

Deep River Dam Feasibility Study

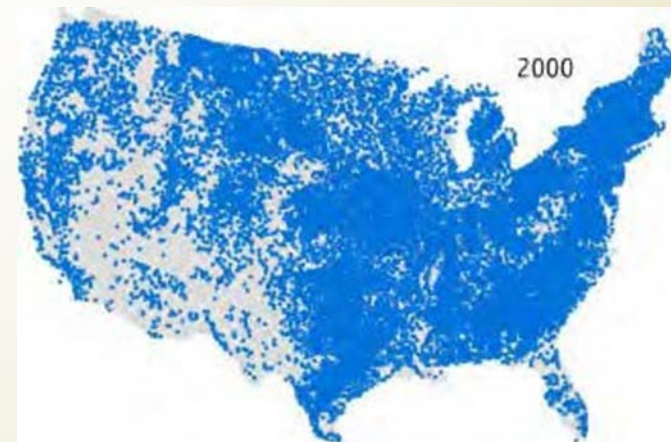
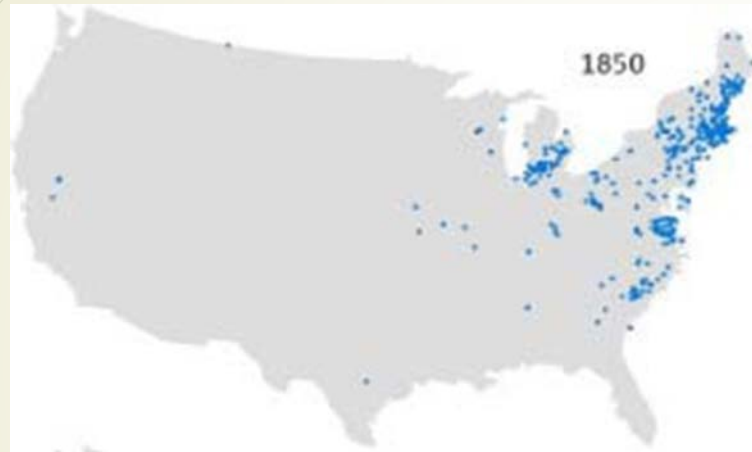


Dams: History and Purpose

- ▶ Power
- ▶ Flood control
- ▶ Water supply
- ▶ Recreation



Rapid Dam Construction





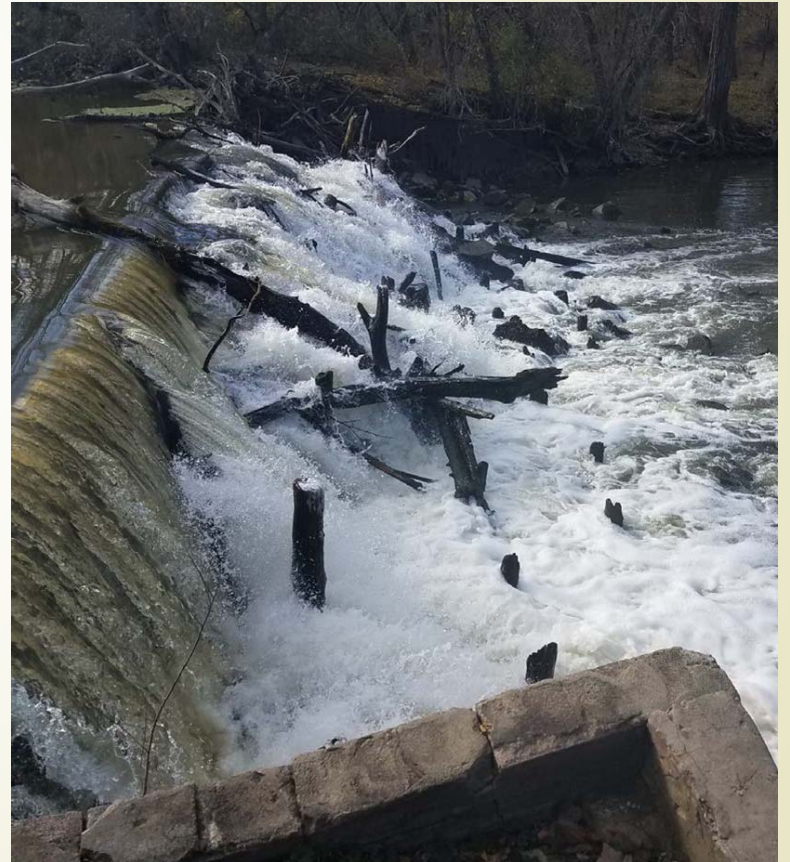
Project History



- ▶ Inspection reports (1967-present) highlighting structural deterioration and poor maintenance
- ▶ September 2008 flood event
- ▶ Habitat restoration stakeholder meeting held at Deep River Outdoor Education Center (2009)
- ▶ US Army Corps of Engineers "Deep River Riparian Restoration" federal interest determination (2013)
- ▶ Deep River Flood Risk Management Plan (2015)
- ▶ Deep River-Portage Burns Waterway Watershed Management Plan (2016)
- ▶ Grant funding secured for engineering feasibility study (2016)

Background Information

- ▶ Built in 1930's by US Army Corps of Engineers
- ▶ Sheet pile and rock filled wooded crib
- ▶ Height ~ 14 feet
- ▶ Width ~ 100 feet
- ▶ Backwater ~ 6.5 miles
- ▶ Sediment ~ 790,000 – 1,000,000 cubic yards



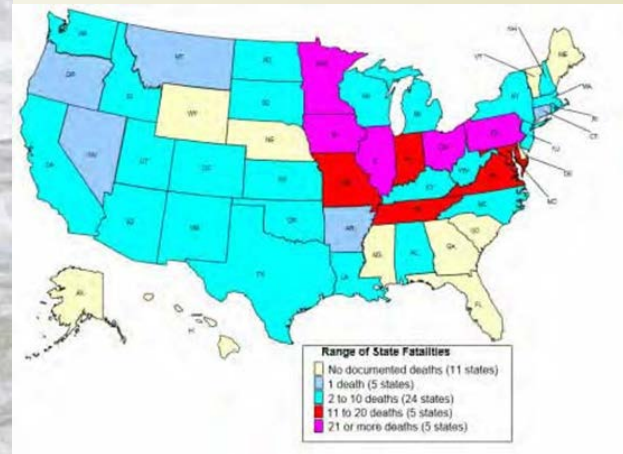
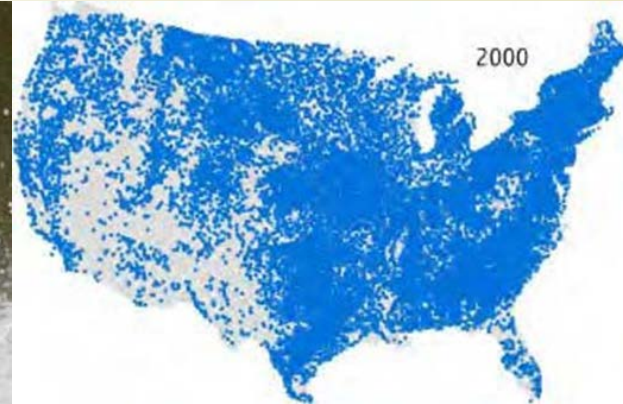
Backwaters



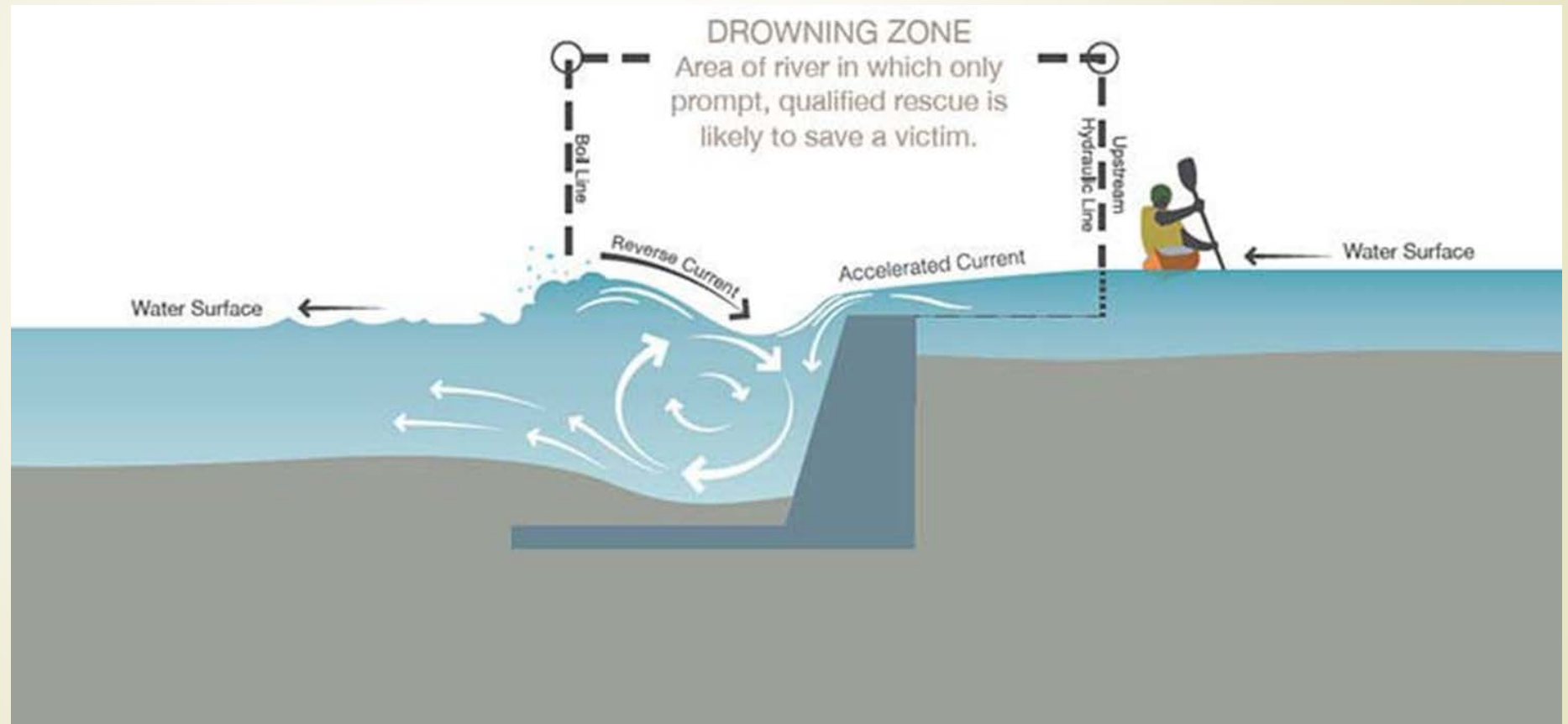


Reasons for Modification or Removal

Safety



Safety



Improved Recreational Opportunities



Increased Biodiversity





Regulatory Agency Early Coordination

Agencies

- ▶ US Army Corps of Engineers
- ▶ Department of Natural Resources
- ▶ US Fish & Wildlife Service
- ▶ Department of Environmental Management

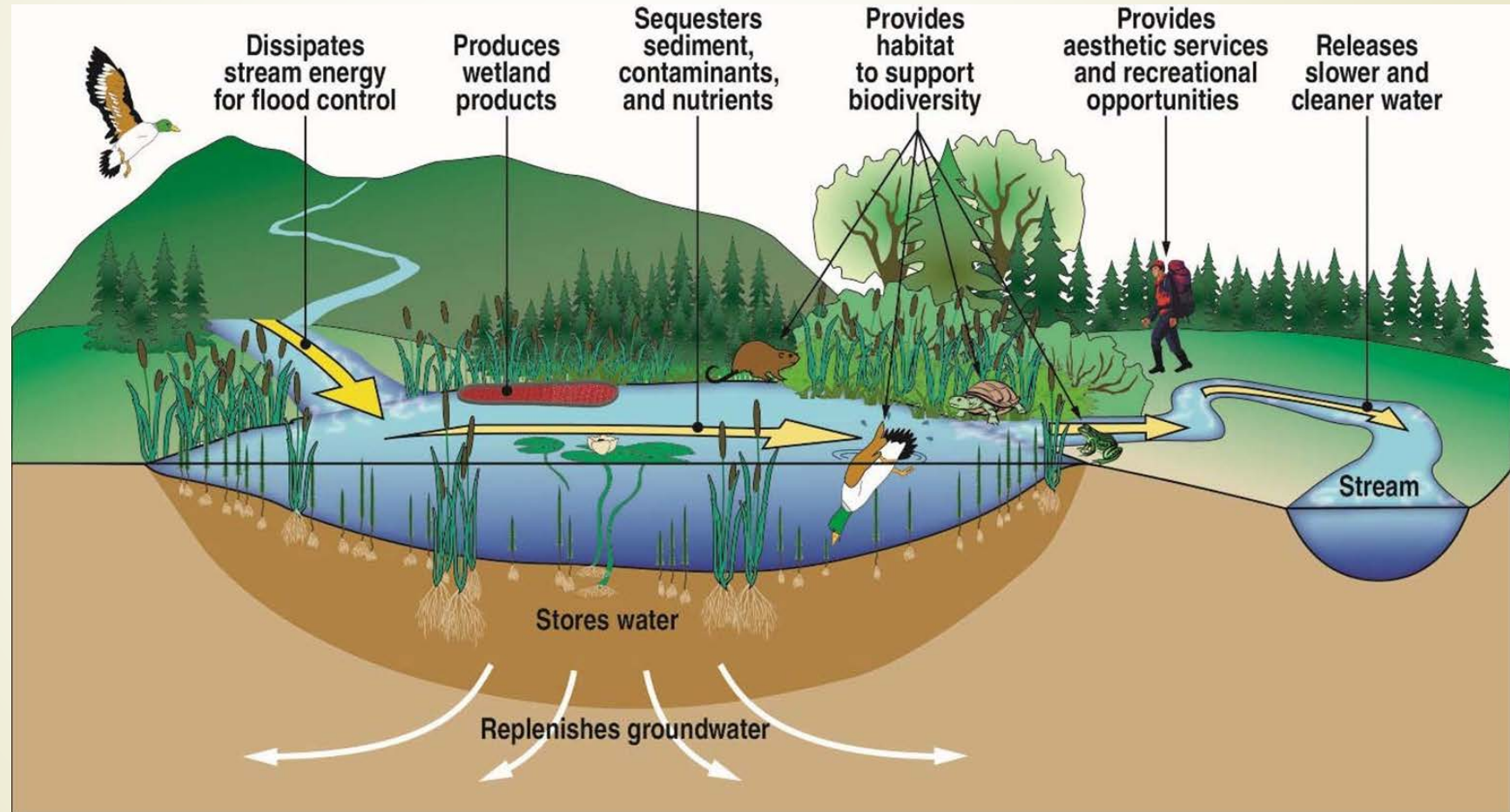
Comments

- ▶ Public input extremely important
- ▶ Will it allow fish passage?
- ▶ What will it look like?
- ▶ Will it improve water quality?
- ▶ Will there be riparian tree impacts?

Existing Riparian Wetlands



Wetland Benefits



Public Concerns

- ▶ Change to existing pool height
- ▶ Impact to existing fishery and wildlife
- ▶ Impact on flooding
- ▶ Cost
- ▶ Safety
- ▶ Navigability



Option 1: No Action

Pros

- No money spent



Cons

- Continued deterioration of dam
- Potential for large sediment release
- Forced into emergency restoration
- Compliance issues

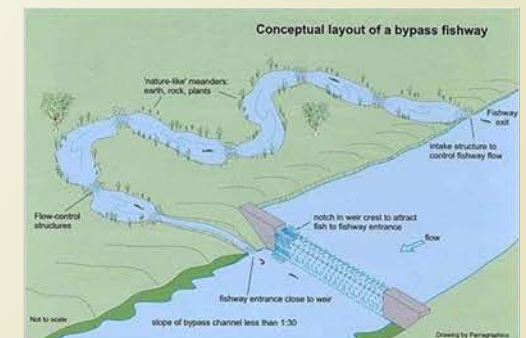
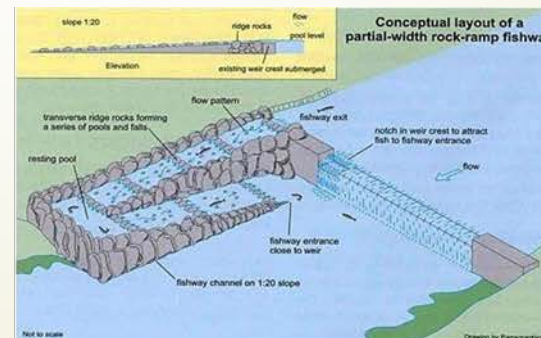
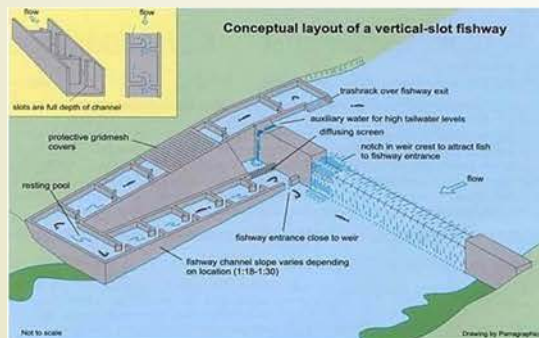
Option 2: Fish Ladder

Pros

- Increased fish passage for certain species
- Relatively cheap option

Cons

- No boat passage
- Upstream access for sea lamprey
- Continued deterioration of dam



Option 2: Fish Ladder





Option 3: Dam Removal

Pros

- Increased fish passage
- Restoration of riparian corridor
- Increased river health

Cons

- Most expensive option
- Upstream access for sea lamprey
- Elimination of community culture/identity

Option 3: Dam Removal



OPTION 3: DAM REMOVAL



Option 4: Constructed Riffle

Pros

- Provide structural support for dam
- Improved recreational passage
- Increased fish passage
- Relatively cheap option

Cons

- No passage for power boats
- Upstream access for sea lamprey

Option 4: Dam Removal



Preliminary Cost Estimates

ITEM	DESCRIPTION	LOW END COST	HIGH END COST
1	ENGINEERING / PERMITTING	\$ 30,000.00	\$ 50,000.00
2	RIFFLE CONSTRUCTION	\$ 975,000.00	\$ 1,130,000.00
3	BANK RESTORATION/REVEGETATION	\$ 25,000.00	\$ 40,000.00
4	MONITORING	\$ 10,000.00	\$ 20,000.00
5	CONTINGENCY (20%)	\$ 208,000.00	\$ 248,000.00
	ESTIMATED TOTAL	\$ 1,248,000.00	\$ 1,488,000.00

Special Thank You

- ▶ DNR Lake & River Enhancement Program
- ▶ DNR Lake Michigan Coastal Program
- ▶ Community Members
- ▶ Flatland Resources





Questions?

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