

**FIFTH FIVE-YEAR REVIEW REPORT FOR
PFOHL BROTHERS LANDFILL SUPERFUND SITE
CHEEKTOWAGA COUNTY, NEW YORK STATE**



Prepared by

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

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LIST OF ABBREVIATIONS & ACRONYMS

AWQS	Ambient Water Quality Standards
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
IRM	Interim Remedial Measure
ICs	Institutional Controls
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
ng/L	Nanograms per Liter
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
O&M	Operation and Maintenance
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PRPs	Potentially Responsible Parties
RAOs	Remedial Action Objectives
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SVOCs	Semi-Volatile Organic Compounds
UU/UE	Unlimited Use and Unrestricted Exposure
VFPE	Very Flexible Polyethylene
VOCs	Volatile Organic Compounds

I. INTRODUCTION

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

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

This is the fifth FYR for the Pfohl Brothers Landfill Superfund site. The triggering action for this statutory review is November 12, 2021, the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The site consists of two operable units (OUs). OU1 consists of two landfilled areas (Area B and Area C). OU2 consists of a soil borrow area (Area A) and off-site groundwater. Only OU1 will be addressed in this FYR. A 1994 Record of Decision (ROD) chose no action for OU2; therefore, it is not subject to this FYR.

The FYR was led by Amanda Seidner, EPA Remedial Project Manager. Participants included Jinnie Hanlee, EPA human health risk assessor; Rachel Griffiths, EPA hydrogeologist; Detbra Rosales, EPA ecological risk assessor; and Mike Basile, EPA community involvement coordinator. The relevant entities such as the PRP were notified of the initiation of the five-year review. The FYR began on March 4, 2025.

Site Background

The Pfohl Brothers Landfill site is a 130-acre area with an inactive landfill located in a commercial/residential area in the Town of Cheektowaga, Erie County, New York, approximately one mile northeast of Buffalo Niagara International Airport (see Appendix A, Figure 1). The site is bordered by wetlands, Aero Lake, Aero Creek, and the New York State Thruway to the north. The remaining boundaries consist of Transit Road to the east, a Niagara Mohawk Power easement and wetlands to the west, and residential yards (along the north side of Pfohl Road) and Conrail tracks to the south. In addition, the site is bisected by Aero Drive. The road and wetlands divide the site into three distinct areas—Areas A, B, and C (see Appendix A, Figure 2).

The site consists of two capped fill areas. One fill area (approximately 70 acres) is located on Area B and the other (approximately 24 acres) is located on Area C. The two capped areas are individually fenced and there are two entrance gates along Aero Drive—one on the north side for Area B and another on the south side for Area C. A utility building is located inside the

entrance gate on the north side of Aero Drive. The capped areas have evenly distributed gas vents for the landfill gas control system. Several engineered drainage swales, ditches, and culverts divert surface water off the caps.

A portion of Area A was used as a borrow area by the New York Thruway Authority for road fill material. Aero Lake, a 40-acre man-made lake, was created from the borrow pit. The remainder of Area A contains the Thruway ramp and tollbooths, as well as a trucking firm.

Thirty-six acres of the landfilled areas located on either side of Aero Drive and along Pfohl Road were excavated during the remedial action and are now available for redevelopment.

Appendix B, attached, summarizes the documents utilized to prepare this FYR. Appendix C, attached, summarizes the site's surface drainage, geology/hydrogeology and land use. For more details related to background, physical characteristics, geology/hydrogeology, land/resource use, and history related to the site, please refer to <https://www.epa.gov/superfund/pfohl-brothers>.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Pfohl Brothers Landfill		
EPA ID: NYD980507495		
Region: 2	State: NY	City/County: Cheektowaga
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? Yes	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Amanda Seidner		
Author affiliation: EPA		
Review period: 3/4/2025 – 8/24/2025		
Date of site inspection: 4/16/2025		
Type of review: Statutory		
Review number: 5		
Triggering action date: 11/12/2020		
Due date (five years after triggering action date): 11/12/2025		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The New York State Department of Environmental Conservation (NYSDEC) initiated a remedial investigation/feasibility study (RI/FS) in 1988, which identified significant soil, surface water/sediment and groundwater contamination. Contaminants of concern included polycyclic aromatic hydrocarbons, polychlorinated biphenyls, volatile organic compounds (VOCs), and metals. The RI/FS also concluded that the site posed unacceptable human health risks attributable to dermal exposure to leachate seeps, dermal absorption and ingestion of contaminated sediments, and ingestion and dermal contact with site soils and groundwater. In addition, the setting of the site adjacent to freshwater wetlands, fishing areas and creeks, as well as the uncovered and exposed waste at the site, presented a high potential for terrestrial and aquatic wildlife exposure, with resultant degradation of these critical environmental areas.

In 1992, NYSDEC initiated an off-property RI to study the influence of the landfilled areas on downgradient groundwater contamination and to determine if Area A required remediation. Based upon the results of this investigation, it was determined that Area A was not used for the disposal of hazardous substances and significant levels of groundwater contamination were not detected.

In 1993, the site was proposed for inclusion on the National Priorities List (NPL).

Response Actions

Remedy Selection

Based upon the results of the above-noted investigations, on February 11, 1992, a ROD was signed for Operable Unit (OU1). The remedial action objectives (RAOs) identified in the ROD were as follows:

- Reduce organic and inorganic contaminant loads to the surface water streams from leachate seeps and groundwater to assist in meeting Class B and D stream standards;
- Reduce carcinogenic and non-carcinogenic risks caused by dermal exposure to leachate seeps;
- Reduce carcinogenic risks caused by dermal absorption and ingestion of sediments;
- Prevent migration of contaminants from sediments that could result in surface water exceedance of Class B or D stream standards;
- Reduce carcinogenic and non-carcinogenic risks caused by ingestion and dermal contact of landfill soils;
- Reduce risk or exposure to groundwater via ingestion and dermal contact; and

- Minimize migration of contaminants into uncontaminated groundwater.

The selected remedy included:

- Construction of a barrier wall containment system around the perimeter of the landfilled areas;
- Construction of a leachate collection and conveyance system;
- Construction of 6 NYCRR Part 360 (regulations for Solid Waste Management Facilities) compliant landfill caps over the landfilled areas in Areas B and C;
- Treatment and disposal of the collected leachate either on- or off-site;
- Operation and maintenance of the caps and leachate collection system, and long-term groundwater monitoring;
- Institutional controls (ICs) to restrict access to the landfilled areas in order to prevent the use of groundwater beneath the site and protect the integrity of the cap; and
- An Interim Remedial Measure (IRM) to remove drums and phenolic tars within the 100-year flood plain and at concentrated areas of the site.

Based on the off-property investigations discussed above, on January 10, 1994, a no action ROD was signed for OU2.

Status of Implementation

NYSDEC initiated the IRM required by the OU1 ROD by performing drum removal and excavation activities from 1992 to 1993. A total of 2,928 drums containing wastes were removed, placed in metal overpack drums, and staged on-site for later off-site disposal. Another 1,619 empty drums were recovered and later reburied on-site. Fifteen drums containing low-level radioactive waste were overpacked and staged on-site for later disposal off-site.

Four hundred and forty cubic yards of visibly contaminated soil were excavated from Areas B and C and were staged on-site in roll-off containers for later disposal off-site.

An Order on Consent to complete the IRM was signed by NYSDEC and the potentially responsible parties (PRPs) in October 1993. Field work, which was performed from 1994 to 1995, included the excavation and off-site disposal of 392 cubic yards of visibly-contaminated soils previously staged by NYSDEC, removal and off-site disposal of 1,724 drums and 990 cubic yards of visibly-contaminated soils and tar materials discovered during the final phase of the IRM, rehabilitation of the site to pre-IRM conditions, and removal of all appropriate IRM support facilities.

Negotiations with the PRPs for the performance of the remedial design/remedial action (RD/RA) related to the selected remedy resulted in 34 PRPs signing a Consent Decree in 1993. The Pfohl Brothers Landfill Site Steering Committee represented the PRP group. The RD, which started in

1994, was approved by NYSDEC in 2001. RA activities commenced thereafter pursuant to a consent decree.

To facilitate future development along Pfohl Road and Aero Drive, approximately 36 acres of the landfilled areas, consisting of about 540,000 cubic yards of waste located along these roads (the edges of Areas B and C) were excavated and consolidated on the interior portions of Areas B and C. In addition, 9,200 cubic yards of contaminated soil and waste were excavated to protect the wetlands and consolidated on the interior portions of Areas B and C. Post-excavation soil samples showed that the remaining soils met New York State Technical and Administrative Guidance Memorandum No. 94-HWR-4046 January 24, 1994 cleanup objectives. The excavated areas were backfilled with clean fill and topsoil and were reseeded. Two caps totaling 94 acres were constructed over the consolidated wastes in conformance with New York State 6 NYCRR Part 360 closure requirements. Each cap consists of a six-inch gas venting layer overlain by a layer of filter fabric, a 40-mil thick very flexible polyethylene (VFPE) liner, a 24-inch barrier protection layer of clean soil, and topped with six inches of topsoil capable of supporting vegetation. Forty-nine gas vents were installed to convey the gas from beneath the low permeability layer of the caps via the gas venting layer to the atmosphere.

The leachate collection system consists of an eight-inch diameter perforated collection pipe set in a granular material-filled trench, which runs along the 10,000-foot perimeter of the landfilled areas at a depth of approximately five to 22 feet below ground surface (bgs). An additional 1,000 feet of collection drain was installed eight to 14 feet bgs in the southwest interior of Area B to promote an upward gradient from the bedrock to the overburden within the confines of the perimeter barrier containment system. All of the collected leachate is discharged directly to the Buffalo Sewer Authority's Treatment Plant via the Town of Cheektowaga's sewer system through six collection wet wells and a force main that was connected to a sewer interceptor. Twenty-eight manholes were installed to facilitate monitoring and maintenance. A VFPE wall keyed into 24 inches of undisturbed clay at the bottom of the perimeter trench was installed as a vertical barrier to prevent the collection drain system from collecting clean off-site groundwater and dewatering the adjacent wetlands. The polyethylene wall was connected to the VFPE liner in the landfill caps.

All disturbed areas of the site were subsequently restored. A vegetative layer consisting of hardy, shallow rooted grasses was established on the surface of the landfill caps. The grass serves to stabilize the soil against erosion, minimize percolation of precipitation, promote evapotranspiration of soil moisture, and is aesthetically pleasing.

Due to meandering wetland boundaries, the construction of the landfill caps led to the permanent removal of 0.16 acre of wetlands along a portion of the western boundary of Area B. As mitigation, 0.50 acre of wetland was reestablished along the northern boundary of Area B, resulting in a net gain of 0.34 acre of wetland.

Based upon the results of a final inspection of the site conducted in 2002 by NYSDEC and EPA, it was determined that all construction activities had been completed and that the implemented

remedy was consistent with the 1992 and 1994 RODs and the design documents. The site was deleted from the NPL on September 22, 2008.

Institutional Controls Summary

The 1992 ROD called for ICs to restrict access to the landfilled areas in order to prevent the use of groundwater beneath the site and protect the integrity of the cap.

Restrictions were placed on Areas B and C in the form of Declarations of Covenants and Restrictions and Grant of Access signed by each of the seven owners whose parcels make up the site. Five of the seven agreements were signed in 2003 and the last two were signed in 2005. Each Declaration requires that the owners agree to not use any on-site groundwater other than for monitoring the remedial action, that no on-site surface water cisterns be constructed, that the capped areas not be accessed without prior written approval of NYSDEC, that on-site soil not be excavated, removed, or disturbed without NYSDEC written approval, and that trees and shrubs whose roots may breach the cap not be planted. Access agreements were needed to perform operation and maintenance (O&M) activities. On October 21, 2005, the final access agreement was recorded.

Table 1: Summary of Planned and/or Implemented Institutional Controls

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater, surface water, and soil	Yes	Yes	Areas B and C	No use of on-site groundwater other than for monitoring the remedial action, that no on-site surface water cisterns be constructed, that the capped areas not be accessed without prior written approval of NYSDEC, that on-site soil not be excavated, removed, or disturbed without NYSDEC written approval, and that trees and shrubs whose roots may breach the cap not be planted.	Declarations of Covenants and Restrictions and Grant of Access 2003 and 2005

Systems Operations/Operation & Maintenance

An O&M plan, which provides for a long-term monitoring program for the cover system, the drainage system, the groundwater, and the institutional controls, was approved in 2006. The O&M activities at the site are being performed by the Town of Cheektowaga. Semiannual O&M reports are reviewed by NYSDEC and EPA. The elements of the O&M plan are discussed in more detail below.

The Operation, Maintenance, and Monitoring Manual for the site contains the procedures for inspecting and evaluating the landfill caps, off-site disposal of the collected leachate and extracted groundwater, provision and certification of institutional controls, monitoring of groundwater, surface water and wetlands in the immediate perimeter of the landfilled areas, and long-term monitoring of downgradient groundwater wells. Repairs are to be made to the cap, drainage, and leachate collection systems as necessary, to control the effects of settling, subsidence, erosion or other events that might interfere with the performance of the remedy.

The site is inspected on a monthly basis as follows:

- The manholes and wet wells are inspected to determine that each one is free of obstructions, in good condition, and locked securely; and
- The wetlands are inspected and checked for bare areas, washouts, dead/dying/undesirable plants, build-up of sediments, flow restrictions, the stability of erosion protection, and the general condition of the water budget and water levels.

The site is inspected on a quarterly basis as follows:

- The landfill caps are inspected for signs of erosion, bare areas, washouts, leachate seeps, length of grass, dead/dying grass and signs of burrowing animals;
- The surface water drainage system is inspected for signs of sediment build-up, erosion, obstructions, and dead/dying grass in the drainage ditches;
- The landfill gas venting system is inspected for any damage to the vents;
- The access roads are inspected for erosion, obstructions, potholes, puddles and debris;
- The integrity of the two landfill perimeter fences, gates, locks, and placement and condition of signs are checked;
- The utility building is inspected for vandalism, damage, and if secure; and
- The site is inspected for debris, litter and/or waste.

The leachate is collected in a trench collection system and discharged to the Buffalo Sewer Authority's Treatment Plant via the Town of Cheektowaga's sewer system. Sampling of the leachate was performed monthly for the first two years and is now performed quarterly in accordance with the requirements of Discharge Permit No. 02-11-CH016 between the Buffalo

Sewer Authority and the Town of Cheektowaga. As a condition for renewal of this permit, an analysis of all constituents within the leachate, not just metals, is required within every three-year period.

In 2007, NYSDEC approved the Town of Cheektowaga's request to eliminate radionuclides, dioxins, and dibenzofurans from their list of test parameters because they were not detected in the leachate since monitoring commenced in 2005. NYSDEC approved the PRPs' request to end surface water and sediment sampling in 2008.

The groundwater monitoring wells had historically been sampled semiannually, but sampling was reduced to an annual frequency in 2023 (as approved by EPA and NYSDEC in September 2023). The annual groundwater monitoring events alternate between May and November to capture any seasonality in groundwater concentrations.

Potential site impacts from potential extreme weather events have been assessed. The performance of the remedy is currently not at risk due to the expected effects of an extreme weather event in the region and near the site (see Appendix D).

III. PROGRESS SINCE THE LAST REVIEW

The protectiveness determinations from the last FYR are summarized in Table 2, below.

Table 2: Protectiveness Determinations/Statements from the 2021 FYR

OU #	Protectiveness Determination	Protectiveness Statement
01	Protective	The remedy at OU1 is protective of human health and the environment.
Sitewide	Protective	The sitewide remedy is protective of human health and the environment.

There were no recommendations in the previous FYR report. However, there were other findings in the Fourth FYR as summarized here:

The site inspection noted several areas where maintenance is required. Evidence of poor drainage in Area B requires corrections to the surface drainage. Woody growth needs to be cleared along the fence of landfill Area C. Damaged grounding rods and covers in Area B should be repaired. Animal burrows in Area B should be mitigated. Water depth gauges in two pump chambers are offline and do not run automatically and may require rewiring to communicate with the Control House. Sheening observed at the wet wells and manholes along the western perimeter of Area B should be investigated further to confirm if it is naturally-occurring or from the landfill.

The above issues remained largely unaddressed during this FYR period. Similar issues were identified during the site inspection performed for this FYR. Details related to that inspection are included in Section IV below.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On July 21, 2025, the 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 the U.S. Virgin Islands, including the Pfohl Brothers Landfill Superfund site. The announcement can be found at the following web address: <https://www.epa.gov/superfund/R2-fiveyearreviews>.

In addition to this notification, the EPA Community Involvement Coordinator, or CIC for the site, Mike Basile, posted a public notice on the <https://www.epa.gov/superfund/pfohl-brothers> and provided the notice to the Town of Cheektowaga by email on March 14, 2025 with a request that the notice be posted in municipal offices and on the village/town webpages. This notice indicated that a FYR would be conducted at the site to ensure that the cleanup at the site continues to be protective of people's health and the environment.

Once the FYR is completed, the results of the review and the FYR report will be made available online <https://www.epa.gov/superfund/pfohl-brothers> and at the site information repositories. The information repositories are maintained at the Anna M Reinstein Public Library, 2580 Harlem Road, Cheektowaga, NY and EPA Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, NY, as well as on the EPA's website.

Data Review

Groundwater sampling was conducted during this FYR period using overburden and bedrock monitoring wells GW-01D, GW-01S, GW-03D, GW-03S, GW-04D, GW-04S, GW-07D, GW-07S, GW-08D, GW-08SR, GW-26D, GW-28S, GW-29S, GW-30S, GW-31S, GW-32S, GW-33S, GW-34S, and GW-35S (see Appendix A, Figure 3). Semi-annual groundwater sampling was conducted until 2023, at which time the sampling frequency was reduced to an annual basis with sampling events alternating between May and November to capture any seasonality in groundwater concentrations.

Since the last FYR, there were few and infrequent detections of VOCs and semi-volatile organic compounds (SVOCs). Specifically, 1,4-dichlorobenzene was detected marginally above its Class GA Ambient Water Quality Standard (AWQS) of 3 micrograms per liter ($\mu\text{g/L}$) in monitoring well GW-03D (maximum detection of 4.1 $\mu\text{g/L}$ in November 2021) and bis(2-ethylhexyl) phthalate was detected above its AWQS of 5 $\mu\text{g/L}$ in monitoring well GW-03D during the May 2023 sampling event at a concentration of 20 $\mu\text{g/L}$, and in monitoring well GW-07D throughout the review period. Historically, concentrations of bis(2-ethylhexyl) phthalate in monitoring well GW-07D fluctuated around its AWQS, however, concentrations spiked to a maximum of 1,600 $\mu\text{g/L}$ in

November 2022 before decreasing to 560 µg/L in May 2023 and 84 µg/L in November 2024. These anomalously high concentrations have been attributed to the replacement of the polyethylene-lined stainless-steel leader on the sampling bailer during the November 2022 sampling event. In subsequent sampling events, the leader was removed and thoroughly cleaned before replacement. The bis(2-ethylhexyl) phthalate concentrations at this location seem to be responding positively to the additional measures and will continue to be monitored in future sampling events.

During the review period, iron, magnesium, manganese, and sodium routinely exceeded their respective Class GA AWQS of 0.3 milligrams per liter (mg/L), 35 mg/L, 0.3 mg/L, and 20 mg/L in most of the wells at the site. Iron is the most prevalent of the inorganic constituents in groundwater, and concentrations fluctuated throughout the review period but remain consistent with the range of historically detected concentrations. Concentrations of iron during the most recent sampling event in November 2024 ranged from 0.051 mg/L in monitoring well GW-32S to 21.8 mg/L in monitoring well GW-08SR. The levels of magnesium were fairly stable during the review period, and during the most recent sampling event in November 2024 ranged between 10 mg/L in monitoring well GW-08D and 84.8 mg/L in monitoring well GW-04D. Manganese concentrations were fairly stable during the review period, and ranged from 0.053 mg/L in monitoring well GW-33S to 2.2 mg/kg in monitoring well GW-30S during the November 2024 sampling event. Iron, magnesium, and manganese are likely naturally present in the aquifer solids, but have been mobilized by the reducing conditions generally associated with landfills. Significantly elevated sodium concentrations above the AWQS of 20 mg/L were generally observed in bedrock monitoring wells GW-01D, GW-03D, GW-08D, and GW-26D and a shallow monitoring wells GW-01S, GW-03S, GW-08SR, and GW-30S. Sodium concentrations during the November 2024 sampling event ranged between 3.5 mg/L in monitoring well GW-33S to 532 mg/L at monitoring well GW-30S. The elevated sodium concentrations in the bedrock wells may be attributed to the bedrock composition and the elevated concentrations in the shallow wells may be the result of seasonal road de-icing activities.

During the review period, there were sporadic exceedances of additional metals in monitoring well GW-07D, including lead, nickel, and chromium above their respective AWQS of 0.025 mg/L, 0.1 mg/L, and 0.05 mg/L. The maximum concentration of lead in GW-07D was 0.042 mg/L in May 2020. The maximum concentration of nickel in GW-07D was 0.88 mg/L in May 2022. The maximum chromium concentration in GW-07D was 1.8 mg/L in May 2022. The trends of these metals, including the naturally occurring metals identified above, mirror each other. They have fluctuated significantly between sampling events, typically higher in May than November, with an overall increasing trend since the previous review period. During the November 2024 sampling event, both filtered and unfiltered samples were analyzed for metals at GW-07D. The filtered results for lead and chromium were substantially lower than the unfiltered results, suggesting the metals are related to sample turbidity. Concentrations of lead, nickel, and chromium in landfill leachate are either not detected or are significantly lower than those observed in groundwater at GW-07D, and groundwater concentrations of lead, nickel, chromium, and bis(2-ethylhexyl) phthalate in upgradient monitoring wells GW-30S and GW-31S are also not detected.

or are below AWQS. Trend charts for lead, nickel, chromium, and bis(2-ethylhexyl) phthalate in GW-07D are presented in Appendix A Figure 4.

Groundwater level data indicate that the landfill perimeter collection system is maintaining an inward hydraulic gradient, as demonstrated by higher groundwater levels outside the collection system when compared to manholes inside the collection system.

Emerging Contaminants

As discussed in the previous FYR, emerging contaminants sampling was performed on-site in November 2018 to evaluate the presence of 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS) at four monitoring wells (GW-08D, GW-08SR, GW-26D, and GW-35S). In April 2024, EPA finalized federal drinking water MCLs for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) of 4 nanograms per liter (ng/L), in addition to three other PFAS compounds. In 2023, NYSDEC established drinking water MCLs for PFOA and PFOS of 10 ng/L and Ambient Water Quality Guidance Values of 6.7 ng/L for PFOA and 2.7 ng/L for PFOS. Revisiting the 2018 sampling results in the context of the state and federal MCLs and guidance values, concentrations of PFOA and PFOS marginally exceed their respective MCLs or guidance values at the site. The highest concentration of PFOA was 5.6 ng/L in GW-06D, which only exceeds its federal MCL. The highest concentration of PFOS was 13 ng/L in GW-06D, which exceeds its federal and state MCLs and NYSDEC guidance value.

NYSDEC adopted a drinking water MCL of 1 µg/L for 1,4-dioxane in 2020 and an ambient water quality guidance value of 0.35 µg/L in 2023. Concentrations of 1,4-dioxane were not detected in the four wells sampled and therefore did not exceed its MCL or guidance value. The site does not appear to be a major source of emerging contaminants. Further sampling for PFAS and 1,4-dioxane is not required at this time.

Site Inspection

A site inspection was conducted on April 16, 2025. In attendance were Amanda Seidner, Detbra Rosales and Jinnie Hanlee on behalf of the EPA, Patrick Bowen and Enzo Bellavia on behalf of the Town of Cheektowaga, Megan Kuczka on behalf of NYSDEC, and Rob Murphy of AECOM, the Town's consultant. During the inspection, several issues were identified across the site that require attention. There is an erosional rill located at the northern extent of the landfill, indicating potential soil erosion concerns. An overturned manhole was also observed adjacent to one of the wells, which may need correction to ensure proper functionality. Additionally, various animal burrows have been discovered throughout the site, potentially affecting the structural integrity of the landfill cap. The fence on the northeastern extent of the landfill has sustained damaged, necessitating repairs to prevent trespassing. A leaking hose was observed in one of the wells, which should be addressed to prevent further leakage. Unused bailers in several monitoring wells are in need of disposal to maintain cleanliness and safety standards. Woody vegetation has grown along the fence lines, possibly impeding access or visibility. The Meter Chamber located

adjacent to the control house did not include a “Confined Space” notice. Significant pooling/ponding of water was observed in the northern portion of the landfill/cap, the cause of such ponding should be investigated and addressed to ensure the integrity of the landfill cap. Lastly, there is reduced flow in the groundwater collection lines, which requires jetting to restore optimal function. EPA will continue to monitor these issues closely to ensure they are addressed promptly and effectively, maintaining the sites integrity and compliance with the O&M plan.

V. TECHNICAL ASSESSMENT

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

Based on the remedial actions implemented at the site, including capping the landfill, perimeter fencing, and leachate collection system, the remedy is functioning as intended and human and ecological exposure pathways have been eliminated. The ICs which restrict development on top of the cap and use of groundwater are in place and effective. However, numerous issues were identified during the site inspection, many of which had been observed during the previous FYR as well. Erosion concerns, ponding, animal burrows, and woody vegetation growth need to be addressed to prevent further damage to the cap. Additional maintenance issues such as fence damage, unused bailer presence within monitoring wells, and collection line buildup also need attention to ensure proper O&M of the remedy. The leaky pipe and negative flow observed at several wet wells also requires maintenance and further evaluation to ensure system integrity is sustained. Although data from this FYR period indicate the system is currently maintaining an inward gradient, further damage to the cap and the wet wells may impact the ability of the collection system to maintain this inward gradient in the future.

Long-term groundwater monitoring data identifies metals and bis(2-ethylhexyl) phthalate present above their NYSDEC Class GA AWQS. The prevalence of metals in groundwater, including iron, magnesium, and manganese, can primarily be attributed to naturally occurring metals being mobilized by the reducing conditions associated with the landfill. High concentrations of sodium in site groundwater are likely due to the proximity to the New York State Thruway and Transit Road, a major local roadway, and copious use of road salt during the long winter season. Limited exceedances of other constituents such as 1,4-dichlorobenzene were observed sporadically above their respective NYSDEC Class GA AWQS. During the review period, anomalously high concentrations of bis(2-ethylhexyl) phthalate were observed in a monitoring well and are suspected to be related to sampling equipment. Emerging contaminants, including PFAS and 1,4-dioxane, are not significantly elevated in groundwater and do not suggest the site is a major source of emerging contaminants. Overall, the concentrations of metals and other constituents in the groundwater have either decreased or remained relatively consistent since 2004.

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

The exposure assumptions and toxicity data used to estimate potential risks and hazards to human health followed general risk assessment practices at the time the risk assessment was conducted. Although the risk assessment process has since been updated, and specific parameters and toxicity values may have changed, the risk assessment process that was used is consistent with current practice and the need to implement the remedial action remains valid.

The 1992 ROD selected remedies such as placement of the cap, leachate collection system, and vertical barriers to address the contaminated soil and groundwater at the site. Although some of the cleanup objectives have changed, they are still within EPA's risk range and the values used for soil and groundwater cleanup values are still valid and protective. ICs and environmental easements were placed on the property to ensure no use of on-site groundwater other than for monitoring remedial action and that no activities are conducted on the consolidated waste area that would disturb the cap. Damage to perimeter fencing were observed during the FYR site inspection which could allow for trespassers to enter the landfill area. However, as the cap remedy addresses the soil contamination at the site, and prevents direct contact with waste materials, the remedy continues to interrupt all exposure pathways. Nevertheless, damages to the fence need to be addressed to prevent any future unauthorized access. Covenants and restrictions are in place to prevent the on-site usage of groundwater; thus, interrupting the groundwater exposure pathway.

The potential for soil vapor intrusion (VI) into indoor air is evaluated when soils and/or groundwater are known or suspected to contain VOCs. Low levels of VOCs sporadically found in groundwater are located within the containment system. Since the site does not contain any buildings, the vapor intrusion pathway is currently incomplete.

Although a standard ecological risk assessment was not performed for the site, the RI/FS was conducted in 1988 to characterize the site's adjacent wetlands, fishing areas and creeks. The results of the RI/FS showed that there were potential risks present for terrestrial and aquatic wildlife. However, the landfill capping has eliminated any potential risk from surface soil contaminants to terrestrial and aquatic receptors. Surface water and sediment samples were collected for previous five-year reviews but were discontinued in 2008 based upon monitoring data which indicated that there was not any significant potential risk to ecological receptors. Additionally, surface water, sediment, and groundwater did not present any significant potential risk to ecological receptors in the previous FYRs. These conclusions remain valid for this FYR.

The RAOs are still valid.

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

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

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
<i>None</i>

Issues and Recommendations Identified in the Five-Year Review:
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OU(s): 1	Issue Category: Remedy Performance			
	Issue: Erosional rill at the northern end of the landfill, ponded water in the northern extent of the landfill, numerous animal burrows, and woody vegetation growth may impact the integrity of the cap and the ability of the collection system to maintain an inward gradient in the future.			
	Recommendation: The area should be assessed to determine how to rectify the erosional rill and ponding, i.e. backfilling or mitigation into the cap, animal burrows should be filled and woody vegetation should be removed.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	5/30/2028

OU(s): 1	Issue Category: Operations and Maintenance			
	Issue: A leaking pipe was observed in a wet well located along the southeastern side of the landfill, which may impact system functionality, as negative flow was also observed at several wet wells in the same area thus potentially impacting leachate collection and the ability of the system to maintain an inward gradient in the future.			
	Recommendation: The pipe shall be repaired in order to maintain system integrity. Additionally, it should be determined if this leak contributes to observed negative flow at select other wet wells.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	10/31/2027

OTHER FINDINGS

In addition, the following are suggestions that were identified during the FYR and may improve performance of the remedy and management of O&M, but do not affect current and/or future protectiveness:

- Sheen observed at select wet wells and manholes along the western perimeter of Area B should be investigated further to confirm if it is naturally occurring or emanating from the landfill.
- A hole in a fence was identified during the site inspection located on the northeastern extent of the site. The hole in the fence should be repaired to prevent unauthorized access.
- An overturned manhole was also observed adjacent to one of the wells, which may need correction to ensure proper functionality.
- The Meter Chamber located adjacent to the control house requires a “Confined Space” notice on the chamber door. Although a special tool is needed to open the door, placing a confined space notice on the outer door is recommended for safety and awareness purposes.
- Unused bailers in several monitoring wells need to be disposed of to maintain cleanliness and safety standards.
- There is reduced flow in the groundwater collection lines, suggesting blockages that require jetting to restore to optimal function. Additionally, an overturned grounding rod was observed adjacent to one of the wells, which needs correction to ensure proper functionality.

VII. PROTECTIVENESS STATEMENT

Table 3, below, presents the OU and Sitewide protectiveness statements.

Table 3: Protectiveness Statements

Protectiveness Statement(s)	
<i>Operable Unit:</i> 01	<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy at OU1 is protective of human health and the environment in the short term as there are no currently complete exposure pathways. For the remedy to be protective in the long-term: 1) the erosional rill, ponding, animal burrows and woody vegetative growth need to be addressed to ensure cap integrity; and 2) leaking pipes and negative flows in select wet wells need to be evaluated and addressed to ensure sufficient leachate collection.	

Sitewide Protectiveness Statement

Protectiveness Determination:

Short-term Protective

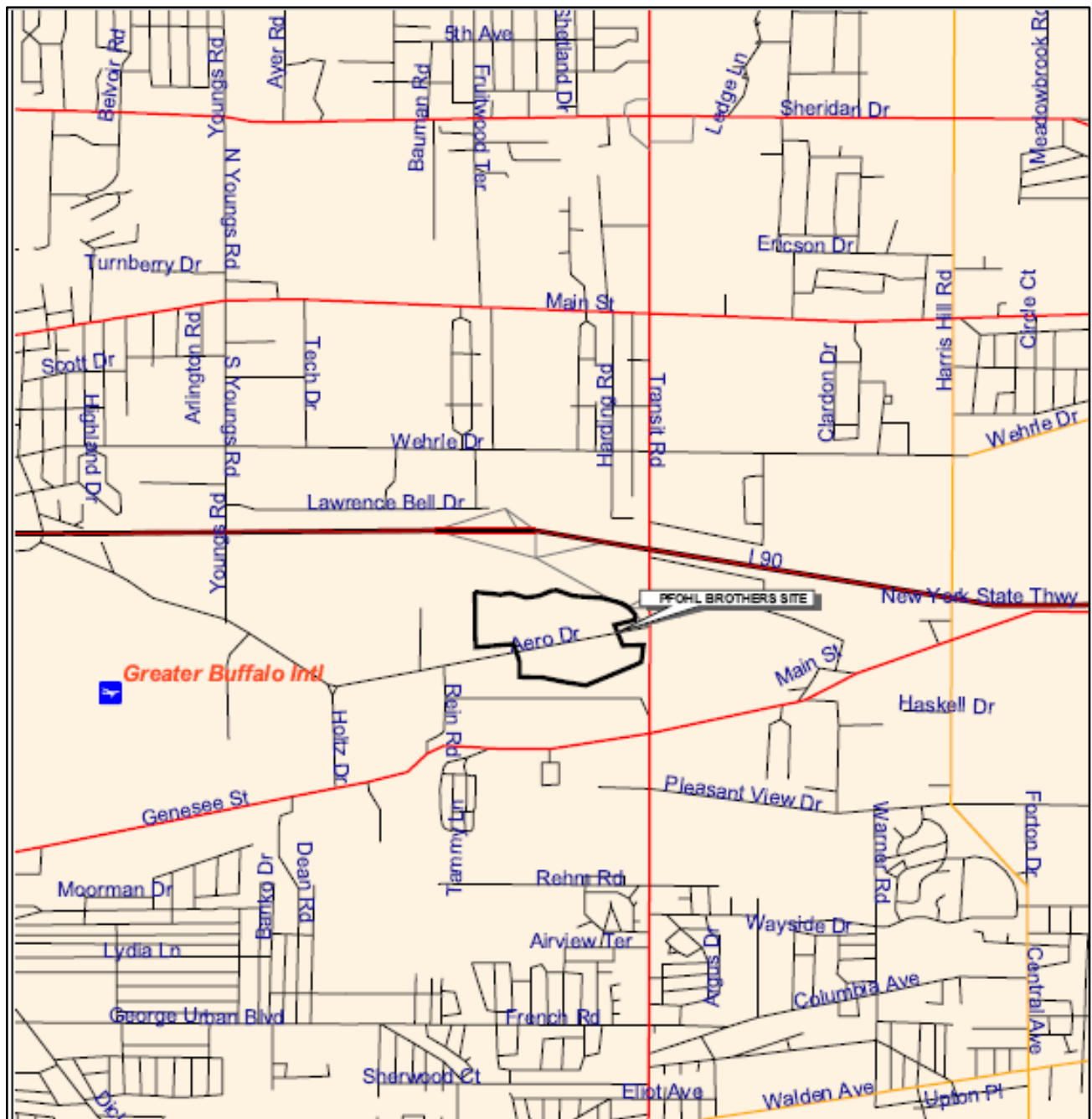
Protectiveness Statement: The sitewide remedy is protective of human health and the environment in the short term as there are no currently complete exposure pathways. For the remedy to be protective in the long-term: 1) the erosional rill, ponding, animal burrows and woody vegetative growth need to be addressed to ensure cap integrity; and 2) leaking pipes and negative flows in select wet wells need to be evaluated and addressed to ensure sufficient leachate collection.

VIII. NEXT REVIEW

The next FYR report for the Pfohl Brothers Landfill Superfund Site is required five years from the completion date of this review.

APPENDIX A – FIGURES

Figure 1 — Site Location



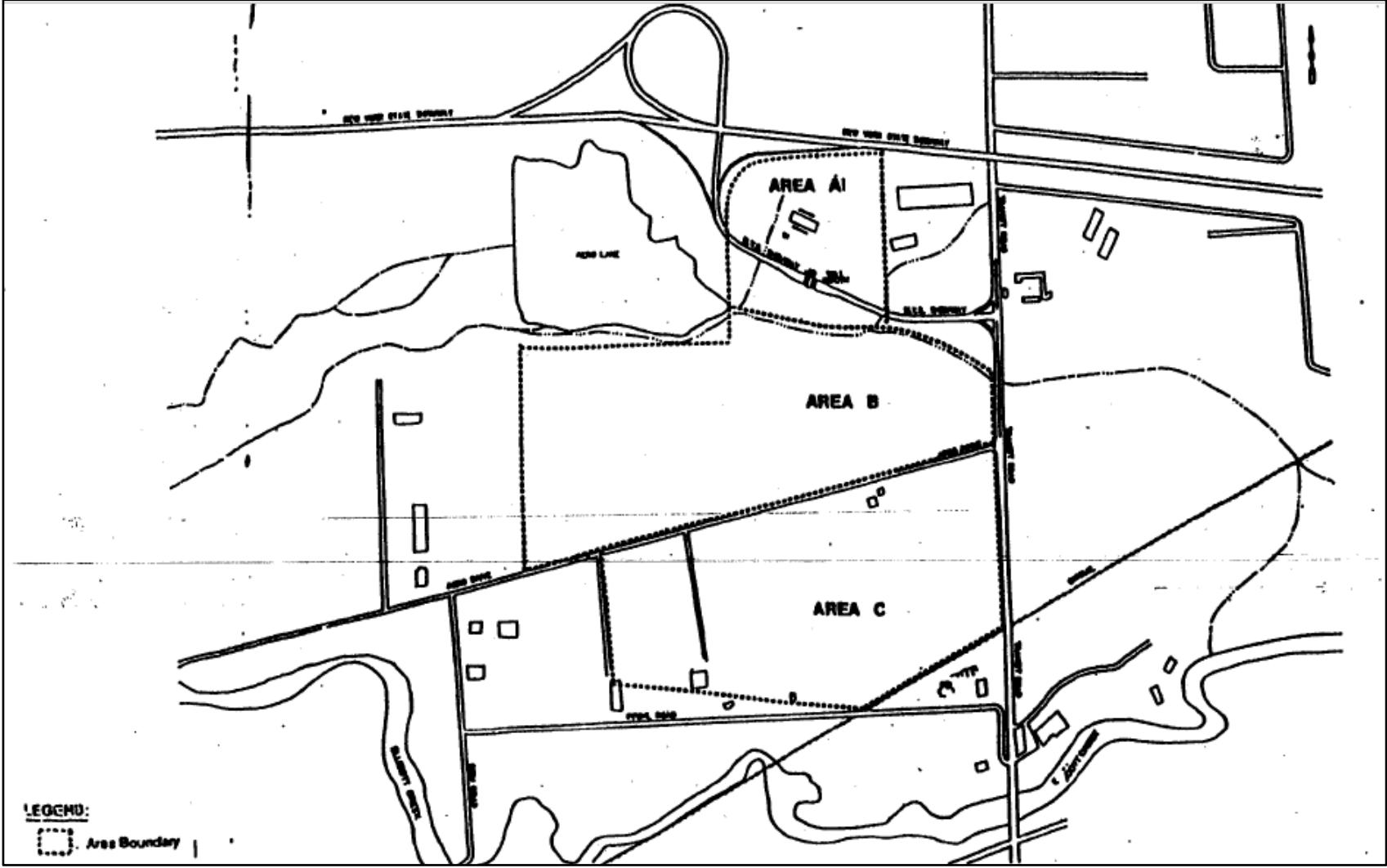
[illegible]

Figure 3 — Monitoring Well Locations

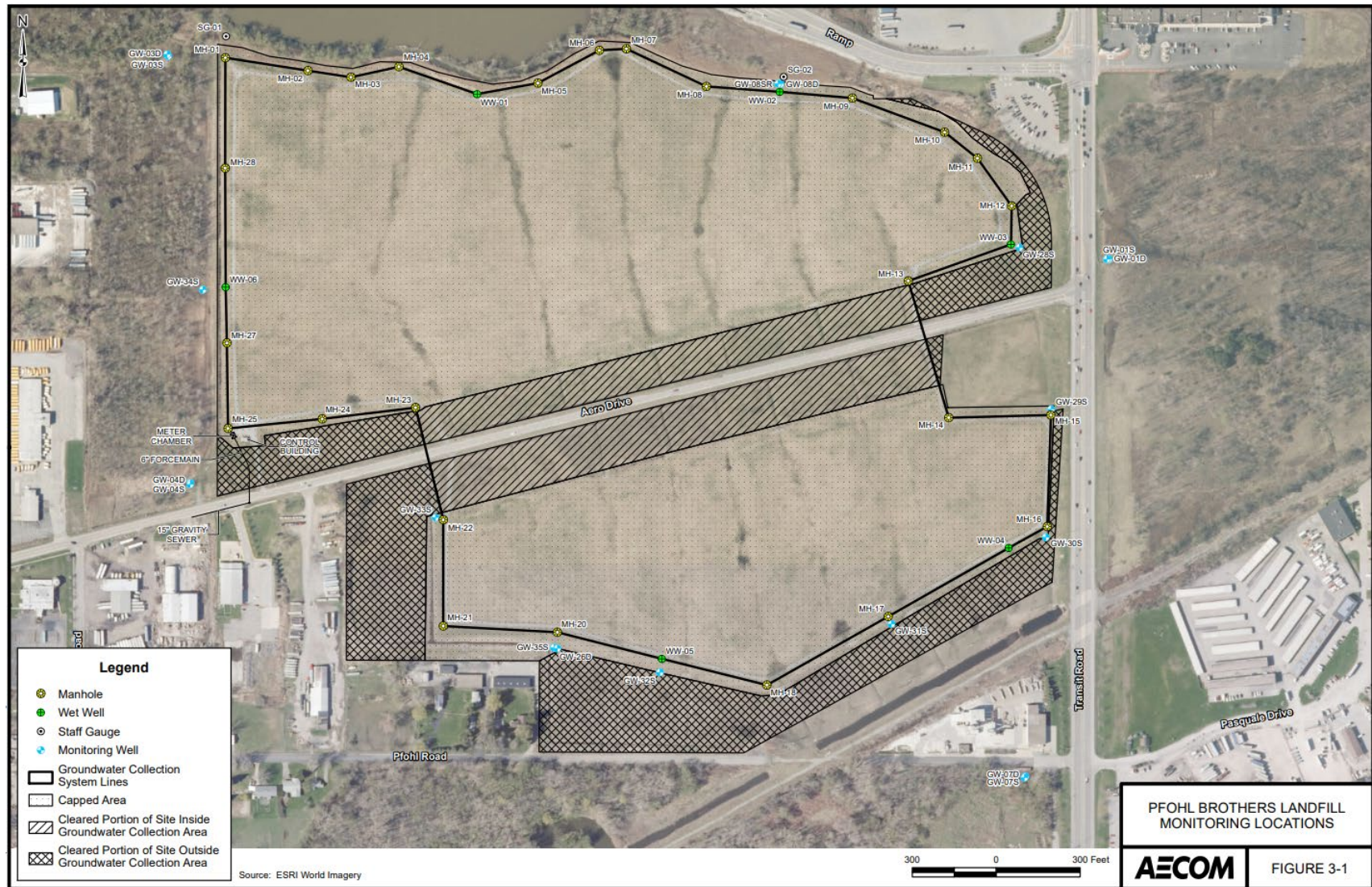
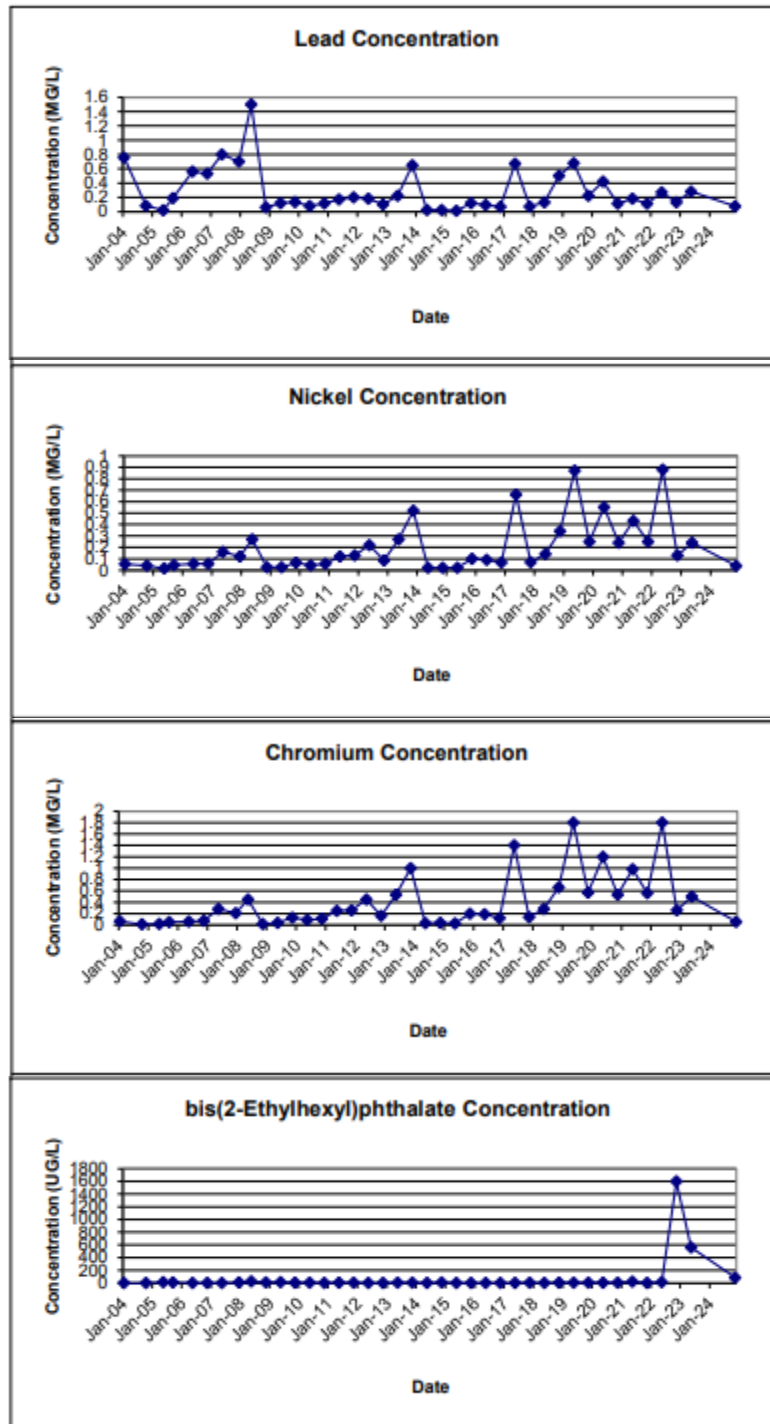


Figure 4 — Monitoring Well GW-07D Concentration Trends



APPENDIX B – REFERENCE LIST

Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	Date
Remedial Investigation/Feasibility Study, Camp, Dresser & McKee	1992
Off-Site Remedial Investigation, NYSDEC	1993
Record of Decision, NYSDEC	1992
Record of Decision, NYSDEC	1994
Drum and Soil Interim Remedial Measure Final Remediation Report, URS Corporation	1996
Interim Remedial Measures Completion Report, Conestoga-Rovers & Associates	1995
Final (100%) Design Documents, Conestoga-Rovers & Associates	1999
Remedial Action Report, Conestoga-Rovers & Associates	2003
Final Close-Out Report, EPA	2007
First Five-Year Review Report – Pfohl Brothers Landfill, Town of Cheektowaga, NY	2006
Second Five-Year Review Report - Pfohl Brothers Landfill, Town of Cheektowaga, NY	2011
Third Five-Year Review Report - Pfohl Brothers Landfill, Town of Cheektowaga, NY	2016
Fourth Five-Year Review Report - Pfohl Brothers Landfill, Town of Cheektowaga, NY	2021
Semi-Annual Report, Operation and Maintenance, January 2020 to June 2020, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2021
Semi-Annual Report, Operation and Maintenance, July 2020 to December 2020, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2021
Semi-Annual Report, Operation and Maintenance, January 2021 to June 2021, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2022
Semi-Annual Report, Operation and Maintenance, July 21 to December 2021, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2022
Semi-Annual Report, Operation and Maintenance, January 2022-June 2022, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2023
Semi-Annual Report, Operation and Maintenance, July 2022 to December 2022, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2023
Semi-Annual Report, Operation and Maintenance, January 2023 to June 2023, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2024
Semi-Annual Report, Operation and Maintenance, July 2023 to December 2023, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2024
Semi-Annual Report, Operation and Maintenance, January 2024 to June 2024, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2025
Semi-Annual Report, Operation and Maintenance, July 2024 to December 2024, Pfohl Brothers Landfill, Cheektowaga, NY, URS	2025

APPENDIX C— PHYSICAL CHARACTERISTICS, GEOLOGY/HYDROGEOLOGY AND LAND USE

Physical Characteristics

Existing flood insurance maps (Federal Emergency Management Agency, 1983) indicate that the site is not in the Ellicott Creek Floodway. Changes to the flood elevation in Ellicott Creek did not occur as a result of site construction. The areas just outside the boundary of Area B (i.e., Aero Lake, Aero Creek, and adjacent wetlands) are within the 100-year flood zone elevation of 696.8 feet, as are several areas within Area C located adjacent to Aero Drive, Transit Road, and Pfohl Road.

Vegetation patterns at the site are a mixture of herbaceous field, weed, and grass species. Both open field, wetland, and forested habitats characterize the surrounding area. These habitats support a variety of avian and mammalian species. No New York State Department of Environmental Conservation (NYSDEC) Significant Habitat Areas are found on-site, and no endangered or threatened species were identified in this area.

Site Geology/Hydrogeology

The Pfohl Brothers Landfill is located in the Lake Erie Plain. The topographic setting consists of gently rolling hills and intervening flatlands 6 to 12 miles in width formed by Pleistocene glaciation. The region is underlain by gently dipping bedrock of sedimentary nature (e.g., sandstones, siltstones, and shales). The advancement, melting and subsequent retreat of the glacier resulted in the deposition of till and lacustrine sediments in the vicinity of the site. The sediments consist of clay with discontinuous bands of silt and very fine sand.

The underlying bedrock, located approximately 20 feet bgs, consists of Onondaga Limestone and also serves as the principal aquifer within the area of the landfill. Most of the ground water flow occurs through rock fractures and interconnected cavities. Recharge to the aquifer occurs mainly through precipitation, which averages about 36 inches per year.

The landfill lies within the Erie-Niagara drainage basin and is surrounded by Aero Lake to the north and Ellicott Creek to the south. Data obtained from surface water level measurements in creeks and tributaries surrounding the landfilled areas imply that the aforementioned surface-water features act as hydraulic boundaries to groundwater flow and that groundwater from the landfilled areas discharges, in part, into nearby surface waters.

The regional groundwater flow in the unconsolidated aquifer is generally in a south-southwest direction and eventually discharges into both Aero Lake and Ellicott Creek. During the wet seasons, the groundwater moves radially outward from the site in all directions, except to the northeast, due to local groundwater mounding. During those times, Aero Lake and the wetlands surrounding the site serve as local discharge areas for the aquifer.

Land and Resource Use

Land use in the vicinity of the site consists of a mix of residential, commercial, and industrial properties. The Buffalo Niagara International Airport is located just one mile to the west of the site. Several residences are located to the southwest within 1,000 feet of the site boundary.

The New York State Thruway borders Area A to the north. A toll plaza and an access ramp for the Thruway are located in the southern half of Area A. Aero Lake, a 40-acre man-made lake formed from a borrow pit used during the construction of the Thruway, is located to the west of Area A and north of Area B. The 40-acre, 20-foot deep man-made Aero Lake is classified as Class D water and is used by local residents for fishing in the warmer months. Ellicott Creek, classified as Class B and Class C, depending on the section, may receive surface waters from a small unnamed creek located adjacent to Aero Lake and from adjacent drainage swales.

Thirty-six acres of the landfilled areas located on either side of Aero Drive and along Pfohl Road were excavated during the remedial action and are now available for redevelopment.

APPENDIX D- REMEDY RESILIENCE EVALUATION

Three tools were used to assess the Pfohl Brothers Landfill Site. Screenshots from each of the tools used are included below.

The first tool, the CMRA (see [CMRA](#)), examined five hazards (extreme heat, drought, wildfire, flooding, and coastal inundation) for Erie County, the county in which the Site is located. According to the CMRA tool the National Risk Index Ratings for extreme heat and flooding are “Relatively Moderate” (see figure D1 and figure D4). However, no impacts from these hazards to the Site area or to the implementation of the remedy have been observed. The CMRA tool reported the risk for drought, wildfire and coastal inundation as “Very Low” or “Relatively Low”, as shown in Figure D2, Figure D3 and Figure D5.

The second tool is called the NOAA Sea Level Rise Viewer (SLVR) (see <https://coast.noaa.gov/slr/>). This tool assessed the potential for impacts to the Site vicinity from sea level rise and coastal flooding. The Site is not located near a coast therefore coastal flooding is unlikely. The nearest water bodies to the Site are Ellicott Creek to the South of the Site and Aero Lake to the North of the Site. Flooding attributable to flooding from the creek or lake is possible given extreme circumstance, such as a period of extreme precipitation. Figure D6 from the SLRV shows that a 10-foot increase in the current mean higher water (MHHW) level (i.e., the maximum increase viewable using the tool) would not result in any increased risk of impacts from sea level rise to the Site vicinity.

The final tool is called the USGS U.S Landslide Inventory (see <https://www.usgs.gov/tools/us-landslide-inventory-and-susceptibility-map>). As shown by figure D7, there is a low to moderate vulnerability of landslides around the perimeter of the Site and no landslides have been observed in the Site vicinity in the past. Note the red star on Figures D6 and D7 designate the site’s approximate location.

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 these effects in the region and near the Site.

Figure D1

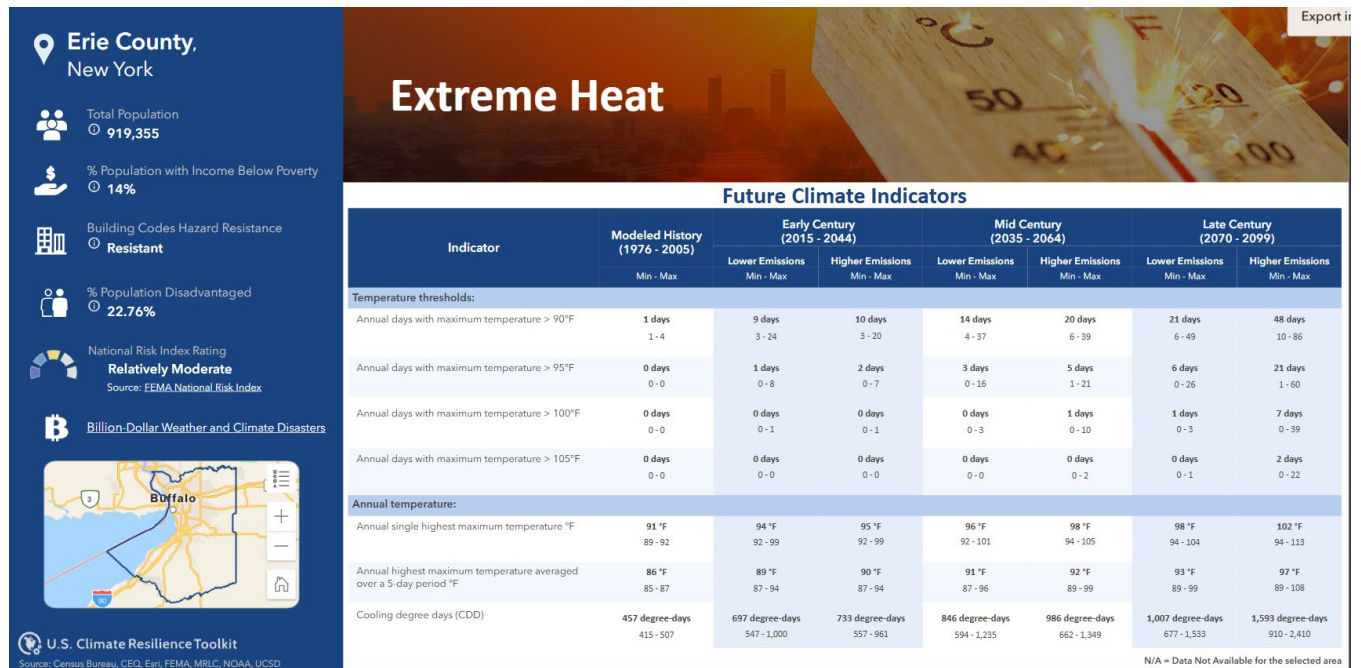


Figure D2

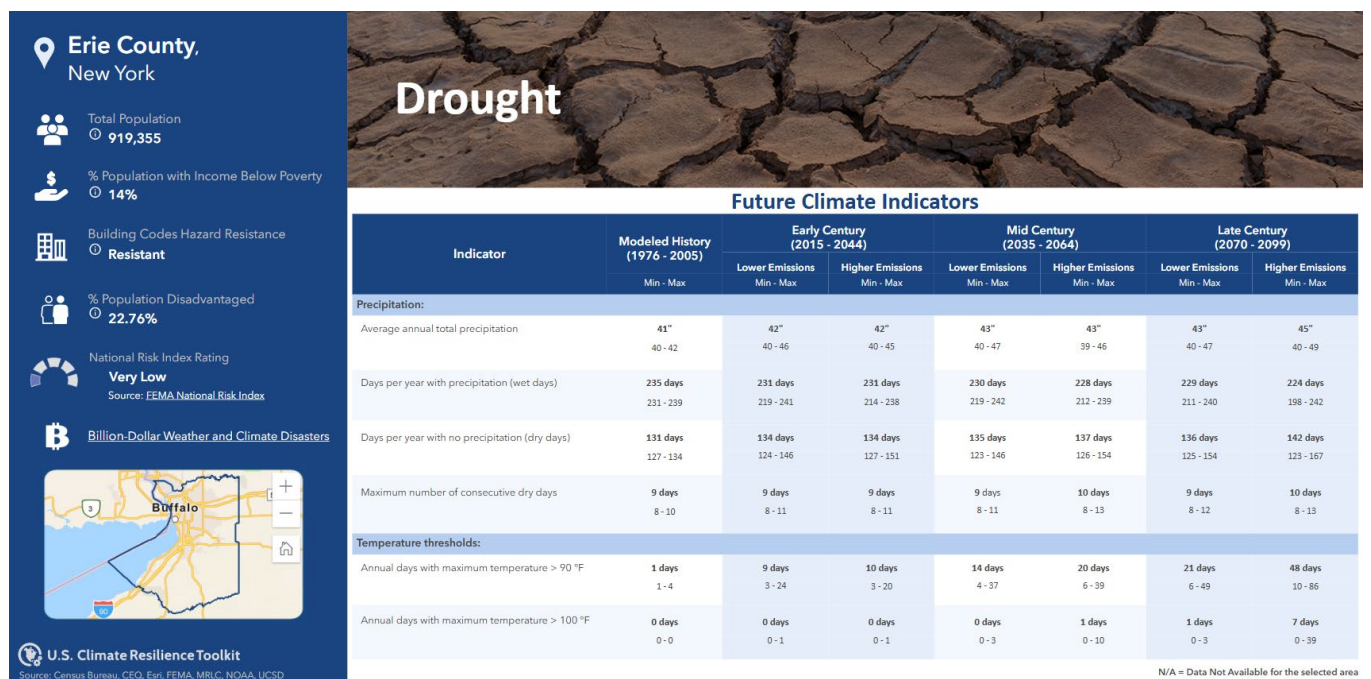


Figure D3



Figure D5

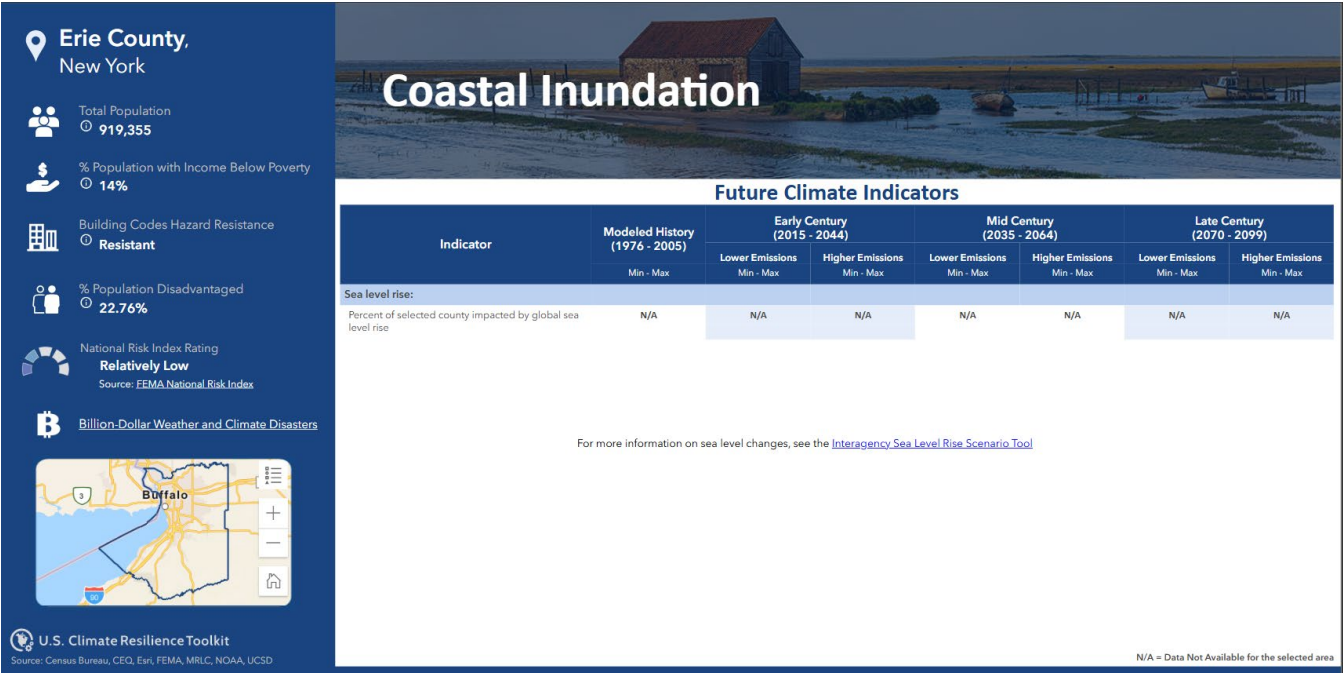


Figure D6

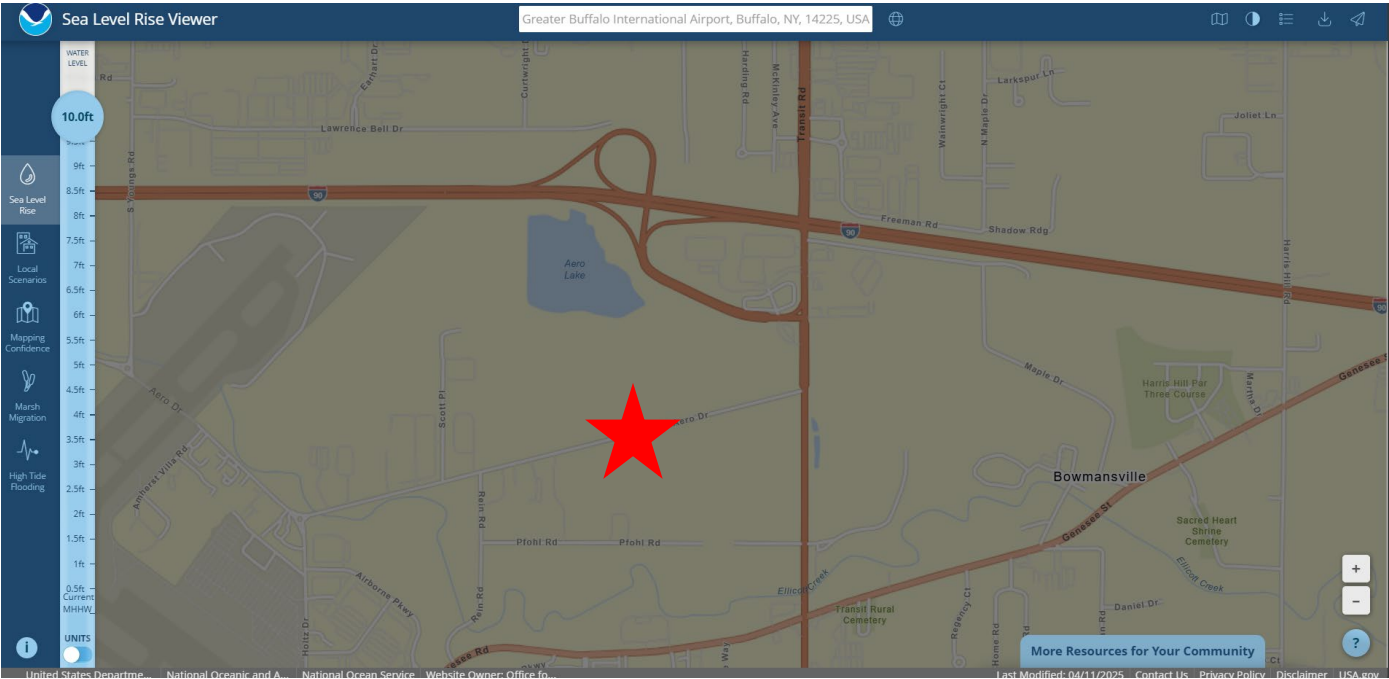


Figure D7

