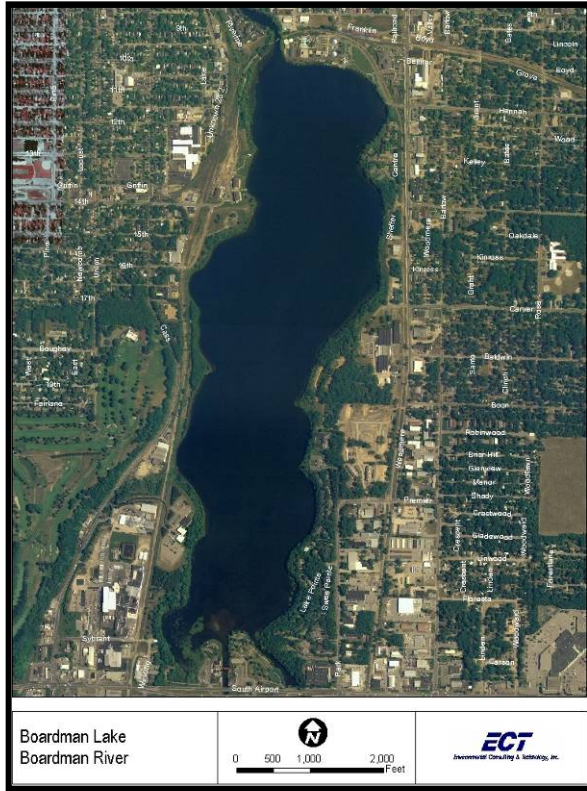


DRAFT - BOARDMAN RIVER FEASIBILITY STUDY

Alternative 41 - Modify Union Street, Sabin, Boardman Pond, and Brown Bridge Dams

September 10, 2008



Alternative 41 - Modify Union Street, Sabin, Boardman, and Brown Bridge Pond Dams

Introduction

This fact sheet is a summary of a detailed analysis of the alternative described below. The alternative was selected for detailed analysis along with five (5) other alternatives by the Boardman River Dams Committee. The following information is provided as a summary of the analysis of the alternative. Information on the existing conditions and impacts of this alternative can be obtained by reviewing the complete report on the website. You may notice that the description of the analysis of the alternative sometimes includes at the end of certain sentences an alphanumeric code in parentheses. This code refers to the list of questions that was included in the Request for Proposals.

Description

This option will consist of modifying all of the dams by adding fish ladders and fish passageways at all of the dams, improving the spillway at Boardman Dam, and constructing a bottom draw structure at Brown Bridge Dam. The DNR weir operation on the Boardman River would be maintained. The fish ladder at Union Street would be replaced with a passage way that would maintain the current Boardman Lake level, but would allow the passage of fish from the Great Lakes into the Boardman River and vice versa. Sabin Dam would be maintained, but a fish passageway would be installed to allow fish passage at the dam. Boardman Dam would be retained and the penstocks altered to meet the requirements of the MDEQ. A fish passage structure would be installed to allow fish to pass at the dam. The Brown Bridge Dam would be modified to allow fish passage at the dam and a bottom draw system will be installed to potentially mitigate the impact of warm water discharge from the impoundment on downstream coldwater habitat.

Impacts of Modifying Union Street, Sabin, Boardman, and Brown Bridge Dams

ENVIRONMENTAL:

Fish and Wildlife Populations

- Fish and wildlife, including but not limited to eagles, swans, nesting ducks, shorebirds, insects, ruffed grouse, hex hatches, cold and warm water fish, fur bearing mammals, and deer, will be impacted in different ways depending on the habitat requirements of the species. (A2) Wildlife species living in or dependent upon lake-like conditions will not be impacted, but wildlife populations that prefer riverine, flowing-water habitat, or that will benefit from the reconnection of riverine habitats by removal of an impoundment not gain from this alternative.
- Reptiles and amphibians: Habitat for reptiles and amphibians will not be significantly impacted. Habitat for wood turtles will not increase due to maintaining the impoundments. The leopard frog population at Brown Bridge pond will likely not change although the reduction in water levels that occurred fall 2007, if continued, may affect their habitat and ultimately their population.
- Birds: Nesting loons and trumpeter swans will not be adversely impacted by this alternative.
- Wildlife populations may be exposed to additional concentrations of contaminants from Great Lakes fish that are allowed to access the Boardman River.

- Migratory fish passage will be managed at the weir and Union Street Dam and certain species of fish will be allowed access to the Boardman River. (A13 A16 and D15)
- The adverse environmental impact to cold-water fisheries of the Brown Bridge Dam may be mitigated (B3).
- Salmon and steelhead spawning will occur in the Boardman River.
- A cold water fishery will not develop in the area of the existing Sabin Pond, Boardman Pond and Brown Bridge Pond. The cold water fish populations in the remaining portion of the Boardman River will not be significantly impacted, except for the segment of Boardman River below the Brown Bridge Dam. (A18 and C20)
- The warm water fish population in Sabin, Boardman, and Brown Bridge ponds will not be adversely impacted but the species composition will change as a result of Great Lakes fish accessing the impoundments.
- Control of invasive aquatic species will be maintained by the weir and dam at Union St. and the threat of invasive aquatic species entering the Boardman River will not be significantly impacted. (A10)

Threatened and Endangered Species

- Existing use of Boardman Pond and Brown Bridge Pond by threatened and endangered species that use the open water area of Boardman Pond and Brown Bridge Pond will not be adversely impacted in that the open water habitat will be maintained.
- Opportunities for threatened and endangered species that rely on cold water habitat, wetlands and uplands will not be realized.
- Contaminants from Great Lakes fish may affect certain wildlife populations, including, but not limited to, loons and bald eagles.
- Sturgeon may use the tributaries of the Boardman River for new spawning habitat.

Plant communities and habitat

<u>Habitat Type</u>	<u>Existing Acres</u>	<u>Proposed Acres</u>
New River Channel (from Boardman Lake to Boardman Pond Inlet)	0	0
Existing River	113	113
Impoundment/Lake	673	673
Riparian Habitat	56	56
Wetlands	112	112
River Upstream from Brown Bridge	<u>288</u>	<u>288</u>
Total	1,242	1,242

- The wetlands at Sabin Pond, Boardman Pond, and Brown Bridge Pond will not be adversely impacted.
- The hydroperiod of wetlands in the impoundments will not be adversely impacted. (A3)
- Wetlands along the river will not be significantly impacted.

Hydrology and Hydraulics

- The flow of water will not be impacted by this alternative because the dams are not flood control structures and are not significant impediments to the flow of water.
- The flow of water upstream of the Brown Bridge Dam will not be significantly impacted. (A24)
- The size and extent of floodplain elevations will not be significantly altered.

Stream Channel

- The stream channel of the Boardman River will not be impacted in the vicinity of Union Street.
- Channel erosion will occur along the banks of the existing river in a similar fashion as before the modifications.
- Tributaries to the Boardman River upstream from Brown Bridge Pond will not be impacted.

Sediment

- Contaminated sediments that exist in and portions of Boardman Lake and the impoundments will remain.
- Base load sediment levels in the river channel will not be restored.

Water Quality

- Water quality will not be significantly altered and the warm water adverse impact of the Brown Bridge Dam may be mitigated. (A9)
- The regional wastewater treatment plant will not be impacted.

Ground Water

- There will be no significant impact on water supplies and septic systems of properties adjacent to the impoundments. (B10, A15)

SOCIETAL:

- The property boundaries of private property will not be significantly impacted. The property adjacent to Brown Bridge Pond and Sabin Pond is primarily in public ownership. (D1)
- There will be no significant change in the risk to property owners due to storm events and flooding. (D2)

Recreation

- Recreational uses may increase during certain times of the year as a result of salmonids being present in the river. (A19 D5)
- Fish populations may increase in Grand Traverse Bay as a result of habitat accessibility in the Boardman River.
- Waterfowl hunting on Brown Bridge Pond will not be adversely impacted by modifying the dam.
- A whitewater park may be feasible at several locations below Union Street. (B14)
- Recreational paddling use patterns of users of the Boardman River will not change due to the proposed modifications of the dams.

- The safety concerns associated with an impoundment will continue to exist at Boardman Lake, Sabin Pond, Boardman Pond, and Brown Bridge Pond (D13)
- The County's Natural Education Reserve will not be impacted. (D17)

Community

- The economic gains for restoring a portion of high quality trout stream will not be realized. However, the fish passage modification will attract anglers interested in fishing for Great Lakes fish such as salmon, steelhead, etc.(C12) In addition, the opportunity for an improved fishery in Grand Traverse Bay may attract more anglers.
- The taxpayers in the City will be responsible for paying to maintain the remaining Union Street Dam. (C26)

Historic Value

- The dams and powerhouses are not eligible for designation as historic structures; therefore, the repair, removal and modification of the dams will not have an impact on historic properties.

ECONOMIC:

Cost

- The cost of this alternative is estimated to be between \$8,600,000 and \$12,100,000, which includes annual maintenance of the dams.
- The cost of this alternative, if hydroelectricity is generated at the dams, is estimated to be \$12,900,000 to \$16,700,000

Economic Benefit

- Visitors to the Boardman River are estimated to contribute annually \$4 million dollars to the local economy. The increase in visitor expenditures has not been determined.

Property Value

- Residential properties within a ½ mile of the current impoundments will not see a change in property values due to dam modification. (C1)
- The current property boundaries will not be affected by this alternative. (C3)

Funding

- The repair, modification, removal and maintenance of the dams are the responsibility of the owners of the dams. (C6,C7)

Energy

- This alternative does allow traditional hydroelectric power using dams to be produced. However, the flood control modification would not be feasible if hydroelectricity is implemented. A more costly spillway would

be required. Alternative methods of hydroelectric energy production that rely on flowing water may also be feasible. (C28, D4)

Jobs

- This alternative may have a positive impact on job growth in various economic sectors due to the potential for increased angler interest in the Boardman River. (C18, C22)

ENGINEERING:

Infrastructure

- This alternative will have no significant impact on transportation or other infrastructure. (A17)
- There will be no significant impact on structure crossings within and downstream of the project area to the termination in Grand Traverse Bay. (B11)
- The risks and liabilities associated with the dams will not change if this alternative is implemented. The City and County are responsible for maintenance of the dams and assume the risks and liabilities of the ownership of the dams, therefore, by modifying the dams the risk and liability may not change. (D20)