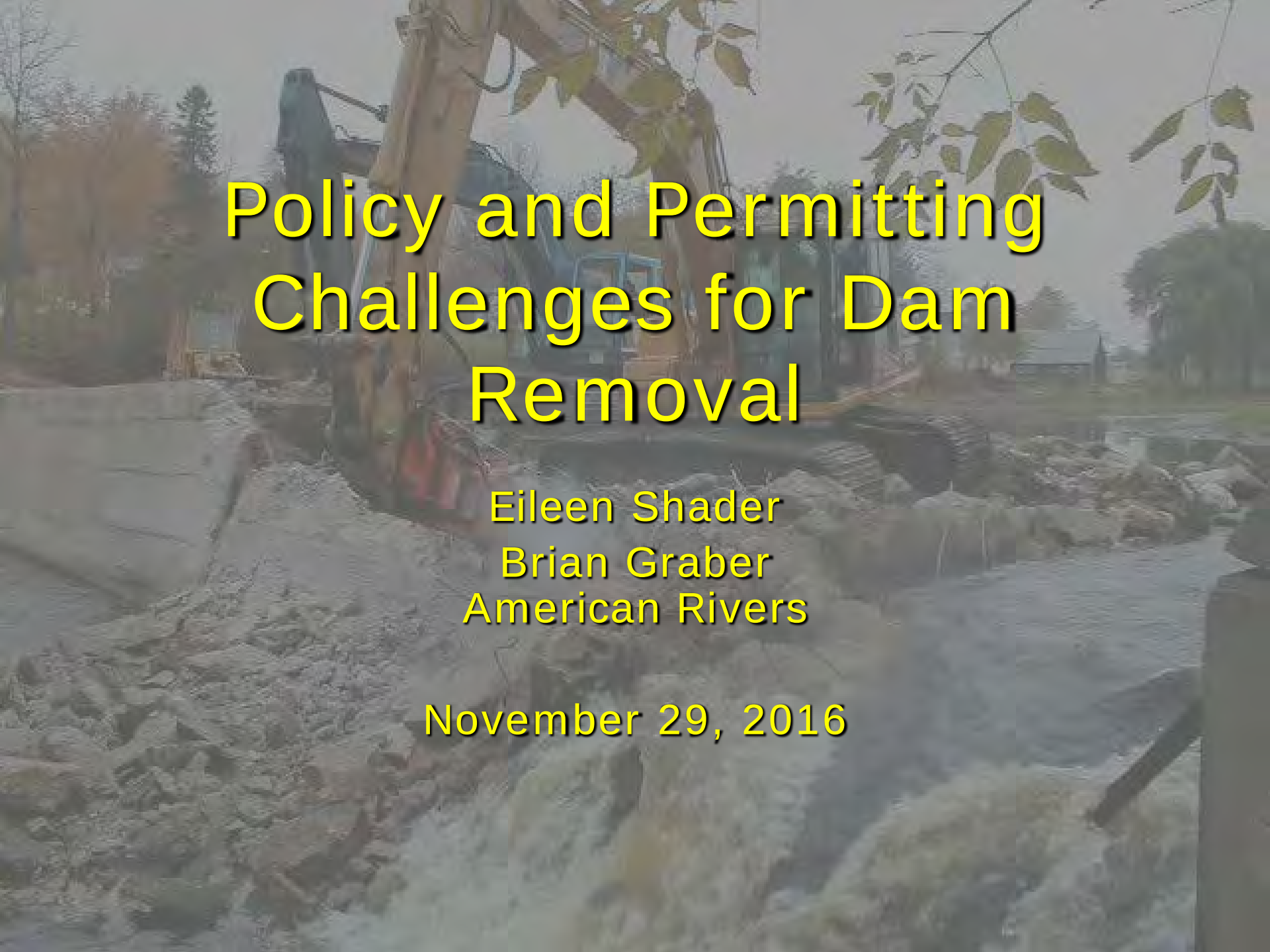


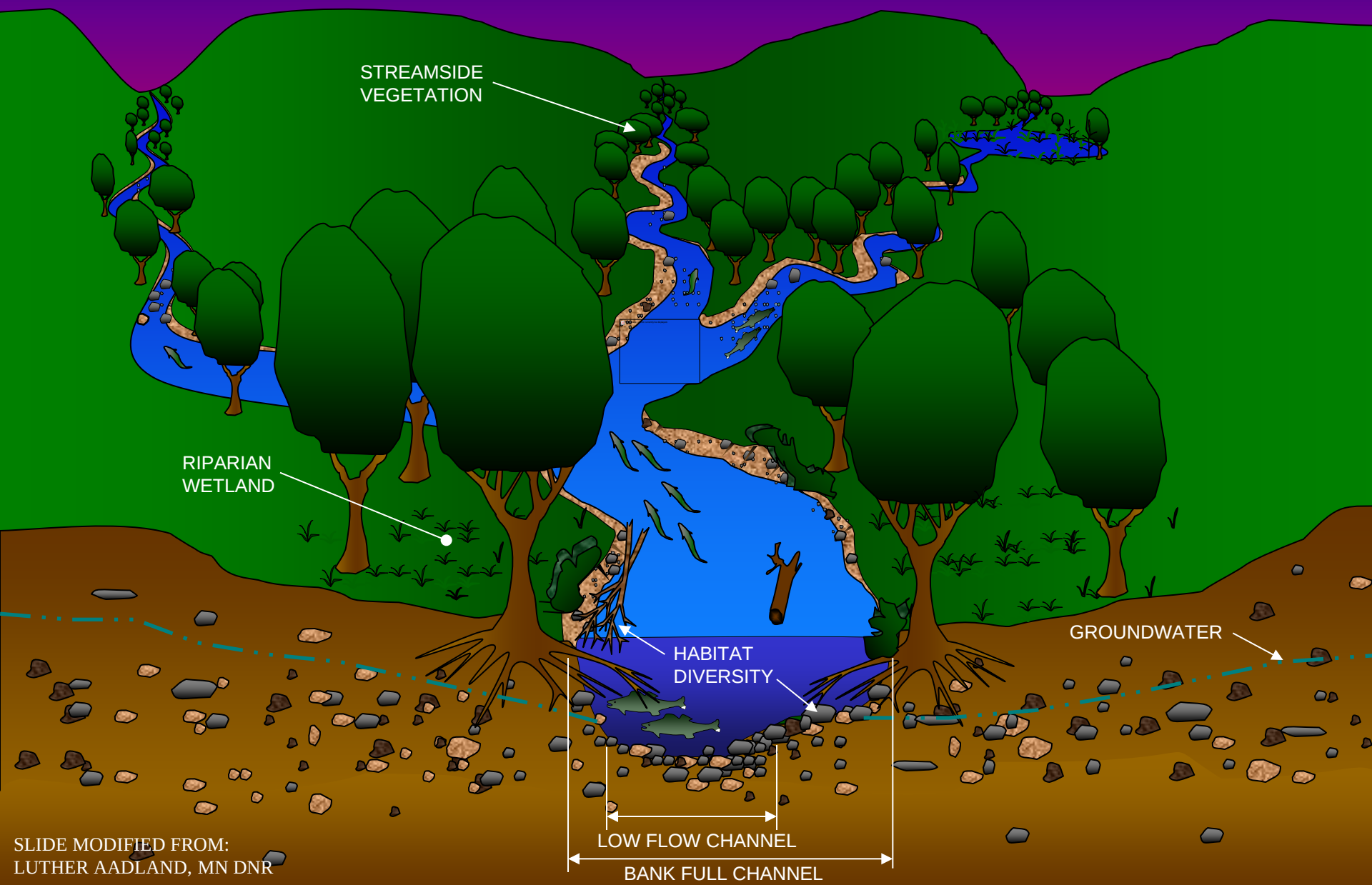
Policy and Permitting Challenges for Dam Removal

Eileen Shader
Brian Graber
American Rivers

November 29, 2016

...and we connect rivers

CRITICAL FEATURES OF A RIVER



SLIDE MODIFIED FROM:
LUTHER AADLAND, MN DNR

The best restoration projects:

- Emulate natural ecosystems
- Yield broad ecological improvements
- Include monitoring
- Limit negative impacts – in both space and time
- Incorporate understanding of external stressors/site constraints
- Address cause of impairment

The best restoration projects:

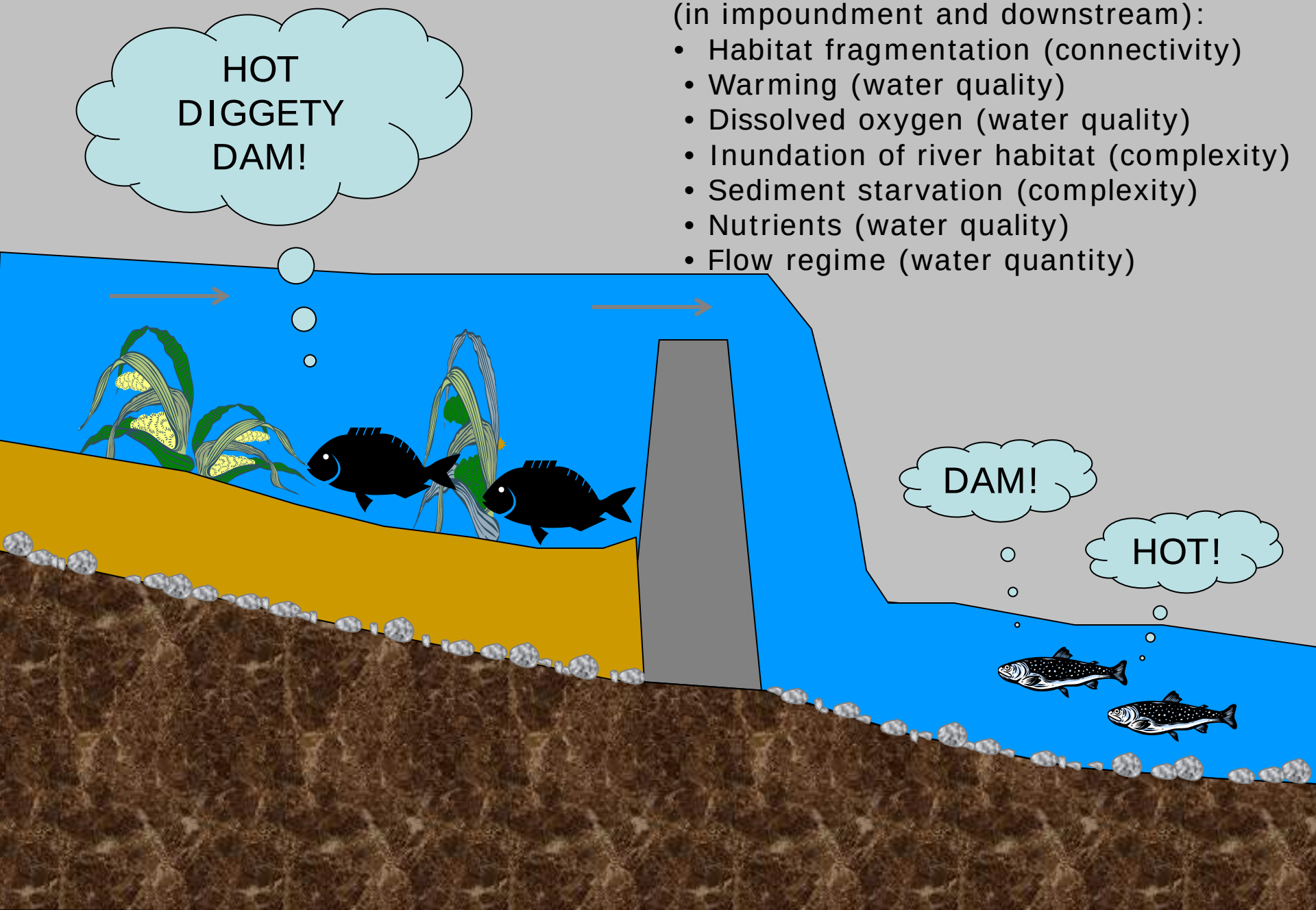
- Are scaled appropriately to make an impact
- Allow river by be dynamic and self-adjust
- Match the surrounding context
- Are long-lasting & sustainable

Projects should be necessary and worth doing

Dams impact every aspect of healthy rivers

(in impoundment and downstream):

- Habitat fragmentation (connectivity)
- Warming (water quality)
- Dissolved oxygen (water quality)
- Inundation of river habitat (complexity)
- Sediment starvation (complexity)
- Nutrients (water quality)
- Flow regime (water quantity)



Dam Removal is functional restoration

- Informed by community & ecosystem perspective
- Outcome is self-sustaining & resilient
- Addresses a major cause of impairment
- Benefits multiple species & life stages
- Promotes “natural” riverine processes

Dam Removal Challenges:

Letters of Map Revision

Sediment Release

Wetland Loss

Issue 1: LOMR

Shuford Dam, Henry Fork River, NC

Image: Erin Singer McComb

Issue 1: LOMR
Shuford Dam, Henry Fork River, NC

- 35 ft tall, 275 ft wide masonry and concrete dam
- Constructed late 1800s
- Purpose: textile mill power
- Benefits of dam removal:
  - Unmaintained dam poses safety risk
  - Improved recreation
  - Restore freshwater mussels and other species

Image: Jeffrey Rich

Issue 1: LOMR
Shuford Dam, Henry Fork River, NC

- LOMR challenge:
  - Dam was not on FIRM panel, thought LOMR wasn't needed
  - When design was almost complete, told that a LOMR was required
  - Would have added $25K in modeling that was not in budget.

Issue 1: LOMR

Shuford Dam, Henry Fork River, NC

Solution: Get political.

County was undergoing remapping

Images: Erin Singer McCombs and Jeffrey Rich

State Senator asked that this stretch of stream be included in remapping

Issue 1: LOMR

- Local political fix is not an option for most projects.
- No dam on the FIRM is a project specific problem.
- Real Issue: Expense associated with completing the modeling and repeated consultations with FEMA to complete LOMRs make it a significant disincentive for projects that lower the flood surface and improve river function.

Issue 1: LOMR

- Potential solutions:
  1. If no NFIP insured structures are affected, project managers should be required to submit a notice to FEMA to ensure that the change is taken into account during the next map revisions.
  2. FEMA should develop protocols or BMPs to simplify LOMR process for restoration projects that reduce flood risk to NFIP insured properties.
  3. Alternatively, as an incentive to lower flood surfaces, dam removals (and other projects that reduce the flood surface) could be waived from producing LOMRs, or could have the LOMR work funded by a grant program.

Example State and Federal Permit Requirements

Federal Permits

Clean Water Act (CWA), Section 404 Permit

Rivers and Harbors Act, Section 10 Permit

National Environmental Policy Act Review

FERC License Surrender or Non-Power License Approval

Consultations

Endangered Species Act, Section 7

Magnuson-Stevens Fishery Conservation and Management Act

National Historic Preservation Act, Section 106

State Certifications

CWA Section 401 Water Quality Certification

Coastal Zone Management Act Certification

Common Challenges in Permitting a Restoration Project: Practitioner Perspective

Multiple Permit Applications

Completing 3,4, and 5 permit applications can confuse the permitting process, leaving many unclear as to what permits are needed. Multiple permits often mean an increase in cost and time.

Lack of Restoration Permit

In some sta
restoration
to file the s
developers
projects file
impacts are
term benef

Federal/State
Coordination

Dam removal projects can often require several permits or approvals from multiple state and federal agencies. Lack of coordination between agencies can lead to delays, increased costs, and even preclude appropriate consideration of the dam removal option.

Permitting Costs

Because restoration projects are often evaluated in the same fashion as development projects, costs to permit a removal can be driven up artificially.

Inflexibility

Rigidity in the regulations may preclude the
rnative techniques
ated to reflect the
t.

Inflexibility

Rigidity in the regulations may preclude the opportunity to explore alternative techniques or may not have been updated to reflect the change in scientific thought.

Issue 2: Sediment Release

Sediment can be harmful or beneficial

Issue 2: Sediment Release

- In order for the USACE to issue a Section 404 permit, the state must grant or waive a water quality certification pursuant to Section 401 of the CWA, 33 U.S.C. 1341.
- Regulators fear short-term impacts at expense of long-term benefits

Consider long-term benefits vs. short-term impacts

Some *short-term* impacts occur during construction

Sediment movement

Construction access

Habitat change

There are 3 potential long-term impacts if not managed well

Contaminants

T & E species

Infrastructure

Assess the quantity, particle sizes, quality, and potential mobility of impounded sediment

NH Barrier Removal Sediment Assessment & Management Protocol Flow Chart

Assumptions:

- **Anthropogenic barrier removal is beneficial to river health.**
- **The total volume of potentially mobile impounded sediment is critical to the sediment management process. As such, the level of sediment contaminant testing should be commensurate with the volume of potentially mobile impounded sediment.**
- **Projects with sm… mobile impounde… due diligence iss… proceed with no…**
- **Sediment assess… protocols should… on a case-by-cas… sediment assess… protocol should… sediment volume or contamination thresholds are exceeded.**
- **Natural erosion of the potentially mobile impounded sediment should be the preferred sediment management alternative unless conditions/factors dictate otherwise.**

Conduct due diligence review #1

Determine quantity of impounded sediment #2

Determine potential mobility of impounded sediment #3

…tentially #4

Natural erosion of the potentially mobile impounded sediment should be the preferred sediment management alternative unless conditions/factors dictate otherwise

Assess whether mobile portion of sediment is likely to "cause problems" downstream or upstream #5

Does due diligence review suggest contaminant or other issues? #6

Yes

No

Is mobile portion of impounded sediment likely to "cause problems" downstream or upstream? #7

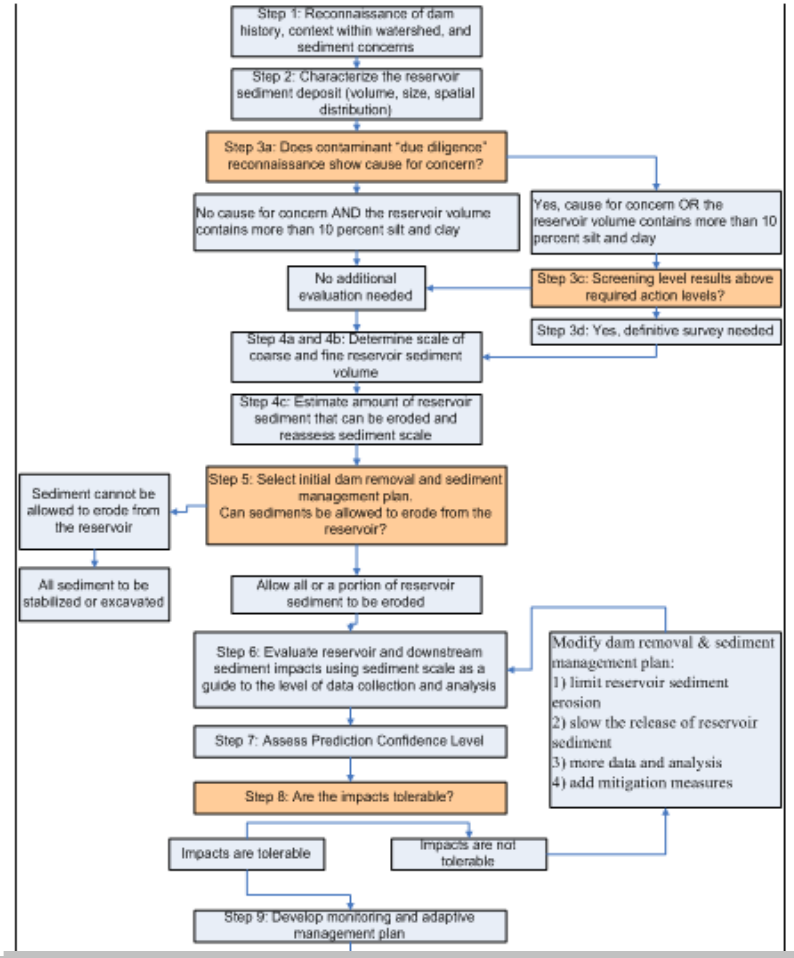
Yes

No

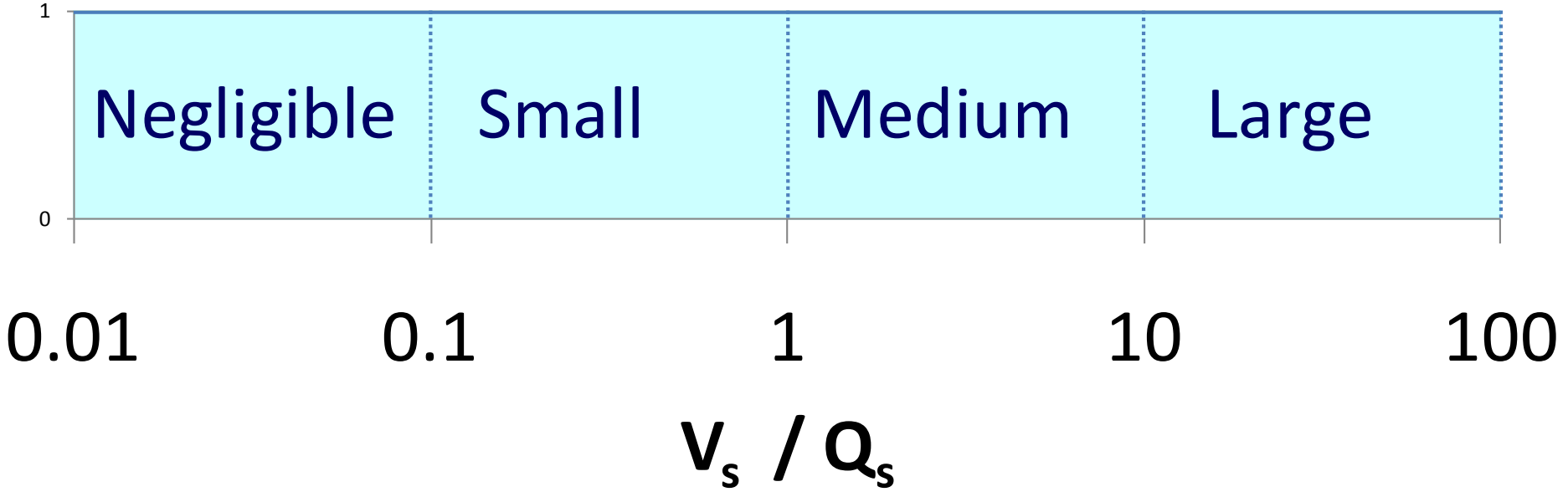
No contaminant testing or sediment management required #8

Last Updated July 14, 2011

National Subcommittee on Sedimentation Protocols



Reservoir Sediment Volume (V_s) Relative to the Average Annual Sediment Load (Q_s)



Scale analysis and management to sediment volume

Proposed Dam Removal Nationwide Permit

USACE proposed new nationwide permit for removal of low-head dams.

- Assume that “low-head dams are likely to be storing little sediment laden with contaminants.”

AR recommendations:

- Some “due diligence” is necessary to determine if there is significant risk of contaminants
- Where due diligence reveals potential for greater environmental risk, defer contaminant management to 401 Water Quality Certificate

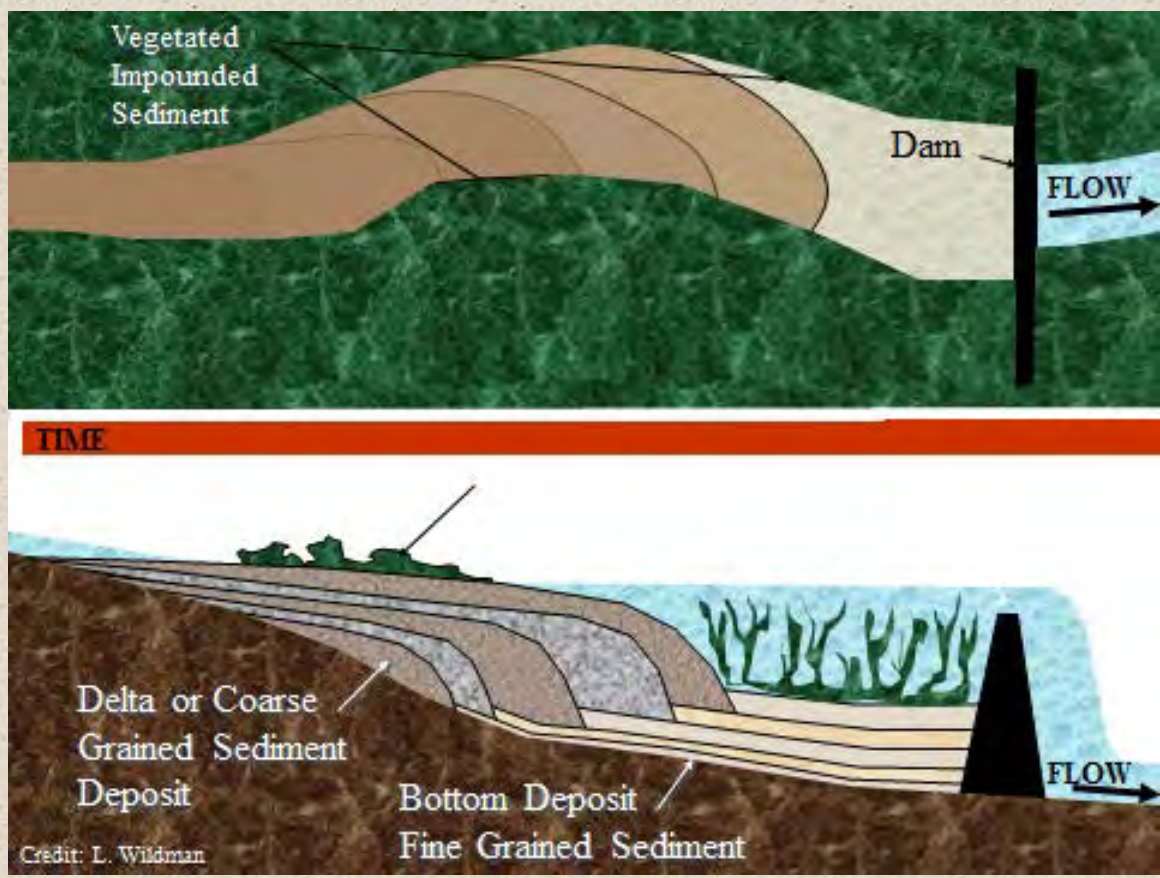
Issue 2: Sediment Release

- Potential solutions:
  1. BuRec should complete their sediment assessment and management protocols document and it should be adopted by regulators to provide clarity on proper sediment analysis. The protocols clarify how to determine an acceptable sediment release based on the carrying capacity of the river.

  2. USACE and EPA should develop guidance on contaminated sediment. Guidance should address analysis techniques necessary to assess contaminants, and describe appropriate management approaches (e.g., clarify whether it is acceptable to release contaminated sediment if downstream sediments are already contaminated.)

Issue 3: Loss of Wetlands

- Wetlands can form in impoundments behind dams.
- When dams are removed these wetlands can be impacted.
- Causes conflict with “No Net Loss of Wetlands” policy



Issue 3: Loss of Wetlands

- Impoundment wetlands are often poor quality:
  - Low Dissolved Oxygen
  - High nutrient
  - Algae blooms
- Wetlands formed after dam removal may be lower acreage, but higher quality
- Mitigation is sometimes required to replace lost acreage

Wetlands

VI. Weighing the Benefits and Impacts of Dam Removal

Because dam removal projects may be (and have been) considered as limited projects under 310 CMR 10.53(4), traditional mitigation requirements are discretionary. Due to the nature of these projects, the purpose of which is to improve the natural capacity of a resource area, the mitigation benefits include the general restoration of wetland resources and, specifically, the riverine ecosystem. During project review, applicants should document the benefits and impacts associated with dam removal. In doing so, the long-term benefits of a dam removal project are likely to outweigh the short-term impacts and the distinction should be addressed in

What Has Worked: Practitioner Perspective

Mechanism/Restoration Lens

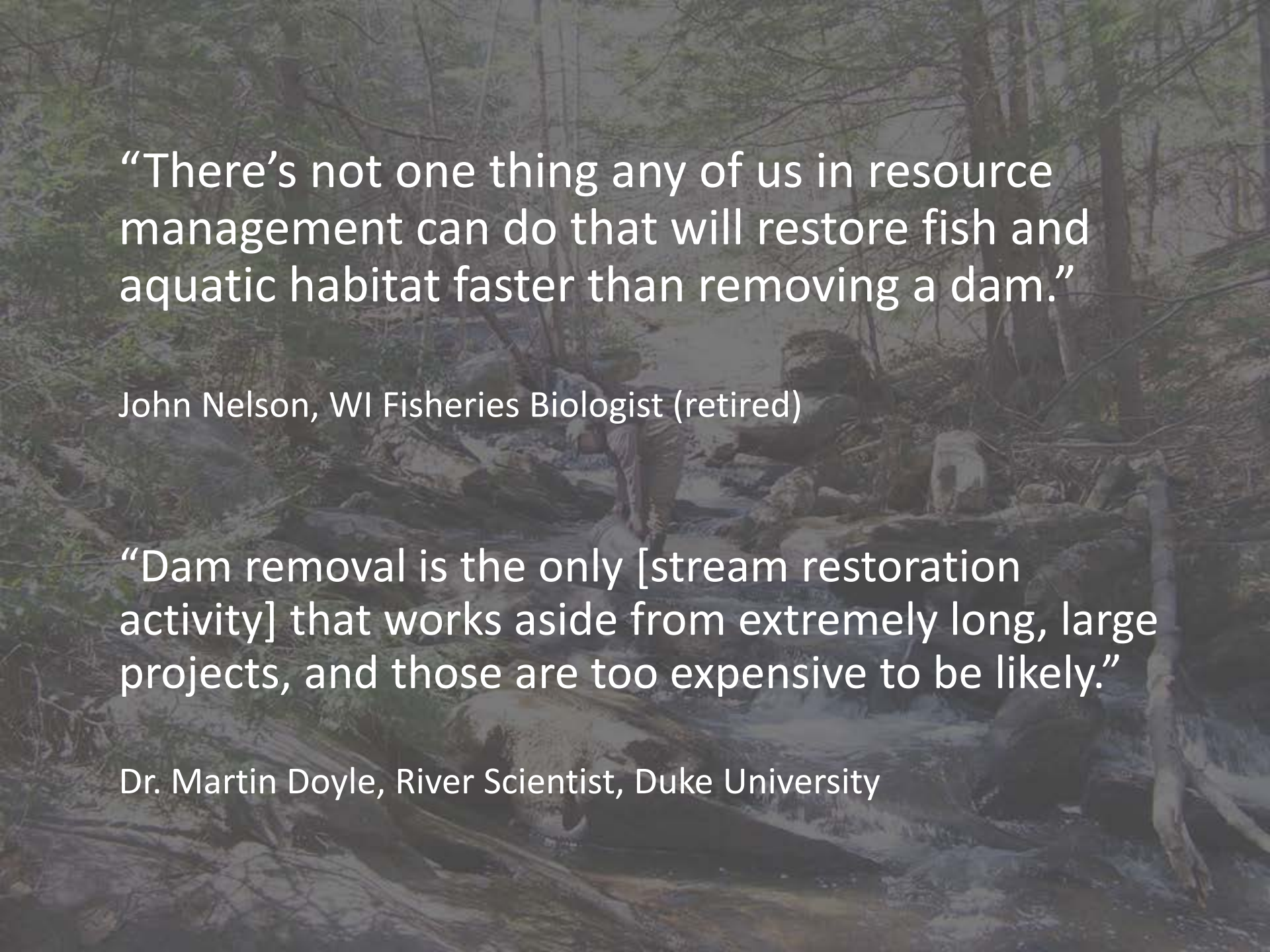
- Programmatic General Permits
- Exemptions or Waivers
- Permit Attachments

Federal/State and State Interagency Coordination

- Guidance Documents
- Standardized Coordination
- Single POC

Issue 3: Loss of Wetlands

- Potential solutions:
  1. USACE should develop clarifying guidance that stipulates that while dam removal may result in decrease of wetland quantity, it results in high value wetland and riverine ecosystems and therefore is a permittable activity. A new nationwide permit stipulates this for some projects, but USACE regions can decline to use the nationwide permit.
  2. USACE should clarify that dam removals are self-mitigating projects



"There's not one thing any of us in resource management can do that will restore fish and aquatic habitat faster than removing a dam."

John Nelson, WI Fisheries Biologist (retired)

"Dam removal is the only [stream restoration activity] that works aside from extremely long, large projects, and those are too expensive to be likely."

Dr. Martin Doyle, River Scientist, Duke University