Grasse River Superfund Site

Public Meeting

November 14, 2012
7:00 PM

Massena Town Hall
Massena, NY

www.epa.gov/region02/superfund/npl/aluminumcompany/

Young S Chang, Remedial Project Manager
Doug Fischer, Assistant Regional Counsel
Marc Greenberg, Ph.D., Ecological Risk Assessor
Dave Kluesner, Community Involvement Coordinator
Pete Mannino, Western New York Remediation Section Chief
Marian Olsen, Dr.PH, Human Health Risk Assessor

Agenda

- Introduction
- Superfund Process
- Site History and Background
- Investigation Results
- Preferred Remedy
- Questions and Answers

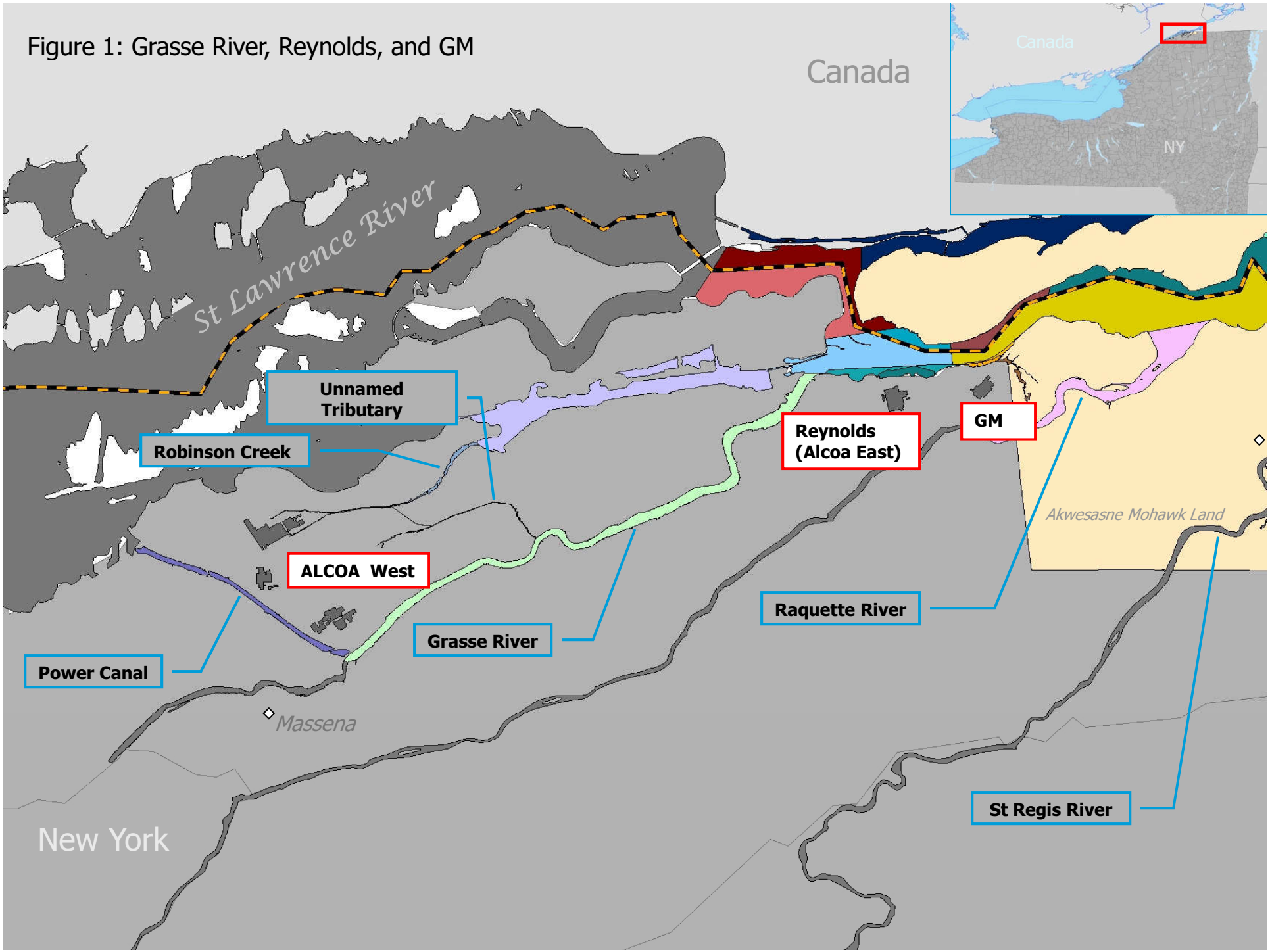
Comprehensive Environmental Response, Compensation, and Liability Act

- Toxic waste disposal disasters prompted passage by Congress in 1980
- Provides federal funds for cleanup of hazardous waste sites and to respond to emergencies involving hazardous substances
- Empowers EPA to compel responsible parties to pay for or conduct necessary response actions

Superfund Remedial Process

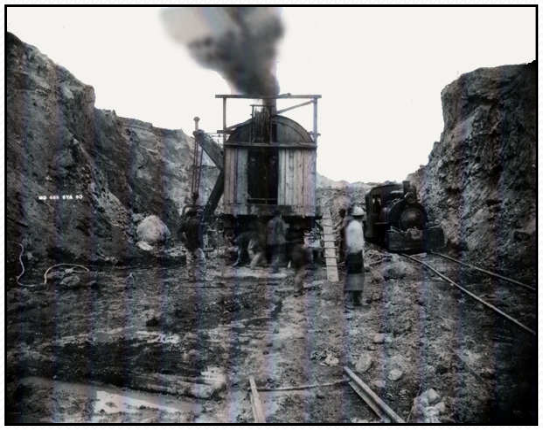
- Site Discovery and Ranking
- Site Placed on National Priorities List
- Remedial Investigation/Feasibility Study
- Proposed Remedy
- Record of Decision
- Remedial Design
- Remedial Action
- Site Deletion

Figure 1: Grasse River, Reynolds, and GM



History of Grasse River Development

- 1898-1903: Power Canal Construction
- 1902: Pittsburgh Reduction Company constructs aluminum plant in Massena. In 1907, Pittsburgh Reduction Company changes its name to Aluminum Company of America (now Alcoa, Inc.)
- Early 1900s: Lower Grasse River excavated, deepened and widened to support the increased flows from the Powerhouse

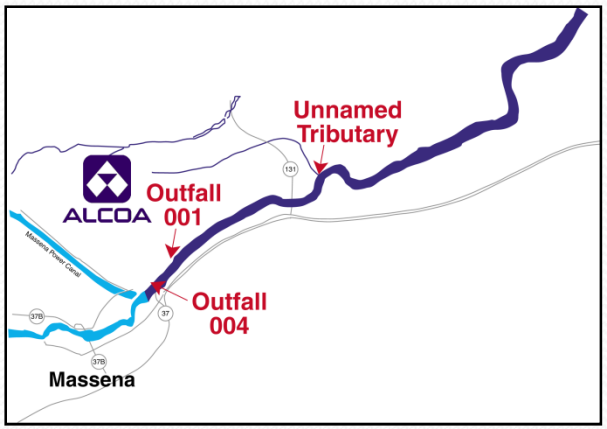


History of St Lawrence River Development

- 1954: Construction of the Eisenhower Locks System and the Moses-Saunders Power Dam (FDR Project), US & Canadian development project of the St. Lawrence River
- 1958: New York Power Authority purchased the Power Canal and Powerhouse and stopped their operation
- 1958: FDR Project started supplying hydroelectric power to Alcoa plant

Site History

- Alcoa discharged wastewater from the Alcoa Massena-West Plant containing oils and PCBs
- Waste was discharged into the lower Grasse River in three areas: Outfall 001, Outfall 004, and Unnamed Tributary
- Waste was also discharged into the Power Canal: Outfall 003
- Mid-1970s: Alcoa stops using oil containing PCBs

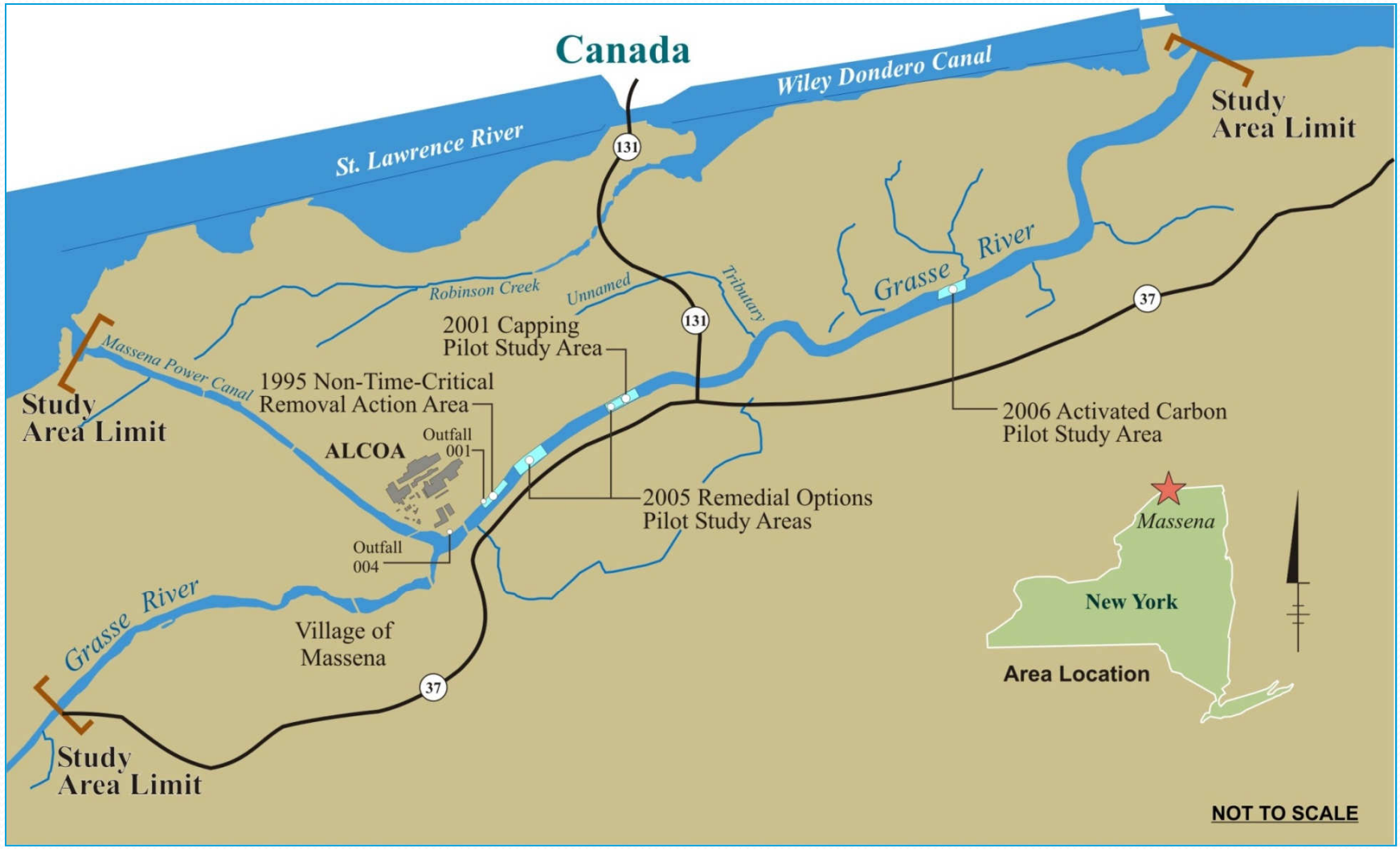


- Under the 1985 NYSDEC Order, Alcoa conducts remediation of the land based waste disposal areas, completed in 2001

Site History (cont'd)

- 1989: EPA issues an Administrative Order to Alcoa for the investigation of the Alcoa Study Area, development of cleanup alternatives, and design and implementation of a remedial action to be selected by EPA
- 1991: Alcoa initiated the River and Sediment Investigation (equivalent to remedial investigation)
- 1995: EPA amends the Administrative Order to require Alcoa to conduct Non-Time Critical Removal Action (NTCRA)
  - 3,000 cubic yards of sediment, boulders, and debris removed from Outfall 001 area

Initial Alcoa Study Area

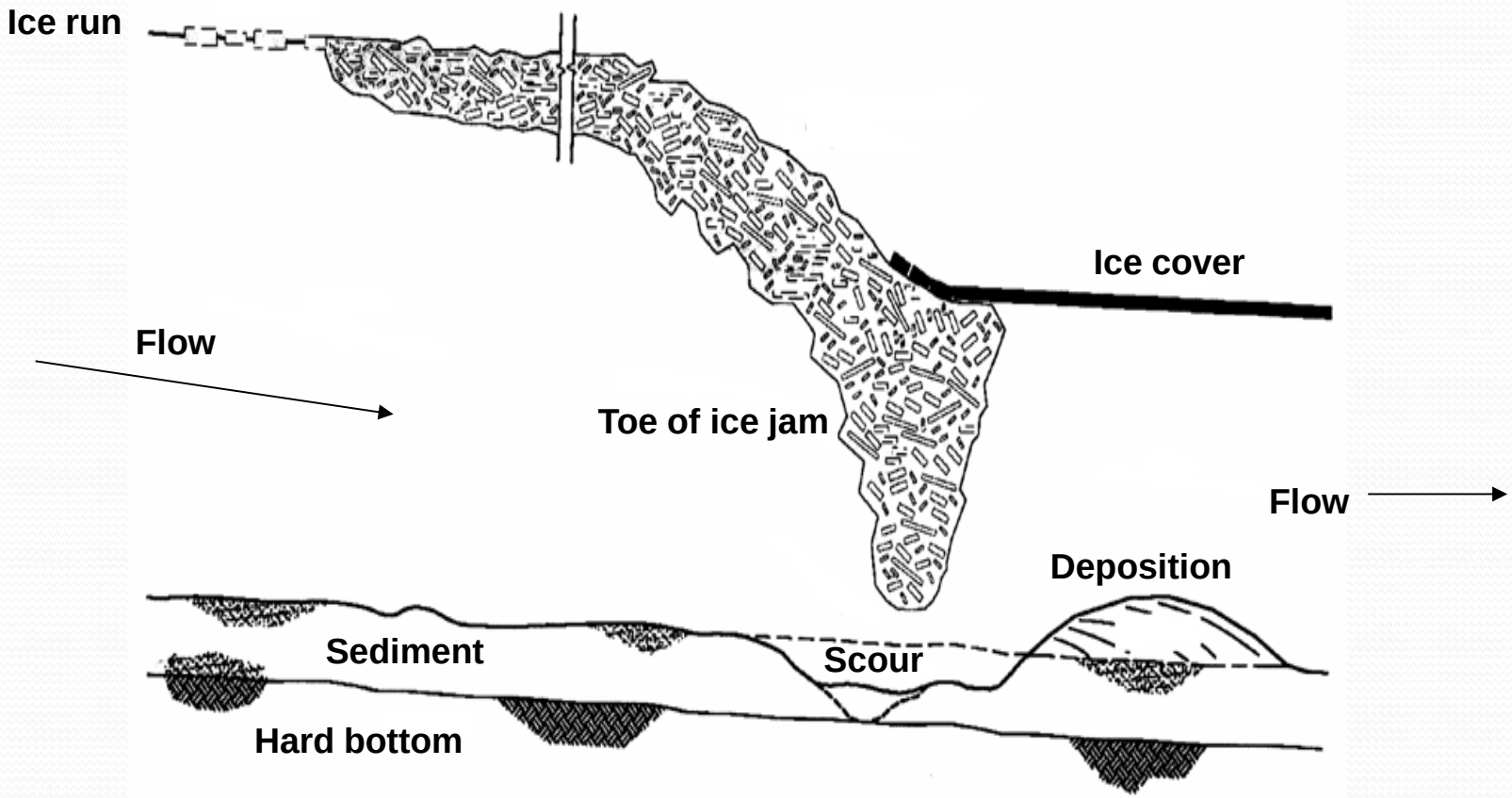


Site History (cont'd)

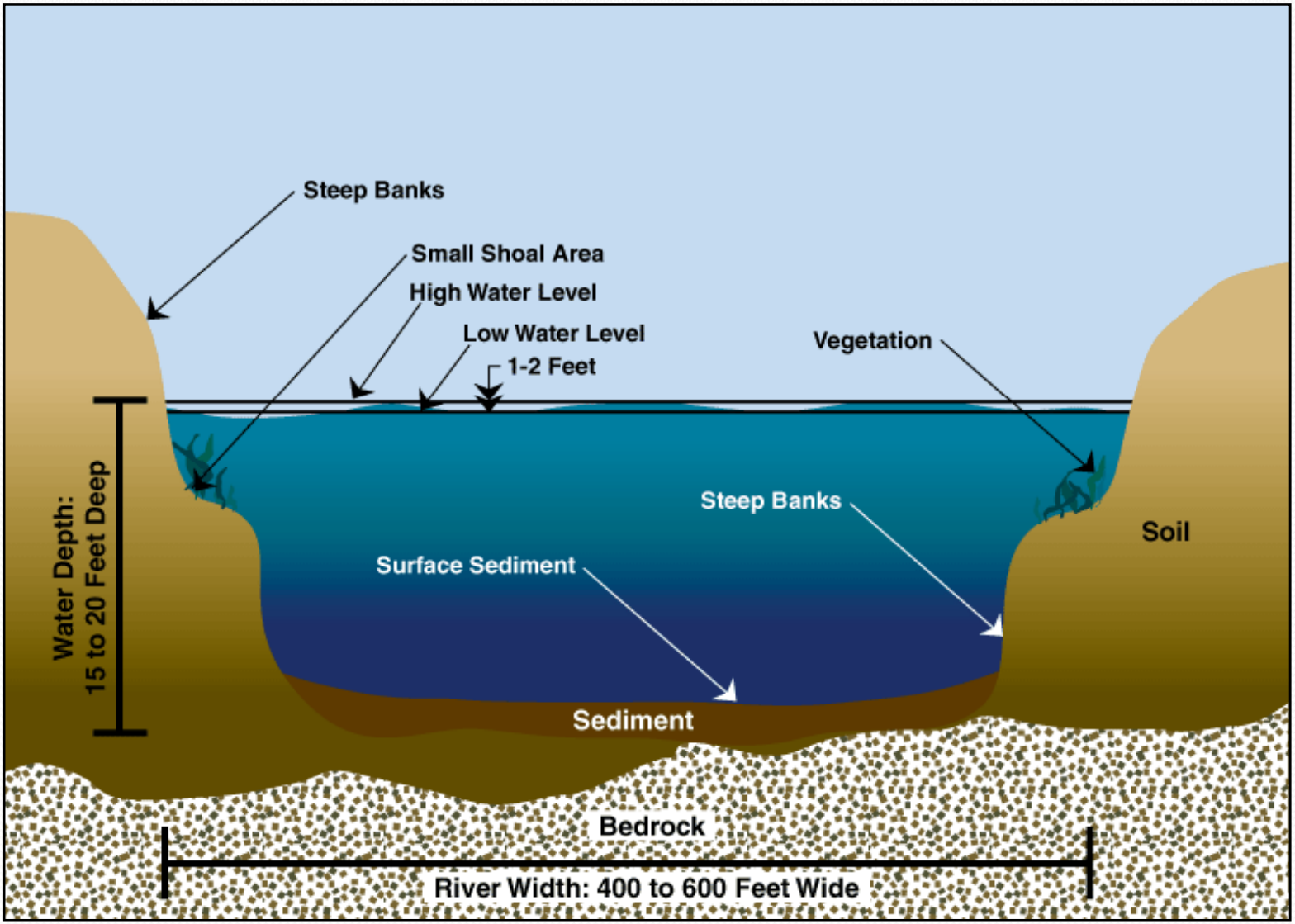
- From 1991 to 2010, numerous studies were conducted to define the extent of contamination and to develop the alternatives for cleanup
- Several pilot studies and demonstration projects of various technologies also conducted in the river
- During post implementation monitoring of the capping pilot study, "ice jam" event severe enough to scour sediment was discovered

March 2003 Ice Run Photo: Grasse River

Profile of Ice Jam



Grasse River Profile



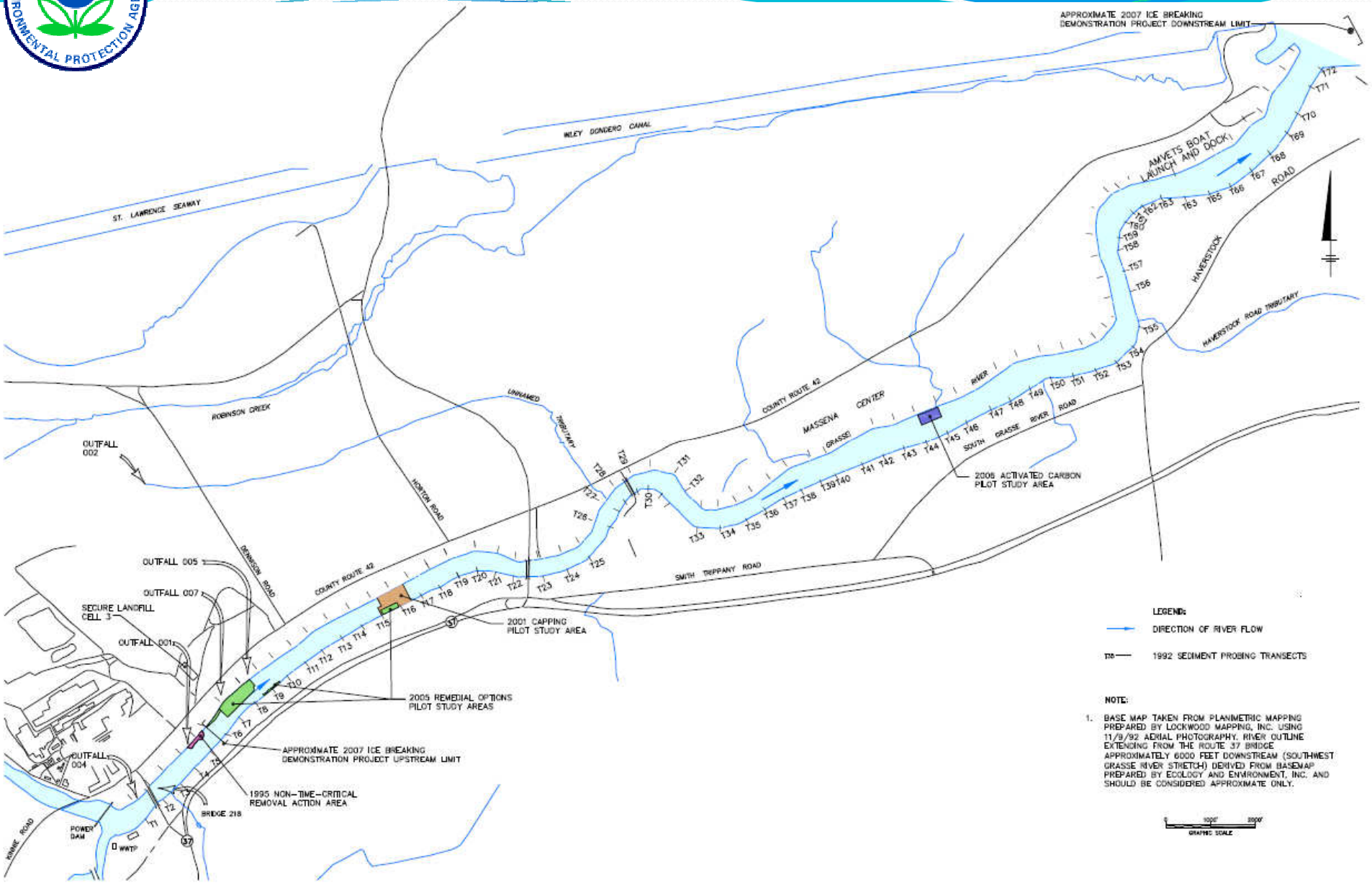
Grasse River Investigation Results

- PCBs are the contaminants of concern.
- Primary human health risk is from ingesting PCB-contaminated fish caught from the lower Grasse River.
- Ecological risk to aquatic organisms, fish, fish-eating birds and mammals is also unacceptable and driving remediation.
- Sediment in 7.2 mile stretch of the lower Grasse River (slow flowing) is contaminated with PCBs in the near shore, side slope and main channel areas.
- Sediment in the near shore and main channel is stable, except in the upper 2 miles beginning at the confluence with the Power Canal, where sediment is susceptible to scour during a severe ice jam event, even at depth (potential frequency of occurrence once every 8-10 years).

Grasse River Investigation Results (cont'd)

- Other than the upper 2 miles, surface sediments are the primary source of PCBs to the biota. PCB contamination is widespread.
- Highest PCB concentrations in the Grasse River sediment are typically found at depth in the main channel, near the hardpan, bedrock, or glacial till bottom (over dredging is not possible).
- Contamination in the near shore is generally within the top 12 to 18 inches of sediment.
- In the past 17 years, PCB levels in fish have decreased by over 90% for smallmouth bass and brown bullhead. The PCB levels in young-of-year spottail shiner have decreased by 55 to 60%. However, the fish are still contaminated and pose unacceptable risk.
- Decline observed in all three fish species is mostly attributable to source control by upland facility remediation, completed in 2001.

Grasse River Superfund Site



10 Alternatives Evaluated

Alternative 1 **• No Further Action** **• $0; 0 years construction time**	**Alternative 2** **• Monitored Natural Recovery** **• $3.4 million; 0 years**
Alternative 3 • T1-T72 near shore cap • T1-T21 main channel armored cap • T21-T72 main channel cap • $114.4 million; 3 years	Alternative 4 • T1-T21 near shore dredge/backfill to grade • T21-T72 near shore cap • T1-T21 main channel armored cap • T21-T72 main channel cap • $147 million; 3 years
Alternative 5 • T1-T72 near shore dredge PCBs ≥ 10 ppm and cap PCBs between 1 ppm and 10 ppm • T1-T21 main channel armored cap • T21-T72 main channel cap • $175 million; 4 years	Alternative 6 • T1-T72 near shore dredge/backfill to grade • T1-T21 main channel armored cap • T21-T72 main channel cap • $243 million; 4 years

10 Alternatives Evaluated (cont'd)

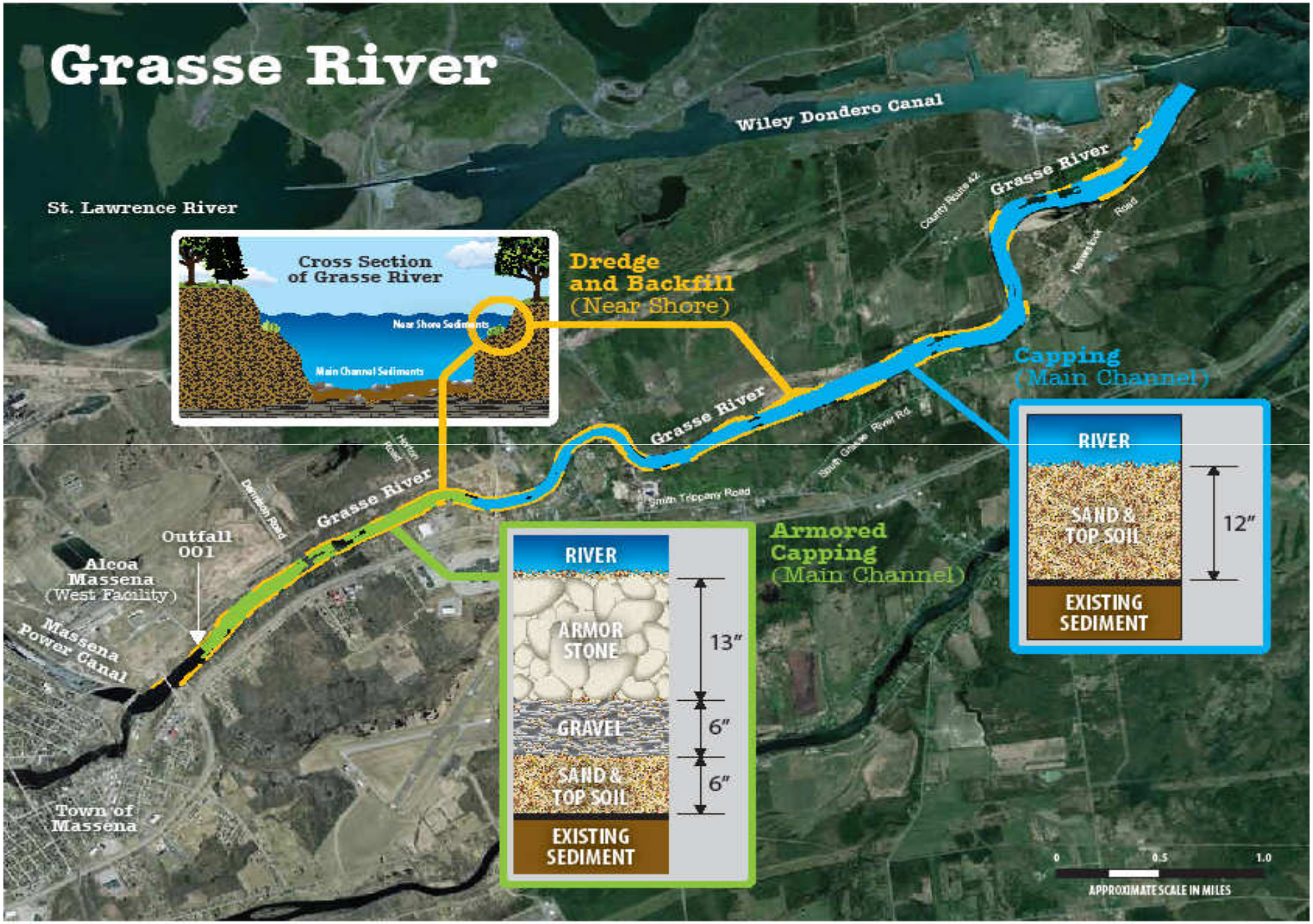
Alternative 7	Alternative 8
• T1-T72 near shore dredge/backfill to grade • T1-T19.5 select main channel dredging • T1-T21 main channel armored cap • T21-T72 main channel cap • $352 million; 5 years	• T1-T21 near shore dredge/backfill to grade • T21-T72 near shore cap • T1-T21 main channel dredge and armored cap residual • T21-T72 main channel cap • $388 million; 8 years
Alternative 9	**Alternative 10**
• T1-T72 near shore dredge/backfill to grade • T1-T46 select main channel dredging • T1-T21 main channel armored cap • T21-T72 main channel cap • $589 million; 7 years	• T1-T72 near shore dredge/backfill to grade • T1-T21 main channel dredge and armored cap residual • T21-T72 main channel dredge and cap residual • $1.274 billion; 18 years

Alternatives Evaluation Criteria

"NCP Nine Criteria"

- Overall Protection of Human Health and the Environment
- Compliance with Applicable or Relevant and Appropriate Requirements
- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, and Volume
- Short-Term Effectiveness
- Implementability
- Cost
- State Acceptance /Tribal Acceptance
- Community Acceptance

Alternative 6



Proposed Remedy

EPA and State recommend Alternative 6

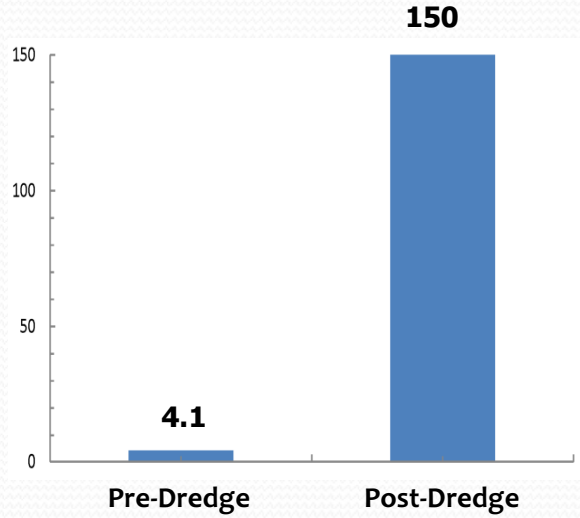
- Dredge near shore sediment PCB concentrations ≥ 1 parts per million (ppm), followed by backfill to grade (approx. 109,000 cubic yards)
- Place main channel armored cap over T1-T21 main channel sediments where either the segment length weighted average (SLWA) or the maximum surface sediment PCB concentrations ≥ 1 ppm (approx. 59 acres)
- Place main channel cap over T21-T72 main channel sediments where the maximum surface sediment PCB concentrations ≥ 1 ppm (approx. 225 acres)
- Dewater dredged sediment and dispose in the on-site permitted landfill
- Reconstruct habitat impacted by remedial action
- Long-term monitoring and maintenance

Some Common Questions

- "Why not dredge in main channel too?"
- "Can armored cap work?"
- "Why dredge near shore if capping is just as effective?"

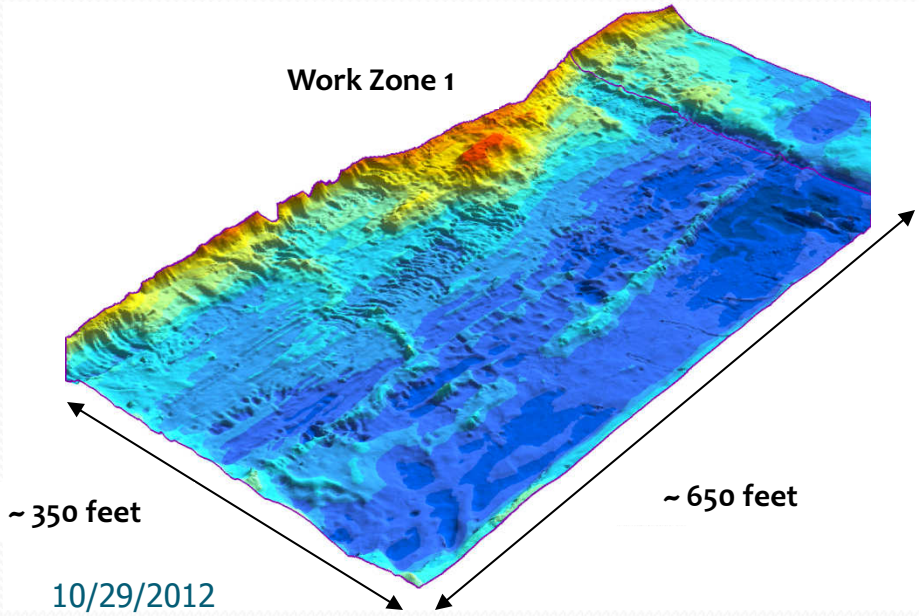
"Why not dredge in Main Channel too?"

- **Site-specific conditions not conducive to dredging main channel. Dredging main channel results in high residual concentration still requiring capping after extensive dredging.**
  - Most highly contaminated sediment buried towards the bottom of sediment column
  - Irregular, uneven river bottom
  - Boulders and rock debris



Average ROPS Work Zone 1

Sediment (0-3 inches) PCB Concentrations (mg/kg)



"Can armored cap work?"

- Armored cap designed and implemented during 2005 ROPS
- Models used to design armored cap address turbulent flow, velocity, and ice thickness. Designed to protect against scouring forces created under the ice jam toe
- In-river armored cap has been used at Superfund sites to address erosional and scouring forces for which sand/topsoil caps are insufficient

Armored Cap

Photo of Armored Cap 2005 ROPS

Photo of Armored Capped Area 2009

"Why dredge near shore, if capping is just as effective?"

- **Capping the Grasse River near shore is not "as good" as dredging and backfilling to grade**
- **Unlike main channel, near shore can be successfully dredged and not require a cap after dredging**
- **Dredging near shore will take out some of the side-slope, which has been difficult to cap due to its steepness**
- **Near shore is backfilled to grade after dredging to allow for habitat re-establishment and species use**

Grasse River Superfund Site Proposed Plan Public Comment

- EPA relies on public involvement to ensure that input from the community is considered during selection of the cleanup plan.
- EPA's final decision on the cleanup will be described in a Record of Decision which will be issued after all comments received during the public comment period have been reviewed.
- The comments and EPA's responses will be included with the Record of Decision.

Grasse River Superfund Site
Public Comment (cont'd)

- **EPA will accept written comments on the Proposed Plan through November 15, 2012.**
- How to submit comments:
  - Postal mail
  - E-mail
  - Fax
- Please address written comments to:

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Grasse River Superfund Site

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- St. Regis Mohawk Tribe Environment Division
- NYS Department of Environmental Conservation
- NYS Department of Health
- National Oceanic and Atmospheric Administration
- US Fish and Wildlife
- Grasse River Community Advisory Panel
- EPA Contractors (Aecom, US Army Corps of Engineers, Warren Pinnacle Consulting, Dave Richardson, Dr. Mike Palermo, and Dr. Danny Reible)
- Alcoa Contractors (Dr. George Ashton, Anchor QEA, ARCADIS, and CDM Smith)
- Alcoa

Grasse River Superfund Site
Q and A

Panelists

EPA

- Young S Chang - Remedial Project Manager
- Doug Fischer - Assistant Regional Counsel
- Marc Greenberg, Ph.D. - Ecological Risk Assessor
- Dave Kluesner - Community Involvement Coordinator
- Pete Mannino - Western New York Remediation Section Chief
- Marian Olsen, Dr.PH - Human Health Risk Assessor

EPA Contractor

- Danny Reible, Ph.D. - Director of the Center for Research in Water Resources Environmental and Water Resources Engineering Group and Bettie Margaret Smith Chair of Environmental Health Engineering at the University of Texas