## **Dam Removal:** "is not just about dam removal"



Geoffrey M. Goll, P.E. ggoll@princetonhydro.com Mobile: 609-915-9425





SCIENCE ENGINEERING DESIGN



"Removing dams, weirs and culverts is hugely beneficial to riverdwelling species and the environment as a whole – but there may be risks in a densely populated, flood-prone country."

Sarah Wild, Reporter for The Guardian, April 7, 2024

#### Rivers

### 'Working with the landscape is a more sensible way of managing our rivers': should we dismantle the UK's dams?

Removing dams, weirs and culverts is hugely beneficial to river-dwelling species and the environment as a whole - but there may be risks in a densely populated, flood-prone country

#### Sarah Wild

Sun 7 Apr 2024 06.00 EDT



.....But letting a river choose its own path is a risky business, especially in flood-ravaged parts of England."



https://amp-theguardiancom.cdn.ampproject.org/c/s/amp.theguardian.com/environment/2024/apr/07/removin g-barriers-dams-rivers-run-free-britain-waterways

## ....versus CONTENT

We can't keep building giant concrete walls and structures in our rivers to control the water – that's impossible. A significant reason [the UK is falling behind the Hannah Cloke, University of Reading. rest of Europe, particularly England is that it is

much more densely populated. "It is much easier

to restore rivers when few people live around,"

All the scientists the Observer contacted agreed that it is possible to predict the outcomes of taking away a culvert or weir. - Wild

"Should we be building on floodplains? No. Should we be polluting our rivers? No. Those are the giant questions that need careful thinking from government," - Cloke "Money is the obvious [obstacle]," to barrier removals, but communities and anglers are often vocal opponents. Dr Perikles Karageorgopoulos, England Environmental Agency



## Five Stages of Grief (of dam removal opposition)

**Environment, Energy and Transportation** 

Published June 18, 2023 at 8:25 AM PDT

brace for dam removal

Jefferson Public Radio | By Juliet Grable, Erik Neumann

### 1. DENIAL

2. ANGER

3. BARGAINING

4. DEPRESSION

## 5. ACCEPTANCE



**Paradise lost? Copco Lake residents** 

Danny Fontaine and Francis Gill live in the Copco Lake community and recently purchased the Copco Lake store. They worry about the dramatic change that dam removal will bring to their community.



PRINCETONHYDRO.COM

in 🖂

# Cultural and Community

### Historic resources

Archeological resources Local connection to community

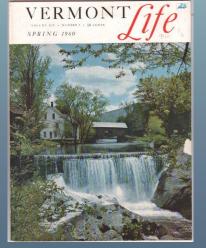
Recreation Energy security Resist change Politics



WARREN DAM (2006) Painting by Candy Barr



Burlington Free Press, Jan. 2015



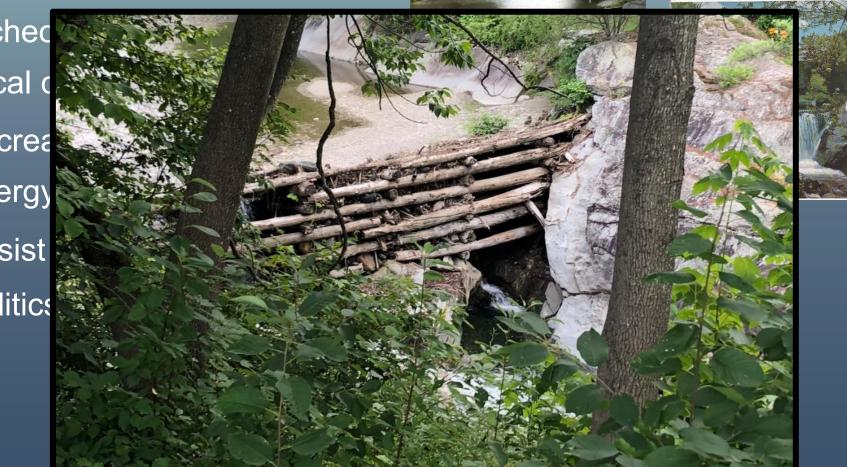




# Cultural and Community

### Historic resources

Archec Local Recrea Energy Resist Politics



Painting by Candy Barr

SCIENCE **ENGINEERING** DESIGN

Geoff Goll, 2019

VERMONT SPRING 1960

"You can please some of the people all of the time, you can please all of the people some of the time, but you can't please all of the people all of the time".

**John Lydgate** (c. 1370 – c. 1451)



"You can please some of the people all of the time, you can please all of the people some of the time, but you can't please all of the people all of the time".

John Lydgate (c. 1370 – c. 1451)

"Empty vessels make the most sound."

"Non-native, invasive fish will take over" "My well will dry up." "The river will dry up" "The river will dry up" "This dam is important to the history of the town." "My property values will drop" "I will not be able to walk right up to the water. "It's been there forever" "It will look terrible afterward!" "You're gonna kill the fishing" "Why would you want to take away the centerpiece of our community?" "It's a government conspiracy" "The exposed lakebed will be a mud pit and stink!" "How will we fish?" "The 'waterfall' sound will disappear" "The striped bass will eat all of the trout" "The pond is owned by the public" "Who is paying for this?" "The pond is owned by the public" "We are concerned about contaminated sediment" SCIENCE FNGINFFRING "There's drums of toxic chemicals under there" DESIGN PRINCETONHYDRO.COM "We are going to flood out downstream!"

## COMMUNICATION, COMMUNICATION, COMMUNICATION

- Understand the community and their values.
- Take the time and answer all the question, regardless of what you believe which are valid.
- Public meetings either at the local governing office or other accommodating large space. Can be webinar, but preferably in-person.
- Consistent and available methods to keep stakeholders apprised, including email blast updates, social media site, webpage updates.
- Keep on alert for misinformation and correct as soon as possible, depending on the response need.



SCIENCE

DESIGN

**ENGINEERING** 



## FINESVILLE DAM REMOVAL MUSCONETCONG RIVER, NJ

- Community Resistance due to being central component of community
- Issues that gained "acceptance":
  - Prior drownings and near drownings
  - Owner's liability
  - Available funds

DESIGN



## VICTIM OF DROWNING AT FINESVILLE DAM IDENTIFIED



### COLUMBIA LAKE DAM REMOVAL PAULINS KILL, NJ

- Community Resistance due "lake" recreational fishing and wildlife watching
- Issues to gain "acceptance" were:
  - Hydroelectric was not profitable
  - Costs to maintain the dam in compliance with regulations
  - Provision of fishing access
  - Available grant funds







The Nature Conservancy







## **GIFFORD MILL DAM REMOVAL TUCKERTON, NJ**

Owned by local school district, neighbors not owning dam wanted waterfront property Issues to gain "acceptance" were:

- Costs to maintain the dam and maintain regulatory compliance
- Available grant money for removal/bog restoration/public access
- Opportunity for science programs at the school district







SCIENCE ENGINEERING

DESIGN

Establish an outdoor Living Laboratory for

EDUCATION

local students.

FLOODING Mitigate stormwater runoff and flooding.

WATER QUALITY Reduce sediment and nutrient loading downstream.

#### Ashley N. Stoop, Rutgers University



## DARBY CREEK DAM REMOVALS DELAWARE COUNTY, PA



Four blockages owned by various governmental entities: ALL WERE FOR REMOVAL

- Costs to maintain the dams and maintain regulatory compliance
- Available natural resources damages monies.
- Flood mitigation
- Key infrastructure protection









Athos I Oil Spill in the Delaware River



## BUSHKILL CREEK DAM REMOVALS Easton, PA



Four blockages on a high-quality trout stream and direct tributary to the Delaware River

- Costs to maintain the dams and maintain regulatory compliance
- Dams failing and in need of significant repairs/upgrades
- Flood mitigation
- Key infrastructure protection
- Enhanced trophy trout fishing opportunities



SCIENCE

DESIGN

**ENGINEERING** 









## With dams gone American shad return to Musconetcong River

Dan Radel, @DanielRadelAPP

Published 12:29 p.m. ET June 20, 2017 | Updated 8:52 a.m. ET June 21, 2017

#### () 🗙 🖬 🏓

Fishermen casting for trout made a huge discovery on the Muscontcong River in early June.

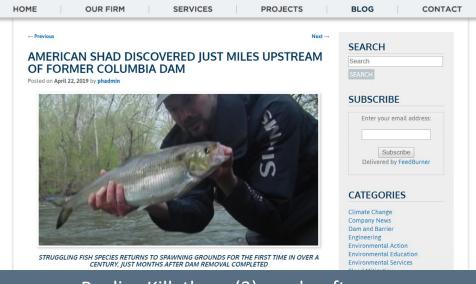
While working the river's banks they found small schools of American shad swimming above the site of the former Hughesville Dam in Warren County.

Their report was quickly followed up by biologists from New Jersey's Bureau of Freshwater Fisheries who captured shad at the base of the Warren Glen Dam in Holland Township.

Wildlife officials noted that this is the first time in at least a 100 years that American shad have returned to the Musconetcong River in Hunterdon and Warren counties.

Musconetcong River, next migratory season after dam removal, 2017

### **PRINCETON HYDRO**



Paulins Kill, three (3) weeks after removal of the dam structure



"I would love to live like a river flows, carried by the surprise of its own unfolding."

- John O'Donohue Irish poet, author, priest, environmental activist



# Thank you!