HABITAT PROTECTION AND RESTORATION PROJECT FINAL REPORT GUIDELINES

Final reporting requirements consist of (1) a completed profile of the grant for posting to the public Great Lakes Fishery Trust (GLFT) website (see below), (2) a narrative response to GLFT final report questions (see following section), and (3) a final financial report (form and instructions attached).

PROJECT PROFILE

Your profile should be no more than three pages in length (preferably two). As the profile will be published to the GLFT website, please strive to communicate in language accessible to a general audience. The primary intended purposes of the profile are to (1) provide an overview of the work funded by GLFT and characterize results and achievements in an accessible manner, and (2) help interested parties access further resources or materials germane to the effort. The profile should follow this format:

Synopsis

- **Project Title: Boardman River Dam Removal #2**
- **Grantee Organization: Conservation Resource Alliance (CRA)**
- **Project Team:** The Implementation Team (IT) includes the following partners:

  Grand Traverse Band of Ottawa & Chippewa Indians, U.S. Fish & Wildlife Service, City of Traverse City, Grand Traverse County, Michigan Department of Environmental Quality, Michigan Department of Natural Resources, Michigan Hydro Relicensing Coalition, Traverse City Light & Power. IT Ex-Officio members & partners include: Conservation Resource Alliance, Grand Traverse Conservation District, Grand Traverse County Road Commission, US Army Corps of Engineers, Watershed Center – Grand Traverse Bay, Traverse City Rotary Charities, Garfield Township.
- **Contact Persons: Kimberly Balke, CRA Project Manager, kim@rivercare.org**

  Amy Beyer, CRA Director, amy@rivercare.org

  Nate Winkler, CRA Project Manager, nate@rivercare.org
- **Grant Amount: $400,000**
- **Time Frame: 9-17-2014 through 5-31-2017**
- **Focus Areas** EHSFP Habitat Protection and Restoration (including Dam Management)

- **Brief Project Summary** (In 100 words or less, provide a summary of the project, including its purpose and key results.)

The removal of the second dam on the Boardman River, represents the next major milestone in the overall Boardman River Dams Removal Project, a signature effort that will result in large-scale benefits to fish and wildlife habitat, and is forging important new ground for dam management throughout the Great Lakes. The overall project involves removing 3 dams and modifying the 4th, lowest dam; it will result in re-connection of 160 miles of river and habitats fragmented and impacted by the dams for over 100 years. Three warm-water ponds will be replaced with almost 5 miles of high quality, cold water riverine habitat, directly impacting 20 miles river. Fifty-seven acres of upland habitat and 89 acres of wetlands will be restored in the river corridor. With the decommissioned dams originally built between 1898 and 1921, the project also provides significant benefits to the local economy and community safety.

Project in Context

This orientation to the project should provide key background information on its purpose, location (where appropriate), and broader significance. You may wish to consider:

- Background research identifying a need for the work
- Stakeholder identification of a need for the work
- Specific focus of the work as it relates to Great Lakes ecology/resources
- Relationship to other related products/services/programs
- Intended audience/population to be served

Goals of the Effort

In this section, identify the key goals and/or the specific purpose of the effort.

The goals of the project included the following: removal of the second dam (Boardman Dam), replacement of Cass Road Bridge (funded separately), and restoration of the associated river and corridor habitat. The project will reconnect an additional 12.5 miles of stream for fish passage, for a new total of 157 miles upstream of Boardman Dam; create 1.8 new miles of coldwater stream under the impoundment, restore 66 acres of wetlands and 36 acres of upland habitat. The Boardman is a state-designated Natural River and Blue Ribbon trout stream, providing high quality habitat and associated ecosystem resiliency to the Great Lakes (highest CNQI category for brook trout and coldwater species in the GLBFHP Fish Habitat Assessment). Completing this project will inform Great Lakes resource managers and build confidence and capacity to tackle the growing list of aging dams needing attention in the next decade.

The project directly benefits important fish species including brook trout, brown trout and macroinvertebrates by reconnecting habitat that has been fragmented for over 100 years, eliminating warming caused by the former impoundment, and reconnecting the natural floodplain in 1.8 miles of stream. In later phases, Sabin Dam (third dam) will be removed in 2018, and the Union Street Dam (lowest barrier) modification is planned for 2020 focusing on allowing lake sturgeon to access the river habitat.

Results

In this section, briefly summarize the key findings or results of the project. Identify the results (e.g., fishery habitat restored, products developed, outreach engaged in, participation/use of materials achieved, feedback received).

The results of the project are straightforward in that goals are being achieved with the full completion of construction work related to Boardman Dam removal and stream channel restoration slated for December 30, 2017. This project involved the first phase of the **largest dam removal project in Michigan history with the removal of Brown Bridge Dam on the Boardman River, a premier Lake Michigan tributary.** An estimated 3 miles of river now meander through where once a 191 acre warmwater pond used to sit. An estimated 145 miles of stream has been reconnected, and restoration included 12 acres of floodplain, 13 acres of wetland, and 25 acres of adjacent uplands. Only 3 years after dam removal aspen saplings, willow shrubs, native grasses and wildflowers are growing amongst the relic tree stumps and along the restored river, creating a new legacy for partners and community members to be proud of. Field investigation, 30% conceptual design plans and modeling are complete for the next two dam removals downstream – the Boardman and Sabin Dams. The Boardman is a state-designated Natural River, and provides 30% of the water to Grand Traverse Bay. Since 2005, an Implementation Team (IT) of 8 Local, State, Tribal, and Federal agencies and 7 additional ex-officio members have been authorized through a Settlement Agreement to oversee the removal of three dams and modification of one dam on the Boardman River, all originally built between 1867 and 1921. This innovative community-driven partnership approach is recognized as a national model for future dam removal efforts, and the project has attracted over 40 funders, federal, state, tribal, local and private in nature.

Products and Resources

List, and provide addresses for, related websites developed for or through the project or that provide additional information. Provide site title, full address, and a brief (one- to two-sentence) description of the relevant content.

List any other communications outlets, publications, media coverage, etc. for the work. If these are available online, please hyperlink the listing. Items that are *planned* or *in process* should be so designated.

The Boardman Dams project is portrayed on the following websites:

- http://theboardman.org/

  This website is specifically for the project and contains information on reports, documents, permits, meeting agendas and minutes, press releases and articles, videos and the specific dams.

- https://www.rivercare.org/news/tag/Boardman+River

  This website is the Conservation Resource Alliance's and contains updated information on the Boardman River dams and restoration effort.

FINAL NARRATIVE REPORT

Background/Overview

1. Briefly summarize the project description as outlined in the original proposal.

The proposed project represents the next steps in the Boardman Dam Removal Project, a signature effort that will result in large-scale benefits to fish and wildlife habitat, and is forging important new ground for dam management throughout the Great Lakes. The overall project involves removing 3 dams and modifying the 4th, lowest dam; it will result in re-connection of 160 miles of river and habitats fragmented and impacted by the dams for over 100 years. Three warm-water ponds are being replaced with 5 miles of high quality, cold water riverine habitat and 20 miles of restored river. Fifty-seven acres of upland habitat and 89 acres of wetlands will be restored in the river corridor. In addition to ecological benefits, the project provides significant benefits to the local economy and community safety (the dams were originally built between 1898 and 1921).

2. Was the project completed as originally intended? If not, indicate how the final outcome(s) differed from what was anticipated. Does your experience suggest that original expectations were realistic? What factors hindered or helped progress?

The project is mostly being completed as originally intended with the construction end date of full Boardman Dam removal and channel restoration being the primary difference. The construction phase is on schedule and charted for full completion by December 30, 2017. With the Environmental Protection Agency (EPA) and US Army Corps of Engineers (USACE) providing $8 million in funding in 2015 and fulfilling the funding needs for the construction phase, the overall project is reaching fruition. The Implementation Team (IT) and CRA have had an excellent working relationship with USACE, EPA and project engineer, AECOM, in tracking anticipated construction costs through the engineering phase, bidding process, and contractor selection process. The IT, USACE, AECOM and selected contractor, Michel's Corporation, have met regularly throughout the construction phase to ensure work is done properly and budget needs are met.

Outcomes

3. Whether they were intended or unintended, what do you consider the most important benefits or outcomes of this habitat restoration project?

The project has focused on restoring the critical habitat associated with the Boardman River, one of the highest-quality tributaries of the Great Lakes. These globally rare habitats are characterized by cold water, groundwater input, sandy soils, and large connected corridors with dominant forested land cover. Collectively these northern tributaries provide the highest quality water inputs and the most critical resiliency for the Great Lakes. The proposed project directly addresses threats from lack of access to spawning habitat; loss of riparian habitat and large woody debris; alteration of stream channels, natural flow, and sediment transport; increased water temperatures; and loss of plant and animal diversity. The Boardman River includes 160 miles of river and tributary stream, located in Grand Traverse

and Kalkaska counties in Northwest Michigan. There are a total of 287-square miles in the watershed, producing one-third of the water volume of Grand Traverse Bay in Traverse City and draining 182,800 acres of land. An Estimated 2 million visitors use the Boardman River annually for recreation purposes. The river contains 36 river miles designated as Blue Ribbon river sections and is one of the top ten trout streams in Michigan.

The project benefits a wide range of fish and wildlife species **including native species traditionally significant to tribes, species of special conservation concern, and species of recreational and economic value**. Removing the upper three dams and modifying the fourth provides a historic opportunity to restore native species populations and historic migrations. The Boardman River has self-sustaining populations of brown, brook and rainbow trout. Enhanced passage through the lowermost dam will contribute to the restoration of native populations, such as lake sturgeon, lake trout, and Great Lakes muskie. The project also provides improved management of sea lamprey (and other aquatic invasive species). In parallel with the removals of Boardman and Sabin Dams, the Great Lakes Fishery Commission has selected Union Street Dam as a flagship project to design and construct an alternative mechanism for blocking sea lamprey while selectively allowing other aquatic species and recreational paddlers to pass on the Boardman River.

4. What activities were pursued in relationship to intended outcomes, and to what extent did you achieve the intended outcomes listed in your proposal?

Primary activities included the following categories of tasks:

- *Communications and Meetings:* Implementation Team (IT), Project Manager, Communications Team, Bottomlands Team, and Monitoring Team meetings were held monthly and/or as needed, with agendas and notes developed and distributed by CRA. Presentations by CRA, GTB, Grand Traverse Conservation District and other partners for the project were given throughout this project period at Trout Unlimited meetings, County and City meetings, Michigan Aquatic Restoration Conference, and for student groups. The Communications Team developed updates and outreach emails for the permit hearings, project construction start date, contractor award, dewatering start date and status, recreational access limitations and fish rescue efforts for Boardman Dam removal.
- *Design and permits:* 100% design for Boardman Dam removal and channel restoration was completed with permits from MDEQ/USACE, MDNR Natural Rivers Program and Grand Traverse County Soil Erosion Department all obtained. The Finding of No Significant Impact (FONSI) was obtained by USACE for the overall Boardman Dams project in response to the Environmental Assessment (EA).
- *Project fund and budget management:* The IT had active leadership from Grand Traverse Band of Ottawa and Chippewa Indians, CRA, US Fish and Wildlife Service, Rotary Charities, Grand Traverse County and the City of Traverse City to fulfill funding needs for the design of Cass Road Bridge, Boardman Dam removal and inevitably Sabin Dam removal, and partial funding needs for Boardman Dam removal construction phase. This complemented the USACE and EPA providing $8 million

for Boardman Dam removal, allowing the project to come to fruition with construction being bid out in the fall of 2016 and starting in March 2017.

- *Construction:* Cass Road Bridge construction was completed in 2016 under funding and management by MDOT and Grand Traverse County Road Commission. This was the first step to prepare for the return of the river to its relic channel 500' to the west of the powerhouse, and where the original Boardman Dam was built. USACE awarded the Boardman Dam removal construction contract to Michel's Contracting out of Wisconsin with a start date of March 27, 2017. The construction bid was within grant funding limits. Channel work at the south and north ends of the project limits is well underway, woody debris habitat is being installed, siphoning of the impoundment has drawn down the impoundment 21', water is no longer flowing through power house, the auxiliary channel is being used to drain the remaining ponded area, and the dam wall is almost fully removed as designed. Photos of these milestones are included as a separate attachment to this report.
- *Monitoring:* Through a qualifications based selection process, the Monitoring Team selected Great Lakes Environmental Consulting (GLEC) to perform the aquatic insect monitoring field collection in June 2016/2017 and Herpetological Resource Management, LLC (HRM) to complete the amphibian/reptile monitoring assessment during May-September 2016/2017. Field work will be compiled into reports provided to CRA and partners by the end of 2017 and those will be shared with GLFT. The AuSable Institute conducted aquatic insect monitoring of the river pertaining to the Brown Bridge Dam removal part of the overall effort at 11 locations between 2007-2015, with one additional site at the upstream end of Boardman Pond. Findings from this comparable field work include the following:
  - High quality macroinvertebrate communities are found throughout the main channel of the Boardman in most locations.
  - Invertebrate communities above and below Brown Bridge Dam differed – mayflies above and mollusks and net-spinning caddisflies below.
  - Downstream invertebrate community was greatly reduced in more sensitive organisms (EPT - mayflies, stoneflies and caddisflies) and numbers of organisms after Brown Bridge Dam removal.
  - Insect communities have rapidly recolonized new areas of channel above BB Dam and Boardman Dam though recovery is still in process.
  - 2 years after Brown Bridge Dam removal, downstream invertebrate communities recovered to similar types (EPT, sensitive) of organisms though total numbers of invertebrates are still below the upstream control.
  - The Boardman River was also recovering from the drawdown of Boardman Pond (17' in 2007-08 responding to MDEQ spillway concerns) with both community composition and diversity improving and a significant increase in total numbers of organisms in just the last 2 years.

  The Monitoring Team also developed the stream channel monitoring plan for Boardman Dam removal as required by the MDEQ JPA conditions, and that plan is

being reviewed by MDEQ with formal approval anticipated in October 2017 and monitoring to start in 2018.

5. What audience(s) were you particularly hopeful of reaching? To what extent did you reach them? Did you receive any feedback?

The target audiences are varied and include:

- public and private entities related to river management throughout the Great Lakes region
- residents of the 5-county area in Northwest Michigan (Grand Traverse, Leelanau, Antrim, Benzie, Kalkaska Counties)
- IT members and ex-officio members
- Leaders and municipalities of the 5-county area in Northwest Michigan
- Boardman River landowners
- Students and youth

These audiences were reached through a variety of ways including but not limited to:

- Landowner response and information cards mailed directly
- Local leader luncheons
- Presentations/tours to Grand Traverse County and Traverse City Commissioners, Grand Traverse County Road Commission board, and Grand Traverse Band Council
- Presentations/tours to Northern Michigan College classes
- Presentations at national and state conferences (Great Lakes Restoration Initiative, Tribal, Michigan Aquatic Restoration, and others)
- CRA newsletters and email updates
- Website updates via www.theboardmanriver.org and www.rivercare.org
- Presentations for specific interest groups including Trout Unlimited, river committees, local churches and townships, youth groups and others.
- Tours for partners as requested

6. What relationships or opportunities were developed or strengthened through the work?

The Implementation Team (IT), authorized in a Settlement Agreement to oversee surrender of the hydropower licenses and dam removal, has been supported by a consistent, dedicated group of agency and entity professionals since 2005. The IT's representation and collaborative approach have ensured that the project is building from the latest experience and not duplicating efforts or past mistakes. A single scope of work, funding plan, and contracting arrangement enable team members to coordinate fundraising and efficiently put every dollar to use. The MDNR Fisheries Division provided substantial project management support, and chaired the IT from 2005 to 2011. The Grand Traverse Band of Ottawa and

Chippewa Indians assumed the chair role in 2012, and remains in that role with expansion into funding, technical assistance and primary partner to the USACE in the project partnership agreement (PPA). The U.S. Fish & Wildlife Service plays a key role assisting with NEPA, funding and sea lamprey management. CRA has served in the project manager to the IT role since 2009, helping to expand support with communications, design and construction phases, and funding support. Additional ex officio members provide specific expertise in natural resources, advocacy, and education, such that the team is very well organized and supported. Community involvement has been unprecedented throughout the project; over 1,000 individuals have participated to date.

The project has received substantial technical support from the Army Corps of Engineers through its Great Lakes Fishery and Ecosystem Restoration program, resulting in reduced local costs for the scoping phase, pre-removal data collection, and permitting. The Corps has completed data collection, modeling, NEPA analysis, and early design work. This collaboration is a unique arrangement that allows various local, state and federal partners to focus on project components for which they are best suited. With EPA providing $8 million to the construction phase of Boardman Dam removal, the project serves as a flagship effort of the Great Lakes Restoration Initiative showing that tangible progress can be made in restoring a unique ecosystem with the secondary benefits of improved infrastructure, community safety, outdoor recreation and education, and invasive species management.

Concurrent with the dam removal project is the long-term planning initiative for the Boardman River Watershed. The Boardman Watershed Prosperity Plan has been focused on developing a new approach to natural resource planning - one that leverages the economic and community development potential of a unique asset (the 291 square mile Boardman River watershed) with protection of that watershed. The plan reflects one of the prime tenets of Michigan's long-term vision: creating a sense of place and emphasizing the importance of natural resources to regional prosperity.

Another opportunity catalyzed by this project is with the Michigan Hydro Relicensing Coalition; they are tracking information gained through interviews with partners through their "MHRC Institutional Knowledge Capture Project – Boardman River," supported by the Mott Foundation. Bob Stuber, retired US Forest Service Fisheries Biologist, is one of the report authors and noted that, "Over the past 25 years, a great deal of institutional knowledge related to hydroelectric project relicensing and implementation of the licensing orders has been gained by the Michigan Hydro Relicensing Coalition (MHRC), resource agencies, project owners, Tribes, NGOs, and others. The MHRC wants to capture this institutional knowledge so that it may be passed on to the next generation of managers. In the case of the Boardman River, the history, experiences, and lessons learned through license surrender and subsequent dam removal will be of great value to the next generation faced with potential dam retirement. It is a success story worthy of being captured and passed on."

7. Was an evaluation included as part of this project? If so, what were the key findings? (Please attach a copy of the evaluation report.)

Great Lakes Environmental Consulting (GLEC) completed 2016/2017 field work to collect aquatic insect samples from stretches of the Boardman River, and Herpetological Resource Management, LLC (HRM) completed the amphibian/reptile monitoring assessment field work during May-July 2017. The ongoing reports will be provided to GLFT at the end of 2017. The monitoring plan for Boardman Dam removal as required by the MDEQ JPA conditions is undergoing final stages of approval by MDEQ. The Au Sable Institute of Environmental Studies has been conducting macroinvertebrate surveys at a total of 11 locations on the Boardman River between 2007-2015, with sites upstream, throughout and downstream of the former Brown Bridge Impoundment, and one site at the upstream end of Boardman Pond. The intentions of that related overall effort were to 1) determine baseline macroinvertebrate communities in the newly restored section of river, 2) resample at other cross sections to maintain baseline information, 3) assess how the macroinvertebrates have fared below the dam in lieu of its removal, 4) assess what the recovery period is for the organisms potentially impacted by the removal of the dam, and 5) see if recovery has continued at the Lone Pine site above the Cass Road/ Boardman Dam site. Three articles have been written by Au Sable staff including:

- "Macroinvertebrate rates of recovery after dam removal on the Boardman River" by Davis A. Guebert and Dave C. Mahan
- "Effects of reservoir drawdown on benthic riffle macroinvertebrate communities" by Annaka E. Scheeres and Dave C. Mahan
- "Recovery of downstream Macroinvertebrate populations following removal of a hydroelectric dam" by Jonathan C. Shoaff and David Mahan
- The 2014 final report narrative includes the summarized conclusion that, "The most important observation from this years' (2014) work is the overall trend of macroinvertebrate community recovery that we observed at virtually all locations. (The only location that is not recovering is located above Brown Bridge Pond {site B} and still experiencing downcutting as the river finds its natural elevation.) While the total number of organisms and their biotic indices from this year, when compared to 2013, confirmed that the removal of Brown Bridge Dam negatively impacted the insect communities, it appears that the stream is well on the way to recovery. The %EPT, EPT/C ratio, and sensitive/tolerant ratio all indicate higher water quality at Grasshopper Ranch Upper upstream control site than all other sites (Fig. 6 – Fig. 8). Thus, while we have confirmed that macroinvertebrate community recovery is occurring downstream from the old dam site, the impact of the major influx of sediment deposited downstream following dewatering the reservoir is still negatively impacting downstream organisms."

Related Efforts

8. Was this project a standalone effort or was there a broader effort beyond the part funded by the GLFT? Have other funders been involved either during the time of your GLFT grant or subsequently?

The Boardman Dam removal effort is part of the greater effort to restore the Boardman River to a free-flowing condition, with the removal of Brown Bridge Dam in 2012 and planned removal of Sabin Dam in 2018, and Union Street Dam modification in 2020. The following

funders and partners have stacked hands to ensure this overall endeavor comes to fruition:

- Bureau of Indian Affairs
- Great Lakes Fishery Trust
- National Fish & Wildlife Foundation
- U.S. Fish & Wildlife Service
- U.S. Environmental Protection Agency
- U.S. Army Corps of Engineers
- Michigan Department of Natural Resources
- Michigan Department of Transportation
- Michigan Department of Environmental Quality
- Traverse City Light & Power
- Michigan Hydro Relicensing Coalition
- Grand Traverse Band of Ottawa & Chippewa Indians
- Conservation Resource Alliance
- Grand Traverse County
- City of Traverse City
- Grand Traverse County Road Commission
- Watershed Center, Grand Traverse Bay
- Traverse City Rotary Charities
- Garfield Township
- AECOM Engineering
- Michel's Contracting

9. Has there been any spinoff or follow-up work related to this project? Did this work inspire subsequent, related restoration projects involving you or others?

The Boardman Dam removal is part of the overall Boardman River restoration effort as noted above. Subsequent restoration work and activities at and near the site will include:

- Ongoing planting and revegetation efforts
- Streambank stabilization at locations upstream of the permitted project area
- Monitoring of aquatic insects, herpetological species, and stream morphology changes over the next 3 years at various locations up and downstream of and within the permitted project area
- Sabin Dam removal in 2018
- Modification of Union Street Dam in 2020

The overall Boardman River effort serves as a flagship project in the Great Lakes region for providing the primary benefits of ecosystem restoration to a high quality stream and the secondary benefits of improved infrastructure, outdoor recreation, and community safety.

Communication/Dissemination

10. List publications, presentations, websites, and other forms of formal dissemination of the project deliverables, tools, or results, including those that are *planned* or *in process*.

Websites offering information include the following:

- The overall Boardman Dams effort continues to be fully documented and illustrated on the www.theboardman.org website. News articles, press releases, meeting agendas & minutes, photos, videos, engineering and study documents, and historical information on the Boardman Dams can all be found at this website.
- CRA posts information at https://www.rivercare.org/news/tag/Boardman+River website.
- The Watershed Center Grand Traverse Bay posts information at http://www.gtbay.org/our-programs/boardman-river/ website.

Other highlighted materials include the following:

- Documentary of the overall project by Grand Traverse Band of Ottawa and Chippewa Indians, "Ottaway Reborn." This 1-hour documentary has been aired on PBS and shown at the State Theater in Traverse City. It is available for viewing online at https://vimeo.com/222235168.
- Boardman Dam Removal Photo Report – August 2017
- Example powerpoint presentation of the overall project (given at EPA Tribal Water Workshop 2016)
- Cass Road Bridge and Boardman Dam Removal: Frequently Asked Questions handouts
- Record Eagle articles "A New River" from Sunday, November 8, 2015; "Restoration Progresses" from Wednesday, July 20, 2016 and "Dam Removal Begins" from Wednesday, June 21, 2017. Please note that more articles and press releases have been produced and are available upon request; with many being provided at www.theboardman.org/media.
- AuSable Institute 2014 and 2015 reports on Boardman River aquatic insect monitoring
- "Macroinvertebrate rates of recovery after dam removal on the Boardman River" by Davis A. Guebert and Dave C. Mahan
- "Effects of Keystone Pond drawdown on riffle macroinvertebrate communities" by David W. Petry and Dave C. Mahan

11. Please characterize your efforts to distribute and encourage use of products, processes, programs, etc. developed through this grant.

CRA as part of the Boardman River Dams and Restoration Project *Communications Team*, maintains an annual Communications Work Plan that is updated as appropriate according to the needs of the overall Boardman River effort. The Communications Plan is categorized as follows:

- Annual priorities
- Issues management

- Community relations and events
- General communications
- Government relations
- Media relations
- Communications project management

The annual Communications Plan is distributed to the Implementation Team where it is garnered for IT input and approval. Mechanisms for carrying out communications efforts included:

- Site tours
- Powerpoint presentations and discussions at conferences, for organizations/groups upon request, and during this grant scope, for City, County and Road Commission Boards
- Volunteer events and workbees
- Assistance at public information sessions for the Joint Permit Application and USACE Environmental Feasibility Study processes
- Website updates at www.theboardman.org and www.rivercare.org
- Creation and dissemination of press releases
- Luncheons for local leaders (2015)
- Outreach to affected landowners and businesses
- Outreach to partners and Boardman River interest related database that CRA houses
- Outreach materials are comprised of both print (newsletter) and electronic (Boardman specific) formats

Reflections

12. Please describe any unanticipated benefits, challenges or surprises, and/or important lessons learned over the course of the project.

With the project spanning multiple years, it also spans multiple terms of local leaders and staff positions of the City, County and GTB, the entities that either own the Boardman Dams or are signatories to the Project Partnership Agreement (PPA) with the USACE. Thus, the IT was active in assisting with the learning curves of new County and City Commissioners and administrators, the future Cass Road bridge owner (Grand Traverse County Road Commission), and GTB Council. As an example in 2015, the IT members and subcontractors (design firm, project manager, communications coordinator) organized and attended a series of three community luncheons to help bring local leaders up to speed on the status of the dam removals and bridge design, recreational impacts and potential landowner concerns. Combined presentations, outreach emails, website updates, and site tours to main partners were used throughout the grant period to ensure partners were kept up to speed and questions were answered regarding the overall dam removal effort.

Another challenge was fitting in the design, permitting and reconstruction of the new Cass Road Bridge to the overall Boardman Dams effort. The existing Cass Road Bridge was a

one-lane crossing over top the Boardman Dam; the crossing was in poor condition and needing replacement with bridge inspection ratings continuing to decline in recent years. It was vital that the redesign of a Cass Road Bridge be done in tandem with the Boardman Dam removal design since the new bridge needed to be 500' west of the powerhouse at the location of the original stream channel. Partners and funders were receptive to this consolidated design approach, understanding the need to design the recovered river channel at the same time as the new bridge relocation and dam removal. AECOM, the engineering firm, was selected in part during the qualifications based selection process in 2013 due to their extensive experience and capabilities in bridge design. Some "noise" was created in response to the resurfacing of local politics from certain individuals of a local township supporting the extreme idea of building a different bridge over the Boardman River further downstream, instead of Cass Road, at a cost that would be at least ten times higher and require 5 to 10 years of permitting and planning with a high risk of not being permitted by MDEQ, MDOT and EPA at all. However, the credibility, logic, and strength of the overall Boardman River restoration effort prevailed and Cass Road Bridge was successfully reconstructed in 2016 utilizing grant funds from Michigan Department of Transportation's Local Bridge Program and matching funds from the Grand Traverse County Road Commission.

In 2015 a positive surprise materialized and a major milestone was met that catalyzed the overall Boardman Dams effort with the USACE and EPA offering combined financial support of $8M to Boardman Dam removal in addition to the 65% federal: 35% local cost share option for Sabin Dam removal and Union Street Dam modification. These funds evolved from the Great Lakes Restoration Initiative (GLRI) and Great Lakes Fishery Ecosystem Restoration (GLFER) Programs, respectively. This funding accomplishment transformed the next steps into:

- Determining which local non-federal partner would then enter into contract with USACE for both or either Boardman and Sabin Dam removals, and what the secondary contracts would be to help flow remaining needed funds and distribute associated responsibilities.
- Local partners cooperating with USACE on fitting in available existing Boardman Dam removal/stream restoration construction dollars, and also fulfilling the funding scenario match requirements for Sabin Dam removal. These funds management tasks evolved as construction engineer's estimates were updated, construction bids were received for Boardman Dam removal, and a bid was selected.
- Ensuring that design for Boardman and Sabin Dam removals were completed under current grant funds with the IT, and that those specifications met USACE requirements and bid packages reflected USACE standards.

13. What recommendations (if any) would you make to other project directors working on similar efforts or to the GLFT?

Communication is key to the success of a project of this magnitude and duration. The most important recommendation to peers is to organize, engage and regularly communicate with

partners through various tools, helping to ensure that partner entities and representative individuals are in roles that utilize strengths allowing people to do what they do best. The IT played a significant role as the overarching group that helps to steer the project, negotiate through changes, and process information. Additionally helpful is to have an entity serving in the project manager role, as CRA has done the last 8 years. It is better to have a qualified team of staff representing fulfilling the project manager role, each with strengths attuned to different responsibilities and issues. The primary responsibilities of budgeting, bookkeeping, outreach, private and public dollar fundraising, meeting agendas and notes documentation, photo documentation, contract paperwork review, proposal development, grant management and funds flow, and communications with various partners and the public, all require staff attuned with the proper capabilities, experiences, and strengths. The network of CRA staff working on the Boardman River project has proved efficient and strong, providing a "check and balance" approach where one staff leaves off another picks up with assigned roles in the overall effort.

Pictures

14. Provide at least three photos of the completed project (if applicable).

Please see the separately downloaded photo report from August 2017 for a comprehensive photo illustration of the Boardman Dam removal and river restoration effort.

15. The GLFT requires each project it funds to have suitable permanent public acknowledgement of GLFT assistance. If applicable, the GLFT will provide a sign to you (via mail) and requires photo verification of the posting of the sign before it will process your final reimbursement request.

Attachments

16. Please attach any reports or materials developed through the grant.

Attached please find the following items:

- Boardman Dam Removal Photo Report – August 2017
- Example powerpoint presentation of the overall project (given at EPA Tribal Water Workshop 2016)
- Cass Road Bridge and Boardman Dam Removal Frequently Asked Questions
- Record Eagle articles "A New River" from Sunday, November 8, 2015; "Restoration Progresses" from Wednesday, July 20, 2016 and "Dam Removal Begins" from Wednesday, June 21, 2017. Please note that more articles and press releases have been produced and are available upon request; with many being provided at www.theboardman.org/media.
- AuSable Institute 2014 and 2015 reports on Boardman River aquatic insect monitoring
- "Macroinvertebrate rates of recovery after dam removal on the Boardman River" by Davis A. Guebert and Dave C. Mahan

  "Effects of Keystone Pond drawdown on riffle macroinvertebrate communities" by David W. Petry and Dave C. Mahan