Presentation to

MA Water Resources Commission

Quinapoxet Dam Removal

John J. Gregoire, Sr. Program Manager, Reservoir Operations

April 10, 2025

Todays presentation

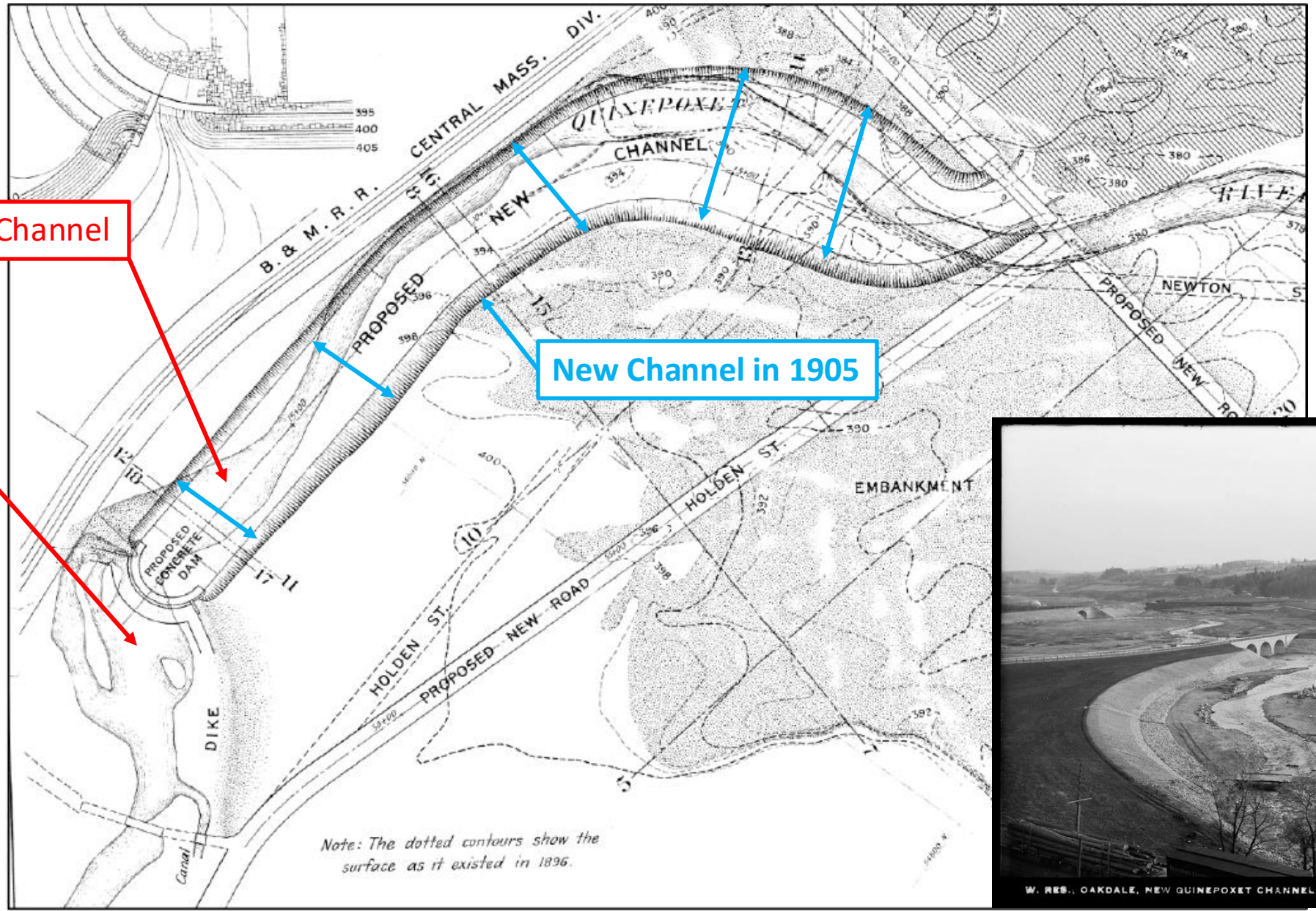
- MWRA
- Brief overview: rational for dam removal, design components

Project commencement October 2024

- River bypass methods
- Turbidity monitoring
- Physical dam removal
- Urgent acceleration of critical component
- Time-lapsed video
- Current site work

Project Location – Wachusett Reservoir, West Boylston, MA

Historic River Channel ca. 1902



Original River Channel

New Channel in 1905

Rationale for dam removal

- Original dam sediment control function obsolete due to modern reservoir operations, WQ monitoring and water treatment,
- Restore fish passage (landlocked salmon and native trout) up the Quinapoxet River,
- Dam in disrepair requiring expensive investment, ~ $1M
- Return River to a natural riverine hydrology aids in climate resilience.

LL Salmon at Wachusett Reservoir

Project Team

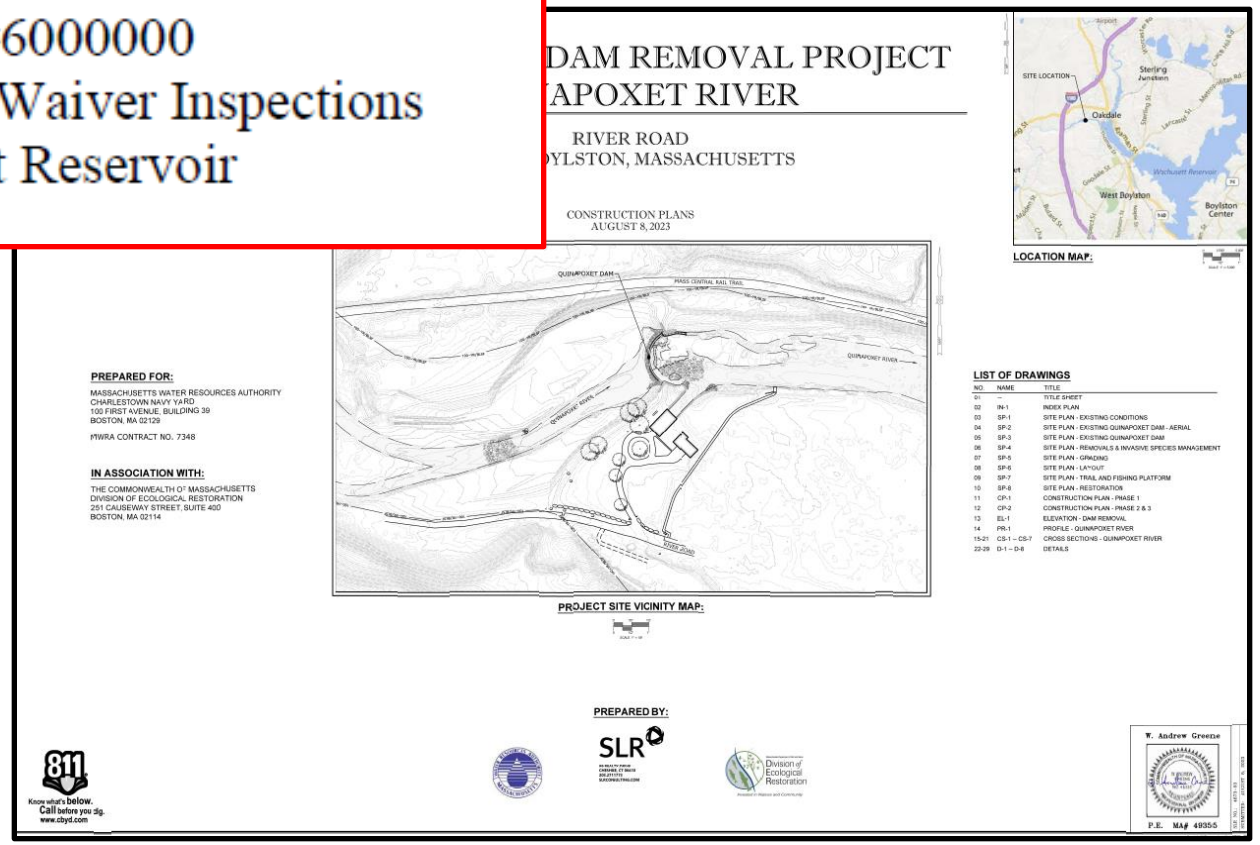
… and Supporters

Permitting

- Local, State, and Federal jurisdiction of the project.
- Permits required:
  - MA Environmental Protection Act
  - West Boylston ConCom
  - Waterways/C. 91 US ACOE 404 dredge and fill/NPDES General Construction Permit
  - MA DEP 401 WQ Cert
  - MA Endangered Species Review
  - MA Historic Commission

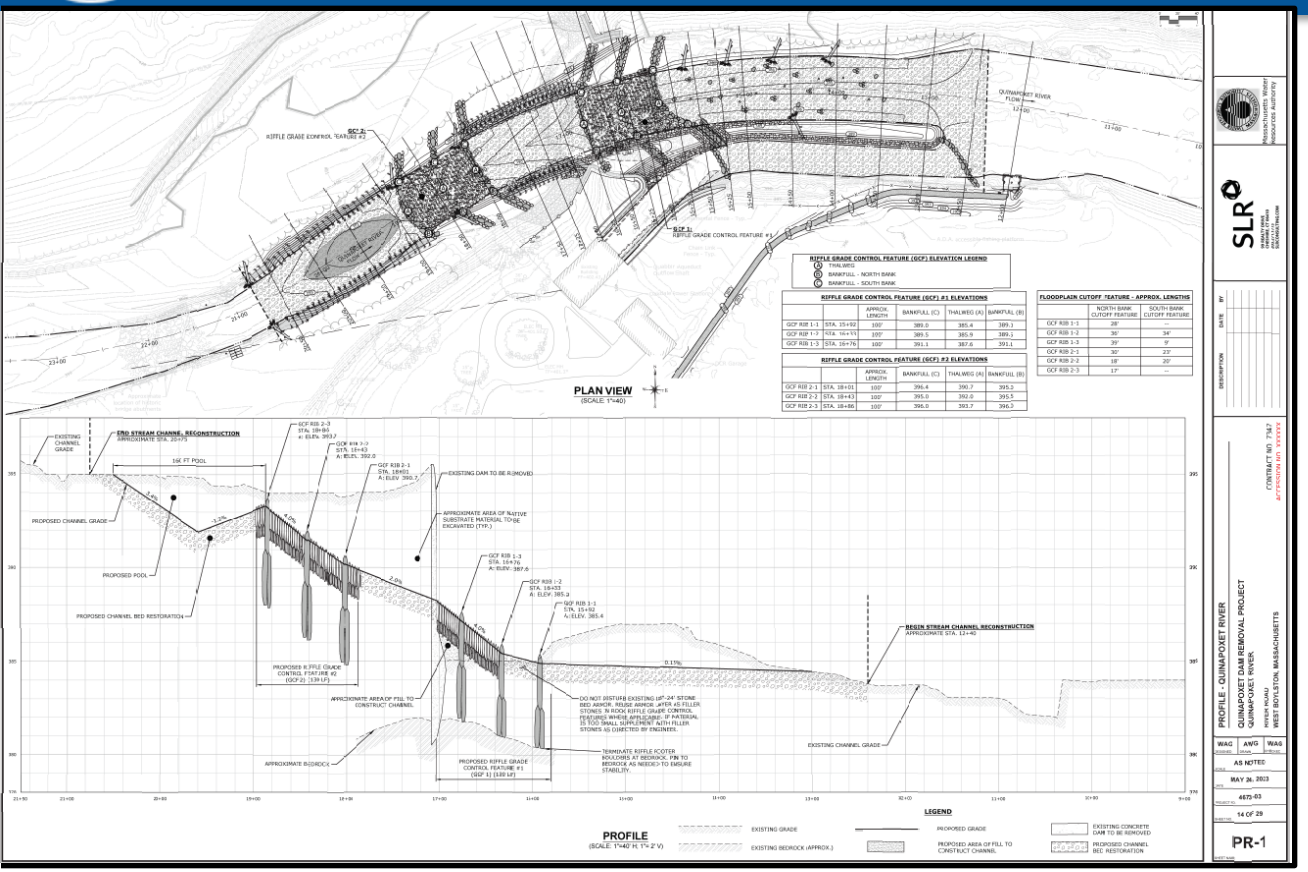
Design Components

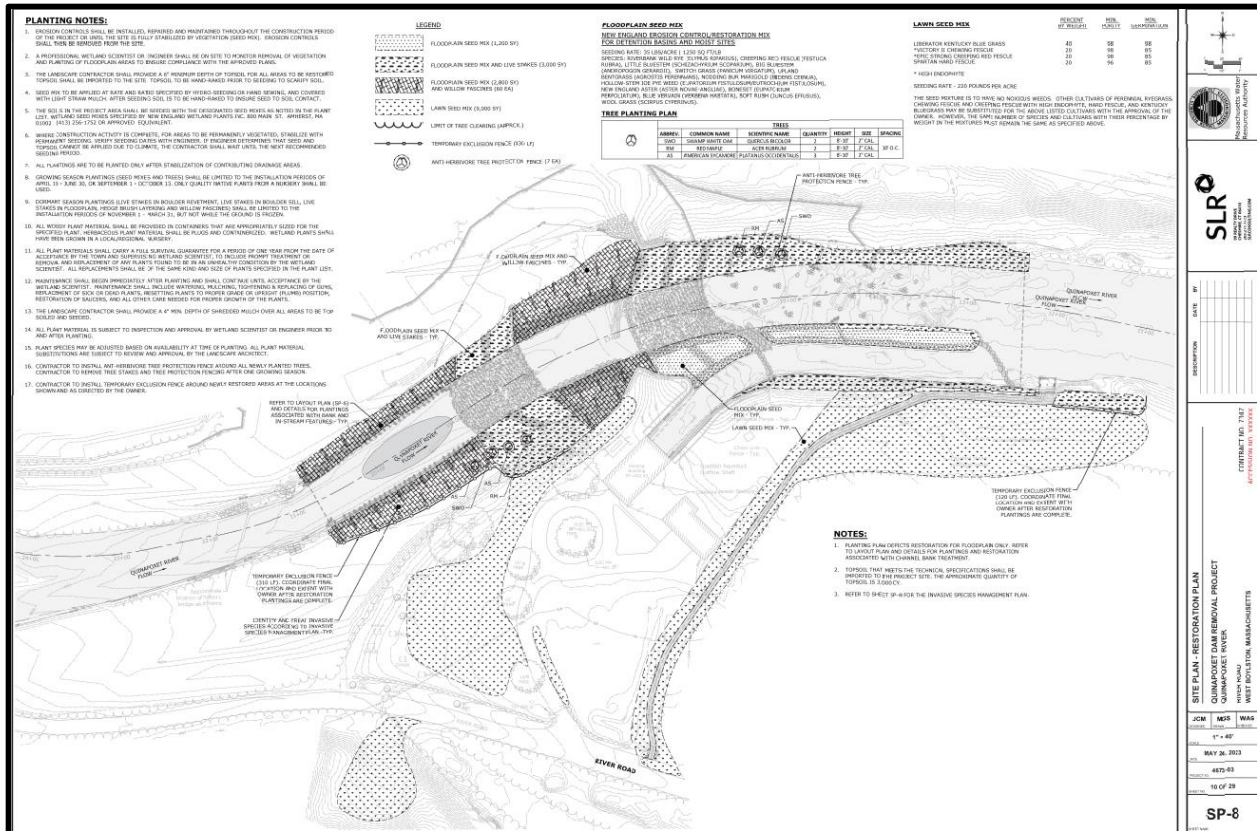
PWS Name: MWRA
PWS ID #6000000
Filtration Waiver Inspections
Wachusett Reservoir



- Water Control Plan
- Sediment Mgmt. Plan
- Turbidity Monitoring Plan
- Demolition
- Temp access
- Tree work
- Stockpiling materials
- Infrastructure Protection (Shaft 1)
- Construction Videography
- Riverine restoration and post construction monitoring

Design components





Original Construction Phasing

Phase I. Cofferdam upstream river, removal of southern portion of dam to accommodate install bypass piping

Phase II. Water gravity bypass and limited groundwater pumping to dry out the work area. Culvert crossings over flow path for river and dam access. Demo of masonry weir, fish ladder, appurtenances and removal of existing islands.

Phase III. Installation of tailrace channel, riverine reconstruction, ADA fishing platform, floodplain bioengineering restorations

WQ Monitoring Locations upstream and downstream

Upstream WQ-B-1

Downstream WQ-C-1

QUINAPOXET DAM

WQ-C-1

QUINAPOXET RIVER

QUINAPOXET RIVER

RIVER ROAD

INSTALL TWO TURBIDITY CURTAINS

BEAMAN STREET

Grab Samples

Revised Location of WQ-C-2

THOMAS STREET

RAILROAD TRESTLE BRIDGE

QUINAPOXET BASIN

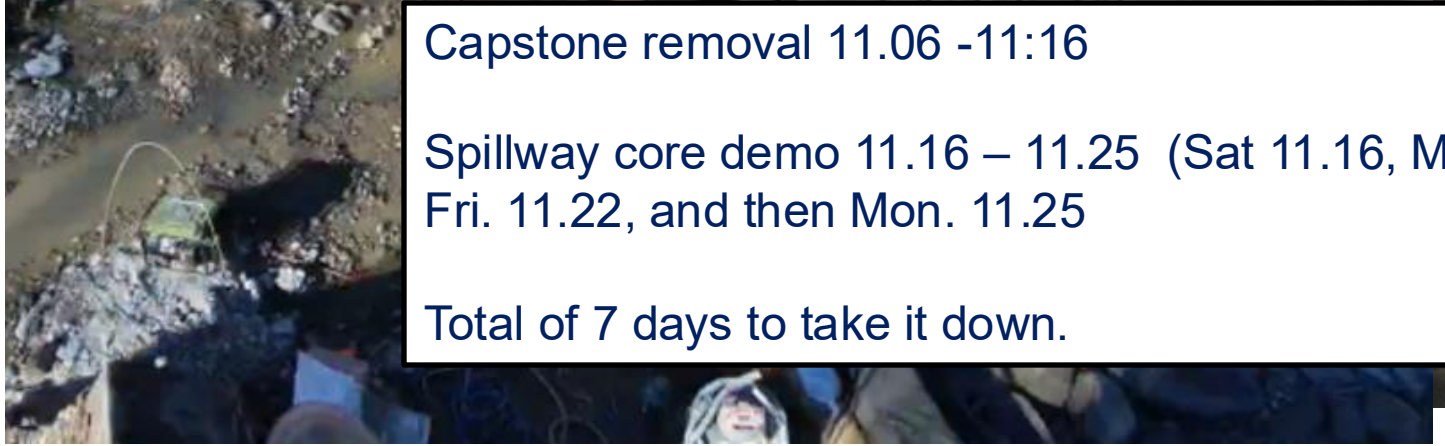
MWRA Fixed Depth Buoy location

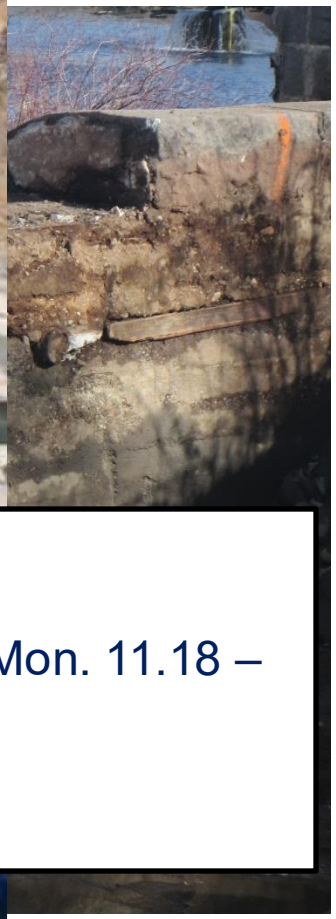
THOMAS BASIN

Bypass Pumping – Low-flow Conditions < 20 cfs

Open Channel Bypass – high-flow conditions

Demo details…



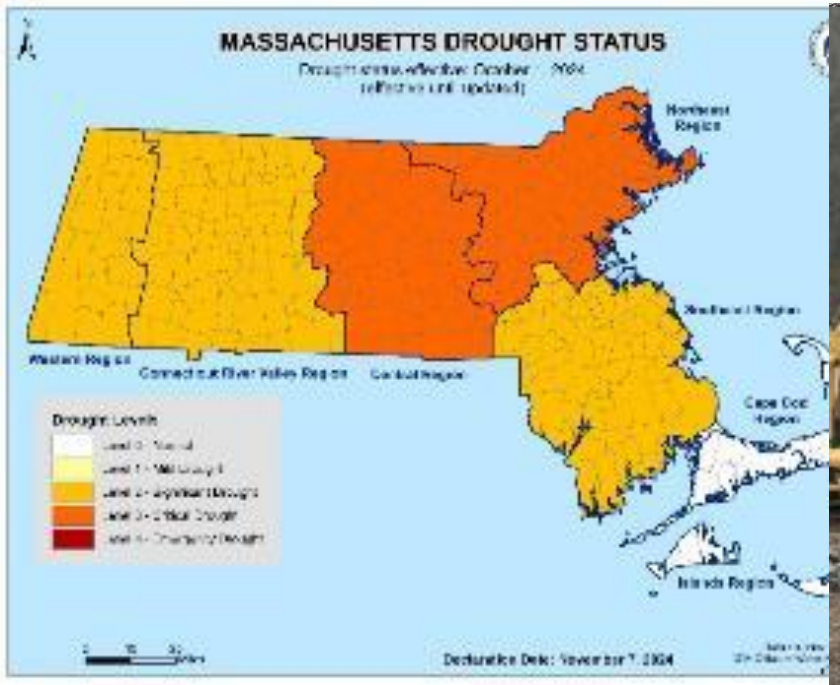


Capstone removal 11.06 -11:16

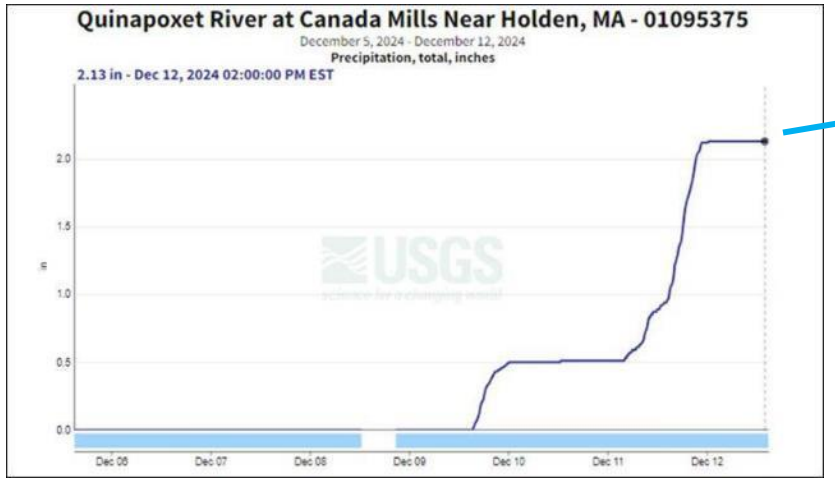
Spillway core demo 11.16 – 11.25 (Sat 11.16, Mon. 11.18 – Fri. 11.22, and then Mon. 11.25

Total of 7 days to take it down.

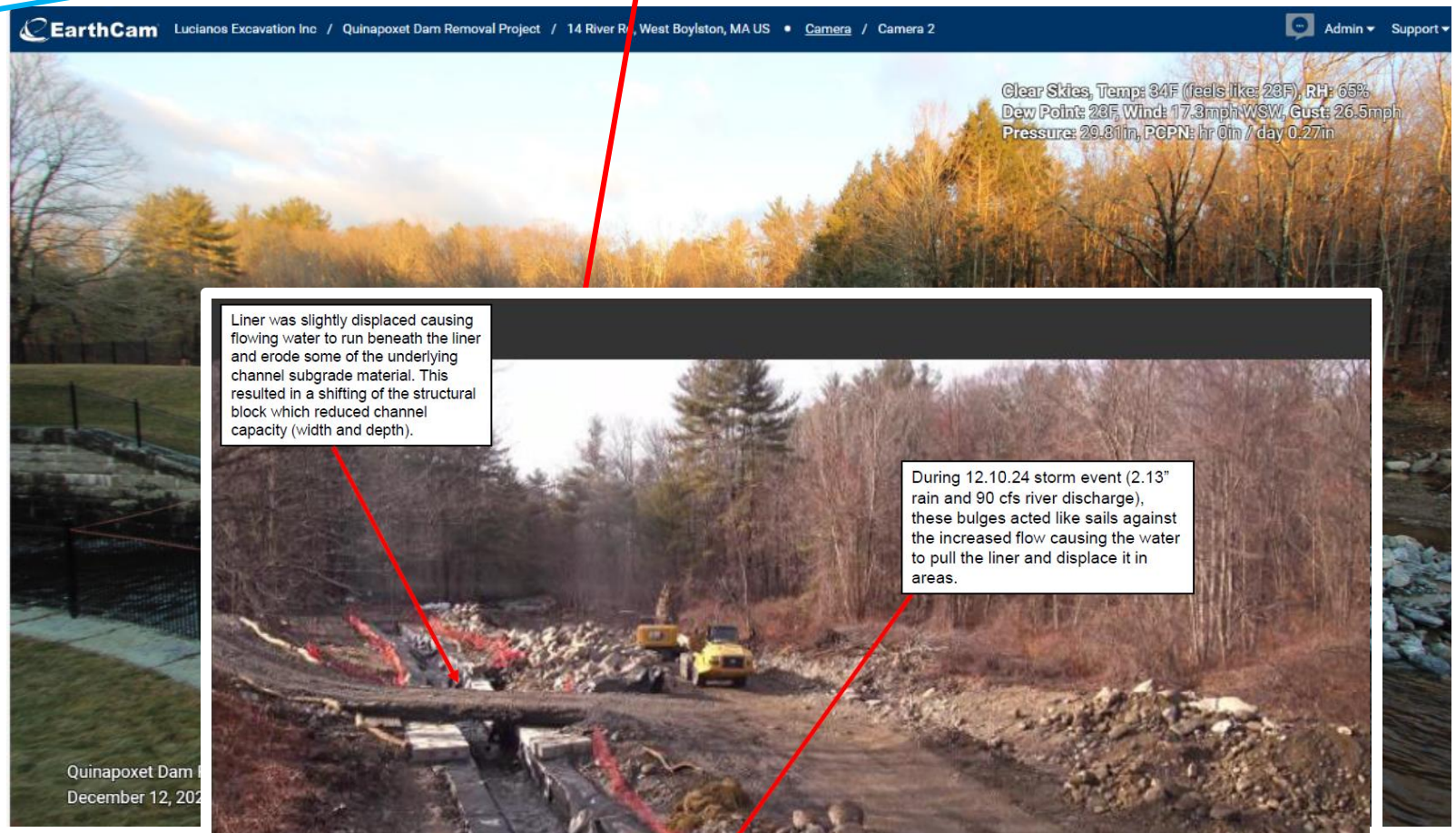
Accelerated Tailrace Berm Extension due to critical drought Nov. 2024



How channel responded ot 12.10.24 rain event

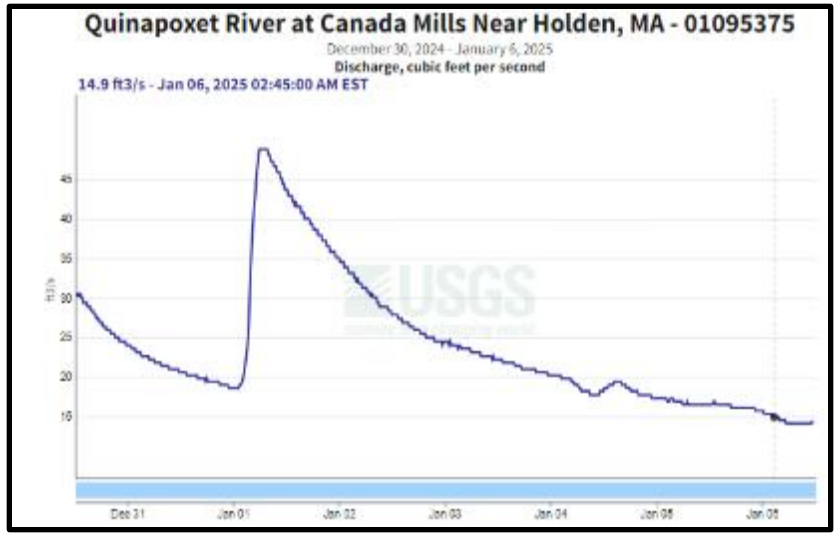


70 cfs



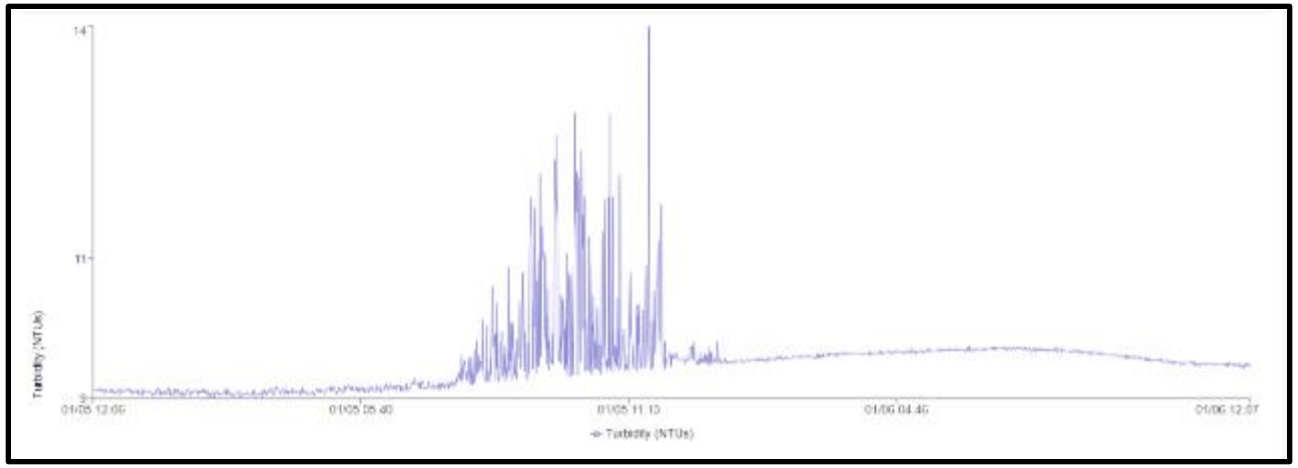
Turbidity Monitoring during the project

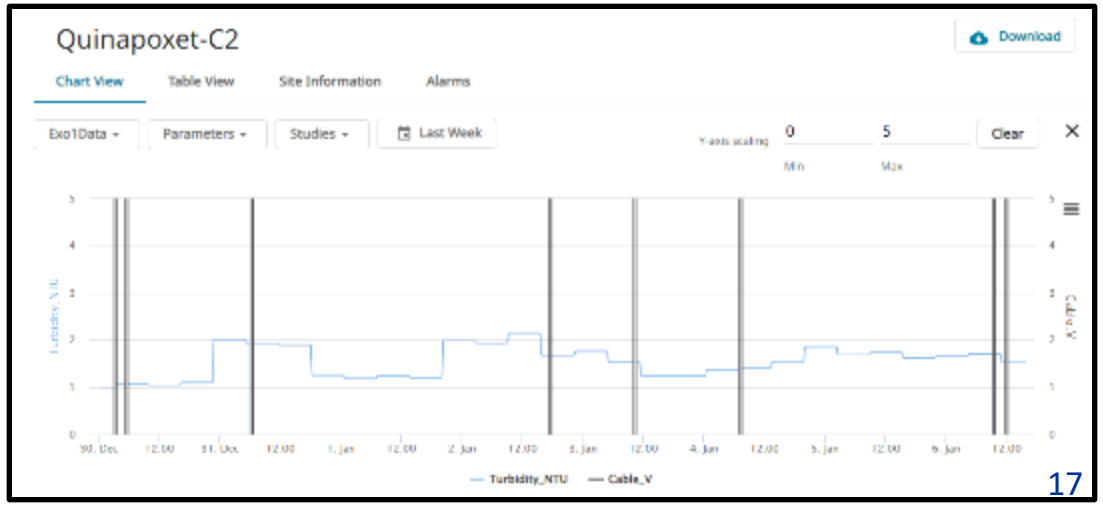
USGS gage upstream of site



C2 FD Buoy, Quinapoxet Basin

WQ –C1 downstream of site

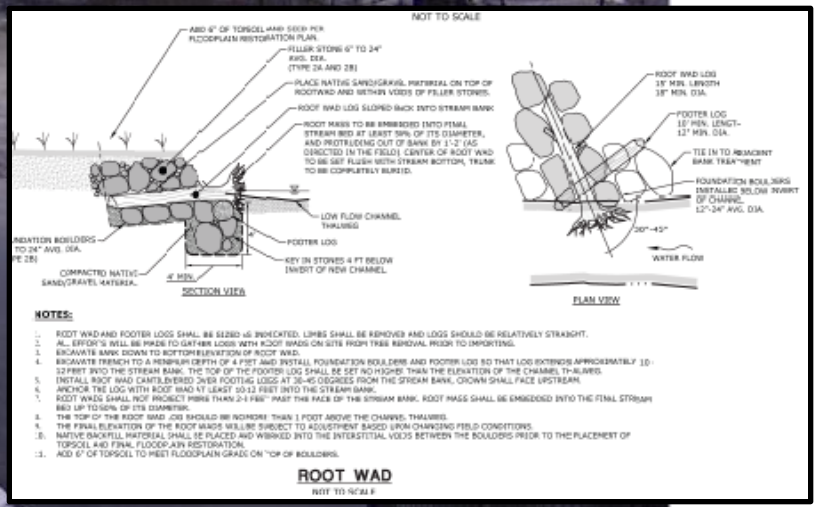




Restored river channel downstream

Restored floodplain bank

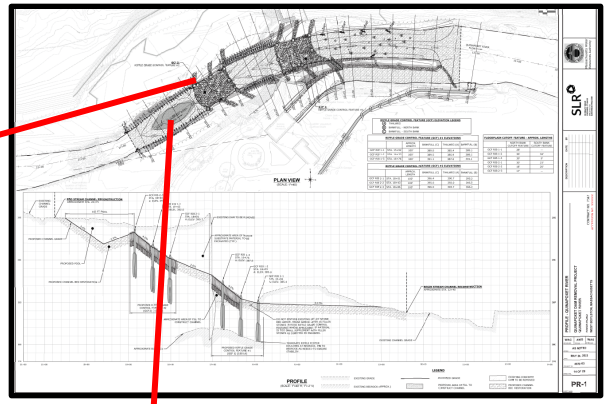
Embedded rootwads



Quinapoxet Dam Removal Project
January 21, 2025 10:57 AM

Upstream riffle and pool construction

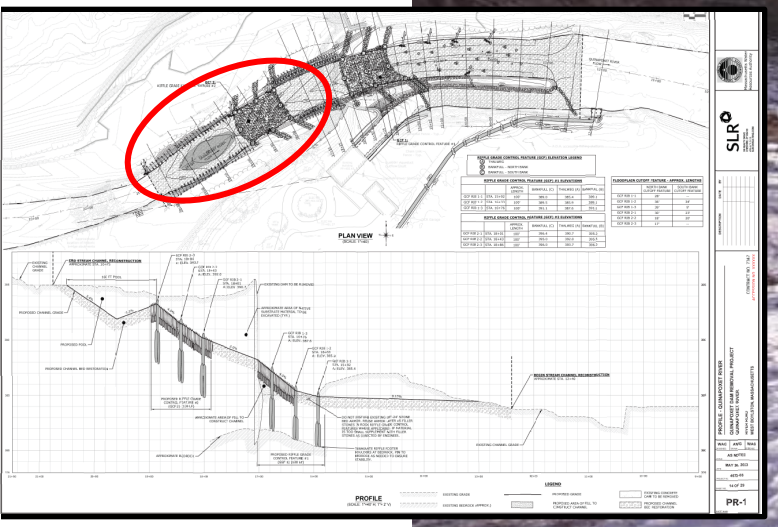
Placement of rock for riverbed riffle



Downstream view of pool area.

Checking riverbed grades

Second Riffle and Pool Completed



EarthCam Lucianos Excavation Inc / Quinapoxet Dam Removal Project • Camera / Camera 2

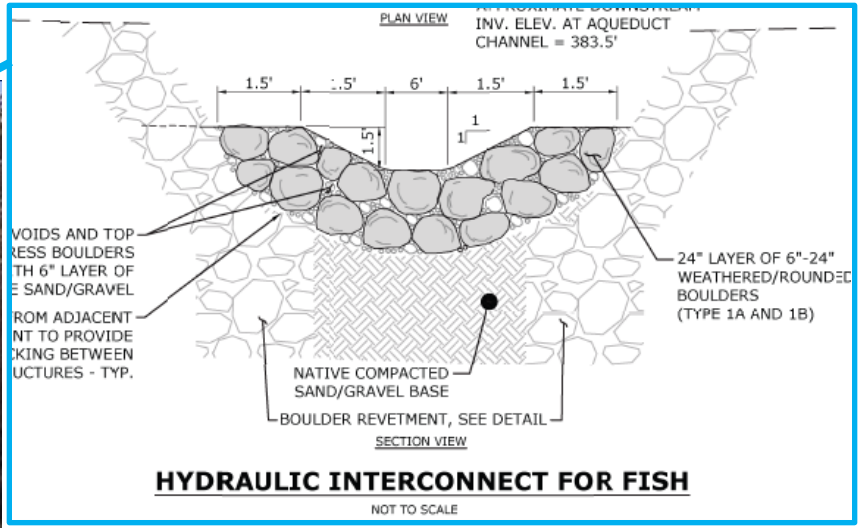
Admin Support

Scattered, Temp: 34F (feels like: 25F), RH: 56%
Dew Point: 19F, Wind: 13.8mph W, Gust: 27.6mph
Pressure: 29.96in, PCPN: hr 0in / day 0.02in

Restored floodplain bank

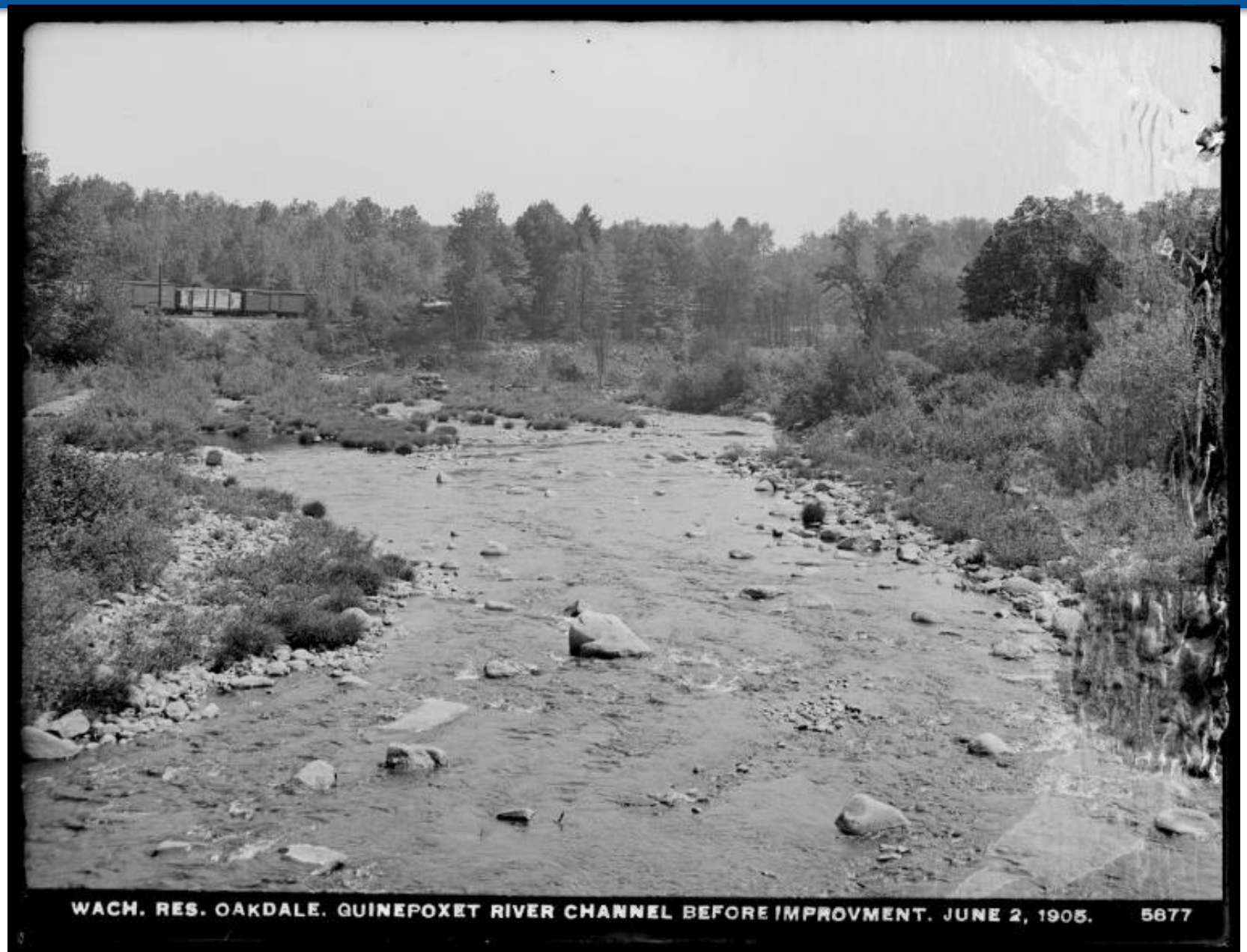
Quinapoxet Dam Removal Project
January 26, 2025 12:03 PM

Tailrace extension fish structures and kayak takeout



Fish deterrent structures

Back in time 120 years ago...



...back to the future: River free flowing as of 01.31.25

“All water has a perfect memory and is forever trying to get back to where it was.”

- Toni Morrison

Quinapoxet River yesterday… and today

Project Time-lapsed Video

Next up: Bioengineering

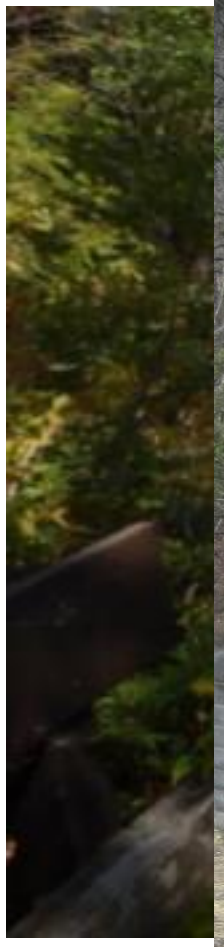
April:

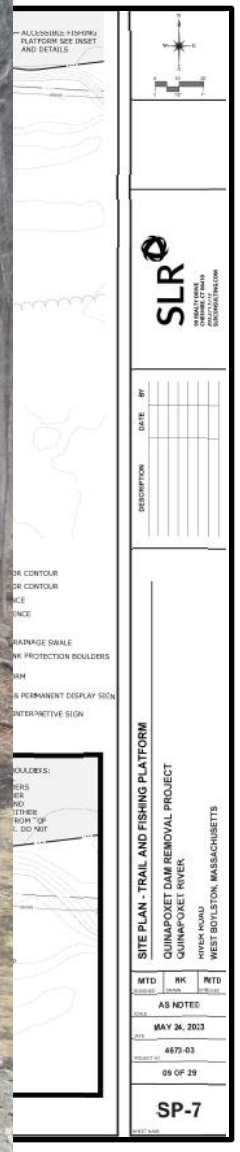
- Willow Fascines

Live Stakes

- Ribbon Cutting Ceremony for restored Quinapoxet River

Public Access Amenities





Cheers for attending this presentation!

Big thanks to:

- Designer: SLR International
- Contractor: Lucianos Excavation, Inc.
- RE: Kleinfelder
- MWRA Water Quality, Operations, Permitting and Construction Teams
- Town of West Boylston
- MA DCR Watershed Division
- MA DER

… and many more who influenced and touched this project

John.Gregoire@mwra.com