Upper Hudson River: Floodplain Investigation

EPA

Hudson River
PCBs SUPERFUND SITE

Hudson River Superfund Site

EPA Activities

(Conceptual - not to scale)

Remnant Deposits – OM&M

Upper Hudson River Floodplain - RI/FS and STRAS

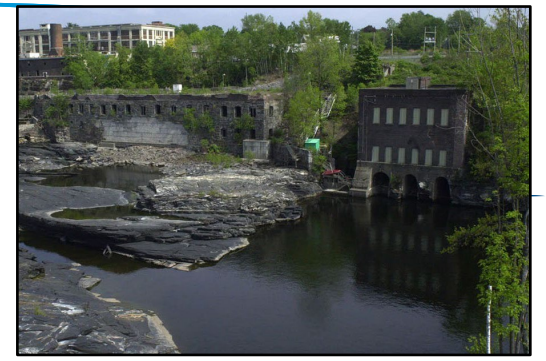
Waterline Transfer to Municipalities

Hudson Falls
(GE Plant Site - DEC)

Fort Edward
(GE Plant Site - DEC)

Former Fort Edward Dam

Powerhouse and Allen Mill - Deconstruction



Upper Hudson River – Dredging Remedy OM&M and Special Studies (40 mi)

Troy (Dam)

Albany

Catskill

Poughkeepsie (salt front)

Tappan Zee

George Washington

NJ

NY Harbor

New York City Battery

Lower Hudson River – Additional Investigations and Sampling (160mi)

PCB Sites (DEC)

- BASF
- Hastings
- BIC

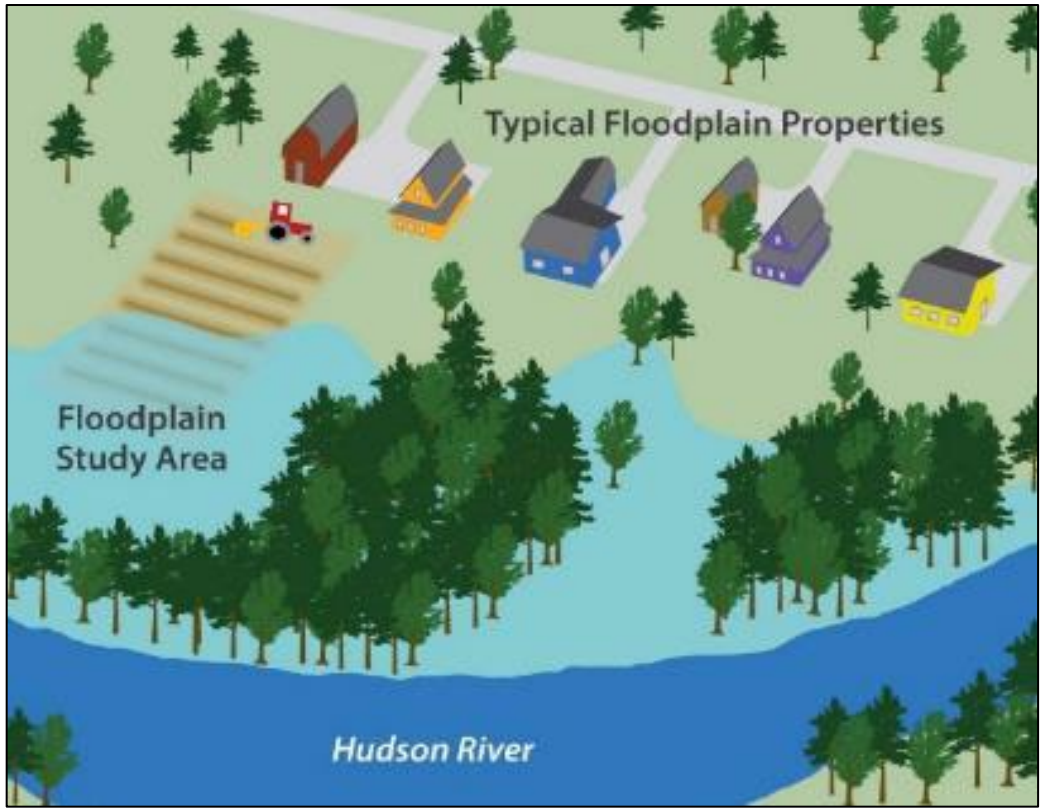
The items shown in this figure represent a subset of activities and do not encompass all operations conducted at the site.

Short-Term Removal Actions

- Areas that people use with elevated PCBs are addressed while the comprehensive investigation (RI/FS) continues
- Floodplain continually monitored for activity and change in use
  - Areas sampled as they are identified
  - Areas being actively used with elevated PCBs (>10ppm) are addressed
    - Soil covers or signs
    - Close coordination with property owners
- Actions to date
  - 77 total areas; 2 new areas completed in 2025
- Annual inspections continue and repairs done as needed

Remedial Investigation/Feasibility Study (RI/FS)

- The RI/FS is a comprehensive study of the floodplain
  - Performed by GE and overseen by EPA; close coordination with NYSDEC/NYSDOH
- Over 12,000 samples collected to date
- Data evaluation ongoing
- 2025 field work included:
  - Soil sampling in use areas
  - Actions in actively used areas
  - Inspections/maintenance of soil covers
  - Flood mud sampling



Human Health Risk Assessment

- Human Health Risk Assessment – Underway
- First step of the Human Health Risk Assessment approved – May 2025 (*Screening-Level Assessment*)
  - Parcel-by-parcel review of all properties (~2000)
  - 1,273 properties to be evaluated in next step
- Pathway Analysis Report (PAR) received by EPA
  - Objective is to identify potential exposure areas, pathways, and criteria that will be used to evaluate human health risk
  - Currently under review

Human Health Risk Assessment

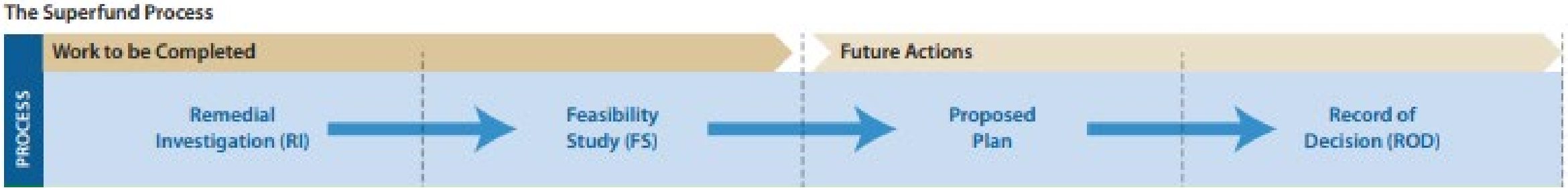
- Pathway Analysis Report
  - Presents a Human Health Risk Assessment conceptual site model
  - Summarizes the results of the Screening-Level Assessment
  - Identifies potential exposure areas for each parcel
  - Designates current and reasonably anticipated future uses for each parcel
  - Selects the exposure scenario (e.g. residential; recreational exposure to soil) that will be evaluated for each area

Ecological Risk Assessment

- Ecological Risk Assessment – Underway
  - Field work planned for 2026 (under review) includes:
    - Invertebrate collection – land and water-based invertebrates
    - Berry collection
    - Fish and small mammal sampling
    - Soil sampling and sediment collection
    - Catbird reproductive study (and egg collection)
    - Shrew population study
    - Water-based amphibian collection; evaluate habitat, presence, and tissue concentrations (2027)
  - Previous field work included:
    - Earthworm sampling method study
    - Invertebrate sampling method study
    - Catbird survey
    - Wetland sampling

Next Steps

- Coordinate property access to perform studies
- Continue coordination with state and municipalities
- Continue soil, sediment, and flood mud sampling
- Continue to monitor floodplain for active use areas; address as appropriate
- Review and approve next step for the human health risk assessment
- Review and approve proposed ecological field studies for 2026



Upper Hudson River: Habitat Monitoring/Restoration

EPA

Hudson River
PCBs SUPERFUND SITE

Upper River - Habitat Restoration Approach

Benchmark Monitoring

- Non-destructive, quantitative and qualitative monitoring of habitat reconstruction areas
- Anticipated to be at least five years
- Monitoring metrics become more rigorous over time
- Response actions implemented when appropriate

EPA Review

Success Criteria

- To be evaluated following completion of benchmark monitoring (as determined by EPA)
- Additional 2-5 years of quantitative and statistically-based evaluations
- Monitoring may include harvesting or remote sensing
- Must meet criteria two years in a row or three of five years

Submerged Aquatic Vegetation (SAV) - Percent Cover
Benchmark Status 2020-2024

- Benchmark evaluation
  - Planting areas: percent cover is 70% of reference
  - Natural recolonization areas: percent cover is 50% of reference
- Met: three out of five years passing benchmark
- Not Met: Less than three years passing benchmark
- Ongoing evaluation: Less than two years of data available

River Section	Benchmark Status (2020 through 2024)	Number of Certification Units	Total Acres
RS 1	Met	45	37
	Not Met	14	5.4
	On-going Evaluation	13	1.4
RS 2	Met	7	6.3
	Not Met	13	11
	On-going Evaluation	5	0.7
RS 3	Met	16	14
	Not Met	2	0.9
	On-going Evaluation	7	1.1

River Fringing Wetland (RFW) - Percent Cover Benchmark Status 2020-2024

- Benchmark Evaluation
  - All areas: Percent cover is 85% of reference
- Met: three out of five years passing benchmark
- Not Met: less than three years passing benchmark

River Section	Reach	Benchmark Status (2020 through 2024)	Number of Certification Units	Total Acres
RS 1	8	Met	24	5.6
		Not Met	5	0.4
RS 2	7	Met	4	0.2
		Not Met	5	1.1
	6	Met	5	3.1
		Not Met	7	5.3
RS 3	5	Met	4	1.4
		Not Met	5	0.6
	3	Met	2	1.2
	2	Met	1	0.1
	1	Met	3	0.8

Modernizing Habitat Monitoring

Using remote sensing technologies

- Hyperspectral Imaging
  - Aerial-based technology
  - Uses wavelengths of light
  - Estimates SAV areal extent
- BioSonics
  - Boat-based technology
  - Uses sonar
  - Estimates SAV percent cover and volume

BioSonics data collection in Upper Hudson River

Habitat Monitoring – 2025 Update

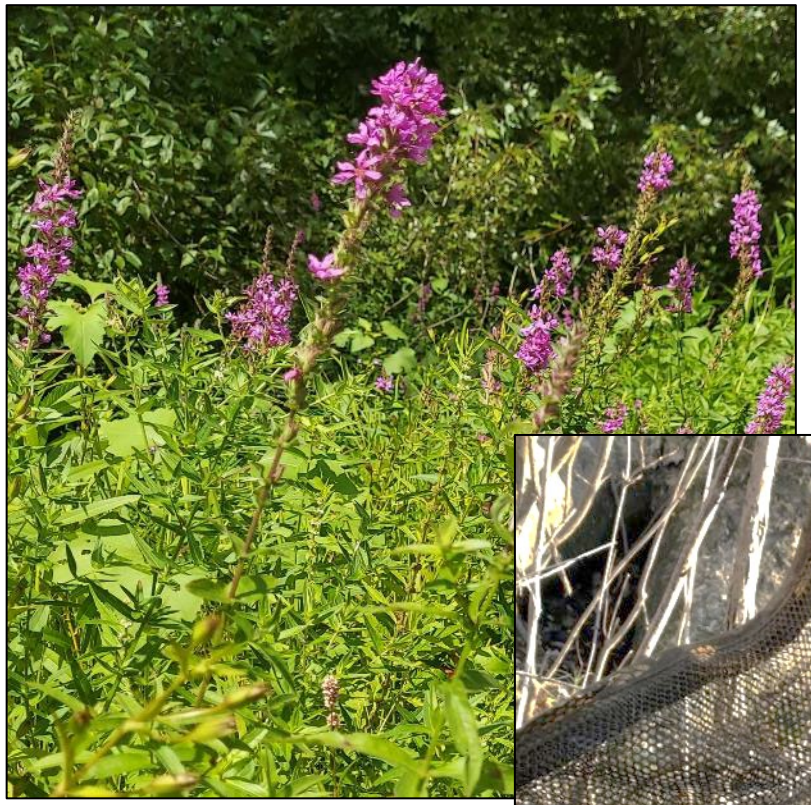
- Riverine Fringing Wetlands
  - 480 total quadrats collected in RFW areas
  - Whole RFW observations
- Submerged Aquatic Vegetation
  - 836 total quadrats collected in SAV areas
  - River-wide hyperspectral and BioSonics data collected
  - Video monitoring

RFW quadrat in Upper Hudson River

SAV quadrat in Upper Hudson River

Habitat Response Actions – 2025 Update

- Invasive species removal
- SAV seed buoys installed
  - Seeds harvested from NYS Canal Corps Feeder Canal
- 1,500 individual RFW plants installed
- Bio-logs installed in select areas



Purple loosestrife

Seed buoy

Habitat Response Actions – 2026 Update

- Monitoring
  - Riverine Fringing Wetlands
    - Quadrat surveys are planned in RFW areas
    - Whole RFW observations
  - Submerged Aquatic Vegetation
    - Quadrat surveys are planned in SAV areas
    - Hyperspectral and BioSonics data collection are planned
    - Video monitoring is planned
- Response Actions (detailed plan under development)

SAV in Schuylerville, NY

Upper Hudson River: Allen Mill and Powerhouse Deconstruction

EPA

Hudson River
PCBs SUPERFUND SITE

Hudson River Superfund Site

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(Conceptual - not to scale)

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Lower Hudson River – Additional Investigations and Sampling (160mi)

PCB Sites (DEC)

- *BASF*
- *Hastings*
- *BIC*

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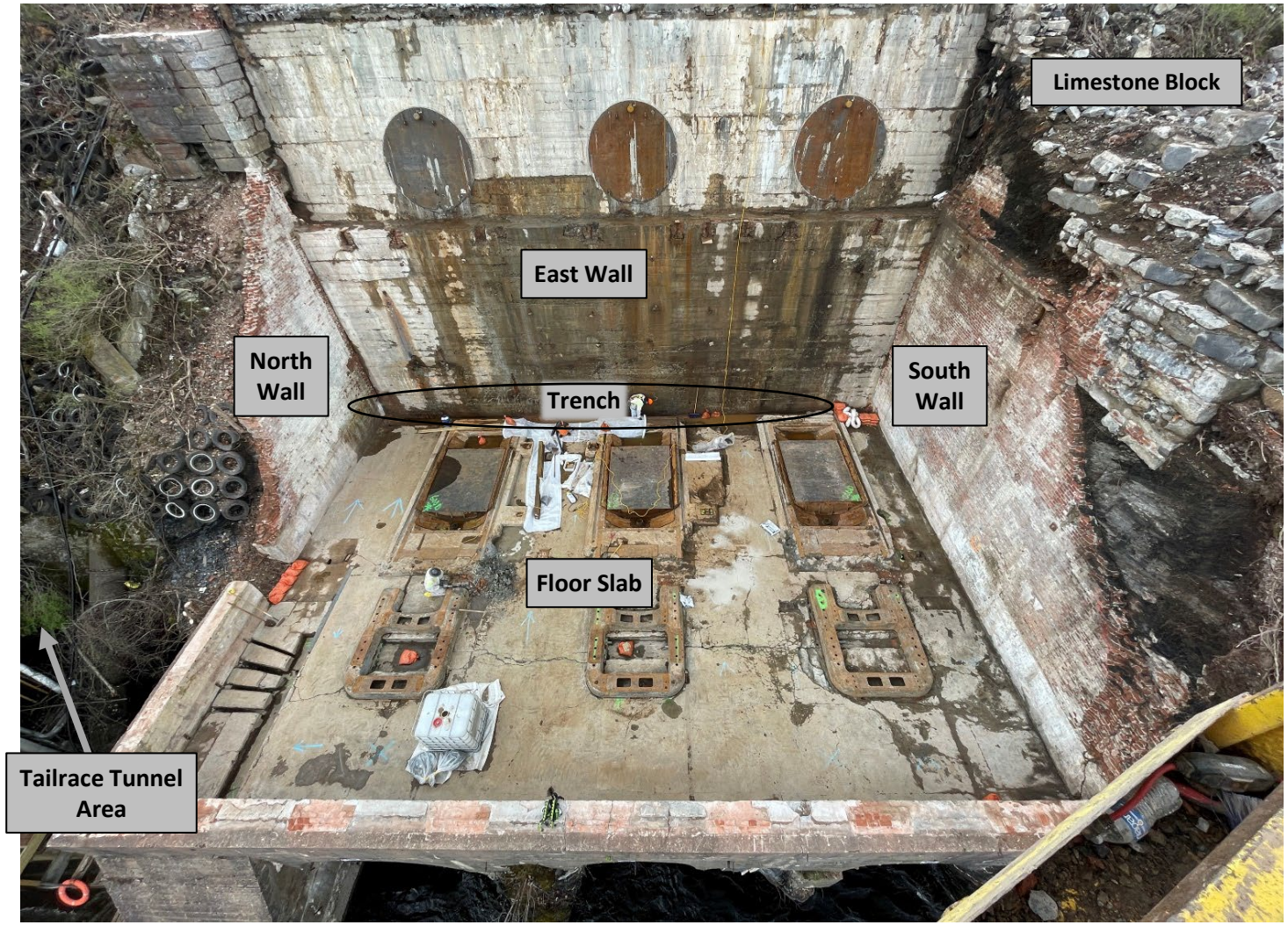
Hudson River PCBs SUPERFUND SITE

Allen Mill & Powerhouse Deconstruction

- Buildings are located adjacent to the GE Hudson Falls Plant Site
- EPA reached legal agreement with National Grid and GE in 2022 to oversee deconstruction of both buildings
- EPA involvement due to potential for release - PCBs remain under buildings
- Close coordination with NYSDEC/NYSDOH needed – NYSDEC is the lead for environmental issues at the plant site
- Powerhouse deconstruction substantially completed in 2023 – ongoing follow up
- Design for the deconstruction of the Allen Mill is underway

Powerhouse Status and Next Steps

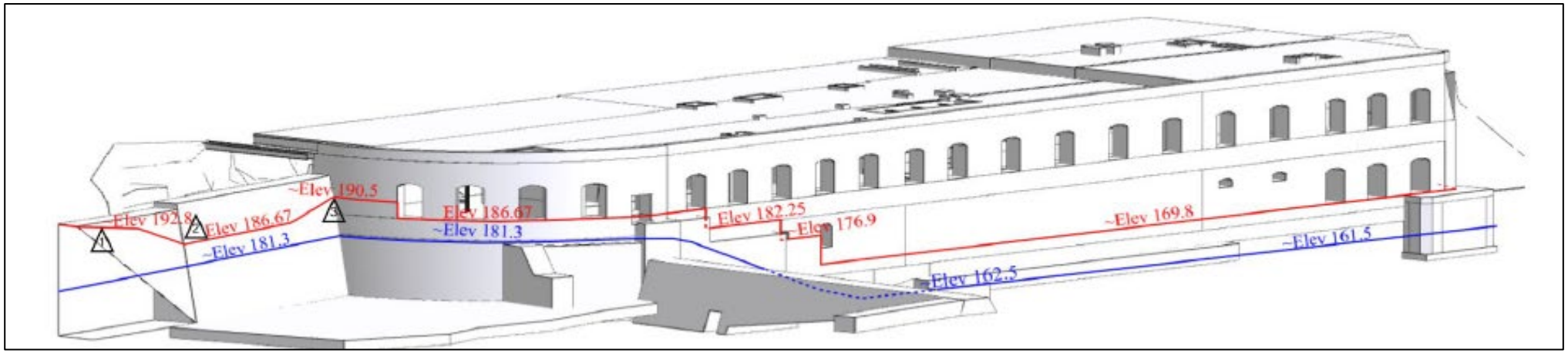
- Deconstruction substantially completed in 2023
- Collection of water in the east trench is ongoing – long term approach for groundwater capture and treatment needed
- Planning underway for stabilization of remaining north and south walls to maintain safe access to floor slab
- Stabilization work scheduled for 2026



Allen Mill – Design

- Deconstruction design is underway (near completion)
- Challenges/Considerations:
  - Partial removal of exterior wall facing Baker's Falls
  - Support/bracing of remaining exterior wall – addition of new concrete stabilization wall
  - Potential reuse of certain building material onsite and/or inside the building footprint
  - Sequence and approach for handling/staging removed materials given access challenges
  - Installation of monitoring and remedial systems to enhance containment of shallow bedrock groundwater
  - Consideration of future access needs for inspections and remedial work under NYSDEC

Allen Mill – Design Figures

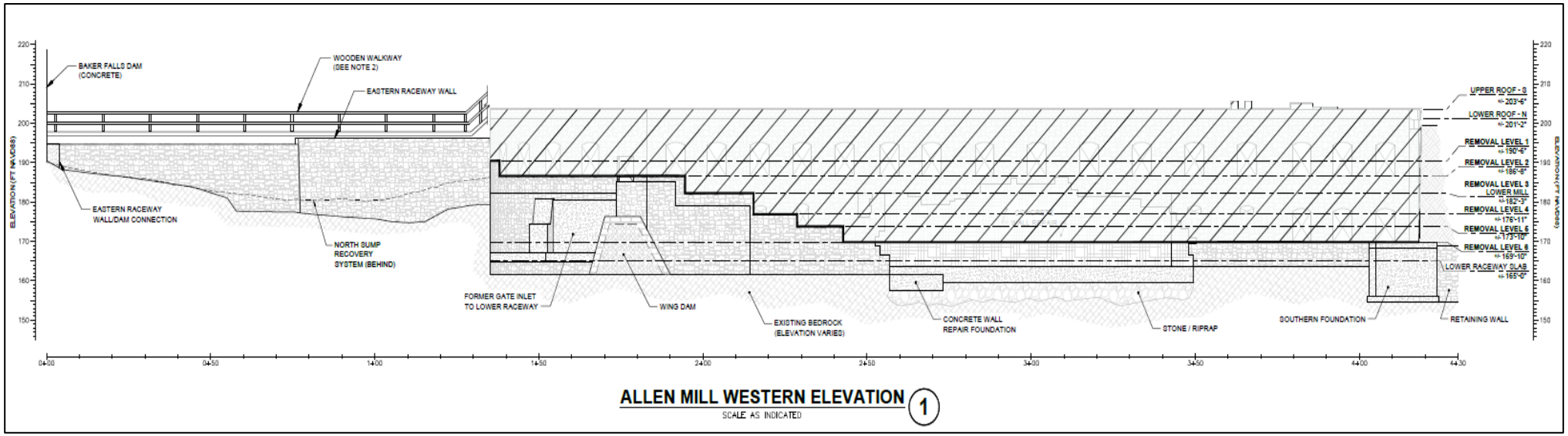


LEGEND

ESTIMATED 100 YEAR RIVER FLOW EVENT ELEVATIONS AS SCALED FROM HISTORICAL PHOTO-DOCUMENTATION FROM APRIL-MAY 2011.

PROPOSED DECONSTRUCTION ELEVATIONS DERIVED FROM BEARDSLEY ARCHITECTS' MAY 03, 2024 RENDERINGS OF THEW ASSOCIATES LAND SURVEYORS' SITE SURVEY DATA. ELEVATION TO BE MAINTAINED AT LEAST FIVE FEET ABOVE ESTIMATED 100 YEAR FLOW EVENT ELEVATION.

~ DENOTES AN ESTIMATED ELEVATION AS SCALED FROM BEARDSLEY ARCHITECTS' MAY 03, 2024 RENDERINGS OF THEW ASSOCIATES LAND SURVEYORS' SITE SURVEY DATA. ELEVATIONS ARE +/-0.5 FEET IN ADDITION TO SURVEYOR IDENTIFIED TOLERANCES.

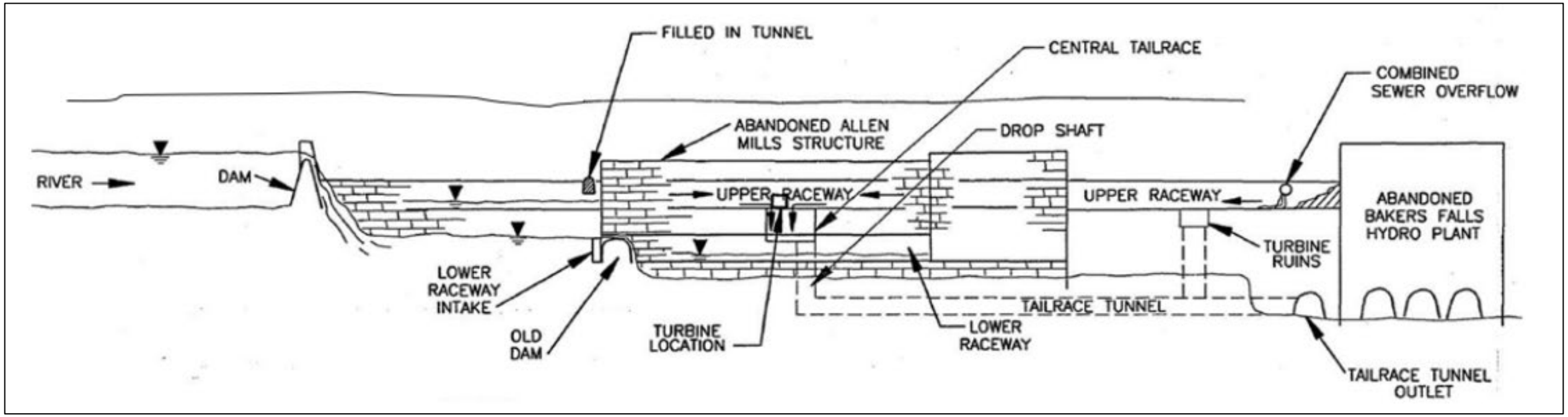


ALLEN MILL WESTERN ELEVATION (1)

SCALE AS INDICATED

Allen Mill – Tailrace Tunnel

- The tailrace tunnel runs under the Allen Mill and conveyed water from the upper raceway to the river
- Work began in July 2025 under NYSDEC to evaluate access and make improvements to the tunnel for future inspections and sampling (20+ existing wells)
- Important - located between the upland contaminated shallow groundwater and the river



Allen Mill – Tailrace Tunnel (Bedrock Stabilization)

Allen Mill – Looking Ahead

- Ongoing pre-design work focused on shallow bedrock under the Allen Mill (including tailrace tunnel)
- Deconstruction design under review – ongoing discussions regarding remedial systems and restoration approach
- Contractor procurement soon
- Deconstruction scheduled to begin summer 2026
- EPA/DEC/DOH continued close coordination

Lower Hudson River Update

EPA

Hudson River
PCBs SUPERFUND SITE

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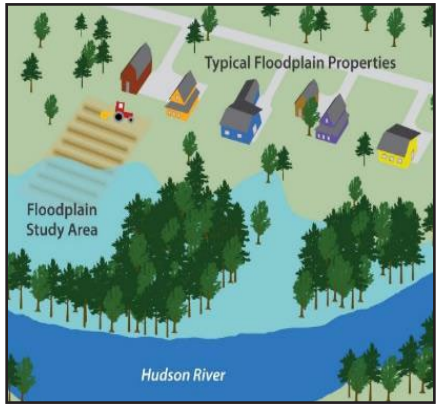

Upper Hudson River Floodplain - RI/FS and STRAS

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Lower Hudson River – Additional Investigations and Sampling (160mi)

Poughkeepsie (salt front)

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Tappan Zee

George Washington

NJ

New York City Battery

NY Harbor

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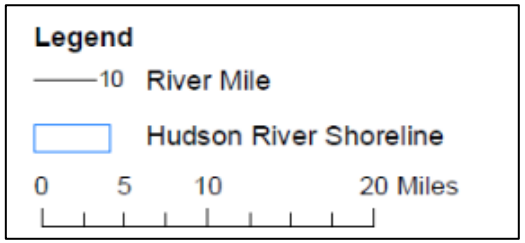
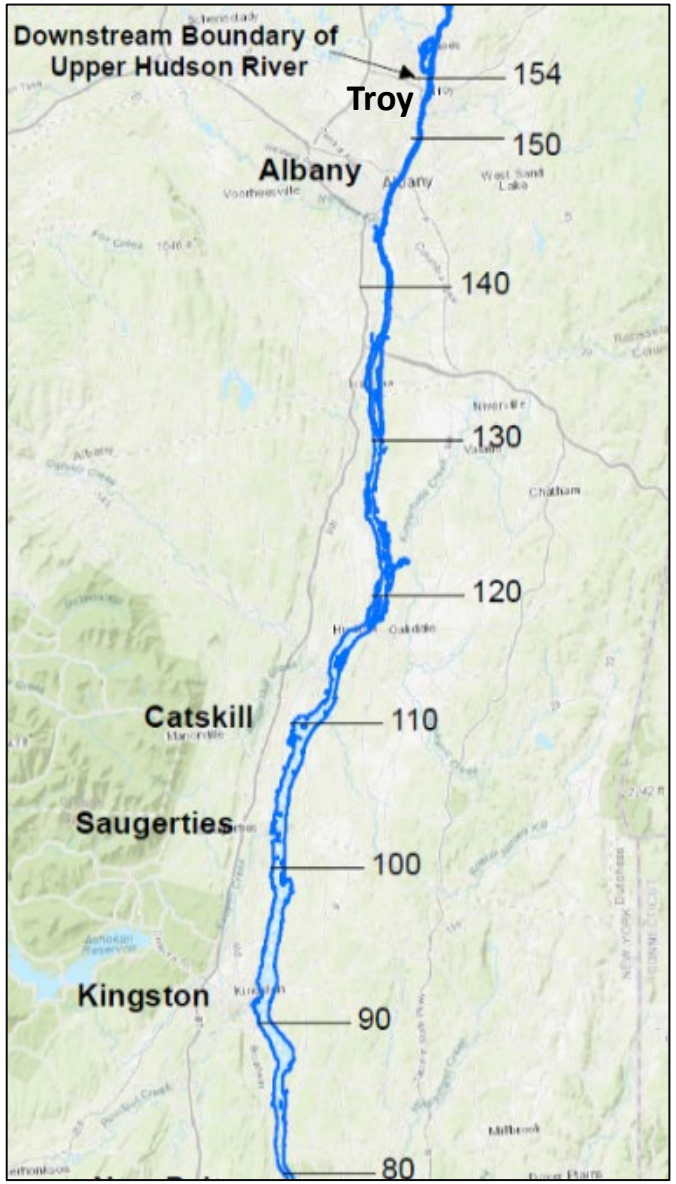
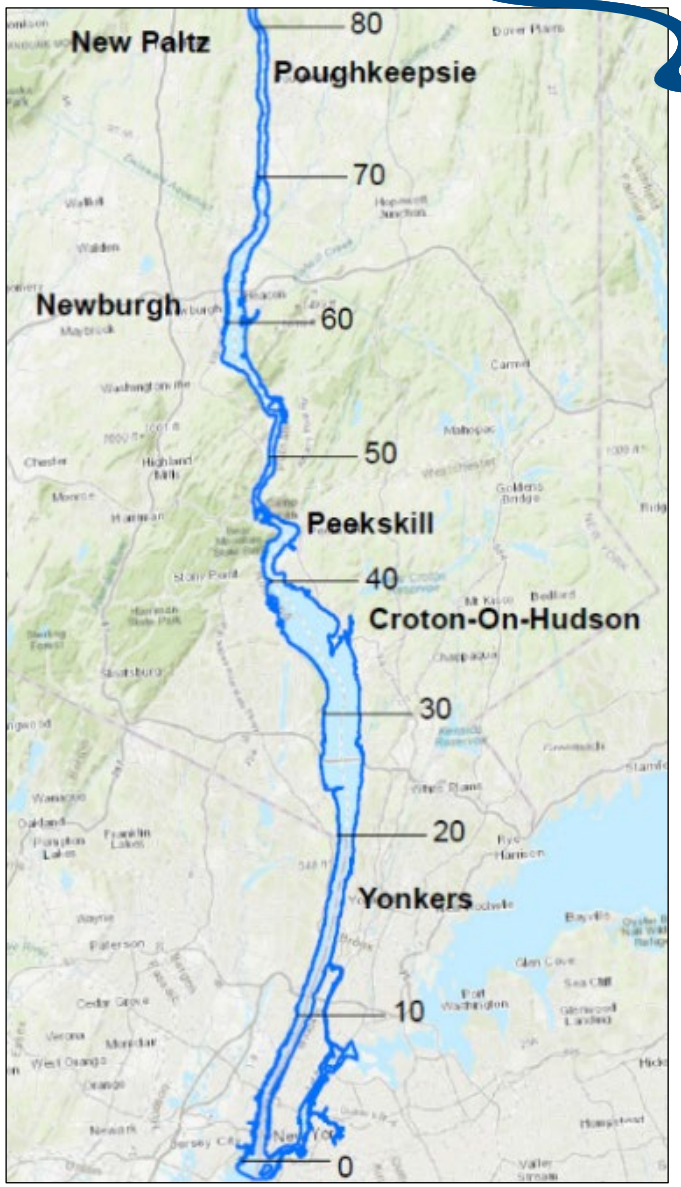
Lower Hudson River Overview

- Approx. 160 miles
- Extends from the Federal Dam in Troy to the Battery at Manhattan
- Estuary with mix of fresh water and saltwater
- Saltwater can extend upstream as far as Poughkeepsie

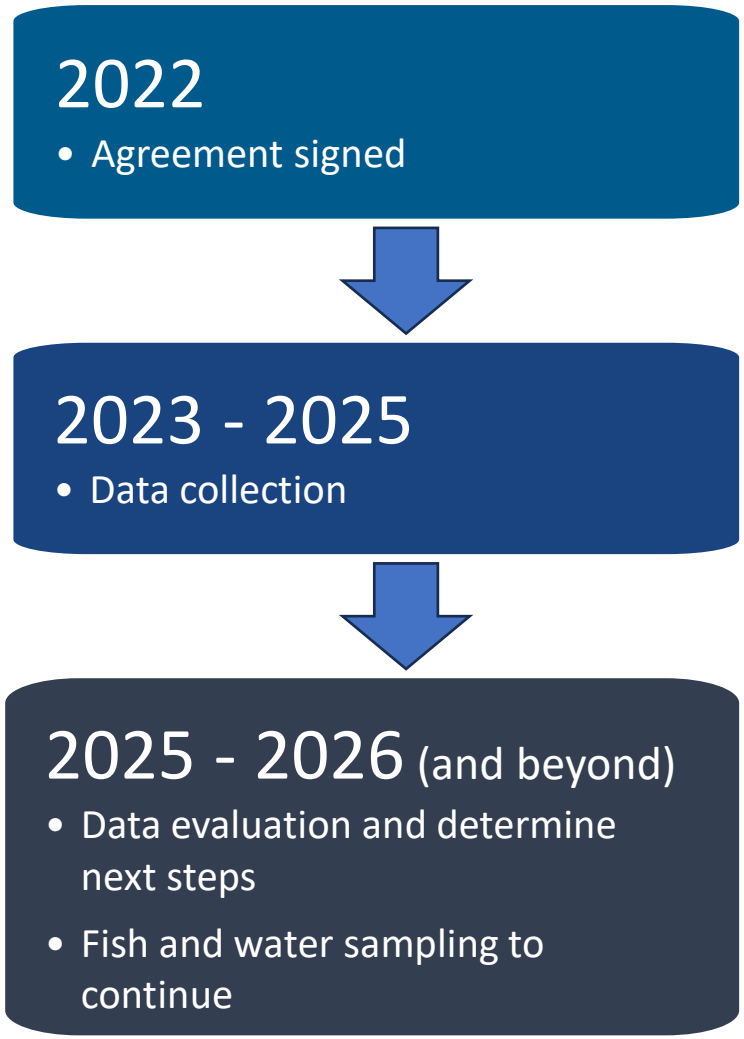






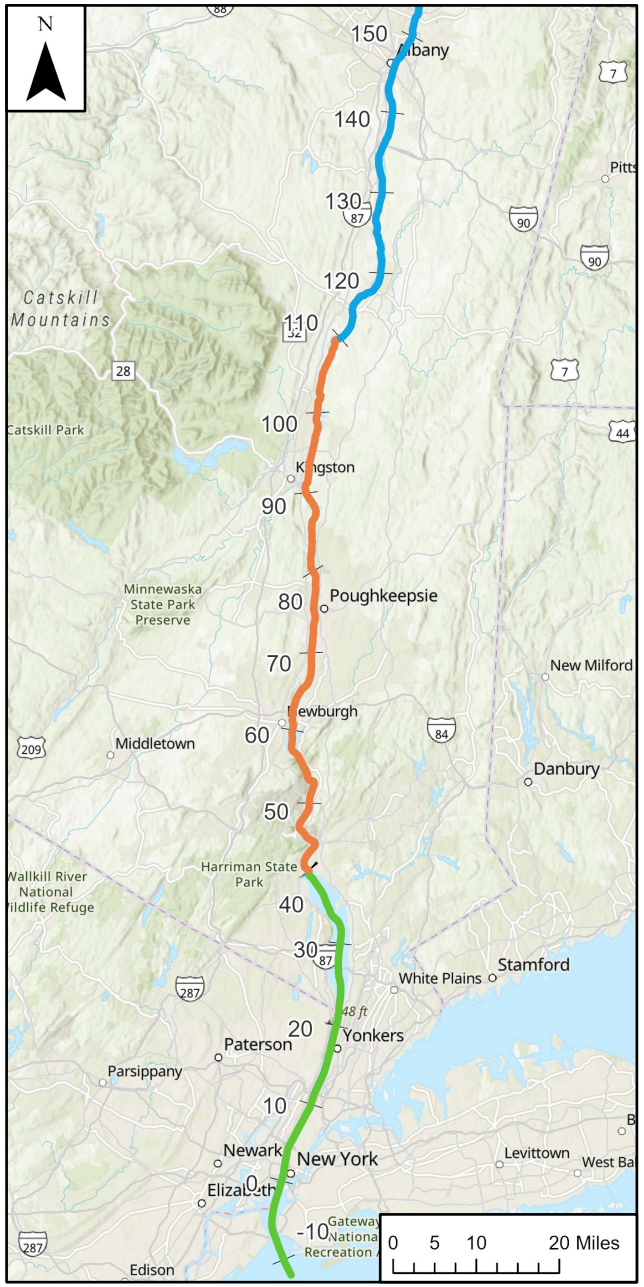
Lower Hudson River - Timeline

- Agreement signed in fall 2022
  - Fish, water and sediment sampling programs
  - Focus on PCBs - additional contaminants also tested
  - Data being used to inform decision making and next steps
- Field work conducted 2023 through 2025
  - Fish, sediment and water to continue into 2026
    - Evaluate data gaps and long-term trends
- Data evaluation and determination of next steps
  - High resolution coring – analysis in progress
  - Water and fish data is evaluated as it is received
- The 2022 agreement allows for work to be performed in 2026 and beyond



Summary of 2025 Field Work

- Lower Hudson River fish sample collection
  - Spring and fall 2025
  - Albany/Troy, Catskill, and Tappan Zee
  - Close coordination with NYSDEC fish program
    - Minimize duplication of effort and maximize resources
- High resolution core processing and radionuclide analysis
  - Status update
    - Several cores likely dateable – analysis is moving forward
    - Couple of cores may not be dateable – evaluating next steps
- Water collection (ongoing)
  - Monthly collection (winter months - weather dependent)
  - Albany, Red Hook, Poughkeepsie, Newburgh, and Tappan Zee



Preliminary Division of the River

- Based on evaluation of supplemental study data
  - 2023 recently-deposited (Be-7) sediment samples (0-2 cm)
  - 2024 supplemental surface sediment samples (0-6 inch)
  - Fish and water data
  - Geographic and physical features such as river bottom conditions
- Detailed presentation to CAG - September 2025

Division A	Division B	Division C
Albany to Catskill RM 154 to ~110	Catskill to Hudson Highlands RM ~110 to ~40	Hudson Highlands to Battery RM ~40 to 0

Planned Work in 2026

- High resolution cores - continue processing, analysis, and data evaluation
- Collect fish and water column samples
- Data gap sampling – based on ongoing analysis of collected data – including historic data
- Continued data evaluation
  - Data discussion with NYSDEC
  - Data discussion with GE
  - EPA to continue to report out to the public (including CAG)