Hudson River PCBs Superfund Site
Project Update

Community Advisory Group Meeting

Wednesday, September 14, 2022

Virtual Meeting

Hudson River PCBs SUPERFUND SITE

Hudson River Project Update

- Lower River
  - Sampling and Investigations
- Powerhouse and Allen Mill Deconstruction
  - Progress of ongoing work
- Five-Year Review (3rd Review)
- Floodplain Remedial Investigation/Feasibility Study
  - 2021 activities and work planned for 2022
- Upper River Sediment Data
  - Status of data analysis

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Hudson River Superfund Site

EPA Activities

(Conceptual- not to scale)

Upper Hudson (~40 Miles)

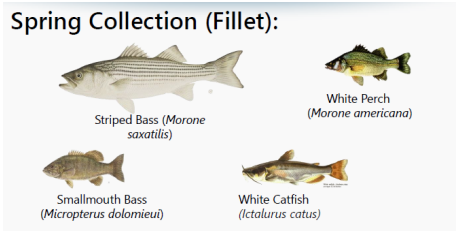
Lower Hudson (~160 Miles)

Remnant Deposits (OU1)

Dredging Remedy (OU2)

Waterline Transfer to Municipalities

Lower River Monitoring (upper portion only)



Hudson Falls (GE Plant Site - DEC)

Fort Edward (GE Plant Site - DEC)

Former Fort Edward Dam
Rogers Island

Schuylerville

Waterford

Troy (Dam)

Albany

Catskill

PCB Sites (DEC)
- BASF
- Hastings
- BIC

Poughkeepsie (salt front)

Tappan Zee

George Washington

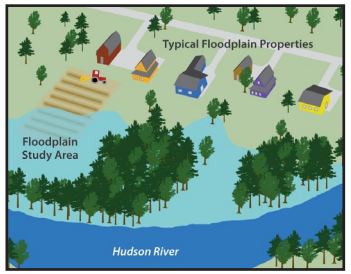
NJ

New York City Battery

NY Harbor

Powerhouse and Allen Mill Deconstruction

Floodplain RI/FS (OU4)



Additional Investigations and Sampling (OU5)

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Lower Hudson River

Hudson River
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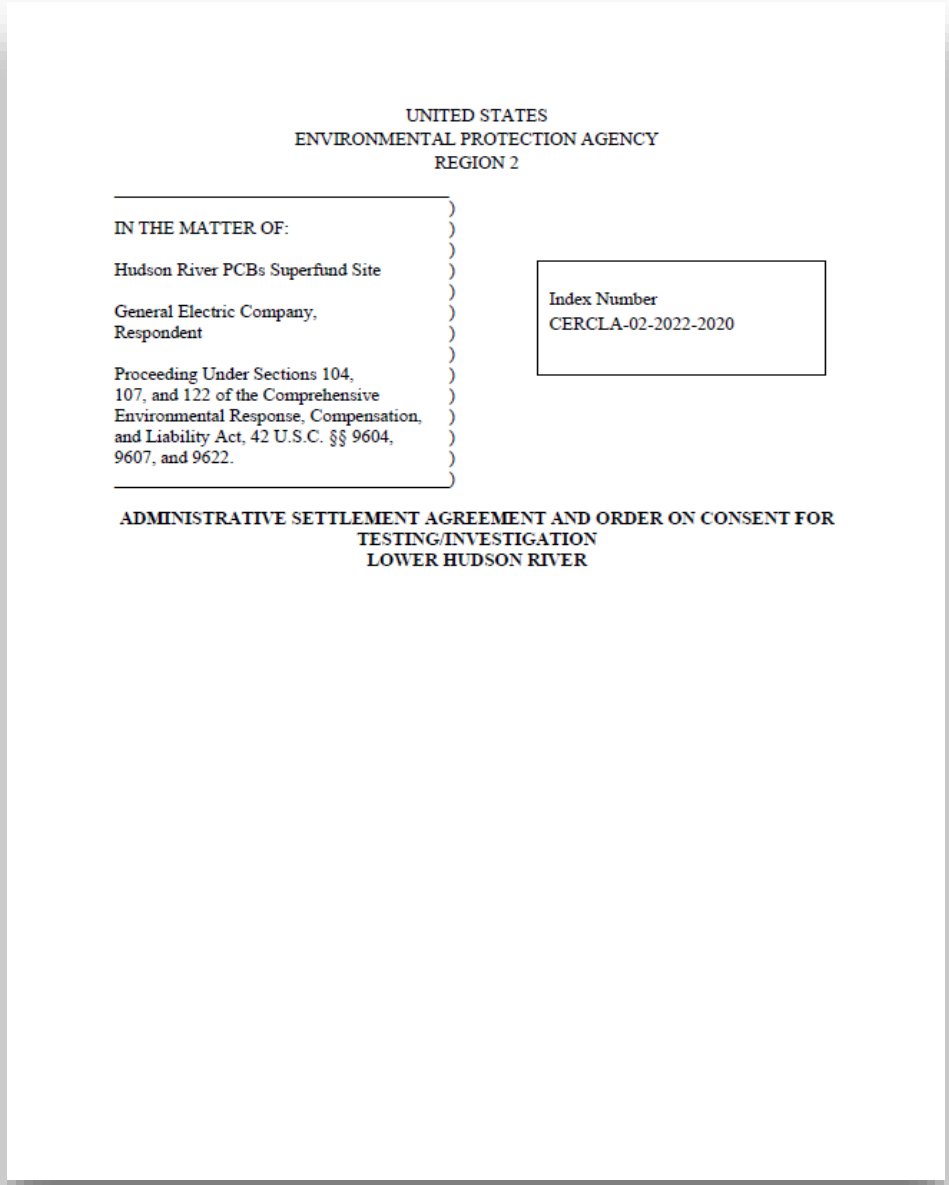
Lower Hudson River Agreement

- Order signed yesterday 9/13/2022
  - Statement of work included with the order
- Data gathered will be used to determine next steps and scope future work
- Work will begin this fall and continue through at least 2024
- Designed to be a phased and iterative process
  - Results from initial sampling will inform future sampling under this agreement
- Focus will be on PCBs – other contaminants will also be evaluated
- Five primary programs
    - Water column
    - Fish tissue
    - Recently deposited sediment (Be-7 bearing)
    - Supplemental sediment coring
    - High-resolution sediment coring (historical trends)



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 2

IN THE MATTER OF:

Hudson River PCBs Superfund Site

General Electric Company,
Respondent

Proceeding Under Sections 104, 107, and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9604, 9607, and 9622.

Index Number
CERCLA-02-2022-2020

**ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR TESTING/INVESTIGATION
LOWER HUDSON RIVER**

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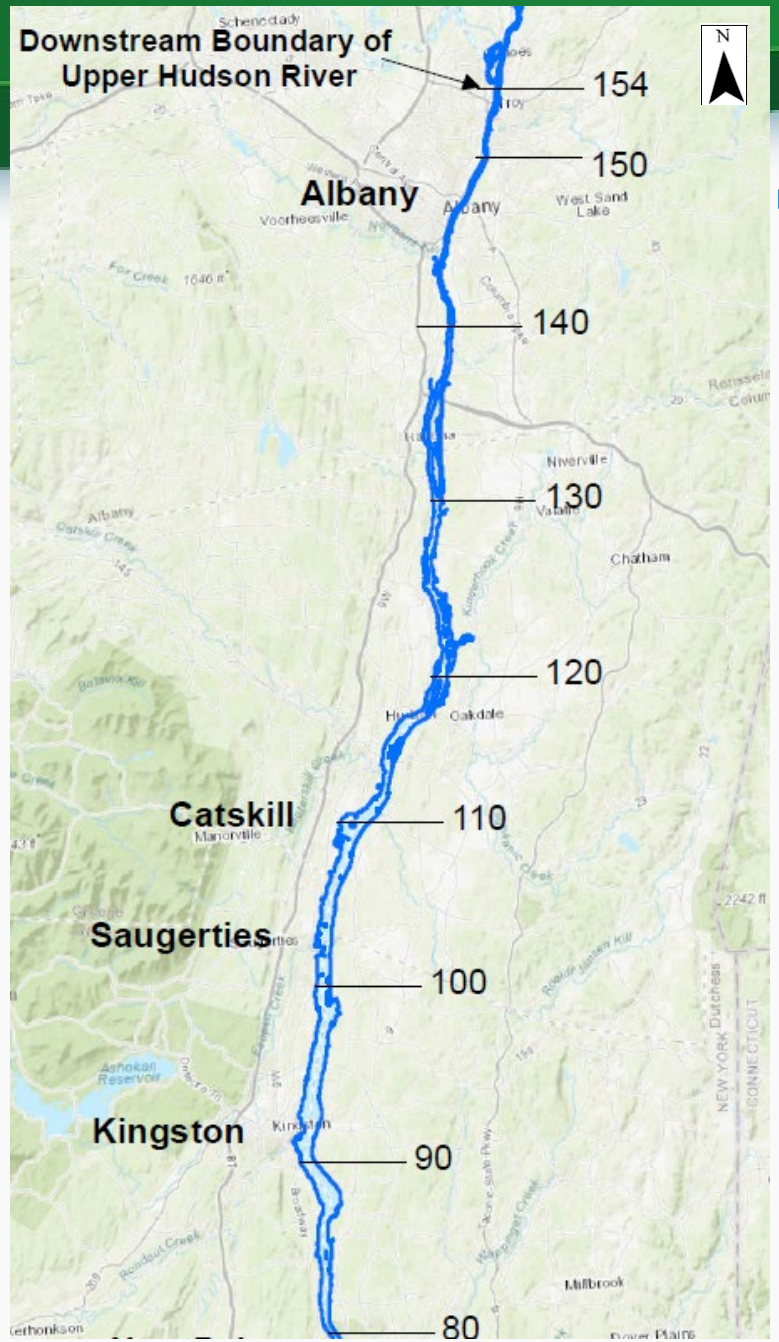
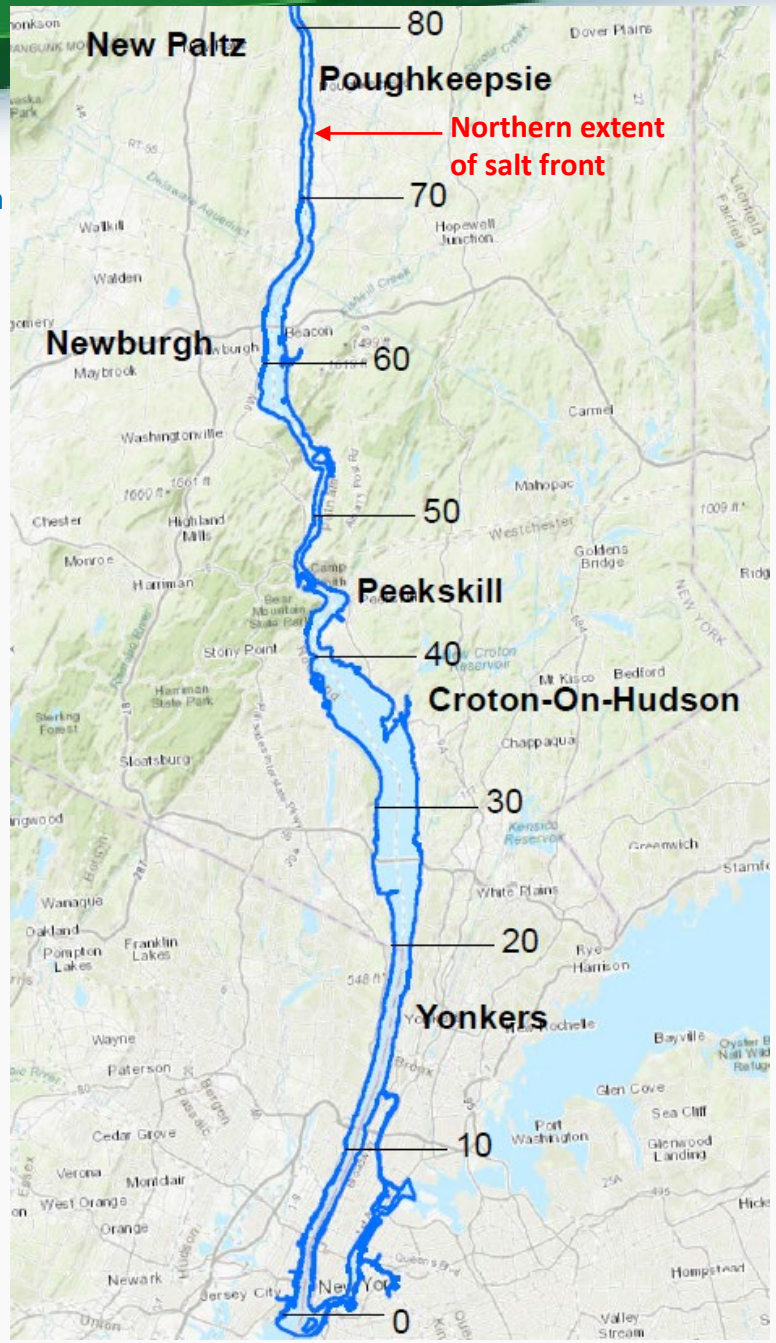
Lower Hudson River

- Lower River extends from Battery at Manhattan (RM 0) to the head of tide at the Federal Dam (RM 154)
- Estuarine salt front extends upriver to Poughkeepsie (~ RM 73)



Direction of Flow



Legend

10 River Mile

Hudson River Shoreline

0 5 10 20 Miles

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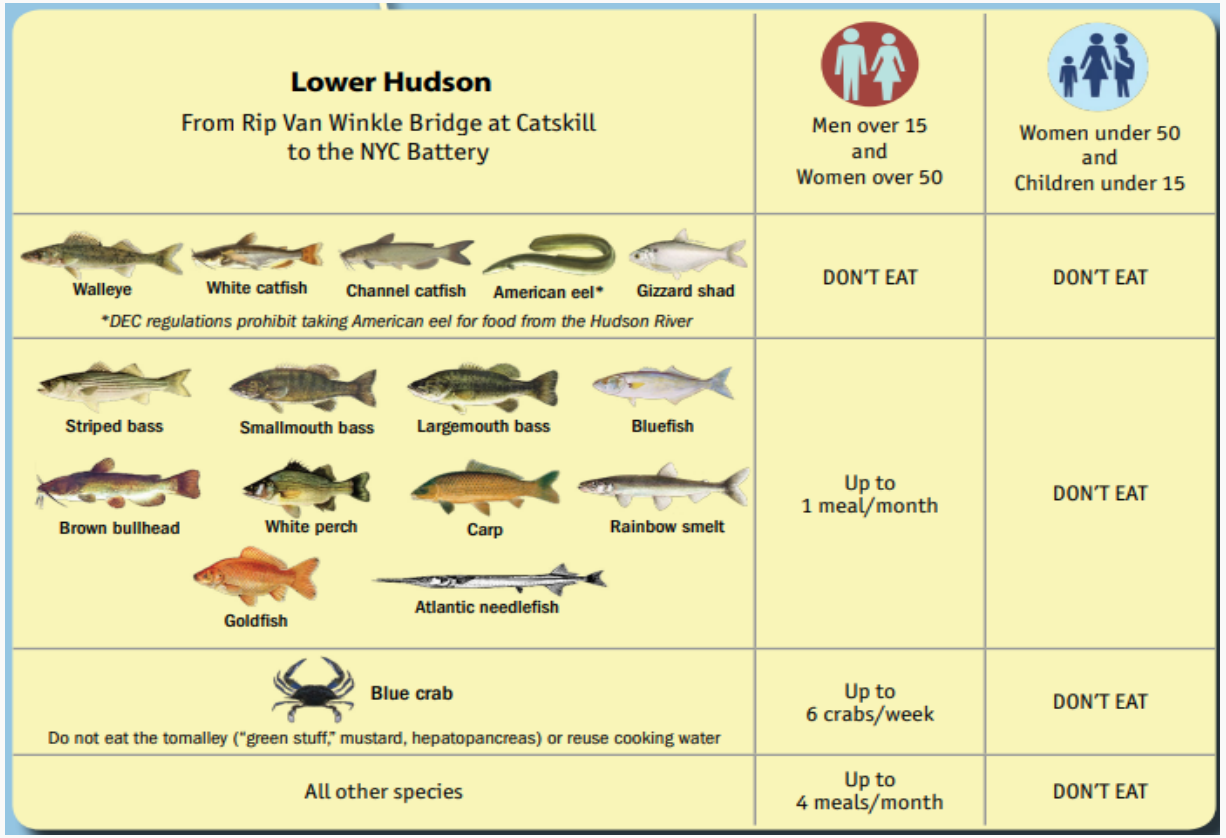
Why are additional investigations necessary for the Lower Hudson River?

- Lower River has been designated as OU5
- Limited data are available for the Lower River; it appears there may be limited recovery in some parts of the Lower River
- Consumption advisories, as identified by NYSDOH, remain in place throughout the Lower River



Lower Hudson From Rip Van Winkle Bridge at Catskill to the NYC Battery	Men over 15 and Women over 50	Women under 50 and Children under 15
Walleye, White catfish, Channel catfish, American eel*, Gizzard shad **DEC regulations prohibit taking American eel for food from the Hudson River*	DON'T EAT	DON'T EAT
Striped bass, Smallmouth bass, Largemouth bass, Bluefish, Brown bullhead, White perch, Carp, Rainbow smelt, Goldfish, Atlantic needlefish	Up to 1 meal/month	DON'T EAT
Blue crab Do not eat the tomalley ("green stuff," mustard, hepatopancreas) or reuse cooking water	Up to 6 crabs/week	DON'T EAT
All other species	Up to 4 meals/month	DON'T EAT

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Water Column

- Purpose:
  - Evaluate overall concentrations of PCBs and additional water quality parameters throughout the Lower River
  - Inform EPA's understanding of the relationships among water, fish and sediment
- Scope:
  - Monitor 5 stations monthly for PCBs (Albany/Troy, Catskill, Poughkeepsie, Newburgh and Tappan Zee)
    - Tributaries and the salt water will be considered
    - Target 3 freshwater stations and 2 brackish water stations
  - Evaluate data after one year and determine optimal approach (frequency and location) for water column sampling

Fish Tissue

- Purpose:
  - Collect data to assess variations in PCB contamination among various fish species and locations in the Lower River
- Scope:
  - Collect fish and crab from 5 primary monitoring stations throughout the Lower River
    - 11 total fish species (6 - 9 species per station) and crab
    - Primary stations will be distributed approximately 30 miles apart
  - Evaluate data after one year and determine if sampling at secondary locations is necessary
    - Pumpkinseed and/or local forage fish (with local home ranges) will be considered
    - Alternative locations for the sport fish species in the event primary stations do not produce sufficient numbers

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Fish Collection Locations (upstream to downstream)

- **Albany/Troy** (RM 152): Primary location - Freshwater - Striped bass, pumpkinseed, black bass, forage fish (spottail shiner), channel catfish, perch, carp
- **Coeymans** (RM131): Secondary location - Freshwater - Pumpkinseed
- **Catskill** (RM 113): Primary location - Freshwater - Striped bass, pumpkinseed, black bass, forage fish (spottail shiner), channel catfish, bullhead, perch, hogchoker or carp*
- **Red Hook** (RM 98): Secondary location - Fresh/brackish water - Pumpkinseed
- **Poughkeepsie** (RM 75): Primary location - Fresh/brackish water - Striped bass, pumpkinseed, black bass, forage fish (spottail shiner), channel catfish, bullhead, perch, bluefish, hogchoker or carp
- **Newburg** (RM 60): Secondary location - Fresh/brackish water – Local forage fish species (TBD)
- **Hudson Highlands** (RM 45): Secondary location - Fresh/brackish water – Local forage fish species (TBD)
- **Haverstraw/Tappan Zee/Piermont** (RM 32-27): Primary location - Fresh/brackish water - Striped bass, channel catfish, perch, bluefish, blue crab, hogchoker or carp, American eel, forage fish (silverside)
- **George Washington Bridge** (RM 11): Primary location – Saline water - Striped bass, channel catfish, perch, bluefish, blue crab, hogchoker, forage fish (silverside)
- **New York Harbor** (RM 5): Secondary location - Saline water – Local species (TBD) including forage fish (silverside)

Recently Deposited (Be-7 bearing) Sediment

- Purpose:
  - Evaluate PCB concentrations of recently suspended and depositing sediment
  - Investigate main stem and 12 major tributaries
- Scope:
  - Target 150 locations in the main stem (approximately every 3 to 5 miles)
    - Anticipate 30 to 50 samples containing beryllium 7 (Be-7) bearing sediment will also be analyzed for PCBs
  - Target 100 locations from 12 major tributaries
    - Anticipate approximately 3 samples per tributary containing Be-7 bearing sediment will also be analyzed for PCBs

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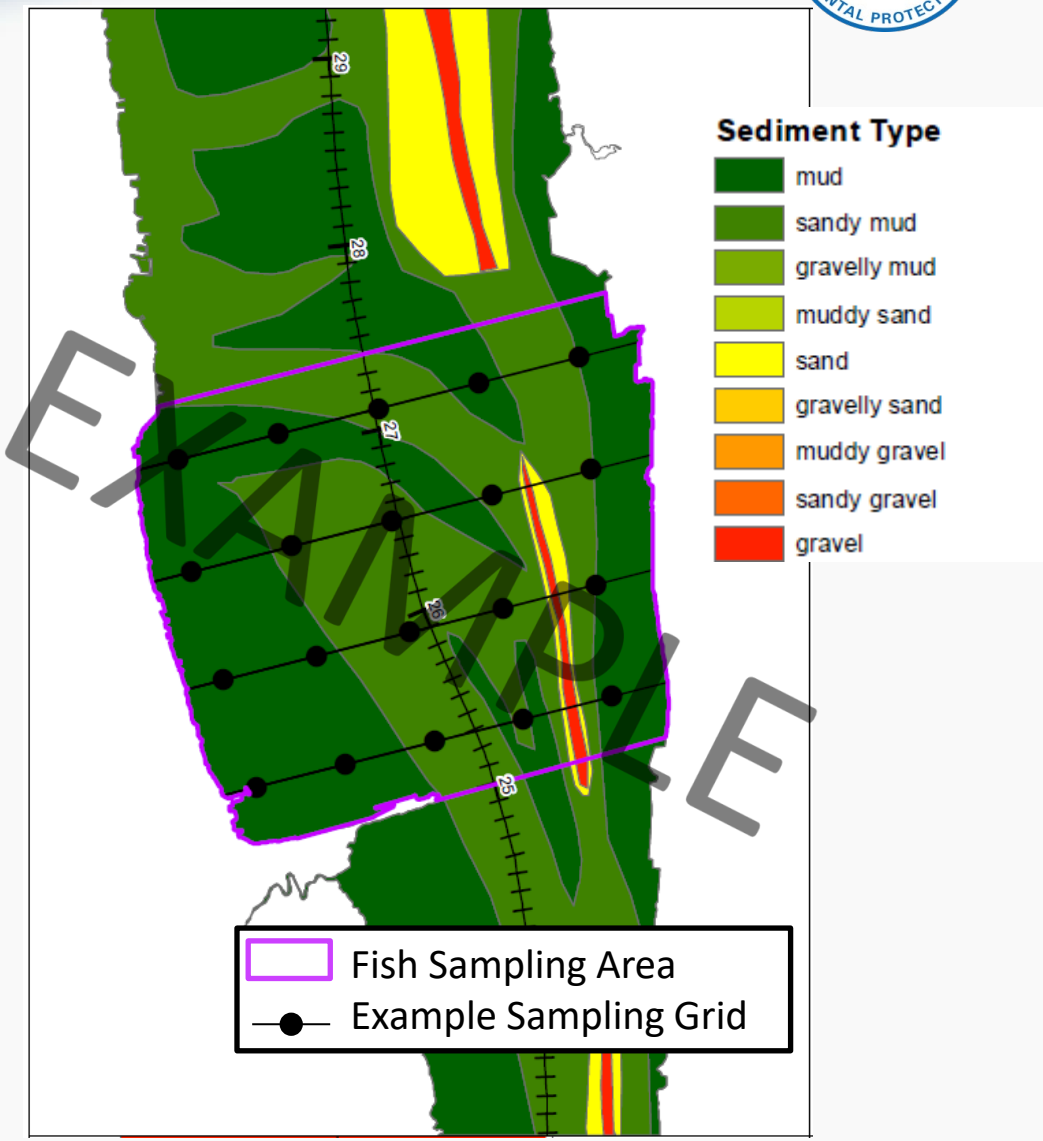
Supplemental Sediment Coring

- Purpose:
  - Evaluate PCB concentrations in Lower River sediments
  - Provide information about the relationships among fish, water and sediment in the Lower River
- Scope:
  - Target samples from 10 sampling grids of 20 cores for each station at the primary and secondary fish sampling stations (200 samples)
  - Collect to a depth of 3 feet
    - Top 0-6 in segment analyzed for PCBs
    - 6-12 in and bottom 2 ft segments will be archived for possible future analysis



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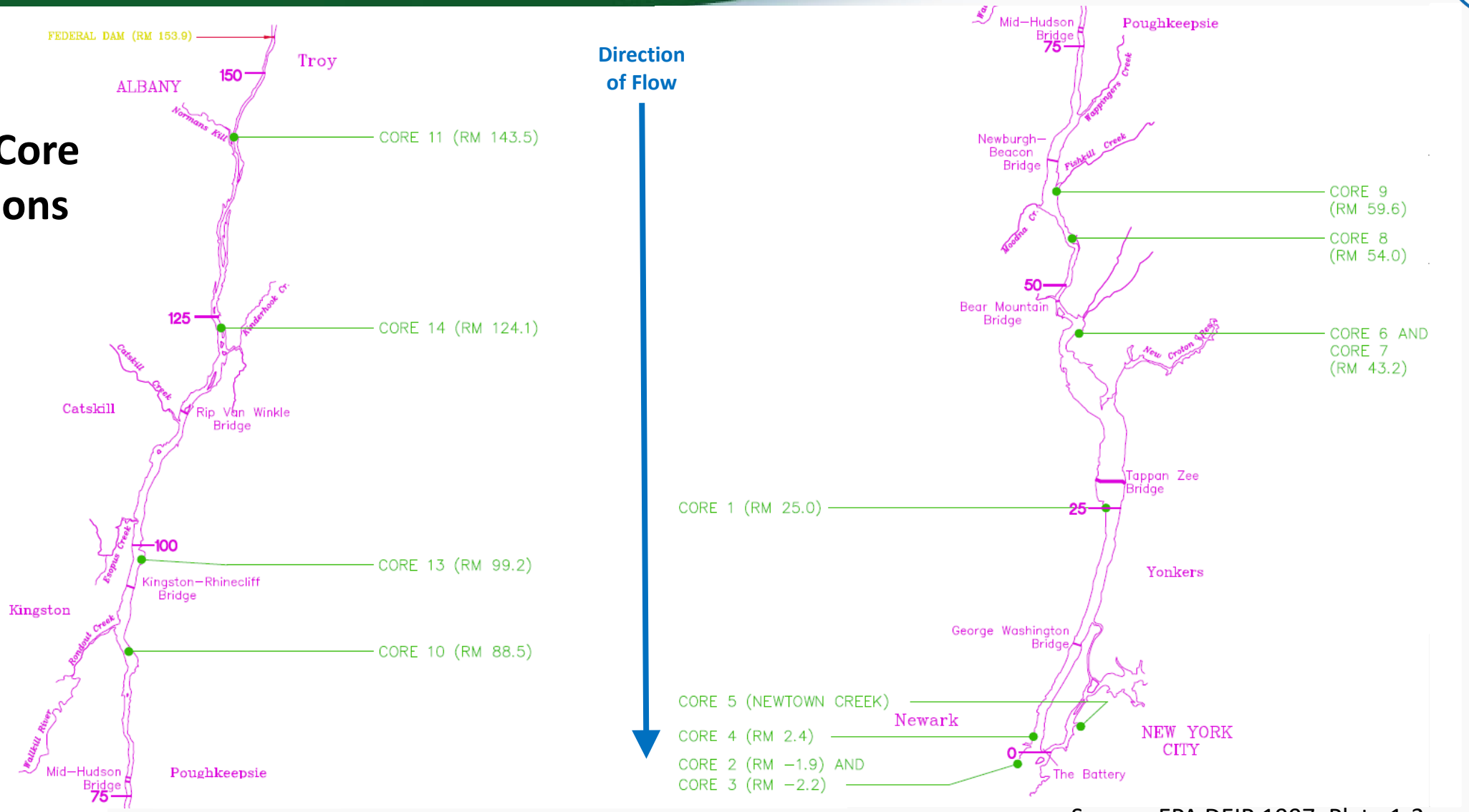
High Resolution Sediment Coring

- Purpose:
  - Provide data necessary to further evaluate the history of PCB sediment deposition in the Lower River
  - Evaluate recovery rates of the Lower River sediment over time with respect to PCBs
- Scope:
  - Target 6 initial core locations
    - Select locations spread out through the Lower River
    - Target previous successful locations
  - Evaluate whether additional cores are needed, based on initial results

Supplemental Studies – High Resolution Sediment Coring

1992 Core Locations



Source: EPA DEIR 1997, Plate 1-3

Hudson River PCBs SUPERFUND SITE

Next Steps – Fall 2022 through 2024

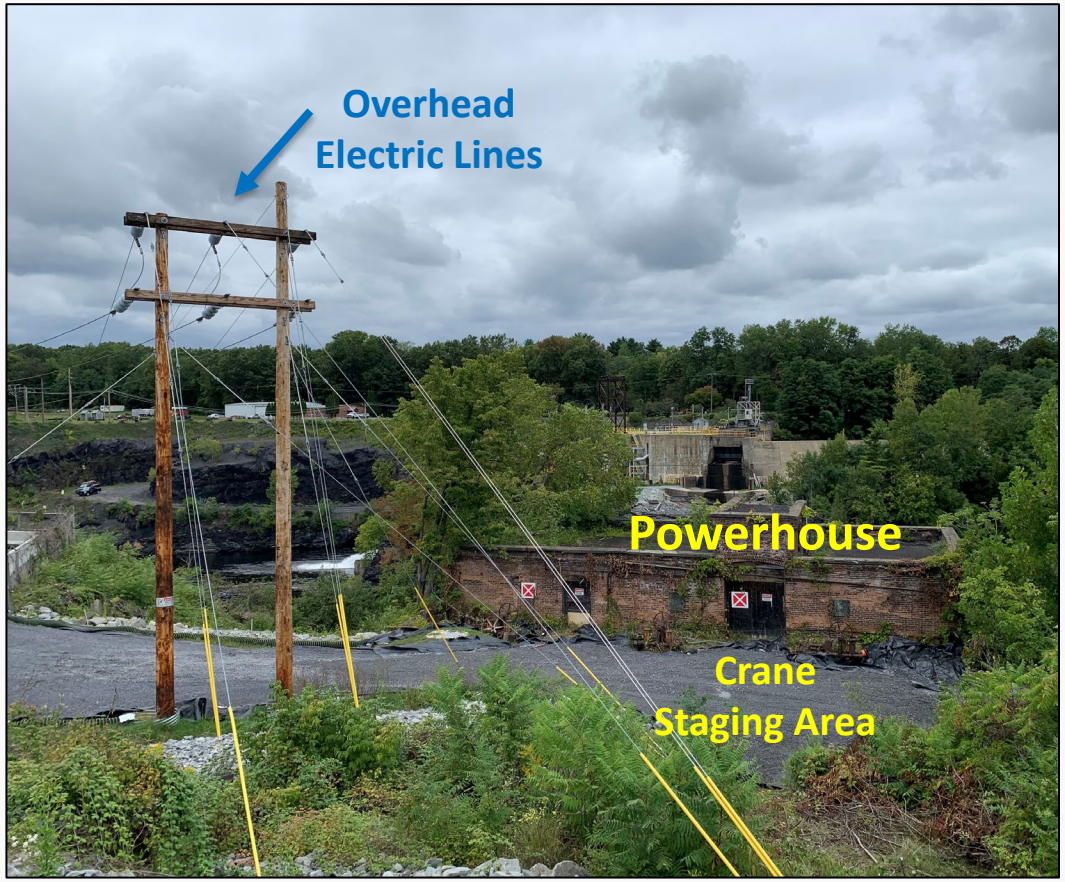
- Work plan and other necessary document development
- Establish schedule
- Field reconnaissance – identify locations for sampling
- Plan and conduct fieldwork
- Laboratory analysis of samples
- Evaluate sampling results and future sampling needs
- Reminder: given the challenges with collecting samples of various media (primarily in terms of fish and sediment) in this large complex river system, the scopes of work are designed to be stepwise and iterative

Powerhouse and Allen Mill Deconstruction


Former GE Hudson Falls Plant
Allen Mill
Powerhouse
Baker's Falls Dam
Hudson River
(low flow condition)

Powerhouse Deconstruction - Background

- The Powerhouse was built in 1907 and is located adjacent to the GE Hudson Falls Plant Site
  - GE Hudson Falls contamination has migrated to the Niagara Mohawk Power Corporation (NMPC) property
  - Disturbance during deconstruction and further building deterioration have potential to cause a release to the river
- EPA reached a legal agreement with NMPC and GE in July 2022 to oversee the deconstruction of the Powerhouse and Allen Mill
- EPA is the lead agency and is coordinating closely with other agencies (DEC, DOH and USACE)
- Extensive environmental monitoring and protective measures required during deconstruction work
- Project challenges
  - Deteriorated Powerhouse condition
  - Project schedule (weather and river flow conditions)
  - Limited access and work area (34 kV overhead electric lines)
  - Working from heights and on/near water
  - Environmental conditions (asbestos-containing material in roof flashing, Hudson Falls Plant site contamination)



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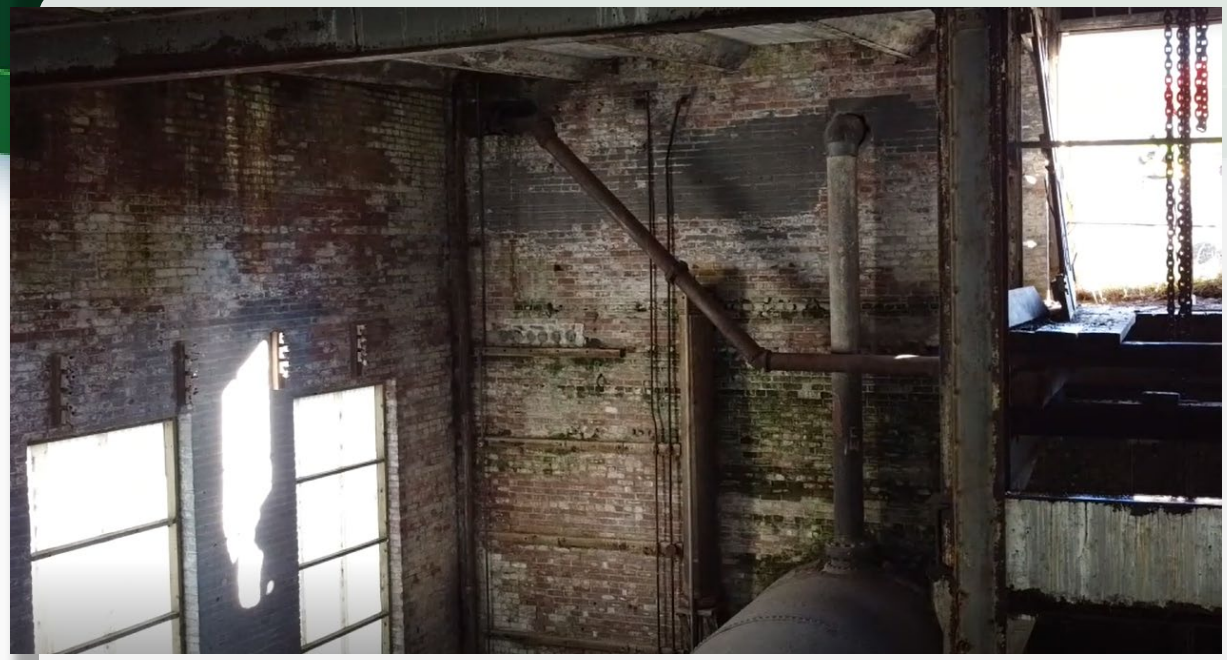

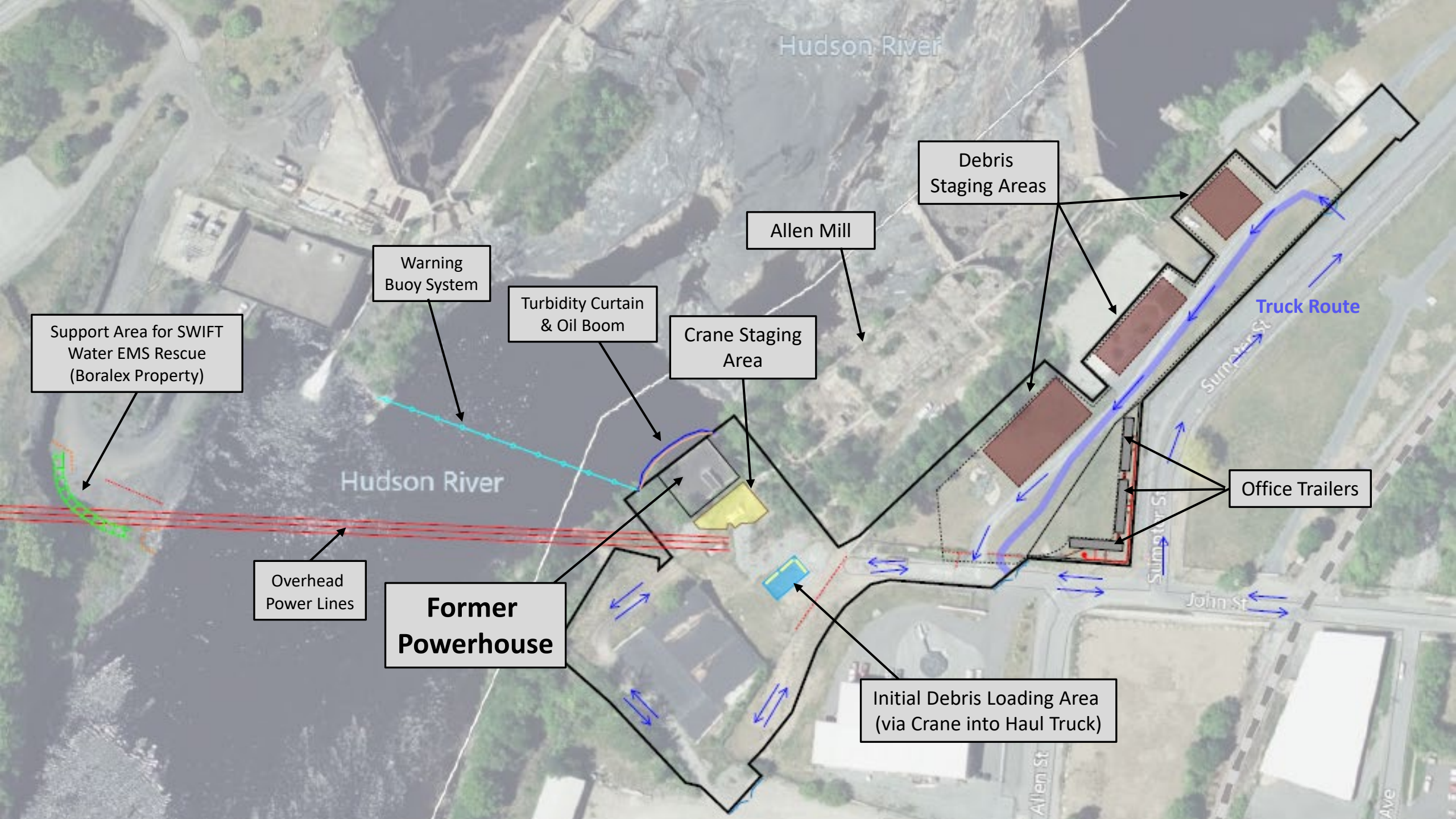
Hudson River
Debris Staging Areas
Allen Mill
Warning Buoy System
Turbidity Curtain & Oil Boom
Crane Staging Area
Support Area for SWIFT Water EMS Rescue (Boralex Property)
Truck Route
Hudson River
Office Trailers
Overhead Power Lines
Former Powerhouse
Initial Debris Loading Area (via Crane into Haul Truck)
Summer St
John St
Allen St

Powerhouse Deconstruction – Environmental Monitoring

- Baseline monitoring completed for air, water and groundwater
- Community Air Monitoring Plan
  - Continuous monitoring for particulates (dust), volatile organic compounds and PCBs
  - Air monitoring stations positioned around the site perimeter, including across the river
- Water Monitoring
  - Continuous PCB samples collected every 12 hours at 004N (north of Fort Edward outfall)
  - PCB sample (grab) collected daily at Roger's Island
  - Visual observation in plunge pool during deconstruction work
  - Continued water quality monitoring at Upper Hudson River stations under OM&M
- Groundwater Monitoring
  - Expanded groundwater and DNAPL monitoring program (26 wells)
  - Expanded DNAPL removal near Powerhouse
  - Continued implementation of Hudson Fall Site remedy, including tunnel drain collection system (TDCS)


Air Monitoring Station

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Powerhouse Deconstruction – Underwater Survey

In August 2022, an underwater video inspection was performed using a drone to assess conditions in the plunge pool

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Powerhouse Deconstruction – Underwater Survey

Sediment was not observed in the plunge pool and only a small amount of debris was identified adjacent to the Powerhouse

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Powerhouse Deconstruction – Looking Ahead

- Site preparation underway
  - Trailer setup, access road and decon pad installation
- Project documents in various stages of review/approval
  - Community Air Monitoring Plan, Design Report, Environmental Monitoring Plan, Project Operations Plan and Health & Safety Plans
- Deconstruction expected to begin in late September following document approvals
  - Begins with the removal of the roof structure, followed by careful dismantling of the building walls and removal of the concrete foundation
- Some work expected to continue in spring 2023
- Deconstruction of the Allen Mill following lessons learned from the Powerhouse work and subsequent planning

Trailers and Staging Area Setup

140-Ton Crane

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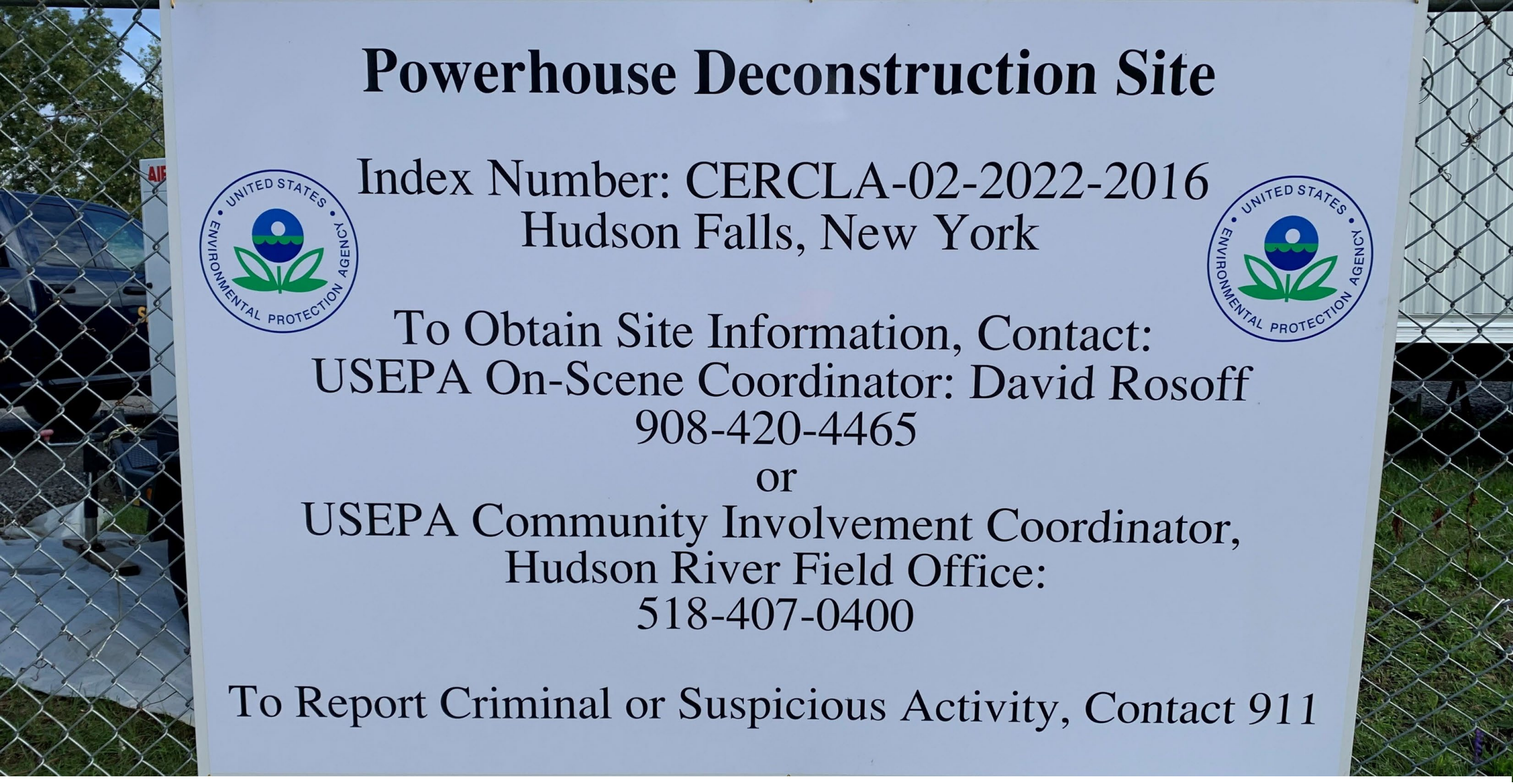

EPA Project Website: https://response.epa.gov/HudsonFalls

Five-Year Review
(3rd Review)

What is a five-year review?

Purpose: To ensure that cleanups are working as intended and protective of people's health and the environment

- Legally required under the Superfund law every five years after the start of on-site construction
- Uses current information (data, site visits, document review) to evaluate the implementation and performance of the selected cleanup remedy
- The process is intended to assess protectiveness of the selected cleanup remedy; not to explore alternative cleanup options or strategies
- EPA guidance
  - EPA issues memoranda on various elements of the FYR process (report writing, site inspection, protectiveness statements, etc.)
  - https://www.epa.gov/superfund/writing-five-year-reviews-superfund-sites

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What is EPA reviewing?

Upper Hudson River PCB cleanup (Operable Unit 2)

- Record of Decision signed 2002: dredging followed by a period of natural recovery
- Start of on-site construction (building of dewatering facility) - 2007
- Phase 1 dredging - 2009
- Peer Review - 2010
- Phase 2 dredging - 2011-2015
- 2.75M cubic yards of sediment removed (≈310,000 lbs of PCBs)
- Monitoring of sediment, water, and fish ongoing

Remnant deposits (Operable Unit 1)

- 1984 cleanup plan: addressed areas of PCB-contaminated sediment that became exposed after river water level dropped following removal of the Fort Edward Dam in 1973
- Areas are now capped, maintained, and monitored

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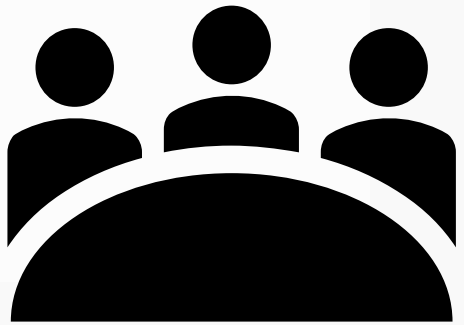
Five-Year Review – Team

- EPA inviting agency and community representatives to join Five-Year Review team
- Includes EPA technical experts, support agencies, members of Community Advisory Group
- Team members provide input to EPA through technical meetings

Team provides input on remedy implementation and performance based on information that may include, but is not limited to:

- Environmental data
- Document review
- Site inspection (considering current/future land and resource use)
- Interviews



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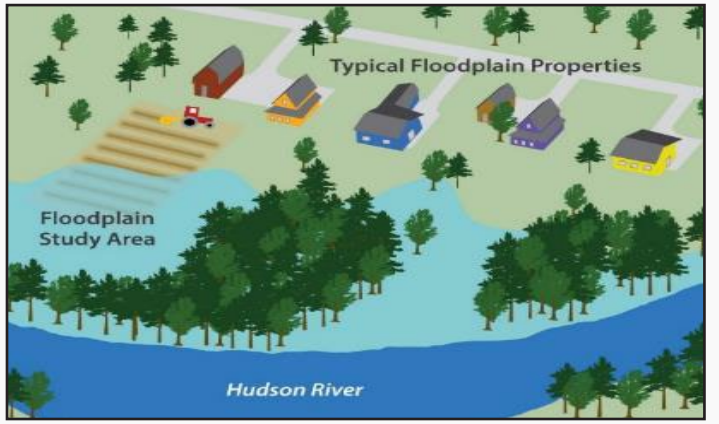
Five-Year Review Next Steps

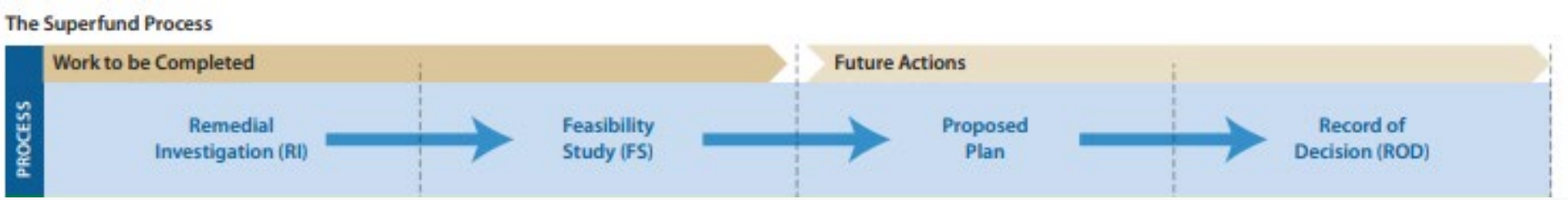
- EPA to continue its analysis of data
  - Evaluating data collected up through end of 2021
  - Recently received the last of the 2021 data
- Five-year team – establish team and set schedule for meetings
- Overall tentative schedule
  - Team meetings late Sept. – Dec. (about 4 meetings planned)
  - Report review (internal EPA) Dec. to Feb. 2023
  - Release report – March 2023 – public comment
  - Finalize report – July 2023

Floodplain Investigation

Floodplain Comprehensive Study

- Ongoing sampling
  - Multiple rounds in past years and more this year
    - Flood mud samples collected to assess impacts from flood events
      - April 2022 – 6 samples (0.2 – 1ppm)
    - Human use areas – EPA in collaboration with DEC/DOH continue to identify these areas as property use along the river changes
      - Some follow-up sampling completed in 2022
    - Where are PCBs in the floodplain (Nature and Extent)
      - 2021 and 2022 focused on better understanding spatial distribution and variability of PCBs in soil near the river (709 samples collected from 11 properties)
- Risk assessment ongoing – initial screening level assessments underway
  - PCB concentrations decrease farther down river and away from the shore





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Floodplain Short-Term Removal Actions (STRAs)

- Areas regularly used by people have been prioritized for sampling
- Sampling associated with community projects are also prioritized
- Actions taken to address immediate threats to human health (>10ppm PCBs)
  - Total of 68 STRAs (45 – grass or gravel covers, 23 signage)
  - Topsoil with grass or gravel covers
  - Signage - along trails and less frequently used areas
- Annual Inspection of STRAs conducted in August and September 2022
  - EPA to review results and determine necessary maintenance
- New STRA installations planned for Fall 2022
  - 3 new covers to be installed
    - Includes public use areas
  - Additional signage

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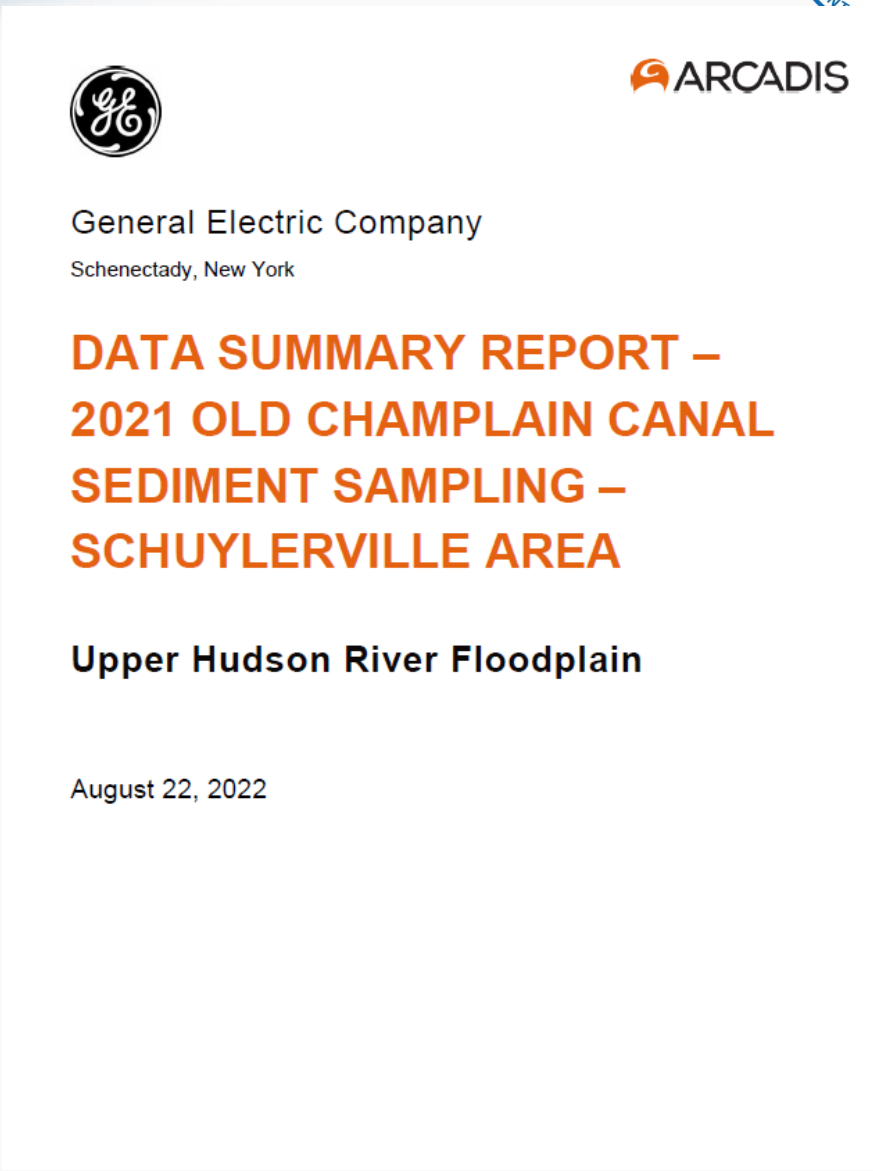
Old Champlain Canal - overview

- Town/Village have long-term recreational and economic development plans for the Old Champlain Canal
- EPA coordinated sediment sampling program with DEC and DOH
- Sampling of the Canal was conducted between 2012 and 2021
  - Total of 43 locations and 68 samples from the canal
- Data Summary Report prepared by GE
  - Includes all data collected in canal to date
  - Provided to town/village on August 22, 2022
- EPA and DEC following up internally in support of the town/village plans


ARCADIS

General Electric Company

Schenectady, New York

DATA SUMMARY REPORT – 2021 OLD CHAMPLAIN CANAL SEDIMENT SAMPLING – SCHUYLERVILLE AREA

Upper Hudson River Floodplain

August 22, 2022

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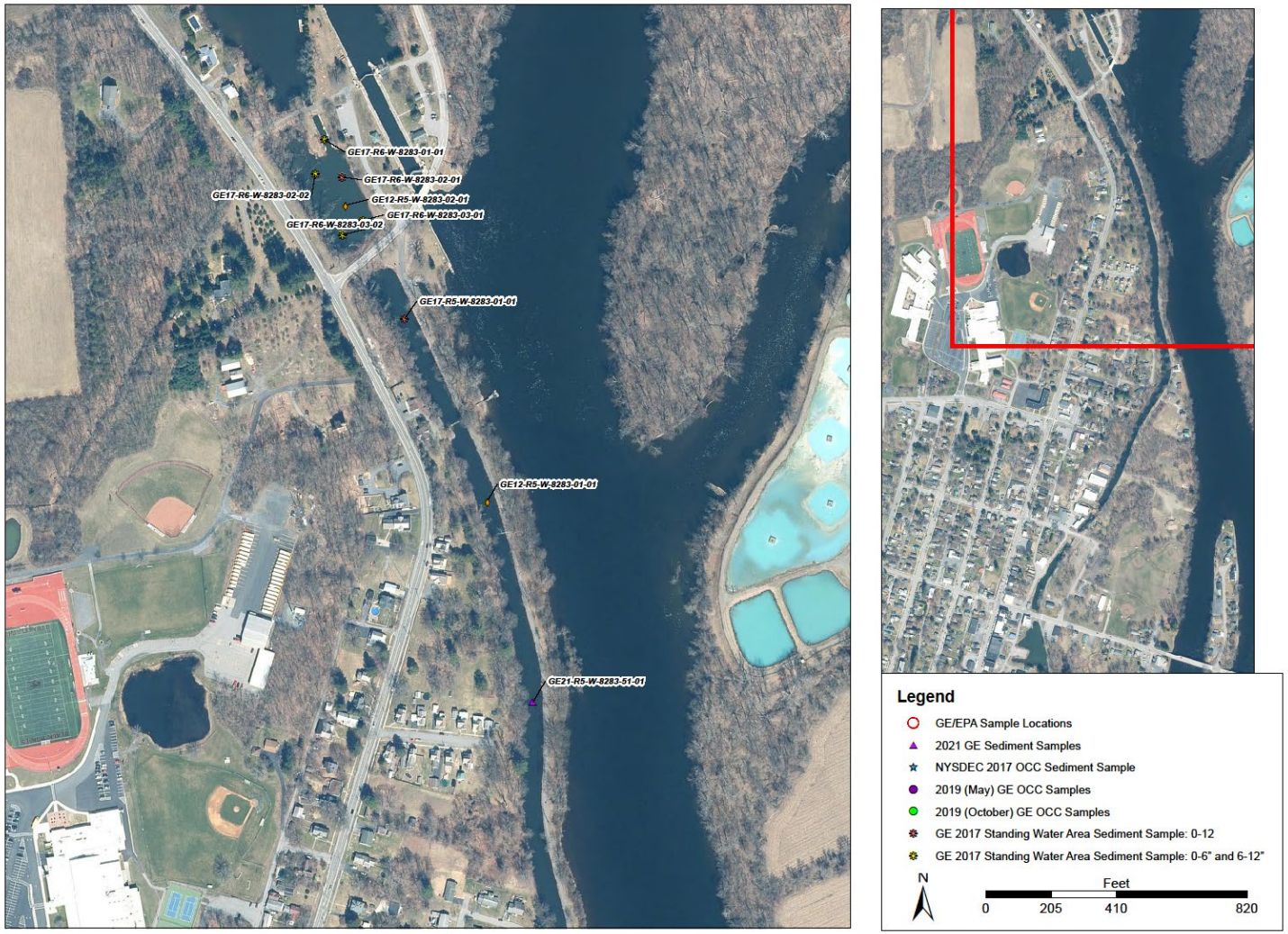
Old Champlain Canal – sample locations



ARCADIS Design & Consultancy for natural and built assets

Data Summary Report - 2021 Old Champlain Canal Sediment Sampling
Upper Hudson River Floodplain
Figure 2 - Surface Sediment Sample Locations (2012 through 2021) - Panel 1

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Old Champlain Canal – sample locations

Legend

- GE/EPA Sample Locations
- 2021 GE Sediment Samples
- NYSDEC 2017 OCC Sediment Sample
- 2019 (May) GE OCC Samples
- 2019 (October) GE OCC Samples
- GE 2017 Standing Water Area Sediment Sample: 0-12
- GE 2017 Standing Water Area Sediment Sample: 0-6" and 6-12"

N

Feet: 0, 35, 70, 140

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Data Summary Report - 2021 Old Champlain Canal Sediment Sampling
Upper Hudson River Floodplain
Figure 2 - Surface Sediment Sample Locations (2012 through 2021) - Panel 2

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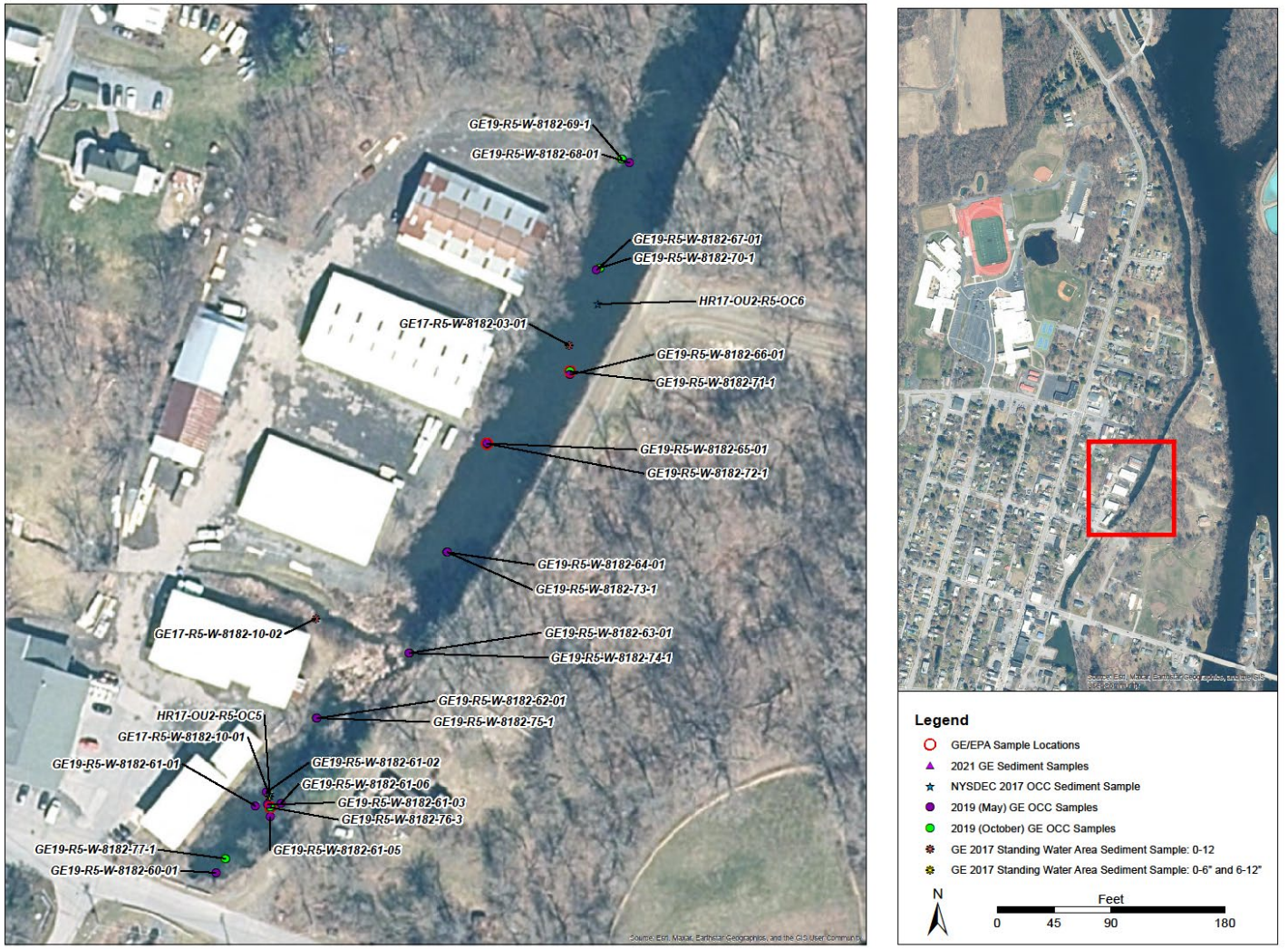
Old Champlain Canal – sample locations



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N

Feet: 0 45 90 180

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Data Summary Report - 2021 Old Champlain Canal Sediment Sampling
Upper Hudson River Floodplain
Figure 2 - Surface Sediment Sample Locations (2012 through 2021) - Panel 3

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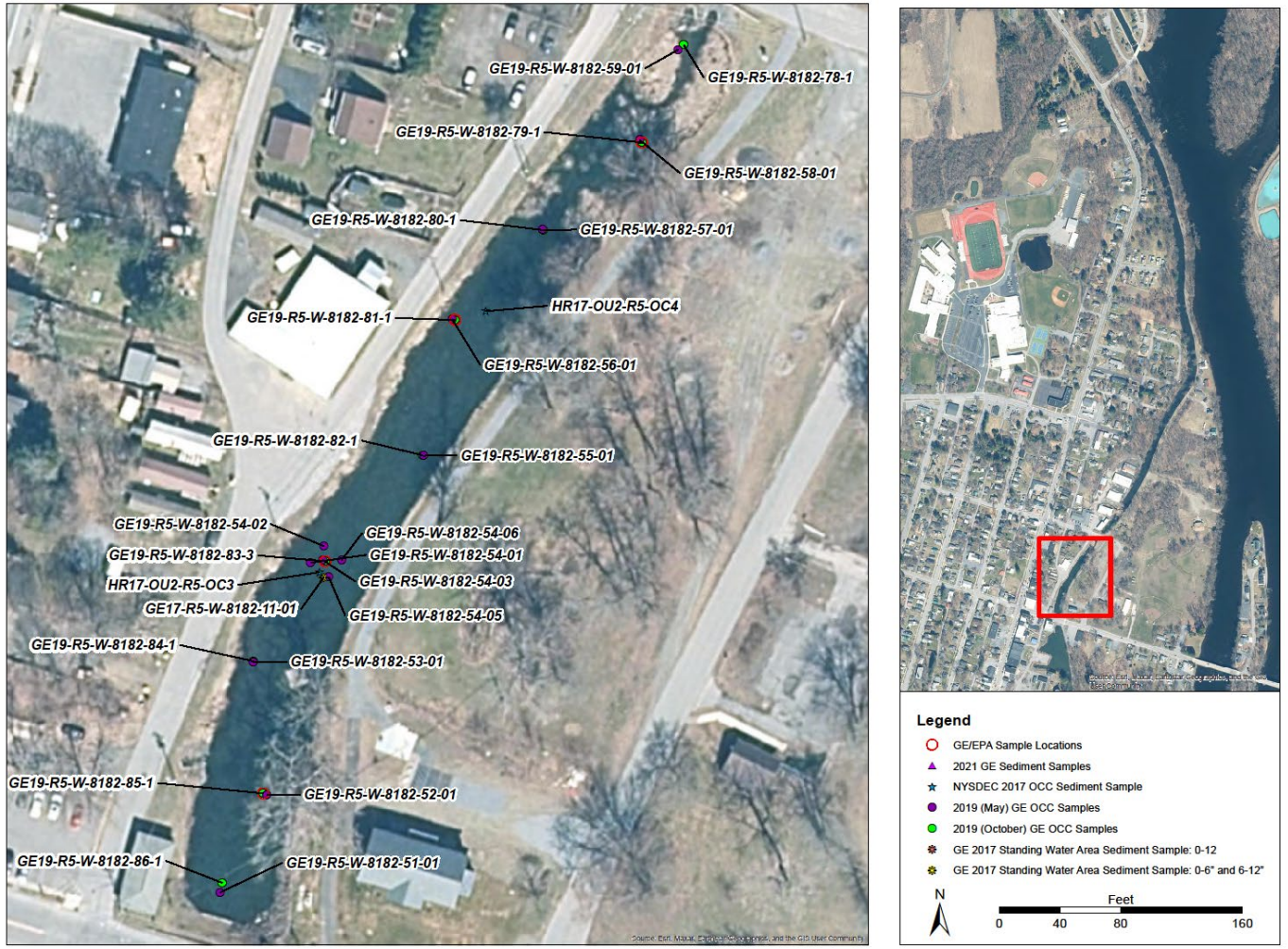
Old Champlain Canal – sample locations



Legend

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N

Feet

0 40 80 160

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Data Summary Report - 2021 Old Champlain Canal Sediment Sampling
Upper Hudson River Floodplain
Figure 2 - Surface Sediment Sample Locations (2012 through 2021) - Panel 4

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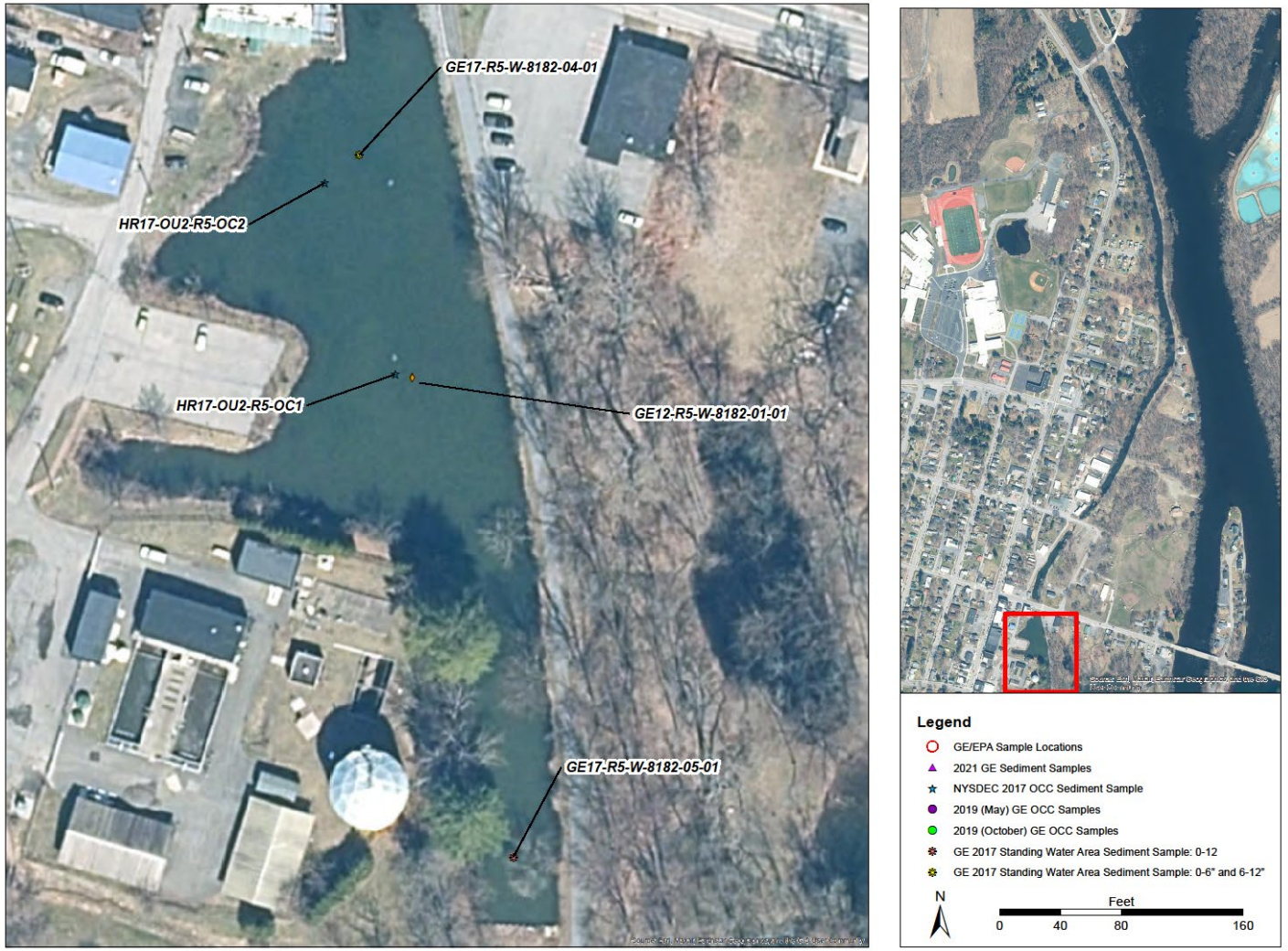
Old Champlain Canal – sample locations



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Data Summary Report - 2021 Old Champlain Canal Sediment Sampling
Upper Hudson River Floodplain
Figure 2 - Surface Sediment Sample Locations (2012 through 2021) - Panel 5

Hudson River PCBs SUPERFUND SITE

Floodplain - Next Steps

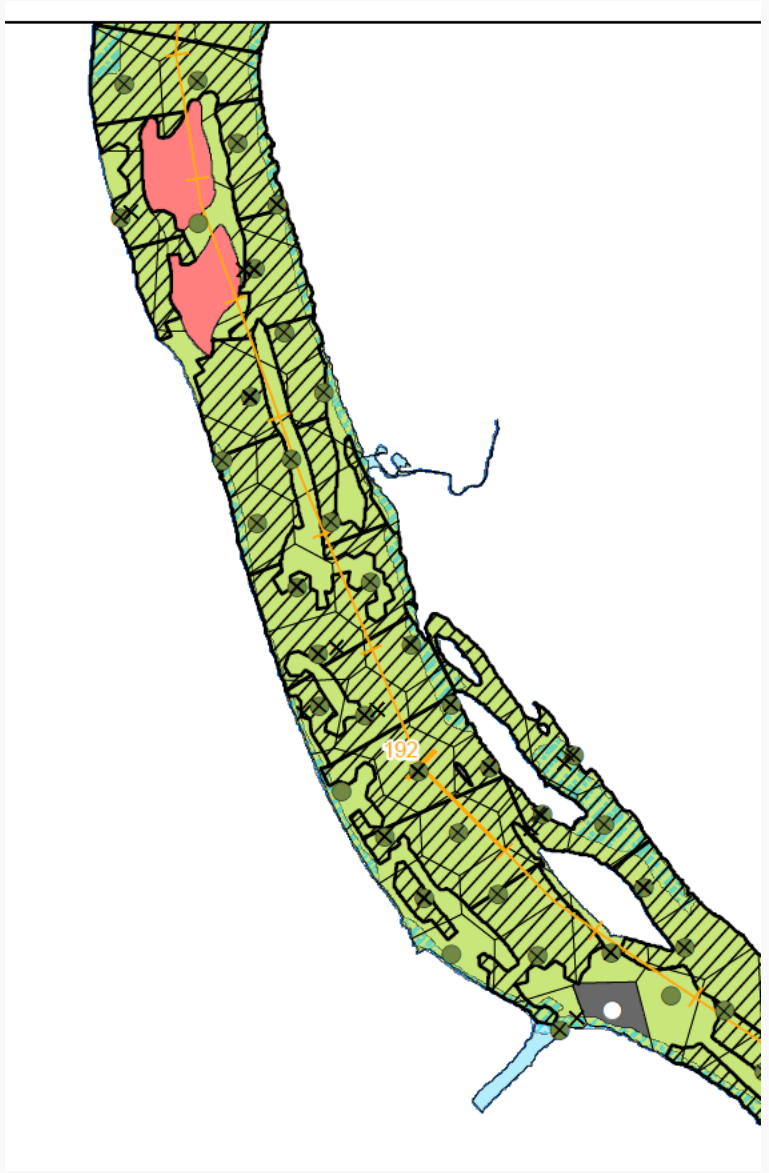
- Identify data gaps - additional sampling this fall
- Continue coordination with municipalities and NYS
- Continue to evaluate PCB concentrations in frequently flooded areas (areas close to the river)
- Continue review of screening level risk assessments
- Installation of three new STRAs this fall
- Continue maintenance of existing STRAs
- Continue support of Old Champlain Canal area development

Upper River Sediment Data

Upper Hudson River Sediment

Purpose: Collect surface sediment samples to monitor recovery

- Surface sediments collected September to November 2021
  - Data received on 8/16/2022 (delayed)
  - 745 samples collected (0 – 2 inches)
  - Next round of sampling 2026 (every 5 years)
- Ongoing data analysis (Consistent with 2016/2017 analysis)
  - Review QA/QC data
  - Reach and river section evaluations
  - Consideration of rocky areas
  - Comparison to 2016/2017 data
  - 2016/2017 areas of Interest – continued follow-up
- Next steps:
  - Update at the next CAG meeting and five-year review team meetings
  - Results will be included in the five-year review report



Hudson River PCBs SUPERFUND SITE

Beryllium-7 Bearing Sediment (Upper River)

Purpose: Collect and measure PCBs in surface sediment samples that represent recently suspended and deposited sediment

- Beryllium-7 (Be-7) data anticipated soon
- 90 samples collected for Be-7 analysis (30 per River Section)
  - Re-occupied subset of 2021 locations
  - Locations selected in areas anticipated to be depositional
  - Top 2 cm of sediments collected
- Be-7 will be measured - but may not be detected in all samples (goal is 50% detection rate)

Hudson River PCBs SUPERFUND SITE