THIRD FIVE-YEAR REVIEW REPORT FOR SALINA LANDFILL SUBSITE OF THE ONONDAGA LAKE SITE ONONDAGA COUNTY, 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

CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
FYR	Five-Year Review
ICs	Institutional Controls
IRM	Interim Remedial Measure
MCL	Maximum Contaminant Level
METRO	Metropolitan Syracuse Wastewater Treatment Plant
mg/kg	milligram per kilogram
mg/L	milligrams per liter
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
OLCC	Old Ley Creek Channel
O&M	Operation and Maintenance
OU	Operable Unit
PAHs	Polyaromatic Hydrocarbon Compounds
PCB	Polychlorinated Biphenyl
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
SVOCs	Semi-Volatile Organic Compounds
SMP	Site Management Plan
TSCA	Toxic Substances Control Act
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 FYRs 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 Section 121, consistent with the National Contingency Plan (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

In 1994, EPA designated Onondaga Lake, and its tributaries and upland areas which have contributed or are contributing hazardous substances to the lake (subsites), as a Superfund National Priorities List (NPL) site. The Onondaga Lake site includes 11 subsites, which are defined as any site that is situated on Onondaga Lake's shores or tributaries that has contributed contamination to, or threatens to contribute contamination to, Onondaga Lake. Each subsite is an operable unit (OU). This FYR focuses only on the Salina Landfill subsite (Subsite) (OU 8) of the Onondaga Lake site. The Subsite is located in the Town of Salina, Onondaga County, New York.

The work at the Subsite has been conducted as a single OU.

This is the third FYR for the Subsite. The triggering action for this statutory FYR is the signature date of the last review, December 7, 2020. The FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the Subsite above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Subsite's third FYR team was led by Mark Granger, the EPA Remedial Project Manager. Participants included Sabrina Gonzalez (EPA hydrogeologist), Jinnie Hanlee (EPA human-health risk assessor), Detbra Rosales (EPA ecological risk assessor), and Larisa Romanowski (EPA community involvement coordinator). The Town of Salina, the potentially responsible party, was notified of the initiation of the FYR. The FYR began on June 10, 2025.

Site Background

The approximately 55-acre Subsite is located in the Town of Salina, Onondaga County, New York. It is bounded by the New York State Thruway to the north and by Route 11 (Wolf Street) to the east. An Onondaga County Resource Recovery Agency Transfer Station is located immediately to the west of the landfill. Ley Creek, a Class B stream, runs through the approximate eastern half of the Subsite and along the southern border of the approximate western half of the Subsite. The eastern half of the Subsite is bounded to the south by the banks of a separate tributary, known as Old Ley Creek Channel (OLCC). See Appendix A, **Figure 1**, for a vicinity location map.

The Subsite is segregated into seven parcels (see Appendix A, **Figure 2**):

- **Parcel 1**: This area is located in the northeastern portion of the Subsite.
- **Parcel 2**: This parcel consists of the main landfill.
- **Parcel 3**: This parcel consists of utility corridors bisecting Parcels 1, 2, 4, and 5.
- **Parcel 4**: This parcel occupies the southwestern-most portion of the landfill property, immediately south of Parcel 2.
- **Parcel 5**: This parcel is located in the eastern portion of the Subsite.
- **Parcel 6**: This parcel is south of, and across Ley Creek from, the remaining parcels. It is bordered by Ley Creek to the north and west and the OLCC to the east and south.
- **Parcel 7**: This is located immediately east of Parcels 1 and 5.

Beginning in the early 1960s, municipal solid waste, as well as hazardous wastes, including paint sludge, paint thinner, polychlorinated biphenyl (PCB)-contaminated wastes, and contaminated sediments dredged from Ley Creek were disposed of in the landfill. Because of flooding events, in 1970, the Onondaga County Department of Drainage and Sanitation widened, deepened and rerouted the adjacent Ley Creek through the Town of Salina Landfill. Dredged materials were spread, among other places, along the banks of Ley Creek. Reaching its capacity, the landfill was officially closed sometime in late 1974 or early 1975, pursuant to an order by New York State Department of Environmental Conservation (NYSDEC). In 1997, NYSDEC and EPA jointly notified the Town that the Salina Landfill was a subsite of the Onondaga Lake NPL site due to releases or the threat of releases of hazardous substances, pollutants or contaminants into the environment.

Appendix B, attached, summarizes the documents utilized to prepare this FYR. **Appendix C**, attached, summarizes the subsite's topography, hydrology, and geology/hydrogeology. For more details related to background, physical characteristics, geology/hydrogeology, land/resource use, and history related to the Subsite, please refer to:

www.epa.gov/superfund/onondaga-lake

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Onondaga Lake Site (Salina Landfill Subsite)(OU8)		
EPA ID: NYD986913580		
Region: 2	**State:** NY	**City/County:** Town of Salina/Onondaga County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** No

REVIEW STATUS
Lead agency: State
Author name (Federal or State Project Manager): Mark Granger
Author affiliation: EPA
Review period: 6/10/2025 – 12/7/2025
Date of site inspection: 10/8/2025
Type of review: Statutory
Review number: 3
Triggering action date: 12/7/2020
Due date *(five years after triggering action date)*: 12/7/2025

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

From 1986 through 1997, soil, sediment, groundwater, leachate, surface water, and fish tissue samples were collected by NYSDEC, EPA, and the Onondaga County Department of Health. The results showed polyaromatic hydrocarbon compounds (PAHs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs), dibenzofuran, cadmium, chromium, nickel, zinc, and pesticides in the soil, VOCs and SVOCs in surface water, and PCBs, pesticides, VOCs, and SVOCs in the sediment and leachate. PCBs were detected in fish samples.

On October 29, 1997, the Town of Salina entered into an Order on Consent with NYSDEC to perform a remedial investigation (RI)/feasibility study, remedial design, and remedial action for the Subsite. The RI report, which was completed in 2000, indicated that the primary contaminants in each media were as follows:

- *Surface Soils:* The primary contaminants in the surface soil of the Subsite were metals and PAHs. Additionally, elevated levels of Aroclor 1248 (ranging from 0.22 to 8.4 mg/kg) were encountered on the parcel between OLCC and Ley Creek.
- *Subsurface soils:* While several contaminants were identified in the subsurface soils, the primary group of contaminants encountered was PAHs and PCBs.
- *Sediment:* The primary contaminants in the sediment of the Subsite were PAHs, PCBs (Aroclor 1248 and 1260) and metals.
- *Groundwater:* The primary contaminants in the groundwater of the Subsite were VOCs. Additionally, elevated concentrations of SVOCs, pesticides, and metals were detected.
- *Leachate:* Benzene, chlorobenzene, Aroclor 1248, and metals were identified as the contaminants within Site leachate.
- *Surface Water:* One PAH, Aroclor 1248, aluminum, and iron were identified as the contaminants within Site surface water.

Based on these findings, the risk assessment determined that the contaminants of concern detected in the environmental media at the Subsite (*i.e.*, PAHs, metals, and Aroclor 1248), at the levels identified in the RI, posed elevated carcinogenic (under both current and future land-use scenarios) and noncarcinogenic (under the future land-use scenario) health risks to potentially-exposed populations at the Subsite. It was also determined that waste material and contaminated surface soil, as well as contaminated sediment in the western drainage ditch, posed an unacceptable ecological risk.[1] Based upon the human health and ecological risk assessments and the fact that groundwater containing hazardous substances in excess of groundwater standards discharges to Ley Creek, a tributary of Onondaga Lake, EPA and NYSDEC determined that the Subsite posed an unacceptable threat that warranted remediation.

Response Actions

During the RI, groundwater quality monitoring identified the presence of elevated VOCs in a monitoring well located very close to Ley Creek. NYSDEC performed a subsurface investigation that identified contaminated soils. These soils were addressed as an Interim Remedial Measure (IRM). During the IRM, approximately 1,250 tons of nonhazardous soils, approximately 450 tons of hazardous soils, and approximately 116 tons of Toxic Substances Control Act (TSCA)-regulated soils were disposed of off-site.

[1] Surface water and sediment in Ley Creek, which runs along the southern edge of the landfill, are being addressed as a part of the Lower Ley Creek subsite. Therefore, these media were not evaluated as part of the baseline human health and ecological risk assessments.

In March 2007, a Record of Decision (ROD) was signed. The ROD had the following remedial action objectives (RAOs):

- Reduce/eliminate contaminant leaching to ground water;
- Control surface water runoff and erosion;
- Prevent the off-site migration of contaminated groundwater and leachate;
- Restore groundwater quality to levels which meet state and federal drinking-water standards;
- Prevent human contact with contaminated soils, sediment and ground water; and
- Minimize exposure of aquatic species and wildlife to contaminants in surface water, sediments, and soils.

The selected remedy included:

- Excavation of contaminated sediments in the western drainage ditch;
- Construction of groundwater/leachate collection trenches north and south of Ley Creek;
- Consolidation of the excavated sediments and the soils and wastes (from the excavation of the collection trenches) on the landfill areas;
- Construction of 6 NYCRR Part 360 caps over the landfill areas north and south of Ley Creek;
- Lining the drainage ditches located along the northern and eastern borders of the Subsite;
- Engineered drainage controls and fencing;
- Installation of a 150,000-gallon storage tank to hold excess water volume stemming from storm events;
- Treatment of the collected contaminated groundwater/leachate at an on-site treatment plant and discharge of treated effluent to Ley Creek or disposal at the Metropolitan Syracuse Wastewater Treatment Plant (METRO) after pretreatment;
- Institutional controls (ICs) (such as restrictive covenants or environmental easements) to prohibit residential use of property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the caps, groundwater/leachate collection trenches, and engineered drainage controls;
- Maintenance of the caps and groundwater/leachate collection trenches; and
- Long-term monitoring.

In July 2007, the Town of Salina's contractor commenced the remedial design (RD) of the selected remedy. In 2008, the Town of Salina and the County entered into an agreement for METRO to accept the pretreated groundwater/leachate.

In the ROD, an alternative including excavation of the landfilled materials from the area located south of Ley Creek (Parcel 6; see Appendix A, **Figure 2**) and consolidation onto the waste located north of Ley Creek was eliminated from consideration due to concerns that significant quantities of hazardous waste were commingled with the municipal refuse, which would have significantly increased the cost of the remedy because these wastes would require off-site disposal. As part of the design of the selected remedy, samples were collected from the waste from Parcel 6. Upon

analysis of these samples, it was concluded that Parcel 6 likely contained a heterogeneous mixture of municipal refuse with only low concentrations of hazardous substances that were typically associated with municipal refuse. As a result of this conclusion, the remedy selected in the ROD was reevaluated and a ROD amendment was issued in September 2010 calling for, among other things, the consolidation of the waste from Parcel 6 onto the main landfill mass north of Ley Creek.

The contaminants of concern and their associated cleanup goals as documented in the ROD and ROD Amendment are included in **Appendix D**.

Status of Implementation

The RD associated with the landfill consolidation and capping was approved by NYSDEC in August 2010. NYSDEC approved the RD for the pretreatment plant in June 2014.

The construction contractor mobilized for the landfill consolidation and capping remedial action in November 2010. During the remedial action, approximately 176,000 cubic yards of material was excavated from the southern landfill. Approximately 1,100 tons of PCB-contaminated material was disposed of at the Model City Landfill in Model City, NY. After consolidating the nonhazardous material on the northern landfill, the material was graded and the landfill was capped. The following summarizes the remediation by parcel:

- **Parcel 1**: All municipal solid waste on this parcel was relocated to Parcel 2. In addition, a 1.33-acre wetland mitigation area and the groundwater/leachate pretreatment plant was constructed on this parcel.
- **Parcel 2**: Municipal solid waste and construction and demolition debris excavated from other parcels (mostly Parcels 1, 6 and 7) were relocated to this parcel. Following waste consolidation efforts, Parcel 2 was capped with a geomembrane.
- **Parcel 3**: The majority of this parcel was covered with a clay cap to facilitate better access to electric and gas utilities.
- **Parcel 4**: Municipal solid waste along Ley Creek on this parcel was pulled back approximately 30 feet and relocated to Parcel 2. Following completion of excavation activities, the parcel was graded and capped with geomembrane.
- **Parcel 5**: Municipal solid waste along Ley Creek on this parcel was pulled back approximately 30 feet and relocated to Parcel 2. Following completion of excavation activities, the parcel was graded and capped with geomembrane.
- **Parcel 6**: Municipal solid waste was excavated from this parcel and relocated to Parcel 2. PCB-impacted waste (> 50 milligrams per kilogram [mg/kg] PCBs) located in the northeastern portion of the parcel was excavated and disposed of off-site. VOC-impacted materials located in the north central portion of the parcel below the municipal solid waste were also excavated and relocated to Parcel 2. Following completion of excavation activities, the parcel was backfilled, graded and seeded. In addition, a 2.05-acre wetland mitigation area was constructed on this parcel.

- **Parcel 7**: Waste from Parcel 7 was excavated and relocated to Parcel 2. The parcel was then backfilled, graded and seeded.

See Appendix A, **Figure 3**, for a layout of the landfill cover components.

The groundwater-collection trench, installed for the entire length of the landfill along the northern bank of Ley Creek, was completed in August 2012. Cap construction related to all parcels (Parcels 1 through 7) was completed in November 2013. The pretreatment plant was constructed between June and December 2014 and began operating in January 2015.

Status of Subsite Reuse/Redevelopment

The Subsite is available for reuse and redevelopment to the extent that efforts in that regard do not compromise the integrity of the landfill cover system or any other remedial measures. Notably, interest has been expressed in building a non-intrusive solar facility on Parcel 2. See **Appendix A, Figure 2** for an illustration of the Subsite parcels.

Institutional Controls

The ROD called for the implementation of ICs, such as environmental easements, to prohibit residential use of the Subsite property; prohibit the installation and use of groundwater wells and protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), the wetlands, and the engineered drainage controls.

Table 1, below, summarizes the status of the ICs.

Table 1: **Summary of 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)
Property	Yes	Yes	All	Property may not be used for residential, restricted residential, or commercial purposes	Environmental Easement; 7/25/2017
Groundwater	Yes	Yes	All	Use of groundwater underlying the property prohibited without necessary water quality treatment	Environmental Easement; 7/25/2017
Soil	Yes	Yes	All	Protect the integrity of the remedy	Environmental Easement; 7/25/2017

Systems Operation/Operation & Maintenance

A network of on-site wells was designed to evaluate groundwater quality and elevation beneath the landfill; the well network is organized as follows:

- Monitoring well MW-200 is located sidegradient in Parcel 1 (northeast corner), in an area from where all of the waste was removed, to provide background groundwater quality data.
- Monitoring wells MW-14 and MW-15 are located within the waste mass in Parcel 2 (the main area in the northwest section of the landfill), and are used to evaluate groundwater mounding subsequent to cap installation.
- Monitoring wells MW-201 and MW-202 are located on the western edge of the landfill, just beyond the western limits of Parcels 2 and 4, to evaluate downgradient groundwater quality.
- Four monitoring wells are located on the southern edges of Parcels 4 and 5 near Ley Creek: MW-203; MW-205; MW-10; and MW-9 (in order from downstream to upstream). These monitoring wells, along with attendant piezometers between the trench and Ley Creek (PZ-204, PZ-206, PZ-207, and PZ-208), are used to measure groundwater elevations and confirm drawdown within the collection trench from both the landfill and Ley Creek sides of the trench. Monitoring well MW-10 is also used to monitor water quality, as historical VOC contamination has been detected in this well.

- Another six monitoring wells, MW-19, MW-209, MW-210, MW-211, MW-212, and MW-213, are located on Parcel 6 (which is downgradient and across Ley Creek from the other parcels) to provide groundwater quality data for that area.

With regard to MW-14, during the annual inspection in 2025 this well was found to have partially collapsed such that it could be sampled for groundwater quality but not measured for depth to water.

MW-202 was found to be broken during the review period and was not able to be utilized for depth-to-water measurements or sampled for groundwater quality. A groundwater sample was collected from MW-203, which is near MW-202.

With regard to the Ley Creek piezometers PZ-204, PZ-206, PZ-207, and PZ-208, during the review period these one-inch diameter monitoring points became overgrown with thick creek-bank vegetation and became difficult at times to locate. An effort was made to locate and permanently reestablish them; the effort was successful for PZ-204, PZ-206, and PZ-207. PZ-208 was unable to be found.

While there is sufficient data over the past five years from these and surrounding monitoring points to evaluate protectiveness for the current review period, efforts should be made to reestablish or replace MW-14, MW-202, and PZ-208 as viable monitoring points.

See Appendix A, **Figure 4**, for the location of the monitoring wells.

In the monitoring plan, quarterly monitoring of remedy performance was stipulated to be conducted for the first five years following the completion of remedial construction. Semiannual monitoring was to be conducted for years six and seven while annual monitoring was to be conducted years eight through ten, after which the monitoring frequency was to be reassessed. Monitoring well sampling has been performed annually since 2022.

The Site Management Plan (SMP) provides guidance for post-closure groundwater monitoring, landfill gas monitoring, cap mowing and inspections, corrective actions, and contingencies. The SMP includes a description of institutional and engineering controls, as well as future reporting requirements for the project, including annual periodic review reports and FYR reports. The SMP includes the following individual plans:

- National Grid Access and Operations Plan
- Engineering and Institutional Control Plan
- Environmental Monitoring Plan
- Corrective Actions Plan
- Contingency/Safety Plan
- Groundwater Collection Trench/Pretreatment Plant Operations Manual

During the review period the groundwater flow volume from the groundwater-collection trench to the pretreatment plant declined to levels that indicated the system was no longer performing

as designed. Annual flow for the year dropped from approximately 610,123 gallons in 2021 to approximately 41,358 gallons in 2024. While it is likely that much of the decrease in flow is attributable to the impermeable liner constructed to eliminate precipitation-related water from entering the 50-acre landfill, it became apparent in early 2025 that, after 10 years of continuous operation, the groundwater-collection system required restoration. The Town of Salina and their consultant, along with several subcontractors, worked with NYSDEC and EPA to replace worn piping and pumps and to pressure flush the entire force main from all six pumping stations back to the pretreatment building. The electronics associated with the treatment system were then upgraded.

The restored collection system baseline rate is now approximately 14,000 gallons per month, equating to an annual collection rate of 170,000 gallons per year. Consideration should be given to updating the SMP maintenance schedule related to pressure flushing of the groundwater-collection system.

Remedy Resilience

Potential site impacts from severe weather events have been assessed, and the performance of the remedy is not expected to be impacted.

III. PROGRESS SINCE THE LAST REVIEW

The protectiveness determinations from the last FYR, as well as a discussion of that FYR's recommendations and suggestions and the current status of the recommendations and suggestions, are summarized in **Tables 2, 3,** and **4**, respectively, below.

Table 2: **Protectiveness Determinations/Statements from the 2020 FYR**

OU	Protectiveness Determination	Protectiveness Statement
08	Short-term Protective	The remedy for OU8 is protective of human health and the environment in the short-term because all 55 acres of landfill-related exposure routes have been eliminated. To be protective in the long-term, a focused evaluation of gradient data should be performed on either side of the collection trench to confirm that it is effective in capturing contaminated groundwater.

Table 3: **Status of Recommendations From 2020 Five-Year Review**

OU(s)	Issue	Recommendations	Current Status	Implementation Status
08	Trench Effectiveness	A focused evaluation of gradient data should be performed on either side of the collection trench and an evaluation of the pumping rates of the individual pump stations should be performed to confirm that the trench is effective in capturing contaminated groundwater. If it is determined that there are capture issues, an evaluation should be performed to identify what actions, if any, may be necessary to correct deficiencies.	Completed	Following the rehabilitation described above, a gradient evaluation was performed on both sides of the collection trench during the review period, along with an assessment of pumping rates. It was determined that the system is functioning as intended. Gradients and pumping rates will continue to be evaluated as part of O&M, with adjustments made to the system, as necessary, in order to ensure sustained performance.

In addition to the issue/recommendation noted above, several suggestions to improve management of O&M were included in the last FYR as Other Findings. Table 4, below, includes those suggestions and current status updates.

Table 4: Status of Suggestions From 2020 Five-Year Review

Suggestion	Implementation Status
While contaminant concentrations were historically low, consideration should be given to sampling monitoring wells MW-14 and MW-15 for PCBs as part of the groundwater-sampling program to confirm the extent of contaminated groundwater relative to Parcel 2 and to confirm that no groundwater is flowing off-site to the north.	MW-15 was sampled within the review period; the low levels of PCBs there were found to be limited. MW-14, located downgradient of MW-15, was also sampled within the review period; PCBs there were not detected. Reference Data Review in Section IV for further detail.
Instances of animal burrowing and minor areas of erosion relative to the cap should be addressed.	These situations were addressed on an ongoing basis as part of O&M.
Historically, PCBs were collected from the four Ley Creek piezometers on the creek side of the trench and the four attendant collection-trench monitoring wells. To continue the evaluation of the groundwater, the piezometers and attendant collection-trench monitoring wells should be sampled for PCBs.	The wells and piezometers were sampled during the review period. PCBs were not detected. Reference Data Review in Section IV.
Upon completion of the Lower Ley Creek subsite (OU25 of the Onondaga Lake site) dredging effort, consideration should be given to installing permanent monitoring wells in place of the four existing piezometers on the Lower Ley Creek side of the collection trench (it is anticipated that the Lower Ley Creek dredging will be completed during the upcoming FYR period).	The Lower Ley Creek subsite remedy has not been completed. This will be addressed once this remedy has been completed.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification and Involvement

On July 21, 2025, 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 Onondaga Lake - Salina Landfill OU8 subsite. 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 (CIC) for the site, Larisa Romanowski, posted a public notice on the EPA site webpage https://www.epa.gov/superfund/onondaga-lake and provided the notice by email to the Town of Salina on October 9, 2025 with a request that the notice be posted in municipal offices and on their respective webpages. In addition, on October 16, 2025, the notice was distributed via the NYSDEC's Onondaga Lake News email Listserv which includes approximately 11,000 subscribers. This notice indicated that a FYR would be conducted at the Onondaga Lake OU8 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 to the following repositories: NYSDEC Region 7 Office, 5786 Widewaters Parkway, Syracuse, New York; NYSDEC Central Office, 625 Broadway, Albany, New York; Onondaga County Public Library, Syracuse Branch at the Galleries, 447 South Salina Street, Syracuse, New York; Salina Town Hall, 201 School Road, Liverpool, New York; Salina Free Library, 100 Belmont Street, Mattydale NY 13211; and Atlantic States Legal Foundation, 658 West Onondaga Street, Syracuse, New York. In addition, the final report will be posted on the following website: https://www.epa.gov/superfund/onondaga-lake. Efforts will be made to reach out to local public officials to inform them of the results.

Data Review

Water Level Elevation

Baseline and annual elevation data show that the highest groundwater elevation at the Subsite is at monitoring well MW-15 on Parcel 2. Radial flow around monitoring well MW-15 indicates that groundwater is flowing off-site to the north in the direction of MW-14. Analytical results for these wells are discussed in the following subsection.

At the eastern end (upstream) and at the western end (downstream) of the collection trench, two monitoring wells are coupled with two temporary piezometers. The four monitoring wells are situated on the landfill side of the trench and the four piezometers are installed along the creek-side of the trench. Specifically, the MW-10/PZ-207 and MW-9/PZ-208 pairs are situated on the eastern end of the collection trench and the MW-203/PZ-204 and MW-205/PZ-206 pairs are situated on the western end of the collection trench. See Appendix A, **Figure 4**, for the location of the monitoring wells and piezometers.

A gradient evaluation was performed on both sides of the collection trench during the review period, along with an assessment of pumping rates within the trench. Groundwater levels were measured regularly and compared to the operating range of water levels within the groundwater-collection trench. Each of the four monitoring-well/piezometer pairs along the trench alignment demonstrated sustained inward gradients while the groundwater-collection system was operational. As noted above, the entire system required rehabilitation in 2025. The rehabilitation effort significantly improved flow volume within the groundwater collection trench. The trench and pretreatment systems have been functioning as intended after completion of the rehabilitation. Gradients and pumping rates will continue to be evaluated as part of O&M, with adjustments made to the systems, as necessary, in order to ensure sustained performance.

See Appendix A, **Figure 5**, for groundwater elevation contours.

Groundwater Sampling Results

The ROD included specific VOCs, SVOCs, PCBs, and inorganics, as COCs in groundwater with cleanup goals based on the New York State TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values (AWQSGV)(shown in **Appendix D**). Detections of these chemicals are described below. VOCs and inorganics detected that are not listed as COCs in the ROD were also compared to the NYS AWQSGV or Federal MCLs, if no AWQSGV were present.

Sidegradient monitoring point (background):

During the review period, iron and sodium consistently exceed their AWQSGV and groundwater secondary Maximum Contaminant Level (SMCL), respectively, in MW-200. Maximum concentrations of 15.8 mg/L milligrams per liter (mg/L) (AWQSGV is 0.3 mg/L) and 53.8 mg/L (SMCL is 20 mg/L), respectively. Magnesium and manganese exceeded their SMCL and AWQSGV sporadically as well with maximum concentrations of 57.3 mg/L (SMCL is 0.05 mg/L) and 0.57 mg/L (AWQSGV is 0.3 mg/L), respectively. Note that magnesium and sodium are not considered site-related COCs.

Monitoring points north of the collection trench and Ley Creek:

MW-15 (located on the southern portion of Parcel 2) was sampled and analyzed for PCB aroclors in September 2025. Aroclor 1232 was detected at a concentration of 0.51 µg/L. While the ROD and RODA only included a cleanup goal for Aroclor 1248 (AWQSGV of 0.09 µg/L), that AWQSGV value is applicable to all aroclors, hence the ROD cleanup goal of 0.09 µg/L was used to evaluate the detections of Aroclor 1232 in this FYR. MW-14 (located on the northern portion of Parcel 2 and downgradient of MW-15) was sampled in November 2025. Other PCB Aroclors were not detected above the reporting limit. Although the reporting limit (0.50 µg/L) exceeded the ROD cleanup goal of 0.09 µg/L, the method detection limit was 0.18 µg/L and no estimated concentrations were reported. Therefore, the PCBs detected at MW-15 are believed to be limited in extent and not migrating off site.

In monitoring well MW-201 (located on the western edge of Parcel 2), 1,1-dichloroethane was detected at a maximum concentration of 5.8 µg/L (AWQSGV is 5 µg/l) in 2022 and chloroethane was detected at a maximum concentration of 11 µg/L (AWQSGV is 5 µg/l) in 2020. The concentrations for these contaminants only marginally exceeded their respective AWQSGVs in the most recent sampling event in 2025. Vinyl chloride was also recently detected above the AWQSGV at concentrations of 2.4 µg/L (2021) and 3.9 µg/L (2024). The AWQSGV for vinyl chloride is 2 µg/L.

With respect to Parcel 2 and the northern and western edges of the landfill, sampling of MW-14, MW-201, MW-202, and MW-203 for PCBs and VOCs is suggested to occur annually in order to confirm that groundwater impacts in these directions remain limited. In addition, sampling of MW-15 for PCBs and VOCs is suggested to occur once every five years.

In monitoring well MW-10 (located close to Ley Creek south of Parcel 5), the majority of the VOCs decreased when compared to the notable increases seen during the previous FYR period. Specifically, 1,1-dichloroethane decreased from 760 µg/L (2019) to 74 µg/L (2025) (AWQSGV is 5 µg/L), cis-1,2-dichloroethene decreased from 8,200 µg/L (2019) to 16 µg/L (2025) (AWQSGV is 5 µg/l), ethylbenzene decreased from 1,700 µg/L (2019) to 310 µg/L (2025) (AWQSGV is 5 µg/l), methylene chloride decreased from 120 µg/L (2019) to non-detect (< 2.2 µg/l detection limit) (2025) (AWQSGV is 5 µg/l), toluene decreased from 24,000 µg/L (2019) to 49 µg/L (2025) (AWQSGV is 5 µg/l), vinyl chloride decreased from 2,000 µg/L (2019) to 16 µg/L (2025) (AWQSGV is 2 µg/l), and total xylenes decreased from 5,200 µg/L (2019) to 33 µg/L (AWQSGV is 5 µg/l) (2025). Also, chloride marginally exceeded its secondary MCL of 250 mg/L during the October 2021 sampling event.

In September 2025, three of the piezometers (PZ-204, PZ-206, and PZ-207) on the south side of the collection trench were sampled and analyzed for VOCs and PCBs. PCBs were not detected above the reporting or method detection limit in any of the samples. Similar to other samples collected at this time, the reporting and method detection limits were above the ROD cleanup goal for PCBs in groundwater, however, the method detection limit only marginally exceeded. PCBs are not believed to be migrating. VOCs were either non detect or below their respective AWQSGV at locations PZ-204 and PZ-206. PZ-207 had an exceedance of benzene and chloroethane. Benzene was detected at a concentration of 13 µg/L (AWQSGV is 1 µg/L) and chloroethane had a concentration of 1,100 µg/L (AWQSGV is 5 µg/L). Chloroethane levels at PZ-207 may be residually present downgradient of the MW-10 area and likely represent the successful dechlorination of TCE, TCA, and other related chlorinated compounds. It should also be noted that VOCs at PZ-207 are captured by the groundwater collection trench. Furthermore, the piezometers were designed for groundwater elevation measuring. Fine particle infiltration may cause skewed sample results. Proper well construction includes a filter pack designed to match the grain size distribution of the formation. The piezometers were not designed as monitoring wells and do not have a proper filter pack. Review of the sampling logs show high turbidity in PZ-207, which may be causing biased high results. Thus, consideration should be given to installing permanent monitoring wells in place of the four trench-related piezometers upon completion of the Lower Ley Creek subsite (OU25 of the Onondaga Lake site) dredging effort. In the meantime, sampling of the piezometers is suggested to continue.

In monitoring well MW-9, chlorobenzene was first detected at 5.20 µg/L in November 2018, decreasing to 3.9 µg/L in September 2025. Toluene decreased from 25 µg/L in February 2019 to non-detect in September 2025. Total xylenes decreased from 7.50 µg/L in February 2019 to non-detect in September 2025. Also, arsenic marginally exceeded its AWQSGV of 25 µg/L during the 2020, 2021, and 2022 sampling events.

Monitoring wells MW-203 and MW-205, along Ley Creek were also sampled and analzyed for PCBs during the September 2025 sampling event; PCBs were not detected in either of these locations.

Monitoring points on Parcel 6:

In monitoring well MW-19, concentrations of VOCs generally decreased during this review period. Specifically, 1,1-dichloroethane decreased from 55 µg/L in February 2019 to 19 µg/L in May 2025. Chloroethane decreased from 86 µg/L in February 2019 to 13 µg/L in May 2025. Cis-1,2-dichloroethene decreased from 420 µg/L in February 2019 to 350 µg/L in May 2025. Vinyl chloride decreased from 470 µg/L in February 2019 to 220 µg/L in May 2025.

In monitoring well MW-209, cis-1,2-dichloroethene increased from 7.4 µg/L in 2020 to 3,900 µg/L in 2024, but was then non-detect during the 2025 sampling event. Vinyl chloride decreased from 7.8 µg/L in 2020 to non-detect in 2025.

In monitoring well MW-210, cis-1,2-dichloroethene increased overall from 740 µg/L in 2020 to 3,000 µg/L in 2025. The maximum during this review period was 4,200 µg/L in 2023 before declining to non-detectable levels in 2024 and increasing again 2025. Additionally, vinyl chloride increased from 34 µg/L in 2020 to 88 µg/L in 2025. 1-1-DCE increased from 3.5 µg/L in 2020 to 29 µg/L in 2025. This monitoring well has shown an increase in VOC concentrations since 2019. Prior to 2019, the total VOC concentration was less than 5 µg/L. The extent of this impact appears to be limited, and it is not clear what is causing such high variability between select sampling events. VOCs will continue to be analyzed on an annual basis to determine if the increase at MW-210 continues or stabilizes.

In monitoring well MW-211, 1,1-dichloroethane slightly increased from 14 µg/L in February 2019 to 17 µg/L in May 2025. Cis-1,2-dichloroethene decreased from 62 µg/L in February 2019 to 39 µg/L in May 2025. Trichloroethylene has remained relatively stable and was detected at a concentration of 28 µg/L during the most recent sampling event in 2025.

Site Inspection

The FYR inspection was conducted on October 8, 2025. In attendance were Mark Granger and Sabrina Gonzalaz of EPA, Jacky Luo of NYSDEC, Alma Lowry representing the Onondaga Nation, and Tom Bullard of Camden Group, Inc. The fencing, vents, roadways, wetlands, monitoring wells, and groundwater-collection and pretreatment system were all in good repair at the time the inspection, as were the engineered-cap components of the 50-acre portion of the landfill north of Ley Creek and the soil-cover/wetland components of the 5-acre portion of the landfill south of Ley Creek. It was noted that PZ-208 was unable to be located and that this monitoring point should be located or replaced.

V. TECHNICAL ASSESSMENT

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

The remedy selected in the March 2007 ROD and modified by the May 2010 ROD amendment included excavation/consolidation of the landfilled wastes, off-site treatment/disposal of TSCA wastes, capping, construction of a groundwater/leachate collection trench, construction of a pretreatment facility, long-term monitoring, ICs, and an operation and maintenance (O&M) plan.

As per the O&M program, the landfill and pretreatment system both undergo periodic inspections and maintenance. The integrity of the geomembrane, soil, and vegetative covers has been maintained. Fencing, monitoring wells, engineered drainage controls, and gas vents are in good repair. Vegetation in the wetland areas is well established. Also, the ICs (*i.e.,* the environmental easement) prohibit residential use of the Subsite property and help to protect the integrity of the various components of the remedy. The volume of groundwater pumped from the trench had declined significantly in recent years; however, a comprehensive rehabilitation of the system was undertaken from March to September 2025. The groundwater collection and treatment system has been returned to operating per designed specifications. With the system restored, gradient data continues to be evaluated to confirm that an inward gradient is sustained along both sides of the trench alignment, particularly in the area of MW-10 where there are elevated concentrations of VOCs in groundwater. On review of the restored system, an inward gradient is established along both sides of the trench alignment and the trench is functioning as intended. Continued evaluations will be used to make adjustments to the system, as necessary, to ensure a sustained inward gradient. Annual inspections found that wells MW-14 and MW-202 and piezometer PZ-208 are in need of repairs or being replaced. The deficiencies associated with these wells does not significantly impact remedy function given that data was collected from other wells nearby. The wells should be replaced or repaired in order to enhance the O&M.

Increasing concentrations of select VOCs were observed in Parcel 6, with particularly elevated, yet variable, results at wells MW-209 and MW-210 and slight increases in MW-211. However, the extent of this impact appears to be limited. VOC monitoring will continue on an annual basis through the next FYR period to evaluate the fluctuations observed in this FYR and to determine if the increased concentrations continue or stabilize.

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

<u>Human Health</u>

There have been no changes in the physical conditions of the Subsite over the past five years that would change the protectiveness of the remedy. The baseline human-health risk assessment considered exposure to soils, leachate, and groundwater by child and adult trespassers, as well as future construction workers. The exposure assumptions and the toxicity values that were used to estimate the potential risks and hazards to human health followed the general risk-assessment

practice at the time the risk assessment was performed and are consistent with current practice. Although specific parameters may have changed since the time the risk assessment was completed, the process that was used remains valid.

Chemical specific toxicity values have changed since the site was originally assessed. A comparison of the current federal water standards (EPA secondary MCLs) with those used at the time of the remedy selection (NYS TOGS 1.1.1 Guidance Values for Class B Surface Waters) in the ROD/RODA indicate changes. Federal secondary MCLs for manganese have become more stringent (SMCL of 0.05 mg/L) than selected in the 2007 ROD/RODA. The MCLs for lead and arsenic are currently 10 µg/L while the ROD/RODA cleanup goals were each 25 µg/L. However, secondary MCLs are non-mandatory and the state standards established in the ROD remain protective for each of these inorganics given that there is no current exposure to drinking water.

The RAOs discussed in Section II, above, remain valid. The objective of the ongoing groundwater monitoring is to ensure that groundwater contamination and leachate are not migrating off-site. Although some monitoring wells show exceedances of drinking water standards, there is no exposure via the direct pathway (ingestion as a potable water source) because the surrounding community is connected to a public supply. An IC was also put in place preventing the installation of wells at the Subsite, thus the prohibition of groundwater use on the property further ensures that contaminated water will not be consumed.

The remaining waste material and contaminated soils not taken off-site for disposal were consolidated under the landfill cap. The cap provides an effective barrier to direct contact with contaminated material. Additionally, a fence prevents access from the east, Ley Creek prevents access from the south, and highways on the north and dense wetlands to the west of the landfill make the Subsite extremely difficult to access.

Vapor Intrusion

One potential exposure pathway that was not evaluated at the time of remedy selection is vapor intrusion. The potential for soil vapor intrusion is evaluated when site soils and/or groundwater are known or suspected to contain VOCs. Review of groundwater analytical data collected during the timeframe of this FYR (2020-2025) show several VOCs exceeding MCLs in some monitoring wells at the site. It was noted in the previous FYR report (2015-2020) that there were increasing levels of VOCs observed close to Ley Creek south of Parcel 5 in monitoring well MW-10. However, for this current FYR period (2020-2025), although still exceeding MCLs, a trend of decreasing levels of VOCs has been observed in MW-10.

Marginal exceedances were observed in monitoring wells MW-20, MW-211, and MW-201. As there are currently no buildings within 100 ft of the monitoring wells mentioned, vapor intrusion is not of concern. Based on these considerations, the vapor intrusion pathway remains incomplete and additional vapor intrusion investigations are not warranted. Additionally, the ICs that have been put in place to protect the cap and prohibit development on the landfill ensure

that this pathway remains incomplete. To ensure protectiveness, this pathway will continue to be assessed during future FYRs.

Ecological

The methodologies, exposure assumptions, and toxicity values used to determine the potential for unacceptable ecological risk followed the general risk assessment practices at the time the risk assessment was performed and remain valid. Additionally, the RAOs specific to ecological pathways and selected remedies remain valid. The terrestrial exposure pathway to surface soil contaminants and risks to ecological receptors ingesting contaminated sediment from the western drainage ditch have been addressed by removing waste material and contaminated soils and sediments off-site or consolidating under a cap.

Surface water and sediment in Ley Creek, which runs along the southern edge of the landfill cap, are being addressed as a separate Onondaga Lake subsite. Therefore, these media were not evaluated as part of the baseline human health and ecological risk assessments and are not addressed in this FYR.

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:
OU8

Other Findings

The following are suggestions that may improve management of O&M, but do not affect current and/or future protectiveness:

- Repair or replace MW-14, MW-202, and PZ-208;
- With respect to Parcel 2 and the northern and western edges of the landfill, sampling of MW-14, MW-201, MW-202, and MW-203 for PCBs and VOCs is suggested to occur annually in order to confirm that groundwater impacts in these directions remain limited. In addition, sampling of MW-15 for PCBs and VOCs is suggested to occur once every five years.;

- Consideration should be given to installing permanent monitoring wells in place of the four trench-related piezometers upon completion of the Lower Ley Creek subsite (OU25 of the Onondaga Lake site) dredging effort. In the meantime, the four trench-related piezometer locations should be maintained as part of the quarterly landfill O&M effort and sampled along with the other annually sampled monitoring points;
- The evaluation of water levels with respect to the operating range of the groundwater-collection trench, along with the pumping rate of the collection trench itself, should continue to be evaluated to ensure sustained inward gradients and sustained functionality along both sides of the groundwater-collection system. The results of these evaluations should be included in the Subsite-related annual reports going forward;
- Consideration should be given to updating the SMP maintenance schedule related to pressure flushing of the groundwater-collection system; and
- Groundwater quality and hydrology related to Parcel 6 should continue to be evaluated in light of the fluctuations in VOC levels observed at wells MW-209 and MW-210 during select sampling events within this FYR period.

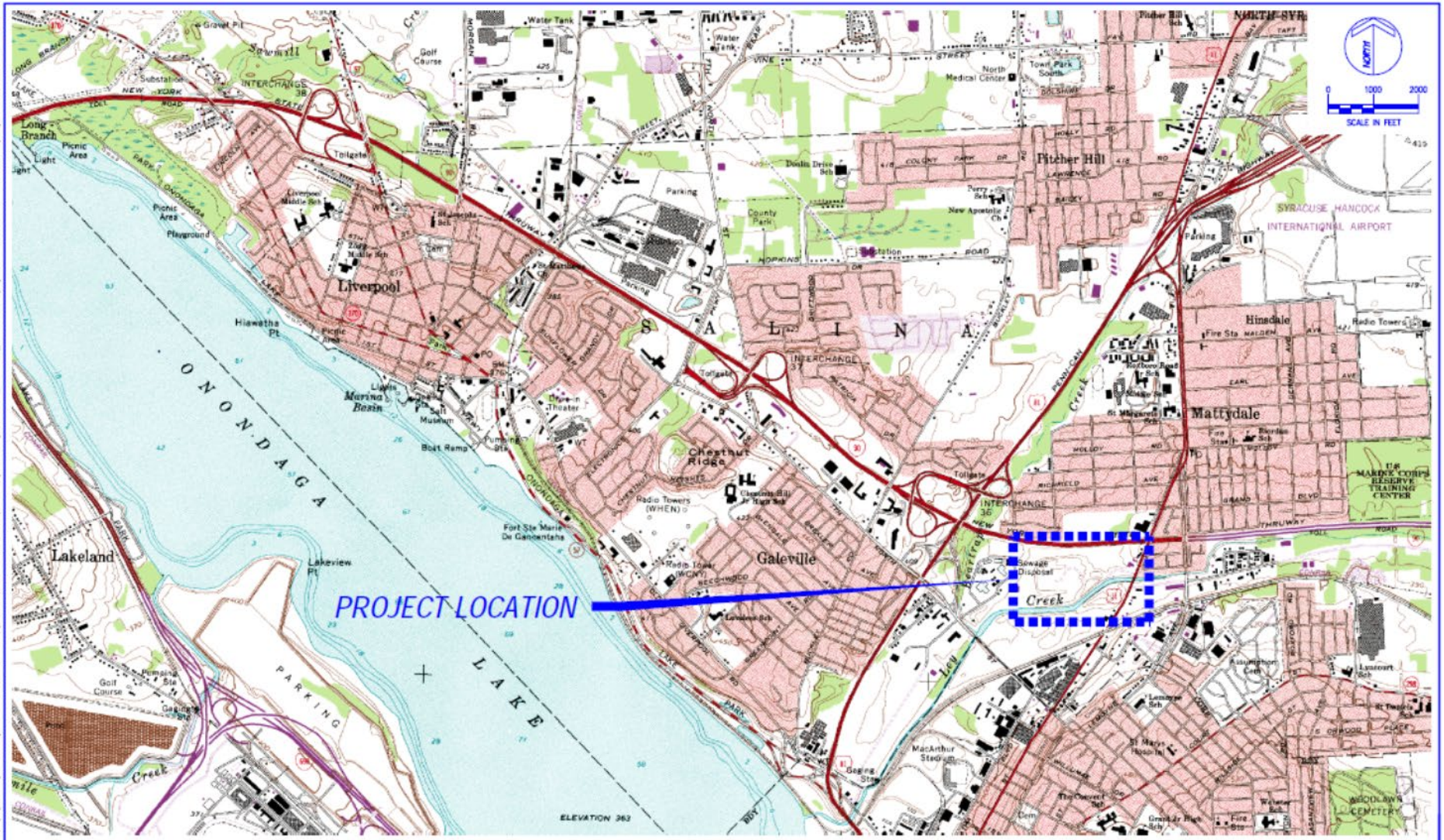
VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU8 (Subsite)	*Protectiveness Determination:* **Protective**
Protectiveness Statement: The remedy for OU8 is protective of human health and the environment.	

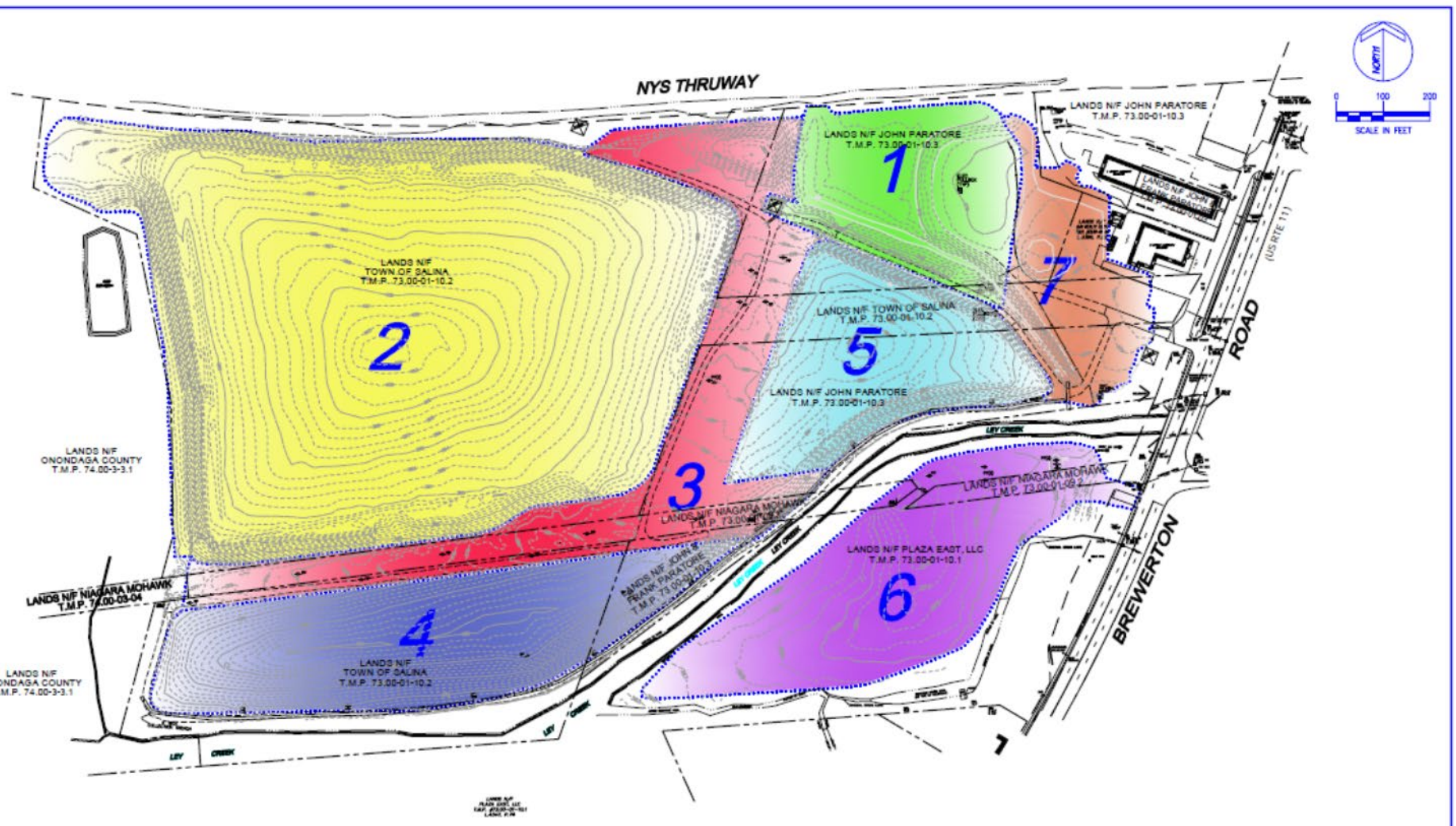
VIII. NEXT REVIEW

The next FYR report for the Subsite is required five years from the completion date of this review.

APPENDIX A: FIGURES



	PROJ. # 22377 SCALE: AS SHOWN DATE: 01 / 21 / 2014	CHA CLOUGH HARBOUR & ASSOCIATES LLP	Town of Salina Landfill Closure, Salina, NY Vicinity Location Map	FIG: 1



PROJ. # 22377	
SCALE: AS SHOWN	
DATE: 01 / 21 / 2014	

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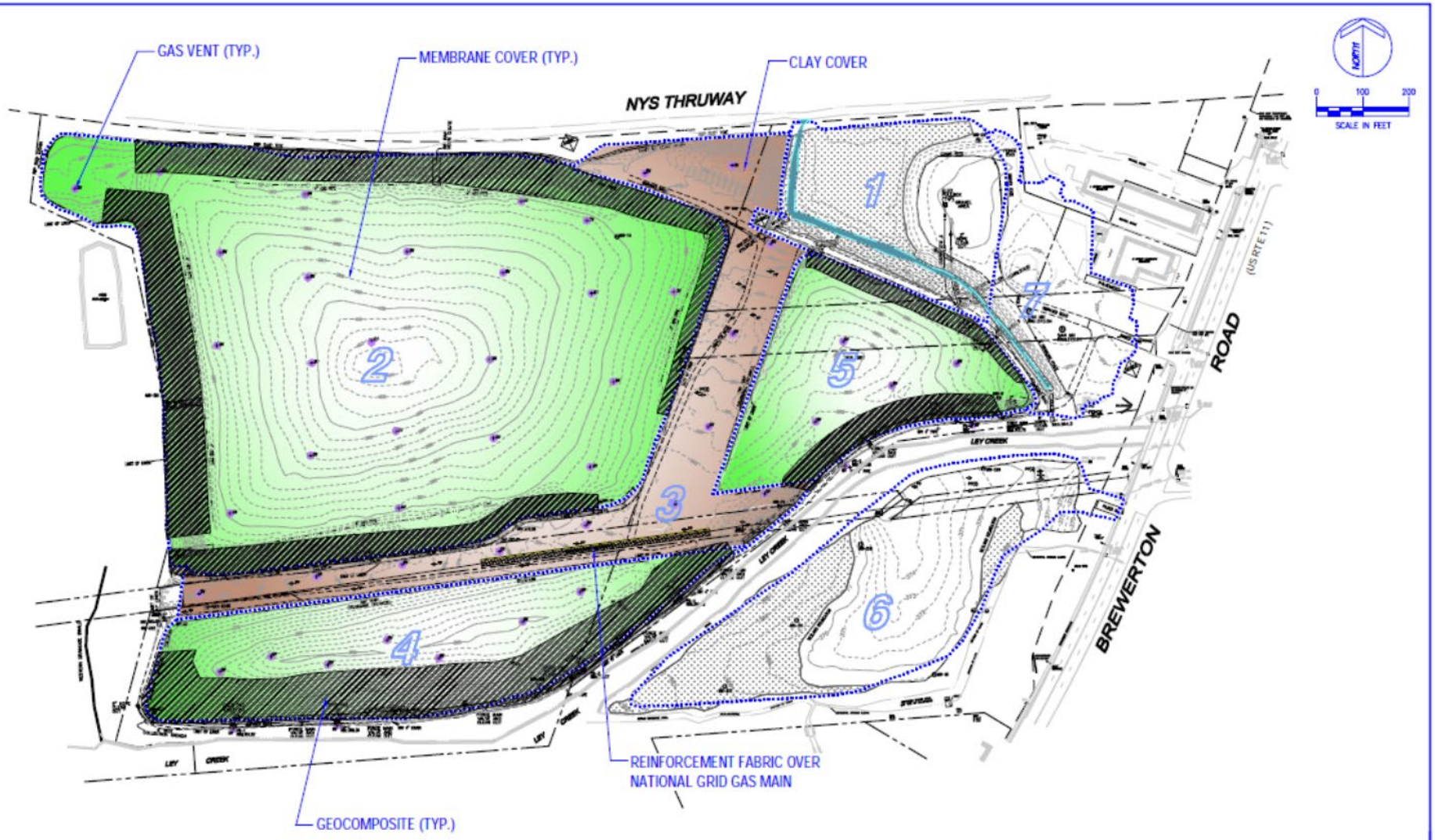
CLOUGH HARBOUR & ASSOCIATES LLP

Town of Salina Landfill Closure, Salina, NY

Property Ownership and Parcel Identification Map

FIG: 2



KEY:

- GEOMEMBRANE COVER SYSTEM
- CLAY COVER SYSTEM
- GEOCOMPOSITE

PROJ. # 22377	
SCALE: AS SHOWN	
DATE: 01 / 21 / 2014	

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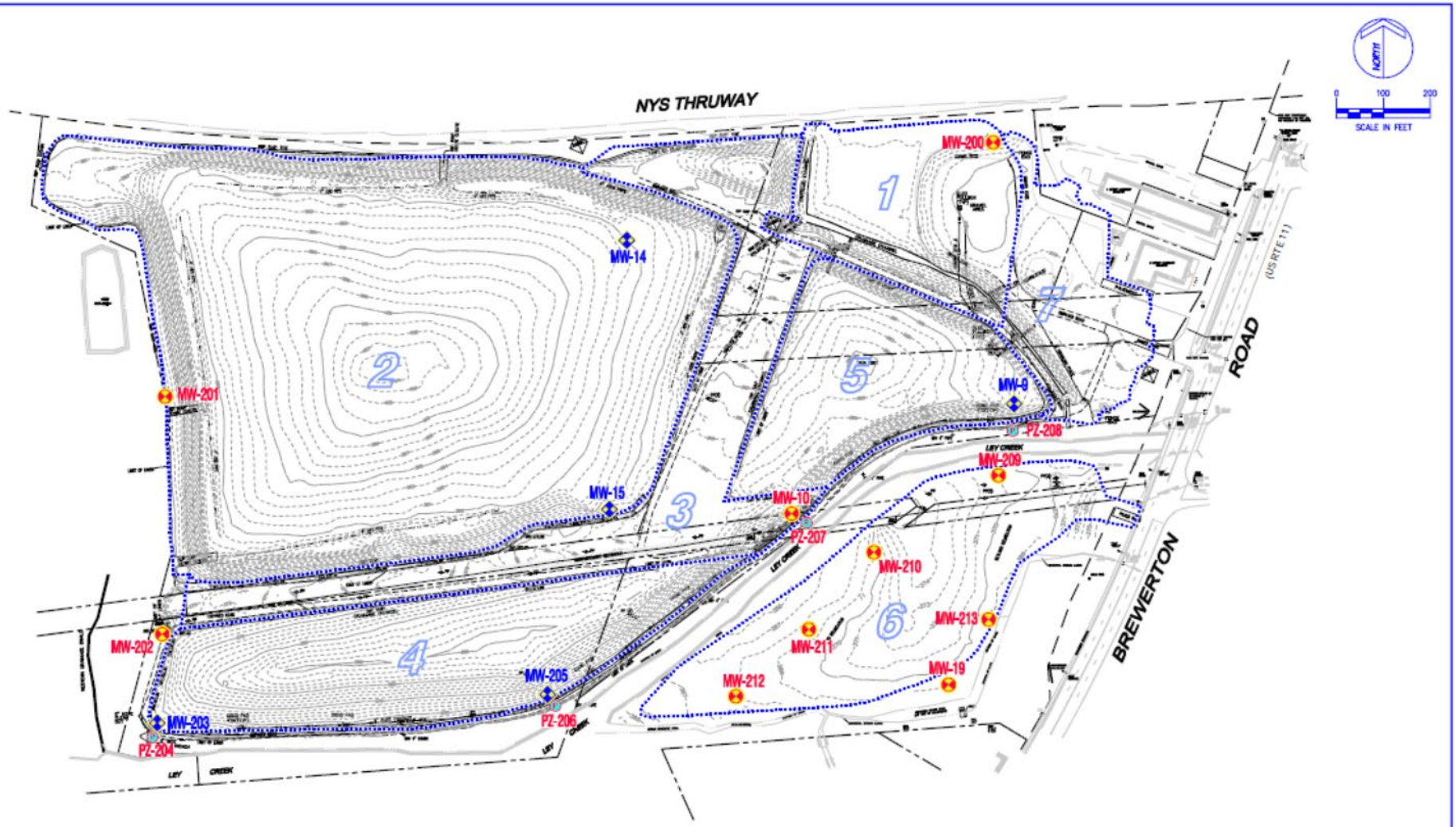
CLOUGH HARBOUR & ASSOCIATES LLP

Town of Salina Landfill Closure, Salina, NY

Landfill Cover Systems

FIG: 3



KEY:

MW-X (SAMPLED / GAUGED) MONITORING WELL

MW-X (GAUGED ONLY) MONITORING WELL

PZ-206 (SAMPLED / GAUGED) ** TEMPORARY PIEZOMETER

PROJ. # 22377	
SCALE: AS SHOWN	
DATE: 01 / 21 / 2014	

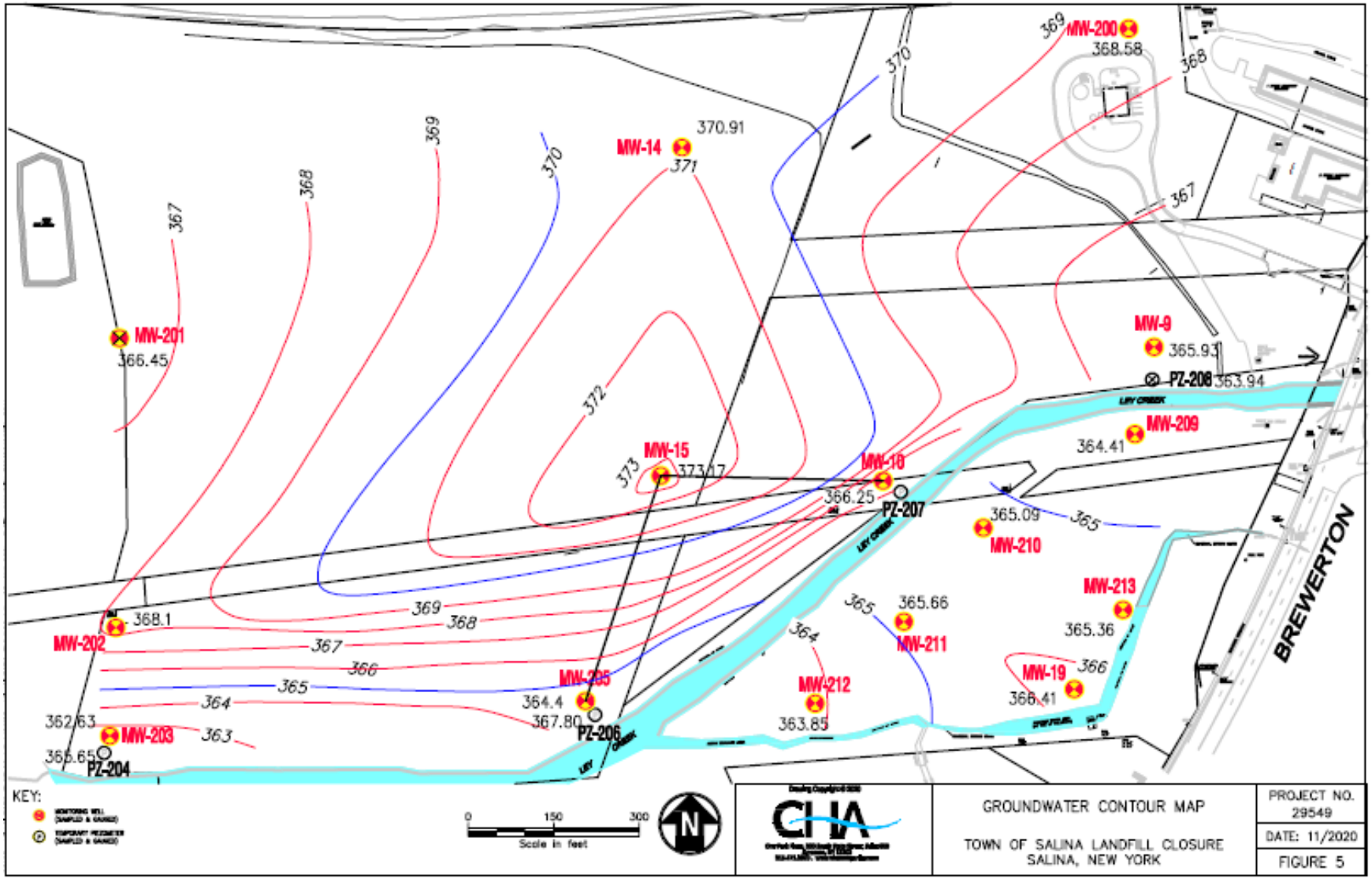
CLOUGH HARBOUR & ASSOCIATES LLP

Town of Salina Landfill Closure, Salina, NY

Monitoring Well Location Map

FIG: 4

File: V:\PROJECTS\ANY\V\22377\REPORTS\SITE MANAGEMENT PLAN\ENVIRONMENTAL MONITORING PLAN\FIGURES\22377EMP_FIG-06.DWG Saved: 11/10/2014 1:30:36 PM Plotted: 12/22/2015 2:56:19 PM User: Co


MW-200
368.58
MW-14
370.91
MW-201
366.45
MW-9
365.93
PZ-208
363.94
MW-209
364.41
MW-15
373.17
MW-10
366.25
PZ-207
365.09
MW-210
MW-213
365.36
365.66
MW-211
MW-202
368.1
MW-205
364.4
367.80
PZ-206
MW-212
363.85
MW-19
366.41
362.63
MW-203
365.65
PZ-204
LEY CREEK
BREWERTON
KEY:
MONITORING WELL (SAMPLED & GAUGED)
TEMPORARY PIEZOMETER (SAMPLED & GAUGED)
0
150
300
Scale in feet
N
GROUNDWATER CONTOUR MAP
TOWN OF SALINA LANDFILL CLOSURE
SALINA, NEW YORK
PROJECT NO. 29549
DATE: 11/2020
FIGURE 5

APPENDIX B: DOCUMENTS, DATA, AND INFORMATION REVIEWED IN COMPLETING THE FIVE-YEAR REVIEW

Documents, Data and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	**Date**
Remedial Investigation	May 2001
Feasibility Study	May 2002
Record of Decision (ROD)	March 2007
Cap RD	August 2010
ROD Amendment	September 2010
Trench RD	January 2012
Pre-Treatment Plant RD	December 2013
Cap/Collection Trench RA Report	September 2014
Pre-Treatment Plant RA Report	September 2015
Site Management Plan	November 2016
Monthly, Quarterly, and Annual Reports	2020 - 2025

APPENDIX C: SITE'S TOPOGRAPHY, HYDROLOGY, AND GEOLOGY/HYDROGEOLOGY

Site Geology/Hydrogeology

Groundwater underlying the Subsite is found in two water-bearing units. The uppermost water-bearing unit is unconfined. The water table ranges from four to 22 feet below grade and is present either within the waste or in the uppermost sand unit. The lower water-bearing unit is under confined conditions and is present in the lower sand unit, above the till.

The bedrock geology in the area of the Subsite generally consists of sedimentary rock units from the Paleozoic-age Salina Group which, in order of oldest to youngest, consists of the Vernon Formation, the Syracuse Formation, Camillus Shale and the Bertie Formation. Specifically, the bedrock is made up of units of the Vernon Formation, which consists of upper Silurian shale and dolostone.

Land and Resource Use

The Salina Landfill is located within an area zoned as an "Industrial District." Land located immediately to the south and to the west of the Subsite is also zoned as an "Industrial District." The land directly east of the Subsite, on the opposite side of Wolf Street, is zoned both as a "Highway Commercial District" and a "One-Family Residential District." The land located to the north of the Subsite, on the opposite side of the New York State Thruway, is zoned as an "Open-Land District," a "Planned Commercial District," and a "One-Family Residential District."

Currently, the underlying aquifers are not used for drinking water. Residents located in the vicinity of the Subsite use the public water supply provided by Onondaga County.

APPENDIX D: Contaminants of Concern and Cleanup Goals (2007 ROD/2010 RODA)

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (mg/kg)	FREQUENCY OF EXCEEDING CLEANUP OBJECTIVE	CLEANUP OBJECTIVE (mg/kg) *
Surface Soils	Semivolatile Organic Compounds	Benzo(a)anthracene	ND to 88.0	21 of 27	0.224
		Benzo(a)pyrene	ND to 87.0	23 of 27	0.061
		Benzo(b)fluoranthene	ND to 13.9	14 of 27	1.1
		Benzo(k)fluoranthene	ND to 3.7	8 of 27	1.1
		Indeno(1,2,3-cd)pyrene	ND to 5.0	4 of 27	3.2
		Dibenzo(a,h)anthracene	ND to 0.95	19 of 27	0.014
		Chrysene	ND to 9.1	20 of 27	0.4
Surface Soils	Inorganics	Arsenic	ND to 7.0	8 of 27	1.1
		Barium	ND to 530	17 of 27	61.85
		Beryllium	ND to 0.48	7 of 27	0.16
		Cadmium	ND to 17.3	11 of 27	1.0
		Chromium	ND to 127	27 of 27	10
		Cobalt	ND to 17	6 of 27	8.55
		Copper	ND to 103	12 of 27	18.45
		Iron	4,800 to 18,800	27 of 27	20000
		Lead	ND to 1,163	13 of 27	28.6
		Manganese	273 to 557	1 of 27	492.0
		Mercury	ND to 1.5	18 of 27	0.100
		Nickel	11 to 70	26 of 27	37.3
		Selenium	ND to 23	20 of 27	2.0
		Silver	ND to 8	12 of 27	1.1
		Thallium	ND to 3.6	10 of 27	1.1
		Vanadium	ND to 22	2 of 27	21.15
		Zinc	39 to 1,733	27 of 27	20.0

* - NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 - Determination of Soil Cleanup Objectives and Cleanup Levels

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (mg/kg)	FREQUENCY OF EXCEEDING CLEANUP OBJECTIVE	CLEANUP OBJECTIVE (mg/kg) *
Subsurface Soils	Volatile Organic Compounds	1,1-Dichloroetane	ND to 377	1 of 8	200
		1,2-Dichloroethene (total)	ND to 766	1 of 8	300
		2-Butanone	ND to 420	2 of 8	300
		Acetone	ND to 1,600	3 of 8	200
		Ethylbenzene	ND to 9,700	1 of 8	5,500
		Toluene	ND to 147,949	1 of 8	1,500
		Xylene (Total)	ND to 45,362	1 of 8	1,200
Suburface Soils	Semivolatile Organic Compounds	Benzo(a)anthracene	ND to 16.0	6 of 8	0.224
		Benzo(a)pyrene	ND to 11.7	7 of 8	0.061
		Benzo(b)fluoranthene	ND to 22.2	6 of 8	1.1
		Benzo(k)fluoranthene	ND to 8.6	1 of 8	1.1
		Indeno(1,2,3-cd)pyrene	ND to 5.2	1 of 8	3.2
		Dibenzo(a,h)anthracene	ND to 1.5	1 of 8	0.014
		Chrysene	ND to 15.4	7 of 8	0.4
		Phenol	ND to 0.5	1 of 8	0.030
Subsurface Soils	Polychlorinated Biphenyls **	Aroclor-1248	0.087 to 420	8 of 8	10.0*
Sediment	Inorganics	Arsenic	5.3 to 6.7	1 of 2	6.0
		Cadmium	5.3 to 6.7	2 of 2	0.6
		Copper	13 to 28	1 of 2	16.0
		Mercury	ND to 0.15	1 of 2	0.15

* - NYSDEC TAGM #4046 - Determination of Soil Cleanup Objectives and Cleanup Levels

** - Values listed reflect the combined guidance for "Total PCBs" - Approximate Background

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ug/l)	FREQUENCY OF EXCEEDING CLEANUP OBJECTIVE	CLEANUP OBJECTIVE (ug/l) *
Groundwater	Volatile Organic Compounds	1,1,1-Trichloroethane	ND to 2,822	3 of 19	5.0
		1,2-Dichloroethene	ND to 26,742	5 of 19	5.0
		Acetone	ND to 3,100	1 of 19	5.0
		Benzene	ND to 29	4 of 19	1.0
		Chlorobenzene	ND to 23	2 of 19	5.0
		Chloroethane	ND to 136	4 of 19	5.0
		Toluene	ND to 92,774	4 of 19	5.0
		Vinyl Chloride	ND to 1,059	3 of 19	2.0
		Xylenes (Total)	ND to 17,900	4 of 19	5.0
Groundwater	Semi-Volatile Organic Compounds	1,4-Dichlorobenzene	ND to 10	4 of 19	3.0
		Naphthalene	ND to 36	2 of 19	10.0
Groundwater	PCBs	Aroclor 1248	ND to 1.6	6 of 19	0.09
Groundwater	Inorganics	Arsenic	ND to 73.6	2 of 19	25
		Barium	ND to 1,687	1 of 19	1,000
		Cadmium	ND to 34.0	12 of 19	5
		Iron	701 to 56,000	19 of 19	300
		Lead	ND to 52.2	2 of 19	25
		Manganese	33.4 to 7,633	14 of 19	300
Leachate	Volatile Organic Compounds	Benzene	ND to 4	1 of 3	1**
		Chlorobenzene	ND to 22	2 of 3	5**
Leachate	Pesticides/ PCBs	Aroclor 1248	0.7 to 1.0	3 of 3	0.09**
Leachate	Inorganics	Aluminum	1,051 to 12,131	2 of 3	2,000**
		Barium	460 to 1,501	1 of 3	1,000**
		Chromium	42 to 125	2 of 3	50**
		Iron	31,183 to 156,000	3 of 3	300**
		Lead	29 to 198	3 of 3	25**
		Manganese	412 to 1,000	3 of 3	300**

* - TOGS 1.1.1 Standards or Guidance Values for Class B Surface Waters

APPENDIX E: SITE'S REMEDY RESILIENCE

In line with regional practice, two tools were utilized to assess the Salina Landfill Superfund Subsite (OU8 of the Onondaga Lake Superfund Site). For the purpose of this analysis, the following address was used to screen the site: 1551 Brewerton Rd, Salina NY 13208. Screenshots from each of the tools used in the assessment are included below.

The first tool used to assess the Site was CMRA. This tool examined five hazards for Onondaga County, within which the Subsite is located, including extreme heat, drought, wildfire, flooding, and coastal inundation.

According to this tool, the National Risk Index Rating for **extreme heat** is relatively moderate. The projected increase of days per year with maximum temperatures greater than 90°F is shown in **Appendix E, Figure 1**.

The risk for **drought** is low and for **wildfire** very low. **Appendix E, Figures 2 and 3** show a small increase in expected consecutive dry days, which can lead to increased drought and wildfire risk when paired with extreme heat. Drought and wildfire are not expected to impact the protectiveness of the remedy, as nearby forest cover is not extensive.

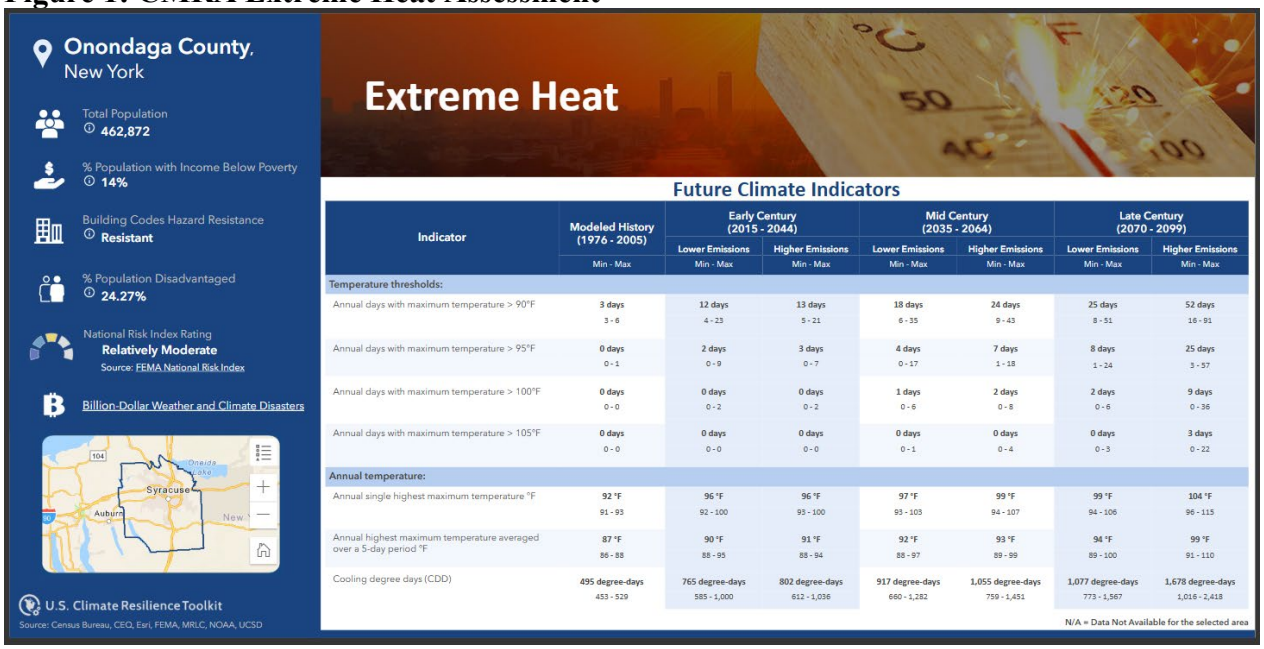
The risk for **flooding** is relatively moderate. There is a projected increase of days per year with greater than one inch of precipitation, as shown in **Appendix E, Figure 4**. Site drainage systems are sufficient and are maintained in working condition. Extreme precipitation events and severe Ley Creek flooding are not expected to impact the effectiveness of the remedy.

The risk for **coastal inundation** is not applicable. As shown in **Appendix E, Figure 5**, the percent of the county impacted by global sea level rise is 0.0%.

The second tool utilized is called the USGS U.S. Landslide Inventory & Susceptibility Map. As shown by **Appendix E, Figure 6**, there have been no **landslides** recorded in the vicinity of the site, and the site has a low risk for landslide activity in the future. A landslide would likely not impact the effectiveness of the remedy, as the landfill has a moderate profile landfill-cap slopes are modest.

Potential site impacts from severe weather events have been assessed, and the performance of the remedy is not expected to be impacted.

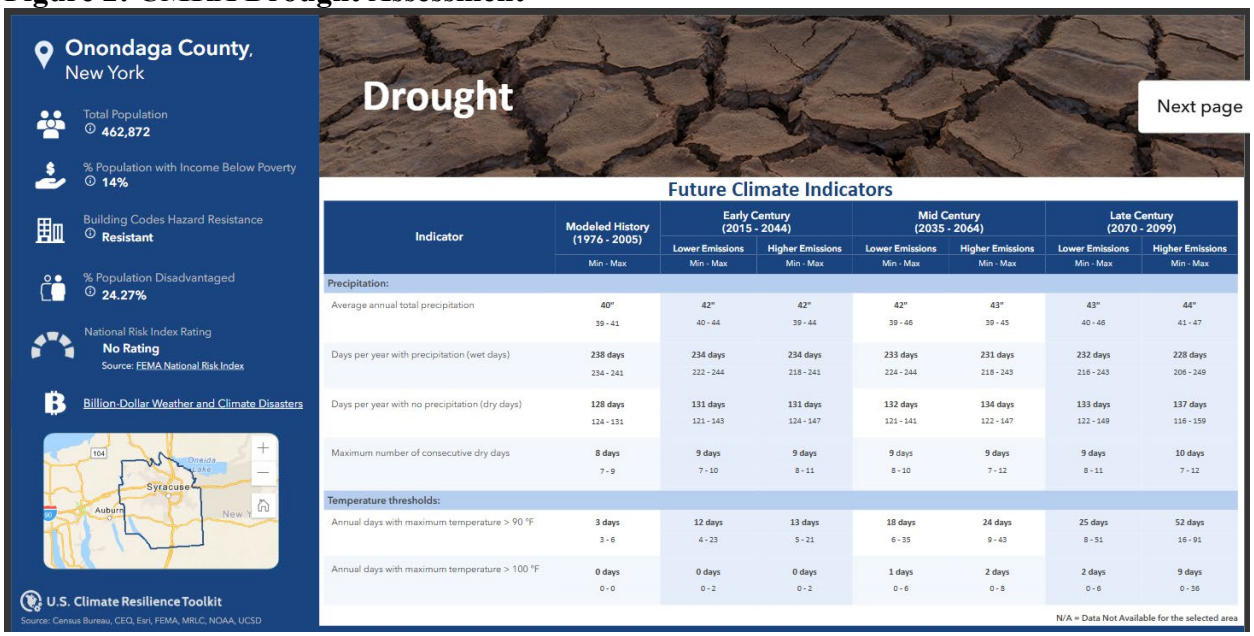
Figure 1: CMRA Extreme Heat Assessment



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	3 days 3 - 6	12 days 4 - 23	13 days 5 - 21	18 days 6 - 35	24 days 9 - 43	25 days 8 - 51	52 days 16 - 91
Annual days with maximum temperature > 95°F	0 days 0 - 1	2 days 0 - 9	3 days 0 - 7	4 days 0 - 17	7 days 1 - 18	8 days 1 - 24	25 days 3 - 57
Annual days with maximum temperature > 100°F	0 days 0 - 0	0 days 0 - 2	0 days 0 - 2	1 days 0 - 6	2 days 0 - 8	2 days 0 - 6	9 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 - 1	0 days 0 - 4	0 days 0 - 3	3 days 0 - 22
Annual temperature:							
Annual single highest maximum temperature °F	92 °F 91 - 93	96 °F 92 - 100	96 °F 93 - 100	97 °F 93 - 103	99 °F 94 - 107	99 °F 94 - 106	104 °F 96 - 115
Annual highest maximum temperature averaged over a 5-day period °F	87 °F 86 - 88	90 °F 88 - 95	91 °F 88 - 94	92 °F 88 - 97	93 °F 89 - 99	94 °F 89 - 100	99 °F 91 - 110
Cooling degree days (CDD)	495 degree-days 453 - 529	765 degree-days 585 - 1,000	802 degree-days 612 - 1,036	917 degree-days 660 - 1,282	1,055 degree-days 759 - 1,451	1,077 degree-days 773 - 1,567	1,678 degree-days 1,016 - 2,418

N/A = Data Not Available for the selected area

Figure 2: CMRA Drought Assessment



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	40" 39 - 41	42" 40 - 44	42" 39 - 44	42" 39 - 46	43" 39 - 45	43" 40 - 46	44" 41 - 47
Days per year with precipitation (wet days)	238 days 234 - 241	234 days 222 - 244	234 days 218 - 241	233 days 224 - 244	231 days 218 - 243	232 days 216 - 243	228 days 206 - 249
Days per year with no precipitation (dry days)	128 days 124 - 131	131 days 121 - 143	131 days 124 - 147	132 days 121 - 141	134 days 122 - 147	133 days 122 - 149	137 days 116 - 159
Maximum number of consecutive dry days	8 days 7 - 9	9 days 7 - 10	9 days 8 - 11	9 days 8 - 10	9 days 7 - 12	9 days 8 - 11	10 days 7 - 12
Temperature thresholds:							
Annual days with maximum temperature > 90 °F	3 days 3 - 6	12 days 4 - 23	13 days 5 - 21	18 days 6 - 35	24 days 9 - 43	25 days 8 - 51	52 days 16 - 91
Annual days with maximum temperature > 100 °F	0 days 0 - 0	0 days 0 - 2	0 days 0 - 2	1 days 0 - 6	2 days 0 - 8	2 days 0 - 6	9 days 0 - 36

N/A = Data Not Available for the selected area

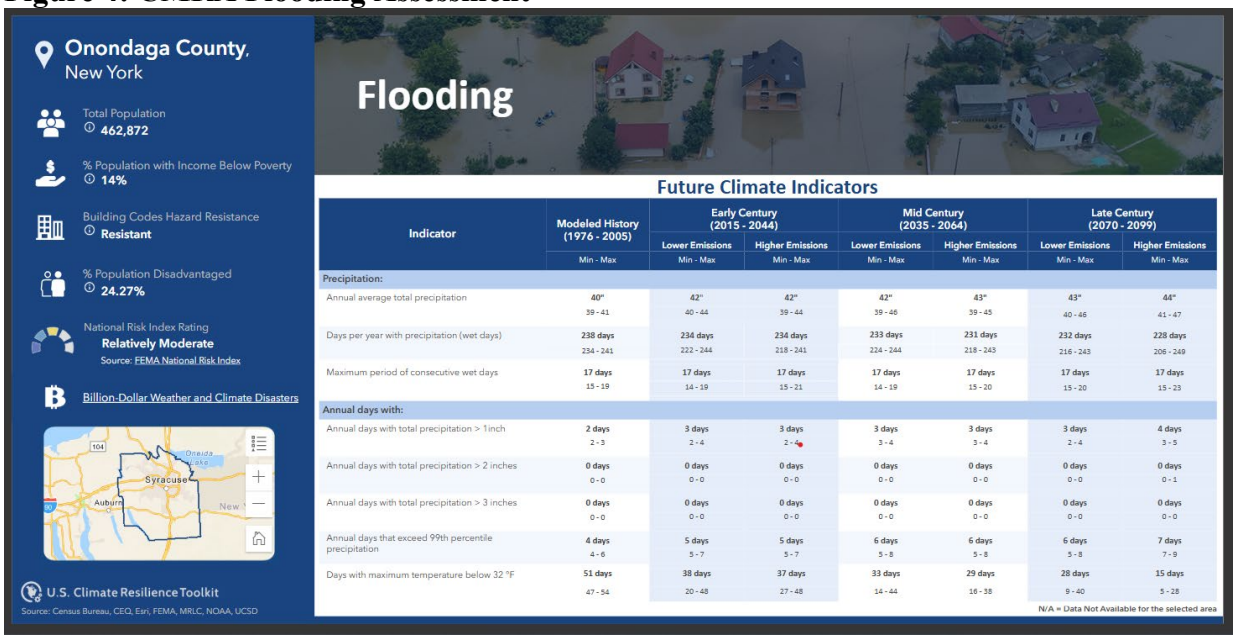
Figure 3: CMRA Wildfire Assessment

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:							
Days per year with no precipitation (dry days)	128 days 124 - 131	131 days 121 - 143	131 days 124 - 147	132 days 121 - 141	134 days 122 - 147	133 days 122 - 149	137 days 116 - 159
Maximum number of consecutive dry days	8 days 7 - 9	9 days 7 - 10	9 days 8 - 11	9 days 8 - 10	9 days 7 - 12	9 days 8 - 11	10 days 7 - 12
Days per year with precipitation (wet days)	238 days 234 - 241	234 days 222 - 244	234 days 218 - 241	233 days 224 - 244	231 days 218 - 243	232 days 216 - 243	228 days 206 - 249
Temperature thresholds:							
Annual days with maximum temperature > 90°F	3 days 3 - 6	12 days 4 - 23	13 days 5 - 21	18 days 6 - 35	24 days 9 - 43	25 days 8 - 51	52 days 16 - 91
Annual days with maximum temperature > 100°F	0 days 0 - 0	0 days 0 - 2	0 days 0 - 2	1 days 0 - 6	2 days 0 - 8	2 days 0 - 6	9 days 0 - 36

N/A = Data Not Available for the selected area

Figure 4: CMRA Flooding Assessment



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:							
Annual average total precipitation	40" 39 - 41	42" 40 - 44	42" 39 - 44	42" 39 - 46	43" 39 - 45	43" 40 - 46	44" 41 - 47
Days per year with precipitation (wet days)	238 days 234 - 241	234 days 222 - 244	234 days 218 - 241	233 days 224 - 244	231 days 218 - 243	232 days 216 - 243	228 days 206 - 249
Maximum period of consecutive wet days	17 days 15 - 19	17 days 14 - 19	17 days 15 - 21	17 days 14 - 19	17 days 15 - 20	17 days 15 - 20	17 days 15 - 23
Annual days with:							
Annual days with total precipitation > 1 inch	2 days 2 - 3	3 days 2 - 4	3 days 2 - 4	3 days 3 - 4	3 days 3 - 4	3 days 2 - 4	4 days 3 - 5
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 - 6	5 days 5 - 7	5 days 5 - 7	6 days 5 - 8	6 days 5 - 8	6 days 5 - 8	7 days 7 - 9
Days with maximum temperature below 32 °F	51 days 47 - 54	38 days 20 - 48	37 days 27 - 48	33 days 14 - 44	29 days 16 - 38	28 days 9 - 40	15 days 5 - 28

N/A = Data Not Available for the selected area

Figure 5: CMRA Coastal-Inundation Assessment

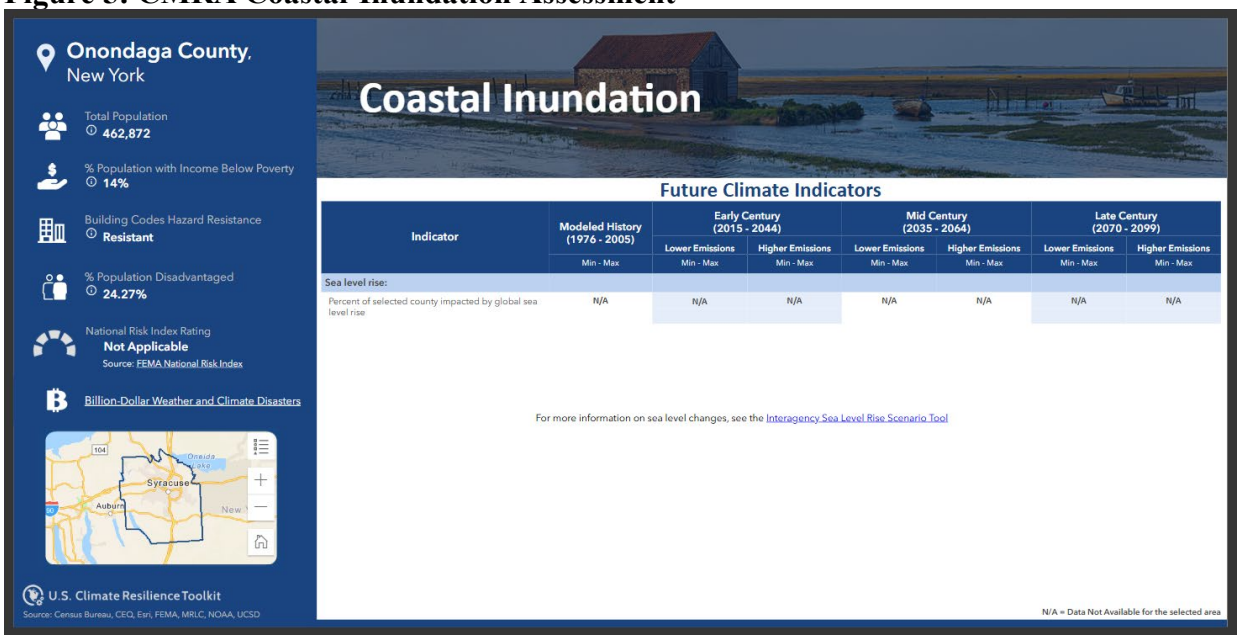


Figure 6: USGS Landslide Susceptibility