FIFTH FIVE-YEAR REVIEW REPORT FOR THE REYNOLDS METALS CO SUPERFUND SITE ST. LAWRENCE COUNTY TOWN OF MASSENA, NEW YORK

Prepared by

U.S. Environmental Protection Agency
Region 2
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LIST OF ABBREVIATIONS & ACRONYMS

BHHRA	Baseline Human Health Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIC	Community Involvement Coordinator
CFR	Code of Federal Regulations
CMRA	Climate Mapping for Resilience and Adaptation Tool
CY	Cubic yards
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
IC	Institutional Controls
LTM	Long-Term Monitoring
mg/kg	milligram per kilogram
ηg/kg	nanograms per kilogram
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable unit
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated biphenyls
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
RMC	Reynolds Metals Corporation
ROD	Record of Decision
RPM	Remedial Project Manager
SAV	Submerged Aquatic Vegetation
SLRRP	Saint Lawrence River Remediation Project
SRMT	Saint Regis Mohawk Tribe
TDBFs	Total Dibenzofurans
TEFs	Toxicity Equivalence Factors
µg/kg	microgram per kilogram
UU/UE	Unlimited use/Unlimited exposure
USGS	United States Geological Survey
YOY	Young of year

I. INTRODUCTION

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

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

This is the Fifth FYR for the Reynolds Metals Superfund Site (Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one operable unit (OU), which will be addressed in this FYR. OU1 addresses the sediment remedy.

The Site FYR was led by EPA: Victoria Rubino, Remedial Project Manager; Abigail DeBofsky, Ecological Risk Assessor; Jinnie Hanlee, Ecological Risk Assessor; Rachel Griffiths, Hydrogeologist; Larisa Romanowski, Community Involvement Coordinator (CIC); and Damian Duda, Supervisor. Other participants included Kelly Hale, New York State Department of Environmental Conservation (NYSDEC) representative, and Jessica L. Jock, Saint Regis Mohawk Tribe (SRMT) Remediation and Restoration Program Manager. Alcoa Inc., the potentially responsible party (PRP), was notified of initiation of the FYR. The review began on 9/1/2025.

Site Background

The Reynolds Metals Corporation (RMC) facility, a former aluminum production plant, is located on the St. Lawrence River, approximately eight miles east of the Village of Massena, New York. The RMC facility is bordered on the north by the St. Lawrence River, which is the international border with Canada. The properties immediately east of the RMC facility are owned by the St. Lawrence Seaway Corporation, New York State Department of Transportation, and the Revitalizing Auto Communities Environmental Response Trust (formerly General Motors Company property). SRMT tribal lands, known as Akwesasne, are located to the east, and Route 37 and the Grasse River are situated to the south and west, respectively.

The Site encompasses a portion of the St. Lawrence River bordering the RMC facility (the facility, which is not part of the Site, is being addressed under New York State authorities). See **Appendix A**, **Figure 1**, for the Site's location.

The RMC facility was constructed in 1958 for the production of aluminum from alumina (aluminum oxide). Through its operation, various types of industrial wastes were generated, disposed of, and spread throughout the grounds. The facility also discharged contaminants to the St. Lawrence River through four outfalls known as Outfalls 001, 002, 003, and 004. Discharges from Outfall 001 included water from the facility's wastewater treatment system. Outfall 002 discharged contact cooling water and stormwater runoff from the facility. The discharge traveled down an open ditch on the RMC property prior to entering the St. Lawrence River. Outfall 003 carried treated discharge from the facility sanitary treatment plant through a submerged pipe that discharged approximately 100 feet from the shore. Outfall 004 carried intermittent runoff from northern areas of the plant directly to the St. Lawrence.

Appendix C, attached, summarizes the documents utilized to prepare this FYR. **Appendix D**, attached, summarizes the physical characteristics, geology/hydrogeology, land use, and facility response actions. For more details related to the Site, please refer to: http://www.epa.gov/superfund/reynolds-metals-ny.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Reynolds Metals Co		
EPA ID: NYD002245967		
Region: 2	**State:** NY	**City/County:** Massena, St Lawrence County
SITE STATUS		
NPL Status: Non-NPL		
Multiple OUs? No	**Has the site achieved construction completion?*** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Victoria Rubino		
Author affiliation: EPA		
Review period: 9/1/2025 – 4/14/2026		
Date of site inspection: 4/14/2026		
Type of review: Statutory		
Review number: 5		
Triggering action date: 6/25/2021		
Due date *(five years after triggering action date)*: 6/25/2026		

*The site will not be eligible for the site-wide Construction Completion milestone, but construction has been completed.

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In January 1989, RMC completed an initial study of sediment contamination in the St. Lawrence River adjacent to its plant. In September 1989, pursuant to a Unilateral Administrative Order (Index No. II CERCLA-90230) issued by EPA, RMC agreed to investigate and clean up contamination in the river system surrounding the RMC facility, referred to as the "Reynolds Study Area." In August 1991, RMC submitted a report that characterized the nature and extent of contamination in the Reynolds Study Area. Based upon the results of this investigation, it was determined that approximately 30 acres of sediments, covering a 3,500-foot portion of the St. Lawrence River and extending 450 feet out from the shoreline, were contaminated with polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and total dibenzofurans (TDBFs) from discharges from the facility and that the contaminated sediments presented both a potential ecological and human health risk from ingestion of contaminated sediments and fish.

Response Actions

EPA issued a ROD for the site in September 1993. Although remedial action objectives (RAOs) were not specifically identified in the ROD, the implicit goals were to:

- Prevent human and biota contact with contaminated sediments;
- Reduce and/or prevent human ingestion of elevated contamination within fish caught from the St. Lawrence River; and
- Reduce short-term impacts to surface water and air expected during remedial activities.

The major components of the remedy included:

- Dredge St. Lawrence River sediments that contain greater than 1 milligram per kilogram (mg/kg) PCBs, greater than 10 mg/kg total PAHs, and greater than 1 microgram per kilogram (µg/kg) TDBFs;
- On-site treatment of the dredged sediments with PCB concentrations greater than 25 mg/kg by thermal desorption; and
- Consolidation of the untreated dredged sediments containing between 1 mg/kg and 25 mg/kg PCBs and the treated dredged sediments in Black Mud Pond, a disposal pit located on the grounds of the facility, prior to its capping in conformance with NYSDEC's January 1992 ROD.

A ROD amendment was signed by EPA in September 1998 to modify treatment/disposal requirements. The major components of the amendment include:

- Treatment and disposal of all dredged sediments with concentrations exceeding 500 mg/kg PCBs at an approved off-site facility;
- Disposal of all dredged sediments with concentrations of PCBs between 50 mg/kg and 5 mg/kg at an approved off-site facility;
- Consolidation of all dredged sediments with concentrations of PCBs less than 50 mg/kg in the on-site Industrial Landfill, which will be capped in conformance with NYSDEC's ROD (Black Mud Pond was capped in 1996 and was no longer available); and
- After implementation of the dredging project, if it is determined that technological limitations preclude the attainment of the cleanup goals, then other remedial actions, such as capping, can be performed to assure attainment of the cleanup goals.

All other components of the 1993 ROD remained unchanged.

An Explanation of Significant Differences (ESD) was issued in December 2008, documenting changes to the 1993 ROD and the 1998 ROD amendment following the 2001 dredging of the Site.

The ESD concluded that:

- Capping the remaining contaminated cells was the proper way to complete the remedial action at the site. EPA was concerned that additional dredging might recontaminate remediated cells and that residual PAHs in a smaller subset of cells might still need to be addressed through the placement of a cap.
- The 23 cells with total PAH concentrations between 10 mg/kg and 20 mg/kg would not require supplemental remediation since much of their low molecular weight PAHs would readily break down over a relatively short period of time bringing their total PAH levels to below the action level of 10 mg/kg.

Status of Implementation

In 2000, RMC, now Alcoa, completed the remedial design for the dredging project and a design for a subaqueous cap, should it be needed. Reynolds was acquired by Alcoa in June 2020. The design divided the river study area into four subareas, labeled Areas A, B, C, and D. The contaminated portions of each subarea were further subdivided into individual dredge cells based on triangular sampling grids with a grid spacing of 70 feet for Areas A, B, and D, and 50 feet for Area C. The remediation area was defined by 268 dredge cells, with an average cell size of approximately 0.08 acres. A three-foot wide, 625-foot long strip of shoreline in Area C was also included in the remediation area.

In April 2001, Alcoa's contractor constructed a containment system consisting of 3,829 feet of interlocking steel sheet pile panels that completely enclosed the area to be dredged, greatly reducing the potential for sediment migration during the dredging. Dredging was conducted through mid-October 2001, during this time, post-dredging sampling indicated that 134 cells

required re-dredging. Several cells required numerous rounds of re-dredging during this dredging event. A total mass of approximately 20,200 pounds of PCBs were removed from the St. Lawrence River.[1]

Post-remedial action sampling results indicated that 12 cells did not meet the cleanup goal of 1 mg/kg PCBs even though these cells underwent several dredge passes. A decision was made to cap 15 cells, which included these recalcitrant cells, as well as three cells that were located in the midst of the 12 cells, with a three-layer cap consisting of six inches of gravel, 12 inches of sand, and a 9-inch armor layer. Because there was not enough time remaining in the 2001 construction season to install all three layers of the cap, Alcoa was directed to increase the depth of the gravel layer to 12 inches and place the remaining two layers the following Spring.

Post-dredging sampling in 2001 for TDBFs in 32 cells showed that two cells did not meet the cleanup goal (indicating that the TDBF-contaminated sediments were collocated with the PCB-contaminated sediments). Post-dredging sample results from 96 cells showed that numerous cells had levels of PAHs above the cleanup goal, indicating that the PAHs were not always collocated with the PCBs and the TDBFs. As a result of these findings, the completion of the PCB cap was put on hold until the full extent of remaining PAH-contaminated sediments could be determined. Based upon the results of additional sediment sampling conducted in 2002, 2003, 2004, and 2006, it was concluded that 76 of the 268 cells contained PAH levels above the cleanup goal of 10 mg/kg. Fifty-three of these cells had total PAHs above 20 mg/kg and the remaining 23 cells had total PAH concentrations between 10 mg/kg and 20 mg/kg (the majority of which had a concentration of 13 mg/kg or less).

The 0.75-acre PCB cap, completed during the 2009 construction season, included the placement of a 12-inch sand layer over the existing gravel layer (placed in 2001) followed by a 6-inch armor layer over 15 cells, 12 of which contained PCBs over 1 mg/kg. One shoreline cell, part of the cluster of 15 cells, which had elevated PCBs, was excavated prior to capping to maintain the original bathymetry. In addition, 50 cells that contained total PAH levels above 20 mg/kg were capped with a 6-inch sand layer followed by a 6-inch armor layer. Three shoreline cells that had elevated levels of PAHs were also capped following excavation to maintain the original bathymetry. At the completion of capping, a six-inch habitat (substrate) layer was placed over the armor layer at every capped cell located outside the nearshore boundary to facilitate the reestablishment of the submerged aquatic vegetation and benthic communities. In addition, a small volume of substrate was placed within the nearshore area to fill in spaces between the armor stone.

[1] Soil sample results from the facility indicated that the PCBs, PAHs, and TDBFs were collocated. Since it was presumed that the PCBs, PAHs, and TDBFs in the sediments were also collocated, the dredging effort utilized PCBs as an indicator compound.

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)
Fish, Biota	Yes	Yes	OU1	Prevent human consumption of contaminated fish	Fish Advisory (NYSDOH, 2019)

Although lack of public access to the shoreline and depth of the river near the site prevents fishing in the immediate vicinity, the ROD, as modified by the ROD amendment and ESD, recognized the existing advisories at the time. The area is accessible by boat. Fish advisories have been posted for the entire St. Lawrence River to prevent or limit exposure to contaminated fish. See the following:

- The 2019 New York State Fish Advisory for the St. Lawrence Seaway: https://www.health.ny.gov/environmental/outdoors/fish/health_advisories/by_county.htm?county=st_lawrence
- Akwesasne Family Guide to Eating Locally Caught Fish https://craft-srmt.files.svdcdn.com/production/_uploads/environment/FishAdvisory_Nov2013_2026-08-18-132700_hsqt.pdf?dm=1787059621
- The 2014 Saint Regis Mohawk Game Advisory for the area is located at: https://craft-srmt.files.svdcdn.com/production/_uploads/environment/GameAdvisory_SRMT-Final.pdf?dm=1787059649

Systems Operations/Operation & Maintenance

Cap Monitoring

To maintain the integrity and effectiveness of the subaqueous caps, monitoring the caps for erosion and making repairs as necessary was required annually for the first five years. Although a cap maintenance plan for the site was not finalized until 2012, the subaqueous sediment caps were inspected in the spring of 2011 using probes along with an underwater video camera. The cap maintenance plan was revised in 2015 to require inspection of the caps using probes and underwater video camera once every five years and following significant hydrodynamic events. A significant hydrodynamic event for the SLRRP is defined as a 100-year or 25-hour storm event. The trigger for storm based monitoring events is based on rainfall data, with a 24 hour rainfall event with a 100 year recurrence, classified as 5 inches of rain

within 24 hours for the Massena area (Arcadis, 2021). Testing of the physical integrity of the capped portions of the Site was performed during this Five-Year Review period from September 20 – 22, 2021 (**Appendix A, Figures 2 and 3**). The monitoring also measured the amount of habitat layer and/or deposited sediment overlying the armor stone. The manual probing was conducted at 151 locations to document the presence of armor stone and substrate covering the stone. Armorstone was present at all probing locations, confirming the cap remains intact. Additionally, visual observations using an underwater video camera were conducted on October 5, 2021 at 15 locations. There were no significant hydrodynanmic events that required additional monitoring in this FYR Period. Cap monitoring will continue to be conducted once in a five year period, or following significant hydrodynamic events unless otherwise agreed upon between all parties.

Fish Tissue Monitoring

During this FYR period, young-of-year (YOY) fish were monitored for PCBs in 2022, 2023, and 2024 at upstream of site, at Reynolds site, and downstream of site locations. In addition, Alcoa performed a specific co-location sampling event, with sediment sampling locations near YOY sampling locations at the site (**Appendix A, Figures 8, 9** and **10**). Spottail shiners were targeted in all events, but due to low availability of spottail shiners, or similar minnow species, round goby were collected as a surrogate species as needed. Adult fish were monitored for PCBs in 2022 and 2024 **(Appendix A, Figure 8 and 12).** Adult smallmouth bass and brown bullhead were collected from the Site, downstream, and background. Six individual fish per species were collected per location, with largemouth bass, walleye pike, and white sucker as substitute species when there was a lack of available smallmouth bass or brown bullhead. No fish monitoring was conducted in 2025. As recommended in the third FYR, YOY and adult fish for PCBs should continue to be monitored at least twice during each FYR period, unless a modification to the schedule is agreed upon by all parties.

Sediment Sampling

Sediment sampling events were conducted in 2021, 2022, 2023, and 2024 during this FYR period. In 2021, nine cells with PAHs or PCBs that were above cleanup goals during the 2016 Long Term Monitoring event results were sampled (**Appendix B, Figure 4**). Sampling events for 2022, 2023, and 2024 included 3 to 4 cells co-located with YOY fish sample locations. Cells with elevated PCBs from previous LTM events were used to investigate if there were potentially any correlations. Additionally, two cells (D-126 and D-127) were sampled for PAHs in 2022 (**Appendix B, Figures 5, 6 and 7**). Sediment sample locations for 2022, 2023 and 2024 monitoring events were determined after fish sampling events to ensure sediment samples were collected where YOY were collected (Arcadis, 2023).

Remedy Resilience

Potential Site impacts from major storm events have been assessed and performance of the remedy is currently not at risk from major weather events in the region and near the Site. **Appendix E** of this FYR provides risk assessment from various models. The remedy, as designed

and implemented, takes into consideration the most likely local effect of extreme weather events in the region, which is in-river caused by extreme precipitation events or rapid snowmelt. Other local factors that EPA has considered in concluding that the remedy is sufficient to address more intense and extreme weather events that may arise include: (1) the St. Lawrence River water level is controlled by the Robert Moses Power Dam located upstream of the Site; (2) the constructed remedy was designed to ensure it is resilient in the face of future extreme weather events; (3) the subaqueous caps in the St. Lawrence River have a large armor stone layer on top of sand and gravel, which was inspected by Arcadis, Alcoa's contractor in 2010, 2011, 2012, 2013, 2014 and 2017, and 2021 and has not shown evidence of ice scour or washouts; (4) per the long term monitoring plan, the caps will undergo additional inspections following extreme weather events in addition to the regularly scheduled inspection.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 2: Protectiveness Determinations/Statements from the 2021 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy protects human health and the environment. The dredging and capping of contaminated sediments have been completed, removing ecological exposure and direct contact (*i.e.,* ingestion and dermal contact with contaminated sediments) exposures to the public. Fish advisories have been posted for the entire St. Lawrence River to prevent or limit exposure to contaminated fish.
Sitewide	Protective	The remedy protects human health and the environment. The dredging and capping of contaminated sediments have been completed, removing ecological exposure and direct contact (*i.e.*, ingestion and dermal contact with contaminated sediments) exposures to the public. Fish advisories have been posted for the entire St. Lawrence River to prevent or limit exposure to contaminated fish.

There were no issues or recommendations that affected the protectiveness of the remedy in the last Five-Year Review.

The following suggestions were identified during the last FYR as Other Findings as they did not affect current or future protectiveness:

- The results presented in the long-term monitoring reports indicate that the remedy is functioning as intended, but elevated contaminant concentrations in YOY spottail shiners should be further considered in the next FYR to ensure that tissue concentrations are not trending in a positive direction.

  Followup: YOY sampling was conducted in 2022, 2023, and 2024 to improve assessment of any trends. Due to an absence of spottail shiners, round gobies were used as an alternative species. There are differences in concentrations between the two species,

making it difficult to determine trends. Additional data for round gobies would be needed to have a more robust data set. Spottail shiners should be analyzed separately from round gobies, if collected in the future. Especially given changes in YOY species availability, two fish sampling events per five year review period should continue to assess long term trends and any potential impacts further up the food chain due to higher concentrations in available prey/YOY fish.

- A site inspection could not be performed during the review period due to the ongoing COVID-19 pandemic. An inspection should be scheduled when it is determined to be safe to do so.

  Followup: A FYR site inspection was performed for this current FYR period on April 14, 2026. A previous site visit occurred in May 2024 as well.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On July 21, 2025, the EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at Superfund sites in New York, New Jersey, and the U.S. Virgin Islands, including the Reynolds Metals site. The announcement can be found at the following web address: https://www.epa.gov/superfund/R2-fiveyearreviews.

In addition to this notification, the EPA Community Involvement Coordinator, or CIC for the site, Larisa Romanowski posted a public notice on the EPA site webpage (https://www.epa.gov/superfund/reynolds-metals-ny) and provided the notice to the SRMT Environment Division and the town and village of Massena by email on June 3rd, 2026 with a request that the notice be posted in municipal offices and on their respective webpages. The public notice was also distributed via the site's email Listserv. This notice indicated that a FYR would be conducted at the Reynolds Metals 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 EPA will make the results available to the following repositories: Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, New York; Saint Regis Mohawk Tribe Environment Division, Community Service Building, 850 Rt. 37, Akwesasne, New York; Massena Public Library, 41 Glen Street, Massena, New York. In addition, the EPA will post the final report on the following website: https://www.epa.gov/superfund/reynolds-metals-ny. The CIC will make efforts to reach out to local public officials to inform them of the results.

Data Review

Fish Tissue

While there are no remedial action objectives, or cleanup goals for fish tissue identified in the decision documents for the Reynolds site, fish tissue are monitored to assess the remedy

performance. During this FYR period, YOY were collected from 2022 to 2024 at a background location, and at the Site, and Adult Fish were collected in 2022 and 2024 for Background (above the Robert Moses Saunders Dam), the Site, and Downstream. Fish Tissue was analyzed for both Total PCBs and Lipid-Normalized PCBs.

Substitute species for YOY fish were collected during this FYR period (2022-2024), as spottail shiner populations in the vicinity of the Site may have declined in recent years. In 2022, no spottail shiners were available at the Site for collection; therefore, YOY round goby (*Neogobius melanostomus)* were collected as a substitute species from the sampling area. The blackchin shiner (*Notropis heterodon)* and fallfish (*Semotilus corporalis)* were collected as a substitute species to supplement the limited availability of spottail shiners in 2023, and the bluntnose minnow (*Pimephales notatus)* was collected as a background substitute in 2024 **(Appendix B, Table 7).**

In 2022, the mean total PCB concentration in whole-body YOY round goby was 1.3 mg/kg, with concentrations ranging from 0.74 to 2.2 mg/kg. These levels were higher than PCB concentrations in whole-body YOY spottail shiner samples collected in the previous sampling event in 2018, with a mean PCB concentration of 0.38 mg/kg ranging from 0.22 to 0.61 mg/kg PCB **(Appendix , Figure 11).** The reason for this relative increase is unclear but may be related to potential species-specific differences in YOY PCB bioaccumulation between the two species (*e.g.*, feeding, habit use, physiology, etc).

The collection of round gobies was targeted in 2023 and 2024 to assess whether the observed concentrations in 2022 were attributed to potential species-specific differences. The mean PCB concentration of YOY shiner/minnow collected from the site in 2023 ranged from 0.34 to 0.85 mg/kg at the Site, and the mean PCB concentration of YOY round goby collected was 1.8 mg/kg (ranging from 0.29 to 7.5 mg/kg) **(Appendix B, Table 7)**. Six of the ten round goby samples observed had a mean of 0.55 mg/kg, while the other four YOY round goby samples collected in the general vicinity of sediment sampling cells D-102, D-126 and D-127 had a PCB mean concentration of 3.7 mg/kg (ranging from 1.8 to 7.5 mg/kg) **(Appendix B, Table 6)**. In 2024, spottail shiner were available for collection and the mean PCB concentration of spottail shiner was 0.10 mg/kg, ranging from 0.072 to 0.14 mg/kg, the lowest average recorded during the duration of the monitoring program. The mean PCB concentration in YOY round goby collected from the site was 1.0 mg/kg in 2024, ranging from 0.18 mg/kg to 3.8 mg/kg. Similar to 2023, round goby samples with the elevated PCB concentrations at the site were collected in the general vicinity of sediment sampling cells D-102, D-126, and D-127. See **Appendix B, Table 6** and **Appendix A, Figure 10** for co-location sampling event results by sediment sampling cell.

Adult smallmouth bass *(Micropterus dolomieui)* and adult brown bullhead *(Ictalurus nebulosus)* were targeted for collection this FYR period (2022 and 2024). Substitute species were collected if there was limited availability of the target species. This included walleye (*Sander vitreus;* a top-down predator) for smallmouth bass and white sucker (*Catostomus commersoni;* a bottom feeder) for brown bullhead **(Appendix B, Table 8 and 9).**

The edible fillets of smallmouth bass and bottom-feeding fish species (brown bullhead & white sucker) were analyzed in 2022 and 2024 for total and lipid normalized PCBs. In 2022, smallmouth bass total PCB concentrations ranged from 0.16 to 5.4 mg/kg, with a mean of 1.5 mg/kg wet weight. The mean smallmouth bass total PCB results decreased in 2024 to 0.45 mg/kg, ranging from 0.22 to 0.65 mg/kg. Background samples of the smallmouth bass total PCB concentrations in 2022 ranged from 0.010 mg/kg to 0.093 mg/kg, with a mean of 0.039 mg/kg, and in 2024, ranging from 0.012 mg/kg to 0.077 mg/kg with a mean of 0.050 mg/kg. PCB concentrations vary but are decreasing over time, and total PCBs in 2024 smallmouth bass are some of the lowest observed **(Appendix A, Figure 13).**

Bottom feeding fish total PCB results in 2022 ranged from 0.11 to 0.20 mg/kg, with a mean of 0.15 mg/kg. The mean brown bullhead/white sucker PCB results slightly rose in 2024 to 0.20 mg/kg, with a range of 0.032 to 0.69 mg/kg. Background samples for bottom feeding fish total PCB concentrations in 2022 ranged from 0.0082 mg/kg to 0.013 mg/kg with a mean of 0.0092 mg/kg. In 2024, PCB in background results ranged from 0.010 mg/kg to 0.025 mg/kg, with a mean of 0.012 mg/kg. PCB concentrations for adult bottom-feeding fish vary but are decreasing over time. Total PCBs in brown bullhead/white sucker collected in 2024 are some of the lowest observed **(Appendix A, Figure 14**).

Total PCB concentrations for most adult fish samples remain above the NYSDOH fish consumption numerical guidelines for PCBs of anything above 0.21 mg/kg triggering a consumption advisory (NYSDOH, 2020). It should be noted that PCB fillet concentrations of 1 mg/kg or higher are considered "Don't Eat" by the revised NYSDOH fish consumption guidelines for PCBs. Fish fillet data from this FYR period had total PCB concentrations detected above 1 mg/kg in 2022 [2]. Additionally, the EPA ROD for the nearby Grasse River site selected a remediation goal (RG) of 0.05 mg/kg PCBs in fish fillet for the protection of human health and an RG of 0.01 mg/kg PCBs in fish for the protection of Mohawk health based on adult Tribal subsistence consumption rate. There is also Mohawk subsistence fishing in the Saint Lawrence River, which is very close to the Grasse River. Most of the adult fish tissue results for total PCBs remain above the Grasse River RG of 0.05 mg/kg., with the exception of Brown Bullhead in 2024 (minimum concentration of 0.032 mg/kg)

Physical Integrity of Caps

A review of the 2021 physical integrity monitoring confirmed that the caps are intact with armor stone (identified as cobble in the field) in place at all the long-term monitoring locations, thereby satisfying the objective of the long-term monitoring program (**Appendix A, Figures 2 and 3).** These findings are consistent with the findings from previous monitoring events (2010 through 2014 and 2017).

Sediment

[2] NYSDOH updated fish consumption guidelines for PCBs in 2020, which defined fish fillet PCB concentrations of 1 mg/kg and above as "Don't Eat", therefore reference used in prior FYRs to Anderson, et al, 1993 for 2 mg/kg as "Don't Eat", has been removed.

A total of four sediment sampling events were conducted in this FYR period, from 2021 to 2024, using a petite ponar grab sampler (Appendix A, Figures 4, 5, 6, and 7). In 2021, sediment samples were collected from cells with PAH or PCB concentrations above the cleanup goals based on results from the 2016 sediment sampling event (**Appendix B, Table 2**). For reference, the 2016 event targeted cells dredged in 2001 that exceeded the 10 parts per million (ppm) PAH cleanup goal after dredging but were not capped in 2009, in accordance with the ESD. In 2022, sediment sampling was performed at three locations to document the surface sediment concentrations where YOY fish samples were collected (D-102 and D-126), and in adjacent downstream cell (D-127) due to elevated PCB concentrations observed in D-126 in the 2021 sampling event (**Appendix B, Table 3**). In 2023, sampling was performed in four cells for PCBs: A-20, D-102, and D-126 and D-127, three of which were generally co-located with the YOY fish sample collection locations: D-102, D-126 and D-127 (**Appendix B, Table 4**). The same was done in the 2024 sediment sampling event to obtain additional data from the co-located sediment and YOY fish sampling locations to assess if any conclusions could be drawn from these paired locations (**Appendix B, Table 5** and **6**). Concentrations over time from 2011 to 2024, can be found in **Table 1A** for PAHs, and **Tabel 1B**, for PCBs.

Total PAH results in 2021 from the seven uncapped cells sampled were all less than the cleanup goal of 10 mg/kg, and ranged from 0.13 mg/kg to 4.91 mg/kg, except for one uncapped cell (C-7) where the result was 50.8 mg/kg (**Appendix B, Table 2**). Comparison of the previous 2016 data indicates that all 2021 results are lower than the 2016 results. Although C-7 was above the PAH cleanup goal, the concentration decreased from 86.29 mg/kg in 2016 to 50.8 mg/kg in 2021 showing a decline in concentration **(Appendix B, Table 2)** . In 2022, PAHs were sampled in capped cell, D-126, and uncapped cell, D-127 as part of the co-location fish sampling event. Total PAH results in 2022 for D-126 were below the clean-up goal (0.221 mg/kg) and the lowest recorded in the long term monitoring program. The Total PAH result in 2022 for uncapped cell D-127 was 19.57 mg/kg, with a duplicate sample at 8.66 mg/kg. The average between the two results is 14.1 mg/kg which is above the cleanup goal of 10 mg/kg (**Appendix B, Table 3**). This was the first sampling event in the long term monitoring program for this cell, therefore there is no comparable data Between the 2021 and 2022 sampling events for PAHs, seven out of the nine samples met the cleanup goal of 10 ppm. PAH concentrations are expected to continue to decline over time.

In 2021, three locations were sampled for PCBs, with one duplicate sample at A-20. Two fell below the cleanup goal of 1 mg/kg, and two fell above the cleanup goal. Concentrations were non-detect at cell D-108, 1.53mg/kg, with a duplicate sample of 0.743 mg/kg at cell A-20, and 59.1 mg/kg at cell D-126 (**Appendix B, Table 2**). In 2022, D-126 was sampled again, and the total PCB was an order of magnitude lower, at 4.54 mg/kg. The highest sample result of 15.6 mg/kg was collected from D-127 in 2022, and a duplicate sample was collected here with a result of 0.41 mg/kg, resulting in an average at D-127 of 8.02 mg/kg. Representative PCB results for the cells ranged from 3.80 to 8.02 mg/kg in 2022 (**Appendix B, Table 3**). Total PCB results decreased the next year, in 2023, ranging from 1.26 to 3.49 mg/kg, with all four cells exceeding the cleanup goal (1.0 mg/kg) (**Appendix B, Table 4**). In 2024, sediment concentrations showed a general decreasing trend, with total PCB results ranging from non-detect (duplicate sample of 1.26 mg/kg) to 2.33 mg/kg (**Appendix B, Table 5).** While Cells D-

102, D-126 and D-127 exceeded the cleanup goal of 1.0 mg/kg, results from this FYR (2021-2024) period show decreasing concentrations near ROD/ESD cleanup levels (**Appendix B, Table 1B**). While limited exceendences exist, **Appendix B, Table 1B** shows PCB concentrations over time, and the majority of cells have previously met the cleanup goals. The expectation is that over time, the area will be covered with clean sediment through natural processes. This will continue to be monitored in future site monitoring and reported in FYRs.

Site Inspection

The inspection of the Site was conducted on 4/14/2026. In attendance were Victoria Rubino, U.S. EPA, Jinnie Hanlee, U.S. EPA, Kelly Hale, of the NYSDEC, Sarah Hill of Arcadis, Jessica Jock and Craig Arquette of the Saint Regis Mohawk Tribe Environment Division, and Craig Peets of Alcoa. The purpose of the inspection was to assess the protectiveness of the remedy. No major issues were identified during the site inspection. Some items for further consideration that were identified included: Fishing by boat was observed on or near the capped area. Conversations with SRMT also indicated there has been ice fishing on or near the capped area. No fish advisory signs were visible along the shoreline of Alcoa.

V. TECHNICAL ASSESSMENT

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

There are three decision documents associated with the Site—a ROD, ROD amendment, and ESD. These documents collectively call for the removal or containment of contaminated sediments in the St. Lawrence River. Approximately 20,200 pounds of PCBs were removed from the St. Lawrence River, representing a 98.6% reduction of PCBs within the remediation area. In 1990, it was estimated that 21,211 pounds of PAHs were present within the sediments of the Site. As a result of 2002, 2003 and 2004 PAH sampling efforts, it was estimated that 747 pounds of PAHs remained within the sediments. This constituted a 96% decrease in the amount of PAHs present in the sediments.

Despite extensive dredging of the St. Lawrence River, the cleanup goals of 1 mg/kg PCBs, 10 mg/kg PAHs, and 1 µg/kg TDBFs were not achievable in all areas. As a result, a 0.75-acre, 15 cell area, containing a range of PCB concentrations from 11.1 mg/kg to 120.5 mg/kg, was capped with the first layer of a three-layer cap to achieve the cleanup goal. The remaining exposed sediments average 0.8 mg/kg PCBs within the remaining 255 cells (21 acres), which is below the cleanup goal.

As was noted above, PCBs were used as an indicator parameter based on the assumption that the PCBs were collocated with the other chemicals of concern, PAHs and TDBFs. A review of post- dredging PAH sampling results, however, indicated that this assumption was not true for the PAHs, as PAHs were found in dredged cells that met the cleanup goals for PCBs and TDBFs. Specifically, 76 cells (6.08 acres) had post-dredging PAH concentrations above the cleanup goal

of 10 mg/kg, 53 of these cells (4.24 acres) contained PAH levels ranging from 21.25 mg/kg to 248.9 mg/kg. Many of these cells were dredged numerous times.

Thirty-two of the 268 dredged cells (12%) were sampled for TDBFs. Thirty of the sampled cells met the cleanup goal of 1 mg/kg. The two remaining cells were located within the area that was capped due to the inability to meet the cleanup goals for PCBs.

To complete the remedial action, the 53 cells were capped in 2009. Twenty-three cells containing total PAHs between 10 mg/kg and 20 mg/kg were not capped because low molecular weight PAHs readily break down over a short period of time, bringing the total PAH level for these cells below 10 mg/kg.

The removal of contaminated sediments from the St. Lawrence River, in addition to the river's physical constraints, has greatly reduced direct dermal contact, ingestion, and inhalation exposures to these sediments and reduces the potential uptake of RMC site-related contaminants in sediment by aquatic and piscivorous receptors.

In summary, the dredging and capping have been completed and the remedy is functioning, based on current available data, as intended by the decision documents. As evidenced in **Appendix B**, **Table 1A and 1B**, the majority of sediment cells have either previously met or are nearing the cleanup goals set forth in decision documents. The remediated area will continue to be monitored to ensure the stability of the caps and recovery of the fish, and sediment. Periodic inspection of the caps, most recently in 2021, confirms that there are no weaknesses or issues with the physical integrity of the cap. Concentrations of PCBs in YOY fish remain lower than they were in 2010; however, PCB concentrations in adult fish remain above those allowable for human consumption. Sediment sampling in the capped locations indicates total PAH and total PCB results remain below cleanup goals with the exception of one cell that slightly exceeded for PCBs during the 2021, 2022, and 2023 sampling events. During 2024 sampling this cell met the goal of 1.0 mg/kg for PCBs. Sediment sampling in the dredged areas indicate very limited areas of PAH and PCB exceedances which are expected to be covered with clean sediment over time via natural processes. Overall, the data reviewed indicate the dredging and capping have been effective.

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

There have been no physical changes to the Site that would adversely affect the protectiveness of the remedy. The exposure assumptions and the toxicity values that were used to estimate the potential risks and hazards to human health followed the general risk assessment practice at the time the risk assessment was performed. Although the risk assessment process has been updated and specific parameters and toxicity values may have changed, the risk assessment process that was used is still consistent with current practice and the need to implement a remedial action remains valid. Although RAOs were not specifically identified in the ROD, the implicit goals are considered valid as well.

Based on the physical hazards, limited access, and currents within the St. Lawrence River, it is anticipated that swimming and wading into the St. Lawrence River at the Site in the dredged area is limited, as discussed in the 1993 BHHRA. Additionally, the overall reduction in sediment concentrations via dredging, capping, and/or chemical degradation further reduces potential risks in the event that an individual recreates within this area. These pathways have not changed from the previous FYR.

The dredging and capping of the sediments to 1 mg/kg of PCBs, 10 mg/kg for PAHs, and 1 µg/kg for TBDFs, as part of the remedial action, have reduced potential exposures to PCBs, PAHs, and TDBFs. The monitoring of the caps show that they remain stable and effective.

Fish, Waterfowl, and Snapping Turtle Consumption

NYSDOH advisories for fish and snapping turtles are reviewed and updated by NYSDOH on an ongoing basis. The NYSDOH 2020 Revised Fish Consumption Numerical Guidelines for PCBs, defines PCB concentrations of 1 mg/kg or greater, as "Don't Eat." NYSDOH Fish Consumption Guidelines for PCBs Fish Advisory updates can be found on the NYSDOH website (see Reference section), including Saint Lawrence Valley Region "Guide to Fish You Catch (NYSDOH, 2026).

Concentrations of PCBs in YOY fish have generally decreased during this FYR period but PCB concentrations in adult fish remain above those allowable for human consumption. The fish advisories remain in place to limit potential exposures to fish from the St. Lawrence River, however, evaluating methods of increasing public awareness is suggested considering fishing by boat and ice fishing have been observed near the caped areas of sediment and fish advisory signs were not visible on the shoreline of Alcoa. Installing or replacing signs could help increase public awareness.

The combination of reductions in the fish concentrations and the Fish Advisories issued by NYSDOH have helped reduce potential exposures. However, additional efforts such as those suggested above would help to increase public awareness of the Fish Advisories.

Ecological Risk Assessment Evaluation

The previous FYR indicated that exposure assumptions, toxicity data, cleanup levels, and remedial action objectives from the remedy remain protective. Long-term monitoring at this Site included inspection of the physical condition of the cap, sediment sampling, and tissue residue analysis for young-of-year spottail shiners, and round gobies as well as adult smallmouth bass, brown bullhead, and white suckers. Round goby were not collected prior to this FYR, but due to changes in spottail shiner population, they began to be collected in 2022. Based on these documents, the conclusions reached in the 2021 FYR are still valid. The results presented in the long-term monitoring reports indicate that the remedy is generally functioning, as intended, with an overall decreasing trend in concentrations in YOY spottail shiners. Given the small data set, analysis of the correlation between sediment and fish tissue concentrations is limited. However, the large variability in detected PCB concentrations

suggests a potential pathway for PCBs between sediment and fish within the Site. The concentration of total PCBs in round gobies was considerably higher than YOY spottail shiners in the Saint Lawrence River Remediation Project (SLRRP) Area, while concentrations were comparable between the two species in the Background Area. Without a historic dataset for round gobies, analyses are limited as to trends in concentrations in the SLRRP Area. A brief pause in sampling for spottail shiners could potentially reduce pressure on the population, but round gobies should continue to be collected in future sampling events to assess trends in this species over time.

Furthermore, there is a weak decreasing trend of concentrations in predatory and bottom-feeding fish that should be further considered in the next five-year review to ensure that tissue concentrations continue to decrease. Sampling should continue to ensure that the remedy remains protective of ecological receptors.

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

No.

VI. ISSUES/RECOMMENDATIONS

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

No issues and recommendations were identified as part of this FYR.

OTHER FINDINGS

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

- Monitor changes in spottail shiner and round goby populations and adjust future monitoring events, accordingly. Consider focusing on the dominant YOY species and not combining YOY data in order to ensure consistency in data trend analysis. Concentrations of PCBs in round gobies in the SLRRP Area were almost an order of magnitude higher than spottail shiners in the same area. While this could be due to a variety of factors, such as diet and foraging habits, additional round goby data should be collected in order to determine a trend.
- Based on the suggestion above, two fish tissue sampling events, with co-located sediment samples, in a FYR period should continue to monitor both YOY and adult fish.

- The co-location fish and sediment sampling events in 2022, 2023, and 2024 were not robust enough for statistical analysis or to determine a potential correlation. While sediment levels are mostly declining over time as expected, there are still sediment concentrations for PCBs and PAHs in uncapped areas above cleanup goals. Consult with Alcoa about conducting different types of investigations or collecting additional data which could be helpful in continuing to assess if there are any correlations between elevated sediment levels and fish tissue concentrations.
- At least one additional sediment sampling event is recommended for the next FYR period to ensure continued decreases in areas with elevated PAHs and/or PCBs. Sampling of areas where there are exceedances of cleanup levels, as well as areas that have historically been clean, would assist in data interpretation. Additionally, improved organization of data collected from cells over time would be beneficial to data interpretation.
- Fishing by boat has been observed and ice fishing has been reported near the capped area during this FYR period. Publications such as the St. Lawrence Valley Region Health Advice on Eating Fish you Catch (NYS DOH, updated 2026), and the Akwesasne Family Guide to Eating Locally Caught Fish (SRMT Environment Division, 2013), have helped increase public awareness, but consideration of additional outreach regarding fish tissue consumption advisories may be beneficial, especially in regard to populations with higher subsistence fishing rates. This could include the posting of signage on the property or other recommendations from the NYSDOH.

VII. PROTECTIVENESS STATEMENT

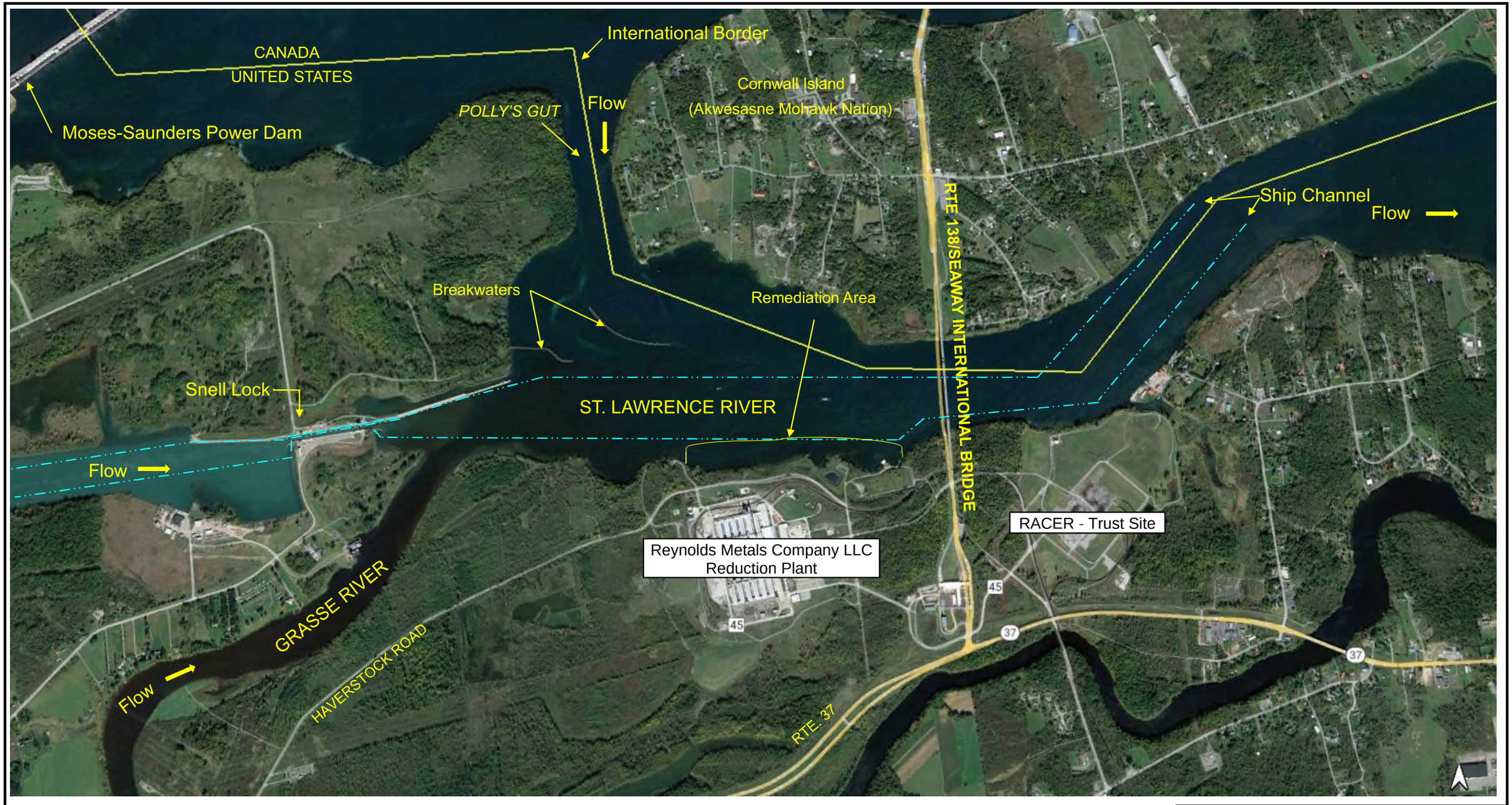
Protectiveness Statement(s)	
Operable Unit: 01	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy for OU1 is protective of human health and the environment.	

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

VIII. NEXT REVIEW

The next FYR report for the Reynolds Metals Superfund Site is required five years from the completion date of this review.

APPENDIX A – FIGURES



NOTE:

Aerial image obtained from Google Earth in January 2023.

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA,NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

SITE OVERVIEW MAP

ARCADIS

FIGURE
1

2/6/2023 8:09:38 AM

ST. LAWRENCE RIVER

MATCH LINE SEE FIGURE 2-2

LEGEND:

- APPROXIMATE SHORELINE
- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- 2021 PHYSICAL CONDITION CAP MONITORING LOCATIONS

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SELECT 2009 POST-ARMOR SURVEY LOCATIONS AND COORDINATES WERE TARGETED FOR THE 2021 PHYSICAL CONDITION CAP MONITORING EFFORTS.

0 60' 120'
GRAPHIC SCALE

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING

2021 PHYSICAL CONDITION CAP MONITORING LOCATION - UPSTREAM PORTION

ARCADIS

FIGURE
2

C:\Users\Ksartori\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\0-Folder Structure Template\2021\01-In Progress\01-DWG\SLRRP-LTM-F02-1&2-2021 CAP UP&DOWN.dwg LAYOUT: 2-1 SAVED: 11/9/2021 7:35 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 11/9/2021 7:57 AM BY: SARTORI, KATHERINE
XREFS:
X-BASEMAP
X-LTM-BORDER-LDR
IMAGES:

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XREFS:
X-BASEMAP
X-LTM-BORDER-LDR
IMAGES:



LEGEND:

- APPROXIMATE SHORELINE
- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- 2021 PHYSICAL CONDITION CAP MONITORING LOCATIONS

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SELECT 2009 POST-ARMOR SURVEY LOCATIONS AND COORDINATES WERE TARGETED FOR THE 2021 PHYSICAL CONDITION CAP MONITORING EFFORTS.

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING

2021 PHYSICAL CONDITION CAP MONITORING LOCATION - DOWNSTREAM PORTION

ARCADIS

FIGURE
3

ST. LAWRENCE RIVER

ALCOA EAST PLANT

LEGEND:

- APPROXIMATE SHORELINE
- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- 2021 SEDIMENT GRAB SAMPLE LOCATION
- SEDIMENT SAMPLE LOCATION WITH PAH AND TOC ANALYSIS
- SEDIMENT SAMPLE LOCATION WITH PCB AND TOC ANALYSIS

NOTE:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.

0 100' 200'
GRAPHIC SCALE

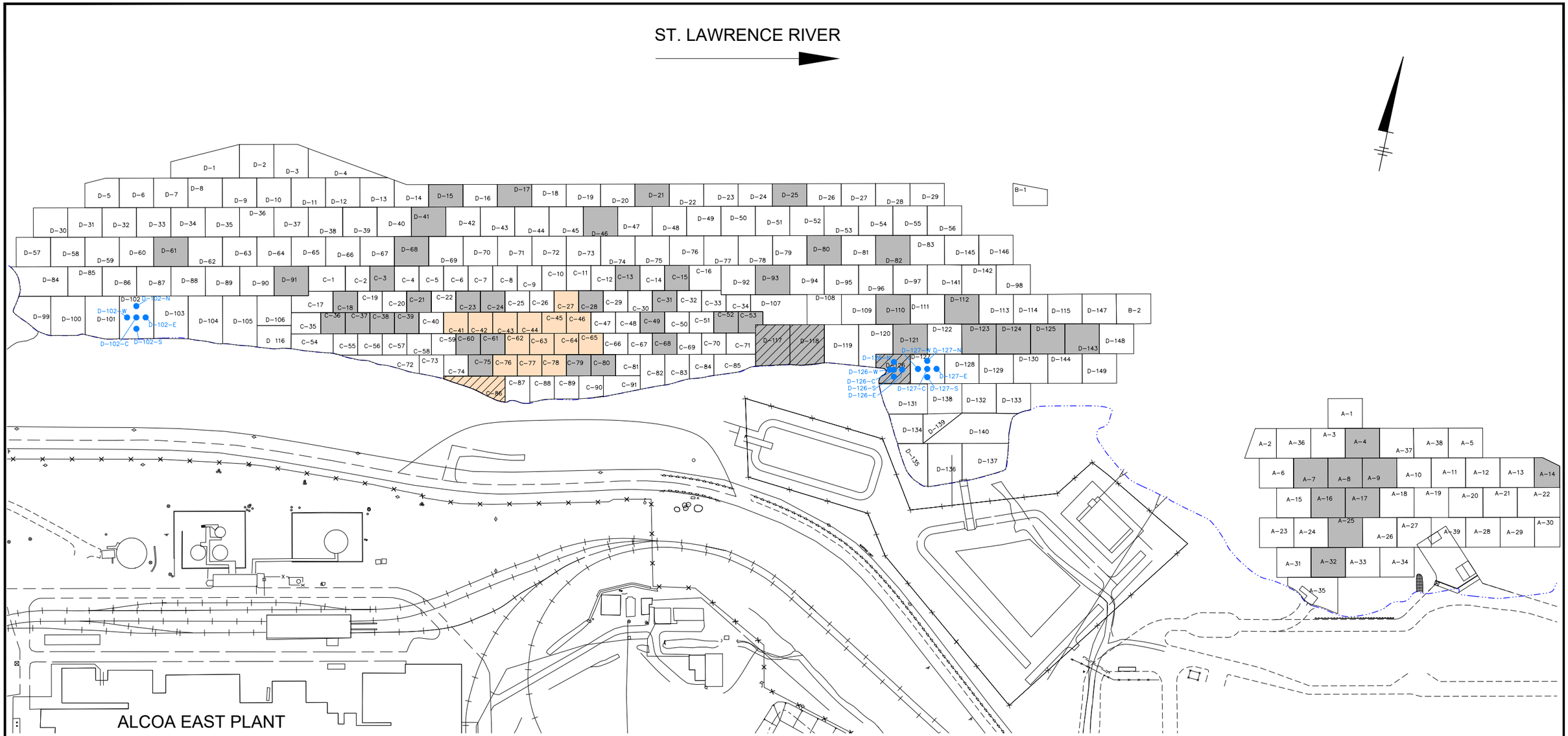
ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING

2021 SEDIMENT SAMPLING LOCATIONS

ARCADIS

FIGURE
4

C:\Users\Ksartori\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\0-Folder Structure Template\2021\01-In Progress\01-DWG\SLRRP-LTM-F02-3-2021 SED SAMPLE.dwg LAYOUT: 3-1 SAVED: 11/9/2021 7:35 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 11/9/2021 7:47 AM BY: SARTORI, KATHERINE
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X-BASEMAP
X-LTM-BORDER-LDR
IMAGES:



LEGEND:

- APPROXIMATE SHORELINE
- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- 2022 SEDIMENT GRAB SAMPLE LOCATION

NOTE:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.

0 100' 200'
GRAPHIC SCALE

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

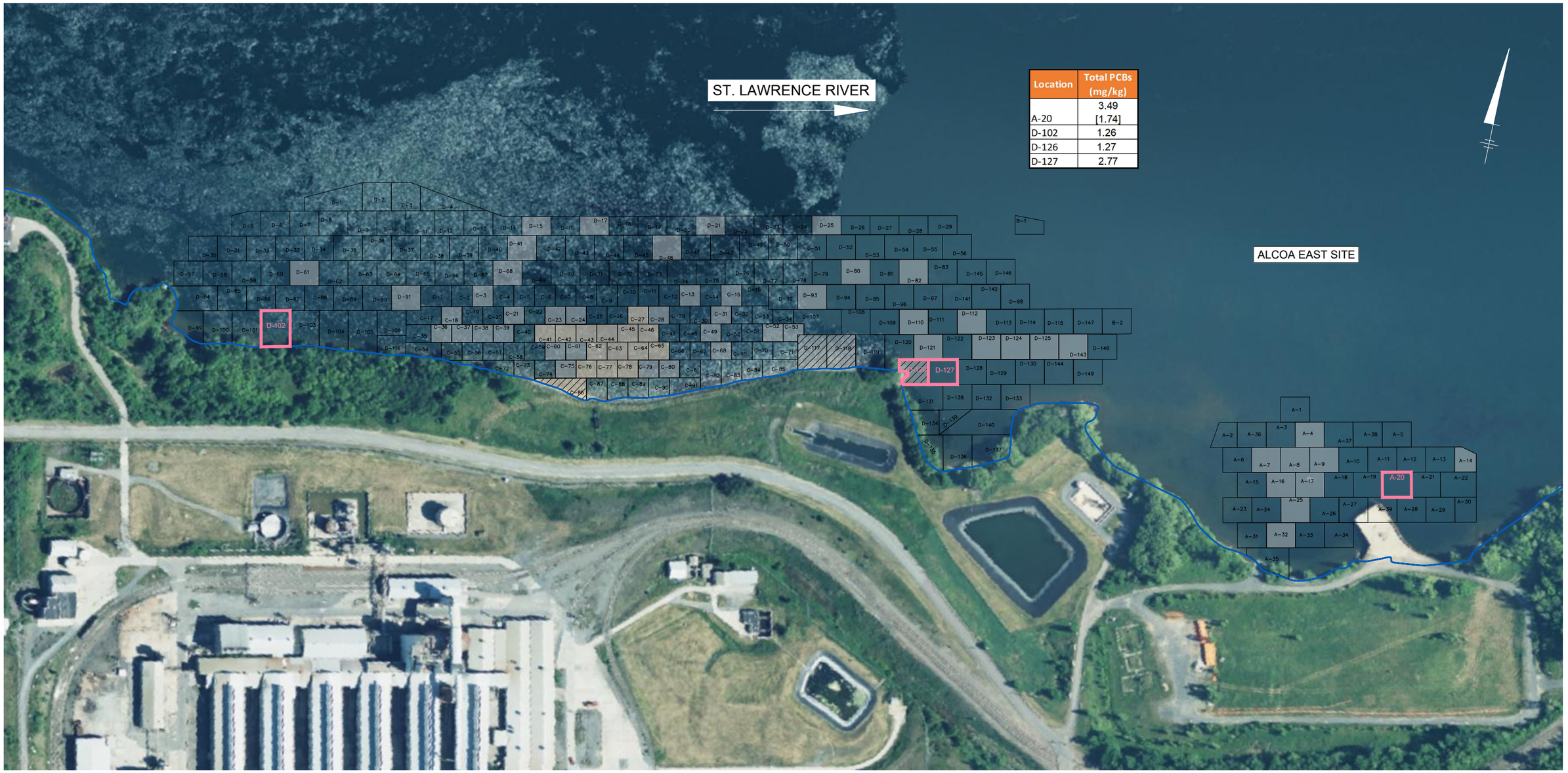
2022 SEDIMENT SAMPLING LOCATIONS

ARCADIS

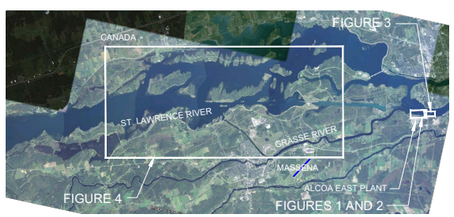
FIGURE
5

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X-LTM-BORDER-LDR
IMAGES:

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Location	Total PCBs (mg/kg)
A-20	3.49 [1.74]
D-102	1.26
D-126	1.27
D-127	2.77



LEGEND:

- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- SEDIMENT SAMPLE LOCATION

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SITE AERIAL PHOTOGRAPH FROM 2024 MICROSOFT CORPORATION © 2023 DIGITAL GLOBE © CNES (2023) DISTRIBUTION AIRBUS DS BING.

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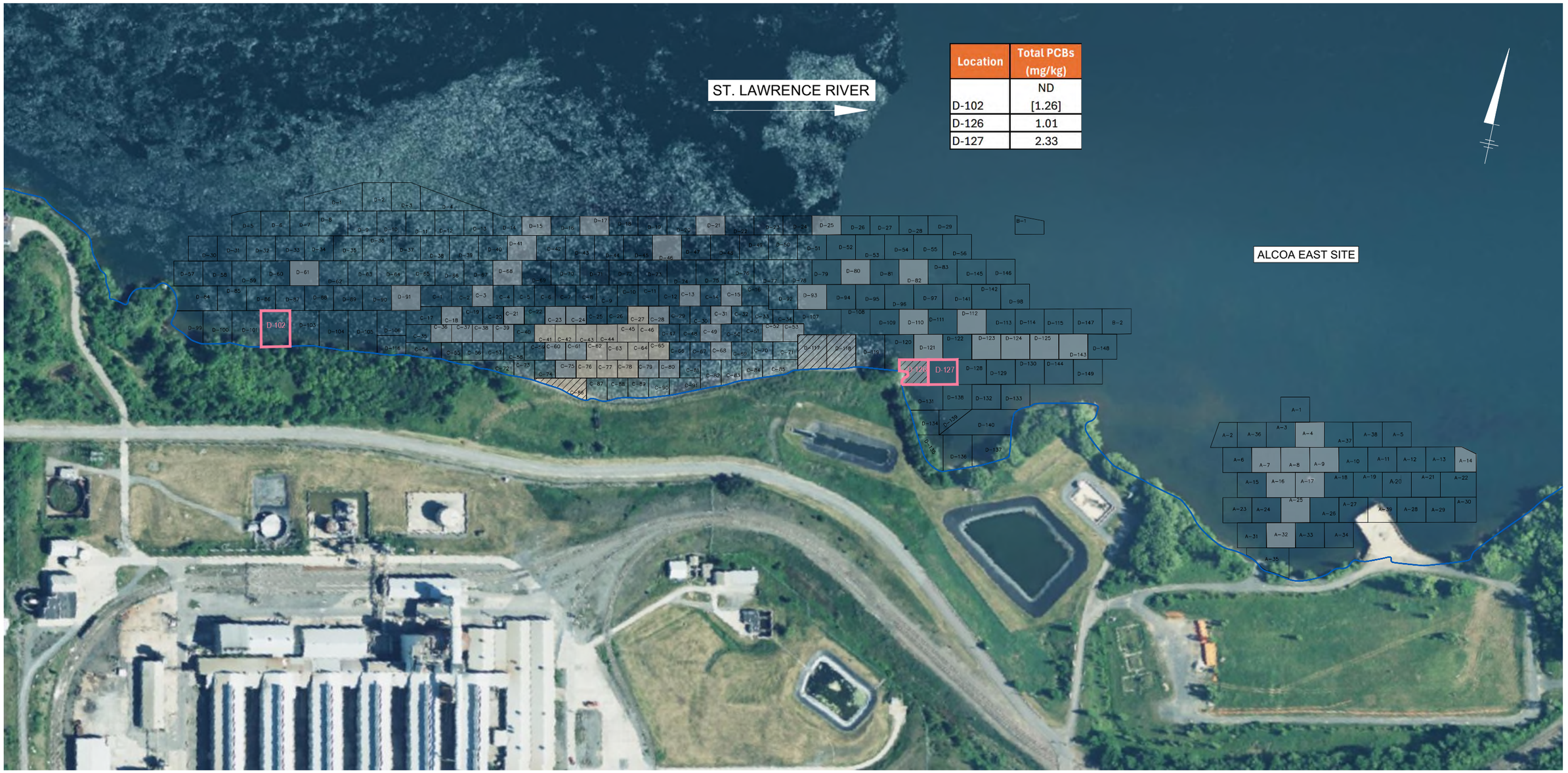
ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

2023 SEDIMENT SAMPLING LOCATIONS

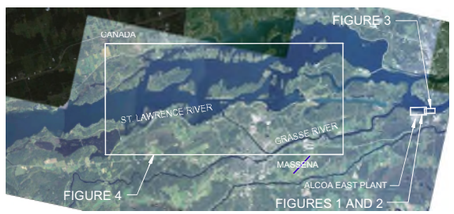
ARCADIS

FIGURE
6

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C-LD2B-PDF-TPY PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/14/2024 12:50 PM BY: POSENAUER, LISA



Location	Total PCBs (mg/kg)
D-102	ND [1.26]
D-126	1.01
D-127	2.33



LEGEND:

- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- SEDIMENT SAMPLE LOCATION

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SITE AERIAL PHOTOGRAPH FROM 2024 MICROSOFT CORPORATION © 2023 DIGITAL GLOBE © CNES (2023) DISTRIBUTION AIRBUS DS BING.

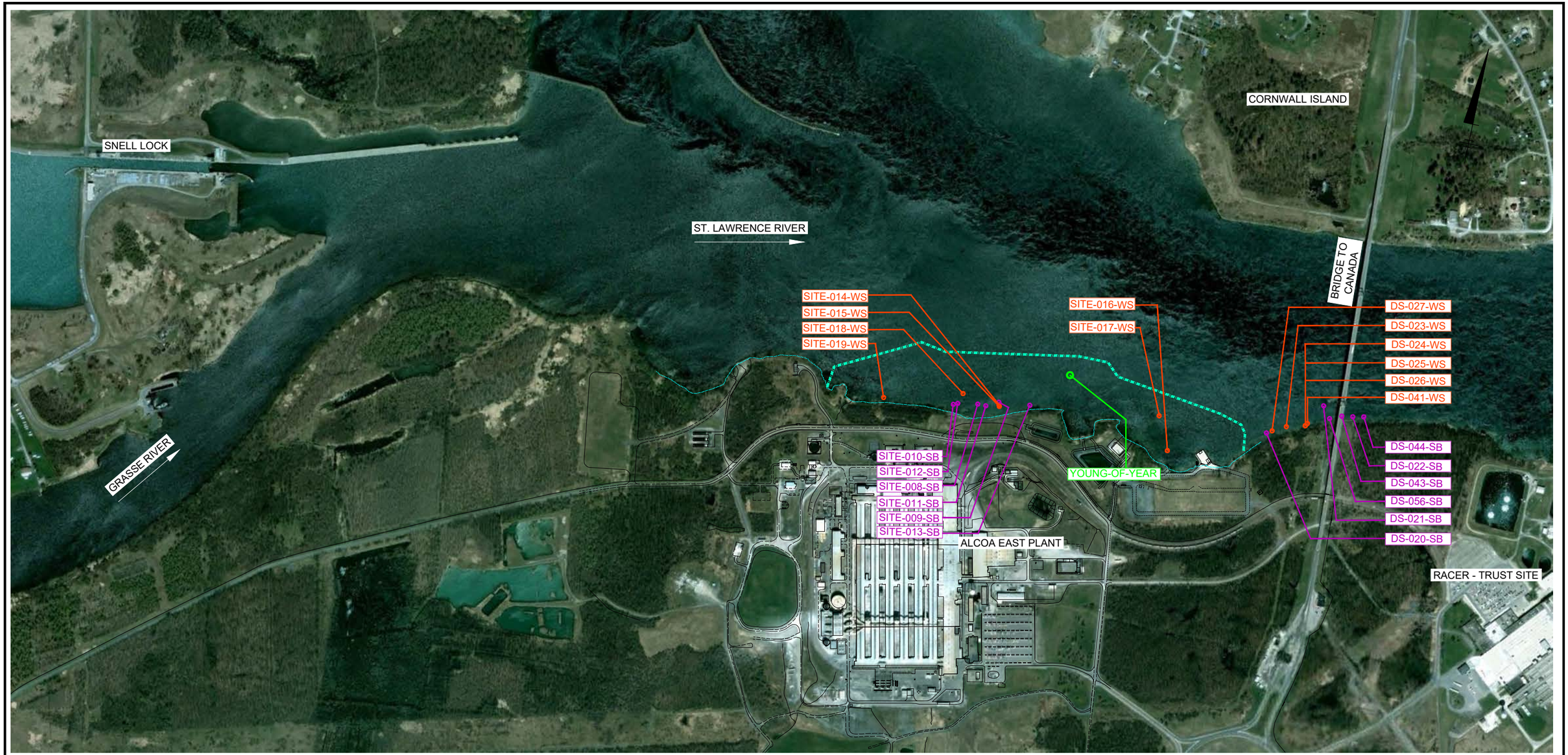
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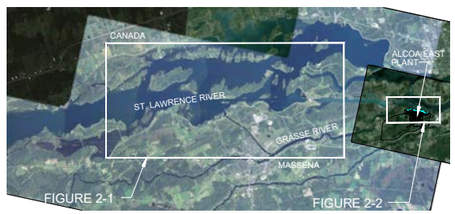
ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

2024 SEDIMENT SAMPLING LOCATIONS

ARCADIS

FIGURE
7





LEGEND:

- APPROXIMATE YOUNG-OF-YEAR MONITORING LOCATION
- APPROXIMATE 2022 ADULT FISH MONITORING LOCATIONS
- DS-025-WS — SAMPLE IDENTIFICATION NUMBER
- 2001 SLRRP REMEDIATION AREA

FISH SPECIES ABBREVIATIONS:

SB = SMALLMOUTH BASS
WS = WHITE SUCKER

NOTES:

AERIAL PHOTO OBTAINED FROM GOOGLE EARTH © MAY 2007.

0 400' 800'
GRAPHIC SCALE

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK

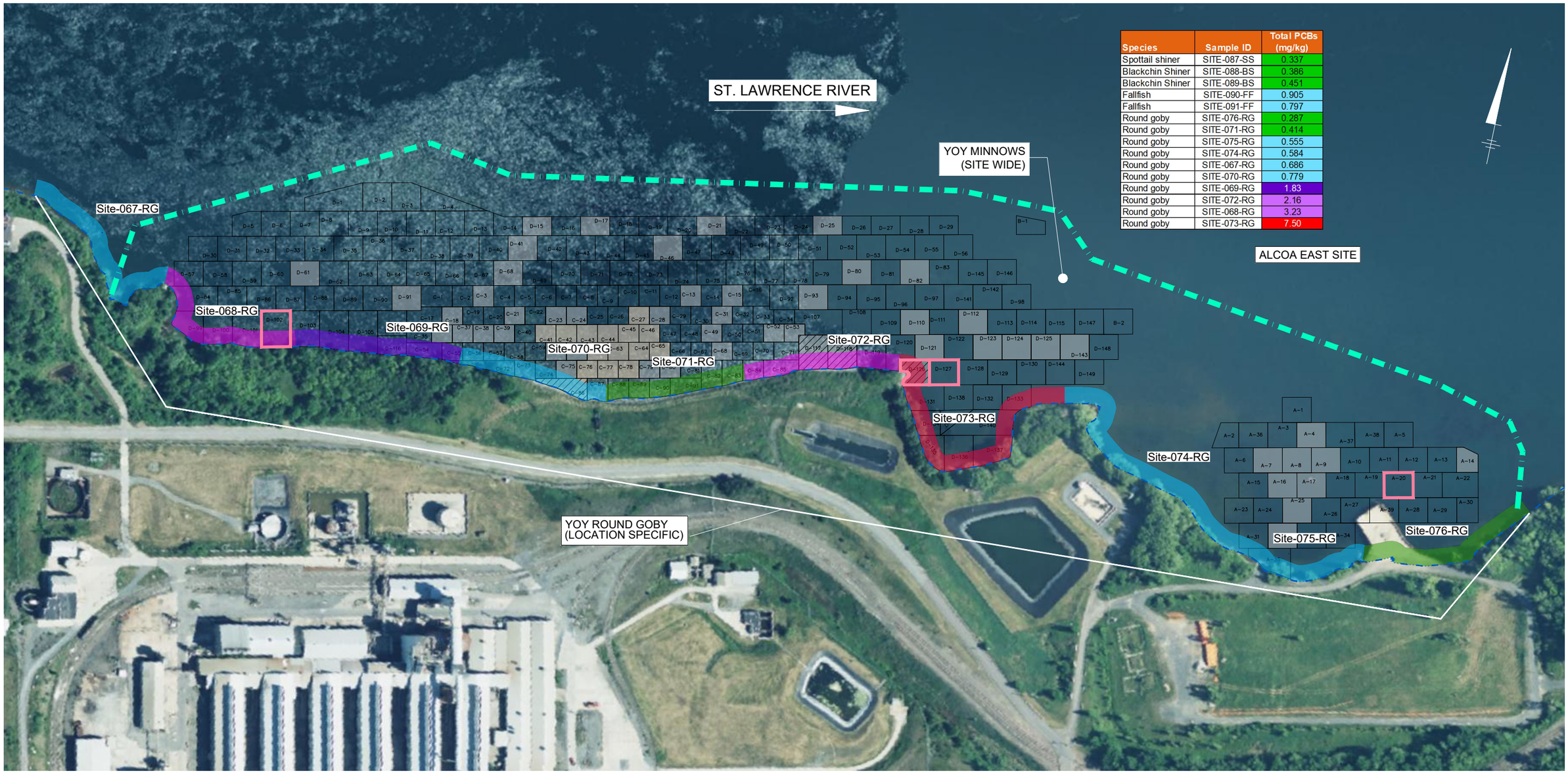
2022 LONG-TERM MONITORING DATA SUMMARY REPORT

2022 FISH SAMPLE COLLECTION LOCATION - SITE AND DOWNSTREAM OF SITE

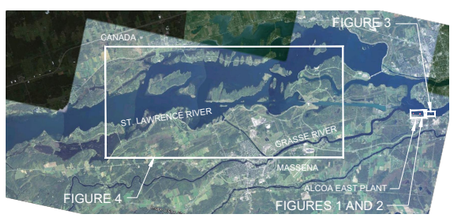
ARCADIS

FIGURE 8

C:\Users\gsteinberger\DC\ACCDocs\Arcadis\AUS-ALCOA-ST. LAWRENCE RI REMEDIATION-MASSENA New York\Project Files\2023\01-In Progress\01-DWG\FSL2022-FIG03-2.DWG LAYOUT: 3-2 SAVED: 2/9/2023 1:50 PM ACADVER: 24.2S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
PLOTTED: 2/9/2023 1:52 PM BY: STEINBERGER, GEORGE
XREFS: IMAGES: PROJECTNAME: ----
FSL-X-BASEMAP.DWG FSL-X-AERIAL3.jpg
FSL-X-TITLE FSL-X-AERIAL5.jpg



Species	Sample ID	Total PCBs (mg/kg)
Spottail shiner	SITE-087-SS	0.337
Blackchin Shiner	SITE-088-BS	0.386
Blackchin Shiner	SITE-089-BS	0.451
Fallfish	SITE-090-FF	0.905
Fallfish	SITE-091-FF	0.797
Round goby	SITE-076-RG	0.287
Round goby	SITE-071-RG	0.414
Round goby	SITE-075-RG	0.555
Round goby	SITE-074-RG	0.584
Round goby	SITE-067-RG	0.686
Round goby	SITE-070-RG	0.779
Round goby	SITE-069-RG	1.83
Round goby	SITE-072-RG	2.16
Round goby	SITE-068-RG	3.23
Round goby	SITE-073-RG	7.50



LEGEND:

- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- SEDIMENT SAMPLE LOCATION

YOY FISH TOTAL PCB RESULTS (2023) (mg/kg):

- <0.11
- 0.11 - <0.5
- 0.5 - <1
- 1 - <2
- 2 - <5
- 5+

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SITE AERIAL PHOTOGRAPH FROM 2024 MICROSOFT CORPORATION © 2023 DIGITAL GLOBE © CNES (2023) DISTRIBUTION AIRBUS DS BING.
3. THE ADULT FISH TOTAL PCB RANGE CATEGORIES (BINS) ARE BASED ON NYSDOH'S FISH CONSUMPTION GUIDELINES AND DISTRIBUTION OF THE DATA.

0 120' 240'
GRAPHIC SCALE

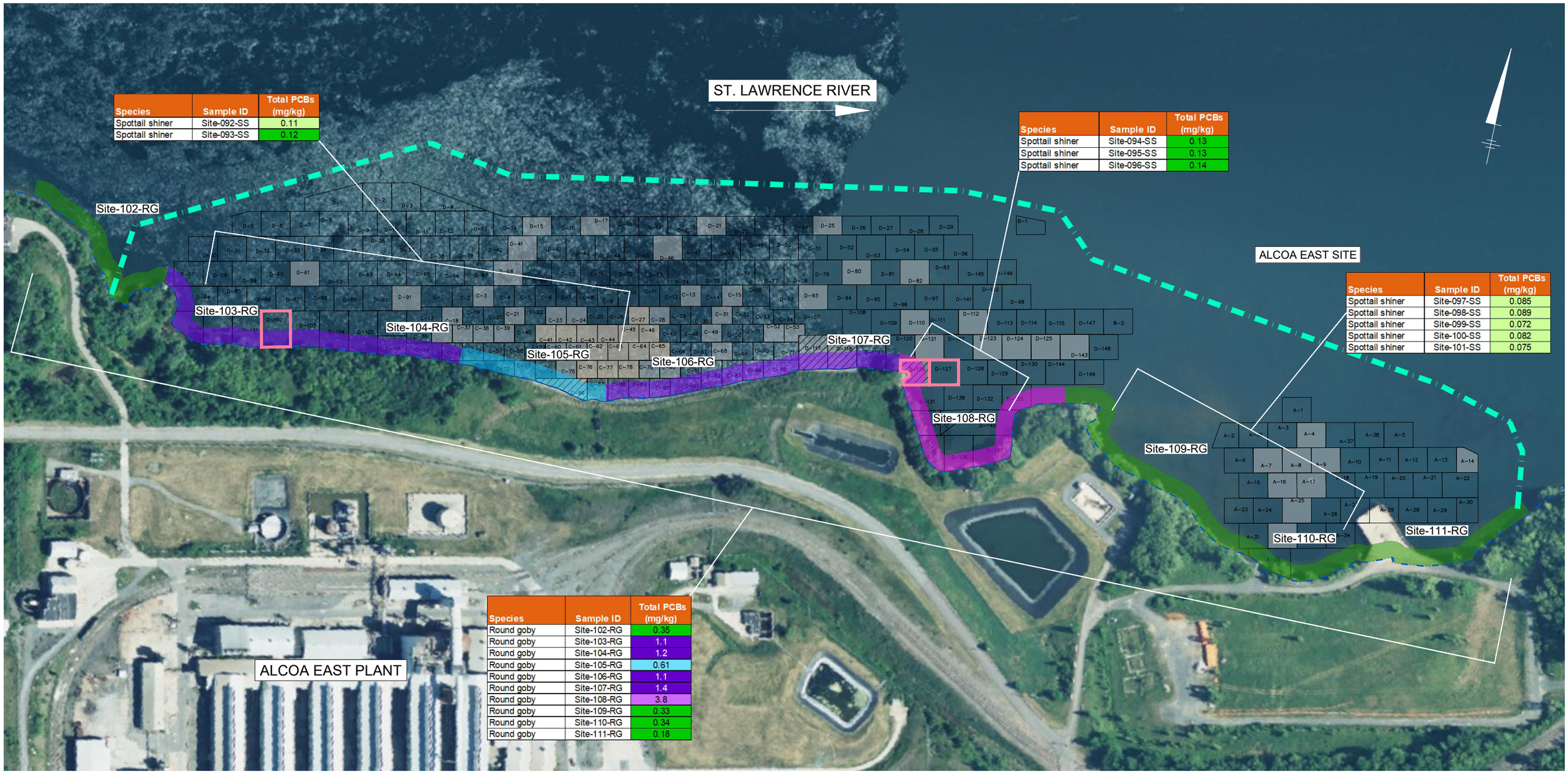
ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

2023 YOY FISH SAMPLE COLLECTION LOCATIONS AND PCB RESULTS - SITE

ARCADIS

FIGURE 9

C:\Users\lposenauer\DC\ACCDocs\Arcadis ACC US\AUS-99999999-ALCOA_ST LAWRENCE RIVER_MASSENA_NY\Project Files\10_WIP\10T_ARC_ENV\2024101-DWG\SSL-LTM-SED SAMPLE 3-X SERIES.dwg LAYOUT: 3-2 SAVED: 4/1/2024 2:33 PM ACADVER: 24.2S (LMS TECH) PAGESETUP:
C-LD2B-PDF-TPY PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/1/2024 3:23 PM BY: POSENAUER, LISA

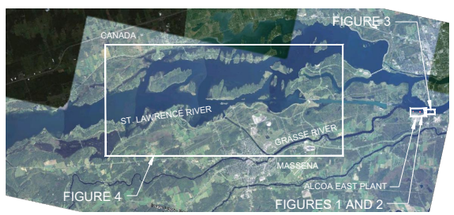


Species	Sample ID	Total PCBs (mg/kg)
Spottail shiner	Site-092-SS	0.11
Spottail shiner	Site-093-SS	0.12

Species	Sample ID	Total PCBs (mg/kg)
Spottail shiner	Site-094-SS	0.13
Spottail shiner	Site-095-SS	0.13
Spottail shiner	Site-096-SS	0.14

Species	Sample ID	Total PCBs (mg/kg)
Spottail shiner	Site-097-SS	0.085
Spottail shiner	Site-098-SS	0.089
Spottail shiner	Site-099-SS	0.072
Spottail shiner	Site-100-SS	0.082
Spottail shiner	Site-101-SS	0.075

Species	Sample ID	Total PCBs (mg/kg)
Round goby	Site-102-RG	0.35
Round goby	Site-103-RG	1.1
Round goby	Site-104-RG	1.2
Round goby	Site-105-RG	0.61
Round goby	Site-106-RG	1.1
Round goby	Site-107-RG	1.4
Round goby	Site-108-RG	3.8
Round goby	Site-109-RG	0.33
Round goby	Site-110-RG	0.34
Round goby	Site-111-RG	0.18



LEGEND:

- APPROXIMATE YOUNG-OF-YEAR COLLECTION LOCATION
- YOY = YOUNG-OF-YEAR FISH
- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- SEDIMENT SAMPLE LOCATION

YOY FISH TOTAL PCB RESULTS (2024) (mg/kg):

- <0.11
- 0.11 - <0.5
- 0.5 - <1
- 1 - <2
- 2 - <5
- 5+

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SITE AERIAL PHOTOGRAPH FROM 2024 MICROSOFT CORPORATION © 2023 DIGITAL GLOBE © CNES (2023) DISTRIBUTION AIRBUS DS BING.
3. THE YOY FISH TOTAL PCB RANGE CATEGORIES (BINS) ARE BASED ON NYSDEC'S WHOLE-BODY FORAGE FISH CRITERIA OF 0.11 MG/KG AND DISTRIBUTION OF THE DATA.

0 120' 240'
GRAPHIC SCALE

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

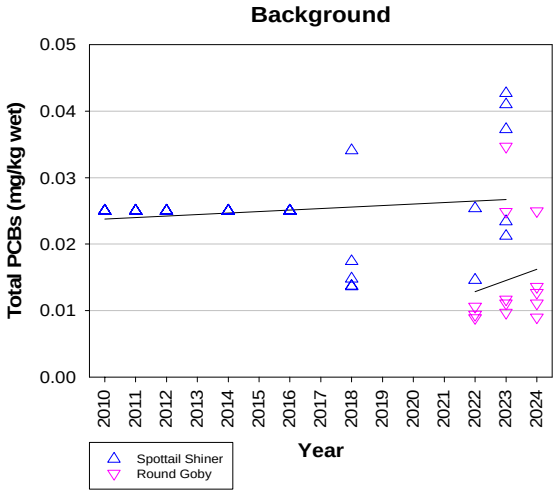
2024 YOY FISH SAMPLE COLLECTION LOCATIONS AND PCB RESULTS - SITE

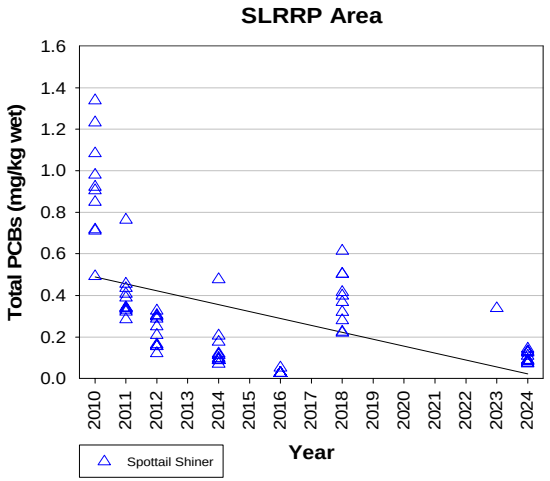
ARCADIS

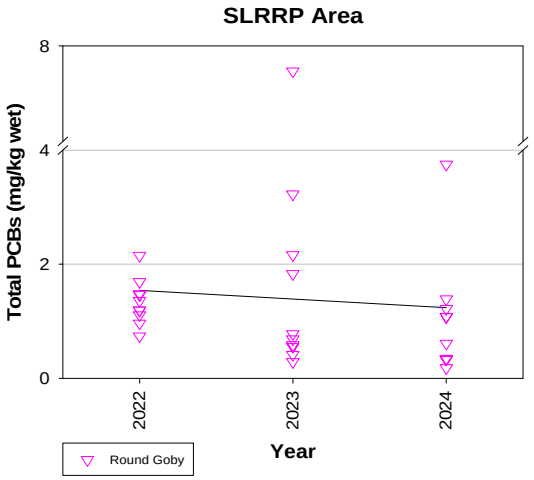
FIGURE
10

C:\Users\lposenauer\DC\ACCDocs\Arcadis ACC US\AUS-99999999-ALCOA_ST LAWRENCE RIVER_MASSENA_NY\Project Files\10_WIP\10T_ARC_ENV\2025\01-DWG\SSL-LTM-SED SAMPLE 3-X SERIES 2024.dwg LAYOUT: 3-2 SAVED: 3/5/2025 1:24 PM ACADVER: 24.2S (LMS TECH) PAGESETUP:
C-LD2B-PDF-TPY PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/18/2025 11:22 AM BY: POSENAUER, LISA

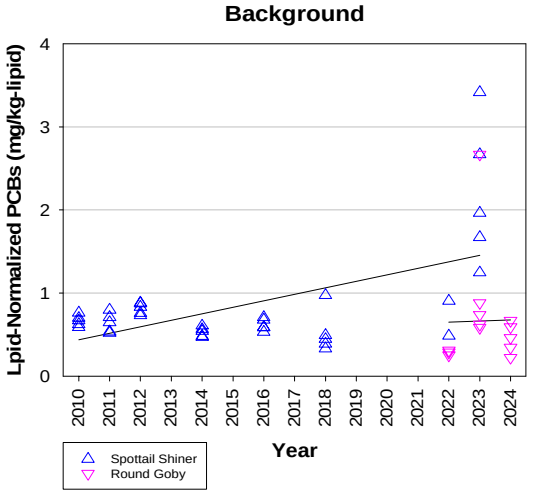
Total PCBs

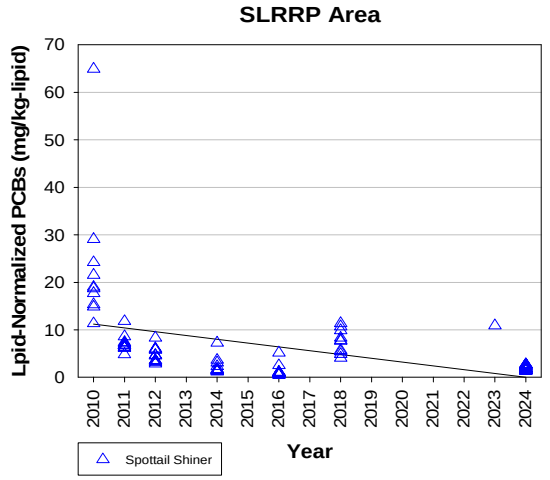






Lipid-Normalized PCBs







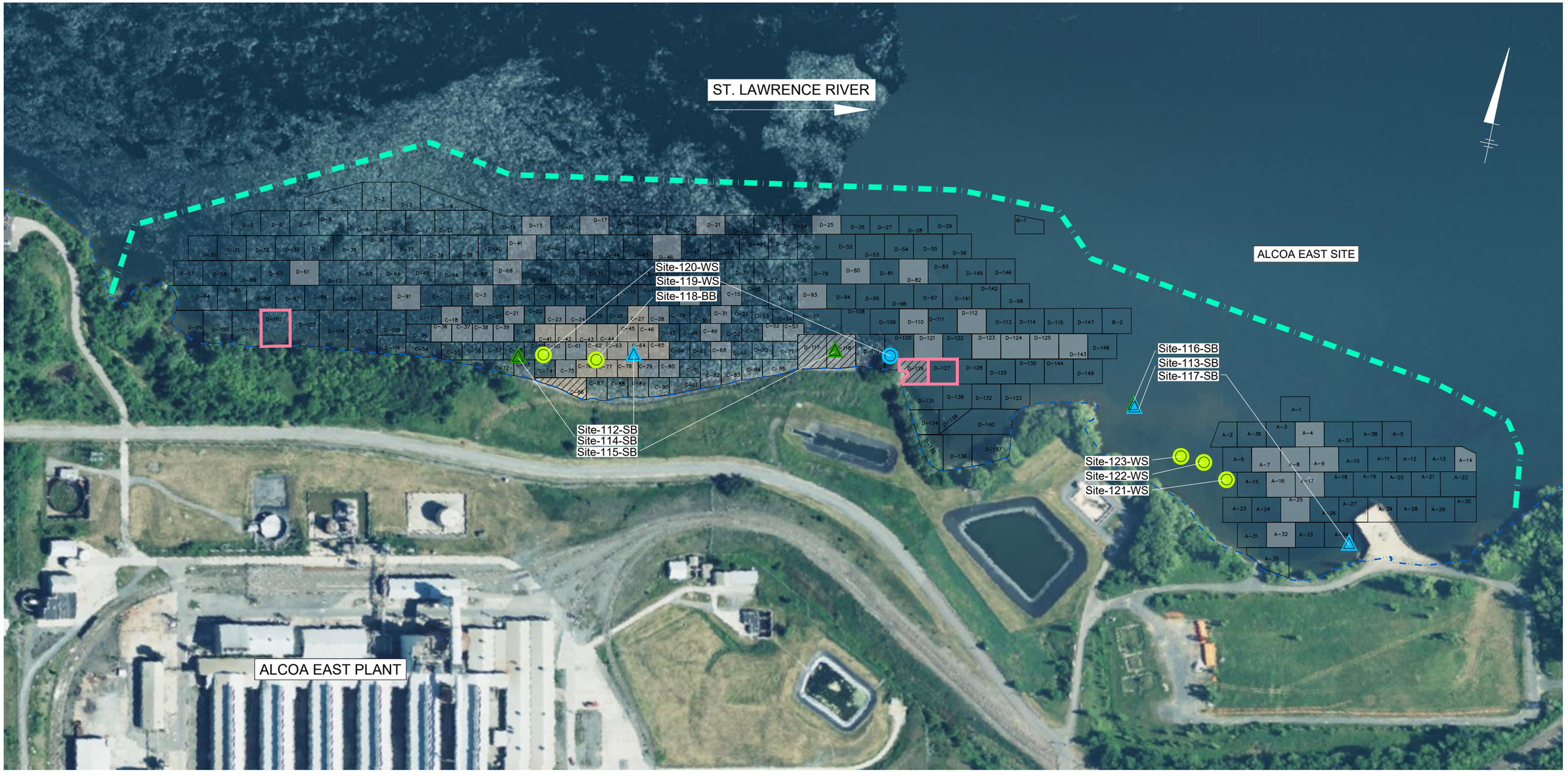
Notes:
1. Values represent the individual sample results for each year.
2. Values below detection set to half the detection limit for determining the average.
3. Round goby were collected as a substitute species in 2022 and 2023 when spottail shiner were unavailable. Round goby were collected again in 2024 when spottail shiner were available for data comparison purposes.

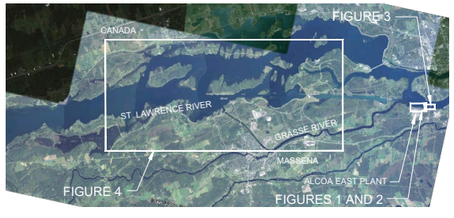
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MASSENA, NEW YORK
LONG-TERM MONITORING DATA SUMMARY REPORT

2010-2024 YOY FISH INDIVIDUAL SAMPLE PCB TEMPORAL TRENDS

ARCADIS

FIGURE
11





LEGEND:

- 2001 SLRRP REMEDIATION AREA
- CELLS EXCAVATED DURING 2009 SLRRP ACTIVITIES PRIOR TO CAP PLACEMENT
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PAH CAP
- CELLS ADDRESSED DURING 2009 SLRRP ACTIVITIES WITH PCB CAP
- SEDIMENT SAMPLE LOCATION
- PREDATORY FISH (BASS) SAMPLE LOCATION
- BOTTOM-FEEDING FISH (BULLHEAD OR WHITE SUCKER) SAMPLE LOCATION

ADULT FISH TOTAL PCB RESULTS (2024) (mg/kg):

- <0.21
- 0.21 - <0.5
- 0.5 - <1.0
- 1 - <2
- 2 - <5
- 5+

NOTES:

1. BASE MAP INFORMATION OBTAINED FROM THEW ASSOCIATES, PLLC. DATED 2004 AND 2006.
2. SITE AERIAL PHOTOGRAPH FROM 2024 MICROSOFT CORPORATION © 2023 DIGITAL GLOBE © CNES (2023) DISTRIBUTION AIRBUS DS BING.
3. THE ADULT FISH TOTAL PCB RANGE CATEGORIES (BINS) ARE BASED ON NYSDOH'S FISH CONSUMPTION GUIDELINES AND DISTRIBUTION OF THE DATA.

0 120' 240'
GRAPHIC SCALE

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG TERM MONITORING DATA SUMMARY REPORT

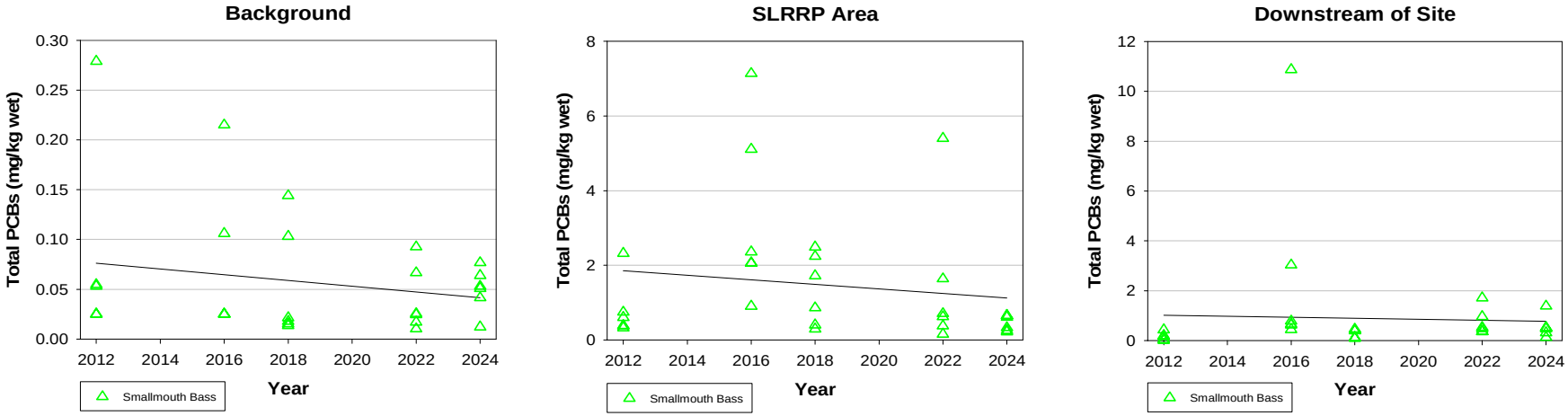
2024 ADULT FISH SAMPLE COLLECTION LOCATIONS AND PCB RESULTS - SITE

ARCADIS

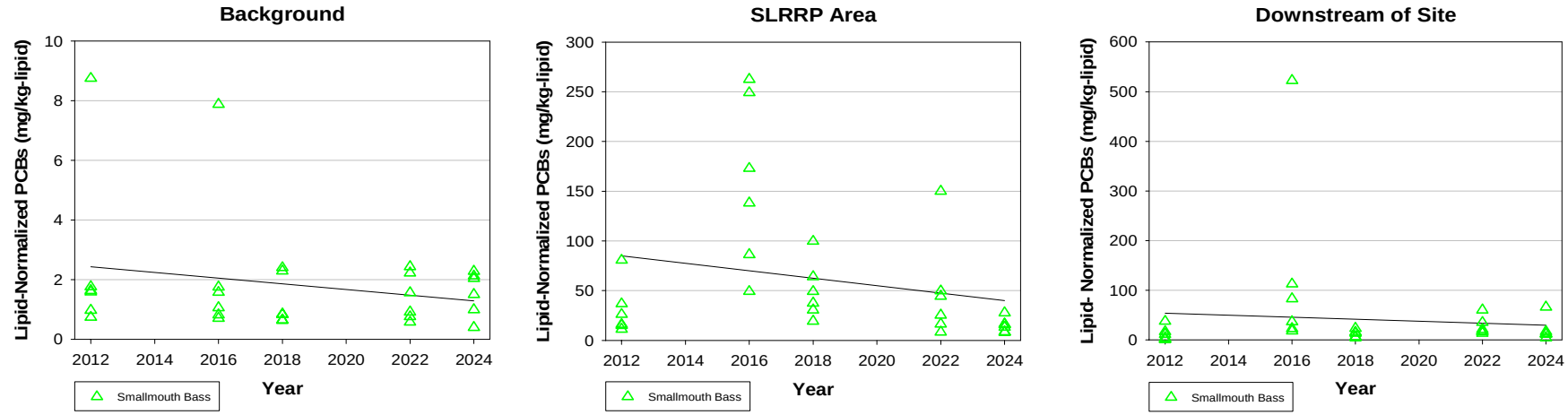
FIGURE
12

C:\Users\posenauer\DC\ACCDocs\Arcadis ACC US\AUS-99999999-ALCOA_ST LAWRENCE RIVER_MASSENA_NY\Project Files\10_WIP\10T_ARC_ENV\2025\01-DWG\SSL-LTM-SED SAMPLE 3-X SERIES 2024.dwg LAYOUT: 3-4 SAVED: 3/5/2025 1:24 PM ACADVER: 24.2S (LMS TECH) PAGESETUP:
C-LD2B-PDF-TPY PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/18/2025 11:22 AM BY: POSENAUER, LISA

Total PCBs



Lipid-Normalized PCBs



Notes:
1. Values represent the individual sample results for each year.
2. Values below detection set to half the detection limit for determining the average.
3. A limited number of walleye (n=3) and largemouth bass (n=2) were collected from the Background sample area as a substitute species when smallmouth bass were unavailable.

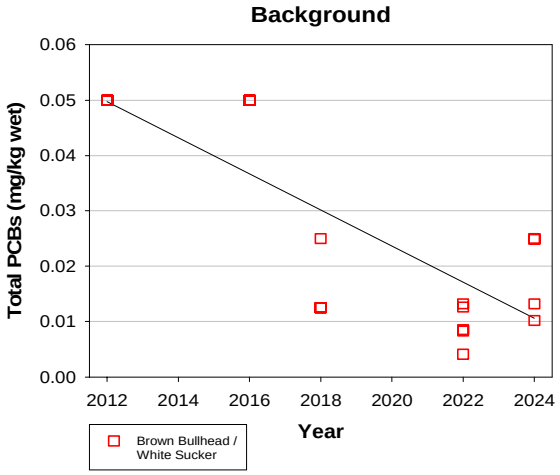
ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG-TERM MONITORING DATA SUMMARY REPORT

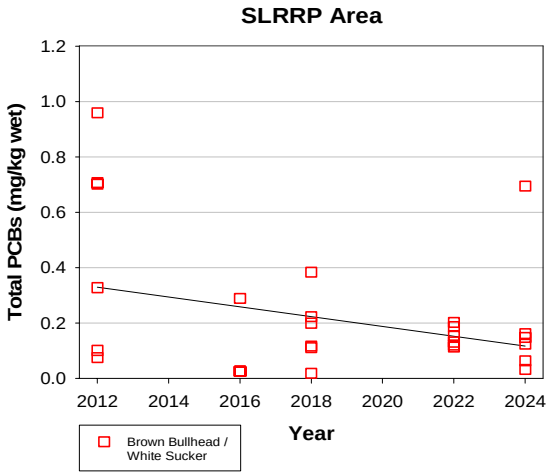
2012-2024 ADULT PREDATORY FISH INDIVIDUAL SAMPLE PCB TEMPORAL TRENDS

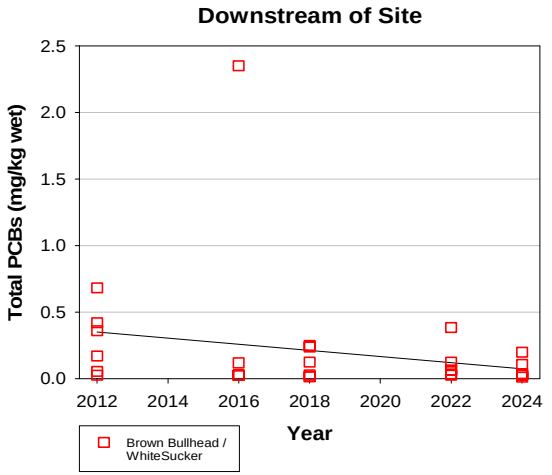
ARCADIS

FIGURE
13

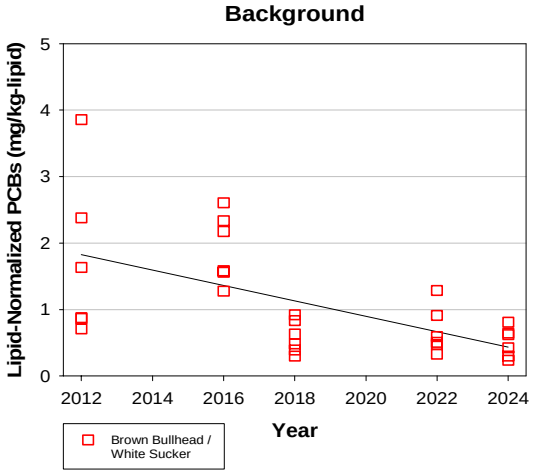
Total PCBs

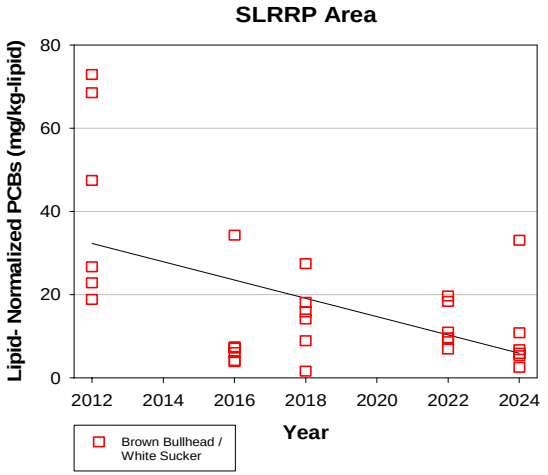


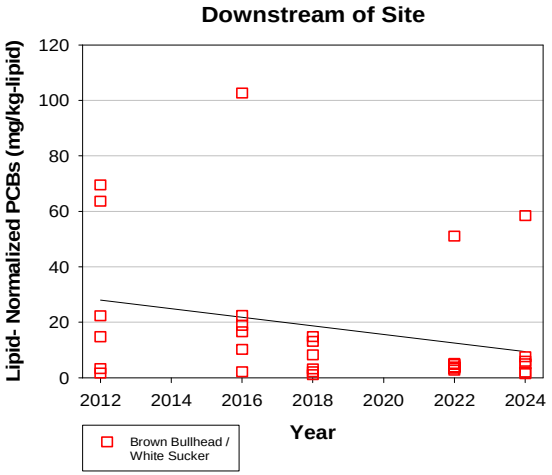




Lipid-Normalized PCBs







Notes:
1. Values represent the individual sample results for each year.
2. Values below detection set to half the detection limit for determining the average.
3. White sucker were collected from all sample areas as a substitute species when brown bullhead were unavailable.

ST. LAWRENCE RIVER REMEDIATION PROJECT
MASSENA, NEW YORK
LONG-TERM MONITORING DATA SUMMARY REPORT

2012-2024 ADULT BOTTOM-FEEDING FISH INDIVIDUAL SAMPLE PCB TEMPORAL TRENDS

ARCADIS

FIGURE
14

APPENDIX B - TABLES

TABLE 1A — PAHs SEDIMENT SAMPLING DATA 2011- 2022						
Cell #	**2011 Total PAHs (mg/kg)**	**2013 Total PAHs (mg/kg)**	**2016 Total PAHs (mg/kg)**	***2021 Total PAH's (mg/kg)***	***2022 Total PAH's (mg/kg)***	***Capped Yes or No***
A-8	*0.15812*	*0.11515*	*0.0227*	--	--	*Y*
A-25/32	*0.43293*	*0.31637*	*0.3698*	--	--	*Y*
C-36/37	*ND*	*ND*	*ND*	--	--	*Y*
C-45/63/64	*0.00482*	*0.04163*	*ND*	--	--	*Y*
D-41*	*0.04561*	*0.11211*	*0.1413*	--	--	*Y*
D-46	*0.06756*	*0.02464*	*0.1199*	--	--	*Y*
D-82	*ND*	*0.04827*	*0.0825*	--	--	*Y*
D-117/118	*0.04406*	*0.02676*	*NS*	*0.73*	--	*Y*
D-124	*0.00866*	*0.05728*	*0.0281*	--	--	*Y*
D-126	*3.2914*	*0.543*	*0.5167*	--	*0.221*	*Y*
D-127	--	--	--	--	*19.57 (8.66)* _	*N*
A-3	--	--	*0.6243*	--	--	*N*
A-10	--	--	*0.045*	--	--	*N*
A-18	--	--	*0.042*	--	--	*N*
A-19	--	--	*3.8711*	--	--	*N*
A-20*	*6.41391*	*148.5073*	*29.619*	*6.12*	--	*N*
A-21	--	--	*8.033*	--	--	*N*
A-22	--	--	*3.563*	--	--	*N*
A-30	--	--	*8.709*	--	--	*N*
C-7	--	--	*86.290*	*50.78*	--	*N*
C-9	*10.73322*	*0.3001*	*0.1992*	--	--	*N*
C-30	--	--	*0.2894*	--	--	*N*
C-58	--	--	*0.772*	--	--	*N*
C-88	--	--	*NS*	*0.13*	--	*N*
C-89	--	--	*NS*	*0.17*	--	*N*

TABLE 1A – PAHs SEDIMENT SAMPLING DATA CONTINUED						
Cell #	**2011 Total PAHs (mg/kg)**	**2013 Total PAHs (mg/kg)**	**2016 Total PAHs (mg/kg)**	***2021 Total PAH's (mg/kg)***	***2022 Total PAH's (mg/kg)***	***Capped Yes or No***
D-27	*--*	*--*	*15.7447*	*0.53*	*--*	*N*
D-36	*2.49973*	*0.097*	*0.6883*	*--*	*--*	*N*
D-59	*--*	*--*	*3.665*	*--*	*--*	*N*
D-62	*0.73596*	*0.23398*	*0.3439*	*--*	*--*	*N*
D-85	*--*	*--*	*4.9932*	*--*	*--*	*N*
D-96	*0.08145*	*0.87852*	*NA*	*--*	*--*	*N*
D-102	*--*	*--*	*5.458*	*--*	*--*	*N*
D-108*	*365.3*	*1.4987*	*5.5935*	*--*	*--*	*N*
D-116	*--*	*--*	*10.8356*	*1.38 (4.91)*	*--*	*N*
D-122	*--*	*--*	*3.1823*	*--*	*--*	*N*
D-130	*--*	*--*	*0.9348*	*--*	*--*	*N*
D-142	*--*	*--*	*1.897*	*--*	*--*	*N*

TABLE 1B – PCB SAMPLING DATA 2011 TO 2024								
Cell #	***2011 PCBs (mg/g)***	***2013 PCBs (mg/g)***	***2016 PCBs (mg/g)***	***2021 PCBs (mg/g)***	***2022 PCBs (mg/g)***	***2023 PCBs (mg/kg)***	***2024 PCBs (mg/kg***	***Capped Yes or No***
A-8	*ND*	*0.405*	*ND*					*Y*
A-25/32	*ND*	*0.468*	*ND*					*Y*
C-36/37	*ND*	*ND*	*ND*					*Y*
C-45/63/64	*0.0387*	*ND*	*ND*					*Y*
D-41*	*57.39*	*ND*	*ND*					*Y*
D-46	*ND*	*ND*	*0.576*					*Y*
D-82	*ND*	*ND*	*ND*					*Y*
D-117/118	*ND*	*ND*	*NS*					*Y*
D-124	*ND*	*ND*	*ND*					*Y*
D-126	*0.2908*	*0.2382*	*1.358*	*59*	*4.5*	*1.3*	*1.0*	*Y*
D-127	*--*	*--*	*--*	*NS*	*16*	*2.8*	*2.3*	*N*
A-3	*--*	*--*	*--*					*N*
A-10	*--*	*--*	*--*					*N*
A-18	*--*	*--*	*--*					*N*
A-19	*--*	*--*	*--*					*N*
A-20	*2.537*	*42.2*	*9.537*	*1.5*	*NS*	*2.6****	*NS*	*N*
A-21	*--*	*--*	*--*					*N*
A-22	*--*	*--*	*--*					*N*
A-30	*--*	*--*	*--*					*N*
C-7	*--*	*--*	*--*					*N*
C-9	*0.771*	*1.004*	*ND*					*N*
C-30	*--*	*--*	*--*					*N*
C-58	*--*	*--*	*--*					*N*
C-88	*--*	*--*	*--*					*N*
C-89								*N*
D-27	*--*	*--*	*--*					*N*
D-36	*1.509*	*0.164J*	*ND*					*N*
D-59	*--*	*--*	*--*					*N*
D-62	*0.746*	*0.0904*	*ND*					*N*
D-85	*--*	*--*	*--*					*N*
D-96	*ND*	*0.4178*	*ND*					*N*
D-102	*--*	*--*	*--*	*--*	*3.8*	*1.3*	*ND*	*N*
D-108*	*ND*	*0.716*	*2.369*					*N*
D-116	*--*	*--*	*--*					*N*
D-122	*--*	*--*	*--*					*N*
D-130	*--*	*--*	*--*					*N*
D-142	*--*	*--*	*--*					*N*

1. *Sample locations are shown in the Figure.*
2. *ND = Non detect*
3. *NS = No sample*
4. *NA = Sample not analyzed due to lack of sample volume. Lab analyzed remaining material for TOC instead of PAHs*
5. *PAHs = Polyaromatic Hydrocarbons*
6. *PCBs = polychlorinated biphenyls*
7. *TDBFs = total dibenzofurans*
8. *Mg/kg = milligrams per kilogram*
9. J = An estimated concentration
10. -- = not targeted for analysis

Note:

1. * - In 2011, Cell D-108 was resampled for PAHs. An additional four samples were taken at a 10-15 foot radius from the resample location. Center = 0.870 (mg/kg), North= 1.11, East=2.85, South= 0.205, West= 0.508
2. * - Also in 2011, Cell D-41 was resampled for PCBs. An additional four samples were taken at a 10-15 foot radius from the resample location. Center= ND, North= ND, East= ND, South= ND, West= ND
3. **- In 2013, Cell A-20 was resampled for PAHs and PCBs. An additional four samples were taken at a 10-15 foot radius from the resample location. PAHs (mg/kg) Center= 0.995, North= 1.277, East= 61.239, South=14.728, West = 3.258. PCBs *(*µg/g) Center= 0.364, North= 0.876, East =44.37, South= 18.55, and West = 3.258. The co-located result was 0.36 mg/kg and the surrounding location results ranged from 0.88 mg/kg to 57 mg/kg (average of the parent [44 mg/kg] and duplicate [70 mg/kg]).
4. ***The PCB result from A-20 (2.6 mg/kg) in 2023 represents the average of the parent (3.49 mg/kg) and duplicate (1.74 mg/kg) collected from this location.

Table 2
2021 Sediment Sampling Results
2021 Long-Term Monitoring Data Summary Report
St. Lawrence River Remediation Project
Massena, New York

Constituents	Uncapped Locations									Capped Locations	
	A-20-COMP		C-7-COMP	C-88-COMP	C-89-COMP	D-27-COMP	D-108-COMP	D-116-COMP		D-117/118-COMP	D-126-COMP
	Parent	Duplicate						Parent	Duplicate		
PAHs (mg/kg)[2,3]											
Acenaphthene	ND (0.0097)	--	0.171	ND (0.0057)	0.0078	ND (0.0102)	--	ND (0.0097)	0.0115	ND (0.008)	--
Acenaphthylene	ND (0.0097)	--	ND (0.0085)	ND (0.0057)	ND (0.0059)	ND (0.0102)	--	ND (0.0097)	ND (0.0099)	ND (0.008)	--
Anthracene	0.043	--	0.277	ND (0.0057)	0.0093	ND (0.0102)	--	0.016	0.0348	0.0149	--
Benzo(a)anthracene	0.452	--	4.07 D	0.0114	0.0121	0.0462	--	0.0883 J	0.363 J	0.0474	--
Benzo(a)pyrene	0.42	--	2.92 D	0.006	0.0085	0.0432	--	0.129 J	0.279 J	0.0617	--
Benzo(b)fluoranthene	1.38 D	--	8.79 D	0.0287	0.0267	0.0818	--	0.348 J	1.47 DJ	0.126	--
Benzo(g,h,i)perylene	0.277	--	2.11 D	0.0069	0.008	0.0428	--	0.125 J	0.268 J	0.06	--
Benzo(k)fluoranthene	0.41	--	3.32 D	0.013	0.0129	0.0439	--	0.0972 J	0.503 J	0.067	--
Chrysene	1.49 D	--	11.6 D	0.0257	0.0211	0.0792	--	0.284 J	0.993 DJ	0.161	--
Dibenz(a,h)anthracene	0.0865	--	0.538	ND (0.0057)	ND (0.0059)	ND (0.0102)	--	0.0398 J	0.114 J	0.0209	--
Fluoranthene	0.802 D	--	8.26 D	0.0201	0.0201	0.0775	--	0.0667 J	0.250 J	0.0509	--
Fluorene	ND (0.0097)	--	0.252	ND (0.0057)	0.008	ND (0.0102)	--	ND (0.0097)	0.015 J	ND (0.008)	--
Indeno(1,2,3-cd)pyrene	0.239	--	1.6 D	0.0065	0.0079	0.0356	--	0.107 J	0.264 J	0.0511	--
Napthalene	0.0129	--	0.0185	ND (0.0057)	0.0077	ND (0.0102)	--	ND (0.0097)	0.0115	ND (0.008)	--
Phenanthrene	0.054	--	0.109	ND (0.0057)	0.0106	0.0192	--	0.033 J	0.121 J	0.0328	--
Pyrene	0.449	--	6.74 D	0.0116	0.0138	0.0585	--	0.0463 J	0.211 J	0.0401	--
Total	**6.1154**	**--**	**50.7755**	**0.1299**	**0.1745**	**0.5279**	**--**	**1.3803**	**4.9088**	**0.7338**	**--**
PCBs (mg/kg)[2,3]											
Aroclor 1016	ND (0.321)	ND (0.0566)	--	--	--	--	ND (0.106)	--	--	--	ND (0.0669)
Aroclor 1221	ND (0.321)	ND (0.0566)	--	--	--	--	ND (0.106)	--	--	--	ND (0.0669)
Aroclor 1232	ND (0.321)	ND (0.0566)	--	--	--	--	ND (0.106)	--	--	--	ND (0.0669)
Aroclor 1242	1.53 J	0.734 J	--	--	--	--	ND (0.106)	--	--	--	59.1
Aroclor 1248	ND (0.321)	ND (0.0566)	--	--	--	--	ND (0.106)	--	--	--	ND (0.0669)
Aroclor 1254	ND (0.321)	ND (0.0566)	--	--	--	--	ND (0.106)	--	--	--	ND (0.0669)
Aroclor 1260	ND (0.321 J)	ND (0.0566)	--	--	--	--	ND (0.106)	--	--	--	ND (0.0669)
Total	**1.53**	**0.734**	--	--	--	--	**ND**	--	--	--	**59.1**
TOC (mg/kg)[3]											
TOC	20200 J	--	22200 J	11500 J	8110 J	17000 J	20300 J	41400 J	32700 J	11200 J	37000
Percent Moisture (%)[3]											
Percent Moisture	48.9	42.3	41.9	12.2	15.2	51.4	69.3	48.8	50	38	50.8

Notes:
1. Sample locations are provided in Appendix A.
2. Non-detect samples are listed with the practical quantitation limit in parentheses.
3. Data are preliminary and have not undergone QA/QC.

Acronyms:
ND Analyte not detected at a concentration greater than the Practical Quantitation Limit.
PAHs polyaromatic hydrocarbons
PCBs polychlorinated biphenyls
TOC total organic carbon
mg/kg milligrams per kilogram
-- Not targeted for analysis
J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
D Dilution required for sample analysis.

Table 3
2022 Sediment Sampling Results

2022 Long-Term Monitoring Data Summary Report
St. Lawrence River Remediation Project, Massena, New York

Parameter	Units	D-102	D-126	D-127
PCBs				
PCB-1016 (Aroclor 1016)	mg/kg	ND (0.702 J)	ND (0.0387)	ND (1.170) [ND (0.117)]
PCB-1221 (Aroclor 1221)	mg/kg	ND (0.702 J)	ND (0.0387)	ND (1.170) [ND (0.117)]
PCB-1232 (Aroclor 1232)	mg/kg	ND (0.702 J)	ND (0.0387)	[ND (1.170 J)] ND (0.117 J)
PCB-1242 (Aroclor 1242)	mg/kg	2.870 J	3.790	12.300 J [ND (0.117 J)]
PCB-1248 (Aroclor 1248)	mg/kg	ND (0.702 J)	ND (0.0387)	ND (1.170 J) [ND (0.117 J)]
PCB-1254 (Aroclor 1254)	mg/kg	0.932 J	0.602	1.560 JN [ND (0.117)]
PCB-1260 (Aroclor 1260)	mg/kg	ND (0.702 J)	0.145	1.770 [0.411]
Total PCBs	**mg/kg**	**3.802**	**4.537**	**15.630** **[0.411]**
PAHs				
2-Methylnaphthalene	mg/kg	NA	ND (0.0788)	ND (0.240 J) [ND (0.235)]
Acenaphthene	mg/kg	NA	ND (0.0788)	ND (0.240 J) [ND (0.235)]
Acenaphthylene	mg/kg	NA	ND (0.0788)	ND (0.240 J) [ND (0.235)]
Anthracene	mg/kg	NA	ND (0.0788)	0.256 J [ND (0.235)]
Benzo(a)anthracene	mg/kg	NA	ND (0.0788)	1.500 J [0.700 J]
Benzo(a)pyrene	mg/kg	NA	ND (0.0788)	1.410 J [0.655 J]
Benzo(b)fluoranthene	mg/kg	NA	0.0902	2.750 J [1.460 J]
Benzo(g,h,i)perylene	mg/kg	NA	ND (0.0788)	1.100 J [0.536]
Benzo(k)fluoranthene	mg/kg	NA	ND (0.0788)	1.140 J [0.494]
Chrysene	mg/kg	NA	0.131	4.240 J [1.920 J]
Dibenz(a,h)anthracene	mg/kg	NA	ND (0.0788)	0.291 J [ND (0.235)]
Fluoranthene	mg/kg	NA	ND (0.0788)	2.870 J [1.400 J]

Table 3 continued...
2022 Sediment Sampling Results

2022 Long-Term Monitoring Data Summary Report
St. Lawrence River Remediation Project, Massena, New York

Parameter	Units	D-102	D-126	D-127
Fluorene	mg/kg	NA	ND (0.0788)	ND (0.240 J) [ND (0.235)]
Indeno(1,2,3-cd)pyrene	mg/kg	NA	ND (0.0788)	0.947 J 0.445
Naphthalene	mg/kg	NA	ND (0.0788)	ND (0.240 J) [ND (0.235)]
Phenanthrene	mg/kg	NA	ND (0.0788)	0.935 J [ND (0.235)]
Pyrene	mg/kg	NA	ND (0.0788)	2.140 J [1.050 J]
Total PAHs	**mg/kg**	**NA**	**0.2212**	**19.579** **[8.660]**
Percent Moisture	**%**	**53**	**15**	**72.1** **[72.1]**
Total Organic Carbon	**mg/kg**	**26,400**	**2,390**	**25,700** **[25,700]**

Notes:
1. Sample locations are provided on Figure 2-1.
2. Non-detect samples are listed as ND with the practical quantitation limit provided in parentheses.
3. Duplicate sample results are presented in brackets.

Acronyms:

ND	Analyte not detected at a concentration greater than the detection limit.
NA	Not analyzed
PAHs	polyaromatic hydrocarbons
PCBs	polychlorinated biphenyls
TOC	total organic carbon
mg/kg	milligrams per kilogram
--	Not targeted for analysis
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
N	The PCB Aroclor cannot be positively determined and is qualified as a tentative identification.

Table 4
2023 Sediment Sampling Results

Parameter	Units	Cell A-20	Cell D-102	Cell D-126	Cell D-127
PCBs					
PCB-1016 (Aroclor 1016)	mg/kg	1.6 [0.91]	ND (0.30)	ND (0.10)	ND (0.60)
PCB-1221 (Aroclor 1221)	mg/kg	ND (0.042) [ND (0.43)]	ND (0.30)	ND (0.10)	ND (0.60)
PCB-1232 (Aroclor 1232)	mg/kg	ND (0.042) [ND (0.43)]	ND (0.30)	ND (0.10)	ND (0.60)
PCB-1242 (Aroclor 1242)	mg/kg	ND (0.042) [ND (0.43)]	ND (0.30)	ND (0.10)	ND (0.60)
PCB-1248 (Aroclor 1248)	mg/kg	ND (0.042) [ND (0.43)]	0.72	0.80	1.3
PCB-1254 (Aroclor 1254)	mg/kg	1.3 [0.55]	0.38	0.36	0.87
PCB-1260 (Aroclor 1260)	mg/kg	0.59 [0.28]	0.16 J	0.11	0.60
PCB-1262 (Aroclor 1262)	mg/kg	ND (0.042) [ND (0.43)]	ND (0.30)	ND (0.10)	ND (0.60)
PCB-1268 (Aroclor 1268)	mg/kg	ND (0.042) [ND (0.43)]	ND (0.30)	ND (0.10)	ND (0.60)
Total PCBs	mg/kg	3.49 [1.74]	1.26	1.27	2.77
Physical Parameters					
Percent Moisture	%	62.1 [63.1]	46.3	22.3	73.5
Total Organic Carbon	mg/kg	43,000 [45,000]	24,000	24,000	43,000

Notes:
1. Sample locations are provided on Figure 2-1.
2. Non-detect samples (analyte not detected at a concentration greater than the detection limit) are listed as NS with the practical quantitation limit provided in parentheses.
3. Duplicate sample results are presented in brackets.
4. J flagged result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Table 5
2024 Sediment Sampling Results

Parameter	Units	Cell D-102	Cell D-126	Cell D-127
PCBs				
PCB-1016 (Aroclor 1016)	mg/kg	ND (0.21) [ND (0.19)]	ND (0.15)	ND (0.21)
PCB-1221 (Aroclor 1221)	mg/kg	ND (0.21) [ND (0.19)]	ND (0.15)	ND (0.21)
PCB-1232 (Aroclor 1232)	mg/kg	ND (0.21) [ND (0.19)]	ND (0.15)	ND (0.21)
PCB-1242 (Aroclor 1242)	mg/kg	ND (0.21) [0.51]	0.38	0.94
PCB-1248 (Aroclor 1248)	mg/kg	ND (0.21) [ND (0.19)]	ND (0.15)	ND (0.21)
PCB-1254 (Aroclor 1254)	mg/kg	ND (0.21) [0.49]	0.42	0.75
PCB-1260 (Aroclor 1260)	mg/kg	ND (0.21) [0.26]	0.21 J	0.64
PCB-1262 (Aroclor 1262)	mg/kg	ND (0.21) [ND (0.19)]	ND (0.15)	ND (0.21)
PCB-1268 (Aroclor 1268)	mg/kg	ND (0.21) [ND (0.19)]	ND (0.15)	ND (0.21)
Total PCBs	mg/kg	ND [1.26]	1.01	2.33
Physical Parameters				
Percent Moisture	%	61.5	45.3	62.1
Total Organic Carbon	mg/kg	24,000	35,000	24,000

Notes:
1. Sample locations are provided in Appendix A.
2. Non-detect samples (analyte not detected at a concentration greater than the detection limit) are listed as ND with the practical quantitation limit provided in parentheses.
3. Duplicate sample results are presented in brackets.
4. J flagged result indicates the compound was positively identified; however, the associated numerical value is an estimated concentration.

A comparison of the sediment sample results and co-located YOY results is provided in Table 7.

Table 6
Young-of-Year Fish and Proximate Sediment Sample PCB Concentrations

Sediment Sample Location	Closest Fish Sample	Total PCBs (mg/kg)	
		Sediment	Fish
2024			
D-102	Site-103-RG and Site-104-RG	ND (1.26)	1.1 and 1.2
	Site-092-SS and Site-093-SS		0.11 and 0.12
D-126 and D-127	Site-107-RG and Site-108-RG	1.01 and 2.33	1.4 and 3.8
	Site-094-SS, Site-095-SS, and Site-096-SS		0.13, 0.13, and 0.14
2023			
D-102	Site-068-RG and Site-069-RG	1.3	3.2 and 1.8
D-126 and D-127	Site-072-RG and Site-073-RG	1.3 and 2.8	2.2 and 7.5

Note:
1. Fish species is provided in the Closest Fish Sample column with RG for round goby and SS spottail shiner.
2. Non-detect samples (analyte not detected at a concentration greater than the detection limit) are listed as ND with the practical quantitation limit provided in parentheses.

Table 7
Mean Young-of-Year Fish PCB Concentrations Over Time

Year	Species	Background			Site		
		Sample Count	Mean	Min-Max	Sample Count	Mean	Min-Max
Total PCBs (mg/kg)							
2010	Spottail shiner	5	0.050	0.050	10	0.92	0.49 - 1.3
2011	Spottail shiner	5	0.050	0.050	10	0.41	0.28 - 0.76
2012	Spottail shiner	5	0.050	0.050	10	0.23	0.12 - 0.33
2014	Spottail shiner	5	0.050	0.050	10	0.15	0.070 - 0.48
2016	Spottail shiner	5	0.050	0.050	10	0.028	0.050 - 0.052
2018	Spottail shiner	5	0.019	0.014 - 0.034	10	0.38	0.22 - 0.61
2022	Spottail shiner	2	0.020	0.015 - 0.025	0	NA	NA - NA
	Round goby	3	0.010	0.009 - 0.011	10	1.3	0.74 - 2.2
2023	Spottail shiner	5	0.033	0.021 - 0.043	1	0.34	NA - NA
	Blackchin shiner	0	NA	NA - NA	2	0.42	0.39 - 0.45
	Fallfish	0	NA	NA - NA	2	0.85	0.80 - 0.91
	Round goby	5	0.016	0.010 - 0.035	10	1.8	0.29 - 7.5
2024	Spottail shiner	0	NA	NA - NA	10	0.10	0.072 - 0.14
	Bluntnose minnow	5	0.013	0.012 - 0.016	0	NA	NA - NA
	Round goby	5	0.012	0.0090 - 0.025	10	1.0	0.18 - 3.8
Lipid-Normalized PCBs (mg/kg-lipid)							
2010	Spottail shiner	5	0.67	0.59 - 0.76	10	24	11 - 65
2011	Spottail shiner	5	0.64	0.52 - 0.80	10	7.2	4.8 - 12
2012	Spottail shiner	5	0.82	0.73 - 0.88	10	4.8	2.8 - 8.3
2014	Spottail shiner	5	0.53	0.47 - 0.61	10	2.5	1.2 - 7.3
2016	Spottail shiner	5	0.62	0.53 - 0.71	10	1.4	0.46 - 5.2
2018	Spottail shiner	5	0.53	0.33 - 0.97	10	7.6	4.1 - 11
2022	Spottail shiner	2	0.70	0.49 - 0.91	0	NA	NA - NA
	Round goby	3	0.28	0.25 - 0.31	10	50	25 - 90
2023	Spottail shiner	5	2.2	1.2 - 3.4	1	11	NA - NA
	Blackchin shiner	0	NA	NA - NA	2	13	9.7 - 16
	Fallfish	0	NA	NA - NA	2	49	45 - 53
	Round goby	5	1.1	0.59 - 2.7	10	126	15 - 461
2024	Spottail shiner	0	NA	NA - NA	10	2.0	1.3 - 2.7
	Bluntnose minnow	5	0.45	0.38 - 0.52	0	NA	NA - NA
	Round goby	5	0.46	0.22 - 0.67	10	31	5.8 - 101

Notes:
1. From 2010 through 2016, the detection limit is shown for the mean and max-min background concentrations as all results were non-detect. Lower detection limits were achievable starting in 2018.
2. Half of the detection limit was used for non-detect results for the mean calculation.
3. All results rounded to two significant figures.
4. NA = No arithmetic mean or range is provided for data having 0 or 1 samples.

Table **8**
Mean Smallmouth Bass PCB Concentrations Over Time

Year	Background			Site			Downstream		
	Sample Count	Mean	Min-Max	Sample Count	Mean	Min-Max	Sample Count	Mean	Min-Max
Total PCBs (mg/kg)									
2012	6	0.077	0.050 - 0.28	6	0.79	0.33 - 2.3	6	0.14	0.050 - 0.43
2016	6	0.070	0.050 - 0.22	6	3.3	0.90 - 7.1	6	2.7	0.44 - 11
2018	6	0.053	0.014 - 0.14	6	1.3	0.29 - 2.5	6	0.27	0.093 - 0.46
2022	6	0.039	0.010 - 0.093	6	1.5	0.16 - 5.4	6	0.73	0.36 - 1.7
2024	6	0.050	0.012 - 0.077	6	0.45	0.22 - 0.65	6	0.56	0.12 - 1.4
Lipid-Normalized PCBs (mg/kg-lipid)									
2012	6	2.6	0.74 - 8.7	6	31	11 - 81	6	12	1.0 - 37
2016	6	2.3	0.70 - 7.9	6	160	49 - 263	6	133	18 - 523
2018	6	1.3	0.63 - 2.4	6	50	19 - 100	6	11	4.8 - 23
2022	6	1.4	0.57 - 2.4	6	49	8.3 - 150	6	27	13 - 60
2024	6	1.6	0.39 - 2.3	6	15	8.0 - 28	6	21	4.0 - 66

Notes:
1. Half of the detection limit was used for non-detect results for the mean calculation.
2. All results rounded to two significant figures.

Table **9**
Mean Brown Bullhead / White Sucker PCB Concentrations Over Time

Year	Background			Site			Downstream		
	Sample Count	Mean	Min-Max	Sample Count	Mean	Min-Max	Sample Count	Mean	Min-Max
Total PCBs (mg/kg)									
2012	6	0.050	0.050	6	0.48	0.075 - 0.96	6	0.29	0.050 - 0.68
2016	6	0.050	0.050	6	0.069	0.050 - 0.29	6	0.43	0.050 - 2.4
2018	6	0.015	0.013 - 0.025	6	0.18	0.018 - 0.38	6	0.11	0.014 - 0.25
2022	6	0.0092	0.0082 - 0.013	6	0.15	0.11 - 0.20	6	0.12	0.025 - 0.38
2024	6	0.012	0.010 - 0.025	6	0.20	0.032 - 0.69	6	0.068	0.011 - 0.20
Lipid-Normalized PCBs (mg/kg-lipid)									
2012	6	1.7	0.71 - 3.9	6	43	19 - 73	6	29	1.7 - 70
2016	6	1.9	1.3 - 2.6	6	11	3.9 - 34	6	29	2.2 - 103
2018	6	0.59	0.30 - 0.92	6	14	1.6 - 27	6	7.1	1.1 - 15
2022	6	0.68	0.33 - 1.3	6	12	6.9 - 20	6	12	2.7 - 51
2024	6	0.51	0.24 - 0.81	6	11	2.5 - 33	6	13	1.5 - 59

Notes:
1. For 2012 and 2016, the detection limit is shown for the mean and min-max background concentrations as all results were non-detect. Lower detection limits were achievable starting in 2018.
2. Half of the detection limit was used for non-detect results for the mean calculation.
3. All results rounded to two significant figures.

APPENDIX C – REFERENCE LIST

Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	**Date**
Record of Decision for the Reynolds Metals Company site, Massena, NY, EPA	1993
Protocol for a Uniform Great Lakes Sport Fish Consumption Advisory, Great Lakes Fish Advisory Task Force Protocol Drafting Committee. Anderson, et al.	1993
Record of Decision Amendment for the Reynolds Metals Company site, Massena, NY, EPA	1998
Final Dredging Program Work Plan for the River Remediation Project at the RMC site, Massena, NY, Bechtel	2000
Final Dredging Project Design Report for the River Remediation Project at the RMC site, Massena, NY, Metcalf & Eddy	2000
Subaqueous Cap Design for the Remediation of the St. Lawrence River at the RMC site, Massena, NY, Bechtel	2000
Draft Interim Completion Report for the St. Lawrence River at the RMC site, Massena, NY, Metcalf & Eddy	2002
Supplemental PAH Sampling Results at the RMC site, Massena, NY, Bechtel	2003
Work Plan for the Completion of Remedial Action Activities at the RMC site, Massena, NY, Alcoa	2003
2004 PAH Sampling Results, Alcoa	2005
Design/Work Plan for the Installation of PAH Cap in the St. Lawrence River, prepared by Anchor Environmental, LLC for Alcoa	2005
Detailed Comparative Analysis of Alternatives for the St. Lawrence River, prepared by Anchor Environmental for Alcoa	2005
Technical Memorandum, Supplemental Information to the Detailed Comparative Analysis of Alternatives, St. Lawrence River Remediation Project, prepared by Anchor Environmental, LLC for Alcoa	2006
First Five-Year Review for the Reynold Metals site, prepared by EPA	2006
EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD.	
Construction Completion Report for the St. Lawrence River Remediation Project, prepared by Anchor Environmental, LLC for Alcoa	2010
Second Five-Year Review for the Reynolds Metals site, prepared by EPA	2011
Awkwesasne Family Guide to Eating Locally – Caught Fish – Saint Regis Mohawk Tribe Environment Division https://craft-srmt.files.svdcdn.com/production/_uploads/environment/FishAdvisory_Nov2013_2026-08-18-132700_hsqt.pdf?dm=1787059621	2013

Long-term Monitoring Data Summary Report, prepared by Anchor QEA, LLC and Arcadis for Alcoa	2014
Saint Regis Mohawk Game Advisory https://craft-srmt.files.svdcdn.com/production/_uploads/environment/GameAdvisory_SRMT-Final.pdf?dm=1787059649	2014
Third Five-Year Review for the Reynolds Metals site, prepared by EPA	2016
Long-term Monitoring Data Summary Report, prepared by Anchor QEA, LLC and Arcadis for Alcoa	2016
Long-term Monitoring Data Summary Report, prepared by Anchor QEA, LLC and Arcadis for Alcoa	2017
Long-term Monitoring Data Summary Report, prepared by Anchor QEA, LLC and Arcadis for Alcoa	2018
NYSDOH Fish Advisory health.ny.gov/environmental/outdoors/fish/health_advisories/by_county.htm	2021
NYS DOH 2020 Revised Fish Consumption Numerical Guidelines for PCBs, Table 1. https://www.health.ny.gov/environmental/outdoors/fish/health_advisories/background.htm	2020
Fourth Five-Year Review for the Reynolds Metals site, prepared by EPA	2021
Long- term Monitoring Data Summary Report, prepared by Arcadis	2021
Long- term Monitoring Data Summary Report, prepared by Arcadis	2022
Long- term Monitoring Data Summary Report, prepared by Arcadis	2023
Long- term Monitoring Data Summary Report, prepared by Arcadis	2024
St. Lawrence Valley Region Health Advice on Eating Fish You Catch. NYS DOH. https://www.health.ny.gov/publications/2769.pdf	2026

APPENDIX D

PHYSICAL CHARACTERISTICS, GEOLOGY/HYDROGEOLOGY, LAND USE, AND FACILITY RESPONSE ACTION

Physical Characteristics

The RMC site, a shallow shelf within the St. Lawrence River adjacent to the RMC facility, contains slow currents, fine-grained sediments, and dense beds of submerged aquatic vegetation (SAV). The shallow shelf was created in the late 1950's by dredge spoils from the south Cornwall Navigation Channel, within the St. Lawrence Seaway, that is located 300 to 800 feet offshore from the RMC facility. Dredge spoils have not been deposited in this section of the river since the initial dredging.

Site Geology/Hydrogeology

The St. Lawrence Seaway shipping channel runs adjacent to the remediation area. Currents in the main river channel are 8 feet per second or greater. This flow is deflected to the east by training dikes that protect the Seaway channel. There are a series of clockwise and counterclockwise eddies as the main current exits the training dikes. Currents within the shallow portions of the remediation area are generally stagnant. In general, the regional topography of the area is characterized by low, elongated ridges of glacial till that generally trend northeast-southwest. Broad, flat valleys between the ridges contain marshy areas and meandering streams that drain to the St. Lawrence, Raquette, and Grasse Rivers. Beneath the study area are approximately 100 feet of overburden materials, consisting primarily of glacial till and clay, overlying fractured carbonate bedrock. The sediments within the study area are also dominated by glacial tills, clays, and sandy depositional units.

Land and Resource Use

Land use in the area surrounding the RMC site consists of mixed residential and industrial uses. As noted in the 2010 census, approximately 3,288 individuals live on the Saint Regis Indian Reservation, located within 0.5 miles of the site. The downtown area of Massena is located approximately eight miles west and upriver of the site. In the 2010 census, the population within the Town of Massena was approximately 10,883.

The former RMC aluminum manufacturing facility is currently occupied by Coinmint, a cryptocurrency mining company, and is zoned industrial. It encompasses 1,600 acres, 112 of which were utilized by the facility. The property also contains a 170-acre tract of Class 2 regulated water wetlands. Local water bodies are used recreationally for swimming, wading, fishing, boating, camping, and picnicking. The Mohawk native population and recreational fisherman fish in the vicinity of the RMC site. However, direct land access to the site is limited by the steep nature of the shoreline. The River is also used as a public water supply and the intakes are located about one and a half miles downstream.

Facility Response Actions

The RMC facility was placed on the NYSDEC Registry of Inactive Hazardous Waste Sites in September 1987. RMC, under a Consent Order with NYSDEC, agreed to investigate the contamination at the facility; this investigation excluded the St. Lawrence River.

In January 1992, NYSDEC issued a Record of Decision (ROD) that called for a combination of excavation and treatment of areas highly contaminated with PCBs and other contaminants, and consolidation and containment of other contaminated areas on the grounds of the facility. In March 1993, RMC and NYSDEC signed a Consent Order that required RMC to implement the selected remedy. In June 1995, NYSDEC issued a ROD amendment allowing on-site disposal of soils and sediments containing less than 50 milligrams per kilogram PCBs and requiring more highly contaminated soils and sediments to be disposed of off-site.

APPENDIX E – REMEDY RESILIENCY

REMEDY RESILIENCY

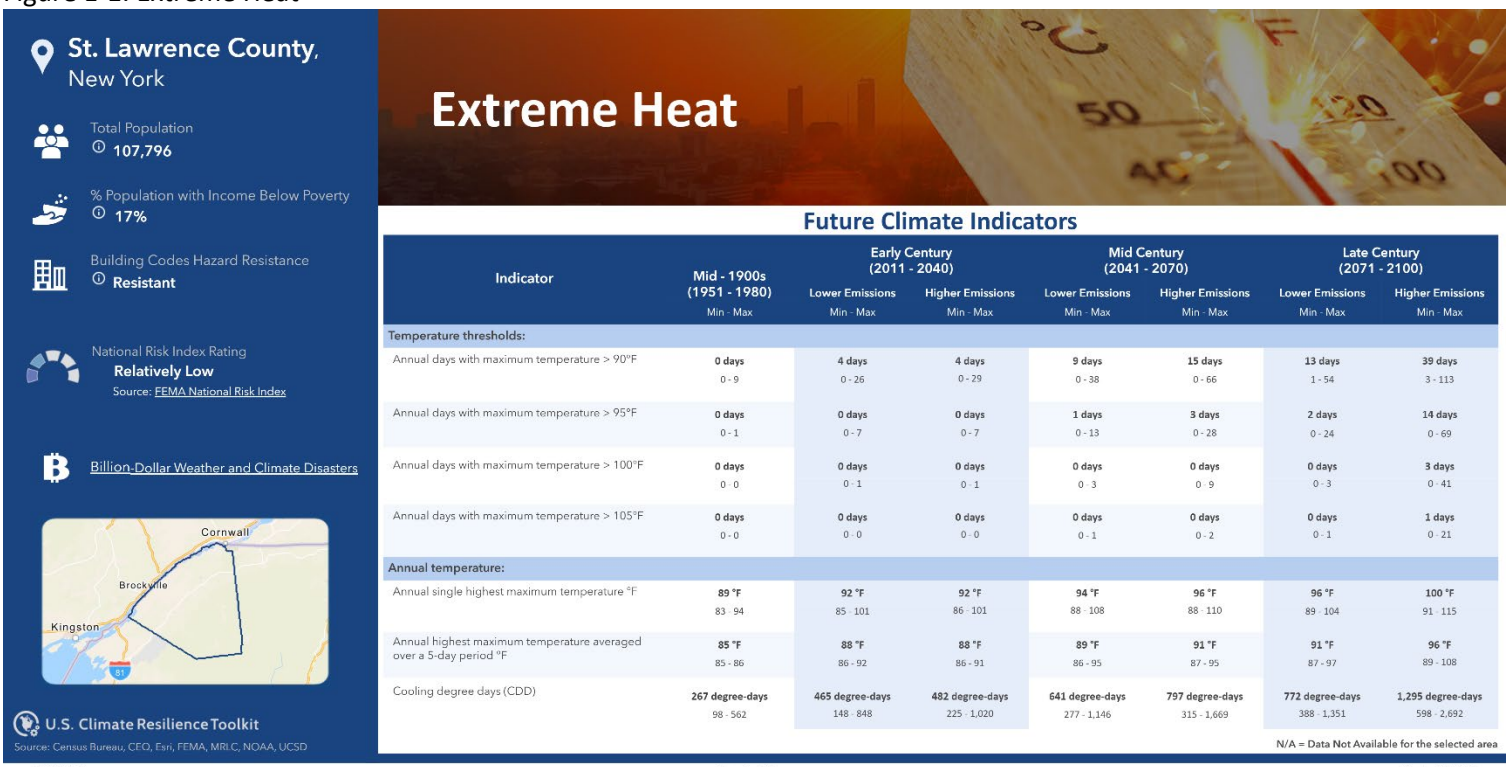
In accordance with regional practice, two tools were utilized to assess the Reynolds Metals Site. Screenshots from each of the tools used are included below.

The first tool (see CMRA) examined five hazards (extreme heat, drought, wildfire, flooding, and costal inundation) for St. Lawrence County, the county in which the Site is located. According to the CMRA tool, the National Risk Index Rating for extreme heat and flooding is relatively low (see Figures E-1 through E-2). However, no impacts from these hazards to the Site area or to the implementation or performance of the OU1 remedy have been observed. The CMRA tool reported the risks for Wildfire, shown in Figures E-3, is very low. The last two hazards: Drought, and Coastal Inundation have No Rating , or Not Applicable, respectively, and as shown in figures E-4 and E-5.

The second tool is called the USGS U.S. Landslide Inventory (see https://www.usgs.gov/tools/us-landslide-inventory-and-susceptibility-map). As shown by Figure E-6, there is a low to moderate vulnerability of a landslide at the Site. The risk of landslides in the area is increasing based on the results. However, the remedy, as further described below, includes provisions that help prevent erosion and includes maintenance and inspections after storm events.

Potential site impacts from severe weather events have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of severe weather in the region and near the Site. The remedy as designed and implemented takes into consideration the most likely local effects of extreme weather in the region, which is in-river or upland flooding caused by extreme precipitation events or rapid snowmelt. There are several other local factors that EPA has considered in concluding that the remedy is sufficient to address more intense and extreme weather events that may arise. First, the SLR water level is controlled by the Robert Moses Power Dam located upstream of the Site. Therefore, flooding of the Site is highly unlikely.

Figure E-1: Extreme Heat



St. Lawrence County, New York

Total Population
107,796

% Population with Income Below Poverty
17%

Building Codes Hazard Resistance
Resistant

National Risk Index Rating
Relatively Low
Source: FEMA National Risk Index

Billion-Dollar Weather and Climate Disasters

U.S. Climate Resilience Toolkit

Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

Extreme Heat

Future Climate Indicators

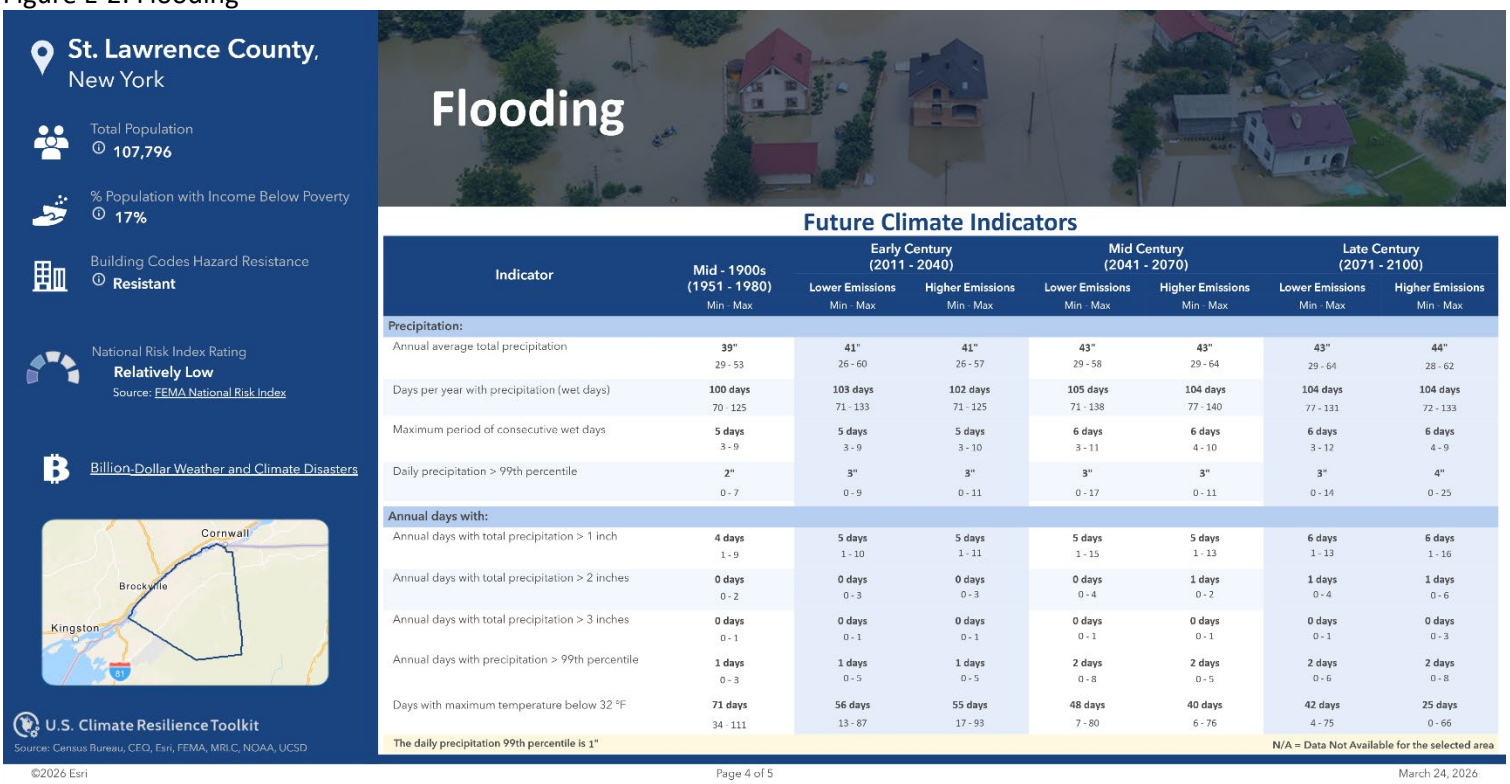
Indicator	Mid - 1900s (1951 - 1980) Min - Max	Early Century (2011 - 2040) Lower Emissions Min - Max	Early Century (2011 - 2040) Higher Emissions Min - Max	Mid Century (2041 - 2070) Lower Emissions Min - Max	Mid Century (2041 - 2070) Higher Emissions Min - Max	Late Century (2071 - 2100) Lower Emissions Min - Max	Late Century (2071 - 2100) Higher Emissions Min - Max
Temperature thresholds:							
Annual days with maximum temperature > 90°F	0 days (0 - 9)	4 days (0 - 26)	4 days (0 - 29)	9 days (0 - 38)	15 days (0 - 66)	13 days (1 - 54)	39 days (3 - 113)
Annual days with maximum temperature > 95°F	0 days (0 - 1)	0 days (0 - 7)	0 days (0 - 7)	1 days (0 - 13)	3 days (0 - 28)	2 days (0 - 24)	14 days (0 - 69)
Annual days with maximum temperature > 100°F	0 days (0 - 0)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 3)	0 days (0 - 9)	0 days (0 - 3)	3 days (0 - 41)
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 - 2)	0 days (0 - 1)	1 days (0 - 21)
Annual temperature:							
Annual single highest maximum temperature °F	89 °F (83 - 94)	92 °F (85 - 101)	92 °F (86 - 101)	94 °F (88 - 108)	96 °F (88 - 110)	96 °F (89 - 104)	100 °F (91 - 115)
Annual highest maximum temperature averaged over a 5-day period °F	85 °F (85 - 86)	88 °F (86 - 92)	88 °F (86 - 91)	89 °F (86 - 95)	91 °F (87 - 95)	91 °F (87 - 97)	96 °F (89 - 108)
Cooling degree days (CDD)	267 degree-days (98 - 562)	465 degree-days (148 - 848)	482 degree-days (225 - 1,020)	641 degree-days (277 - 1,146)	797 degree-days (315 - 1,669)	772 degree-days (388 - 1,351)	1,295 degree-days (598 - 2,692)

N/A = Data Not Available for the selected area

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March 24, 2026

Figure E-2: Flooding



St. Lawrence County, New York

Total Population
107,796

% Population with Income Below Poverty
17%

Building Codes Hazard Resistance
Resistant

National Risk Index Rating
Relatively Low
Source: FEMA National Risk Index

Billion-Dollar Weather and Climate Disasters

U.S. Climate Resilience Toolkit

Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

Flooding

Future Climate Indicators

Indicator	Mid - 1900s (1951 - 1980) Min - Max	Early Century (2011 - 2040) Lower Emissions Min - Max	Early Century (2011 - 2040) Higher Emissions Min - Max	Mid Century (2041 - 2070) Lower Emissions Min - Max	Mid Century (2041 - 2070) Higher Emissions Min - Max	Late Century (2071 - 2100) Lower Emissions Min - Max	Late Century (2071 - 2100) Higher Emissions Min - Max
Precipitation:							
Annual average total precipitation	39" (29 - 53)	41" (26 - 60)	41" (26 - 57)	43" (29 - 58)	43" (29 - 64)	43" (29 - 64)	44" (28 - 62)
Days per year with precipitation (wet days)	100 days (70 - 125)	103 days (71 - 133)	102 days (71 - 125)	105 days (71 - 138)	104 days (77 - 140)	104 days (77 - 131)	104 days (72 - 133)
Maximum period of consecutive wet days	5 days (3 - 9)	5 days (3 - 9)	5 days (3 - 10)	6 days (3 - 11)	6 days (4 - 10)	6 days (3 - 12)	6 days (4 - 9)
Daily precipitation > 99th percentile	2" (0 - 7)	3" (0 - 9)	3" (0 - 11)	3" (0 - 17)	3" (0 - 11)	3" (0 - 14)	4" (0 - 25)
Annual days with:							
Annual days with total precipitation > 1 inch	4 days (1 - 9)	5 days (1 - 10)	5 days (1 - 11)	5 days (1 - 15)	5 days (1 - 13)	6 days (1 - 13)	6 days (1 - 16)
Annual days with total precipitation > 2 inches	0 days (0 - 2)	0 days (0 - 3)	0 days (0 - 3)	0 days (0 - 4)	1 days (0 - 2)	1 days (0 - 4)	1 days (0 - 6)
Annual days with total precipitation > 3 inches	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 3)
Annual days with precipitation > 99th percentile	1 days (0 - 3)	1 days (0 - 5)	1 days (0 - 5)	2 days (0 - 8)	2 days (0 - 5)	2 days (0 - 6)	2 days (0 - 8)
Days with maximum temperature below 32 °F	71 days (34 - 111)	56 days (13 - 87)	55 days (17 - 93)	48 days (7 - 80)	40 days (6 - 76)	42 days (4 - 75)	25 days (0 - 66)

The daily precipitation 99th percentile is 1"

N/A = Data Not Available for the selected area

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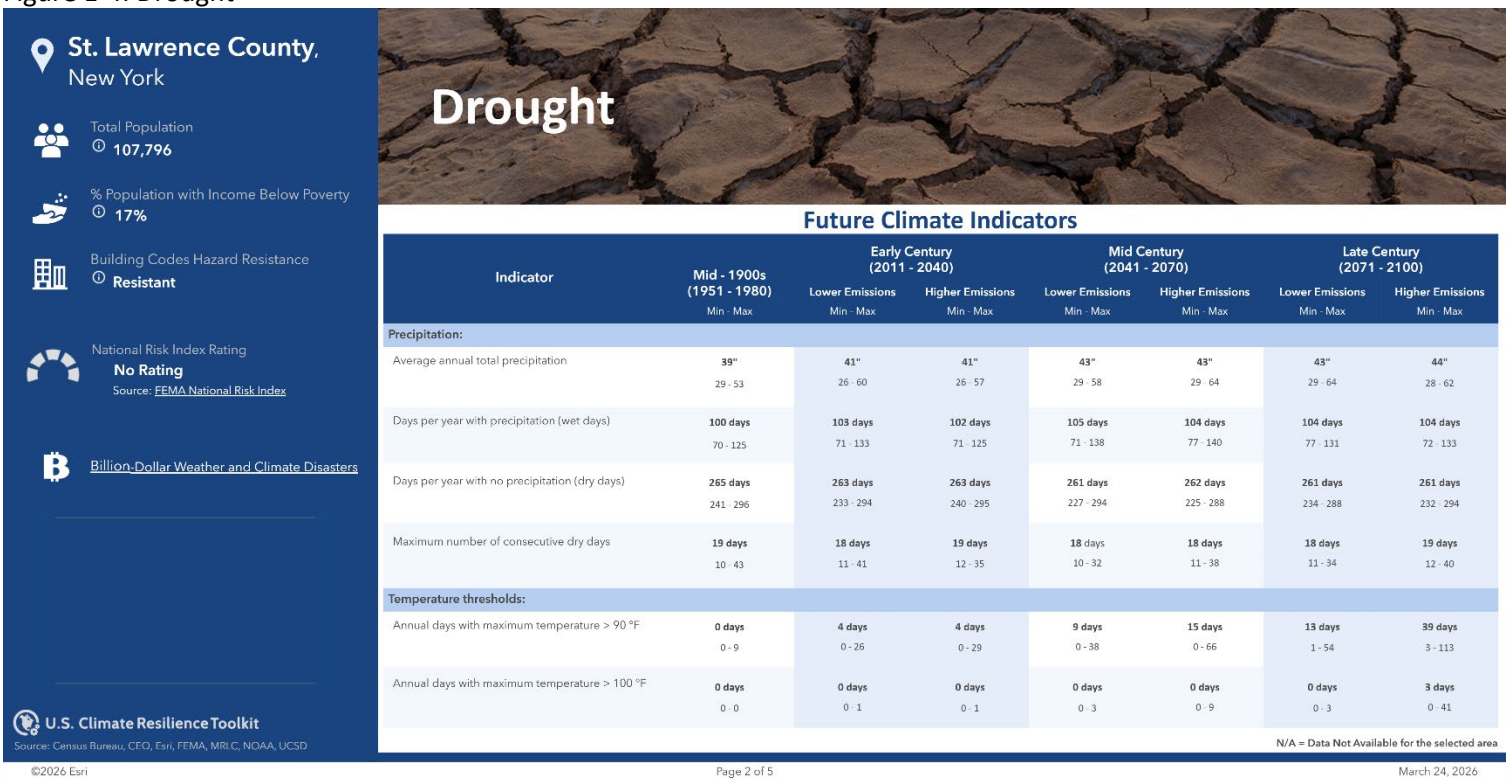
March 24, 2026

Figure E-3: Wildfire



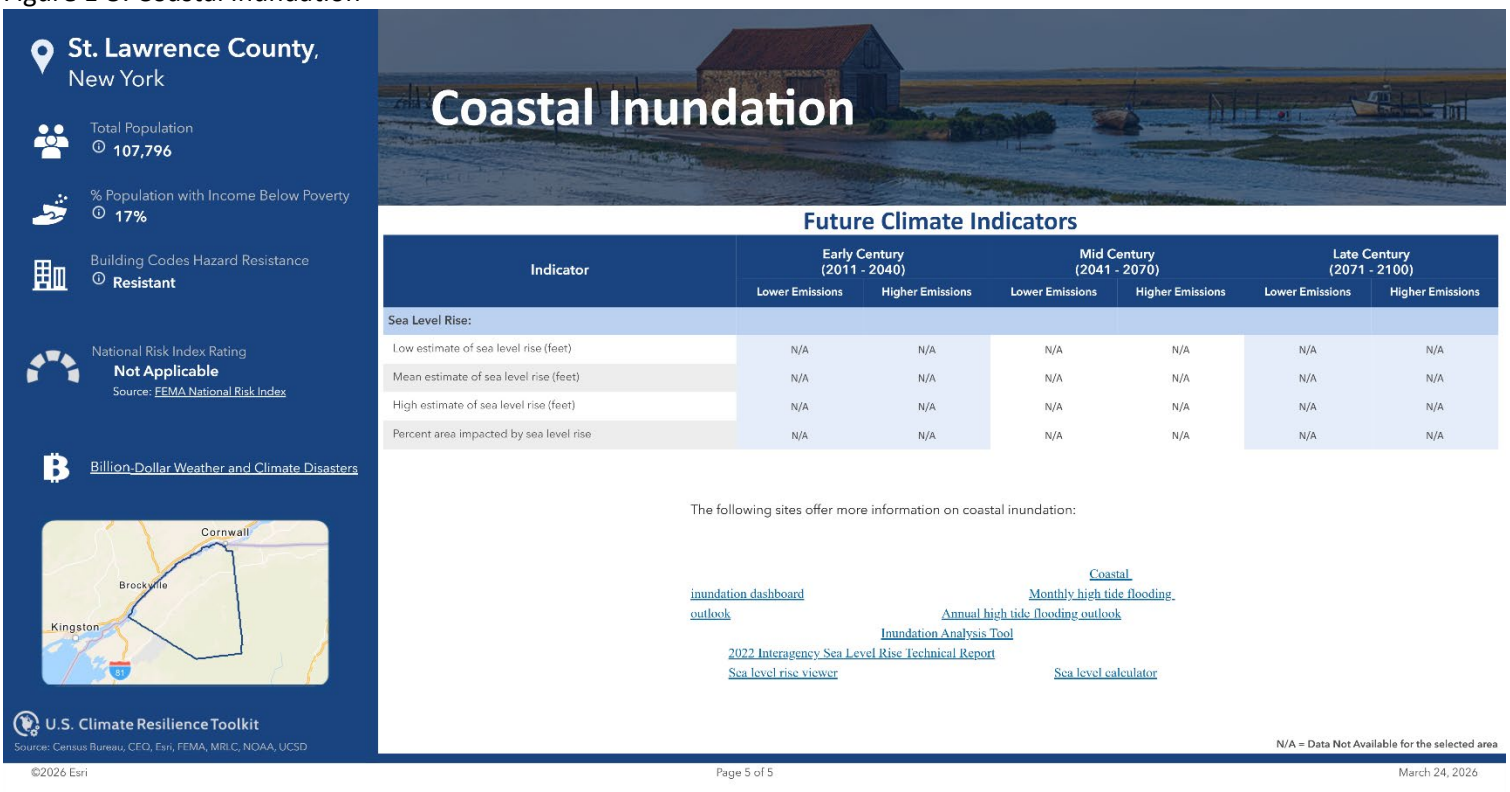
Indicator	Mid - 1900s (1951 - 1980) Min - Max	Early Century (2011 - 2040) Lower Emissions Min - Max	Early Century (2011 - 2040) Higher Emissions Min - Max	Mid Century (2041 - 2070) Lower Emissions Min - Max	Mid Century (2041 - 2070) Higher Emissions Min - Max	Late Century (2071 - 2100) Lower Emissions Min - Max	Late Century (2071 - 2100) Higher Emissions Min - Max
Precipitation:							
Days per year with no precipitation (dry days)	265 days (241 - 296)	263 days (233 - 294)	263 days (240 - 295)	261 days (227 - 294)	262 days (225 - 288)	261 days (234 - 288)	261 days (232 - 294)
Maximum number of consecutive dry days	19 days (10 - 43)	18 days (11 - 41)	19 days (12 - 35)	18 days (10 - 32)	18 days (11 - 38)	18 days (11 - 34)	19 days (12 - 40)
Days per year with precipitation (wet days)	100 days (70 - 125)	103 days (71 - 133)	102 days (71 - 125)	105 days (71 - 138)	104 days (77 - 140)	104 days (77 - 131)	104 days (72 - 133)
Temperature thresholds:							
Annual days with maximum temperature > 90°F	0 days (0 - 9)	4 days (0 - 26)	4 days (0 - 29)	9 days (0 - 38)	15 days (0 - 66)	13 days (1 - 54)	39 days (3 - 113)
Annual days with maximum temperature > 100°F	0 days (0 - 0)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 3)	0 days (0 - 9)	0 days (0 - 3)	3 days (0 - 41)

Figure E-4: Drought



Indicator	Mid - 1900s (1951 - 1980) Min - Max	Early Century (2011 - 2040) Lower Emissions Min - Max	Early Century (2011 - 2040) Higher Emissions Min - Max	Mid Century (2041 - 2070) Lower Emissions Min - Max	Mid Century (2041 - 2070) Higher Emissions Min - Max	Late Century (2071 - 2100) Lower Emissions Min - Max	Late Century (2071 - 2100) Higher Emissions Min - Max
Precipitation:							
Average annual total precipitation	39" (29 - 53)	41" (26 - 60)	41" (26 - 57)	43" (29 - 58)	43" (29 - 64)	43" (29 - 64)	44" (28 - 62)
Days per year with precipitation (wet days)	100 days (70 - 125)	103 days (71 - 133)	102 days (71 - 125)	105 days (71 - 138)	104 days (77 - 140)	104 days (77 - 131)	104 days (72 - 133)
Days per year with no precipitation (dry days)	265 days (241 - 296)	263 days (233 - 294)	263 days (240 - 295)	261 days (227 - 294)	262 days (225 - 288)	261 days (234 - 288)	261 days (232 - 294)
Maximum number of consecutive dry days	19 days (10 - 43)	18 days (11 - 41)	19 days (12 - 35)	18 days (10 - 32)	18 days (11 - 38)	18 days (11 - 34)	19 days (12 - 40)
Temperature thresholds:							
Annual days with maximum temperature > 90 °F	0 days (0 - 9)	4 days (0 - 26)	4 days (0 - 29)	9 days (0 - 38)	15 days (0 - 66)	13 days (1 - 54)	39 days (3 - 113)
Annual days with maximum temperature > 100 °F	0 days (0 - 0)	0 days (0 - 1)	0 days (0 - 1)	0 days (0 - 3)	0 days (0 - 9)	0 days (0 - 3)	3 days (0 - 41)

Figure E-5: Coastal Inundation



St. Lawrence County, New York

Total Population
107,796

% Population with Income Below Poverty
17%

Building Codes Hazard Resistance
Resistant

National Risk Index Rating
Not Applicable
Source: FEMA National Risk Index

Billion-Dollar Weather and Climate Disasters

U.S. Climate Resilience Toolkit
Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

Coastal Inundation

Future Climate Indicators

Indicator	Early Century (2011 - 2040)		Mid Century (2041 - 2070)		Late Century (2071 - 2100)	
	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
Sea Level Rise:						
Low estimate of sea level rise (feet)	N/A	N/A	N/A	N/A	N/A	N/A
Mean estimate of sea level rise (feet)	N/A	N/A	N/A	N/A	N/A	N/A
High estimate of sea level rise (feet)	N/A	N/A	N/A	N/A	N/A	N/A
Percent area impacted by sea level rise	N/A	N/A	N/A	N/A	N/A	N/A

The following sites offer more information on coastal inundation:

Coastal inundation dashboard
Monthly high tide flooding outlook
Annual high tide flooding outlook
Inundation Analysis Tool
2022 Interagency Sea Level Rise Technical Report
Sea level rise viewer
Sea level calculator

N/A = Data Not Available for the selected area

Figure E-6: Landslide Susceptibility

