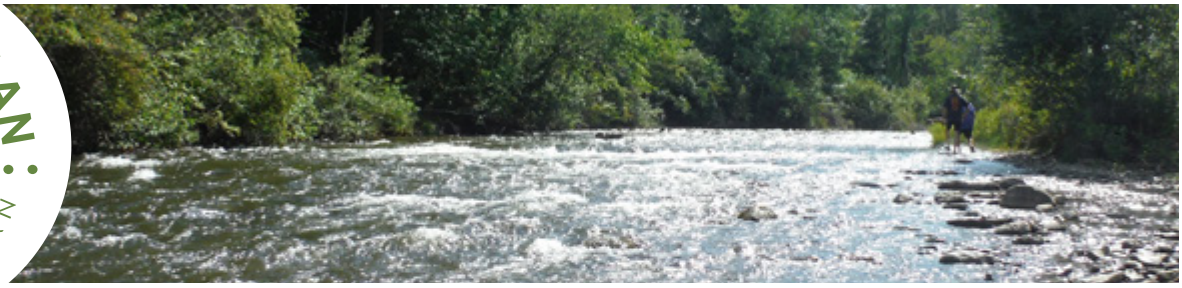

Cass Road Bridge & Boardman Dam Removal

The Boardman: A River Reborn is a collaborative community project which aims to reconnect over 160 miles of free-flowing, cold-water stream and restore hundreds of acres of habitat through the removal of Brown Bridge, Boardman and Sabin dams and the modification of Union Street Dam, the lowermost barrier. It is one of the most comprehensive dam removal and river restoration projects in Michigan's history and one of the largest such projects in the Great Lakes Basin.

Phase I of the project included the removal of Brown Bridge Dam in 2012 and the restoration of the natural habitat for fish and wildlife in that area. Project partners have begun Phase II of the project with the construction of a new bridge on Cass Road spanning the Boardman River followed by the imminent removal of Boardman Dam in 2017 and subsequent restoration work. Phase II is being implemented by local partners in partnership with the U.S. Army Corps of Engineers. To learn more about this project, please visit theboardman.org.

BOARDMAN DAM

Location: River mile 6.1

Owner: Grand Traverse County

Constructed: 1894

Rebuilt: 1930

PROJECT TEAM

AECOM

City of Traverse City

Conservation Resource Alliance

Grand Traverse Band of Ottawa and Chippewa Indians

Grand Traverse Conservation District

Grand Traverse County

Grand Traverse County Road Commission

Michigan Department of Environmental Quality

Michigan Department of Natural Resources

The Watershed Center Grand Traverse Bay

U.S. Army Corps of Engineers

Frequently Asked Questions

Why are the dams being removed?

In 2005, Traverse City Light and Power determined it was not economically feasible to produce hydropower at the Brown Bridge, Boardman and Sabin dams. The dam owners – the City of Traverse City and Grand Traverse County – organized a citizen-based Boardman River Dams Committee to gather community feedback, encourage community involvement and manage an engineering and feasibility study to assess the environmental, economic and social implications of retaining, modifying or removing the dams.

After thorough review and discussion, the dam owners decided to remove the Brown Bridge, Boardman and Sabin dams and modify Union Street Dam. If Boardman Dam was left in place, significant upgrades including a new emergency overflow structure (2009 estimate $1,760,000) and additional repairs without the function of hydroelectric production (2009 estimate $2,230,000 to $3,060,000) would have been required. In addition, maintenance of Boardman and Sabin dams was estimated in 2009 to range between $30,000 and $60,000 every year. The decision to remove the dams was based on the economics as well as the hazard the aging infrastructure posed to the community and the continued negative effects the dams have on the Boardman River's water quality, fishery and wildlife.

What are the benefits of dam removal?

The benefits of dam removal include restoring more natural river flows for fish and wildlife, eliminating the safety risks of aging infrastructure and enhancing opportunities for recreation.

How much does it cost to remove Boardman Dam?

The construction phase of the dam removal and related restoration work is estimated to cost $8.4 million. Engineering designs (incl. Sabin Dam conceptual design) and permits for Cass Road bridge and Boardman Dam cost $1.4 million. Additional non-construction costs including project management, communication and monitoring are currently estimated at $250,000/yr during active management.

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How is the removal of Boardman Dam being paid for?

Through the Environmental Protection Agency – Great Lakes Restoration Initiative, the U.S. Army Corps of Engineers is bringing $8 million for the construction phase of the project. In addition, funding has been secured from the Bureau of Indian Affairs through the Grand Traverse Band of Ottawa & Chippewa Indians, City of Traverse City, Grand Traverse County, Great Lakes Fishery Trust, Michigan DNR – Dams Management Program, National Fish and Wildlife Foundation – Sustain Our Great Lakes and the U.S. Fish & Wildlife Service – Great Lakes Fish Basin and Great Lakes Fish & Wildlife Restoration Act programs.

How is this dam removal different than Brown Bridge Dam removal?

This phase requires two seasons of construction to first replace Cass Road bridge in 2016 then remove Boardman Dam in 2017, at which time the river will be rerouted under the new bridge. The other major difference is how Boardman Pond will be dewatered. The pond drawdown will be done utilizing a bypass pumping/siphon system to dewater the impoundment prior to removing the dam. This approach will maintain the dam structure during the drawdown process and provide an added measure of safety.

What are the risks of flooding after removal of Boardman Dam?

Boardman Dam was constructed for power generation, not for flood control management. The removal of Boardman Dam removes the risk of an unintentional dam failure and also provides a restored and reconnected floodplain enabling the watershed to better manage high water events.

How might the removal of Boardman Dam change the river downstream?

Long-term impacts from removing Boardman Dam will be fully realized once Sabin Dam is also removed. These impacts are expected to include colder water temperatures, increased dissolved oxygen levels, and the natural movement of sediment, nutrients, fish and wildlife.

What is the role of the Implementation Team (IT)?

The IT is a collaborative body formed in 2005 to provide oversight of the disposition of the dams. Voting members of the team consist of representatives from the City of Traverse City, Grand Traverse County, Grand Traverse Band of Ottawa and Chippewa Indians, Michigan Department of Environmental Quality, Michigan Department of Natural Resources, Michigan Hydro Relicensing Coalition, Traverse City Light and Power and the U.S. Fish & Wildlife Service.

What is the role of Grand Traverse County?

Boardman Dam is owned by Grand Traverse County. As the owner, the County is responsible for the operation and maintenance of the dam. In 2009, the County elected to remove Boardman Dam as part of The Boardman: A River Reborn. The County is contributing non-federal funding for dam removal and is an active partner in the project.

What is the role of Grand Traverse County Road Commission?

The Road Commission is responsible for the road system in Grand Traverse County including the Cass Road bridge. The new bridge project has been developed to correlate with the removal of Boardman Dam. It is managed by Grand Traverse County Road Commission with funding from Michigan Department of Transportation Local Assistance Program and Road Commission General Funds. Parallel to the bridge project in 2016, the Road Commission is upgrading the Keystone Rd / Cass Rd intersection including longer turn lanes and signal improvements.

What is the role of the U.S. Army Corps of Engineers?

The Army Corps is a key project partner in the removal of Boardman and Sabin dams as well as the modification of Union Street Dam. Through the Environmental Protection Agency – Great Lakes Restoration Initiative, the Corps is helping to bring $8 million in funding for the removal of Boardman Dam. The Corps will be managing the Boardman Dam removal and related river channel restoration in partnership with local stakeholders.

John Russell – Great Lakes Images LLC

Cass Road Bridge & Boardman Dam Removal

FAQ Bridge Construction and Dam Removal

How will traffic be disrupted?

There will be two major closures of Cass Road where it crosses the Boardman River in Garfield Township – just west of the intersection of Cass Rd and Keystone Rd. The first closure started Monday, March 28, 2016 and is expected to last through Wednesday, August 31, 2016. During this time, the intersection at Cass Rd and Keystone Rd will also temporarily close. The second major closure will occur in 2017. For more information, contact the Grand Traverse County Road Commission (gtcrc.org).

Will there be construction noise and dust during bridge construction?

Yes, there will be construction noise and dust consistent with typical road and bridge construction projects. Dust may occur with trucks entering and exiting the construction project and will be controlled according to Grand Traverse County Soil Erosion & Sedimentation Control requirements. The contractor is responsible for controlling and minimizing dust during construction. Noise will include the sound of heavy equipment and the driving of piles (steel sheets) into the soil to provide support for the bridge.

During bridge construction, how early will crews start in the morning and how late will they work into the evening?

The typical work day for the construction crew is 7am to 7pm 6 days a week with the exception of a few nights of later hours to pour the bridge deck.

What companies will be working on the bridge construction and dam removal?

The Michigan Department of Transportation contracted with Davis Construction, Inc., a Lansing-based company, for the bridge construction. Davis Construction is a family owned and operated business established in 1970 specializing in the construction of bridges, large civil projects and general contracting. Other subcontractors include Northwest Design Group for construction engineering and Team Elmer's. Dam removal contractors are expected to be determined in the early fall of 2016.

Why will there be two bridges after August 2016?

The new Cass Road bridge is being built where the river originally flowed. The river's current position will be moved west under the new Cass Road bridge when partners remove Boardman Dam in 2017. It is safer and more efficient to construct the bridge prior to rerouting of the river beneath it.

Where can the public view construction progress?

During bridge construction, both the Boardman Pond and Beaver Pond trailheads are closed to the public for safety reasons. To view bridge construction, parking is available at the Meadows Pavilion Trailhead with a short walk to where the trail is closed. During dam removal, public access will be available along the Lone Pine Trail. The trail provides a safe place to view work within the former impoundment.

Cass Road Bridge & Boardman Dam Removal

FAQ Aesthetics

What will the river look like during bridge construction?
There is not expected to be any major changes in the appearance of the river during bridge construction.

What will the river look like during dam removal?
The river will temporarily experience an increase in turbidity, or cloudiness. This is caused by the disturbance of moving surrounding earth which suspends sediment into the water often giving the water a muddy appearance. This will be most noticeable downstream of Boardman Dam to Sabin Dam. Sediment will continue to settle downstream of Sabin Dam to Boardman Lake and the river will gradually clear when the dam removal is complete. Turbidity levels will be monitored by the project team.

What will the land near the river look like after construction?
Depending on the soils present, the land near the river, or "bottomlands," are expected to re-vegetate over several growing seasons. Grasses, shrubs and trees will establish quickly in the majority of newly exposed bottomlands while other mineral-heavy, sandier soils will take longer to establish new growth. Partners will actively manage invasive plant species. Native trees and other woody material will also be placed throughout the bottomlands and along the river's edge to stabilize riverbanks and to create habitat for fish and wildlife.

FAQ Access and Recreation

Where will visitors and recreationists access the river during bridge construction and dam removal?
During bridge construction, Cass Road is closed south of Broad Road and west of Keystone Road and both the Boardman Pond and Beaver Pond trailheads are closed. Paddlers are advised to conclude float trips at the Lone Pine trailhead. During dam removal, trail access and parking will be available at the Lone Pine trailhead. River traffic will be closed from Beitner Road downstream to Sabin Dam. Cass Road will also be closed south of Broad Road and west of Keystone Road. Both the Boardman Pond and the Beaver Pond trailheads will be closed.

How will the future use of this area including recreational trails and public access be decided?
The construction access road along the west side of the new river channel is planned to be a recreational trail after dam removal. Project partners are continuing to work to identify plans to determine recreational use and public access. To stay up-to-date, please email info@theboardman.org to receive project updates.

Boardman Dam Removal

View from Lone Pine Trail looking north

Cass Road Bridge & Boardman Dam Removal

FAQ Ecology

Why is the river being "rerouted?"
Historically, two dams altered the river channel near the Cass Road crossing. The new Cass Road bridge is being built where the river originally flowed. The river's current position will be moved west under the new Cass Road bridge when Boardman Dam is removed in 2017.

Is the sediment at Boardman Pond contaminated?
In 2010, 2012 and 2015, 41 total soil samples were taken by the Great Lakes Environmental Center throughout Boardman Pond. Based on sediment sampling and analysis procedures prescribed by the Michigan DEQ, the sediment contaminate levels were determined to be below both residential and non-residential direct contact criteria.

Will sediment move downstream during and after dam removal?
Temporary in-stream sediment traps will be installed within the impoundment area and downstream of the dam. These traps will capture the majority of sediments mobilized by the river during dam removal with minimal sediment moving downstream. The dam removal will re-establish the river's ability to move sediment – a natural and important component of river health.

How are invasive species being managed?
Partners are coordinating funds and personnel to monitor exposed bottomlands for invasive species populations, working to control species found to be high-priority and/or in high-risk areas and preventing new invasions through native plantings and educating the public with outreach events and signage.

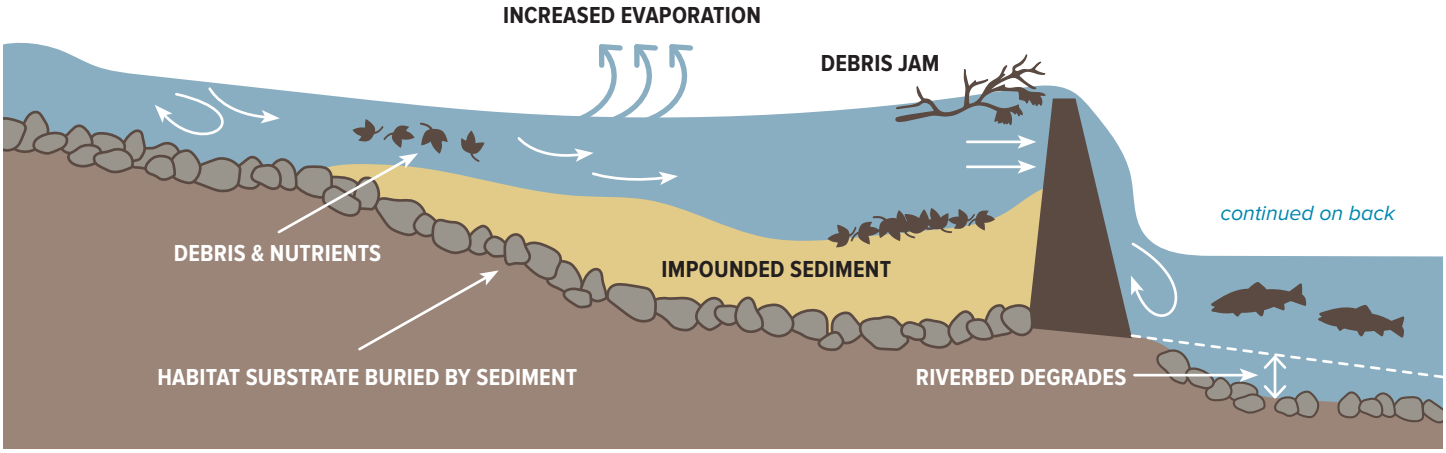
DAM IMPACTS

Upstream

- Reduced natural function, water quality, oxygen, turbidity current and available habitat
- Increased pollutant accumulation, stratification, temperatures and algae blooms
- Loss of natural transport of sediments, nutrients and debris
- Altered floodplain

Downstream

- Warmer water flowing downstream
- Unnatural riverbed elevation changes
- Altered flow regime and temperatures
- Starved of sediment, nutrients and debris



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THE BOARDMAN
A RIVER REBORN

How will streambanks be stabilized?

Newly forming streambanks that are highly erodible and steep slopes in the project area will be graded and stabilized with natural measures such as tree and shrub planting, seeding and the installation of woody material.

What is the impact of dam removal on fish and wildlife?

Dam removal will result in a shift in habitat from a manmade impoundment to a natural cold-water river system. Bass and bluegill habitat is expected to decrease while brook trout, brown trout and sculpin habitat is expected to increase. Due to the abundance of other lake and warm-water habitat – 74 lakes 10 acres or larger in the Boardman River Watershed – and the relative scarcity of cold-water systems, this shift fosters a more balanced availability of habitat. In other dam removals, reports have shown the removal and subsequent change in conditions did not have a negative impact on native species to the region, such as turtles, amphibians, mink, raccoon and skunk. Project partners are actively monitoring reptile and amphibian populations at Boardman Pond and Sabin Pond.

What is the impact of bridge construction on fish and wildlife?

Bridge construction and relocation required the cutting of approximately 600 trees, many of which will be distributed throughout the new bottomlands area for habitat restoration purposes. Due to the availability of habitat both upstream and downstream, wildlife are expected to migrate to new habitat. The new bridge will span 252' long by 134' wide providing improved movement of water, wildlife and people.

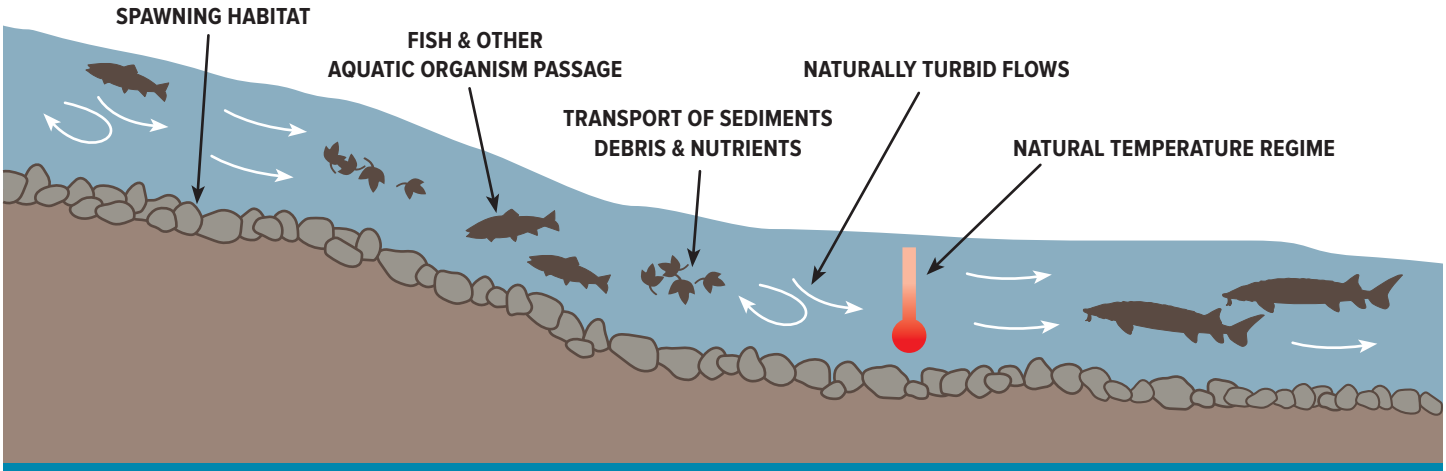
What is the plan for restoration?

Restoration activities include river channel and floodplain shaping to reestablish the river in its original channel and reconnect the floodplain. Newly formed streambanks and bottomlands will be stabilized through native tree and shrub planting, seeding and the installation of woody material. As native plants are reestablishing, partners will actively monitor and treat invasive plant species. The majority of these activities will be accomplished from 2017-2019 while activities such as seeding, planting and invasive species management will be ongoing on an as-needed basis.

Is there a plan to rescue stranded fish and other wildlife?

Under the guidance and supervision of the Michigan DNR Fisheries Division and Grand Traverse Band of Ottawa and Chippewa Indians, partners will monitor for and move stranded fish and wildlife during the final pond drawdown.

DAM REMOVAL BENEFITS



Please email info@theboardman.org | visit theboardman.org | or call (231) 534-7358 for more information

Cass Road Bridge & Boardman Dam Removal

FAQ Property Owners

Who owns the bottomlands?

As Boardman Pond is dewatered, the newly exposed land, referred to as “bottomlands,” is owned by Grand Traverse County.

How will adjacent landowners access the river during bridge construction and dam removal?

For the safety of residents and construction workers, the project construction area will be closed. River traffic will be limited during both the 2016 and 2017 construction seasons. During bridge construction, river traffic is closed downstream of Lone Pine to Sabin Dam. During dam removal, river traffic will be closed at Beitner Road downstream to Sabin Dam.

How will adjacent landowners access the river post construction?

The project team is developing a plan to address access and will be communicating directly with adjacent landowners.

What if damage is caused to my property during bridge construction?

In the event of property damage during bridge construction, property owners should contact the Grand Traverse County Road Highway Engineer at the Grand Traverse County Road Commission.

What if damage is caused to my property during dam removal?

In the event of property damage during dam removal, property owners should contact the U.S. Army Corps of Engineers’ onsite project representative (contact TBD).

How will my property value be impacted?

It is difficult to predict how exactly property value will be impacted because property values are influenced by other issues including the real estate market and characteristics of each property.

Will my well be jeopardized?

The U.S. Army Corps of Engineers completed a Feasibility Study and Environmental Assessment which evaluated the potential impacts of the dam removal project on groundwater near Boardman and Sabin dams. The analysis did not identify any well screens (the intake portion of wells) that would be above the predicted post-dam removal groundwater level. Based on the analysis and known locations of wells, no impact on private wells is expected from the Boardman Dam removal.