Third Five-Year Review Report
Peter Cooper Superfund Site
Cattaraugus, New York

Prepared by

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

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Date

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LIST OF ABBREVIATIONS & ACRONYMS

BHHRA	Baseline Human Health Risk Assessment
bgs	below ground surface
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2-DCE	*cis*-1,2-dichloroethene
COC	Contaminants of Concern
EPA	United States Environmental Protection Agency
FMPA	Former Manufacturing Plant Area
FYR	Five-Year Review
GARC	Gowanda Area Redevelopment Corporation
GWQS	Groundwater Quality Standards
HI	Hazard Index
ICs	Institutional Controls
ILA	Inactive Landfill Area
IRIS	Integrated Risk Information System
MCL	Maximum Contaminant Level
mg/L	Milligrams/Liter
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Management
OM&M	Operation, Maintenance and Monitoring Manual
PCC	Peter Cooper Corporation
PCE	tetrachloroethene
PSDs	Performing Settling Defendants
PFAS	Per and Polyfluoroalkyl Substances
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RD	Remedial Design
RPM	Remedial Project Manager
ROD	Record of Decision
RI/FS	Remedial Investigation/Feasibility Study
SIU	Significant Industrial User
SLERA	Screening Level Ecological Risk Assessment
SMP	Site Management Plan
SWQS	Surface Water Quality Standards
UAO	Unilateral Administrative Order
ug/L	micrograms/liter
UU/UE	Unlimited Use and Unrestricted Exposure
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 pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (40 Code of Federal Regulations Section 300.430(f)(4)(ii)) and considering EPA policy. A FYR is required at this site since hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

This is the third FYR for the Peter Cooper Superfund site (also known as the Peter Cooper Landfill site) located in the Village of Gowanda, Cattaraugus County, New York. The triggering action for this statutory review is the signing date of the previous FYR, December 20, 2019.

The site consists of one operable unit, which is addressed in this FYR.

The Peter Cooper Superfund site FYR was led by Sherrel Henry, EPA Remedial Project Manager (RPM). Participants included: Liana Agrios, EPA hydrogeologist; Detbra Rosales, EPA ecological risk assessor; Marian Olsen, EPA human health risk assessor; Mike Basile, EPA community involvement coordinator (CIC) and Megan Kuczka, New York State Department of Environmental Conservation (NYSDEC) Project Manager. The Potentially Responsible Parties (PRPs) for the site were notified of the initiation of the FYR.

Site Background

The site is located off Palmer Street, in the Village of Gowanda, Cattaraugus County, New York (see Appendix C, Figure 1). The site consists of an inactive landfill and land associated with the former Peter Cooper Corporation (PCC) animal glue and adhesives manufacturing plant. The site is bounded to the north by Cattaraugus Creek (Creek), to the south by Palmer Street, to the west by a former hydroelectric dam and wetland area, and to the east by residential properties. Regionally, the Village of Gowanda is located both in Erie County and Cattaraugus County and is separated by the Creek. In Erie County, the Village of Gowanda is included in the Town of Collins. In Cattaraugus County, the Village of Gowanda is located in the Town of Persia. For purposes of the remedial investigation and feasibility study (RI/FS), the site was divided into two sections. The western section, called the inactive landfill area (ILA), is approximately 15.6 acres in size, and includes an additional five acres referred to as the “elevated fill subarea.” The westernmost portion of the elevated fill subarea is located on property owned by the New York State Electric & Gas Corporation. The eastern section of the site, the former manufacturing plant area (FMPA), is approximately 10.4 acres. The site was deleted from the National Priorities List (NPL) in September 2019.

Regional groundwater is a sole source of potable water and is designated as a drinking water source by NYSDEC, i.e., a "GA" classification. Industries, businesses, and residences obtain their drinking water from the Village of Gowanda municipal water supply.

The site is located in an area characterized by mixed industrial-commercial/residential usage. Residential zoning is the dominant parcel designation within the Village. Industrialized zones are primarily concentrated in the southeast portion of the Village, primarily along the Creek. The Creek is a surface

water body suitable for fishing and secondary recreation (not primary contact recreation such as swimming) but not as a drinking water supply. The site is located in an area zoned industrial.

From 1904 to 1972, the PCC and its predecessor, Eastern Tanners Glue Company, manufactured animal glue at the site. When the animal glue product line was terminated, PCC continued to produce synthetic industrial adhesives until the plant closed in 1985. The wastes from PCC's glue production were disposed of on the elevated fill subarea. Between 1925 and October 1970, PCC used the northwest portion of the property to pile sludge remaining after the animal glue manufacturing process stopped. These wastes, known as "cookhouse sludge" because of a cooking cycle that occurred just prior to extraction of the glue, are derived primarily from chrome-tanned hides obtained from tanneries. The waste material has been shown to contain elevated levels of chromium, arsenic, zinc, and several organic compounds.

Appendix A, Table 1 summarizes the chronology of events for the site; Appendix B, Table 2 provides the documents utilized to prepare this FYR.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Peter Cooper		
EPA ID: NYD980530265		
Region: 2	**State:** NY	**City/County:** Gowanda/Cattaraugus County
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? No	**Has the Site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Sherrel Henry		
Author affiliation: EPA		
Review period: 4/2/2024 - 11/30/2024		
Date of Site inspection: 11/25/2024		
Type of review: Statutory		
Review number: 3		
Triggering action date: 12/20/2019		
Due date *(five years after triggering action date)*: 12/20/2024		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In April 2000, EPA issued a unilateral administrative order (UAO) to fourteen respondents to perform the RI/FS of the site, subject to EPA oversight. Media sampled during the RI included landfill gas, groundwater, surface water, sediment, soil, waste material, and seepage emanating from the landfill.

The RI determined site soils to be contaminated with the following contaminants of concern (COCs): Metals, particularly arsenic and chromium, and volatile organic compounds (VOCs) including carbon tetrachloride, chloroform and tetrachloroethene (PCE). Groundwater was found to be contaminated with arsenic. A baseline human health risk assessment (BHHRA) and a screening level ecological risk assessment (SLERA) were conducted to provide a quantitative assessment of the human health risks and a qualitative assessment of risk to ecological receptors under current and future land use scenarios. The assessments assumed no remedial actions or institutional controls (ICs) to prevent exposure.

The BHHRA evaluated exposures to various reasonable maximally exposed individuals to all contaminants identified in the groundwater, soils, sediment, landfill gas and surface water. The EPA target cancer risk range is 1×10^{-6} (one in a million) to 1×10^{-4} (one in 10,000) and the goal of protection for non-cancer health effects of a Hazard Quotient = 1. The conclusions of the human health risk assessment are summarized below.

- *Future Outdoor Worker at the Inactive Landfill (ILA)*. Cancer risks and noncancer health hazards associated with exposures to the ILA from future ingestion of groundwater and soil. The cancer risks were 4×10^{-4} (4 in 10,000) and a noncancer hazard index (HI) = 2.3. The main contaminant was arsenic.

- *Future Industrial Worker at Former Manufacturing Plant (FMP)*. Cancer risks and noncancer health hazards from ingestion of groundwater and surface soils. The cancer risks were 4×10^{-4} (4 in 10,000) and an HI = 2 from future ingestion of arsenic in the groundwater and carbon tetrachloride, chloroform, and arsenic in surface soils.

- *Future Commercial Worker at Former Manufacturing Plant Area (FMPA)*. Cancer risks from exposures to carbon tetrachloride and chloroform and other VOCs were approximately 3×10^{-5} (3 in 100,000) and, for noncancer health effects, an HI = 2.3, with arsenic in groundwater as the primary risk driver.

- *Construction Worker Exposed to Hot Spots*. The hot-spot analysis found exposures to soil fugitive dust were associated with an HI =7.6. The noncancer HI to construction workers in the FMPA from soil fugitive dust exposure was an HI = 1.4.

The SLERA indicated the potential for ecological risk to site terrestrial receptors from organic and inorganic contaminants in soils. The food web model used in the SLERA indicated potential ecological risk from exposure to semi-volatile organic compounds (SVOCs) in soil, in particular polynuclear aromatic hydrocarbons, for terrestrial mammalian species. The SLERA also indicated potential risk to terrestrial receptors including terrestrial invertebrates and mammals from one or more inorganic chemicals in soil including arsenic, chromium, lead, and zinc.

Response Actions

Remedy Selection

For this site, remedial action objectives (RAOs) were only established for soil. The RAOs for soil are (1) to reduce or eliminate any direct contact threat associated with the contaminant soils/fill, (2) to minimize or eliminate contaminant migration from contaminated soils to the groundwater and surface water, and (3) to minimize or eliminate contaminant migration from groundwater to the Creek.

Based upon the results of the RI/FS, the Record of Decision (ROD) issued on September 30, 2005, called for the following remedial measures:

- Excavating three hot spot areas and consolidating waste from these areas within the elevated fill subarea, capping the five-acre elevated fill subarea of the inactive landfill area with a low permeability equivalent design barrier cap, consistent with the requirements of 6 New York Codes, Rules and Regulations Part 360;
- Seeding with a mixture of seeds to foster natural habitat;
- Conducting post-excavation confirmatory soil sampling;
- Backfilling the excavated areas with clean fill;
- Collecting the leachate seeps, pretreating the leachate as necessary, then discharging the leachate to the Publicly Owned Treatment Works collection system for further treatment and discharge;
- Performing long-term operation and maintenance including inspections and repairs of the landfill cap, gas venting, and leachate systems;
- Performing air monitoring, surface water and groundwater quality monitoring; and
- Evaluating site conditions at least once every five years to determine if the remedy remains protective.

To control risks posed by direct contact with soil in the ILA and the FMPA areas, the ROD identified soil cleanup levels for arsenic, chloroform, and carbon tetrachloride of 120 parts per million (ppm), 0.05 ppm and 0.33 ppm, respectively.

The remedy also included institutional controls (ICs) such as restrictive covenants and environmental easements for limiting future use of the site and the groundwater to ensure that the implemented remedial measures will not be disturbed and that the site will not be used for purposes incompatible with the completed remedial action. The ICs are being managed, in part, through a Site Management Plan (SMP) to ensure appropriate handling of subsurface soils during redevelopment.

To ensure that engineering controls and ICs remain in place and effective for the protection of public health and the environment, an annual certification, commencing from the date of implementation, July 28, 2009, has been required to be performed by the parties responsible for implementing the remediation.

Status of Implementation

In 2009, EPA concluded consent decree (CD) negotiations with a subgroup of the UAO recipients, identified as the performing settling defendants (PSDs), related to the performance of the design and implementation of the remedy called for in the ROD. On February 12, 2009, the Consent Decree (CD) was entered in the United States District Court. The ROD included provisions for the evaluation of the construction of a diversion wall around the elevated fill area in the event the wall would affect the planned remedial actions. In accordance with the ROD, EPA and NYSDEC concurred with the findings of an analysis performed by the PSDs prior to the entry of the CD, that the installation of an upgradient

groundwater diversion wall around the elevated fill subarea would not materially alter the effectiveness of the planned remedial measures; therefore, the diversion wall was not implemented.

In 2009, the remedial design (RD) report and design plans and specifications were implemented under a design build contract for site remediation. The RD report identified materials to be employed for major remedial components, construction requirements, quality control requirements, and measures to protect workers, the surrounding community, and the environment during the remedial work.

The excavation of the three "hotspot" areas of contaminated soil/fill was completed in August 2009. Soil excavated from these impacted areas was hauled to the elevated fill subarea of the ILA for placement and compaction prior to placing the soil cover system. The excavated areas were then backfilled with clean soil. Confirmatory sampling of the excavation sidewalls and bottom indicated arsenic and VOC concentrations that remained were below the site cleanup goals. Construction of the seep/groundwater collection system was substantially completed in November 2009. The construction of the collection system included the Creek bank regrading and bedrock channel excavation, the pump station installation, the pretreatment building construction, the force main piping, and the sanitary sewer tie-in. The seep/groundwater collection system was placed into full-time operation in May 2010, with operation and maintenance duties transferred to the Gowanda Area Redevelopment Corporation (GARC).

The final cap system was installed from August 2009 to July 2010. Containment/isolation with soil cover enhancement involved the following: clearing and grubbing the approximate five-acre elevated fill subarea; moderate regrading and/or filling of low spots across the five-acre area to facilitate runoff; supplementing existing cover to provide for a minimum of 18-inch thickness of a recompacted soil barrier layer and placement of six inches of topsoil over the five-acre area; and reseeding of the elevated fill subarea cover to provide for a good stand of grass that will foster natural habitat. Cover soils were tested to assure conformance with contaminant levels established under New York state law. Following construction of the cap, five passive gas vents were installed through the sludge fill in the elevated fill subarea to relieve gas buildup beneath the cover system. The vents were constructed with individual risers that extend to a sufficient height above ground surface to promote atmospheric dispersion of odor-causing constituents and prevent direct inhalation of vented gases by trespassers or future recreational site users.

EPA and NYSDEC conducted a final inspection of the constructed remedy on September 9, 2010. Based on the results of the inspection, it was determined that the site construction was complete and that the remedy was implemented consistent with the ROD. The PSDs and GARC are sharing responsibilities for management of the site in accordance with the SMP. The ROD called for the development of a SMP to provide for the proper management of all post-construction remedy components including an environmental easement that describes the ICs incorporated into the remedy and the requirement for certification that the ICs remain effective and in place.

Concurrent with completion of the RI/FS activities, the Village of Gowanda in association with the University at Buffalo Center for Integrated Waste Management developed a Reuse Assessment and Concept Plan for the site, in which it was concluded that the “highest and best use” of the property would be as a multi-use recreational facility. The Reuse Assessment and Concept Plan, funded in part by the EPA through its Superfund Redevelopment Initiative, envisions a publicly-available site incorporating elements such as a walking/biking trail, fishing access, outdoor picnic areas, small boat launch, and other related recreational features. The site has been redeveloped with all the features envisioned in the Reuse Assessment and Concept Plan, discussed above.

IC 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 (or planned)
Inactive Landfill Area (ILA)	Yes	Yes	Elevated fill subarea	Establishing ICs in the form of deed restrictions on future uses of the elevated fill subarea.	Environmental Easement/Restrictive Covenants, placed on the real property in March 2009.
Groundwater	Yes	Yes	Groundwater	Restrict future groundwater use at the site.	The New York State Department of Health (NYSDOH) State Sanitary Code regulates the installation of wells.

Systems Operations/Operation & Maintenance

Consistent with the future use of the property, following issuance of the ROD, the Village of Gowanda and the UAO recipients entered into discussions concerning the Village's redevelopment goals. An agreement was reached, and GARC took ownership of the site and agreed to perform certain post-remedial operation and maintenance and monitoring activities in exchange for provisions of specific, non-remedial construction activities and funding by the respondents to facilitate park redevelopment.

Long-term monitoring and maintenance activities, including an annual inspection, are being performed by Barton & Loguidice D.P.C (retained by GARC) and GARC in accordance with the post-remedial operation, maintenance, and monitoring (OM&M) Plan, Part I of the SMP. The primary activities associated with OM&M include the following:

- Visual inspection of the elevated fill subarea cover system with regard to vegetative cover, settlement, stability and any need for corrective action;
- inspection of the gas vents;
- inspection of the creek bank stabilization system;
- inspection of the groundwater/seep collection and pretreatment systems;[1]
- inspection of the condition of monitoring wells, including but not limited to working locks, adequate surface seals and protective casings, and sediment intrusion;
- monitoring of groundwater and surface water (semi-annually first three years, annually util 2018 and every 15 months, thereafter), and groundwater elevation; and
- submission of annual reports to EPA and NYSDEC summarizing the results of the OM&M activities.

[1] The leachate seep and groundwater collection and pretreatment system are monitored by GARC, the current property owner.

All sampling locations are depicted in Figures 2 and 3. In addition to media monitoring, OM&M activities include periodic certification that the ICs established in the environmental easement attached to the site property are unchanged and that nothing has occurred that would impair the ability to protect human health and the environment or otherwise constitute a violation or failure to comply with site controls. This certification is provided in the Periodic Review Report, submitted annually to EPA by the site owner.

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

III. PROGRESS SINCE THE LAST REVIEW

Table 2: Protectiveness Determinations/Statements from the 2019 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy is protective of human health and the environment.
Site wide	Protective	The implemented remedy for the Peter Cooper Superfund site is protective of human health and the environment.

There were no issues and recommendations identified in the last FYR.

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 Peter Cooper 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 CIC for the site, Michael Basile, posted a public notice on the EPA site webpage www.epa.gov/superfund/peter-cooper and provided the notice to the Village of Gowanda by email on September 26, 2024, 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 Peter Cooper Superfund site to ensure that the cleanup at the site continues to be protective of human health and the environment. Once the FYR is completed, the results will be made available at the following repository: Village of Gowanda, Village Hall, 27 East Main Street, Gowanda, NY 14070. In addition, the final report will be posted on the following EPA website: www.epa.gov/superfund/peter-cooper. Efforts will be made to reach out to local public officials to inform them of the results.

Data Review

The primary objectives of the implemented remedy are to control the source of contamination at the site, to reduce and minimize the migration of contaminants into the groundwater and the Creek and to minimize any potential human health and environmental impacts resulting from exposure to contamination at the site. These objectives were accomplished by the construction of a containment system and the removal of hotspots. A long-term monitoring program was designed to ensure the implemented remedy remains effective.

The long-term monitoring program activities being implemented by the PSDs include the annual inspection of the landfill cover system; monitoring of the gas venting system; groundwater level monitoring; collection of groundwater samples from selected wells; monitoring status of the ICs; and providing annual reports on these activities to NYSDEC and EPA. GARC is responsible for monitoring of the leachate and groundwater collection and pretreatment systems.

The second FYR allowed for the following changes in the long-term monitoring program:

- Performing groundwater sampling every fifth quarter, instead of annually.
- Performing groundwater level measurements every fifth quarter, instead of annually.

Cover System Inspection

The landfill cover system is inspected for loss of slope, surface material erosion, insufficient vegetative cover growth, erosion of vegetative cover, and areas of surface settlement. The bank stabilization system is inspected to ensure the erosion control remains in place. The results of the inspections are reported in annual post-closure field inspection reports. The most recent inspection performed on November 22, 2023 indicated the cover system is in good condition with well-established vegetative cover; and the riprap remains in place with no visual or olfactory evidence of leachate breakout.

Gas-Venting System Inspection

Gas vents are inspected annually for physical integrity, as well as monitored for explosive gases and hydrogen sulfide at the point of vent discharge. The most recent inspection conducted on November 22, 2023 indicated that the gas-vent monitoring system is intact and operational with no objectionable odors noted.

Groundwater Elevation Level Monitoring

Static water level measurements were collected from seven shallow monitoring wells (MW-7S, MWFP-2S, MWFP-3S, MW-2SR, MW-5, MW-6, MW-1SR) between December 2019 and December 2023 and were reviewed to determine if any changes in the direction of groundwater flow occurred over this time period. Based on the results of the groundwater elevation monitoring performed from 2019 to 2023, the inferred groundwater flow directions indicate that shallow groundwater migrates north-westerly towards Cattaraugus Creek, which is consistent with observations recorded during the site RI. There are no significant changes in the direction of groundwater flow and the monitoring well network is adequate for determining the groundwater gradient.

Leachate Seep/Groundwater Collection and Pretreatment System

The Village of Gowanda, on behalf of GARC, submits annual reports and all reports indicate that all effluent samples collected per the Significant Industrial User (SIU) discharge permit have been in conformance with permit limits since the collection system was implemented in 2010. In addition, the ROD identified the possible use of pretreatment with oxidant but introduction of this chemical has not been required to achieve sulfide discharge limits. Consequently, the Village of Gowanda issued a revised permit reducing the requirement for pretreatment.

Groundwater Quality Monitoring

The first groundwater and surface water sampling event to be collected on a fifteen-month basis was performed in March 2020. Additional groundwater sampling events were conducted in June 2022, September 2022 and December 2023. Groundwater samples were collected from five monitoring wells (MWs) at the site. Samples were analyzed for inorganic parameters (total metals), VOCs (chlorinated aliphatics only), and water quality parameters (ammonia, hardness, chloride, and total sulfide). Total metals analyses included hexavalent chromium, total chromium, arsenic, and manganese. Groundwater results were compared to the more stringent of the New York State Groundwater Quality Standards (GWQS) or federal maximum contaminant levels (MCLs).

The sample results are discussed below.

VOCs: VOC concentrations were either not detected (non-detect) or below the State GWQS and federal MCLs at all monitoring well locations, with the exception of PCE in one well during one sampling event. PCE was detected above the regulatory standard of 5 ug/L at a concentration of 12 ug/L at MWFP-3S during the 2022 sampling event. This VOC exceedance is not considered significant.

Metals: Manganese exceeded the State GWQS of 0.3 mg/L during multiple sampling events in monitoring wells MW-1SR, MW-5S, MW-7S, MWFP-2S, MWFP-3S with concentrations ranging from 0.34 mg/L to 3.7 mg/L. The highest concentration of 3.7 mg/L was detected in upgradient well MW-1SR which indicates manganese is likely naturally occurring in groundwater. A federal MCL for manganese does not exist. A secondary screening criteria of 0.05 mg/L has been established as an aesthetic parameter. These parameters will continue to be monitored. Concentrations reported for hexavalent chromium, total chromium and arsenic were non-detect or below regulatory standards at all monitoring locations.

Sulfide, Chloride and Ammonia: The water quality parameters reported for all sampling events were non-detect or below the State GWQS and federal secondary screening criteria for chloride at all sampling locations. A federal MCL for chloride does not exist. Ammonia was detected above the State GWQS of 2 mg/L during all monitoring events at concentrations ranging from 2.6 mg/L to 17 mg/L. However, ammonia was also detected in the upgradient monitoring well, so the exceedances are not considered to be site-related. In addition, sulfide exceeded the State GWQS of 0.05 mg/L in MW-5S at a concentration of 1.6 mg/L. Federal MCLs or secondary screening criteria do not exist for sulfide and ammonia. These parameters will continue to be monitored.

Emerging Contaminants

Emerging contaminants groundwater sampling was conducted on June 21, 2019 at the request of NYSDEC to evaluate the presence/absence of per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane at the site. To evaluate conditions, three downgradient monitoring wells (MW-5S, MWFP-2S and MWFP-3S) and two upgradient monitoring wells (MW-1SR and MW-7S) were selected for sampling. Since then, New York State has established MCLs of 1 microgram/liter (ug/l) and 10 nanograms per liter (ng/l) for 1,4-dioxane and perfluorooctanoic acid (PFOA)/ perfluorooctane sulfonic acid (PFOS), respectively. In addition, EPA finalized federal MCLs for PFOA and PFOS which consists of 4 ng/l for each compound in April 2024.

1,4-Dioxane was not detected (ND < 0.01 ug/L), and the detection limit was below the current MCLs. PFOS was only detected in one well at an estimated concentration of 6.9J (MWFP3). This result was below the state MCL of 10 ng/l but slightly exceeds EPA's MCL of 4 ng/l. However, the concentration was an estimated value. PFOA was also only detected at one well at a concentration of 6.1J (MW-5S-

duplicate sample). This detection was below the state MCL of 10 ng/l but slightly exceeds EPA's MCL of 4 ng/l. However, the concentration was an estimated value and was also detected in the field blank. EPA will continue to work with NYSDEC to determine whether further sampling at this site for these chemicals is necessary.

Groundwater Conclusions

Overall, the groundwater data review indicates that the low levels of contamination in site groundwater are attenuating and groundwater quality has improved compared to baseline levels measured prior to commencement of remedial activities. In general, the data indicate minor/seasonal changes in concentration for the monitored parameters at each of the sample locations with no upward trending.

These data support the assumption set forth in the ROD that the groundwater contamination is localized and the decrease in detection frequency and concentration indicate that residual groundwater contamination is attenuating.

The environmental easement placed on the site property restricts the use of groundwater as a source of potable or process water unless groundwater quality standards are met. Groundwater quality will continue to be monitored in accordance with the SMP.

Results of Surface Water Samples

Surface water samples were collected from three locations along the Creek at the same time as the groundwater samples were obtained from 2019 through 2023. Samples were also analyzed for inorganic parameters (total metals), VOCs (chlorinated aliphatics only) and water quality parameters (ammonia, hardness, chloride, total sulfide). Total metals analyses include hexavalent chromium, total chromium, arsenic, and manganese.

VOCs, arsenic, hexavalent chromium, total chromium, manganese, ammonia, chloride, and sulfide were not detected or were below Surface Water Quality Standards (SWQS) at all surface water sampling locations during this FYR period.

The surface water data review indicates no observed impact from the site to the Creek. This indicates that there is no contaminated groundwater plume emanating from the landfill area. Surface water quality will continue to be monitored in accordance with the SMP.

Site Inspection

The inspection of the site was conducted on November 25, 2024. In attendance were Sherrel Henry, EPA-RPM; Megan Kuczka, NYSDEC Project Manager; and Michael Hutchinson, Wanda Koch and John Walgus, GARC Board Members. The purpose of the inspection was to assess the protectiveness of the remedy. No issues or adverse conditions were observed.

During the site inspection, there were no problems or deviations observed with respect to the ongoing operation and maintenance activities.

V. TECHNICAL ASSESSMENT

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

The remedy is functioning as intended by the 2005 ROD. COCs identified in the ROD include arsenic, chromium, zinc, chloroform and carbon tetrachloride. COC concentrations in groundwater and surface water samples over the past five years were either not detected or sporadically detected slightly above regulatory standards. Analysis of geochemical parameters has shown that ammonia is consistently detected above regulatory standards in all wells. However, the highest concentrations have been identified in the upgradient well indicating that its presence is not limited to the site. In addition, measurement of oxidation-reduction potential indicate that geochemical conditions have changed over time, from reducing conditions to more oxidizing conditions in groundwater during the past ten years. A tendency toward a more oxidizing (less reducing) environment would result from a decreasing volume of leachate entering the groundwater beneath the landfill. Also, the leachate collection system is designed to reduce leachate generation and is functioning as intended.

Overall groundwater sampling results have demonstrated an improvement in water quality since the RI/FS was conducted in 2004. During this FYR, COCs were not detected in the majority of the monitoring wells sampled and surface water samples did not reveal any observed impacts from the site to the Creek. The SMP for the site outlines the PSD OM&M and IC requirements. The ICs are in place and ensure that future land use is consistent with the SMP and that groundwater use as a drinking water supply is restricted.

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

There are no changes in the physical conditions of the site or site uses that would affect the protectiveness of the selected remedy. The exposure assumptions and toxicity values that were used to estimate the potential cancer risks and noncancer hazards in the HHRA supporting the 2005 ROD, and the hot spot analysis, followed the Risk Assessment Guidance for Superfund. The process that was used in the HHRA remains valid. The selected remedy was designed to prevent exposure to contaminated soil and reduce the migration of hazardous substances, pollutants and contamination from the soil to the surrounding soil or groundwater. Implementation of the selected remedy, including the excavation of the hotspot area, the construction of the cap and the placement of ICs on the property have effectively prevented exposures to COCs on the site. The RAOs and cleanup levels are still valid. In addition, given that community residents receive drinking water from the Public Water Supply of the Village of Gowanda, the human exposure pathways have been interrupted.

The Basis for Taking Action Section above describes noncancer hazards greater than an HI = 1 and the risk range associated with future consumption of groundwater by the outdoor park worker and industrial worker. Arsenic was the main COC identified in groundwater. Currently, the cancer and noncancer toxicity file for arsenic continues to be updated through the Integrated Risk Information System (IRIS) process that provides toxicity values that are used Agency-wide in the development of HHRAs. In addition, a relative bioavailability value was developed for arsenic, but this value does not significantly change the calculated cleanup goal for arsenic. The health hazards from exposure to these chemicals will need to be addressed when the IRIS toxicity values for arsenic are finalized in a subsequent FYR. There have been no changes in the toxicity values for chloroform and the assessment of the toxicity continues through the IRIS program.

This vapor intrusion pathway was not evaluated based on the nature of the contamination (i.e., metals) and consistent with the 2015 final Office of Solid Waste and Emergency Response (OSWER) *Technical*

Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air (EPA530-D-02-004). This guidance indicates evaluation of this pathway is not appropriate when the residence is more than 100 feet from the site and where the COCs are not volatile. The closest residence is over 100 feet from the site and the main COCs are metals that are not volatile. Therefore, vapor intrusion was not evaluated further.

Ecological risk: The soil excavation and capping eliminate any potential risk from surface soil contaminants to terrestrial receptors. The surface water monitoring data indicated the concentrations are similar to those up gradient of the site and the exposure assumptions for aquatic receptors are still valid.

Although the ecological risk assessment screening and toxicity values used to support the 2005 ROD may not necessarily reflect the current values, the soil excavation and capping eliminate any potential risk from surface soil contaminants to terrestrial receptors.

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

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU1

This report did not identify any issue or make any recommendation for the protection of public health or the environment which was not included or anticipated by the site decision documents.

VII. PROTECTIVNESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU1	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy is protective of human health and the environment.	

Sitewide Protectiveness Statement
Protectiveness Determination: Protective
Protectiveness Statement: The implemented remedy for the Peter Cooper site is protective of human health and the environment.

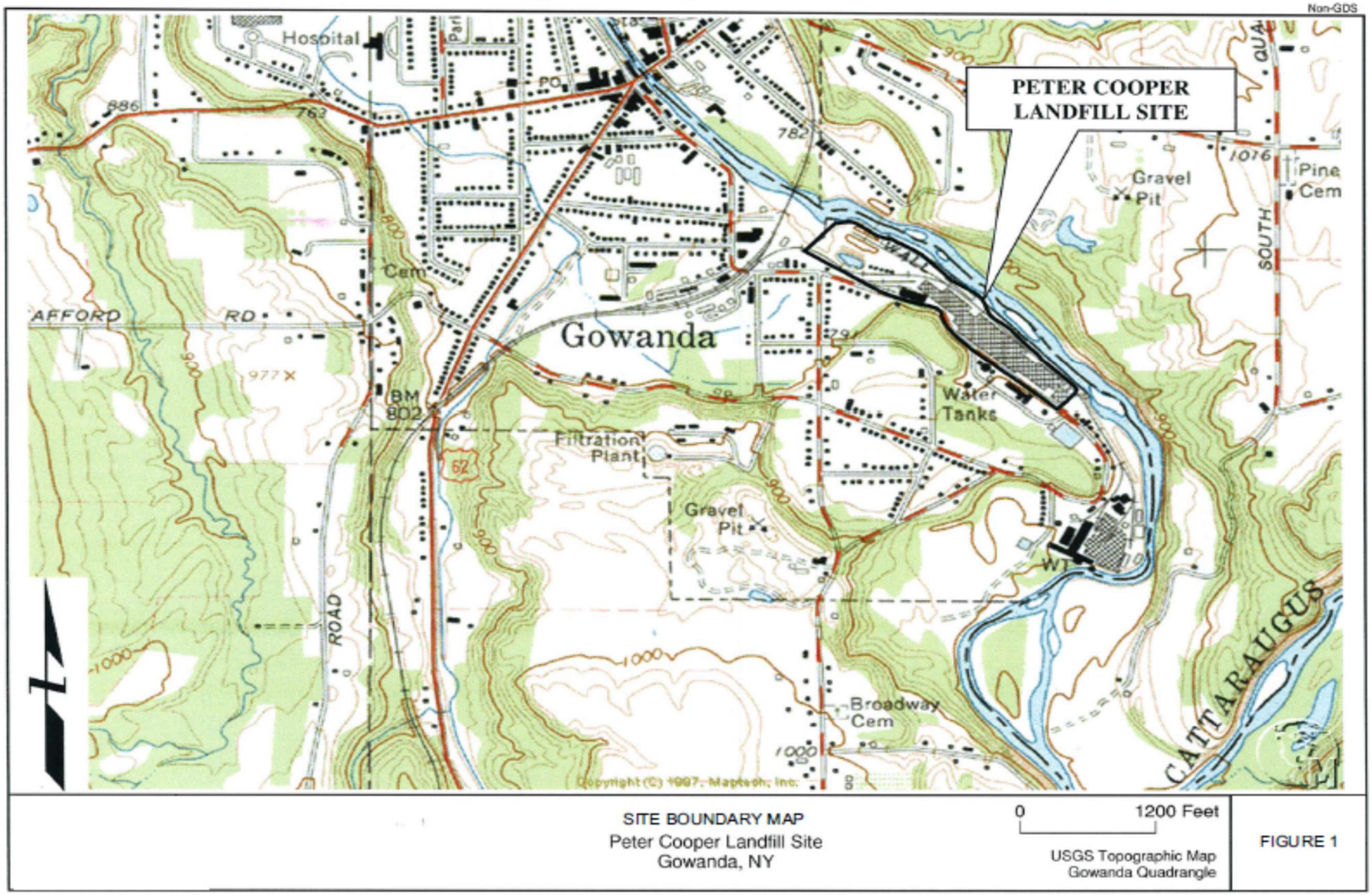
VIII. NEXT REVIEW

The next FYR for the Peter Cooper site is required five years from the completion date of this review.

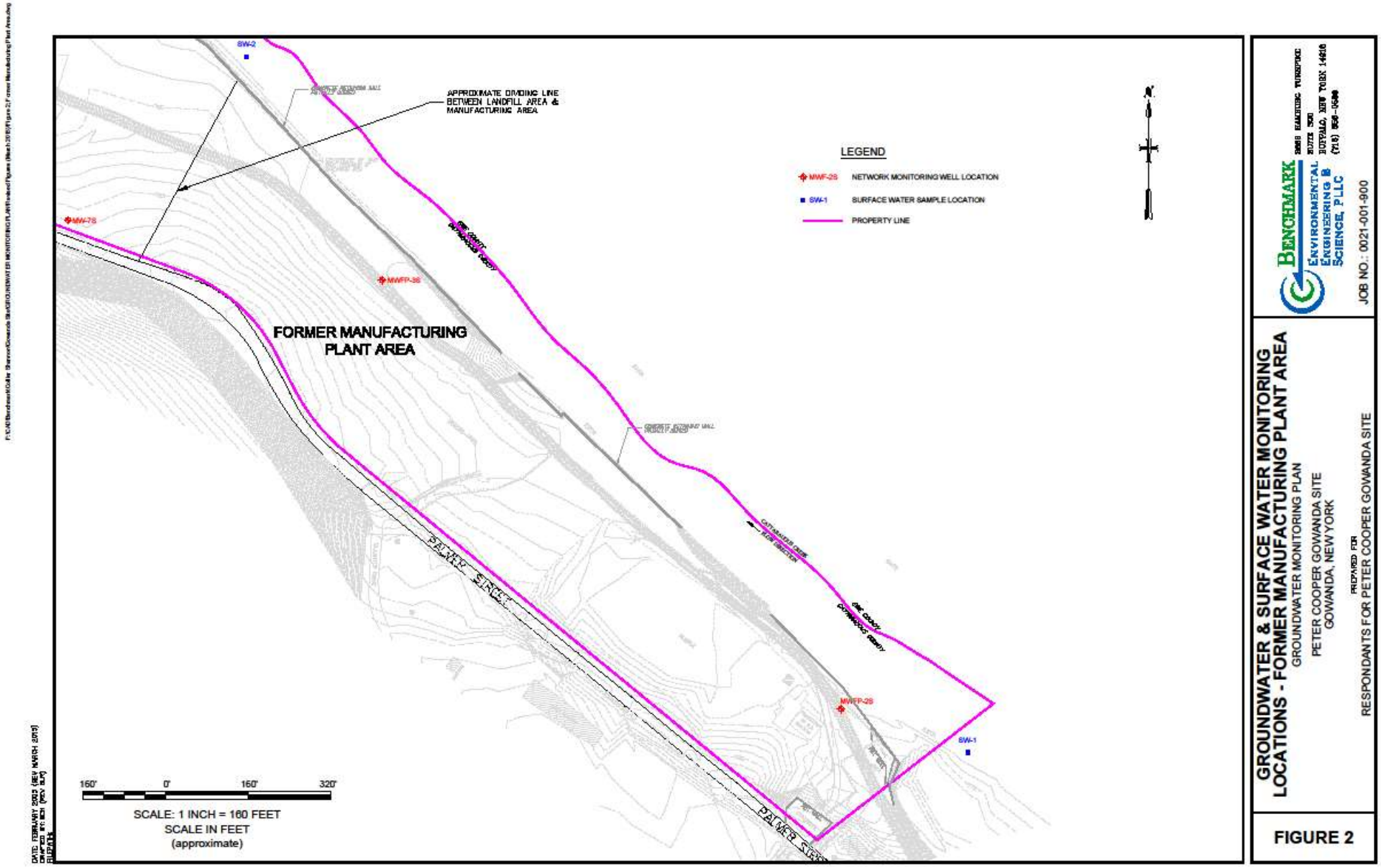
Appendix A: Reference List	
Document Title	**Date**
Record of Decision, Peter Cooper Landfill Site	September 2005
Preliminary Site Close Out Report	September 2010
Site Management Plan	October 2010
Final Remedial Action Report	March 2012
Post-Remedial Groundwater Monitoring and Maintenance Summary Report, 2020 Annual Event	February 2021
Post-Remedial Groundwater Monitoring and Maintenance Summary Report, 2021 Annual Event	February 2022
Post-Remedial Groundwater Monitoring & Maintenance Summary Report, 2022 Fifth Quarter Event	July 2023
Post-Remedial Groundwater Monitoring & Maintenance Summary Report 2023 Fifth Quarter Event	February 2024

Appendix B: Chronology of Site Events	
Event	**Date(s)**
Initial discovery of problem or contamination	1971
Pre-NPL responses	1972-1975, 1996
Final NPL listing	April 6, 1998
Unilateral administrative order issued	March 30, 2000
Remedial Investigation/Feasibility Study complete	October 4, 2006
ROD signature	October 4, 2006
Remedial design start	April 2008
Enforcement documents (Consent Decree entry by the Court)	February 2009
Remedial action start	July 6, 2009
Remedial design complete	October 2009
Remedial Action Construction completion	August 2010
Construction completion date	September 2010
Site Management Plan completion	October 2010
Final Remedial Action Report completion	March 2012
First FYR conducted by EPA	April 2015
Deleted from the NPL	September 2019
Second FYR conducted by EPA	December 2019

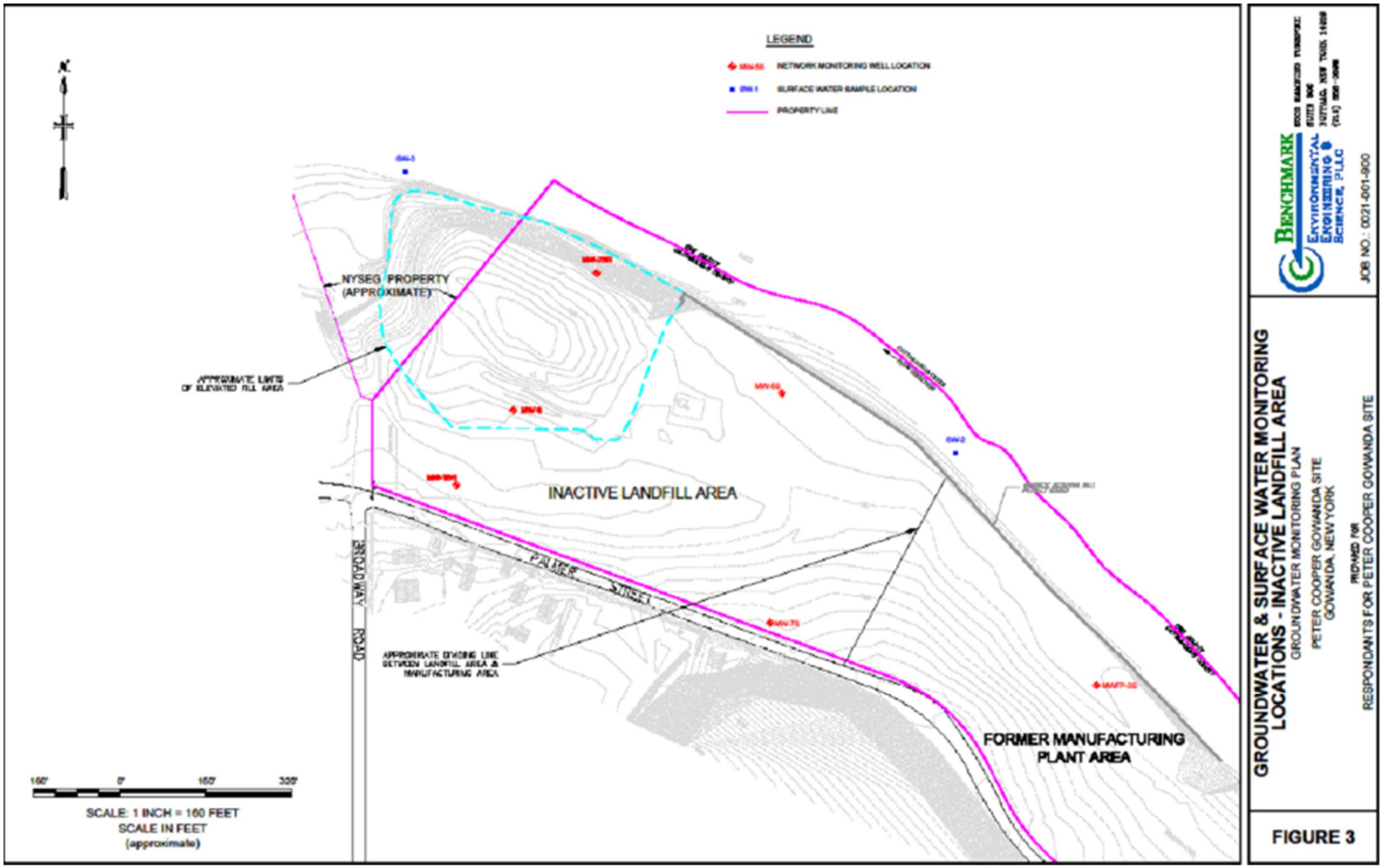
Appendix C, Figure 1: Site Map



Appendix C, Figure 2: Groundwater and Surface Water Monitoring Location Map-FMPA



Appendix C, Figure 3: Groundwater and Surface Water Monitoring Location Map-ILA



Appendix D: Climate Change Evaluation

APPENDIX D– CLIMATE CHANGE SCREENING TOOLS

In accordance with regional practice, three climate change tools were utilized to assess the Peter Cooper site in the Village of Gowanda, Cattaragus County, New York. Screenshots from each of the tools assessed are included below.

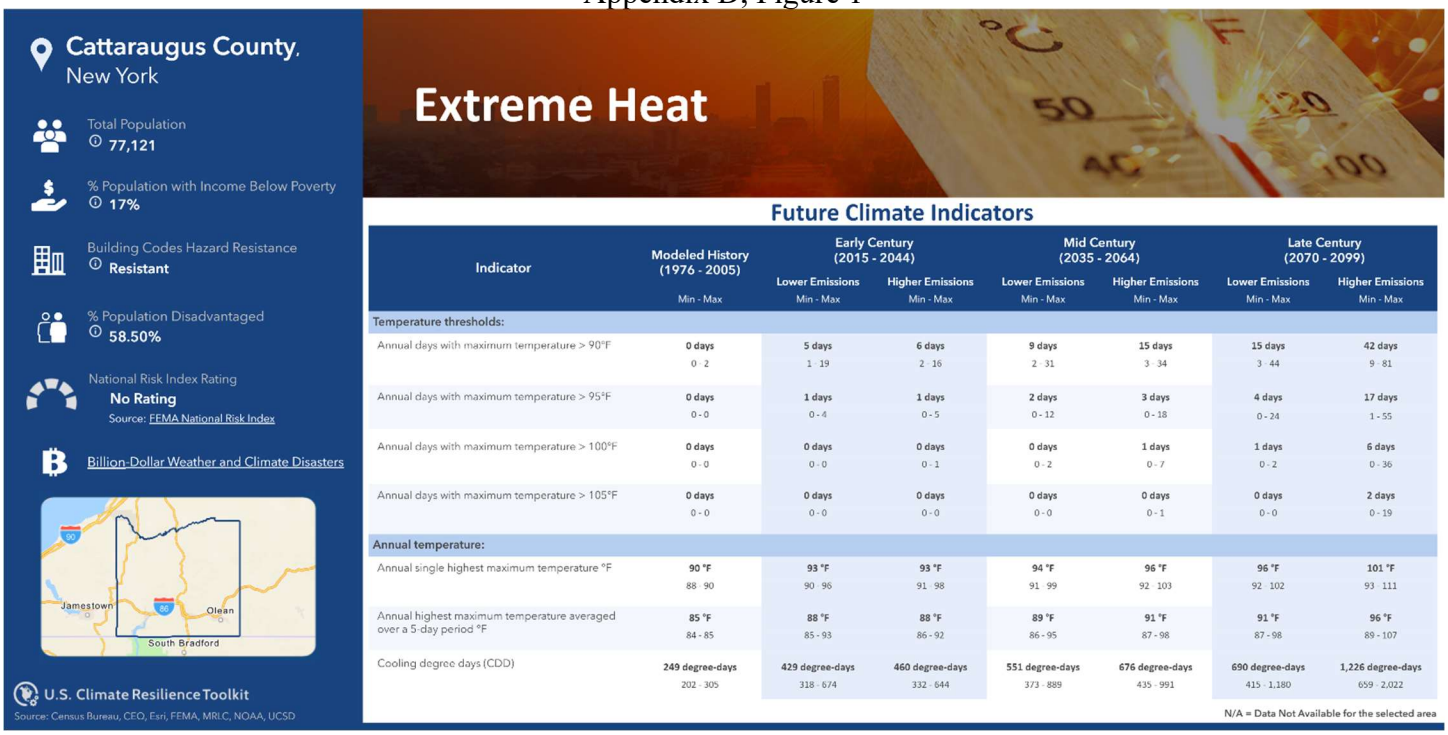
The first tool used to assess the site is the *Climate Mapping for Resilience & Adaptation (CMRA) Assessment Tool*, version 1.3.1. According to this tool, the National Risk Index Rating for extreme heat is "Relatively low". There is a projected increase of days per year with maximum temperatures >100°F, Appendix D, Figure 1. The four other climate hazards evaluated by this tool – drought, flooding, wildfire, and coastal flooding - each have a National Risk Index Rating of "Very Low." Appendix D, Figures 2 and 3 show an increase in average annual total precipitation and a decrease in days per year with precipitation, respectively. Appendix D, Figure 4 shows an increase in annual days with precipitation over one inch. As shown in Figure 5, the percent of the county impacted by global sea level rise has no rating, due to the inland location of the site.

The second tool utilized is called the *National Oceanic and Atmospheric Administration (NOAA) Sea Level Rise Viewer*. Appendix D, Figure 6 shows the current mean higher high-water elevation while Appendix D, Figure 7 shows the impacts of sea level rise of 10 feet. This tool shows the site location will not be impacted by sea level rise, which corresponds with the CMRA tool.

The final tool utilized is called the *United States Geological Society (USGS) National Landslide Inventory*. Appendix D, Figure 8 shows landslide activity in the area of the site. The site has not experienced landslide activity in the past and is likely not susceptible to future landslide activity.

Despite changing climate trends, the low magnitude of climate change hazards identified above are not expected to have impacts at the site. OM&M consists of periodic site inspections, landfill maintenance and monitoring and groundwater monitoring. Additional inspections of the site are performed after severe weather events as well and this will continue into the future. Therefore, potential site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate change in the region and near the site.

Appendix D, Figure 1

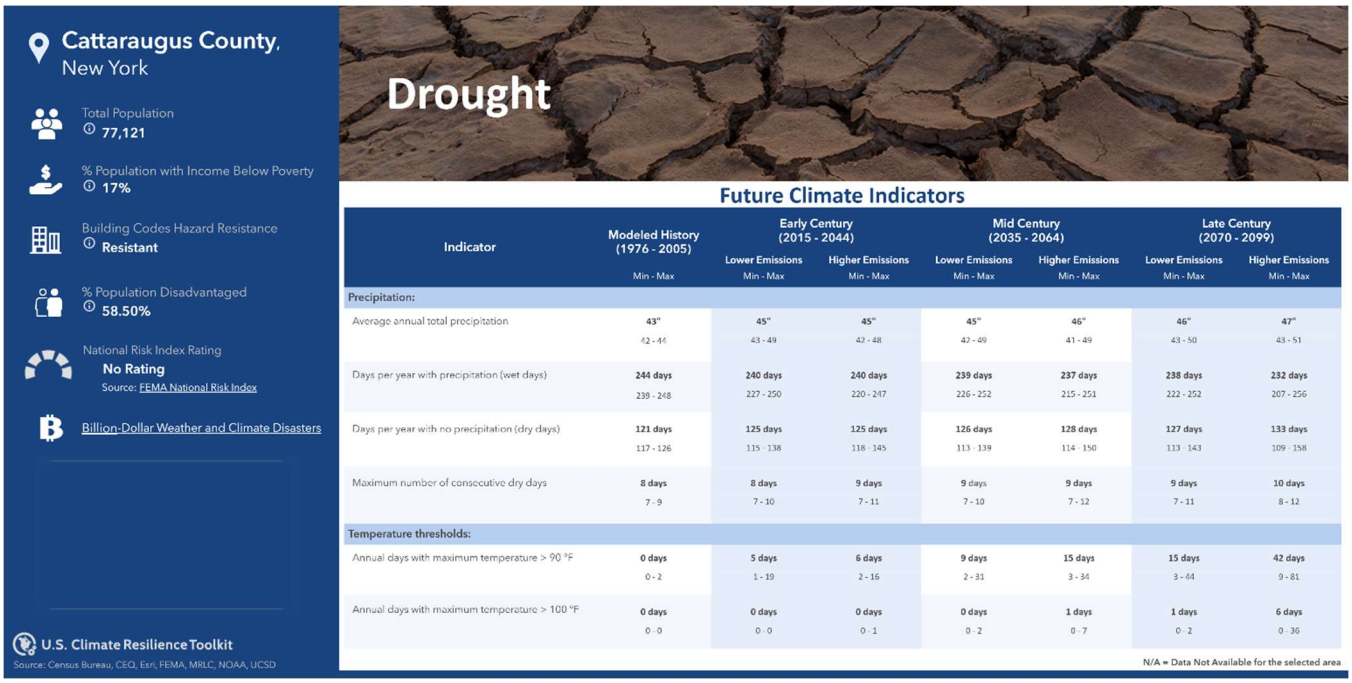


Future Climate Indicators

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	0 days 0 - 2	5 days 1 - 19	6 days 2 - 16	9 days 2 - 31	15 days 3 - 34	15 days 3 - 44	42 days 9 - 81
Annual days with maximum temperature > 95°F	0 days 0 - 0	1 days 0 - 4	1 days 0 - 5	2 days 0 - 12	3 days 0 - 18	4 days 0 - 24	17 days 1 - 55
Annual days with maximum temperature > 100°F	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1	0 days 0 - 2	1 days 0 - 7	1 days 0 - 2	6 days 0 - 36
Annual days with maximum temperature > 105°F	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1	0 days 0 - 0	2 days 0 - 19
Annual temperature:							
Annual single highest maximum temperature °F	90 °F 88 - 90	93 °F 90 - 96	93 °F 91 - 98	94 °F 91 - 99	96 °F 92 - 103	96 °F 92 - 102	101 °F 93 - 111
Annual highest maximum temperature averaged over a 5-day period °F	85 °F 84 - 85	88 °F 85 - 93	88 °F 86 - 92	89 °F 86 - 95	91 °F 87 - 98	91 °F 87 - 98	96 °F 89 - 107
Cooling degree days (CDD)	249 degree-days 202 - 305	429 degree-days 318 - 674	460 degree-days 332 - 644	551 degree-days 373 - 889	676 degree-days 435 - 991	690 degree-days 415 - 1,180	1,226 degree-days 659 - 2,022

N/A = Data Not Available for the selected area

Appendix D, Figure 2



Future Climate Indicators

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:							
Average annual total precipitation	43" 42 - 44	45" 43 - 49	45" 42 - 48	45" 42 - 49	46" 41 - 49	46" 43 - 50	47" 43 - 51
Days per year with precipitation (wet days)	244 days 239 - 248	240 days 227 - 250	240 days 220 - 247	239 days 226 - 252	237 days 215 - 251	238 days 222 - 252	232 days 207 - 256
Days per year with no precipitation (dry days)	121 days 117 - 126	125 days 115 - 138	125 days 118 - 145	126 days 113 - 139	128 days 114 - 150	127 days 113 - 143	133 days 109 - 158
Maximum number of consecutive dry days	8 days 7 - 9	8 days 7 - 10	9 days 7 - 11	9 days 7 - 10	9 days 7 - 12	9 days 7 - 11	10 days 8 - 12
Temperature thresholds:							
Annual days with maximum temperature > 90 °F	0 days 0 - 2	5 days 1 - 19	6 days 2 - 16	9 days 2 - 31	15 days 3 - 34	15 days 3 - 44	42 days 9 - 81
Annual days with maximum temperature > 100 °F	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1	0 days 0 - 2	1 days 0 - 7	1 days 0 - 2	6 days 0 - 36

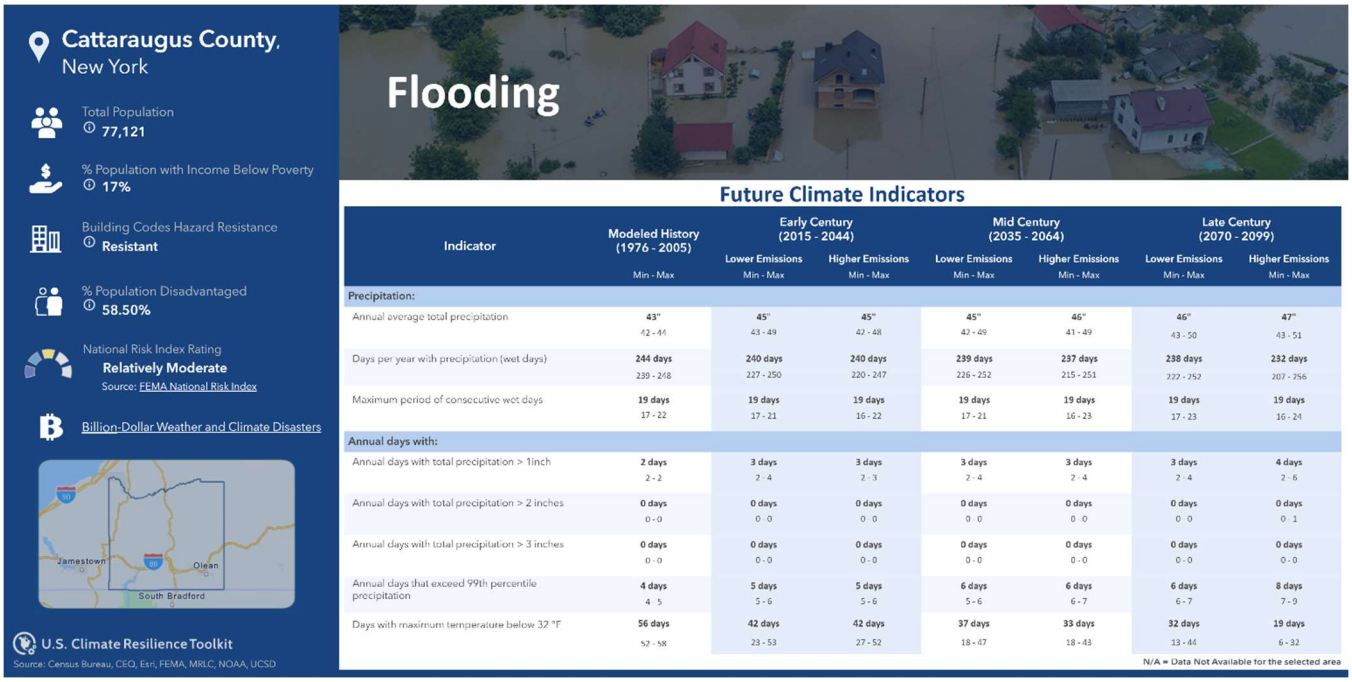
N/A = Data Not Available for the selected area

Appendix D, Figure 3

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:							
Days per year with no precipitation (dry days)	**121 days** 117 - 126	**125 days** 115 - 138	**125 days** 118 - 145	**126 days** 113 - 139	**128 days** 114 - 150	**127 days** 113 - 143	**133 days** 109 - 158
Maximum number of consecutive dry days	**8 days** 7 - 9	**8 days** 7 - 10	**9 days** 7 - 11	**9 days** 7 - 10	**9 days** 7 - 12	**9 days** 7 - 11	**10 days** 8 - 12
Days per year with precipitation (wet days)	**244 days** 239 - 248	**240 days** 227 - 250	**240 days** 220 - 247	**239 days** 226 - 252	**237 days** 215 - 251	**238 days** 222 - 252	**232 days** 207 - 256
Temperature thresholds:							
Annual days with maximum temperature > 90°F	**0 days** 0 - 2	**5 days** 1 - 19	**6 days** 2 - 16	**9 days** 2 - 31	**15 days** 3 - 34	**15 days** 3 - 44	**42 days** 9 - 81
Annual days with maximum temperature > 100°F	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 1	**0 days** 0 - 2	**1 days** 0 - 7	**1 days** 0 - 2	**6 days** 0 - 36

N/A = Data Not Available for the selected area

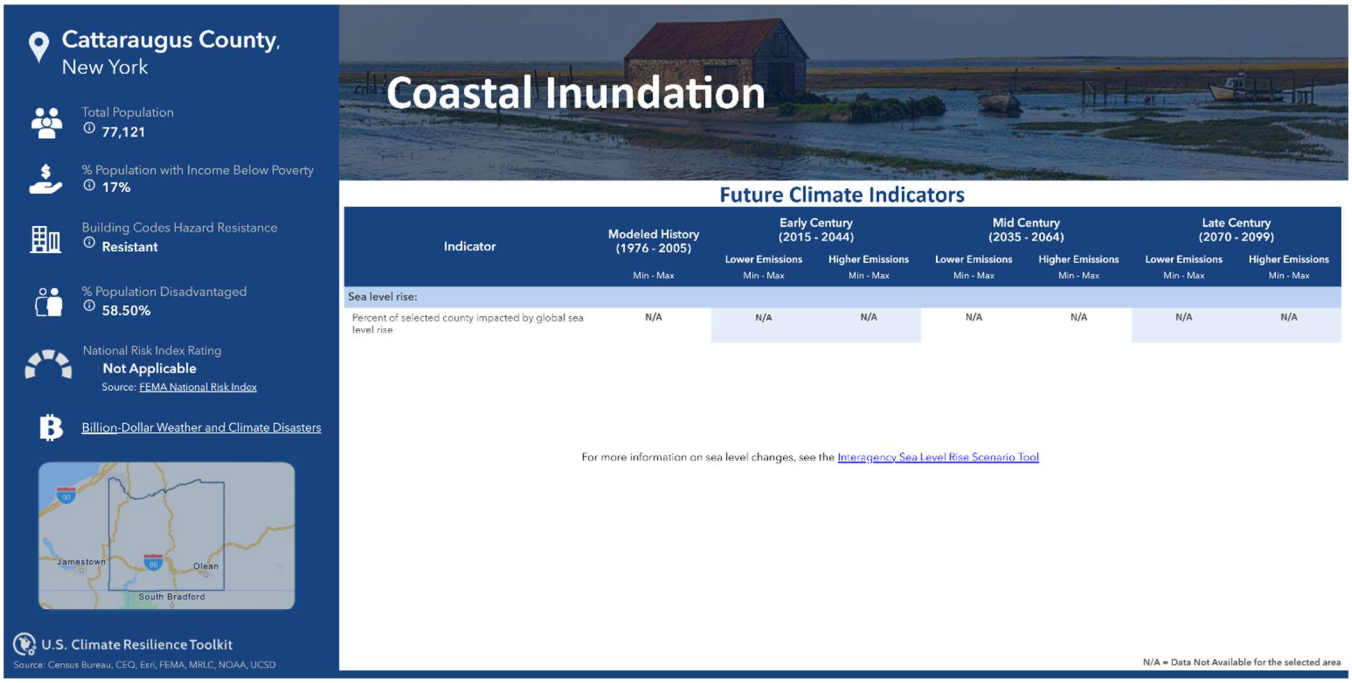
Appendix D, Figure 4



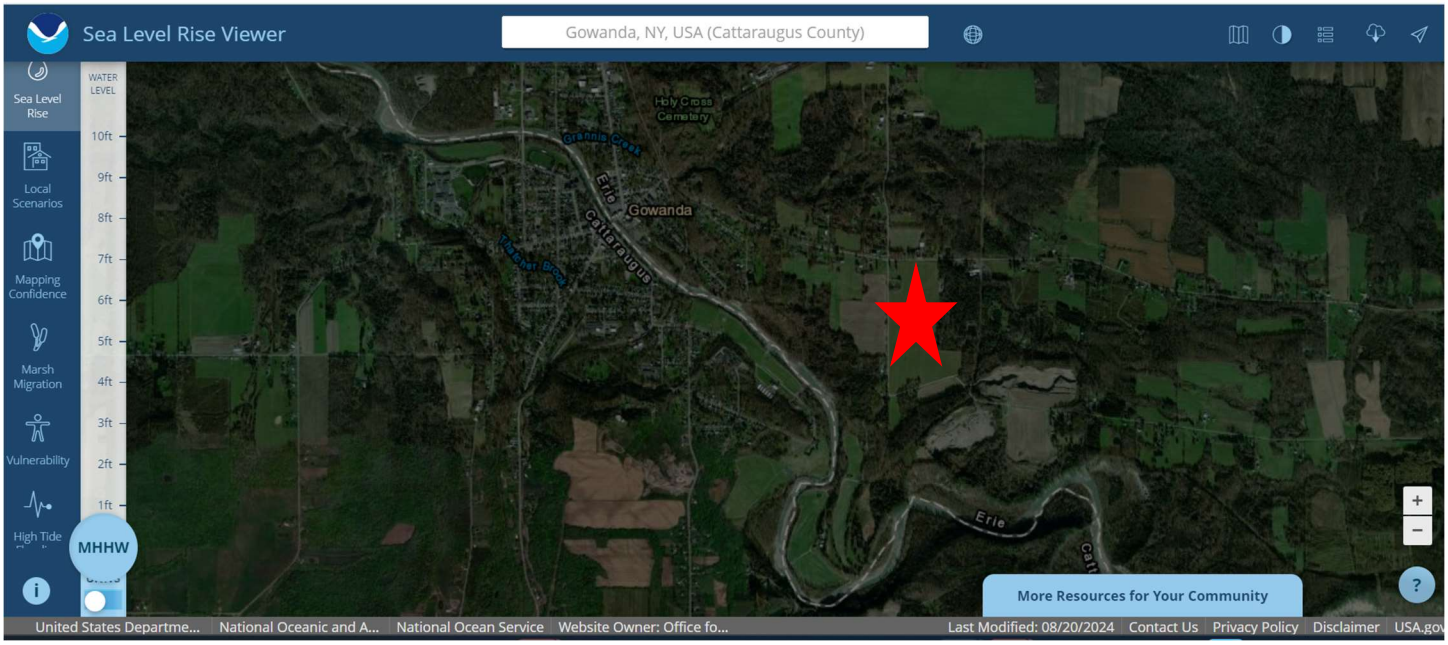
Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Annual average total precipitation	**43"** 42 - 44	**45"** 43 - 49	**45"** 42 - 48	**45"** 42 - 49	**46"** 41 - 49	**46"** 43 - 50	**47"** 43 - 51
Days per year with precipitation (wet days)	**244 days** 239 - 248	**240 days** 227 - 250	**240 days** 220 - 247	**239 days** 226 - 252	**237 days** 215 - 251	**238 days** 222 - 252	**232 days** 207 - 256
Maximum period of consecutive wet days	**19 days** 17 - 22	**19 days** 17 - 21	**19 days** 16 - 22	**19 days** 17 - 21	**19 days** 16 - 23	**19 days** 17 - 23	**19 days** 16 - 24
Annual days with:							
Annual days with total precipitation > 1inch	**2 days** 2 - 2	**3 days** 2 - 4	**3 days** 2 - 3	**3 days** 2 - 4	**3 days** 2 - 4	**3 days** 2 - 4	**4 days** 2 - 6
Annual days with total precipitation > 2 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 - 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	**4 days** 4 - 5	**5 days** 5 - 6	**5 days** 5 - 6	**6 days** 5 - 6	**6 days** 6 - 7	**6 days** 6 - 7	**8 days** 7 - 9
Days with maximum temperature below 32 °F	**56 days** 52 - 58	**42 days** 23 - 53	**42 days** 27 - 52	**37 days** 18 - 47	**33 days** 18 - 43	**32 days** 13 - 44	**19 days** 6 - 32

N/A = Data Not Available for the selected area

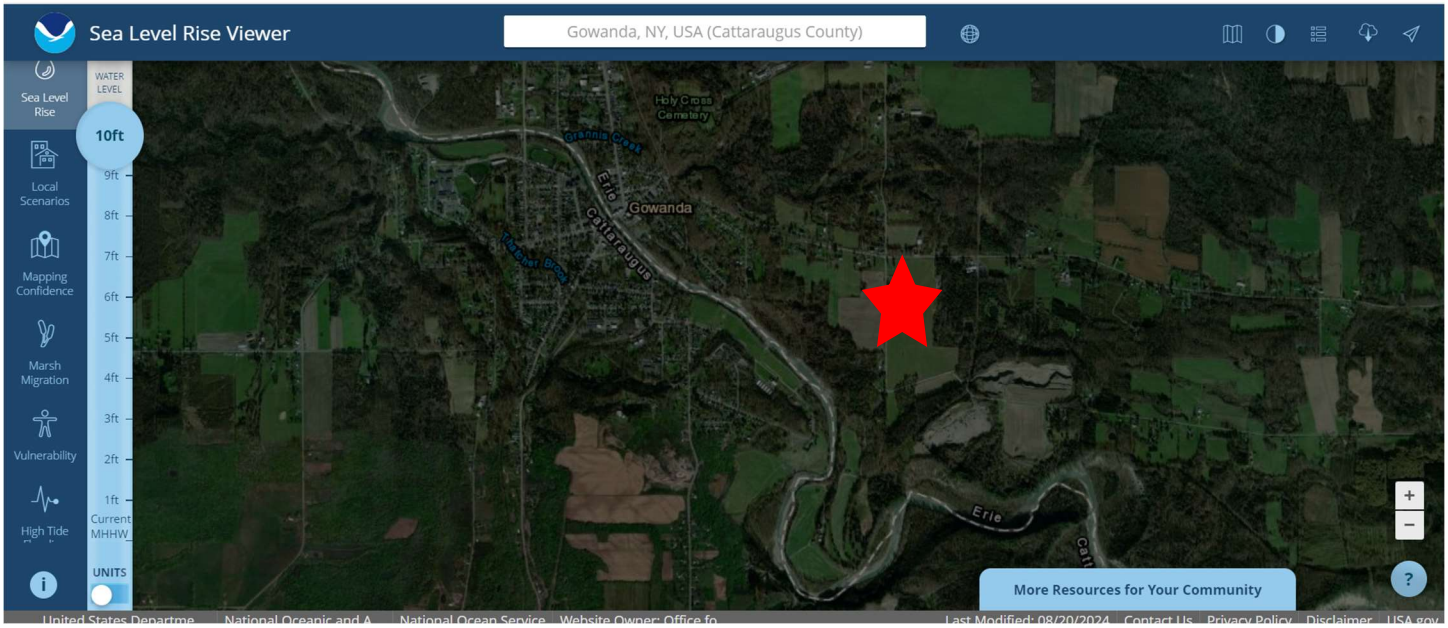
Appendix D, Figure 5



Appendix D, Figure 6



Appendix D, Figure 7



Appendix D, Figure 8