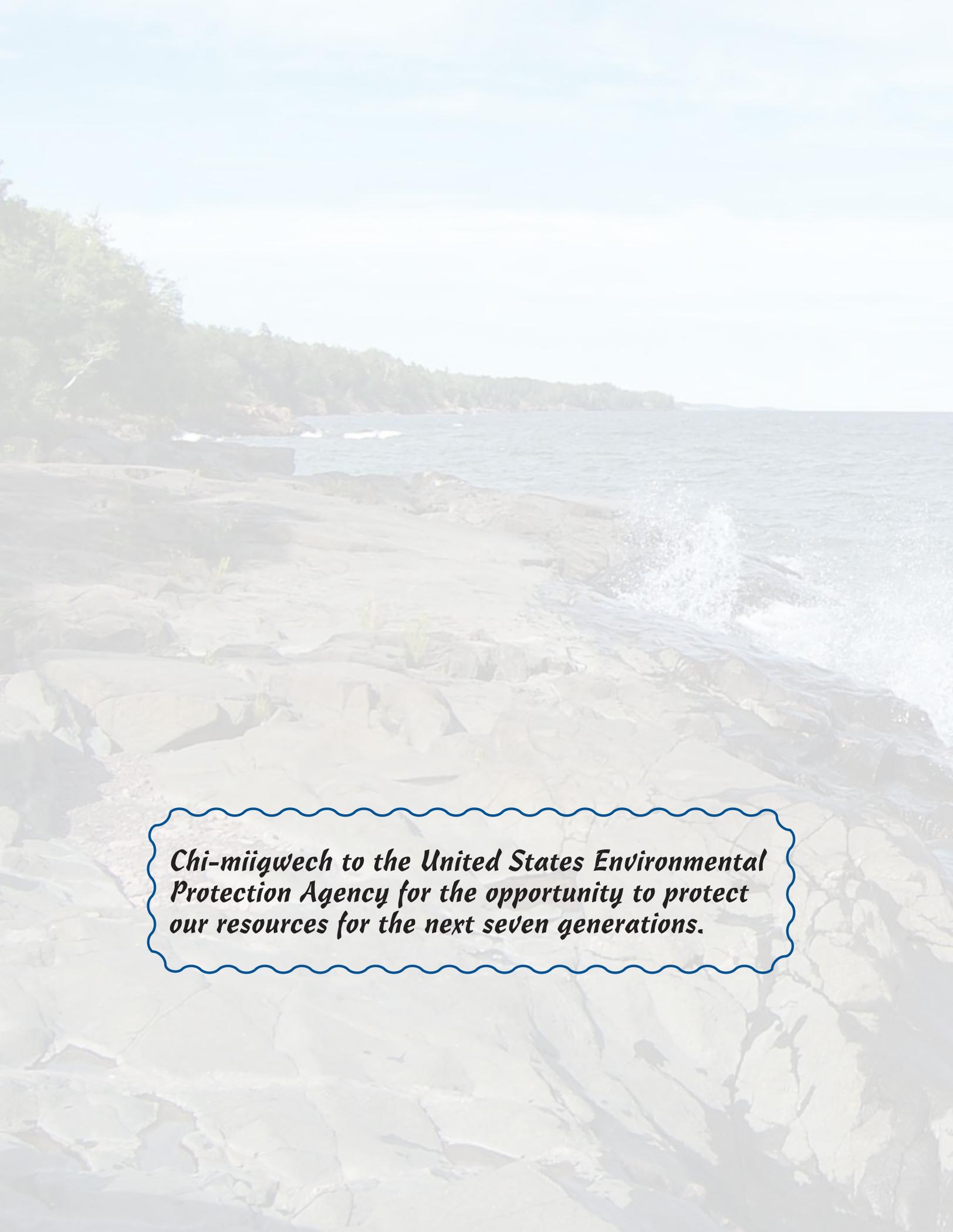


Enhancing GLIFWC Capacity to Protect and Restore Lake Superior





Chi-miiqwech to the United States Environmental Protection Agency for the opportunity to protect our resources for the next seven generations.

GREAT LAKES RESTORATION INITIATIVE

Capacity Building

The United States Environmental Protection Agency provided GLIFWC with a five year grant through the Great Lakes Restoration Initiative (“GLRI”) to help build its capacity to protect and enhance the treaty reserved rights of its member tribes by contributing to the achievement of the goals of local, regional, and international initiatives that had the potential to impact the Great Lakes and ceded territories. These initiatives include the Great Lakes Water Quality Agreement, the Binational Program to Restore and Protect the Lake Superior Basin, the Great Lakes Restoration Initiative, as well as other Great Lakes restoration and protection initiatives. This grant allowed GLIFWC to bring a tribal and Lake Superior perspective to these initiatives, and to help facilitate intergovernmental coordination in Great Lakes management among tribes and between tribes and other governments.

Overall Capacity

As a multinational resource, there are many cross-jurisdictional initiatives related to the management of the Great Lakes. GLRI capacity funding bolstered GLIFWC’s capacity to ensure staff were able to attend meetings and teleconferences where Great Lakes management was discussed and decisions were made, as well as to participate in the review of management documents and to offer comments on these documents. Additionally, capacity funding has been instrumental in enhancing the capacity of GLIFWC to facilitate intertribal coordination, as well as coordination between member tribes and other governments. Tribes historically have lacked the resources and personnel to fully participate in myriad management activities that take place around the Great Lakes basin. GLRI funding has not only allowed tribes to build their capacity to participate in more management activities, it also boosted the ability of GLIFWC staff to provide a backstop for its member tribes that are still building capacity by providing interjurisdictional coordination on management actions and decisions.

GLRI capacity funding has allowed GLIFWC staff to take active roles in international initiatives that directly impact the management of the Great Lakes. For example, in 2012, the Great Lakes Water Quality Agreement (“GLWQA”), an agreement between the federal governments of the United States and Canada that has fashioned each country’s management of the shared Great Lakes since 1987, was amended and reorganized to be implemented by ten annex subcommittees. In addition to participating in the Great Lakes Executive Committee, the main coordinating body under the GLWQA, GLIFWC staff participate in a many of the ten annex subcommittees, including the Lakewide Action and Management Plan (“LAMP”) (Annex 2) Subcommittee, the Chemicals of Mutual Concern (Annex 3) Subcommittee, the Aquatic Invasive Species (“AIS”) (Annex 6) Subcommittee, and a task team of the Science (Annex 10) Subcommittee. GLIFWC staff participate on the Annex 2 Lakewide Action and Management Subcommittee.

The LAMP Subcommittee is charged with producing the documents that will direct lakewide management actions for each of the Great Lakes. This includes establishing Lake Ecosystem Objectives (“LEOs”) as benchmarks against which to assess status and trends in water quality and lake ecosystem health, developing an integrated nearshore framework, and producing a Lakewide Action and Management Plan for each of the Great Lakes—which will direct five years of management actions in each lake. In addition to participating in the overall LAMP Subcommittee, GLIFWC staff participates on the task team responsible for creating the LEOs, and provided continuing comments on the Lake Superior LAMP as it was being developed.

GLIFWC staff is active in the Chemicals of Mutual Concern Subcommittee, working to identify a list of chemicals in the Great Lakes environment about which each country should be concerned. The Subcommittee is also tasked with preparing binational strategies for targeting these chemicals, reducing anthropogenic releases of chemicals of mutual concern, promoting the use of safer chemical substances, and monitoring and evaluating the progress and effectiveness of pollution prevention and control measures for these chemicals.

GLIFWC staff also participates in the AIS Subcommittee, tasked with developing and implementing an early detection and rapid response initiative, implementing programs to prevent the introduction and spread of aquatic invasive species, and assessing the effectiveness of aquatic invasive species prevention programs and develop and evaluate technology and methods that increase the effectiveness of control, eradication and detection efforts.

GLIFWC staff was instrumental in the development and formation of a Traditional Ecological (“TEK”) Task Team under the Science Subcommittee. This Task Team was created to coordinate with each of the other annexes to include TEK in their work. Unfortunately, with changes in both EPA and Environment Canada personnel, the Task Team has not been in operation. GLIFWC staff continues to work with EPA to make the Task Team operational again.

Tribal organizations, like GLIFWC, have been able to increase participation in Great Lakes Initiatives, such as:

- The Lake Superior Partnership Work Group
- The Great Lakes Executive Committee
- The Great Lakes Advisory Board
- Committees of the Binational Program to Restore and Protect the Lake Superior Basin
- The Zero Discharge Demonstration Program
- Several Annex Subcommittees and Task Teams of the Great Lakes Water Quality Agreement

Great Lakes Advisory Board

The US EPA established the Great Lakes Advisory Board (“GLAB”), a Federal Advisory Act operating under the Federal Advisory Committee Act, Pub. L. 92-463 (October 1972), in March of 2012. The GLAB was established to provide advice to the Administrator of the EPA, currently Gina McCarthy, in her capacity as Chair of the Great Lakes Interagency Task Force on matters related to Great Lakes restoration and protection. The major objectives of the GLAB are to provide advice and recommendations on Great Lakes protection and restoration policy, long term goals and objectives for Great Lakes protection and restoration, annual priorities to protect and restore the Great Lakes that may be used to help inform budget decisions, and other issues addressed by the Great Lakes Interagency Task Force.

Michael Isham, Chair of GLIFWC, was an inaugural member of the GLAB, and continues to serve a six year term. GLRI capacity funding has allowed GLIFWC staff to support Chairman Isham in his substantial duties on the GLAB. The initial work of the GLAB consisted of providing advice and commentary on drafts of the Great Lakes Restoration Initiative’s Action Plan II, which summarizes the actions that federal agencies planned to implement during FY15-FY19 using GLRI funding.

The GLAB has held at least two face-to-face meetings each year since it was established, with at least quarterly teleconferences. Once the GLRI Action Plan II was released, the GLAB began to address other issues of importance to the Interagency Task Team, including working on researching and developing potential new ways to track GLRI projects, their success and sustainability, and providing comments and analysis on a new adaptive management strategy for implementing the GLRI.

By providing support to Chairman Isham in his role on the GLAB, GLIFWC was able to ensure that there was a Lake Superior and tribal perspective at every GLAB meeting, including teleconferences. Because Lake Superior is unique among all of the Great Lakes, the issues it faces and the work that must be done is also unique. As the most pristine of all the Great Lakes, it is imperative that protective actions are taken to ensure the quality of its water and habitats do not degrade. It is therefore imperative that Lake Superior be represented at Great Lakes wide initiatives to ensure that its unique issues are not forgotten.

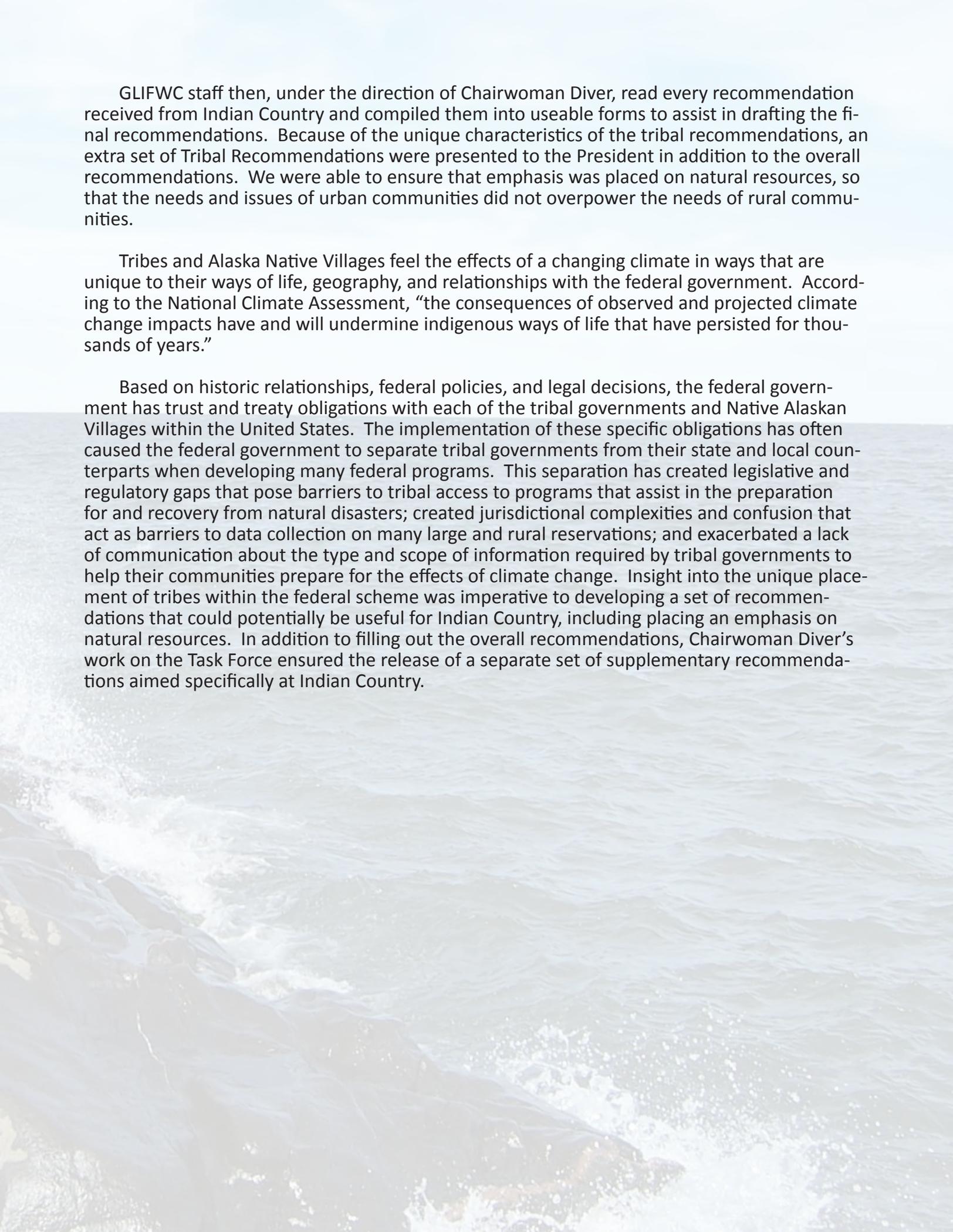
While Chairman Isham does not represent all tribes, he can identify issues that may be of interest or concern as they arise. The appropriate governments then can pursue additional government-to-government interactions where needed.

White House State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience

GLIFWC also provided support in national initiatives with the potential to impact the Great Lakes. On November 1, 2013, President Obama signed an Executive Order that established the White House State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience to advise the Administration on how the Federal Government can respond to the needs of communities nationwide that are dealing with the impacts of climate change. The Task Force included governors, mayors, county officials and tribal leaders, including Karen Diver, then Chairwoman of the Fond du Lac Band of Lake Superior Chippewa, a member of GLIFWC.

GLIFWC staff was able to support Chairwoman Diver in her role on the Task Force. With direction from Chairwoman Diver, GLIFWC staff was able to assist federal agencies develop an outreach plan to tribal communities throughout the country to inform them about the work of the Task Force and to request input on ways the federal government could provide assistance for or remove barriers from preparations for and recovering from the effects of climate change. The changing climate brings with it increased severity in weather events, decreasing access to abundant and usable water, and other stresses on infrastructure. Because tribes are generally behind on infrastructure and capacity, because of the legal routes to gain governmental capacity, and because of the unique locations of reservations and other tribal lands, the needs from the federal government are often different than those required by state and local governments. Therefore, it was important to receive as much input, advice, and personal stories from Indian Country as quickly as possible.





GLIFWC staff then, under the direction of Chairwoman Diver, read every recommendation received from Indian Country and compiled them into useable forms to assist in drafting the final recommendations. Because of the unique characteristics of the tribal recommendations, an extra set of Tribal Recommendations were presented to the President in addition to the overall recommendations. We were able to ensure that emphasis was placed on natural resources, so that the needs and issues of urban communities did not overpower the needs of rural communities.

Tribes and Alaska Native Villages feel the effects of a changing climate in ways that are unique to their ways of life, geography, and relationships with the federal government. According to the National Climate Assessment, “the consequences of observed and projected climate change impacts have and will undermine indigenous ways of life that have persisted for thousands of years.”

Based on historic relationships, federal policies, and legal decisions, the federal government has trust and treaty obligations with each of the tribal governments and Native Alaskan Villages within the United States. The implementation of these specific obligations has often caused the federal government to separate tribal governments from their state and local counterparts when developing many federal programs. This separation has created legislative and regulatory gaps that pose barriers to tribal access to programs that assist in the preparation for and recovery from natural disasters; created jurisdictional complexities and confusion that act as barriers to data collection on many large and rural reservations; and exacerbated a lack of communication about the type and scope of information required by tribal governments to help their communities prepare for the effects of climate change. Insight into the unique placement of tribes within the federal scheme was imperative to developing a set of recommendations that could potentially be useful for Indian Country, including placing an emphasis on natural resources. In addition to filling out the overall recommendations, Chairwoman Diver’s work on the Task Force ensured the release of a separate set of supplementary recommendations aimed specifically at Indian Country.

MERCURY PROGRAM

Promoting Safe Fish Consumption

Tribal members harvest and consume freshwater fish as a part of their bimaadiziwin, or traditional lifeway. Mercury, in the form of methylmercury, is a major contaminant of concern in subsistence fish species of GLIFWC's eleven member tribes. Tribal members are disproportionately impacted by the presence of mercury in fish due to their increased fish consumption rate relative to the general public. Tribes cannot simply reduce fish consumption in order to lower their mercury exposure due to the critical importance of freshwater fish as a subsistence and cultural resource. Further, contaminated fish threaten the tribes' ability to exercise their treaty guaranteed right to harvest fish off reservation throughout the ceded territory.

In response to concerns about the health risks to tribal members of consuming contaminated fish, GLIFWC staff began testing mercury levels in subsistence species in 1989, with the goal of providing tribal members with the necessary information to make informed decisions regarding safe fish consumption. As of February 2016, GLIFWC has collected and analyzed nearly 8,000 fish from Lake Superior and over 200 inland lakes within the ceded territories. These efforts have been funded through the Great Lakes Restoration Initiative since 2010, with GLRI funds providing for the testing of 2,200, or over 25%, of these fish.

In addition to supporting mercury testing, GLRI funds have allowed GLIFWC to develop and implement a far-reaching Mercury Outreach Program that informs tribal members about mercury and safe fish consumption. Mercury-based consumption advice for walleye from inland lakes, the subsistence species most frequently harvested and consumed by tribal members, is communicated using lake-specific, GIS-based, color-coded Mercury Maps. The maps combine text and graphics to encourage continued walleye harvest and consumption while limiting mercury intake. The maps are updated every two years and currently depict 457 lakes throughout the ceded territory. The GLRI funding has also allowed for the development of fish consumption advice for six species from Lake Superior as well as muskellunge and northern pike from inland lakes.



In addition to the Mercury Maps, a number of other materials about safe fish consumption have been developed as part of the Outreach Program including informational brochures, a large display board, and informational cards for parents, women, and spearers. These materials have been distributed at over 100 tribal events since September 2010, such as spearers' meetings, powwows, tribal health fairs, tribal environmental fairs, and traditional food cooking demonstrations. Information is also communicated to tribal members through articles in GLIFWC's quarterly newspaper, interviews on Wisconsin Public Radio, GLIFWC's website, and social media posts.

Under GLRI funding, the Mercury Program has:

- Increased the state of knowledge on mercury in nine tribally important fish species
- Provided for the collection of 2,200 fish, each tested for mercury
- Communicated safe fish consumption advice to tribal members at over 100 events and gatherings
- Distributed approximately 2,500 printed outreach materials to tribal members with information on mercury and safe fish consumption



CLIMATE CHANGE

Predicted Impacts to the Ceded Territory

GLRI capacity funding has allowed GLIFWC to conduct data-driven analysis on the range of climate change scenarios that will affect the ceded territories. The downscaled climate change model outputs developed by Wisconsin Initiative on Climate Change Impacts (“WICCI”) were integrated with GIS information on treaty protected resources in the ceded territories. This information, along with a preliminary ceded territory vulnerability report, are the first steps in developing a GLIFWC climate change adaptation plan for the Ceded Territories.

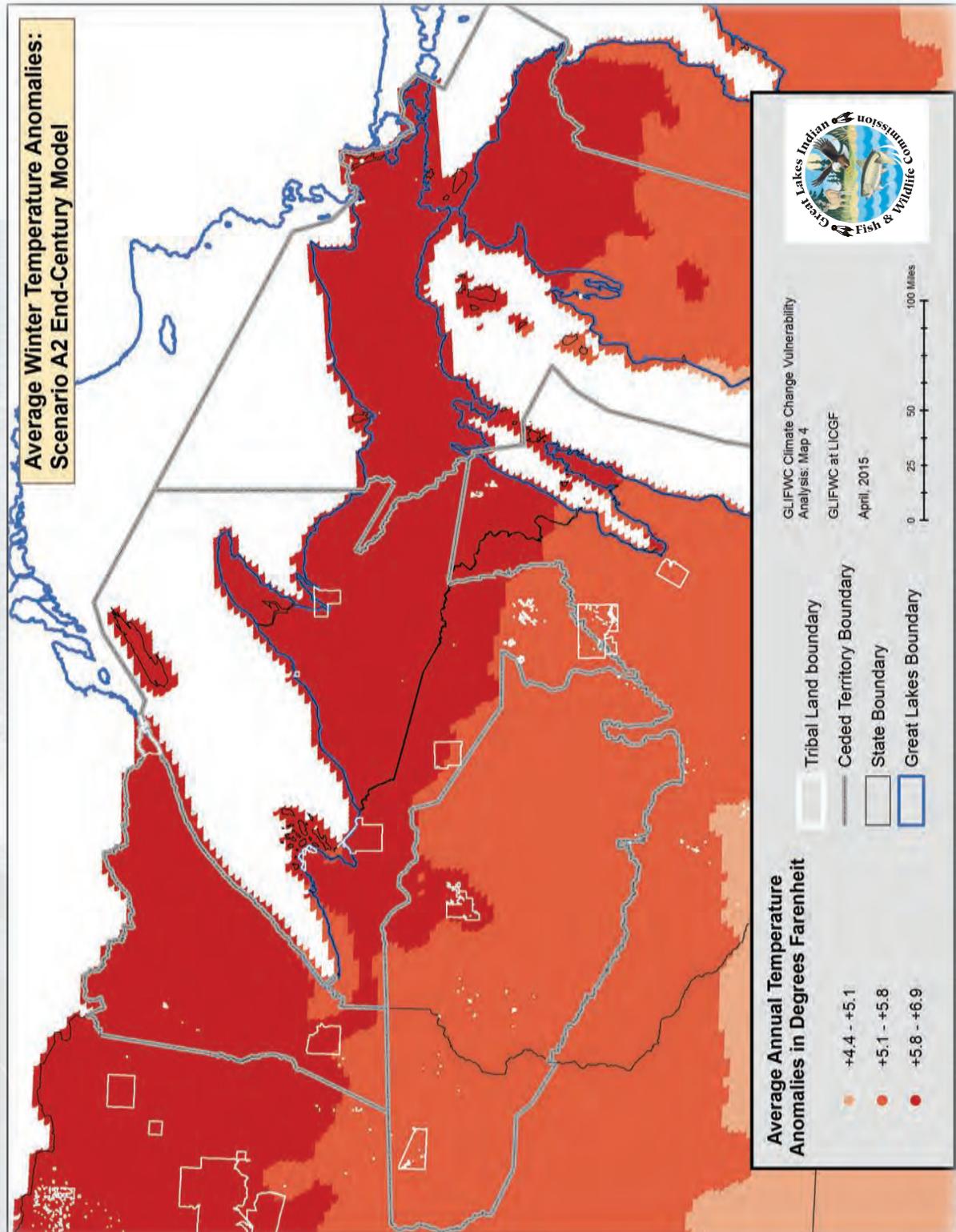
As outlined in the project report, the results of the preliminary analysis indicate that the Ceded Territories are likely to undergo some significant climatic changes in the next 50 years. Using Wisconsin as an example, since 1950, the state’s average temperature has increased by 1 degree; however, this statewide number does not reflect some regional differences in the effects throughout the ceded territory. The western half of the Wisconsin ceded territory has warmed more than the eastern half. Precipitation has also changed with a general trend towards dry conditions along Lake Superior.

The data indicates that climate change effects will become more pronounced over the next 50 years. There is a 95% probability that a 4 to 6 degree average temperature increase will occur in the next 50 years. The most pronounced effects are predicted to occur during the winter season where an increase in temperatures of 6 to 8 degrees is forecast. Summer temperatures are predicted to increase by 4 to 6 degrees. Changes in precipitation are also expected with a general trend towards drier summers and decreased snow in winter. While these numbers vary depending on the scenarios used, it is clear that some changes have already occurred and more significant changes will occur and have the potential to impact species of interest to GLIFWC member tribes.

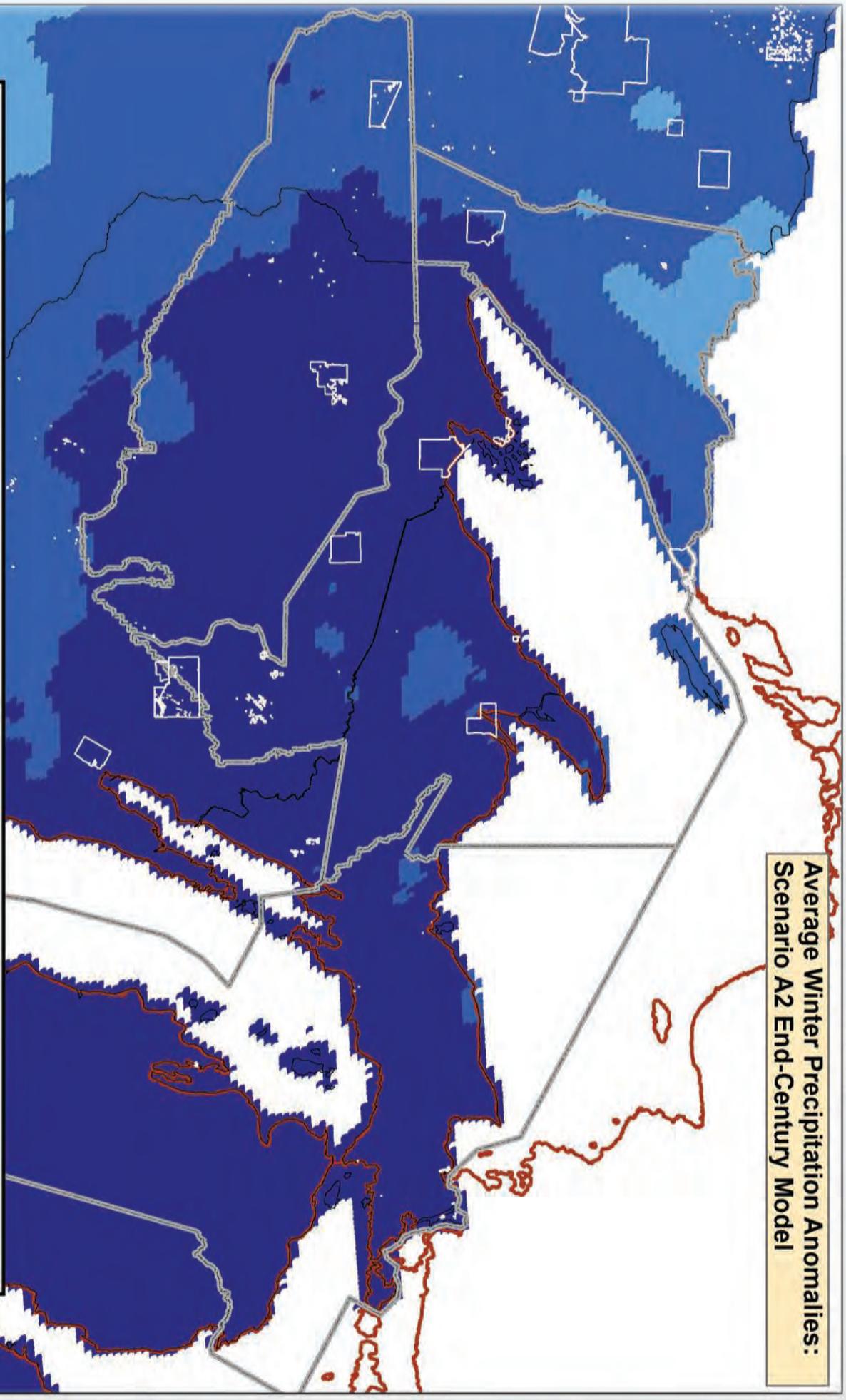
GLIFWC is also supporting the climate change initiatives of our member tribes. The GIS data structures described above have been shared with the Bad River Band of Lake Superior Chippewa to be used in the development of a climate change monitoring plan for the Band’s reservation. GLIFWC staff also participated in the advisory group for that project. GLIFWC has also shared this data with the two other intertribal agencies in the region, the 1854 Treaty authority and the Chippewa Ottawa Resource Authority, to further their own climate change initiatives.

GLRI funding provided GLIFWC staff with the capacity to undertake a preliminary ceded territory vulnerability report, and to conduct data-driven analysis on the range of climate change scenarios that will affect the ceded territories. These projects are the basis of and launching point for GLIFWC’s new climate change program. Under funding from the Bureau of Indian Affairs, GLIFWC climate change staff will use this information to develop a climate change adaptation plan for managing the natural resources of the ceded territories in a changing climate.

GLIFWC staff have been active in the development of regional climate change plans. Staff participated in the development of the National Fish, Wildlife, and Plants Climate Adaptation Strategy—a national, government-wide strategy meant to coordinate federal, state, tribal, and local activities addressing the expected climate impacts on fish, wildlife, and plants. GLIFWC staff also participated in the development of the Lake Superior Ecosystem Climate Change Adaptation Strategy through work of the Sustainability Committee of the Lake Superior Partnership Work Group, part of the Binational Program. GLIFWC staff expect to actively participate in the next version of this document.



**Average Winter Precipitation Anomalies:
Scenario A2 End-Century Model**



**Average Annual Precipitation
Anomalies in Inches**

- +0.4 - +0.7
- +0.7 - +1.1
- +1.1 - +1.8

- ▭ Tribal Land boundary
- ▭ Ceded Territory Boundary
- ▭ State Boundary
- ▭ Great Lakes Boundary

GLIFWC Climate Change Vulnerability
Analysis: Map 14
GLIFWC at LICGF
April, 2015



FISH STUDIES

Long Term Tracking of Toxics and Environmental Trends

The Great Lakes Fish Monitoring and Surveillance program collects fish from each Great Lake annually and analyzes them for contaminants that bioaccumulate to assess trends in the open waters of the lakes. GLIFWC staff utilizes EPA funds to collect lake trout in odd numbered years from waters near the tip of the Keweenaw Peninsula in Michigan. From 2007 to 2015, 139 lake trout were collected during fall spawning surveys, packaged and shipped per EPA protocols. The resulting data are used to track the effectiveness of toxic reduction efforts, track environmental trends, and inform programs that issue health information on chemicals of concern (<http://www3.epa.gov/greatlakes/monitoring/fish>).



WETLANDS

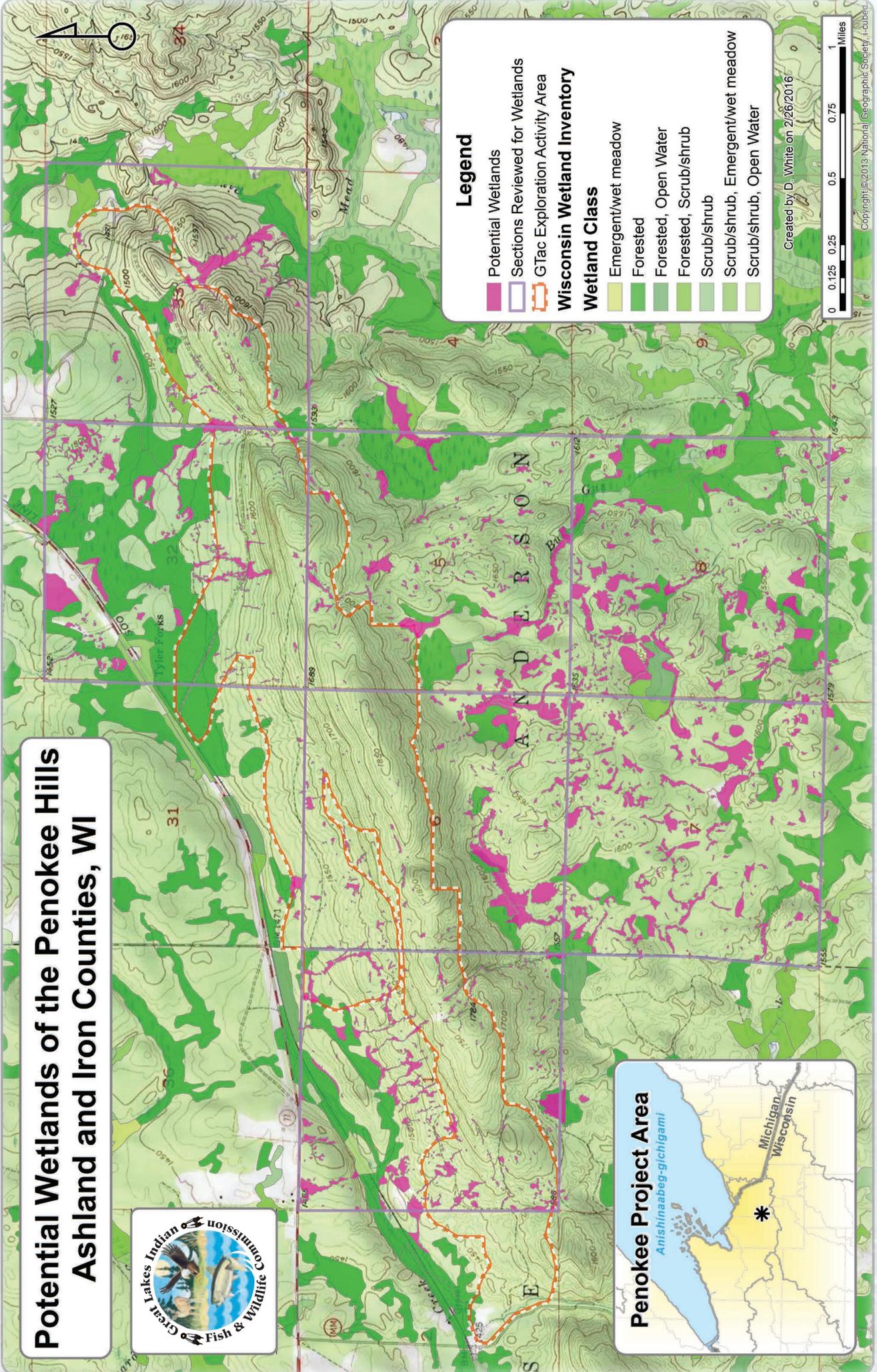
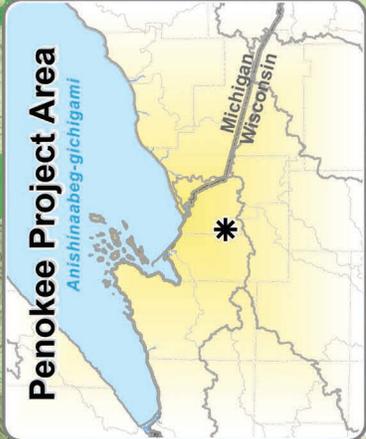
Investigating the Baseline Conditions

GLIFWC was one of the recipients of the 2015 Wetland Awards given by the Wisconsin Wetlands Association (WWA). GLIFWC was one of many organizations and individuals recognized in the cooperative effort to advance wetland science in the Penokee Hills of northern Wisconsin, headwater wetlands of the Bad River Watershed.

GLIFWC's wetland work in Wisconsin's Penokee Range, consisted of mapping areas that appeared to be wetlands (potential wetlands) from aerial photos over seven square miles (approx. 4,500 acres). Although a wetland inventory existed for this area, the abundance of wetlands was not accurately represented. A subset of the potential wetlands were field verified by Bad River's Natural Resource Department and GLIFWC. Field verification determined that a majority of these areas were indeed wetlands, increasing documented wetlands from roughly 15% to 25% by area. Other important work included documenting many unmapped streams, collecting baseline water quality data for several headwater streams, and assisting in the coordination of water quality monitoring in the area by compiling station locations from multiple partners and providing maps at data sharing meetings. This work is critical to understanding the current conditions of the headwaters of the Bad River Watershed and the connections to downstream waters.



Potential Wetlands of the Penokee Hills Ashland and Iron Counties, WI



Legend

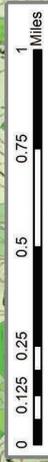
- Potential Wetlands
- Sections Reviewed for Wetlands
- Gtac Exploration Activity Area

Wisconsin Wetland Inventory

Wetland Class

- Emergent/wet meadow
- Forested
- Forested, Open Water
- Forested, Scrub/shrub
- Scrub/shrub
- Scrub/shrub, Emergent/wet meadow
- Scrub/shrub, Open Water

Created by D. White on 2/26/2016





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