

**Feasibility Study for Potential Removal
of McLane & Goldman Dams
Souhegan River, Milford, NH**

Public Kick-off Meeting

**Mark Wamser
Gomez and Sullivan Engineers, P.C.
603-428-4960**



Aug 16, 2010

Agenda

Opening Remarks

- Guy Scaife, Town Administrator

Presentation

- Mark Wamser, Gomez and Sullivan

- Who is providing funding and/or technical assistance?
- Project features
- Why consider dam removal?
- What's involved in a feasibility study?
- What's the project schedule?
- Who do I contact?
- Questions/comments

Who is providing funding and/or technical assistance?

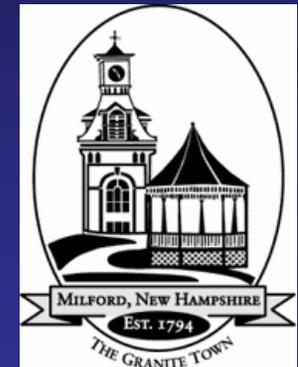
Collectively known as “Project Partners”

Funding Sources:

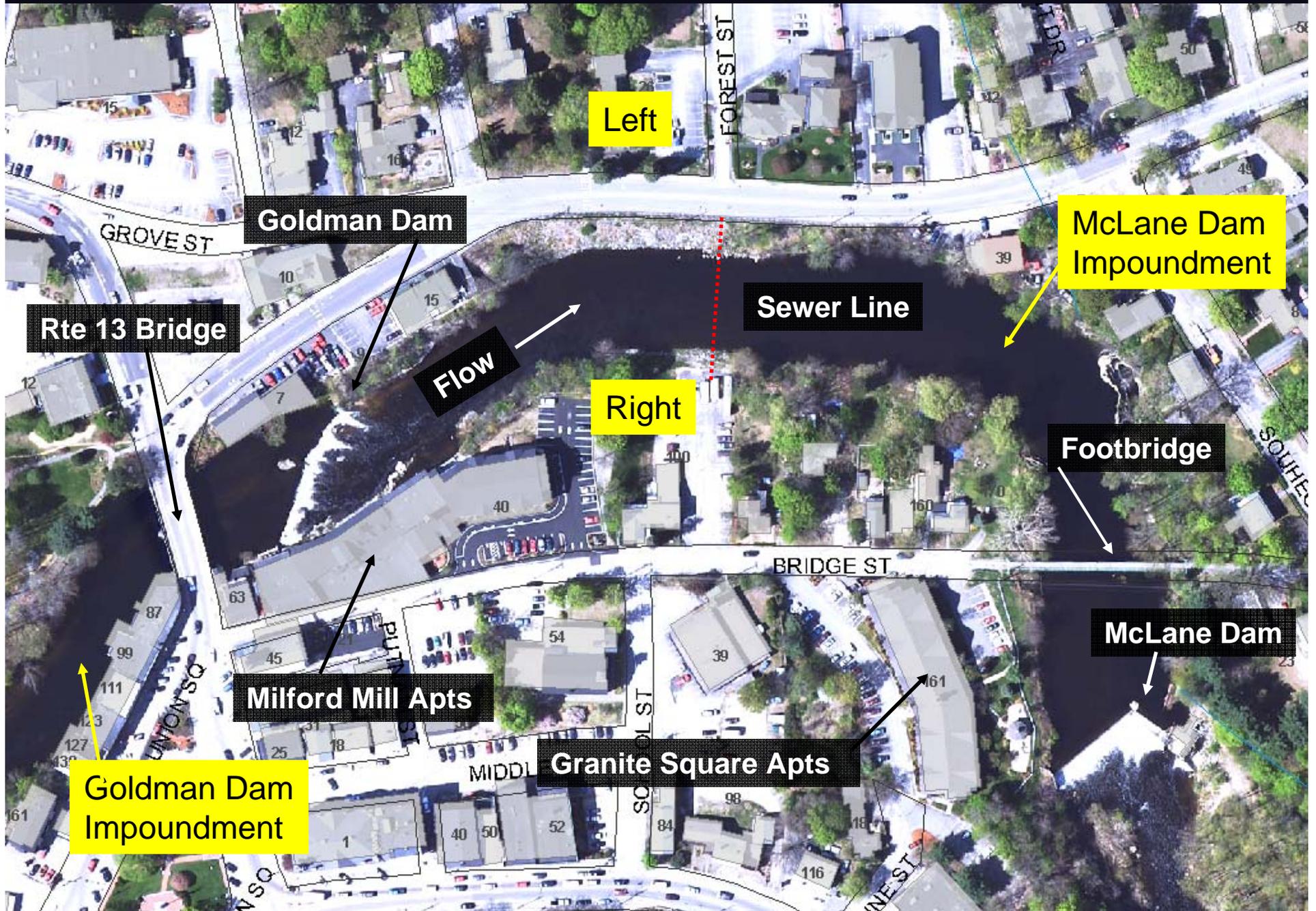
- NH Charitable Foundation- Community Impact Grant
- EPA 319 Watershed Restoration Grant
- American Rivers
- NOAA Community-based Restoration Program
- Trout Unlimited- Embrace-A-Stream
- Town of Milford

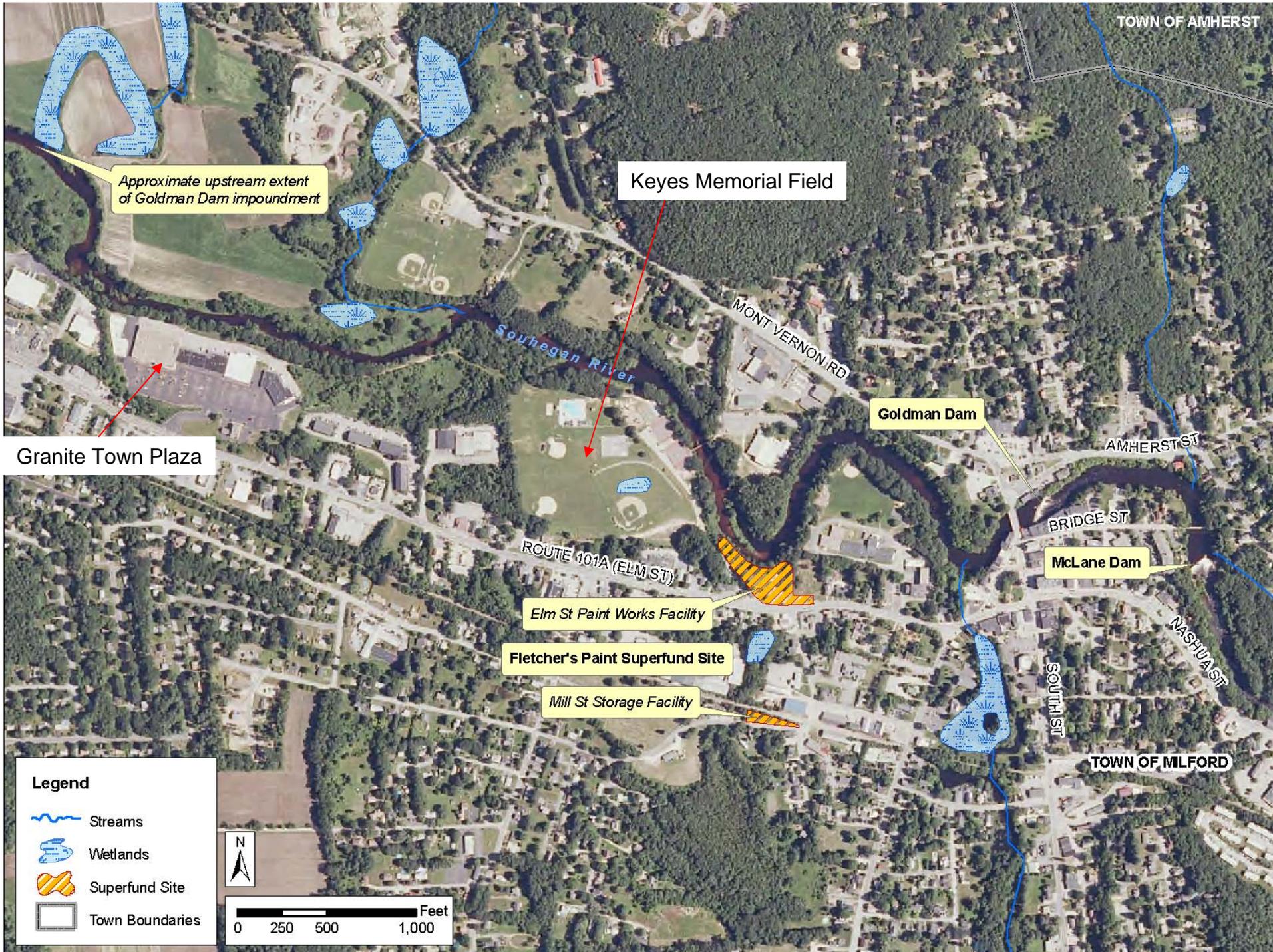
Technical Assistance:

- Town of Milford
- NH Dept of Environmental Services/EPA
- National Oceanic & Atmospheric Adm, National Marine Fisheries
- US Fish and Wildlife Service
- American Rivers
- Gomez and Sullivan Engineers

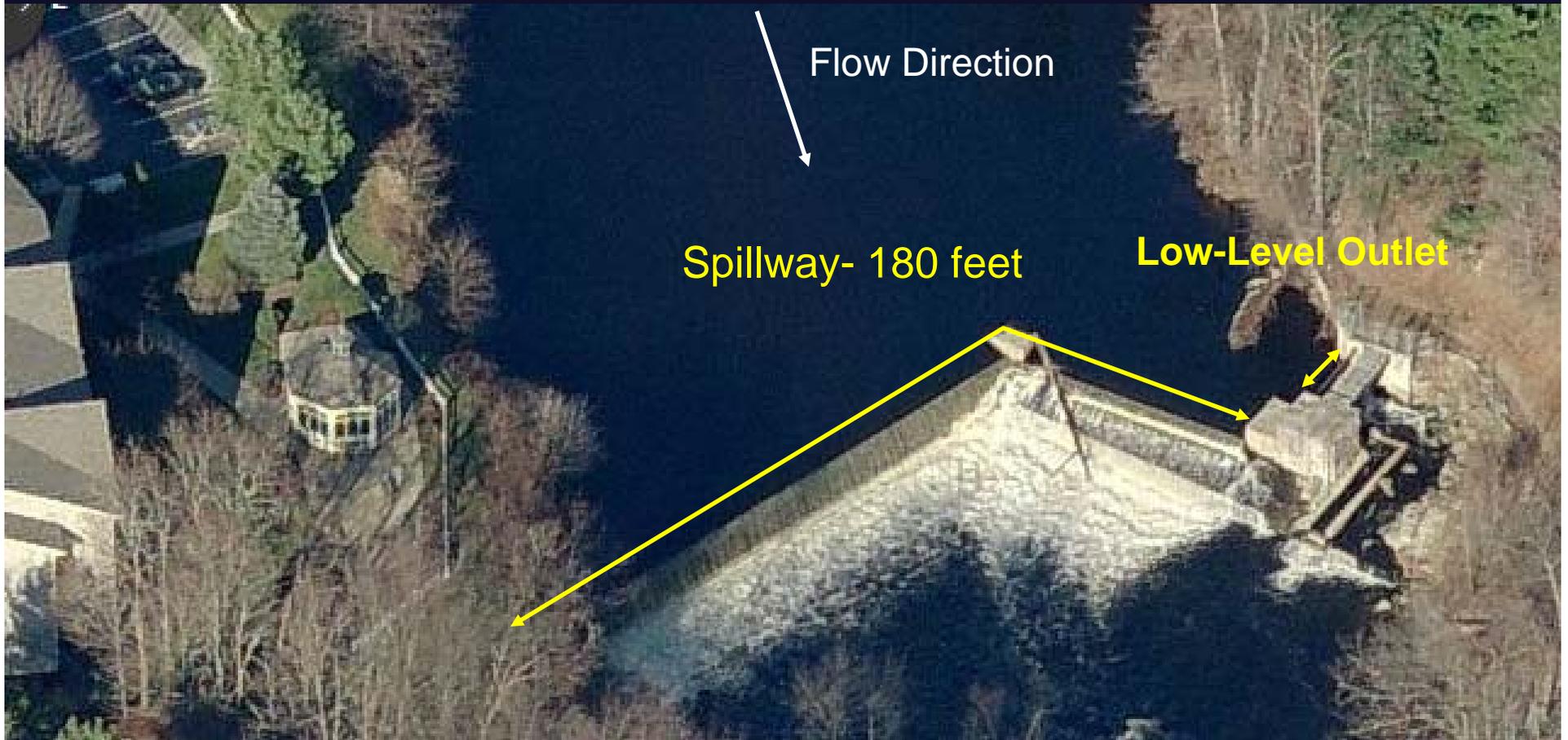


Project Features

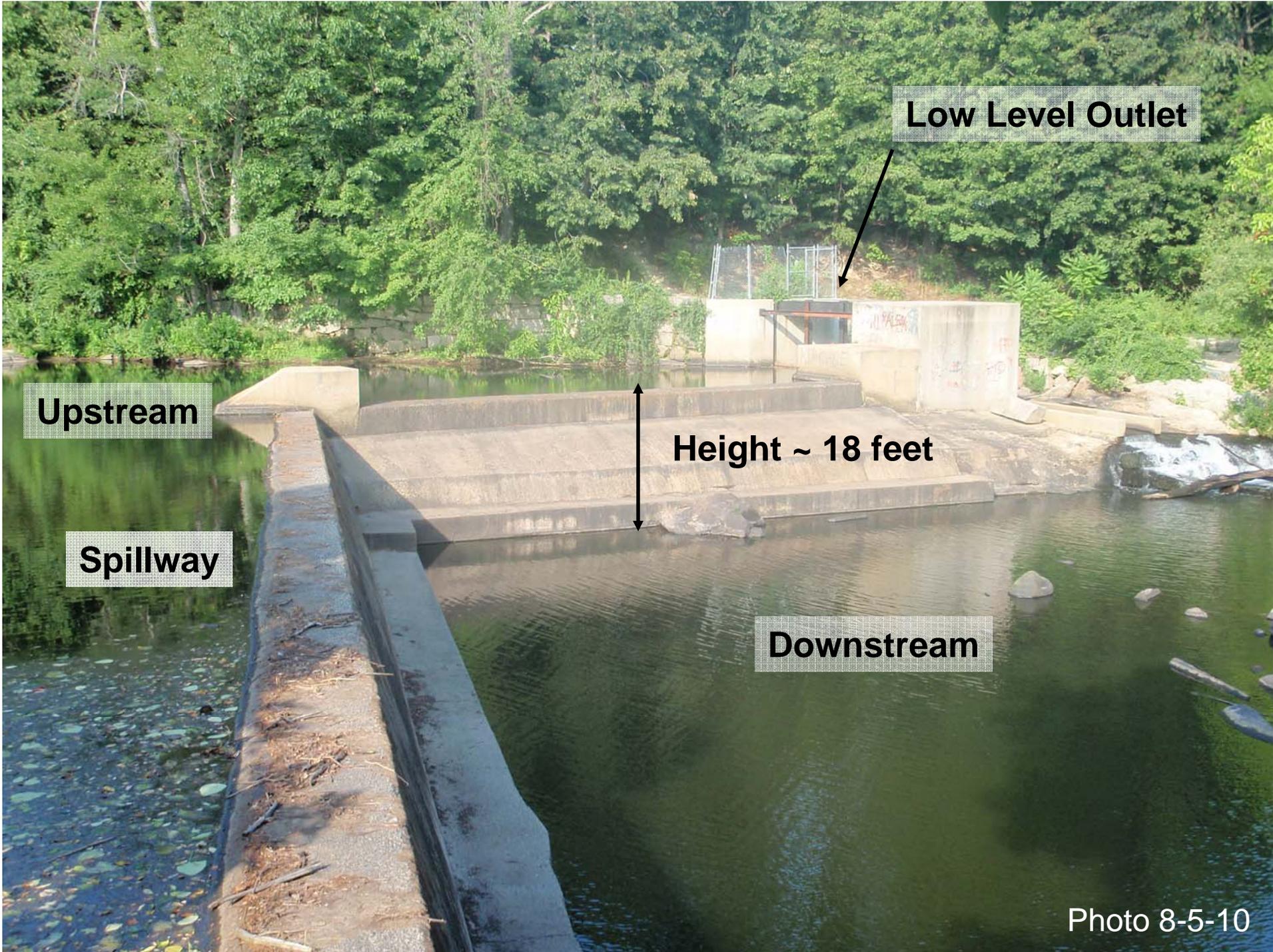




McLane Dam



- Town-owned
- Original Construction 1846- stone masonry
- Reconstructed 1992- concrete over stone and existing concrete
- Low Hazard Dam



Upstream

Spillway

Height ~ 18 feet

Downstream

Low Level Outlet

Photo 8-5-10

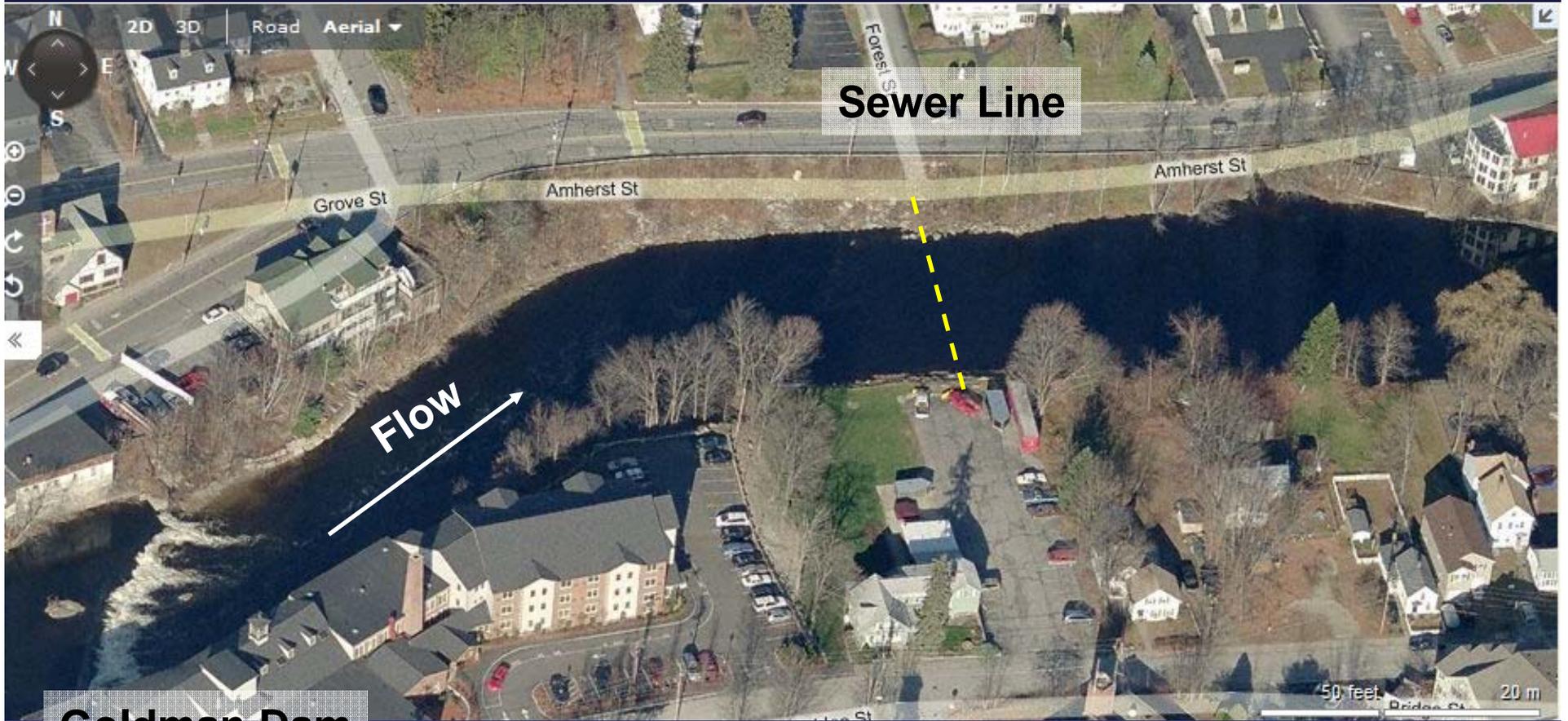
Low Level Outlet



Boards can be removed to lower water level behind dam

Leakage- dropping water level

Sewer Line

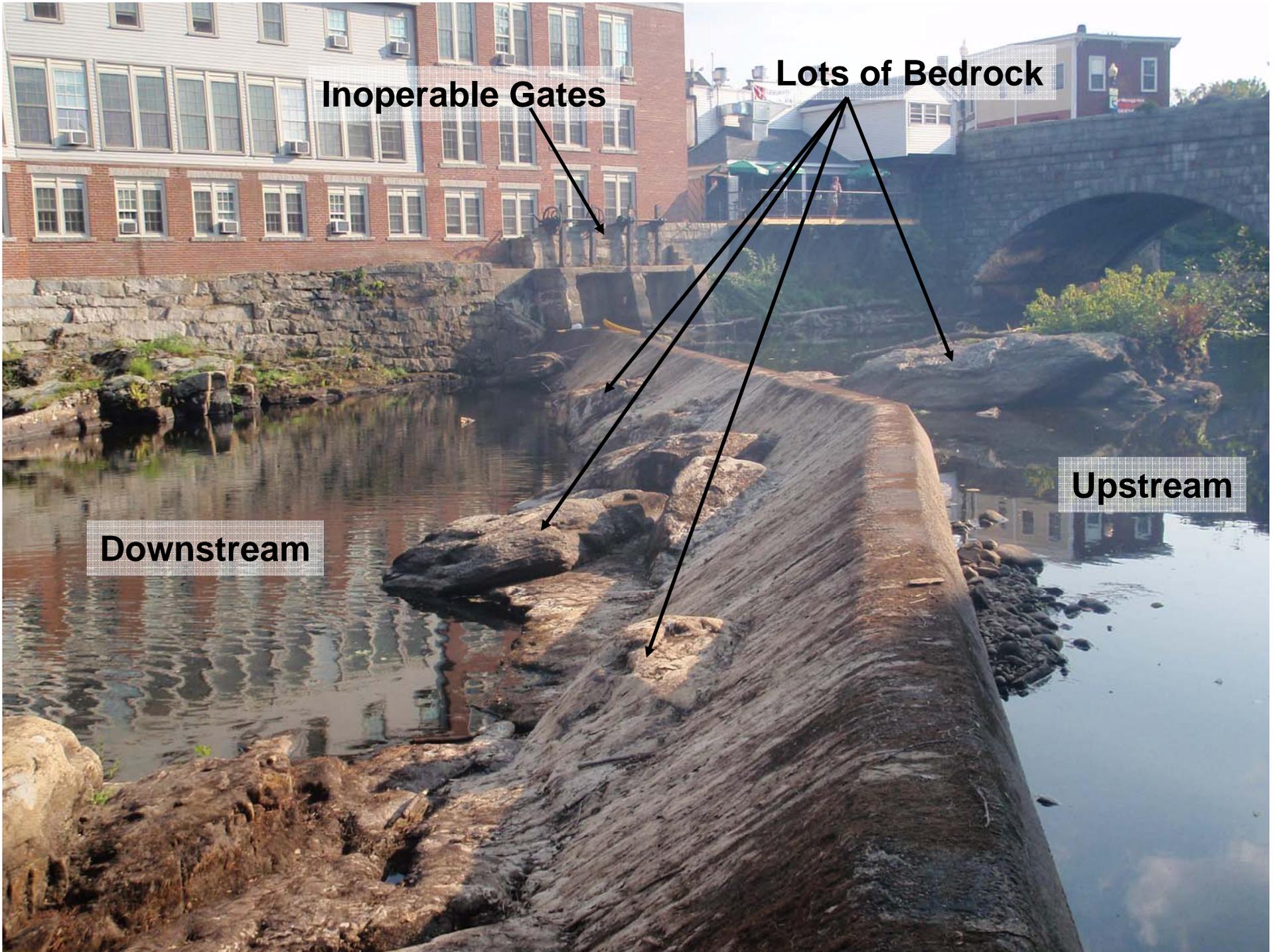


Goldman Dam

Goldman Dam



- Owned by Minor via Helen Goodwin Trust
- Original Construction 1810
- Last Reconstructed 1960s
- Low Hazard Dam (currently being considered for reclassification by NHDES to high hazard)



Inoperable Gates

Lots of Bedrock

Downstream

Upstream

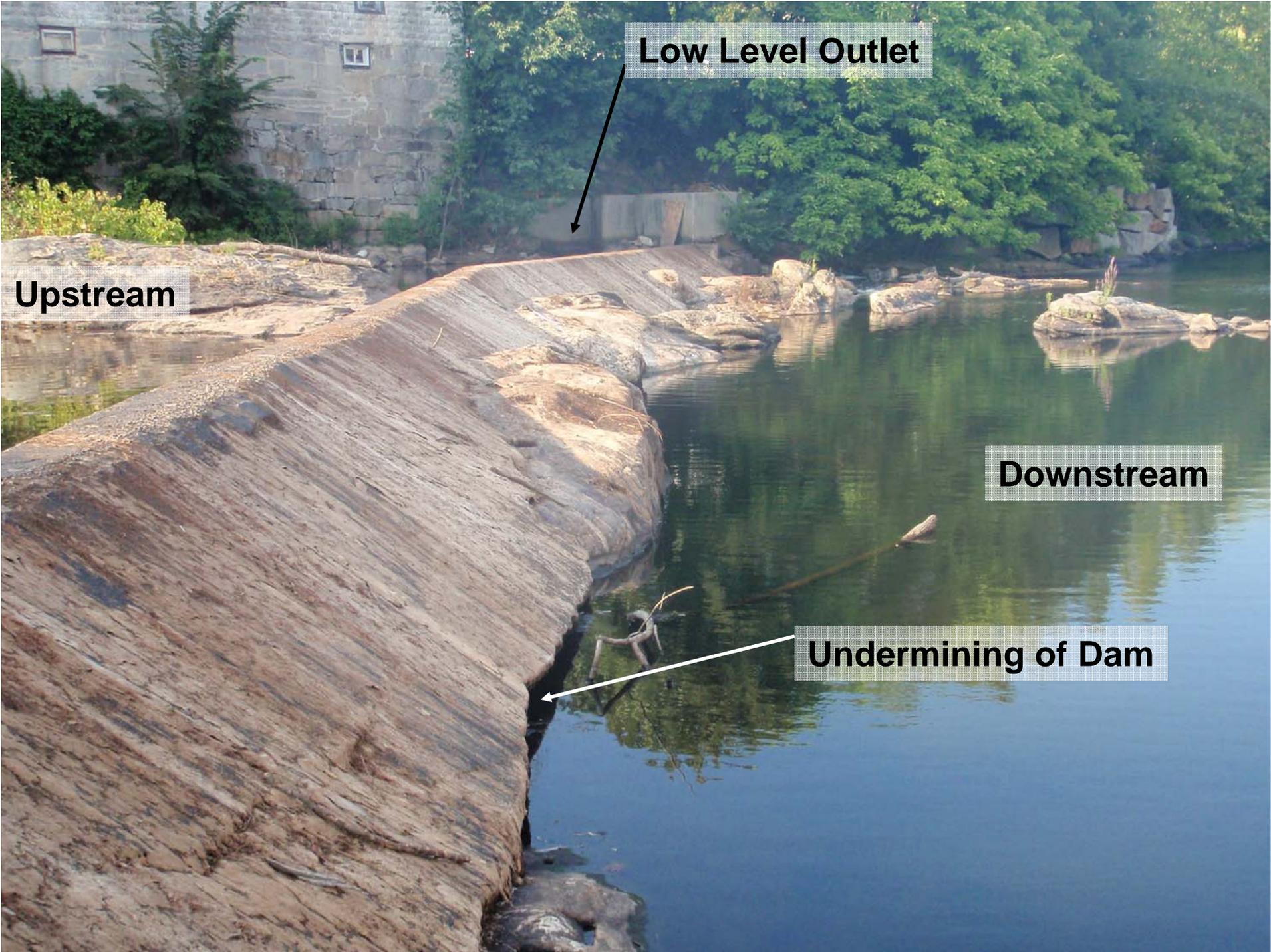
Low Level Outlet



Upstream

Downstream

Undermining of Dam



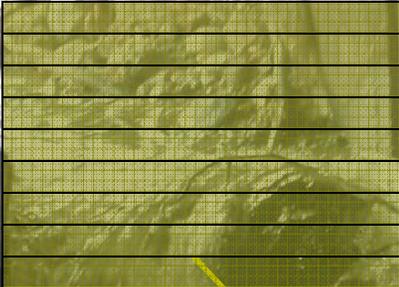


Low Level Outlet

Upstream

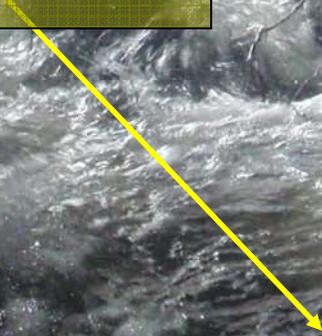
Downstream

**Downstream Side of Low Level Outlet
(stoplogs partially removed)**



Stoplogs

Downstream



Downstream Side of Route 13 Bridge



- Town-owned
- Original Construction 1846- stone (constructed after Goldman Dam)
- Widened 1931

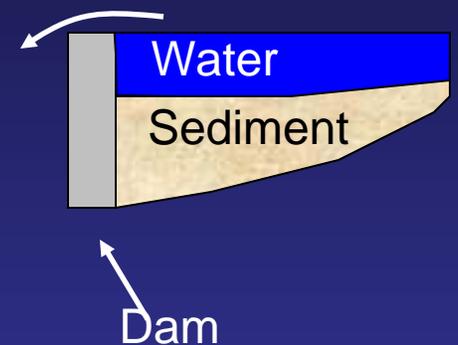
Why Consider Dam Removal?

- Both impoundments are on NH Dept of Env Services 303(d) list of impaired waters (dissolved oxygen and *e.coli*).
- Both dams may contribute to upstream flooding.
- Both dams block passage of resident & migratory fish.
- Both dams are a liability, potential safety hazard, require continual operation, maintenance and repairs and require an expenditure of taxpayer monies.
- Both dams have an Annual Dam Registration Fee.
- Grant funding available to offset costs of feasibility study– and potential future removal.

What's involved in a feasibility study?

Study will evaluate the impacts of dam removal on:

- River depth and width (“hydraulics”) absent the dams
- Flooding
- Sediment (sand/silt) deposited behind each dam
- Infrastructure (sewer line and Route 13 bridge)
- Environmental resources (fish, wetlands and wildlife)
- Cultural resources (above ground structures such as the dams & below ground artifacts)



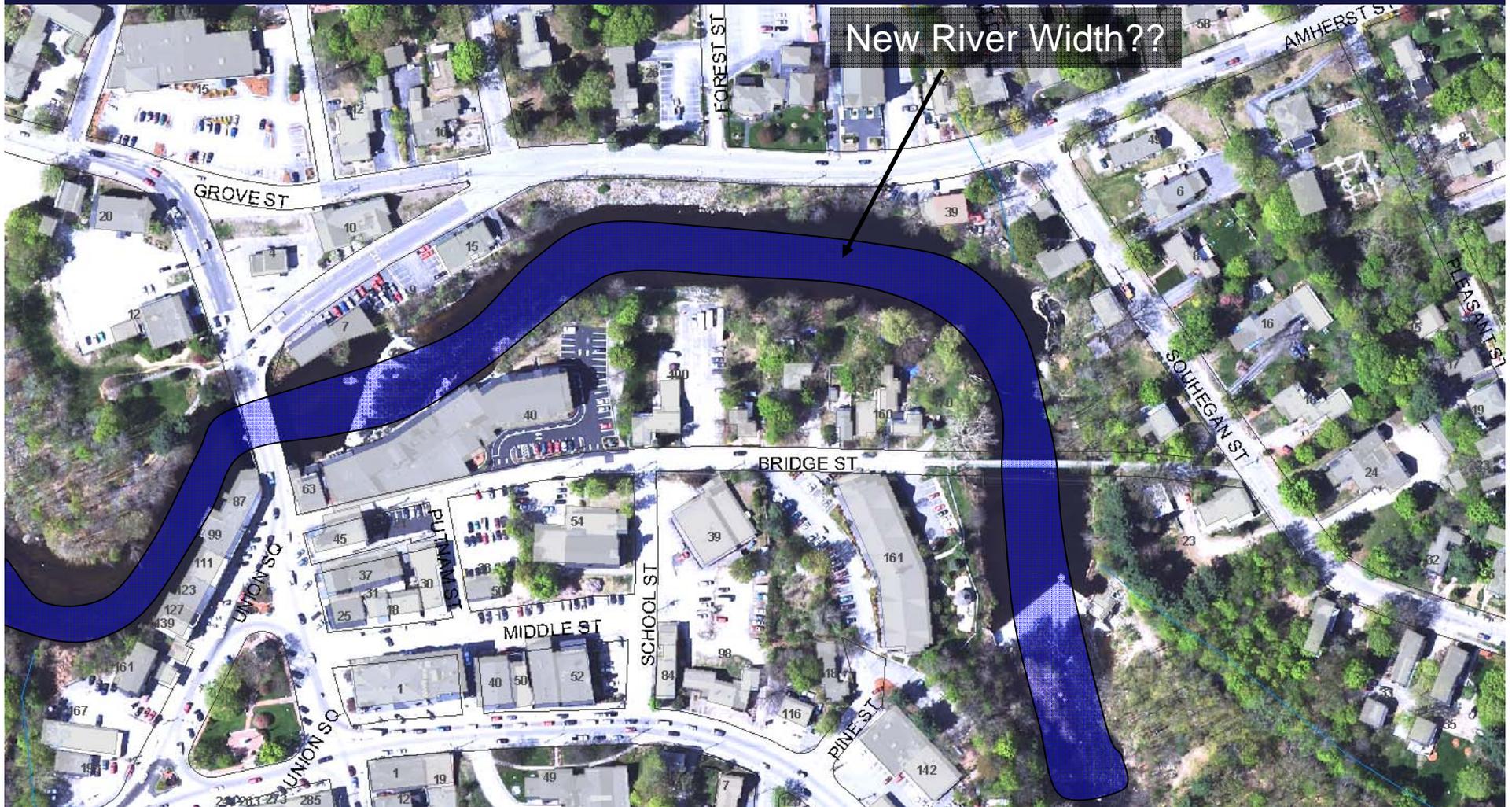
How much will the river change above the dams?

A hydraulic model will be developed from below McLane Dam to above Goldman Dam to estimate the following with the dams removed:

- The “new” channel width, depth, & velocity in the former impoundments.
- Estimate likelihood of impounded sediments being naturally transported downstream.
- Determine whether fish can pass through the project reach.
- Determine whether the Rte 13 Bridge center pier & abutments could be scoured.
- Determine whether the sewer line could be scoured and become exposed.

If dams are removed...

- Channel width will decrease
- Depth will decrease
- Velocity will increase



Determine Quality and Quantity of Sediment behind both Dams

- Goldman Dam
 - Considerable existing information as part of Fletcher's Paint Superfund Site.
- McLane Dam
 - Sediment volume will be quantified by driving steel probes to refusal.
 - Sediment cores will be collected for contaminant testing.
- Likelihood of sediments becoming mobile if dams are removed will be evaluated using the hydraulic model.
- Sediment quantity/quality and sediment transport analysis will dictate management options (partial dredge, full dredge, natural transport).

Sediment Probing to Quantify Volume



Sediment Core for Lab Testing



Sediment Core Sampling



McLane Dam- Sediment Sampling X-sections

- X-sections used to quantify sediment volume.
- Monuments (such as rebar) placed on right and left banks.
- Important not to disturb monuments!



Will removing the dams decrease flooding?

- April 2007 Flood ~ 50 year flood.
- Neither dam provides flood “protection”; they operate as “run-of-river”.
- Both dams artificially raise the water level of the river.
- Hydraulic model will be used to determine the 100-year flood (and other floods) inundation area with the dams removed.



Current 100-year Flood Inundation Area

North River Road Fields



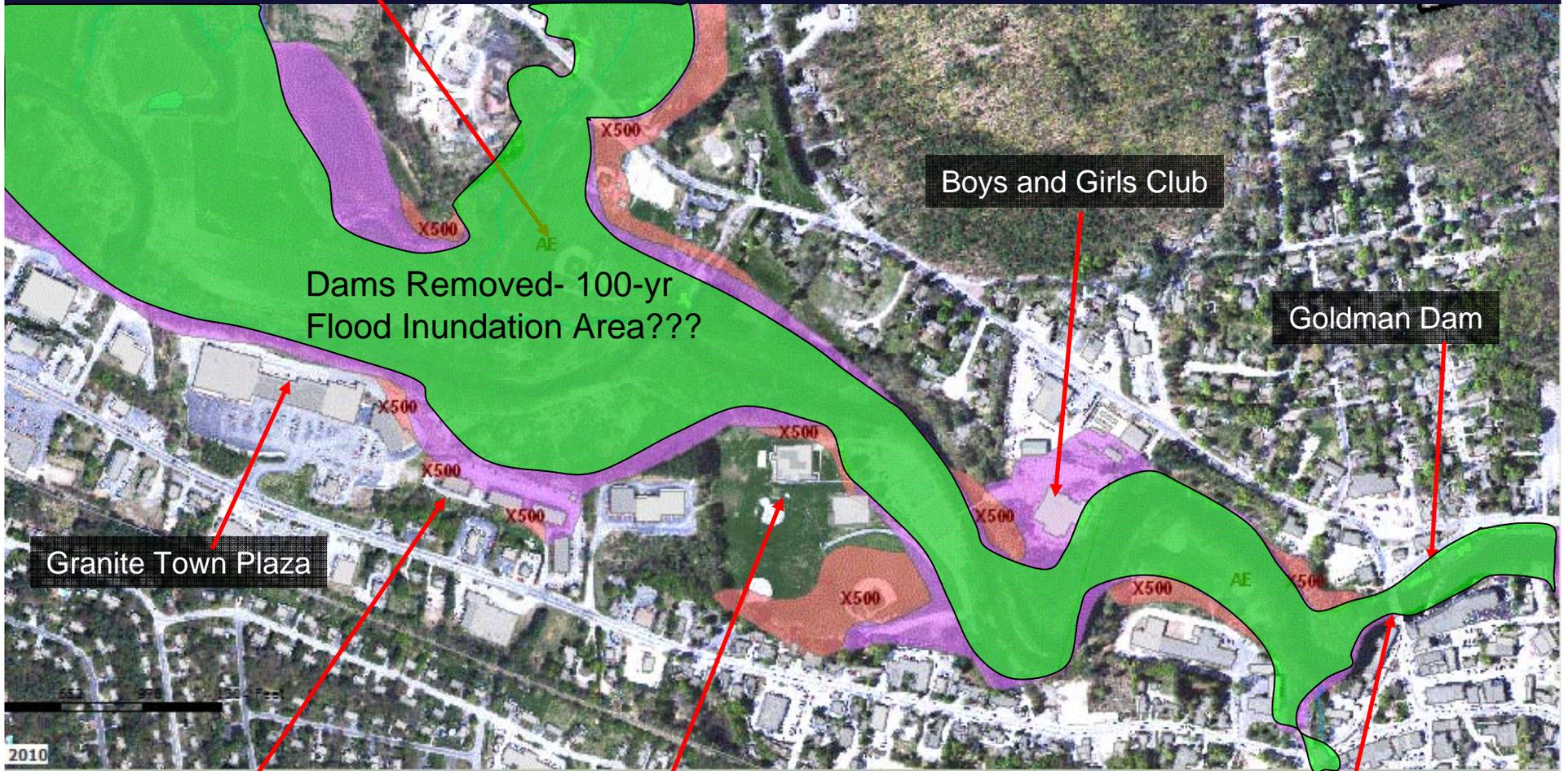
Current 500-yr



Current 100-yr



Post Removal 100-yr?



Dams Removed- 100-yr
Flood Inundation Area???

Boys and Girls Club

Goldman Dam

Granite Town Plaza

2010

Coordinate System: [NAD 1983 StatePlane New Hampshire FIPS 2800 Feet](#)

Scale: 1" = 662 feet Go

Brookstone Apts

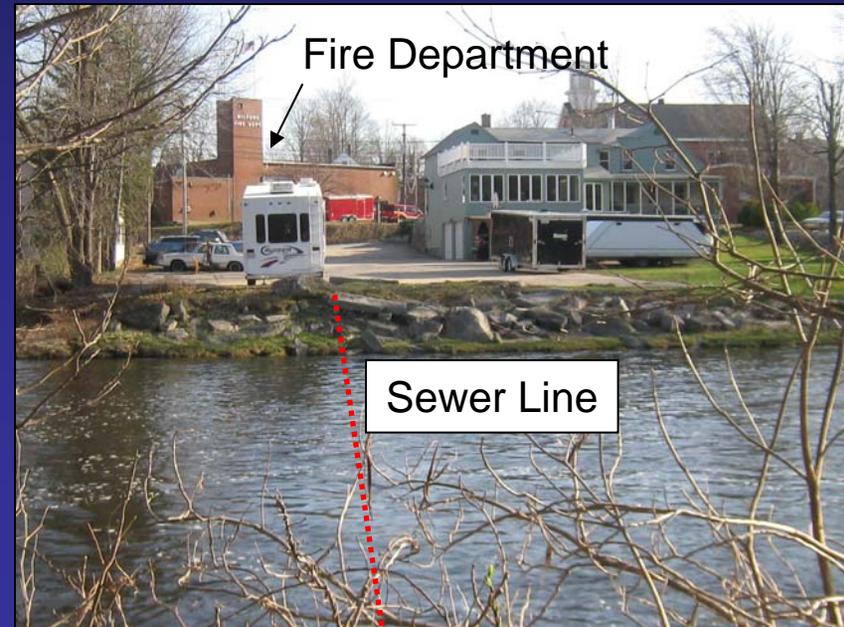
Keyes Memorial Park

Rte 13 Bridge

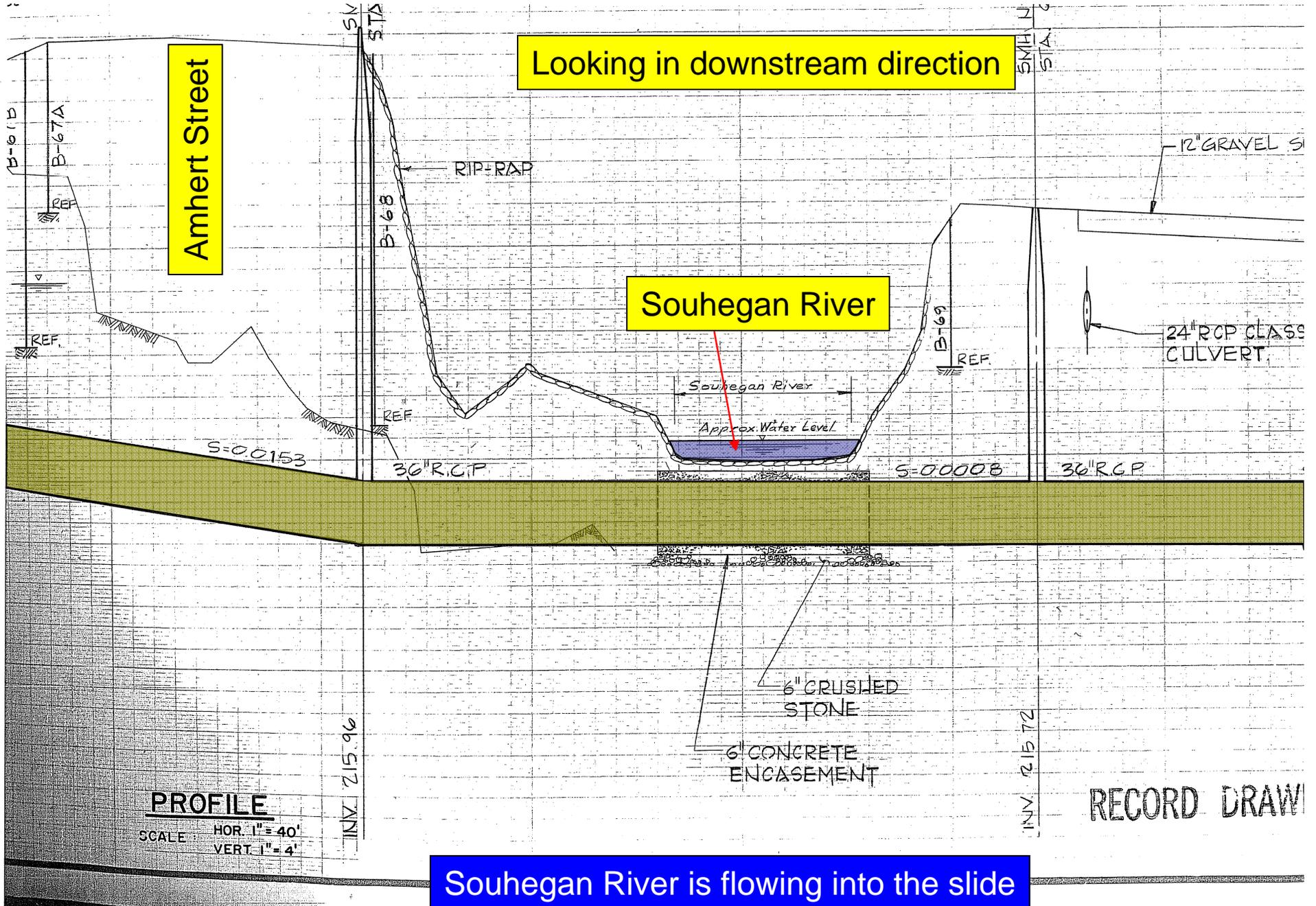
Infrastructure

Evaluate the impact of dam removal on

- sewer line traversing the McLane Dam impoundment.
- Rte 13 Bridge center pier & abutments above Goldman Dam.
- scour analysis will be conducted on both structures.



Sewer Line Profile View



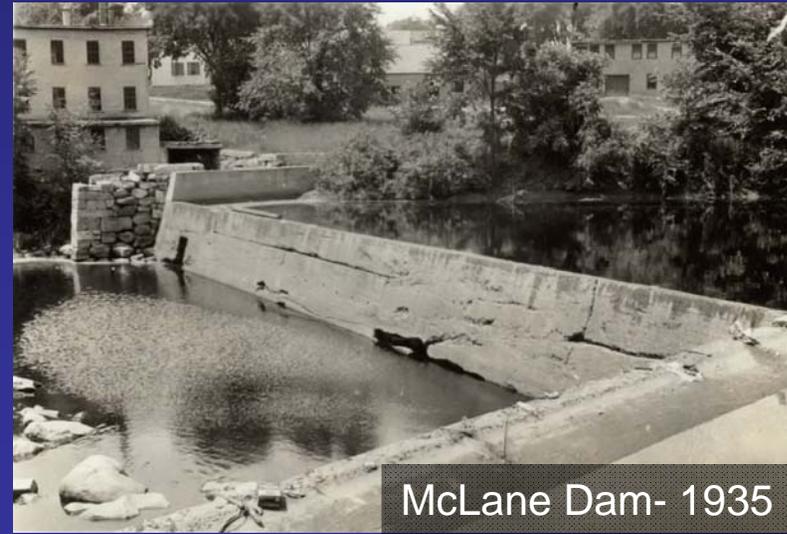
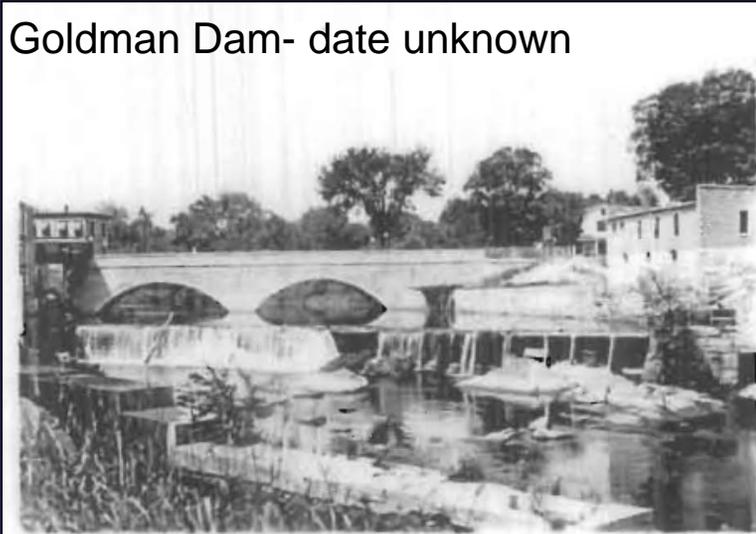
Wetlands, Wildlife, Fisheries

- Wetland Delineation will be conducted
 - Survey flags will be placed along the shoreline to mark wetland boundaries and “top of bank”.
 - During delineation, identify wildlife, and rare, threatened or endangered species.
 - Coordinating with NH Natural Heritage Bureau, NH Fish and Game and US Fish and Wildlife Service.
- Determine if fish passage can occur if dams are removed.
- Evaluate if fish habitat below dams could be impacted by allowing natural sediment transport.

Cultural Resources

- Work to be conducted by Public Archeological Laboratory.
- All work closely coordinated with NH Division of Historic Resources.
- Phase IA Archeological Assessment
 - Evaluate likelihood of archeological resources in project area.
 - Dependent on findings may require Phase IB Assessment- digging test pits.
- Phase I Historic Architectural Assessment
 - Project Area Form
 - Individual Dam Inventory Forms
- NOAA is the lead federal agency relative to Section 106 consultation.

Goldman Dam- date unknown



McLane Dam- 1935

Dam Removal will not....

- Result in drying up the river- the same amount of water will flow downstream.
- Result in increased flooding- the dams do not provide any flood protection; only contribute to flooding.

What's the Project Schedule?

- Overall Project ~ 1 year to complete
- Field Work- Sep and/or Oct 2010
 - Wetland Delineation
 - Upland survey along the shorelines
 - Setting monuments (rebar) near the shoreline between McLane & Goldman Dams
 - Bathymetric and sediment mapping
 - Archeological/Architectural Site Investigation
 - On-water investigation of Rte 13 Bridge
 - Letter being sent to Abutters requesting access to property to complete field work
- Meetings with Granite Square Apts on 8/17/2010 and Milford Mill Apts on 8/24/10
- 2 Additional Public Mtgs at milestone dates
- Feasibility study available to public - summer 2011
- Town will make informed decision on next steps, if any.
- If feasible, engineering plans, permitting and raise funds for removal (not part of this feasibility project).

Who do I contact?

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Questions/Comments

if you have questions or need additional information