FIRST FIVE-YEAR REVIEW REPORT FOR KENTUCKY AVENUE WELL FIELD SITE SUPERFUND SITE CHEMUNG COUNTY, NEW YORK

Prepared by

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

Pat Evangelista Digitally signed by Pat Evangelista
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Pat Evangelista, Director
Superfund and Emergency Management Division

Date

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Contents

Appendices

List of Abbreviations and Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
AS	Air Sparging
BWTS	Barrier Well Treatment System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMP	Closure Monitoring Plan
COPC	Constituents of Potential Concern
ESD	Explanation of Significant Differences
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
EWB	Elmira Water Board
FYR	Five-Year Review
GPM	Gallons Per Minute
HHRA	Human Health Risk Assessment
HI	Hazard Index
IC	Institutional Control
KAW	Kentucky Avenue Well
MCL	Maximum Contaminant Level
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
O&M	Operation and Maintenance
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated biphenyl
PPM	Parts Per Million
PPT	Parts Per Trillion
PRP	Potentially Responsible Party
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
ROD	Record of Decision
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SBERA	Supplemental Baseline Ecological Risk Assessment
SVE	Soil Vapor Extraction
TCE	Trichloroethylene
TSCA	Toxic Substances Control Act
UU/UE	Unlimited Use / Unrestricted Exposure
VOC	Volatile Organic Compound
µg/L	Microgram Per Liter

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to assess the effectiveness and ongoing protection of a remedy for human health and the environment. This report documents the methods, findings, and conclusions of the review, identifies any issues encountered, and provides recommendations for resolution.

The United Sates Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the first FYR for the Kentucky Avenue Well Field Superfund Site ("Site"). The triggering action for this statutory review is based upon the date of on-site mobilization for the Operable Unit 4 remedial action. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

EPA divided the Site into four Operable Units (or OUs), for remediation purposes, three of which are included in this FYR. OU1 initially only addressed residences and commercial properties that had relied upon private drinking water wells for potable water in the area affected by groundwater contamination; subsequently through an Explanation of Significant Differences (ESD), the Sullivan Street public supply well was included in this OU. OU2 addressed contamination in the Kentucky Avenue Well (KAW) public supply well, and groundwater contamination in the Newtown Creek Aquifer. OU3 addressed soil contamination at the former Westinghouse Facility and sediment contamination in the Industrial Drainageway that runs south from the Westinghouse Facility. OU4 addressed soil and sediment contamination in Koppers Pond. OU1 is not addressed in this FYR, but is included in the background information for understanding.

The Kentucky Avenue Well Field Superfund Site FYR was led by Christopher O'Leary, EPA Remedial Project Manager (RPM). Participants included Michael Scorca, EPA Hydrogeologist; Joseph Hayes, EPA Hydrogeologist; Marian Olsen, EPA Human Health Risk Assessor; Jinnie Hanlee, EPA Human Health Risk Assessor; Abigail DeBofsky, EPA Ecological Risk Assessor; and Michael Basile, EPA Community Relations Involvement Coordinator. The potentially responsible parties[1,2] (PRPs) for the Site were notified of the initiation of the FYR. The review began on October 1, 2024.

Site Background

The Site is located within the Village of Horseheads and the Town of Horseheads in Chemung County, New York. The Site includes the KAW, a former municipal water supply well owned by the Elmira Water Board (EWB); the former Westinghouse Electric Corporation's (Westinghouse's) Industrial and Governmental Tube Division facility (Facility), the primary source of trichloroethylene (TCE) contamination at and near the KAW; the Industrial Drainageway that runs south from the Facility into and including Koppers Pond, and the contaminated portion of the underlying aquifer, known locally as the Newtown Creek Aquifer. A Site location map is provided as Figure A-1.

[1] For OU1, OU2, and OU3: Paramount is the successor to Westinghouse Electric Corporation, which became CBS Corporation on December 1, 1997. CBS Corporation merged with Viacom Inc. on May 4, 2000, becoming the non-survivor of the merger. On December 31, 2005, Viacom Inc. rebranded itself as CBS Corporation. Subsequently, on December 4, 2019, CBS Corporation was renamed ViacomCBS Inc., and on February 15, 2022, it changed its name to Paramount Global.

[2] The Village of Horseheads, the City of Elmira, and One Hardinge Drive LLC have been identified as PRPs for OU4.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Kentucky Avenue Well Field Superfund Site		
EPA ID: NYD980650667		
Region: 2	**State:** NY	**City/County:** Town of Horseheads / Chemung County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: U.S. EPA		
Author name (Federal Project Manager): Christopher O'Leary		
Author affiliation: U.S. EPA Remedial Project Manager		
Review period: 10/1/2024 - 5/12/2025		
Date of site inspection: 5/5/2025 - 5/6/2025		
Type of review: Statutory		
Review number: 1		
Triggering action date: 6/11/2020		
Due date *(five years after triggering action date)*: 6/11/2025		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The KAW was constructed in 1962 and provided approximately ten percent of the potable water produced by the EWB until its closure in 1980 following the discovery of elevated levels of TCE. TCE contamination was first detected in the KAW in May 1980 during an inventory of local wells initiated by the New York State Department of Health (NYSDOH). In July 1980, the Chemung County Health Department conducted further groundwater sampling in the area and similarly found elevated levels of TCE in the KAW and several private residences and commercial facilities. As a result of these findings, the EWB closed the KAW in September 1980. In September 1983, the Site was placed on the federal National Priorities List (NPL) of hazardous waste sites.

Additional sampling conducted by local, state, and federal agencies through 1985 identified TCE contamination throughout the Newtown Creek Aquifer.

Subsequent investigations lead to the determination that the Facility was the primary source of TCE

contamination at and near the KAW. Past operations at the Facility, including machining, electroplating, and chemical cleaning, generated solid and liquid wastes. Such plant waste wastes included TCE and TCE-related still-bottoms and degreaser sludges. The solid and liquid wastes were disposed at several locations on the Facility property until 1975.

In 1990, as part of the supplemental Remedial Investigation/Feasibility Study (RI/FS) for OU2, a baseline human health risk assessment (HHRA) was conducted to evaluate potential risks to human health associated with exposure to site media including groundwater, surface water, soil and sediment. Unacceptable risks resulting from the HHRA included: ingestion of groundwater by residents (risk drivers: TCE, antimony, and nickel), exceeding lead levels in groundwater, incidental ingestion and direct contact of sediment and subsurface soil (risk drivers: polychlorinated biphenyls (PCBs) and arsenic).

A large portion of the surface runoff from the Facility is routed through two plant outfall flumes and ultimately flows to the Industrial Drainageway. The Facility was identified as the likely source of PCBs, metals and TCE found in the Industrial Drainageway (surface water/drainage channel). The main building at the Facility covers approximately 16 acres in the eastern portion of the property and includes two wastewater treatment plants. Treated wastewater (process and noncontact cooling water) had been discharged to the Industrial Drainageway via the two permitted outfalls at the Facility from the beginning of operations through 2014 when discharges ceased.

The Industrial Drainageway is a surface water channel that conveys surface water runoff when present from a 1,350-acre commercial and industrial watershed. The Industrial Drainageway begins at the outlet of an underground pipe (located at the Chemung Street outfall) approximately 1,500 feet southeast of the Facility. It is a 7 to 10 foot-wide open ditch which extends approximately 2,200 feet to the southeast where it discharges into Koppers Pond.

Historically, the water in Koppers Pond had been approximately three to six feet deep. At its southern end, the pond discharges to two outlet streams, which then merge about 500 feet downstream to a single channel that flows past the Hardinge Plant and into Halderman Hollow Creek. From there, the creek flows through mixed industrial, commercial, and residential areas and discharges into Newtown Creek approximately 1.5 miles south of Koppers Pond. The water levels in Koppers Pond fluctuate seasonally, due to decreased discharges into the Industrial Drainageway and because of lower seasonal precipitation.

The HHRA for OU3 determined that site workers, employees, and on-site construction workers face an unacceptable risk of 5.1 in 10,000 for cancer due to the ingestion of contaminated surface soils at the Westinghouse Facility, based on an industrial land use scenario. Additionally, area residents, particularly adults, are at risk from consuming contaminated fish from the Industrial Drainageway and Kopper's Pond, with a calculated unacceptable carcinogenic risk of 3.8 in 10,000 and noncarcinogenic hazard index (HI) of 6.9, primarily associated with PCBs and arsenic. Although exposure to constituents of potential concerns (COPCs) in sediments did not surpass established cancer risk and noncancer hazard thresholds, remediation efforts were implemented to prevent further migration into other media.

In 2013, a site-specific HHRA was conducted following reports of trespassing in the Kopper's Pond area during the RI/FS for OU4. Observations of individuals fishing from the pond banks led to the assessment of direct contact exposure pathways, including incidental ingestion and dermal contact with sediment, and fish consumption. The findings indicated an unacceptable maximum cancer risk of 3.1 in 10,000 and a maximum noncancer hazard HI of 21, primarily due to PCBs. Notably, cancer risks from fish consumption exceeded the acceptable levels across all age groups, including children, adolescents, and adults. The Supplemental Baseline Ecological Risk Assessment (SBERA) for Kopper's Pond OU4 also revealed that exposed sediment and soils present an unacceptable risk to herbivorous mammals, such as muskrats.

Response Actions

In March 1985, EPA initiated a removal action for the purpose of providing alternate water supplies to impacted residences not connected to the public water distribution system, whose private wells were found to be contaminated with TCE in excess of NYSDOH permissible drinking water guidelines; these residences were supplied with bottled water and ultimately connected to the public water supply.

In addition to the March 1985 removal action that provided alternate water to impacted residences, a second removal action was performed at the Facility pursuant to a September 1995 administrative order on consent between EPA and Westinghouse. The action consisted of the removal and off-Site disposal of buried drums containing magnesium chips and titanium turnings waste from the magnesium chip burial area and two calcium fluoride sludge disposal areas at the Facility. The removal action was completed in 1996.

Remedial investigations and feasibility studies for the OU1-OU4 resulted in a Record of Decision (ROD) for each of the OUs as follows:

OU1 ROD: The September 1986 ROD for OU1 was to connect residences using private drinking water to a public water supply in order to protect human health from exposure (via ingestion of groundwater, inhalation, and dermal contact) to TCE and polycyclic aromatic hydrocarbons (PAHs) in groundwater at concentrations in excess of state and federal drinking water standards. The selected remedy included the following:

- An investigation to identify all residences in the study area currently using private wells. Upon completion of the investigation, all private well users will be connected to public water supplies.
- Installation of monitoring wells upgradient of the Sullivan Street wells, with sampling at and upgradient of the wells to be performed on a quarterly basis.
- Conduct a supplemental source control RI/FS to identify the source of contamination and to determine which, if any, source control measures would be feasible and cost effective. The source control RI/FS will be a composite of both ongoing and proposed studies at various potential source sites within the study area.

In April 1990, EPA issued an ESD that modified the remedy selected in the 1986 ROD to include the design and construction of air strippers for the Sullivan Street Wells. This action was based upon sampling of newly installed monitoring wells near the Sullivan Street Wells and in the Sullivan Street public water supply, which revealed concentrations of TCE in excess of state and federal drinking water standards.

OU2 ROD: The September 1990 OU2 ROD selected an interim groundwater remedy for the Site, as well as the restoration of the Kentucky Avenue Well public drinking water supply. The 1996 OU3 ROD (discussed below) documented that the OU2 interim remedy for groundwater was the final groundwater remedy for the Site, and further specified that the remedy would be implemented in accordance with the approved OU2 remedial design. The interim remedial action selected for the Site, and the remedial action objectives for the contaminated groundwater in the vicinity of the Kentucky Avenue Wellfield are as follows:

- Restore the Kentucky Avenue Well as a public drinking water supply well. If evaluation of the well condition indicates that the well should be replaced, then the well will be reconstructed in order that the Kentucky Avenue Well can provide approximately 700 gallons per minute (gpm) potable water.

- Prevent further spread of contaminated groundwater within the Newtown Creek Aquifer with the installation of ground water recovery wells between the Westinghouse Electric Corporation facility and the Kentucky Avenue Well. The exact location and pumping rates will be determined during the design stage.
- Construct two treatment plants, one located near the Kentucky Avenue Well, and one located between the Westinghouse facility and the Kentucky Avenue Well which will treat all the recovered ground water to Federal and New York State Standards for public drinking water systems. The selected treatment will include the following:
    - Filtration to remove any suspended solids with adsorbed inorganic contamination.
    - Air Stripping to remove volatile organic contaminants.
    - Vapor Phase Carbon Adsorption to eliminate volatile organic vapor emissions at the air stripper.
- Discharge the treated ground water to the public water supply. In addition, engineered provisions to allow for testing reinjecting ground water to evaluate the feasibility of expanding the ground water remediation effort will be provided for.
- Install a limited number of monitoring wells to monitor contaminant migration and to evaluate effectiveness of the interim remedial action. The location and specifications for these monitoring wells will be determined during the design phase.
- Conduct a limited investigation in order to determine if the contamination detected at the Horseheads Automotive Junkyard contributes to the contamination at the Kentucky Avenue Wellfield.

OU3 ROD: The September 1996 ROD for OU3 documented that the OU2 interim remedy for groundwater was the final groundwater remedy for the Site, and further specified that the remedy would be implemented in accordance with the approved OU2 remedial design. The selected remedy for OU3 also addressed contamination present in soils at the Westinghouse Facility and the Industrial Drainageway.

The following Remedial Action Objectives (RAOs) were established for OU3:

- Preventing direct contact with contaminated soil;
- Preventing the leaching of contaminants into groundwater; and,
- Preventing contact with contaminated sediment and limiting the availability of contaminants for uptake by fish, thereby serving to reduce the health threat posed by fish consumption.

The OU3 ROD included the following major components:

<u>Westinghouse Facility - Disposal Area F</u>

- Performance of additional sampling analysis prior to remedy implementation to better delineate the horizontal and vertical extent of contaminated soils and waste materials and to characterize and classify such materials for off-site disposal and/or further treatment.
- Excavation of all waste materials and soils containing TCE, PAHs and arsenic above cleanup objectives established for such contaminants.
- Transportation of contaminated soils and waste materials to permitted waste management facilities.
- Performance of confirmatory sampling and subsequent backfilling of the excavated areas with clean soil.

Westinghouse Facility - Former Runoff Basin Area

- Design and testing of an enhanced Soil Vapor Extraction (SVE) system using either dual phase SVE or SVE with air sparging, depending on Site-specific characteristics, to extract volatile organic compounds (VOCs) above and below the water table for treatment.
- Construction and operation of the enhanced SVE treatment system for removal and treatments of VOCs from soil to meet the cleanup levels established in the OU3 ROD.
- Transportation (piping) of recovered groundwater to the water treatment facility constructed as part of the groundwater remedy for OU2 for treatment.
- Implementation of a monitoring program to assess the effectiveness of SVE treatment in attaining established cleanup levels in soil and federal and state drinking water standards for groundwater.

Industrial Drainageway

- Excavation of sediments containing PCBs from the Industrial Drainageway above the cleanup level of 1.0 part per million (ppm) for PCBs.
- Placement and operation of diversion pumping and necessary erosion and sedimentation controls during excavation.
- Performance of confirmation sampling.
- Transportation of contaminated sediments to off-site permitted waste management facilities for disposal.
- Reshaping the flow channel using clean soil, as needed.

Further ecological investigation and a supplemental study at Koppers Pond was warranted to assess the need for a remedial action, which helped inform the OU4 ROD as described below.

In addition, based on the findings of remedial investigation for OU3, EPA determined that no further groundwater treatment beyond that specified for the OU2 interim remedy, as set forth in the 1990 ROD and the approved remedial design report for OU2, was necessary; therefore, the interim remedy became the final remedy for restoring the aquifer to its beneficial use as a drinking water aquifer at the Site.

OU4 ROD: The September 2016 OU4 ROD included the following RAOs for the approximately nine acres of sediment and exposed soil comprising Koppers Pond:

- Minimize ecological receptors' exposure to contamination in exposed sediments or soils; and
- Reduce the future health risks and hazards associated with future consumption of fish from Koppers Pond by reducing the concentration of contaminants in fish.

Components of the selected remedy include the following:

- Consolidation and grading of sediments and exposed mudflat soils within the footprint of the former Koppers Pond basin.
- Placement of a geotextile membrane to serve as a demarcation barrier and six-inch thick soil and sand cover over the consolidation/grading area to provide a uniform and continuous bottom surface, which will cover approximately nine acres of sediments and exposed soils.
- Development of a Site Management Plan to ensure proper management of the remedy postconstruction. The Site Management Plan will include provisions for any maintenance and long-term monitoring required for the remedy, as well as periodic certifications.
- Implementation of institutional controls such as restrictions on activities at Koppers Pond that could cause or contribute to the spread of contaminants.

Status of Implementation

OU1: The work began in September 1988 with an effort to identify all remaining homes using private well water within the area of contamination; 45 residences were identified. In September 1989, Site preparations were initiated to extend water service to affected residences. By January of 1990, 43 homes had been connected to public water supplies. In June 1990, another resident asked to be connected, and the Village of Horseheads Water Department tapped the water main and extended the service line to the residence. EPA inspected this installation in June of 1990 and found it to be satisfactory. In June of 1990, the Horseheads Village Manager stated that the Village had inspected and would accept water mains and appurtenances installed by EPA. In addition to the 50 residences addressed by the removal action, 44 additional residences were connected to public water supplies.

In 1994, a new owner of the residence that had previously denied connection, asked to be connected to the water supply. The subsequent connection of this residence brought the total number of residences connected under the OU1 ROD to 45 and the overall number of residences connected through the removal action and the OU1 ROD to 95 residences.

As noted above, the 1990 ESD for OU1 required the construction of air stripping treatment for the Sullivan Street Well water supply. The project included the construction of two twin packed towers, associated building and a wet well. Construction was initiated in September of 1993. Startup, influent and effluent testing of the system was performed in January of 1994. Following an evaluation of the start-up testing results, the remaining construction was completed, and pre-final and final inspections of the work were conducted in May 1994. The EWB began feeding treated water into the distribution system in June 1994. The remedial action report for the Sullivan Street Well project was approved in June 1994.

OU2: In June 1991, EPA issued a unilateral administrative order to Westinghouse to implement the remedy selected in the 1990 OU2 ROD. The remedial design for OU2 was approved by EPA in July 1996 and construction activities were initiated in August 1996. Remedial construction of the barrier well groundwater recovery and treatment system consisted of the installation of barrier wells to establish a hydraulic barrier to contaminant migration by pumping groundwater at a combined rate of approximately 1,100 gallons-per-minute (gpm), as well as the construction of a carbon adsorption water treatment facility at the Westinghouse Facility property for treating groundwater collected by the barrier wells to meet federal and state drinking water standards. The system was constructed to allow treated water to be piped into the Westinghouse Facility to replace the plant's water supply or discharged to the nearby Industrial Drainageway and Koppers Pond via two permitted outfalls, depending upon the demand at the plant.

The barrier wells were installed in the fall of 1996 and consist of two wells located near the southeastern boundary of the Facility. The treatment system, which is located approximately 1,000 feet from the barrier wells at the northeast boundary of the Facility was constructed in the fall and winter of 1997. Pre-final and final inspections of the barrier well and groundwater recovery system were conducted in April and September of 1997, respectively. Following start-up, the effectiveness of the system was evaluated; it was determined that the hydrodynamic control of the groundwater flow regime beneath the Facility (and those properties adjacent and south of the Facility) was preventing the further migration of contaminants in the Newtown Creek Aquifer beneath the Site.

The refurbishment and restoration of the original KAW pumping station and construction of an air stripper water treatment facility for removal of VOCs from the water supply was substantially complete in May 1997. Following a May 1997 pre-final inspection, the Initial Testing Program for the KAW facility was conducted over a five-week period beginning in June. Because the KAW facility was designed to

utilize air stripping to treat contaminated groundwater, both water and air emissions were the subject of the testing. The results of the testing program indicated that the system could operate as designed and meet treatment requirements. A remedial action report covering both the barrier well groundwater recovery and treatment system and the KAW, was approved by EPA in September 1999.

The EWB was involved in all aspects of review of the design and construction of the remedy. Westinghouse and EWB had negotiated a separate agreement for the operation and maintenance of the KAW facility. Following the restoration of the KAW facility, the EWB elected to utilize the 700-gpm KAW facility as a backup, non-critical water supply for the EWB. Currently, the KAW remains out of service.

The barrier well treatment system (BWTS) continued to operate effectively until April 2014 when it was turned off to evaluate groundwater trends with the system off since the concentrations in the influent to the extraction wells were at or below the cleanup goals. After a period of evaluation, the BWTS was decommissioned. A quarterly groundwater monitoring program was then implemented, further details can be found in the Systems Operation/Operation & Maintenance section below.

OU3: OU3 soil and sediment remedial action activities were initiated by the PRP (Viacom Inc.) in July 2000, pursuant to a March 1998 consent decree. The major components of the selected remedy for OU3 included: the excavation and off-Site disposal of contaminated soils and waste materials from Disposal Area F at the Facility; treatment of VOC-contaminated soils from the Former Runoff Basin Area at the Facility using a SVE treatment system, and excavation and off-site disposal of PCB-contaminated sediments from the Industrial Drainageway.

The remediation of Disposal Area F was performed in accordance with the July 2000 Final Remedial Design Report and Remedial Action Workplan. Construction activities were initiated in October 2000 and completed in November 2000. The remedial action included the excavation and off-site disposal of subsurface soil exceeding TCE cleanup criteria, as well as surface soils exceeding cleanup criteria for arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene and indeno(1,2,3-cd)pyrene. A total of 668 tons of soil were disposed of as hazardous waste and 2,612 tons of soil was disposed as non-hazardous waste at permitted facilities. Following excavation, the areas were backfilled, seeded, and mulched. A final inspection for the remedial action was performed in January 2001.

The OU3 ROD specified the use of SVE to achieve cleanup criteria for VOCs at the Former Runoff Basin Area, and further specified that SVE could be enhanced with air sparging (AS) or dual-phase extraction. The former stormwater runoff basin, an oval-shaped depression located north and west of the main plant building, had been filled with demolition debris, soil, and other materials in 1961. A 7,500-gallon above ground tank used for storage of chlorinated solvents was in this area at one time.

The design of the SVE/AS system is presented in the Final Design for Proposed Air Sparge and Soil Vapor Extraction System (April 2000). Construction of the SVE system at the Former Runoff Basin Area was started in July 2000 and became operational in November 2000. The system operated for three years until being suspended in March 2004 after performance monitoring results showed no detectable levels of TCE in extracted air. However, subsequent soil sampling indicated that 7 of 70 samples collected from 4 of 10 boring locations exceeded the TCE cleanup level. As a result, operation of the system continued until January 2011, when additional sampling was performed. The sampling indicated that some soils were recalcitrant to further removal of residual TCE via in-situ SVE/AS. It was determined that the recalcitrant soils should be treated ex-situ. Soils were treated via ex-situ SVE during the April 2012 to July 2012 timeframe. Following treatment, soils were sampled to determine if: (1) TCE concentrations were below the cleanup goal in the ROD and (2) if TCE concentrations were below the objective that would allow the soils to be used as backfill. Soils that achieved backfill levels were used as excavation

backfill, while those that failed (approximately 70 tons) were disposed off-site as hazardous waste at a permitted facility.

In September 2012 the PRP (CBS Corporation as successor to Viacom Inc) submitted a closure report for the FRB remediation which provided the final piece of documentation for the September 2012 completion of the remedial action.

The remediation of the Industrial Drainageway was performed in accordance with the Supplemental Design Report (April 2001) and the Remedial Action Work Plan for the Industrial Drainageway Remediation, as amended (August 2001; April 2002). Construction was initiated in September 2001 and was substantially complete in January 2003; with final restoration activities e.g., fine grading and seeding) completed in the spring of 2003. However, it was determined that additional soils needed to be addressed in the floodplains. Sampling to delineate floodplain soils for excavation was performed in August 2004 with excavation and disposal of the soils taking place in September 2004. Approximately, 6,077 cubic yards of soils and sediments were excavated during the initial excavation activities, which following stabilization, resulted in 372 tons of material being disposed as Toxic Substance Control Act (TSCA) waste, and 12,437 tons being disposed as non-TSCA, nonhazardous waste. The supplemental excavation resulted in an additional 422 tons of stabilized material being disposed as non-TSCA, non-hazardous waste. The final inspection for the remedial action was performed in September 2004 and the remedial action was documented as complete in September 2005.

OU4: Remediation of Koppers Pond was conducted in accordance with the July 2019 Remedial Design Report, pursuant to an April 2018 Consent Decree between EPA and the PRPs (Village of Horseheads, the City of Elmira, and One Hardinge Drive LLC) for the Koppers Pond portion of the Site. Mobilization and Site preparation activities commenced in June 2020. A bypass system was constructed to transport the inflow to the pond (e.g., outfall flows, runoff from upgradient wetlands) around and downstream of the entire work area. Following the dewatering, the existing sediment and soil were consolidated and graded in areas where feasible to accommodate the placement of soil cover material. The area was overlain with an orange nonwoven geotextile to serve as a demarcation layer, followed by placement of soil cover material to a minimum thickness of six inches. Following the completion of soil cover placement, the area was then restored via hydroseeding with EPA approved seed mixes.

Work was substantially complete in August 2020, with final punch list items completed in early September 2020, followed by a final inspection in late September 2020. EPA approved the OU4 Remedial Action Report in December 2020.

Vapor Intrusion

EPA also addressed the potential for vapor intrusion into nearby buildings at and near the Facility. In October 2007, EPA conducted vapor intrusion sampling at six residences near the Facility. Air samples collected from beneath, and in some cases within, the residences indicated that two residences had TCE concentrations slightly above criteria in air samples from beneath two residences. As a result, sub-slab depressurization systems were installed in these two residences to mitigate the impacts of soil vapor intrusion by reducing or eliminating vapor entry to these buildings. In addition to sampling residences, indoor air in some occupied office spaces at the Facility were sampled in February of 2015; VOCs were not detected above health-based levels in the four indoor air samples collected. Further, an August 2015 Soil Vapor Intrusion Evaluation was performed by the New York State Department of Environmental Conservation (NYSDEC) in accordance with Department of Environmental Remediation (DER-13) and the state's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York". The evaluation found that off-site exposures related to soil vapor intrusion were being addressed through one or more institutional or engineering controls. No actions were needed to address on-site exposures.

Institutional Controls (ICs) Summary Table

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date
Groundwater	Yes	Yes	OU2	Prohibited the use of groundwater at the Facility, except for non-potable purposes approved by EPA	Environmental Protection Easement and Declaration of Restrictive Covenants, (September 2015)
Soils	Yes	Yes	Disposal Area F	Prohibited the development or use of the Facility property or any other activity that could result in the disturbance of the soil cover in Disposal Area F	Environmental Protection Easement and Declaration of Restrictive Covenants, (September 2015)
Soils and sediment	Yes	Yes	Koppers Pond	Restrict activities at Koppers Pond that could cause or contribute to the spread of contaminants and/or disturb the pond cover system	Declaration of Covenants, Restrictions and Environmental Easement, (September 2022)

Systems Operations/Operation & Maintenance

A revised Closure Monitoring Plan (CMP) was developed for OU2 and approved by the EPA in March 2014. The CMP demonstrated that the remedial objectives established in the Order for the barrier well treatment system (BWTS) were achieved, and shutdown of the BWTS was proposed. As part of the revised CMP, four monitoring wells (MW-15S, MW-15D, MW-16S, and MW-16D) were installed along the downgradient property boundary and sampled; a post-shutdown quarterly groundwater monitoring program was established; and the performance criteria for the groundwater monitoring program were prescribed. Operation of the BWTS was discontinued in April 2014, and the BWTS was subsequently decommissioned following sampling. A quarterly CMP groundwater monitoring program was then implemented. Groundwater from 14 monitoring wells were sampled as part of the quarterly CMP monitoring program, for eight quarters. The sampling locations were as follows:

- Near Barrier Wells: MW-8D, MW-8S
- Downgradient of Barrier Wells: CW-3D, CW-3S, MW-113D
- Upgradient of Barrier Wells: MW-9D, MW-9S
- Downgradient of the trichloroethylene source area (Disposal Area F): MS-10S
- Near the downgradient property boundary: MW-7D, MW-7S, MW-15D, MW-15S, MW-16D, MW-16S

The samples were analyzed for select VOCs, including: cis-1,2-dichloroethene (DCE); trans-1,2-dichloroethene (DCE); TCE; 1,1,1-trichloroethane (TCA); and vinyl chloride. The groundwater sampling results presented in the Final Data Summary Report indicated that groundwater parameters remained stable or improved since operation of the BWTS was discontinued in 2014.

Based on the EPA's review of the quarterly sampling data, it has been revealed that: (1) the operation of the BWTS is no longer necessary; (2) exceedances of the remediation goals for groundwater have been identified; and (3) additional monitoring will be required to monitor the decreasing trends to meet the remedial action objectives of groundwater restoration. In September 2024, Paramount Global performed a groundwater sampling event at the Site. The results of the sampling event at the 13 groundwater monitoring wells selected for this event [eight on-property monitoring wells (MW-7S, MW-8D, MW-8S, MW-9D, MW-9S, MW-10S, MW-16D, and MW-16S) and five off-property monitoring wells (MW-100D, MW-113D, CW-3S, CW-3D, and CW-7D)] are discussed in the data review section.

Pursuant to the OU4 Site Management Plan, annual inspections are conducted at Kopper's Pond to evaluate the overall performance and effectiveness of the remedy. Site inspection reports submitted during this FYR period have not revealed any disturbances of the cap or vegetative cover requiring repair.

Remedy Resilience Assessment

Potential Site impacts from severe weather have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of weather-related events in the region and near the Site. Please see Appendix C for the full remedy resilience assessment.

III. PROGRESS SINCE THE LAST REVIEW

Not applicable, because this is the first FYR for the Site.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On August 7, 2024, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at Superfund sites in New York, New Jersey, and Puerto Rico including the Kentucky Avenue Well Field Superfund Site. The announcement can be found at the following web address: https://www.epa.gov/superfund/R2-fiveyearreviews.

In addition to this notification, a public notice on the EPA Site page www.epa.gov/superfund/kentucky-avenue was posted and notice was also provided to the Town of Horseheads via email on April 8, 2025 with a request that the notice be posted in municipal offices and on the Town website. This notice indicated that the FYR would be conducted at the Kentucky Avenue Well Field Superfund Site to ensure that the cleanup at the Site continues to be protective of human health and the environment and inviting the public to submit any comments to the EPA. Once the FYR is completed, the results will be made available on EPA's Site page. Information will also be made available at the following information repositories:

Horseheads Town Hall Town Clerk Office 150 Wygant Road Horseheads, New York 14845	US EPA Region 2 Superfund Records Center 290 Broadway, 18th Floor New York, New York 10007

Data Review

The current monitoring network consists of six wells screened at shallow depths [24 feet below ground surface (bgs) to 40 feet bgs] and seven wells screened at deep depths [greater than 40 feet bgs]. Of the shallow well network, five are located on-property and one is located off-property; of the deep well network, three are located on-property and four are located off-property. All accessible wells in the network were sampled and analyzed for 1,2-dichloroethylene (or cis-1,2-DCE), trans-1,2-dichloroethylene (or trans-1,2-DCE), TCE, vinyl chloride, and 1,1,1-trichloroethane (or 1,1,1-TCA) for the first time since 2016 on September 16-18 of 2024. The information below summarizes the results from the September 2024 sampling event and provides a comparison to historical data. Laboratory analytical data was compared to the drinking water maximum contaminant levels (MCLs). TCE was the only contaminant of concern detected in exceedance of regulatory parameters in any sample. Figure A-2 is a Well Location Map for the Kentucky Avenue Wellfield Site. The figure includes current and abandoned monitoring wells (MWs). The general direction of groundwater flow beneath the property is from west to east. Note that all well depths below are estimated from existing well records and are presented as feet bgs.

On-Property Wells

TCE concentrations exceeding the MCL of 5.0 micrograms per liter (µg/L) were detected in wells MW-8D and MW-9D, which are both located along the southern property boundary, nearby the source area. Both wells are screened in the relatively deeper part of the aquifer. No TCE concentrations exceeded the MCL in on-property shallow wells MW-7S, MW-8S, MW-9S, MW-10S, MW-16S, or deep well MW-16D.

Of the wells sampled in 2024, MW-10S, MW-9S and MW-8S are located along the southern property boundary and are nearby the source area(s). Each of these wells displayed significant and consistent decreases of TCE concentrations to levels below the MCL of 5.0 µg/L. In MW-10S [25 feet bgs] the TCE concentration decreased from 445.9 µg/L in 1999 to 3.3 µg/L in 2024. In MW-9S [30 feet bgs] the TCE concentration declined from 29.7 µg/L in 1999 to 4.5 µg/L in 2024. In MW-8S [29.5 feet bgs] the TCE concentration decreased from 25.3 µg/L in 2000 to 2.6 µg/L in 2024. The recent groundwater sampling results reveal a trend of decreasing TCE concentrations, which suggests positive developments in the remediation efforts. Continued sampling and analysis will be essential to further assess and confirm the effectiveness of these remediation activities.

Although TCE levels in the deeper monitoring wells MW-8D (17.0 µg/L in 2024) [54 feet bgs] and MS-9D (15.0 µg/L in 2024) [46.5 feet bgs] were detected above the MCL of 5.0 µg/L, these concentrations are below the historical, pre-remedial maximum values and have exhibited a degree of stability since around 2016. While these findings are encouraging, continued sampling and analysis are essential to further assess the long-term effectiveness of the remediation efforts in the source area.

Wells MW-16D, MW-16S, and MW-7S are located near the eastern property boundary, which is hydraulically downgradient of the former source area. Each of these wells contained TCE concentrations below the MCL in 2024. The TCE concentration in well MW-16D [57 feet bgs] was 3.5 µg/L; in MW-16S [27 ft bgs] the TCE concentration was 1.0 µg/L; and in MW-7S [26 feet bgs] the TCE concentration was 2.1 µg/L.

Trend plots of the TCE analytical results for on-property monitoring wells are included as Figures A-3 to A-11.

Off-Property Wells

The off-property monitoring wells in this network that were sampled in 2024 include MW-113D, CW-3S, and CW-7D. Off-property wells MW-100D and CW-3D could not be sampled at this time.

Wells MW-113D and CW-7D displayed significant and consistent decreases of TCE concentrations to levels approaching the MCL of 5.0 µg/L since 2000. The TCE concentration in MW-113D [100 ft bgs] declined from 48.8 µg/L in 1999 to 13.0 µg/L in 2024 and in well CW-7D [62 feet bgs] the TCE concentration dropped from 44.3 µg/L in 2000 to 9.2 µg/L in 2024. The TCE concentration in well CW-3S [33.5 feet bgs] decreased from 20.0 µg/Lin 1996 to 4.3 µg/L in 2024, which does not exceed the MCL. These decreasing concentrations of TCE observed in the downgradient wells indicate the effectiveness of the remedial actions implemented and mitigation of the source area. This underscores the importance of continued monitoring to ensure the sustained effectiveness of the remedy.

Trend plots of the TCE analytical results for off-property monitoring wells are included as Figures A-12 to A-15.

Summary

The decrease in TCE levels in both on-property and off-property wells indicates that TCE source control efforts and remedial actions, including the discontinued pump-and-treat system, have been largely successful. The consistent reduction in TCE levels in off-property wells suggest effective containment of TCE migration, although the process is slower compared to the source area. However, the slightly elevated, but stable TCE concentrations in deep on-property monitoring wells MW-8B and MW-9D suggest the presence of residual TCE desorbing slowly from the surrounding matrix, resulting in persistently elevated levels at these locations.

Emerging Contaminants

At the request of the NYSDEC, groundwater samples from six monitoring wells (i.e., MW-1S, MW-7S, MW-9S, MW-11S, MW-13R[3], and MW-16S) were collected and analyzed for 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS) in June 2022.The results revealed that 1,4-dioxane was not detected in any of the groundwater samples. The reported concentrations of perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were labeled and estimated by the laboratory to be significantly below NYSDEC's screening levels of 10 parts per trillion (ppt) for each (which align with the NYSDOH's drinking water standards). The PFOS results were also "B" qualified due to detection in the laboratory's method blank sample. Although other PFAS were detected, their concentrations were also low levels (maximum concentration of 6.3 ppt). In April 2024, the EPA finalized drinking water maximum contaminant levels (MCLs) for PFOA and PFOS at 4 ppt, and for perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid, and hexafluoropropylene oxide dimer acid at 10 ppt. Although the maximum concentration slightly exceeded the EPA MCL, it is worth noting that up to seven PFAS, including PFOA, were detected in the two upgradient monitoring wells that were sampled. These results are consistent with results from the site area and downgradient wells and are consistent with the ubiquitous nature of PFAS in groundwater.

In summary, based on the 1,4-dioxane and PFAS results, the NYSDEC, with agreement from EPA, determined no further sampling is warranted for emerging contaminants at this time.

[3] In accordance with the approved Sampling and Analysis Plan (SAP), MW-13R was sampled in lieu of monitoring well MW-2S because the bailer in MW-2S could not be removed prior to or during the sampling event.

Site Inspection

The inspection of the Site was conducted on May 5 and 6, 2025. In attendance were Christopher O'Leary, EPA RPM; Jinnie Hanlee, EPA Human Health Risk Assessor; Joseph Hayes, EPA Hydrogeologist; Payson Long, NYSDEC Section Chief; Kira Bruno, NYSDEC Environmental Program Specialist; Robert Fenton, Environmental Analysist with Fagan Engineers (OU2/OU3 Consultant); and Reynolds Renshaw, Project Coordinator with EHS Support (OU4 Consultant). The purpose of the inspection was to assess the protectiveness of the remedy.

The former Westinghouse building appears well-maintained, featuring adequate fencing, with no indicators of trespassing or vandalism. However, several monitoring wells adjacent to the facility, specifically MW-15S, exhibited damage. Notably, MW-15D was found with standing water above the lid. During the site visit, signs of unauthorized access were noted with regards to Kopper's Pond (OU4). According to the 2022 Kopper's Pond Site Management Plan, compliance monitoring is necessary to alert for any signs of trespassing or vandalism. Specifically, a cigar case and fishing line near the pond suggest recreational fishing activities on the property. Although the geotextile membrane and soil/sand cover has inhibited human and ecological exposures to the underlying sediments and access is limited around Koppers Pond, these observations underscore the necessity to address ongoing trespassing.

V. TECHNICAL ASSESSMENT

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

The remedies for each OU included in this FYR at the Kentucky Avenue Wellfield Superfund site are as follows:

- OU2: Groundwater treatment to address contaminants such as volatile organics and metals, ensuring that exposure levels are reduced to acceptable standards.
- OU3: Managing contaminated soils and sediments to mitigate risks to site workers and local residents. This includes soil excavation and containment measures to address carcinogenic risks from PAHs and arsenic.
- OU4: The remedy implemented at OU4 is comprised of several key actions. First, the sediments and exposed mudflat soils within the former Kopper's Pond basin footprint were consolidated and graded. Next, a geotextile membrane was installed to serve as a demarcation barrier. Over this consolidated and graded area, a six-inch thick cover of soil and sand was applied to create a uniform surface. In addition to these physical measures, several institutional controls were enacted. Specifically, restrictions on activities at the site to prevent the spread of contaminants.

This FYR concluded that each remedy is working as intended to address specific risks associated with the contaminants and exposure pathways identified for each operable unit. During this FYR period, only one round of groundwater sampling was performed. The absence of a long-term groundwater monitoring program prevents the performance of a thorough evaluation of the on-going attenuation processes at the Site in achieving the RAO of aquifer restoration. However, the data collected in 2024, when compared to historical results, indicates that TCE source control efforts and remedial actions, including the discontinued groundwater treatment system, have been largely successful as evidenced by the decreased levels of TCE in both on-property and off-property wells.

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

Sitewide

There have been no physical changes to the site that would adversely affect the protectiveness of the remedy. The exposure assumptions and the toxicity values that were used to estimate the potential risks and hazards to human health followed the general risk assessment practice at the time the risk assessment was performed. Although the risk assessment process has been updated and specific parameters and toxicity values may have changed, the risk assessment process that was used is still consistent with current practice and the need to implement a remedial action remains valid.

OU2

The RAO identified in the OU2 ROD was to restore the groundwater to meet the more stringent of federal and state MCLs which have been developed to protect human health. This objective and the remediation goals are valid and protective of human health. Since everyone in the vicinity of the site is connected to the public water supply (OU1) and the KAW is only used for drinking water an as emergency backup supply (which is also treated), direct exposures related to potable use of groundwater continue to be an incomplete exposure pathway. In addition, the selected remedial actions in the OU2 ROD have further reduced groundwater contamination and institutional controls are currently in place to restrict future use of site groundwater as a drinking water source.

OU3

The 1996 ROD addressed soil contamination at the Facility and sediment contamination in the Industrial Drainageway. The RAOs for the Westinghouse Facility area were to prevent the potential for further migration of TCE and PAHs from the contaminated soil into groundwater and remove direct contact exposure with the contaminated soil. The 1996 OU3 ROD selected excavation of waste materials and soil containing contaminants such as TCE, PAHs and arsenic exceeding cleanup criteria. The excavation of contaminated soils effectively ensures that direct contact exposures by nearby receptors are an incomplete exposure pathway.

The RAO for sediments at the Industrial Drainageway and Koppers Pond is to prevent exposure to PCBs through fish consumption and direct contact with sediments. A remedial goal of 1.0 ppm PCB (total) was established for the sediments. The RAOs remain valid.

OU4

The RAO for the sediment and exposed soil at the Kopper Pond is to reduce the health risks associated with consumption of fish and the concentration of contaminants in fish. This RAO remains valid and the remedy (geotextile membrane cap with ICs) continues to prevent contact by human and ecological receptors to sediment. Nevertheless, signs of unauthorized access to the pond and potential recreational fishing were observed during the site inspection, as expressed above. Trespassing around the pond should be prohibited.

Vapor Intrusion

In March 2007, EPA conducted vapor intrusion sampling at six residences located near the Facility. Where permission was granted, EPA collected air samples from beneath, and in some cases within the buildings. The analytical results of the October 2007 vapor intrusion sampling showed elevated TCE concentrations in the air beneath two of the six homes. As a result, ventilation systems were installed at

these two residences in October 2007. Follow-up sampling in December 2007 confirmed the effectiveness of these systems; none of the contaminants were detected above action levels in the indoor air or system samples, indicating that the vapor intrusion pathway is no longer complete. Recent groundwater sampling results demonstrate decreasing TCE concentrations in groundwater. As a result, no further impacts to residential properties are expected. In addition to sampling residences for soil vapor intrusion, indoor areas in the occupied office spaces at the Facility were sampled in February 2015. VOCs were not detected above health-based levels in the four indoor air samples collected.

Ecological

The SBERA for Koppers Pond OU4 identified that exposed sediment or soils posed an unacceptable risk to herbivorous mammals, such as muskrats. Historically, groundwater treatment operations maintained water levels that supported fish habitats. However, since these operations ceased, the pond has experienced reduced basin inputs and can dry out completely, altering the ecological dynamics. Although current conditions include the presence of fish in the pond, the placement of a geotextile membrane and soil/sand cover remedy has effectively addressed the ecological exposure pathway.

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

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

VI. ISSUES/RECOMMENDATIONS

No issues/recommendations were identified in this FYR.

OTHER FINDINGS

The five-year review did not identify any issues affecting current or future protectiveness. However, the following recommendations emerged that could enhance the remedy's performance:

1. During the site inspection, several groundwater monitoring wells were observed as damaged. A plan should be submitted with a schedule to repair the damaged monitoring wells.
2. Develop and implement a long-term groundwater sampling plan for VOCs and attenuation parameters to monitor progress towards achieving the remediation goals.
3. Evidence of trespasser activity was observed during the site visit. Measures to reduce trespasser activity should be evaluated.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: 2	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy for OU2 is protective of human health and the environment.	

Protectiveness Statement(s)	
Operable Unit: 3	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy for OU3 is protective of human health and the environment.	

Protectiveness Statement(s)	
Operable Unit: 4	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy for OU4 is protective of human health and the environment.	

Sitewide Protectiveness Statement
Protectiveness Determination: Protective
Protectiveness Statement: The remedies implemented at the site are protective of human health and the environment.

VIII. NEXT REVIEW

The next FYR report for the Kentucky Avenue Well Field Superfund Site is required five years from the completion date of this review.

APPENDIX A – FIGURES

Figure A-1: Site Location Map

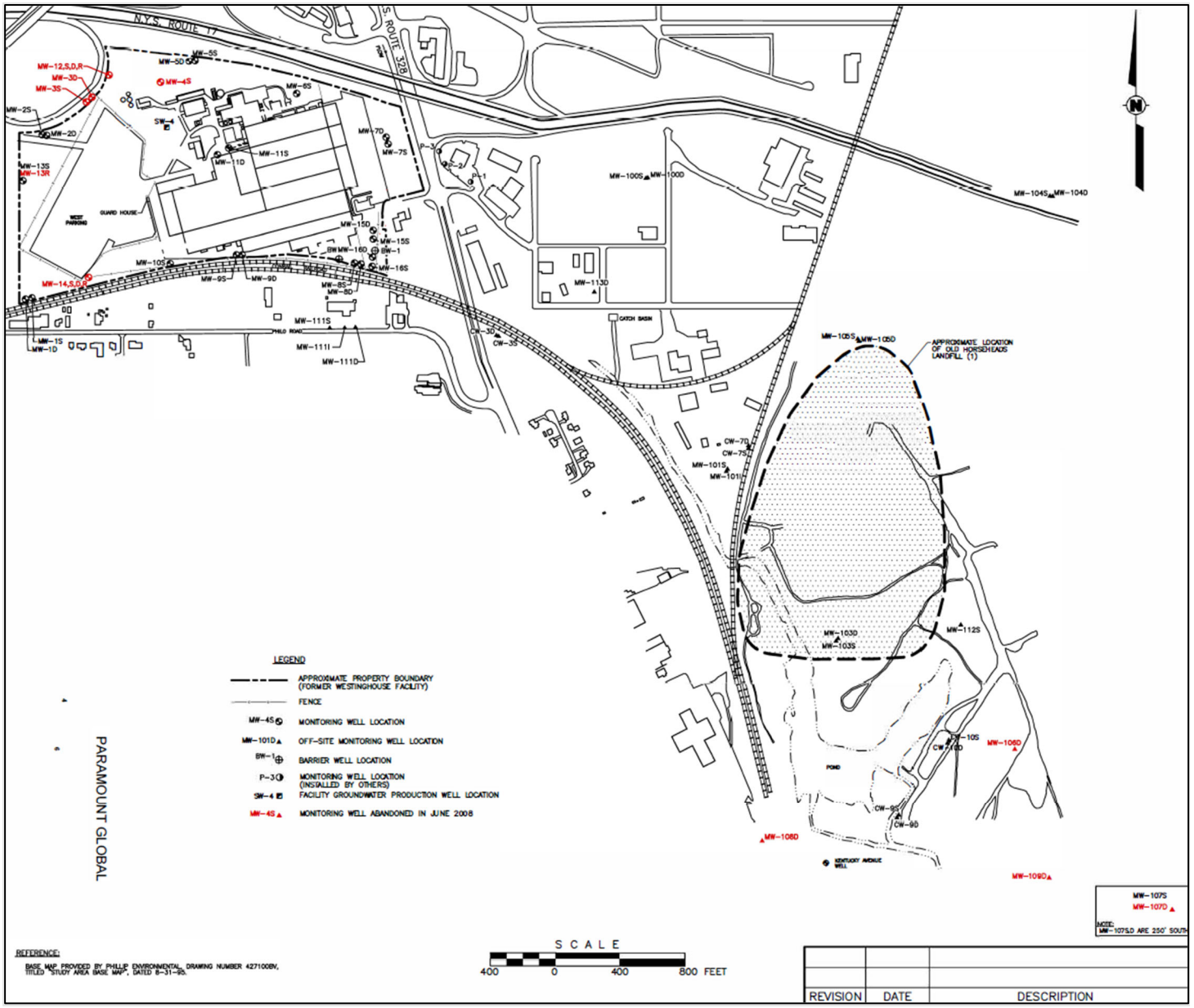


Figure A-2: Kentucky Avenue Wellfield Site Well Location Map

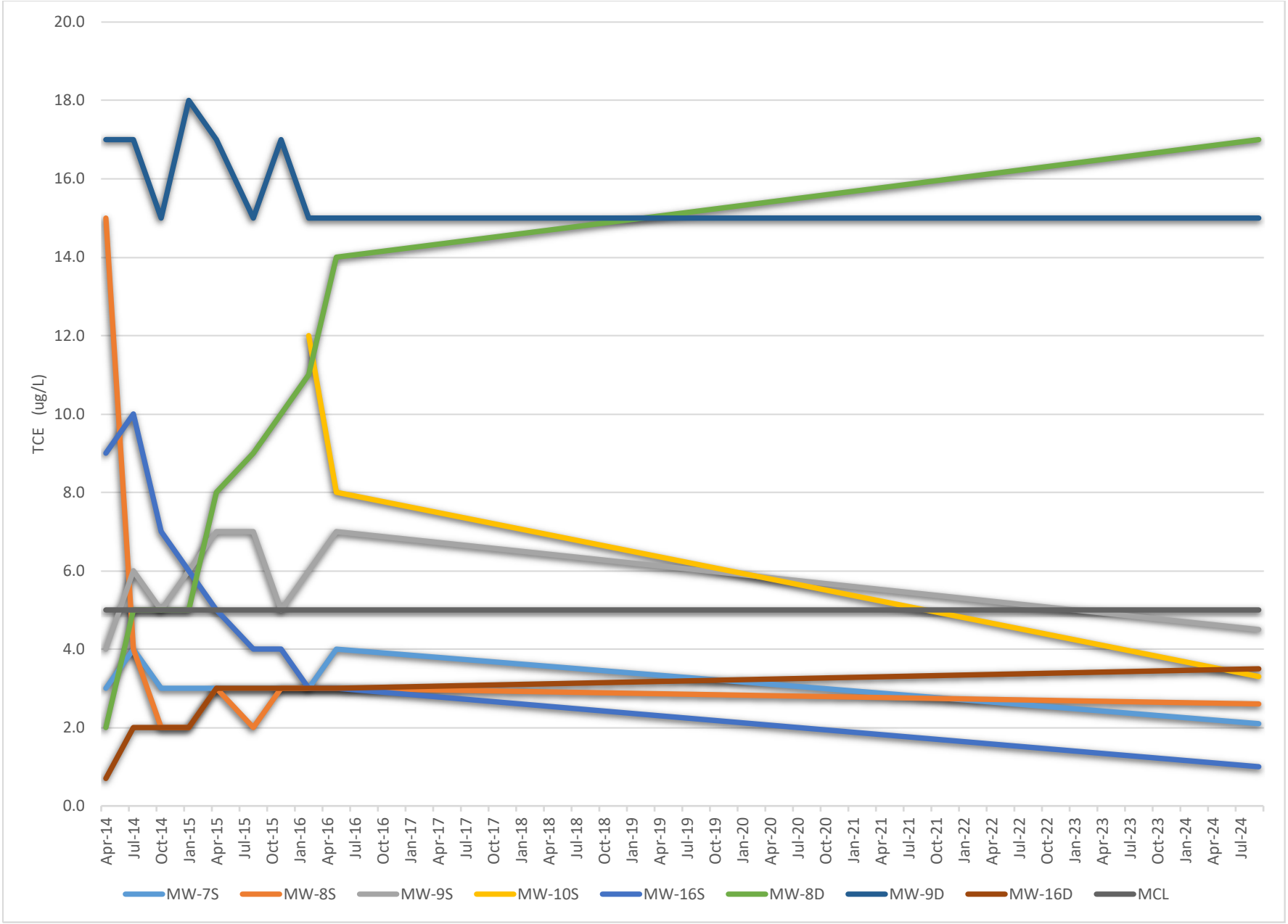


Figure A-3: TCE Concentrations of On Property Monitoring Wells

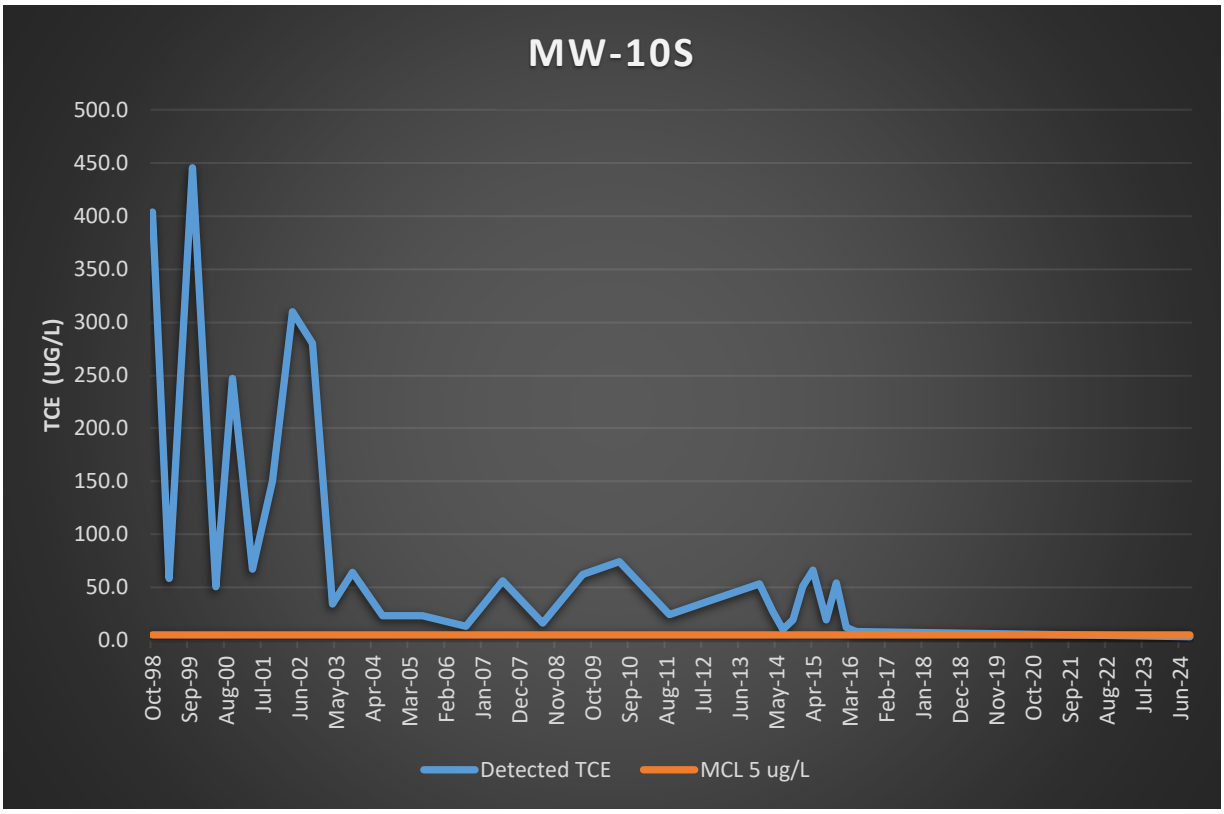


Figure A-4: TCE Concentrations for MW-10S

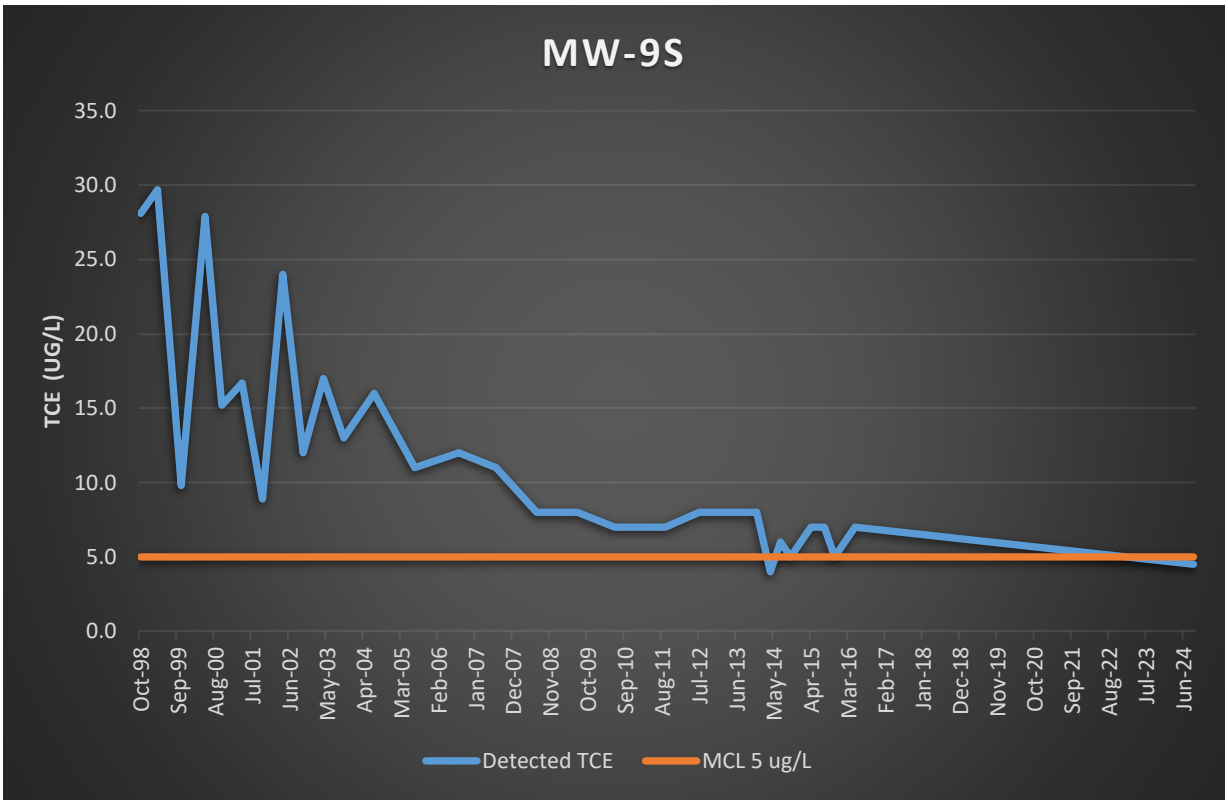


Figure A-5: TCE Concentrations for MW-9S

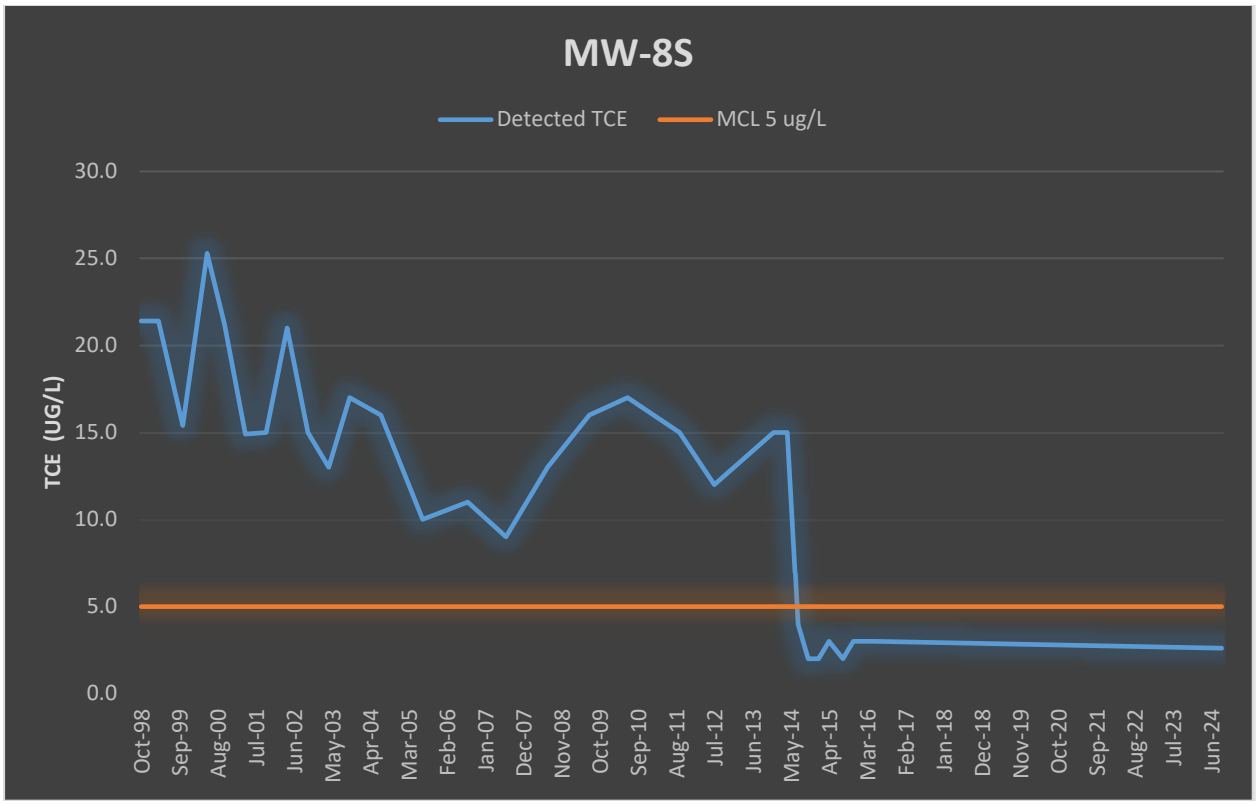


Figure A-6: TCE Concentrations for MW-8S

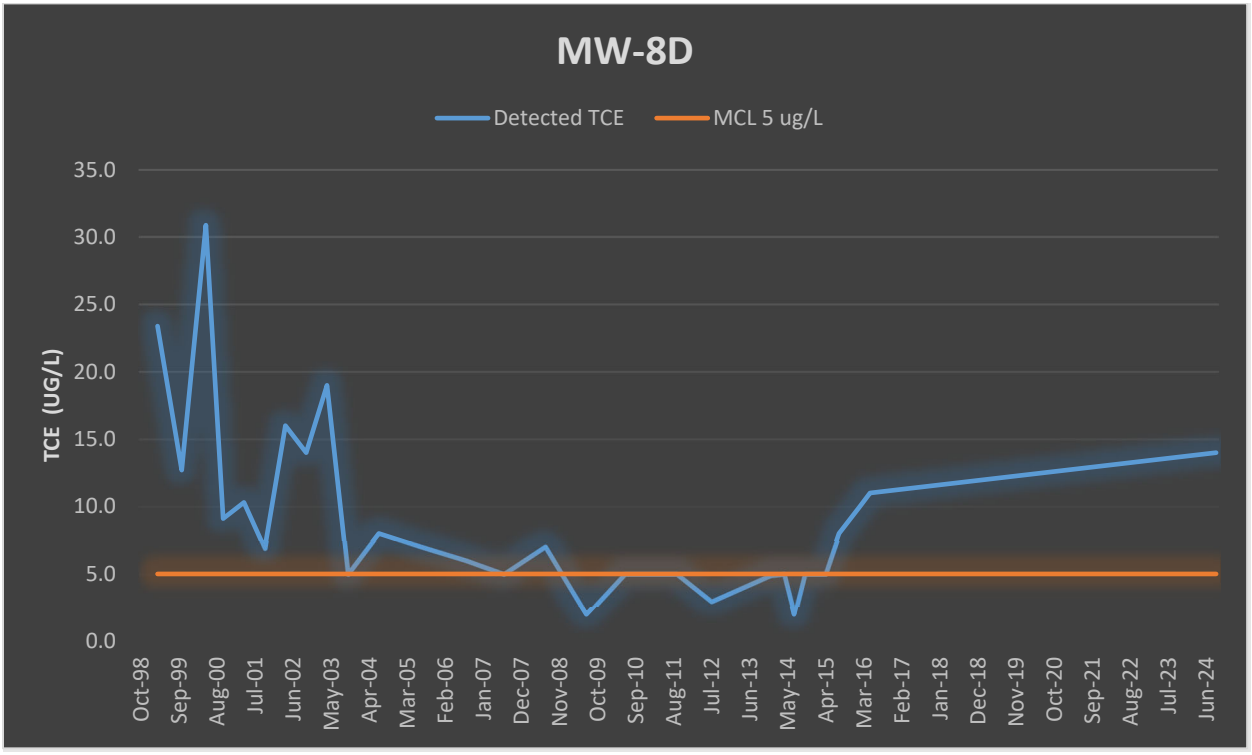


Figure A-7: TCE Concentrations for MW-8D

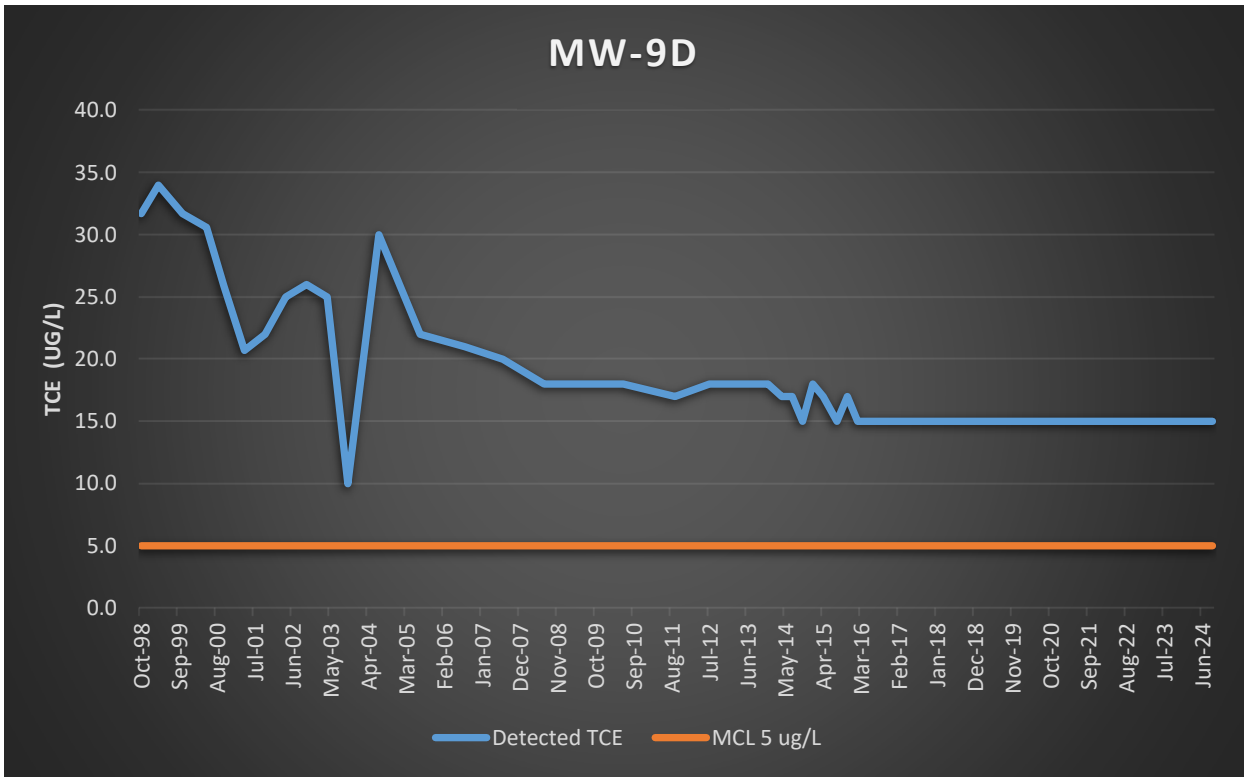


Figure A-8: TCE Concentrations for MW-9D

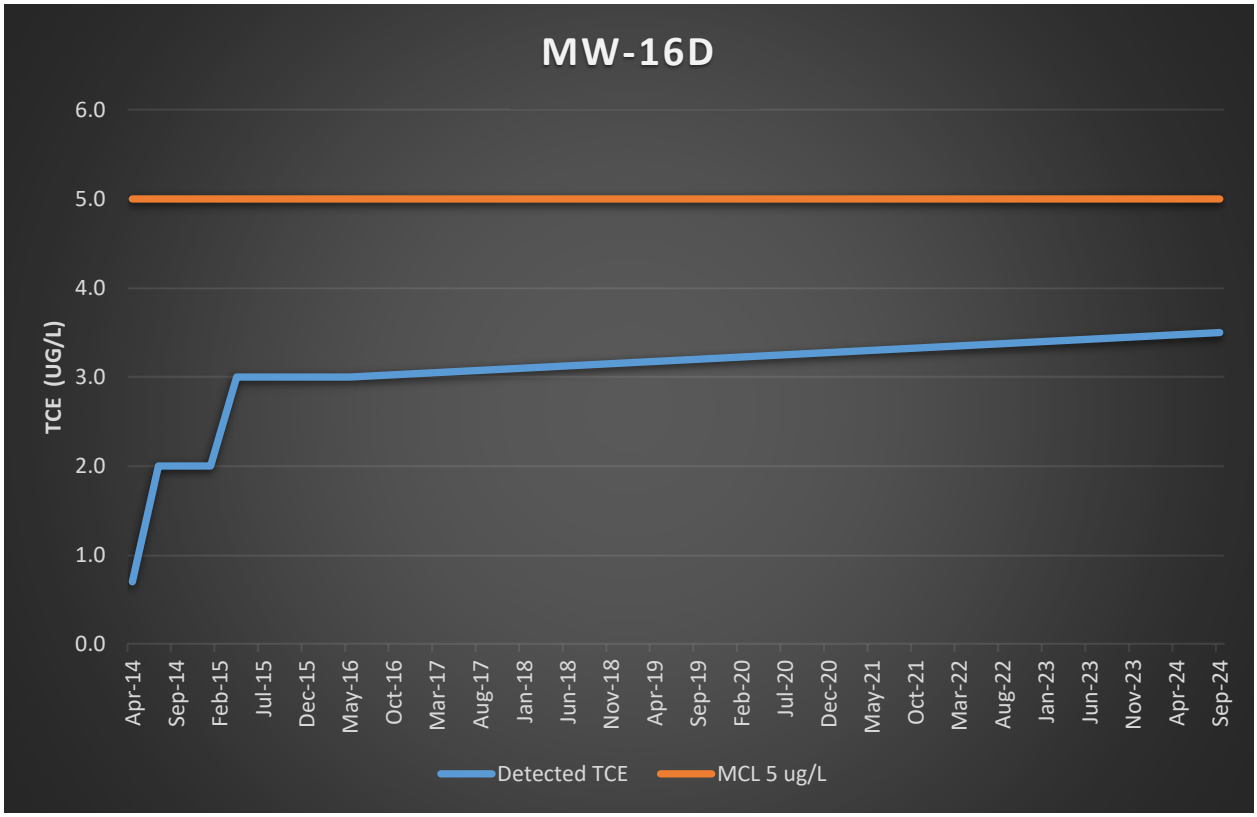


Figure A-9: TCE Concentrations for MW-16D

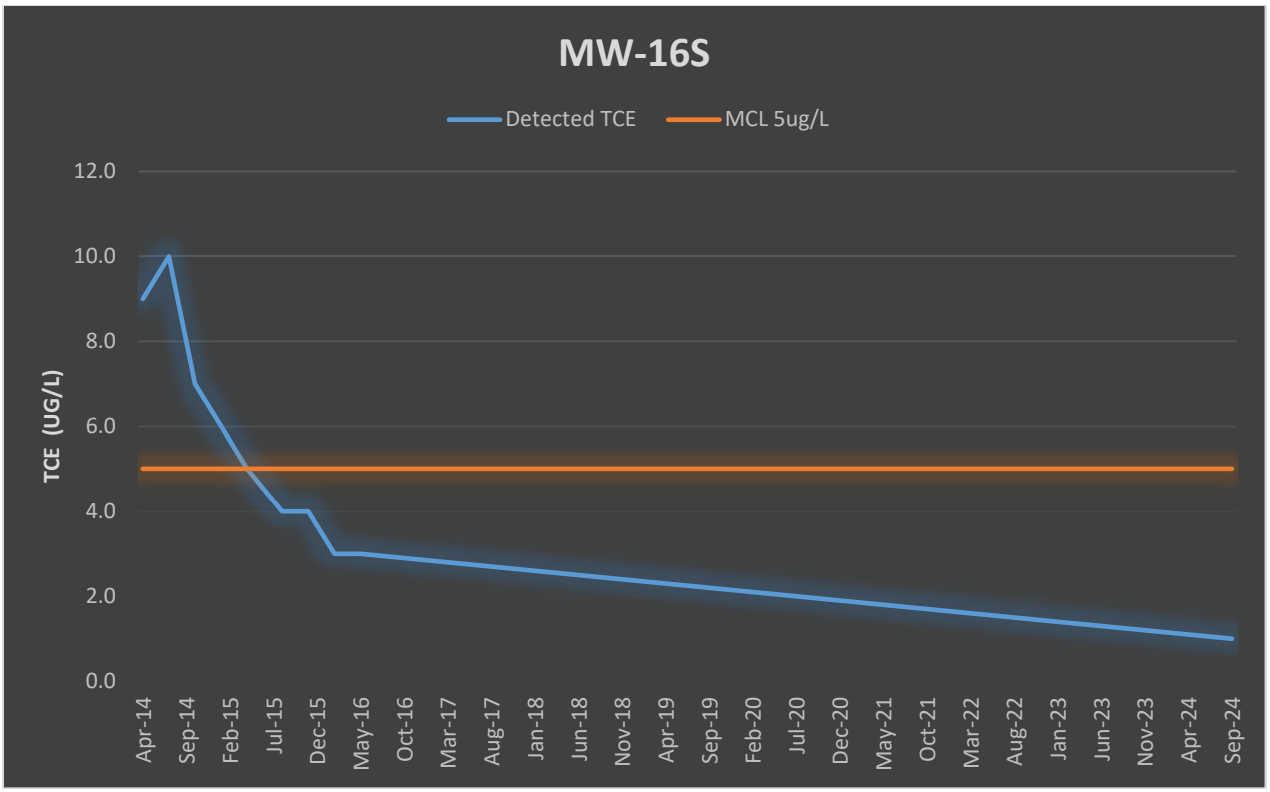


Figure A-10: TCE Concentrations for MW-16S

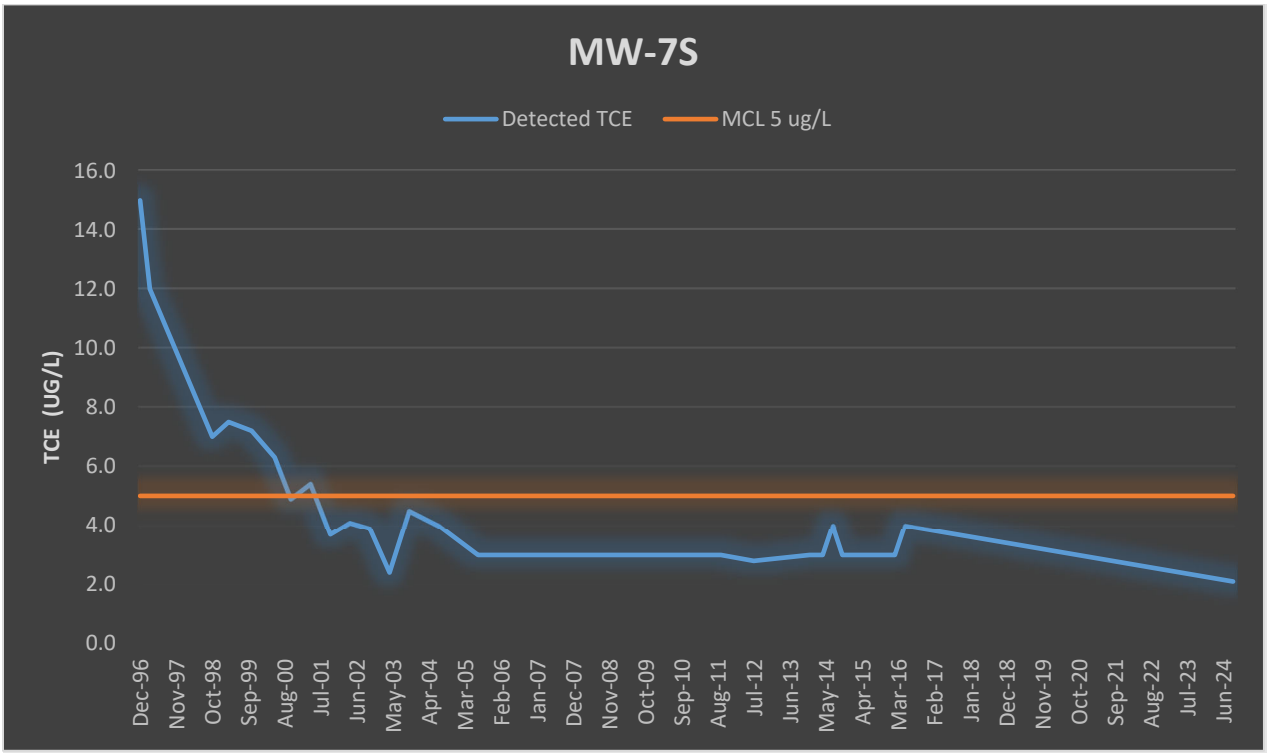


Figure A-11: TCE Concentrations for MW-7S

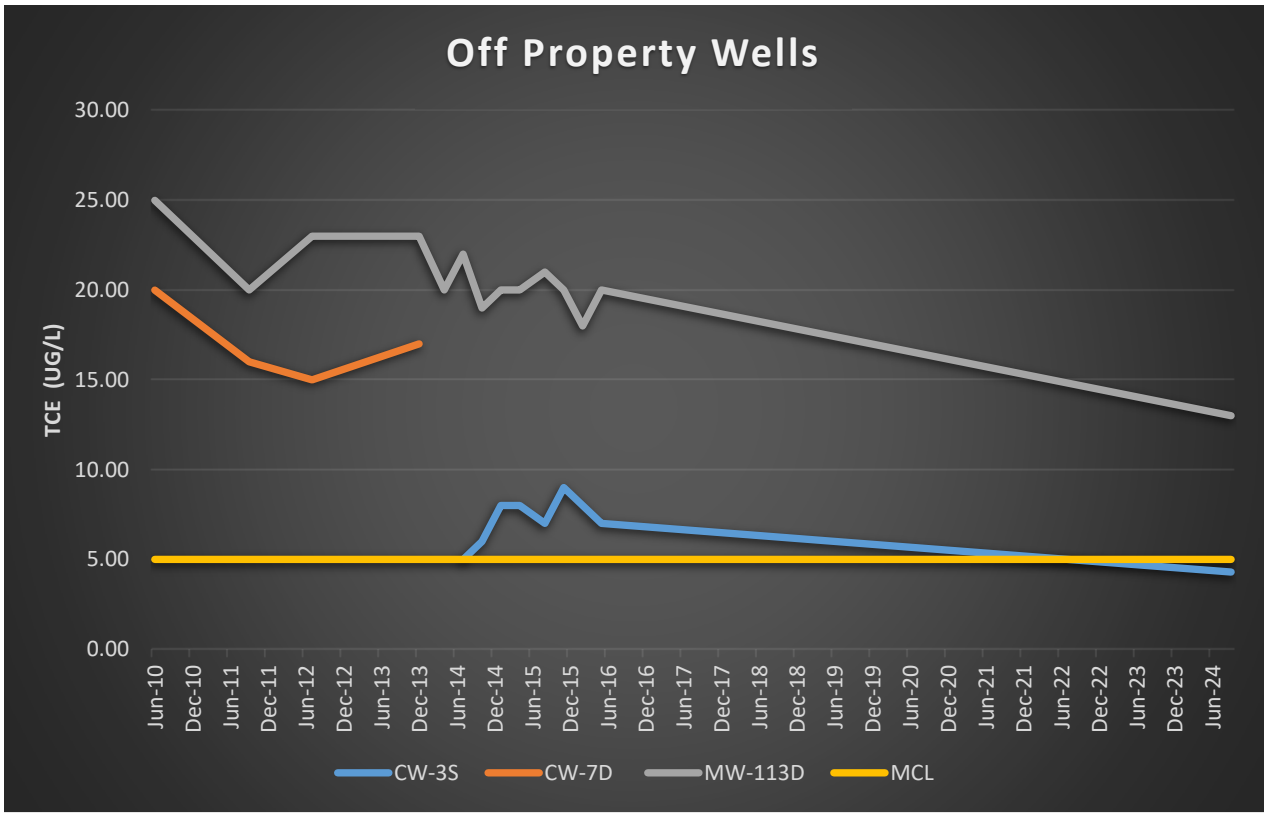


Figure A-12: TCE Concentrations in Off Property Wells

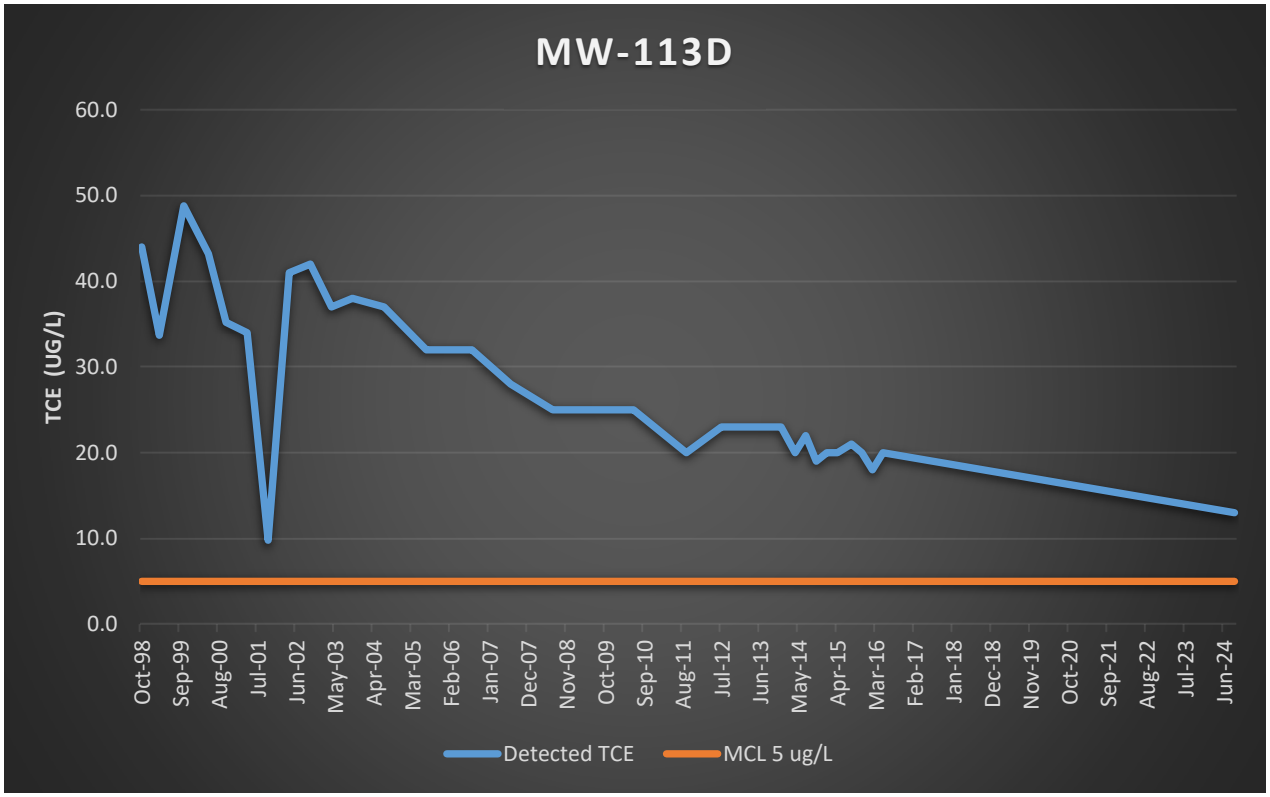


Figure A-13: TCE Concentrations for MW-113D

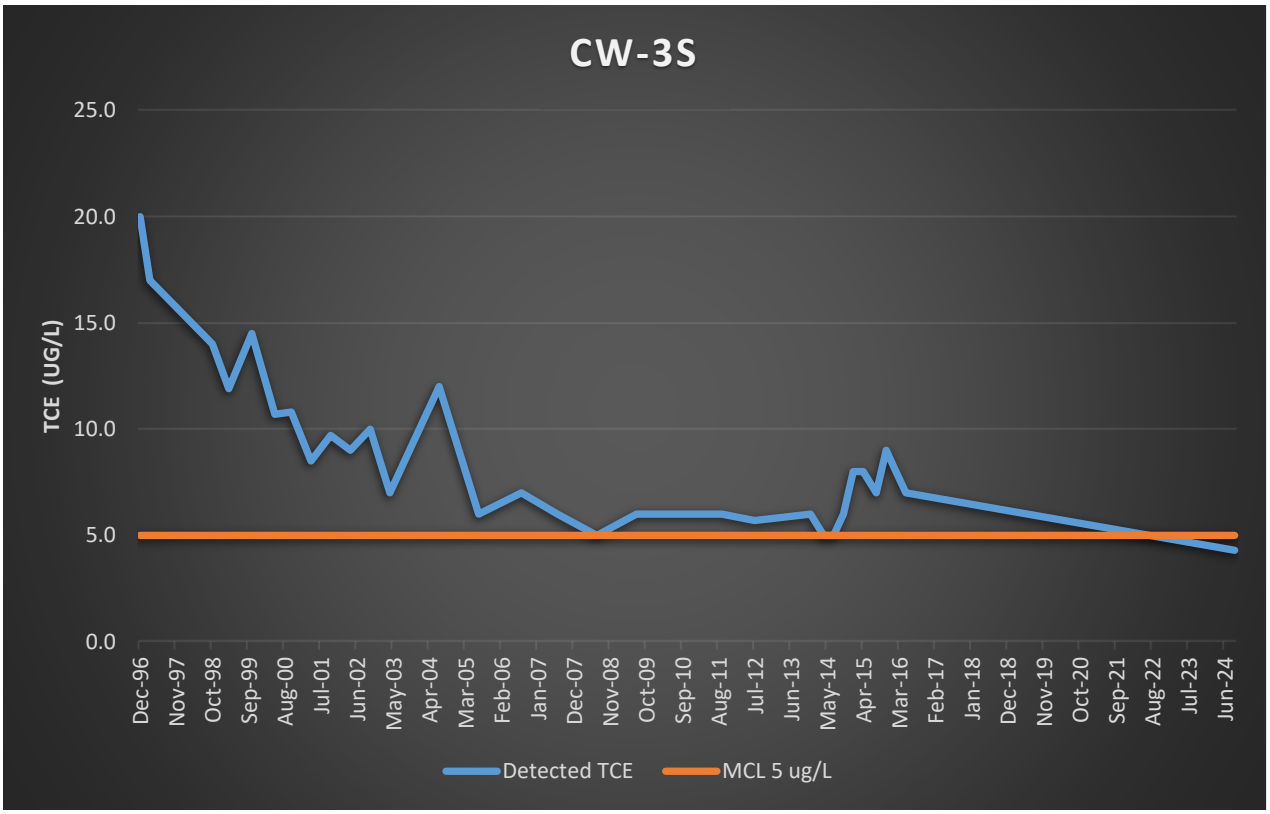


Figure A-14: TCE Concentrations for CW-3S

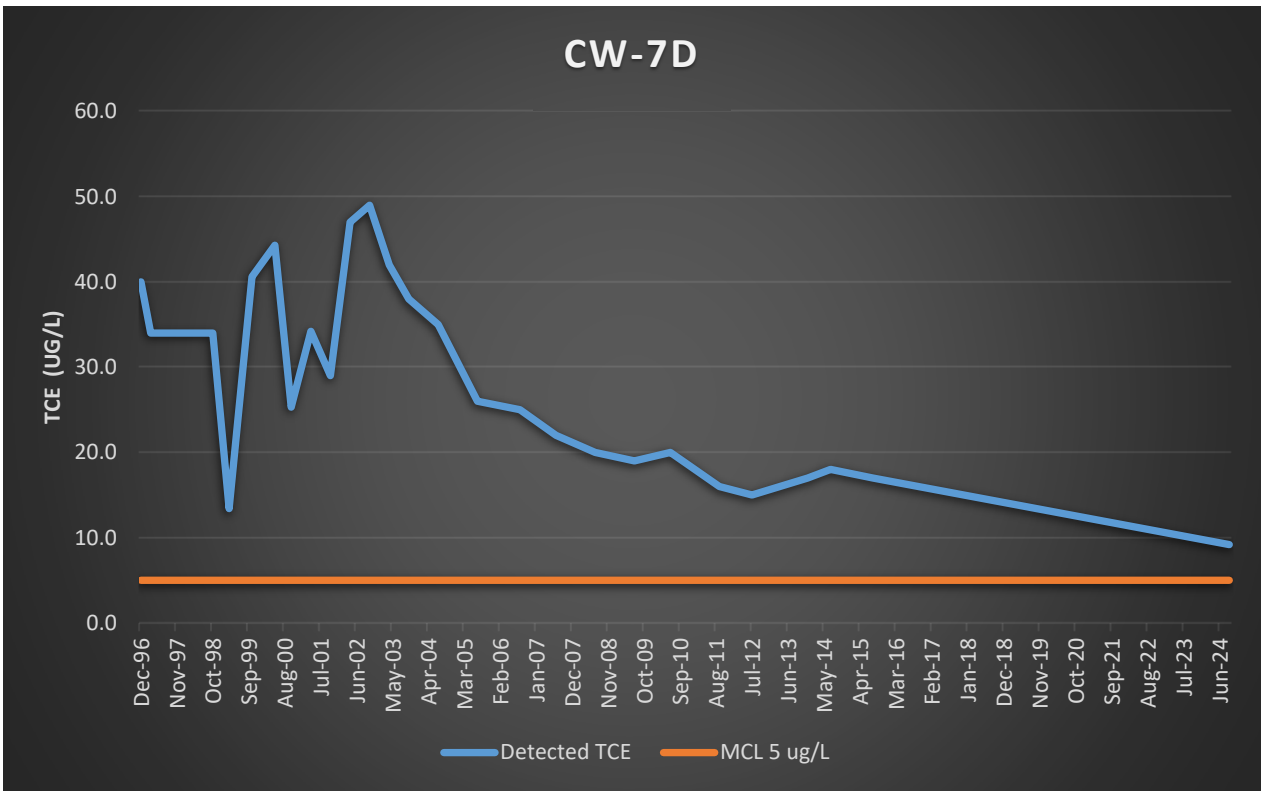


Figure A-15: TCE Concentrations for CW-7D

APPENDIX B – REFERENCE LIST

Documents, Data and Information Reviewed to Complete the Five-Year Review

Record of Decision (ROD), Remedial Alternative Selection, prepared by Emergency and Remedial Response Division, EPA, September 30, 1986
Explanation of Significant Differences (ESD), EPA, April 1990
Declaration for the ROD, Kentucky Avenue Wellfield Site, Town of Horseheads, Chemung County, New York, EPA, September 1990
ROD, Kentucky Avenue Wellfield Site, Horseheads New York, EPA, September 1996
Remedial Action Report, Industrial Drainageway Kentucky Avenue Wellfield Site, Cummings/Riter Consultants, Inc., November 2004
Soil Vapor Intrusion Evaluation Determination, NYSDEC, August 2015
Closure Monitoring Plan - Final Data Summary Report, OU2, CBS Corporation, July 2016
ROD for OU4 – Koppers Pond for the Kentucky Avenue Wellfield Site, EPA, September 2016
Kopper's Pond (OU4) Annual Compliance Inspection Report, November 2021
Site Management Plan, Kentucky Avenue Wellfield Superfund Site OU4 Koppers Pond, Arcadis, August 2022
PFAS and 1,4-dioxane Sampling Former Westinghouse Electric Corporation, Ramboll, August 2022
Kopper's Pond (OU4) Annual Compliance Inspection Report, November 2022
First Quarter 2023 Status Report and Notification, Unilateral Administrative Order (UAO) for Remedial Design and Remedial Action (RD/RA) OU3, Paramount Global, April 2023
Second Quarter 2023 Status Report and Notification, UAO for RD/RA OU3, Paramount Global, July 2023
Kopper's Pond (OU4) Site Inspection Summary, September 2023
Third Quarter 2023 Status Report and Notification, UAO for RD/RA OU3, Paramount Global, October 2023
Groundwater Sampling and Analysis Plan, OU2, Paramount Global, November 2023
Fourth Quarter 2023 Status Report and Notification, UAO for RD/RA OU3, Paramount Global, January 2024
First Quarter 2024 Status Report and Notification, UAO for RD/RA OU3, Paramount Global, April 2024
Second Quarter 2024 Status Report and Notification, UAO for RD/RA OU3, Paramount Global, July 2024
Kopper's Pond (OU4) Site Inspection Summary, September 2024
Third Quarter 2024 Status Report and Notification, UAO for RD/RA OU3, Paramount Global, October 2024
Data Summary Report, Operable Unit 2, Kentucky Avenue Wellfield Site, Woodard & Curran, November 2024

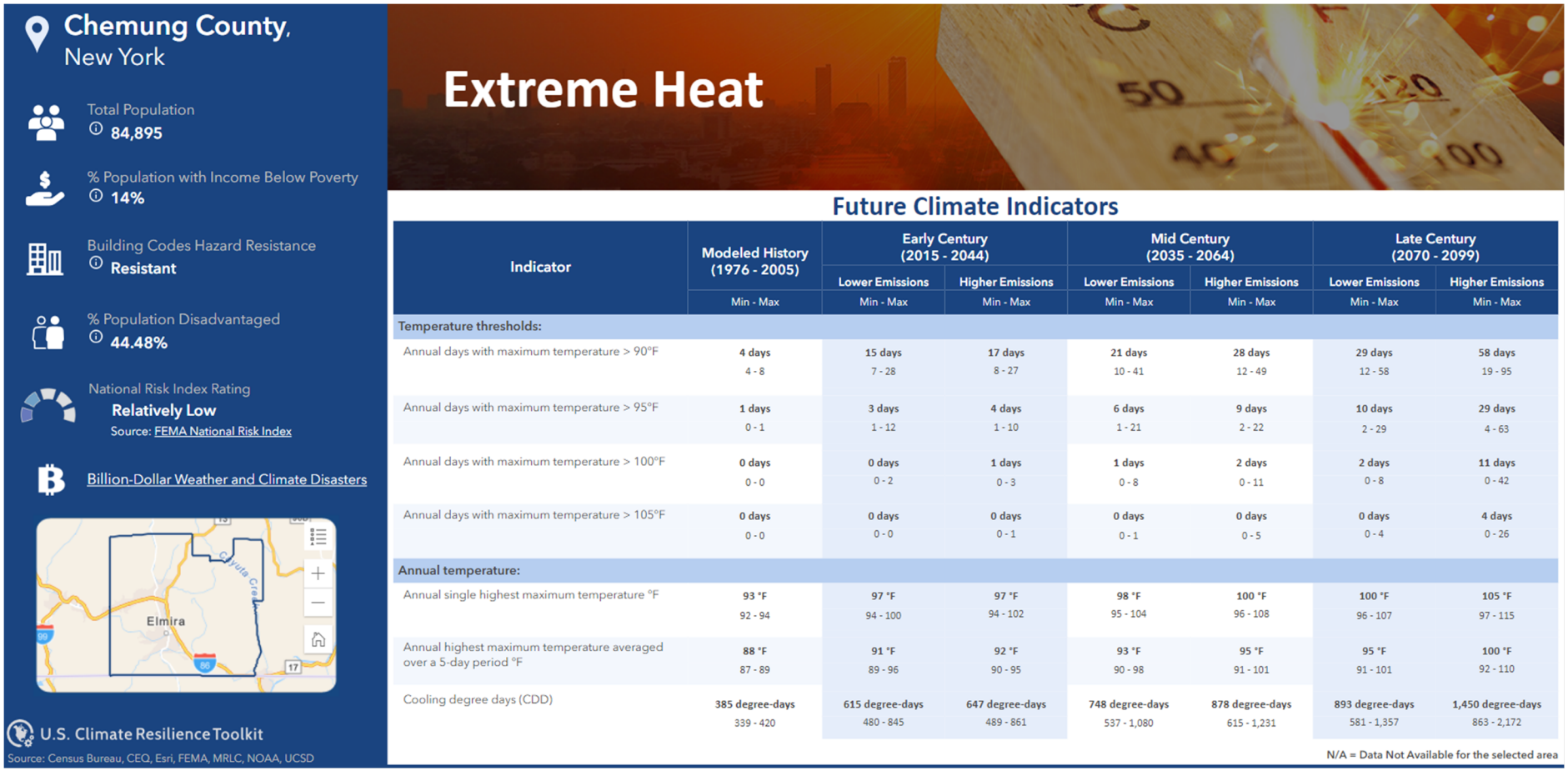
APPENDIX C – REMEDY RESILIENCE EVALUATION

Two tools were utilized to assess impacts from severe weather at the Kentucky Avenue Well Field Superfund Site. Complete reports from each of the tools assessed are included below.

The first tool used to assess the Site was the *CMRA Assessment Tool*. The tool examined five hazards for the county where the Site is located. According to this tool, the National Risk Index Rating for extreme heat is "Relatively Low." Figure 1 shows the projected increase in days per year with maximum temperatures > 100°F throughout the century. The National Risk Index Rating is "Relatively Moderate" for flooding and "Not Applicable" for coastal inundation in Chemung County, however, the same Index Ratings are both "Relatively Low" for the census tract where the Site is located. This is likely because Horseheads is located far from the coast and more than a mile from several creeks to the east of the Site. The two other hazards evaluated by this tool – drought and wildfire – both have a National Risk Index Rating of "Very Low" for the county. Figure 2 reveals a projected increase in annual average total precipitation while Figure 3 shows a projected increase in days per year with precipitation. Additionally, Figure 4 shows a projected increase in annual days with total precipitation > 1 inch. These projections suggest future precipitation events may increase in frequency and also increase in intensity; however, such events are not expected to impact the remedies at the site.

The second tool utilized is the *United States Geological Survey Landslide Inventory* web application. As shown by Figure 5, there have been no landslides recorded in the vicinity of the Site.

Based on this information, potential Site impacts from severe weather have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of weather-related events in the region and near the Site.



Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Temperature thresholds:							
Annual days with maximum temperature > 90°F	4 days 4 - 8	15 days 7 - 28	17 days 8 - 27	21 days 10 - 41	28 days 12 - 49	29 days 12 - 58	58 days 19 - 95
Annual days with maximum temperature > 95°F	1 days 0 - 1	3 days 1 - 12	4 days 1 - 10	6 days 1 - 21	9 days 2 - 22	10 days 2 - 29	29 days 4 - 63
Annual days with maximum temperature > 100°F	0 days 0 - 0	0 days 0 - 2	1 days 0 - 3	1 days 0 - 8	2 days 0 - 11	2 days 0 - 8	11 days 0 - 42
Annual days with maximum temperature > 105°F	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1	0 days 0 - 1	0 days 0 - 5	0 days 0 - 4	4 days 0 - 26
Annual temperature:							
Annual single highest maximum temperature °F	93 °F 92 - 94	97 °F 94 - 100	97 °F 94 - 102	98 °F 95 - 104	100 °F 96 - 108	100 °F 96 - 107	105 °F 97 - 115
Annual highest maximum temperature averaged over a 5-day period °F	88 °F 87 - 89	91 °F 89 - 96	92 °F 90 - 95	93 °F 90 - 98	95 °F 91 - 101	95 °F 91 - 101	100 °F 92 - 110
Cooling degree days (CDD)	385 degree-days 339 - 420	615 degree-days 480 - 845	647 degree-days 489 - 861	748 degree-days 537 - 1,080	878 degree-days 615 - 1,231	893 degree-days 581 - 1,357	1,450 degree-days 863 - 2,172

N/A = Data Not Available for the selected area

Figure C-1: Extreme Heat

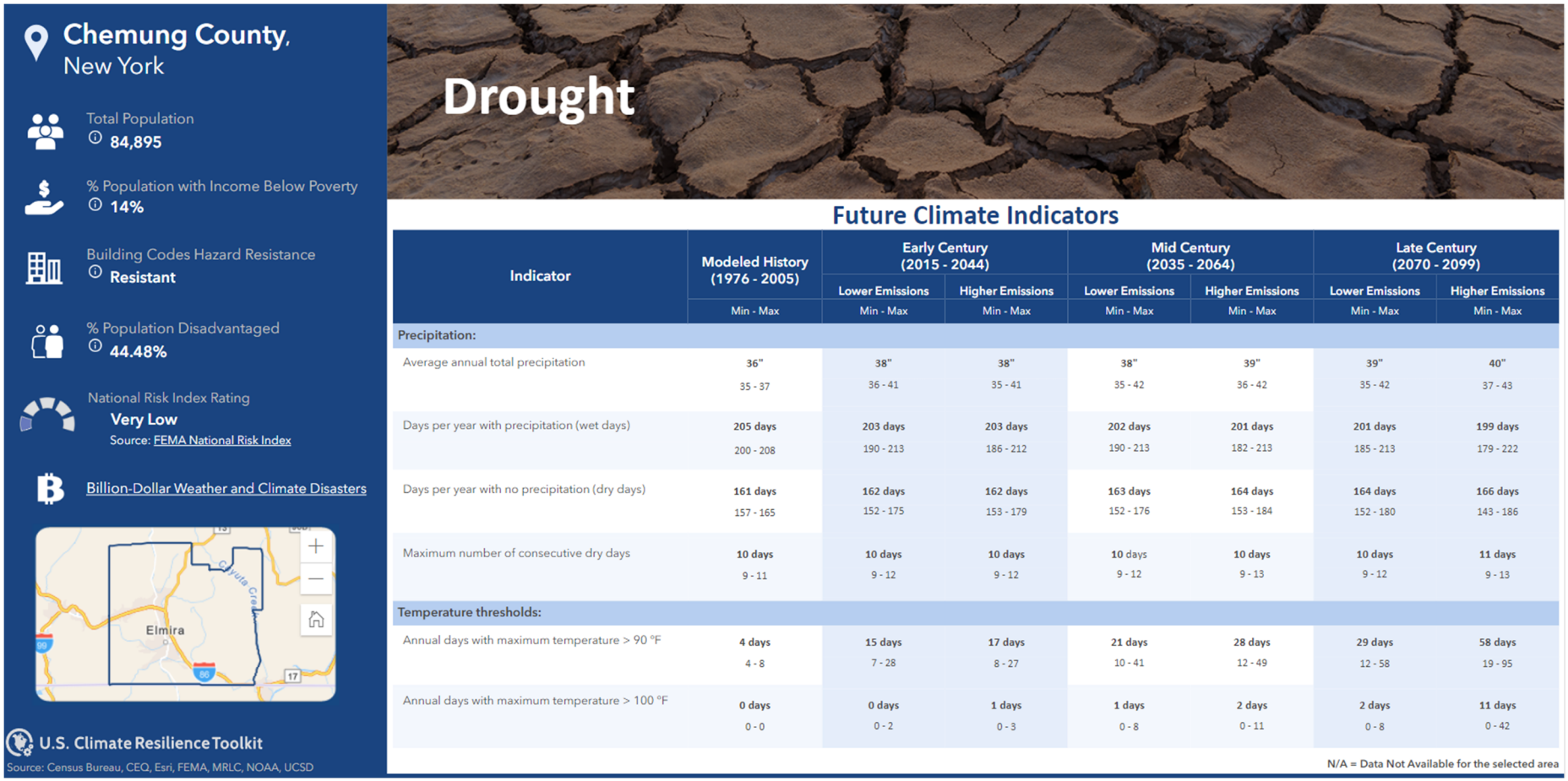


Figure C-2: Drought

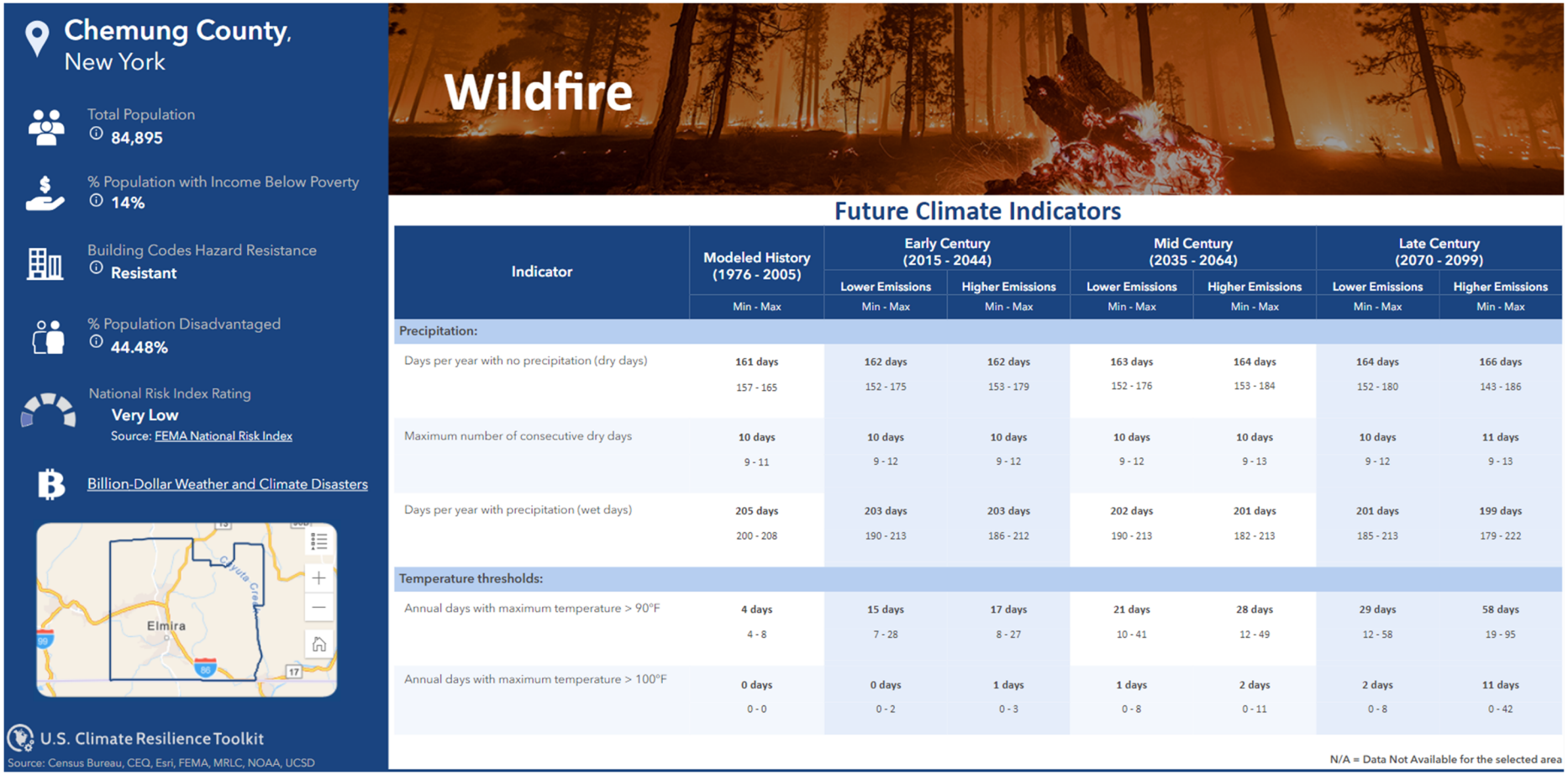
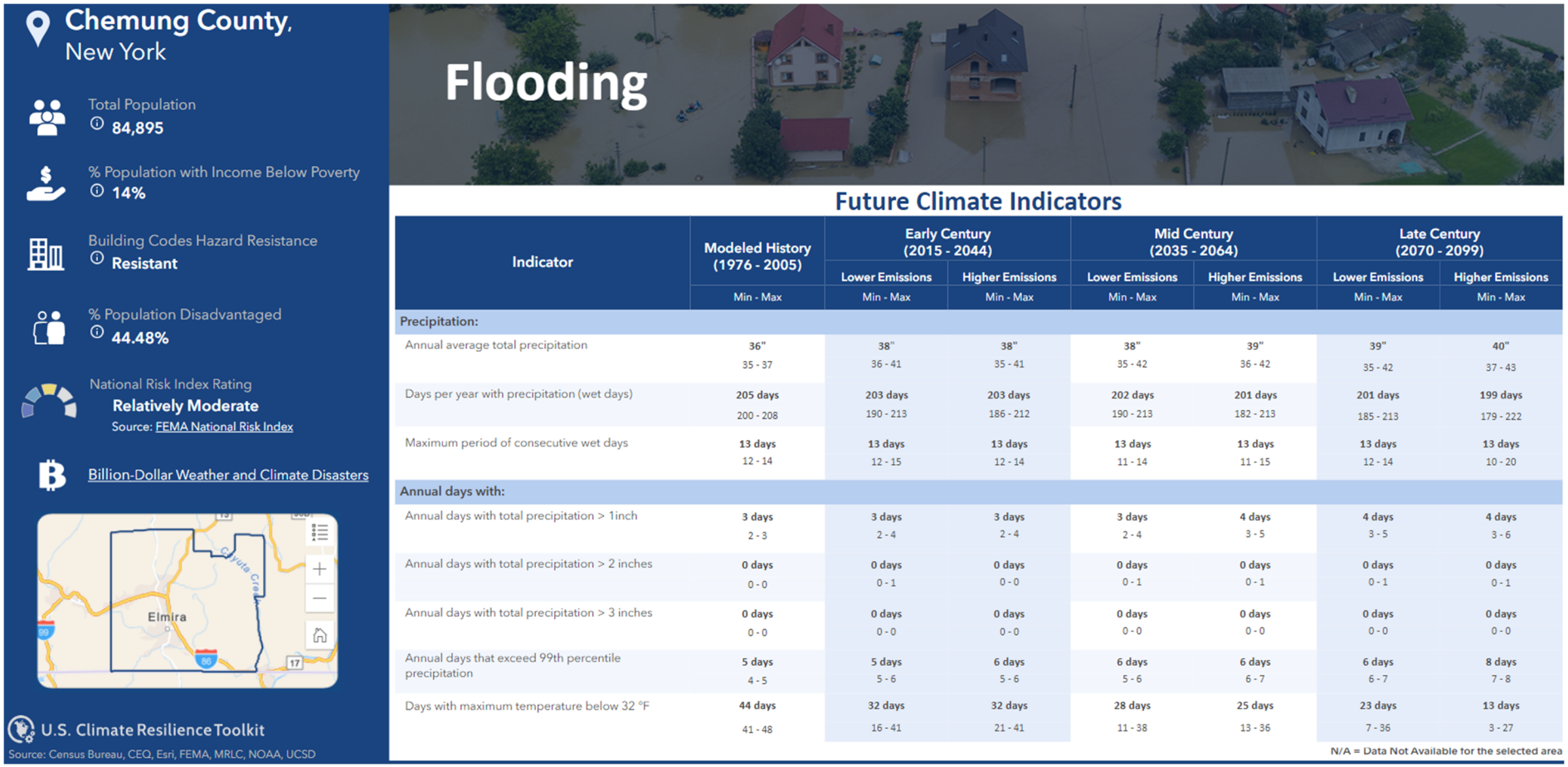


Figure C-3: Wildfire



Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Annual average total precipitation	36" 35 - 37	38" 36 - 41	38" 35 - 41	38" 35 - 42	39" 36 - 42	39" 35 - 42	40" 37 - 43
Days per year with precipitation (wet days)	205 days 200 - 208	203 days 190 - 213	203 days 186 - 212	202 days 190 - 213	201 days 182 - 213	201 days 185 - 213	199 days 179 - 222
Maximum period of consecutive wet days	13 days 12 - 14	13 days 12 - 15	13 days 12 - 14	13 days 11 - 14	13 days 11 - 15	13 days 12 - 14	13 days 10 - 20
Annual days with:							
Annual days with total precipitation > 1inch	3 days 2 - 3	3 days 2 - 4	3 days 2 - 4	3 days 2 - 4	4 days 3 - 5	4 days 3 - 5	4 days 3 - 6
Annual days with total precipitation > 2 inches	0 days 0 - 0	0 days 0 - 1	0 days 0 - 0	0 days 0 - 1	0 days 0 - 1	0 days 0 - 1	0 days 0 - 1
Annual days with total precipitation > 3 inches	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0
Annual days that exceed 99th percentile precipitation	5 days 4 - 5	5 days 5 - 6	6 days 5 - 6	6 days 5 - 6	6 days 6 - 7	6 days 6 - 7	8 days 7 - 8
Days with maximum temperature below 32 °F	44 days 41 - 48	32 days 16 - 41	32 days 21 - 41	28 days 11 - 38	25 days 13 - 36	23 days 7 - 36	13 days 3 - 27

N/A = Data Not Available for the selected area

Figure C-4: Flooding

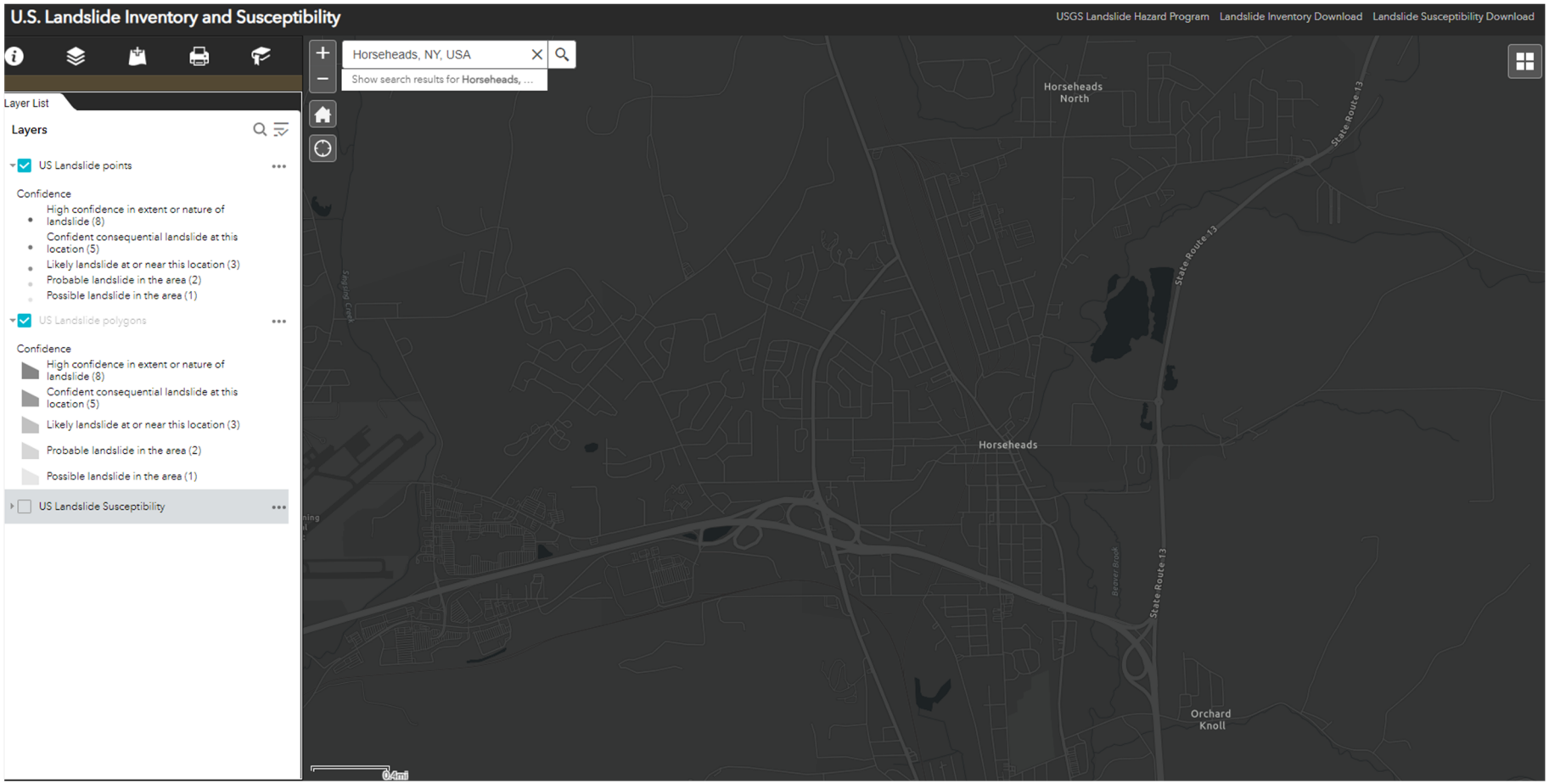


Figure C-5: Landslide