5.27	NA
	02-May	2.54	21.63	–	0.34 J	–	0.79 J	2.07	NA
	03-May	3.05 J	9.09 J	–	–	–	1.44 J	3.36 J	NA
	03-Nov	2.03	4.63	–	–	–	0.93	1.93	NA
	04-Jun	2.8	41	–	0.57 J	0.11	1.3	3.3	NA
	04-Nov	3.1	56	–	0.88 J	0.19 J	1.4	4.1	NA
	05-Oct	2.2	43	–	1	–	1.7	6.3	NA
	08-Jun	2.98	17.8	–	0.751 J	0.364 J	1.51	4.35	8.18
	08-Nov	0.513 J	12.7	–	–	–	0.825 J	3.38	NA
	09-Nov	1.38	11.1	–	–	–	0.536 J	1.85	NA
	10-Nov	1.6	48	–	0.64	–	1.1	3.2	NA
	12-Aug	0.66	11	–	–	–	0.64 F	2.3	NA
	13-Oct	1.8	6.6	–	0.26 F	–	–	2.6	0.81 M
	14-Nov	0.75 F	3.4	–	0.46 F	–	–	1.7	2.5 M
	15-Nov	0.64 F	4.9	–	–	–	0.58 F	2.7	1.6
SW-4RE[1]	17-Dec	0.82 J	140	–	1.2 J	0.68 J	–	11	6.7
	19-Jun	1.6 J	3.9	–	0.36 J	–	0.93 J	2.1 J	4.1
	20-Jun	2.1 J	3.9 J	–	0.43 J	–	1.1 J	2.1 J	4.9
	21-Jun	1.6 J	4.6 J	–	0.38 J	0.25 J	0.99 J	1.4 J	5.2

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (g/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
SW-7	94-Dec	4.6	56	6.2	1	0.3	33	150	NA
	95-Dec	2.2	43	6.8	0.8		20	130	NA
	97-Jul	–	17.8	–	–	–	–	2	NA
	98-Nov	2.5	12.7	3.4	0.65	0.28	12	82	NA
	99-Apr	1.23	15	–	–	–	1.46	5.25	NA
	99-Nov	1.01	7.	–	0.19	–	3.38	18.8	NA
	00-May	0.67	4	–	–	0.12	0.71	2.43	NA
	00-Nov	0.91	11	0.52	0.15	–	3.48	16.06	NA
	01-May	1.18	3.95	–	–	–	0.47	1.46	NA
	01-Nov	0.8 J	5.7	0.85 J	0.19 J	0.13 J	3.02	25.8	NA
	02-May	0.87 J	1.5	–	–	–	0.47 J	2.79	NA
	03-May	1.5 J	3.8	–	–	–	0.409 J	1.43 J	NA
	03-Nov	0.674 J	1.9	–	–	–	0.509	2.76	NA
	04-Jun	1	1	–	–	–	0.3 J	1.1	NA
	04-Nov	1.5	2.1	0.47 J	0.25 J	–	1.5 J	10 J	NA
	05-Oct	0.73 J	3.1	–	–	–	1.4	12	NA
	08-Jun	2.5	2.94	–	–	–	1.59	6.34	4.66
	08-Nov	1.88	8.15	1.21 M	–	0.302 J	5.04	35.3 M	NA
	09-Nov	1.24	2.42	–	–	–	0.905 J	5.21	NA
	10-Nov	1	2.4	1	0.21	0.096	0.58	4.3	NA
	12-Aug	2	.	1.2	0.65	0.21 F	6.5	44	NA
	13-Oct	–	2.5	–	0.93 F	–	–	7	0.43 F
	14-Nov	1.9	7.8	0.78 F	0.67 F	0.2 F	4.6	33	4.4 M
	15-Nov	1.8	.5	1.2 F	0.52 F	0.16 F	5.1	40	6
SW-7RE[1]	17-Dec	1.5 J	6	1.9 J	–	–	4.4 J	2	3.1
	19-Jun	1.6 J	3.8 J	1.1 J	0.44 J	0.45 J	2.4 J	45	3.6
	20-Jun	1.7 J	3.8 J	0.75 J	0.43 J	1.1 J	3.3 J	61	3.3
	21-Jun	1.6 J	3.8 J	0.89 J	0.61 J	0.49 J	3.8 J	72	3.0
DW-	16-Dec	–	–	–	–	–	–	–	3.1
	17-Dec	–	0.8 J	–	–	–	–	–	8
	19-Jun	–	–	–	–	–	–	–	9.5
	20-Jun	–	–	–	–	–	–	–	10.0
	21-Jun	–	–	–	–	–	–	–	11.0
SW-	17-Dec	1.3 J	0.8 J	–	–	–	0.59 J	0.54 J	0.054
	21-Jun	–	3.4 J	0.71 J	–	–	1.2 J	1.7 J	1.0

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (g/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
M-121	15-Nov	–	–	–	–	–	–	–	0.4 F
	16-Dec	–	0.28 J	–	–	–	–	–	0.25
	17-Dec	–	–	–	–	–	–	–	0.11
	19-Jun	0.22 J	–	–	–	–	–	–	0.22 B
	20-Jun	–	–	–	–	–	–	–	0.22
URS-2S	08-Jun	2.2	2.19	–	–	–	0.569 J	0.996 J	NA
	08-Nov	2.99	2.79	–	–	–	1.07	1.46	NA
	10-Nov	2.2	2.6	–	0.37 J	–	1.1	1.3	NA
	12-Jul	3.3	4.4	–	–	–	1.6	1.9	NA
	13-Oct	1.6	2.3	–	–	–	1.1	1.2	1.8 F
	14-Nov	4.1	3.7	–	0.32 F	–	2.1	1.2	20 M
	15-Nov	2.4	2.8	–	–	–	1.3	1.8	12
	16-Dec	2.3 J	3.3 J	–	–	–	1.8 J	2.5 J	14
	17-Dec	2.8 J	3.6 J	–	–	–	1.7 J	1.4 J	27 J
	19-Jun	1.1 J	2.9 J	–	–	–	2.0 J	1.2 J	9.5
	20-Jun	1.7 J	2.5 J	–	–	–	1.3 J	2.3 J	7.7
	21-Jun	1.6 J	2.7 J	–	0.23 J	–	1.0 J	3.3 J	4.
URS-2D[2]	08-Jun	–	–	0.354 J	–	–	0.339 J	71.	NA
	08-Nov	–	–	0.364 J	–	–	0.244 J	72.7	NA
	10-Nov	–	–	0.22 J	–	0.11 J	0.23 J	6	NA
	12-Jul	–	–	0.22 J	–	–	0.27 J	71	NA
	13-Oct	–	–	–	–	0.17 F	0.21 F	62	7.4
	14-Nov	–	–	–	–	–	0.27 F	67	28 M
	15-Nov	–	–	–	–	–	0.2 F	61	21
	16-Dec	–	–	–	–	–	–	67	25
	17-Dec	–	–	–	–	–	0.3 J	66	21 J
	18-Dec	–	–	–	–	–	0.26 J	60	23
	19-Jun	–	–	–	–	–	0.26 J	56	23
	19-Dec	–	–	–	–	–	–	57	22
	20-Jun	–	–	–	–	–	0.22J	63	25
	21-Jun	–	–	0.20 J	–	–	0.28 J	78	25

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (g/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
URS-3D	13-Oct	0.99 F	1.7	–	–	–	–	0.9 F	1.8 F
	14-Nov	1.3	1.9	–	–	–	–	0.95 F	4.7 M
	15-Nov	1	1.6	–	–	–	–	0.9 F	5.8
	16-Dec	1.3 J	1.8 J	–	–	–	–	0.74 J	6.9
	17-Dec	1.1 J	1.6 J	–	–	–	–	0.77 J	6.2
	18-Dec	0.71 J	1.6 J	–	–	–	–	0.87 J	–
	19-Jun	0.98 J	–	–	–	–	–	0.80 J	4.4
	19-Dec	0.92 J	1.4 J	–	–	–	–	0.83 J	3.9
	20-Jun	0.94 J	1.5 J	–	–	–	–	0.67 J	5.7
	20-Dec	1.1 J	1.7 J	–	–	–	–	0.72 J	6.3
	21-Jun	1.1 J	1.8 J	–	–	–	–	0.82 J	8.7
URS-5S	13-Oct	0.5 F	0.63 F	–	–	–	–	–	–
	14-Nov	0.68 F	0.65 F	–	–	–	–	–	–
	15-Nov	0.52 F	0.56 F	–	–	–	–	–	0.4 F
	16-Dec	0.48 J	0.48 J	–	–	–	–	–	0.26
	17-Dec	–	0.53 J	–	–	–	–	–	0.11 J
	19-Jun	0.28 J	0.38 J	–	–	–	–	–	0.19 B
	20-Jun	0.3 J	0.28 J	–	–	–	–	–	0.21
JC-2[3]	13-Oct	0.36 F	0.48 F	–	–	–	–	0.29 F	–
	14-Nov	0.24 F	0.33 F	–	–	–	–	0.23 F	0.739 F
	15-Nov	0.33 F	0.39 F	–	–	–	–	0.24 F	0.896 F
	16-Dec	–	0.47 J	–	–	–	–	0.78 J	0.715
	17-Dec	–	0.54 J	–	–	–	–	0.69 J	0.594
	18-Dec	0.26 J	0.36 J	–	–	–	–	0.27 J	0.536 B
	19-Feb	–	0.43 J	–	–	–	–	–	0.591
	19-Jun	0.25 J	0.28 J	–	–	–	–	0.32 J	0.606 B
	19-Sep	–	0.28 J	–	–	–	–	0.4 J	0.726
	19-Dec	0.23 J	0.36 J	–	–	–	–	0.47 J	0.512
	20-Mar	–	0.38 J	–	–	–	–	–	0.649
	20-Jun	0.36 J	0.44 J	–	–	–	0.21 J	0.79 J	0.964
	20-Sep	–	0.41 J	–	–	–	–	0.72 J	0.696
	20-Dec	0.30 J	0.030 J	–	–	–	–	0.31 J	0.999
	21-Jun	0.32 J	0.47 J	–	–	–	–	0.41 J	0.445 J

Attachment B – Historical Results, Former AFP 59

Well Identification	Sample Date	Compounds and Detected Concentrations (g/L)							
		1,1,1-Trichloroethane (TCA)	Trichloroethene (TCE)	Chloroethene (Vinyl chloride)	1,1-Dichloroethene (DCE)	trans-1,2-Dichloroethene (DCE)	1,1-Dichloroethane (DCA)	cis-1,2-Dichloroethene (DCE)	1,4-Dioxane
JC-3[3]	12-Aug	0.56	0.92	–	–	–	–	0.26 J	NA
	16-Dec	0.59 J	0.62 J	–	–	–	–	–	0.604
	17-Dec	0.41 J	0.52 J	–	–	–	–	–	0.492
	18-Dec	0.51 J	0.46 J	–	–	–	–	–	0.464 B
	19-Feb	0.59 J	0.49 J	–	–	–	–	–	0.464
	19-Jun	0.45 J	0.46 J	–	–	–	–	–	0.755 B
	19-Sep	0.41 J	0.46 J	–	–	–	–	–	0.928
	19-Dec	0.5 J	0.46 J	–	–	–	–	–	0.486
	20-Mar	0.6 J	0.63 J	–	–	–	–	–	0.576
	20-Jun	0.46 J	0.42 J	–	–	–	–	–	0.561
	20-Sep	–	0.38 J	–	–	–	–	–	0.618
	20-Dec	0.58 J	0.48 J	–	–	–	–	–	0.615
	21-Jun	0.5 J	0.49 J	–	–	–	–	–	0.568 J
Post-Treatment[3]	16-Dec	–	–	–	–	–	–	–	0.600
	17-Dec	–	–	–	–	–	–	–	0.536
	18-Dec	–	–	–	–	–	–	–	0.556 BJ
	19-Feb	–	–	–	–	–	–	–	0.964
	19-Jun	–	–	–	–	–	–	–	0.735 B
	19-Sep	–	–	–	–	–	–	–	0.764
	19-Dec	–	–	–	–	–	–	–	0.579
	20-Mar	–	–	–	–	–	–	–	0.554
	20-Jun	–	–	–	–	–	–	–	0.512
	20-Sep	–	–	–	–	–	–	–	0.675 J
	20-Dec	–	–	–	–	–	–	–	0.729
	21-Jun	–	–	–	–	–	–	–	0.574 J

NOTES:

[1] Indicates monitoring wells SW-4RE and SW-7RE are replacements for abandoned wells SW4 and SW7, respectively.

[2] The 1,4-Dioxane reading for URS-2D was reported using method 8260C. This value was higher than the reported value for method 8270D.

[3] In accordance with the USAF 2020 Site Management Plan, samples collected from the municipal water system are to be analyzed via EPA method 524.2, which started during the June 2021 sampling event.

— = Analyte not detected above laboratory method detection limits.

NA = Not available

B = Target analyte was detected in the sample as well as the associated blank.

J = Result is an estimated value, analyte was positively detected in sample above method detection limit (MDL), but below reporting limit (RL).

F = Added by HydroGeologic, the analyte was positively identified but the associated numerical value is below the RL.

M = Matrix effect. The analyte concentration was estimated due to matrix effect and therefore estimated.

1,4-Dioxane concentrations were measured using U.S. Environmental Protection Agency (EPA) Methods 8260C and 8270D except for the public water supply wells, which used EPA Method 522SIM. The highest concentrations was used for reporting.

olded concentrations are exceedance of the New Yor State Department of Environmental Conservation s groundwater uality standards for class GA Groundwater.

ATTACHMENT C

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

FORMER AIR FORCE PLANT 59

Attachment C 1999 AFP 59 ROD
Comparison of Site Data and Federal and New York Chemical-Specific
ARARs for VOCs in Groundwater

	1999 ROD ARARs (µg/L)		1999 Site Maximums (µg/L)	
Constituent	**Federal Primary MCL**	**New York Groundwater Standard[a]**	**Site Shallow Groundwater Concentration**	**Site Deep Groundwater Concentration**
Bromodichloromethane	100[b]	100	0.38	ND
Carbon tetrachloride	5	5	0.6	ND
Chloroethane	--	5	4.2	ND
Chloroform	100[b]	100	0.46	ND
Chloromethane	--	5	ND	0.38
1,1-Dichloroethane	--	5	33	2.4
1,1-Dichloroethene	7	5	2.1	ND
cis-1,2-Dichloroethene	70	5	150	36
trans-1,2-Dichloroethene	100	5	0.30	ND
Ethylbenzene	700	5	0.68	0.40
Isopropylbenzene	--	5	1.0	ND
Methylene chloride	5	5	6.0	ND
Naphthalene	--	50	2.8	ND
n-Propylbenzene	--	5	0.90	ND
Toluene	1,000	5	1.3	ND
1,2,4-Trichlorobenzene	70	5	2.7	ND
1,1,1-Trichloroethane	200	5	20	1.2
Trichloroethene	5	5	370	4.0
Trichlorofluoromethane	--	5	2.8	ND
1,2,4-Trimethylbenzene	--	5	15	ND
1,3,5-Trimethylbenzene	--	5	36	0.78
Vinyl chloride	2	2	6.2	0.28
Xylenes(total)	10,000	5	6.9	0.54

Key: MCL – Maximum contaminant Level
ND - Not detected
NDL - No designated limits
- - No ARAR

a. NYSDEC Class GA

b. Sum of trihalomethanes, including bromodichloromethane, chlorodibromomethane, bromoform, and chloroform

ATTACHMENT D

SITE INSPECTION PHOTOGRAPHS

FORMER AIR FORCE PLANT 59

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:** Former AFP 59, SS005	**Project No.:**
U.S. Air Force		143257.0000

Photo No:	**Date:**
1	9/29/21

Description:

Facing Southeast from Central-North Point of Site

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:** Former AFP 59, SS005	**Project No.:**
U.S. Air Force		143257.0000

Photo No:	**Date:**
2	9/29/2021

Description:

Facing Southwest from Central-North Point of Site

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name: U.S. Air Force	**Site Location:** Former AFP 59, SS005	**Project No.:** 143257.0000

Photo No:	**Date:**
3	9/29/2021

Description:

Vegetation coverage looking west-southwest from northeast area of site

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name: U.S. Air Force	**Site Location:** Former AFP 59, SS005	**Project No.:** 143257.0000

Photo No:	**Date:**
4	9/29/2021

Description:

Ruts traversing northern portion of site

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:** Former AFP 59, SS005	**Project No.:**
U.S. Air Force		143257.0000

Photo No:	**Date:**
5	

Description:

Ponding on north side of site

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:** Former AFP 59, SS005	**Project No.:**
U.S. Air Force		143257.0000

Photo No:	**Date:**
6	9/29/2021

Description:

Well cluster SW-9 and DW-9 southwest corner

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:** Former AFP 59, SS005	**Project No.:**
U.S. Air Force		143257.0000

Photo No:	**Date:**
7	9/29/2021

Description:

Ruts along western edge of site

VERSAR
Your Needs. Our Mission.

PHOTOGRAPHIC LOG

Client Name:	**Site Location:** Former AFP 59, SS005	**Project No.:**
U.S. Air Force		143257.0000

Photo No:	**Date:**
8	9/8/2021

Description:

Air stripper at Camden Street Well Field, note well URS-3D in background

ATTACHMENT E

INTERVIEW RECORDS

FORMER AIR FORCE PLANT 59

SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Air Force Plant 59, SS005	
NYSDEC ID: NYSDEC #704020; NY5570024641	
Interviewer name: Clarkson Meredith	**Interviewer affiliation:** Versar, Inc.
Subject name: Brian Jankauskas	**Subject affiliation:** NYSDEC
Subject contact information: 518-402-9620	
Interview date: 10/13/2021	**Interview time:** n/a
Interview format (select one): In Person Phone Mail **Email** Other:	
Interview category: State Regulatory RPM	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   My overall impression is good as interim site management activities are being performed to limit exposures, but we would like to see the selected remedy from the Decision Document performed so the site can be reclassified and returned to productive use.

2. What is your assessment of the current performance of the remedy in place at the Site?

   Interim site management activities are being performed appropriately, but the cover system needs to be installed as identified in the Decision Document to completely evaluate the remedy.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

   Chlorinated volatile organics and 1,4 dioxane are being monitored to assess changes in trends as groundwater from the site migrates towards the Johnson City supply well field. Groundwater concentrations seem consistent over the past five years.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

   We do not have a continuous on-site presence and site visits are primarily limited to select sampling events or site meetings.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

The interim site management plan has been prepared and includes an environmental easement. This will be used for future sampling events to maintain sampling methods, which will help with tracking trends. Some changes may occur and can be identified (e.g. updated laboratory method). This site management plan will be updated when the site is developed and the selected remedy is performed as required by the Record of Decision.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

   No.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

   Not that I am aware of.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

   No.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

   Yes.

10. Any other comments?

    The State established MCLs for 1,4 dioxane, which is a site contaminant being monitored.

CERCLA/NYSDEC SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Former Air Force Plant 59	
EPA ID: NYSDEC #704020; NY5570024641	
Interviewer name: Clarkson Meredith	**Interviewer affiliation:** Versar, Inc.
Subject name: George Walters	**Subject affiliation:** USAF
Subject contact information: george.walters@us.af.mil	
Interview date: 13 Oct 2021	**Interview time:** n/a
Interview format (select one): In Person Phone Mail **Email (Word doc)** Other:	
Interview category: USAF Installation Support Section Chief, WPAFB	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

No exposure to any PAHs or VOCs in groundwater, area is fenced, no discussion of trespassers (ask BCIDA), or interference with several monitoring wells on site the AF Contractor samples.

2. What is your assessment of the current performance of the remedy in place at the Site?

Same as above, no exposure as site sits today.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

Concentration are steady state. AF has sampled the Johnson City municipal well field since 2007 or so for 1,4-dioxane…appear to be steady state at production wells. Due to flood and demolition, the AF was able to remove all soil with concentrations needing to be removed and no 1,4-dioxane found in any soil (as expected since 1,4-d likes water).

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

NO, no O&M on site. The Air Force paid for Johnson City well field airstripper back in 1999…and they operate it continuously (need to ask them about their O&M), although I believe the VOCs are less than MCLs. They do not have any obligation to report anything to the AF.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

NONE

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

NONE… but ask Johnson City.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

NO….but ask Johnson City.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

NONE….hoping natural attenuation reduces concentrations in the future and any future development will take Vapor Intrusion into account by installing mitigation piping below the slab, just in case NYDEC lowers their vapor standards in the future.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

YES.

SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Air Force Plant 59, Site SS005	
EPA ID: NYSDEC #704020; NY5570024641	
Interviewer name:	**Interviewer affiliation:**
Subject name: David Iacovone	**Subject affiliation:** USAF AFCEC CZOM
Subject contact information: Desk Phone: 937-257-6519	
Interview date: 9 December 2021	**Interview time:** n/a
Interview format (select one): In Person Phone Mail **Email** Other:	
Interview category: O&M Contractor / RA Contractor	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? **Activities at the site consist of annual monitoring of wells for CVOCs and 1,4-dioxane. My overall impression is that the work is proceeding smoothly. The current contractor was retained despite an ORC contract that was signed this year (2021). However, the ORC contractor will not be performing work at AFP 59 until the current contract expires (late 2022).**

2. What is your assessment of the current performance of the remedy in place at the Site? **The remedy in place currently consists of yearly monitoring which is continuing to make progress and appears satisfactory to NYDEC.**

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site? **Monitoring data indicates that contaminant concentrations (CVOCs and 1,4-dioxane) continue to decrease.**

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence. **O&M is being performed by the city entity.**

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts. **No.**

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details. **Not aware of any difficulties.**

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies. **There are currently no discussions with regards to optimization of the sampling effort.**

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site? **None**

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? **Yes**