DRAFT

ENVIRONMENTAL ASSESSMENT (EA)

Samers Bay Wetland Habitat Restoration Project

Submitted:
September, 2021

Prepared by:

Wisconsin Department of Natural Resources
101 S. Webster St.
P.O. Box 7921
Madison, WI 53707-7921

Prepared for:

U.S. Department of Interior, Fish and Wildlife Service
Region 3, Division of Wildlife and Sport Fish Restoration
Bloomington, MN 55437

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1. Purpose and Need

1.1 Purpose

The purpose of this project is to restore aquatic vegetation to provide habitat and enhance quality of food sources (fish) for waterfowl that utilize Lake Butte des Morts (LBDM). This project will aid in the restoration of palustrine emergent and deep marsh wetland that provides high quality habitat for Spring and Fall migrating waterfowl and also improve habitat for breeding and brood-rearing waterfowl.

1.2 Need

Deeper water levels along with timing of water level fluctuations transformed Lake Butte des Morts from a natural state with riverine marshes to what the lake is today: a turbid, open-water system dominated by algae with very few aquatic plants. Major loss of marsh, receding shorelines, increasing surface area and wind fetch, and low abundance of aquatic vegetation has significantly contributed to poor water quality, low water clarity, and continued shoreline erosion. These impairments have been further exacerbated by nutrient and sediment pollution from the watershed. Despite past restoration efforts, aquatic and emergent vegetation as well as shoreland habitat have continued to decline.

Samers Bay is located on the northwest shore of LBMD. The Fox River enters LBDM just north of Samers Bay. Since 1941, the average shoreline recession rate at the Samers Bay site is 8-9 feet per year that has resulted in a total wetland loss of 93 acres to date. Without this project, extensive shoreline erosion and wetland loss will likely continue at Samers Bay, which currently has some of the highest shoreline erosion rates on the Winnebago System. Continual shoreline erosion and loss of critical wetland habitat will have a negative impact on waterfowl populations in the system.

Given the excessive amount of phosphorus and sediment concentrations in the lake surface water runoff, shoreline erosion, and internal loading, nutrient availability is not the limiting for aquatic plant growth in LBDM. Due to degraded lake conditions, the limiting factors for macrophyte growth are sunlight availability and high energy wave action. The Samers Bay Wetland Habitat Restoration Project will decrease wave energy in the bay, resulting in less sediment resuspension, increased water clarity, decreased erosion, and conditions that support restoration of aquatic plant communities.

1.3 Background

“The Winnebago Lakes are part of the Winnebago System which includes roughly 142 river miles on major tributaries to the first dams. The main tributaries for the Winnebago Lakes are the Upper Fox and Wolf Rivers. The Wolf River enters the lake chain on the northern end of Lake Poygan. The Upper Fox River enters the chain on the southern end of Lake Butte des Morts. Water flow then converges in a small section of the Fox River on the eastern end of Lake Butte des Morts and makes its way into Lake Winnebago. The Wolf River drains close to 3,700 square miles of land and the Upper Fox River drains just over 2,000 square miles of land. Those watersheds combined contribute drainage to the lakes from 5,761 square miles of land which is about 10% of the entire area of Wisconsin. Lake Winnebago discharges into the Lower Fox River and water from the system eventually makes its way to the Bay of Green Bay.” (Doering & Acy, 2020)

Land use within the Lake Butte des Morts watershed is predominantly agriculture, see the TMDL Subbasin - Lake Butte des Morts land use summary and map in Appendix A. There are numerous townships bordering the lake with at least 600 residential lots on Lake Butte des Morts.

Marsh and wetland areas located throughout LBDM historically supported some of the most productive fish and wildlife areas on the Winnebago System. However, deterioration of protective marsh edges and decreases in water clarity since the late 1950s have resulted in dramatic vegetation losses and declining fish and wildlife populations.

In July 1998, the Butte des Morts Conservation Club, with financial support from the public and Wisconsin Department of Natural Resources grant programs, purchased 1183 acres of Lake Butte des Morts wetlands and placed it in a "public trust" for perpetuity. This wetland area, known as Terrell's Island, has all the base ingredients necessary to rebuild a healthy and productive wildlife and fish habitat.

Terrell's Island was constructed by the WI DNR in the late 1990s. The 15,000 foot breakwall enclosed approximately 600 acres of water with the intention of restoring lost wetland and aquatic habitat and improving water quality. In addition to the breakwall, seven nesting islands were built inside of the enclosure. The open water and marsh area at Terrell's Island is known as Samers Bay (see Appendix B, aerial image site map). The years following construction, the enclosed area showed incredible improvements in water quality and habitat. Water clarity greatly increased and desirable aquatic vegetation as well as fish species flourished. Unfortunately, in the late 2000s, conditions within the breakwall began to decline. An excess amount of nutrients from large groupings of certain bird species and a lack of water circulation caused a rapid decline in water quality, periods of low dissolved oxygen, and loss of aquatic plants.

Since the construction of the Terrell's Island breakwall, several other breakwalls have been built throughout the Winnebago Pool Lakes (Lake Butte des Morts, Lake Winneconne, and Lake Poygan). Lessons learned from the Terrell's Island project, particularly the importance of openings in the breakwall to encourage water circulation, have been incorporated into breakwall designs which has resulted in incredible restoration success in other locations within the Winnebago system. Project partners now seek to take those same lessons and apply them to the Terrell Island/Samers Bay site to help the site once again provide high-quality habitat for waterfowl and fish populations.

1.4 Description of Project Location

Winnebago County, Wisconsin
Town of Omro
TRS: T18N R15E Sec02 NE NW
T18N R15E Sec02 NW NE
GPS Location: 44.068131, -88.678180

See Appendix A for location map.

1.5 Duration

This Environmental Assessment will remain in place for the duration of the proposed project. The project is expected to be completed by the end of winter 2023/2024.

2. Alternatives

The proposed project is the second phase of a larger two-phase restoration effort. As such, there are only two feasible alternatives for this project: implement as designed (recommended) or take no action. These alternatives are evaluated below.

2.1 Recommended Alternative

The full Samers Bay project involves removal of approximately 2,200' of the existing eastern breakwall, removal of five artificial nesting islands, and construction of approximately 5,850 linear feet of breakwall in Samers Bay along the southern side of Terrell's Island, split into 11 segments. Breakwall segments will be separated by a 35-foot opening approximately every 500 feet. Construction activities associated with this project must be completed when ice conditions are sufficient to hold heavy equipment. Ideally, ice cover should be solid and close to two feet thick to support the weight and movement of the trucks and equipment removing, hauling, and placing the rock. When ice conditions become sufficient for work to occur (typically in January/February), the duration of construction will be dependent on weather and ice conditions. Sufficient ice conditions are not guaranteed every winter. This will be a major factor in determining how much of the work can be completed each season. Given these variables, the anticipated completion date is early spring 2024.

The project consists of two phases. The first consists of removal and reuse of existing breakwall and island rocks to construct a portion of the new breakwall, while the second phase consists of purchasing new rock that will be hauled in to construct the remaining length of new breakwall (see Appendix D, site plan):

- Phase 1 - ***Phase 1 is funded entirely with non-federal sources. As such, impacts associated with phase 1 activities are not evaluated in this environmental assessment.***
    - Phase 1 involves removal of the nesting islands and approximately 2,200' of the existing east breakwall overwinter when LBDM is iced-over, stockpiling materials on land during spring-summer-fall, and placement of recovered rock to form the southern breakwall.
    - Southern breakwall segments 6-11 will be constructed in Phase 1 (~3,000 linear feet). The new breakwall will consist of new non-woven class 1 geotextile on the lake bottom topped with recovered rip-rap (a.k.a. shot rock). A typical section of the new breakwall will be a width of about 23 feet 6 inches, and a general height from lake bottom to top of 5 feet. The estimated total quantity of rip rap needed for breakwalls 6-11 is 9,998 cubic yards/13,486 tons.
    - Phase 1 began in winter 2021. The nesting islands and approximately 400 LF of the eastern breakwall were recovered, with materials stockpiled on land. Ice conditions precluded further removal of the existing breakwall. Phase 1 will be completed in January-February 2022, if ice conditions allow.

- Phase 2 – ***This is the portion of the project being funded by federal money and therefore impacts associated with phase 2 activities being evaluated in this environmental assessment.***
    - Phase 2 involves construction of the Samers Bay (south) breakwalls 1-5, approximately 2,850 linear feet in total. The estimated total quantity of rip rap needed for breakwalls 1-5 is 9,998 cubic yards/13,486 tons. Breakwalls 1-5 will have the same structure and cross section as breakwall installed in Phase 1 but will be constructed with new rip-rap. A local contractor

will be hired to complete this work and rock material will come from a local, existing quarry.

The project timeline for the Recommended Alternative is as follows:

- Summer 2020: Complete Project Engineering and Bid Out the Project
- Fall 2020: Secure Necessary USACOE and WDNR Permits
- Winter 2020/2021: Begin Phase 1, Terrell Island Rock Removal and removal of approximately 400' of existing wall.
- Winter 2021/2022: Continue working on Phase 1 and begin Phase 2, as conditions allow
- Winters 2022/2023 & 2023/2024: The window of time in which construction will be able to commence each season will be dependent on weather. Ice will need to be thick and stable enough to support heavy equipment. As a result of such specific conditions needed for construction activities, overlap in phases may occur once all funding is in place. Project will progress as much as conditions allow for each season. Anticipated to complete construction of Samers Bay Breakwall by the end of winter 2023/2024.

2.2 No Action Alternative

The "No Action" alternative would result in removal of existing breakwall and islands and construction of new breakwall segments 6-11 (Phase 1; non-federal). Breakwall segments 1-5 would not be constructed.

3. Affected Environment

The affected environment for the project is described in Section 1.3 above.

4. Environmental Consequences

4.1 Consequences of Recommended Alternative

Listed Species

Section 7 of the Endangered Species Act requires evaluation of any federal action that may impact any listed, proposed, or candidate species or result in the adverse modification of critical habitat.

To analyze the project`s potential to impact listed species, the project boundary was reviewed in the Information for Planning and Consultation (IPac). Using the IPaC results, a Region 3 WSFR ESA Compliance Document (Section 7) was completed. Findings included either "No Effect" or "May Affect, Not Likely to Adversely Affect" for all applicable species.

The project was further reviewed in the WDNR Natural Heritage Inventory Portal (NHI). The NHI is the most comprehensive source of rare species occurrence data for Wisconsin. The database includes information on state listed species, special concern species, natural communities, and natural features. Searches within the Portal include a 1-mile buffer for terrestrial/wetland species and a 2-mile buffer for aquatic species. In addition to federally listed species identified through the IPaC search, five state listed species were identified in the NHI search: two endangered bird species, one threatened bird, one special concern bird and one special concern fish.

Because site work will occur during the winter and breakwalls that are being removed are being reconstructed less than one mile from their original location, none of the state-listed migratory

bird species will be present during the project activities and thus none will be negatively impacted by the proposed action. Similarly, construction during winter months will limit negative impacts to a special concern fish during their spawning season (mid-May through early July).

Based on these findings, no significant adverse effects on state or federally listed species are anticipated to occur as a result of the recommended alternative.

Cultural Resources

As a federal action, the undertaking of the proposed project with federal grant funds must comply with Section 106 of the National Historic Preservation Act and must consider effects to historic areas and properties. The following reviews were completed:

- WDNR Archaeologist in June 2020, who determined the project did not have much potential to affect historic properties. But determined that, as a major landscape change spurred on by federal funding, THPO notifications were appropriate.
- THPO notification letter was sent via email on July 2, 2020 with responses requested by August 3, 2020. One reply was received (Michael LaRonge, THPO for the Forest County Potawatomi Community) who offered a finding of no historic properties affected with two conditions. First if the State Historic Preservation Office (SHPO) finding suggests there will be an adverse effect on either archaeological site the Tribe reserves the right to reconsider this opinion. Second, in the event that human remains, or archaeological materials are exposed as a result of project activities work must halt and the Tribe must be included in any consultation regarding treatment and disposition of the find prior to removal. No further requests for consultation were received.
- The WI SHPO reviewed the project in May 2021 and found that no eligible properties will be affected. The project is able to proceed as planned with the stipulation that the WI SHPO office is contacted if plans change or cultural materials/human remains are found during the project.

Based on these findings, no impacts to historic resources are anticipated to occur as a result of the recommended alternative.

Socio-economic Resources and Environmental Justice

Social and economic conditions were examined to identify any potential negative impacts associated with the proposed action. LBDM is part of a chain of four lakes in Northeast Wisconsin. This lake system, often referred to as the Winnebago Lakes, spans 159,097 surface acres. Situated in the Fox Valley, over two million people live within 75 miles of the Lakes. The Lakes are prized for fishing, boating, and sturgeon spearing and are important to the local economy as well as long-held family traditions.

These activities support the local economy through purchase of gas, food and drink, and hunting/fishing gear and supplies A UW-Extension study from 2007 estimated that recreational angling (not including Sturgeon spearing) contributes approximately $234 million to a five county region each year. Popular fish species include bluegill, perch, black crappie, white bass, largemouth and smallmouth bass, catfish, northern pike, and walleye. Waterfowl hunting and fishing are the primary activities conducted in the action area. Through enhancement of waterfowl and fish populations, the recommended alternative will provide long-term economic benefits in the area associated with availability of high-quality outdoor recreation opportunities.

Given the project scope, no impacts to traffic, housing, or public health are anticipated. Further, after construction, hunters and anglers who do not have access to a boat will retain the

opportunity to access the eastern breakwall on foot or by vehicle. As such, the proposed alternative is not expected to result in disproportionate impacts to minority or low-income populations.

Cumulative Impacts

When the project (phase 1 and phase 2) is complete, Terrells Island will have a 2,200-foot opening on the east side of the existing breakwall. The rock material removed to create the opening will have been used to build a large portion of the new Samers Bay breakwall. This opening will allow for substantial water exchange between the area inside of Terrells Island and Lake Butte des Morts. The result will be better water quality and reestablished use by desirable fish and wildlife species within the 569-acre Terrell's Island Habitat Restoration Area. The Samers Bay breakwall will total 5,850 feet in length, with 35-foot openings every 500 ft, restoring 111 acres of wetland habitat.

Breakwalls create calm areas protected from wave action in high energy lake systems. When designed and constructed appropriately for the site, breakwalls provide multiple benefits such as:

Attenuation of wave energy, reducing wave size and impact
Protection of the shoreline erosive wave action
Increased habitat quality and complexity
Improved water clarity by reducing re-suspension of lake sediment otherwise caused by high energy waves
Improved water quality

The calm backwater created by breakwalls results in rapid expansion of residual native aquatic macrophytes forming the basis for newly created fish and wildlife habitat where habitat had been previously lost. A 2018 aquatic plant point-intercept survey (see survey map, Appendix C) found that only 11% of 769 sites sampled within the littoral zone of Lake Butte des Morts had aquatic plants present. Of those located sampled, 19 were located within the planned footprint of the Samers Bay breakwall and none of the 19 sites had plants present. If submerged plants were restored at all 19 sites, that would be roughly a 22% increase in vegetated sites across Lake Butte des Morts (starting with 85 vegetated sites as surveyed in 2018 and potentially increasing to 104 vegetated sites post-breakwall construction).

In 2018, emergent and floating leaf plant communities were mapped by drone. Lake Butte des Morts had approximately 372 acres of emergent or floating leaf plant beds. If the project goal of restoring 111 acres of wetland habitat behind the breakwall is met, that would be roughly a 30% increase in emergent or floating leaf plant bed acres for the lake (starting with 372 acres of emergent/floating leaf beds and potentially increasing to 483 acres post-breakwall construction). In addition, this project would provide a larger emergent/floating leaf complex than what is typically seen on the lake. The average size of emergent or floating leaf plant beds within Lake Butte des Morts is only 4.0 acres meaning existing plant beds are highly fragmented.

The restoration of aquatic vegetation within the proposed breakwall area will provide nesting, spawning, rearing, and refuge habitat for multiple fish species. Fish species including bluegill, crappie, largemouth bass, and yellow perch will likely benefit the most and should utilize the restored habitat throughout the year.

Fishery surveys conducted at other completed breakwall projects in the Winnebago System have shown that fish diversity and abundance (particularly Centrarchids) increase when aquatic vegetation is restored. For example, electrofishing surveys were conducted by WI DNR in 2018 to

evaluate an existing Clarks Bay breakwall on Lake Winneconne. Three stations were surveyed to assess fish abundance and population metrics including, the inside of the breakwall along the structure, outside the breakwall along the structure, and a station to the east of the breakwall with natural shoreline. Catch rates for largemouth bass, bluegill, and yellow perch were notably higher inside the breakwall (64.4, 135.6, and 113.3/mile) compared to the natural shoreline station (12.0, 16.0, and 54.0/mile). In addition, bluegills were observed spawning along the rocks on the outside the breakwall along the structure, with a catch rate of 177.1/mile for the station. Therefore, the restoration of aquatic vegetation within new breakwalls should help to continue restoring fish populations.

Wildlife beneficiaries include furbearers, migratory waterfowl, coots, rails, wading birds including American and least bitterns, Foster's and black terns, bald eagles, and ospreys. Of particular interest is the potential to re-establish migration habitat for diving ducks such as scaup, redheads, and canvasbacks, all of which formerly visited the Winnebago pool Lakes in large numbers during spring and fall migrations. The surface of the breakwalls also provide additional habitat by creating complexity in dimension among the rocks and in texture of materials for periphyton, mollusks, fish, and invertebrates. Through the combination of enhanced populations of fish as prey and physical habitat, the proposed project is expected to have a cumulative positive impact on wildlife populations and outdoor enthusiasts that utilize LBDM.

4.2 Avoidance and Mitigation of Impacts for Recommended Alternative

The Primary method of avoiding impacts for the recommended alternative is the timing of activities. The project will be carried out in the winter months when species identified in the consequences section will not be present in or near the action area. The timing of the project also achieves avoidance of impacts to the special concern fish as the project activities will occur outside of its spawning season.

4.3 Consequences of No Action Alternative

Listed Species
The no action alternative would have no impact on any federal or state listed species.

Cultural Resources
With no action, there would be no potential to impact any archeological or historical resources.

Socio-economic Resources and Environmental Justice
Without construction of the proposed project, extensive shoreline erosion and wetland loss will continue at Samers Bay, which currently has some of the highest shoreline erosion rates on the Winnebago System. Continual shoreline erosion and loss of critical wetland habitat will likely result in declining fish and wildlife populations on the system. Allowing wetland loss and shoreline erosion to continue when a practicable alternative exists could have a negative impact on minority and low-income populations by decreasing local opportunities for quality hunting, fishing, and outdoor recreation. Furthermore, by choosing the no action alternative, we would not achieve the anticipated economic benefits of the improved habitat utilized by fish and wildlife and subsequently outdoor enthusiasts.

5. List of Contributors

- Sarah Brenner, Grant Program Manager, Bureau of Community Financial Assistance, WDNR
- Jennifer Gihring, Federal Aid Coordinator, Office of Management and Budget, WDNR
- Rori Paloski, Conservation Biologist, Bureau of Natural Heritage Conservation, WDNR

- Adam Nickel, Fisheries Biologist, Division of Fish, Wildlife and Parks, WDNR
- Richard Kubicek, Archaeologist and Historic Preservation Officer, Bureau of Environmental Analysis and Sustainability, WDNR

6. Consultation and Coordination

6.1 Tribal Coordination

As a federal action, the undertaking of the proposed project with federal grant funds must comply with Section 106 of the National Historic Preservation Act and must consider effects to historic areas and properties. As a part of this process the THPOs listed on the counties of tribal interest for Winnebago County were sent a project notification letter with 30-days to reply. In total, seventeen tribes were notified, and one replied with a finding of no historic properties affected. See Section 3.1.1 for additional details.

6.2 Public Meetings

The Butte des Morts Conservation Club, WDNR, and Winnebago County LWCD held two public meetings regarding the proposed project, one in Oshkosh and one in Omro. The Oshkosh meeting was attended by nineteen members of the public and Omro was attended by twenty-six for a total of forty-five attendees. Of those, forty-three supported the overall project, one was undecided, and one felt all the breakwall should be removed and no additional breakwall be constructed.

In addition to the public meetings, new releases were placed in Oshkosh Northwestern, Appleton`s "The Post-Crescent" and The Winneconne News. The project has also been highly publicized through social media, websites, local newsletters, and press releases. Overall, the project partners have received positive feedback.

6.3 Project Partners

Federal Agencies: United States Fish and Wildlife Service
State Agencies: Wisconsin Department of Natural Resources
Local Agencies: Winnebago County
Additional Stakeholders: Fox-Wolf Watershed Alliance, Butte des Morts Conservation Club, University of Wisconsin – Oshkosh

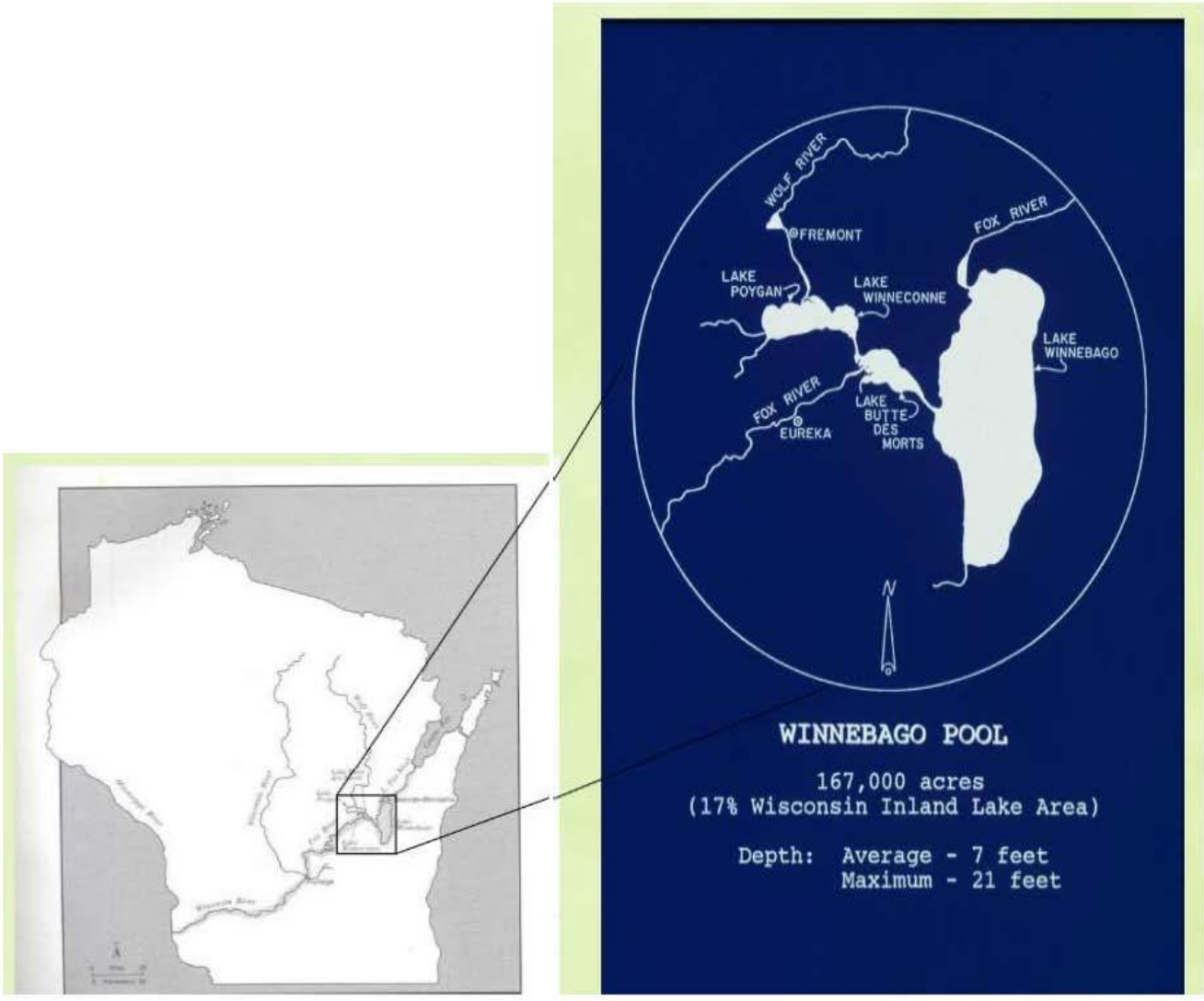
7. Public Comment and Response

Public comments on this document should be submitted to:

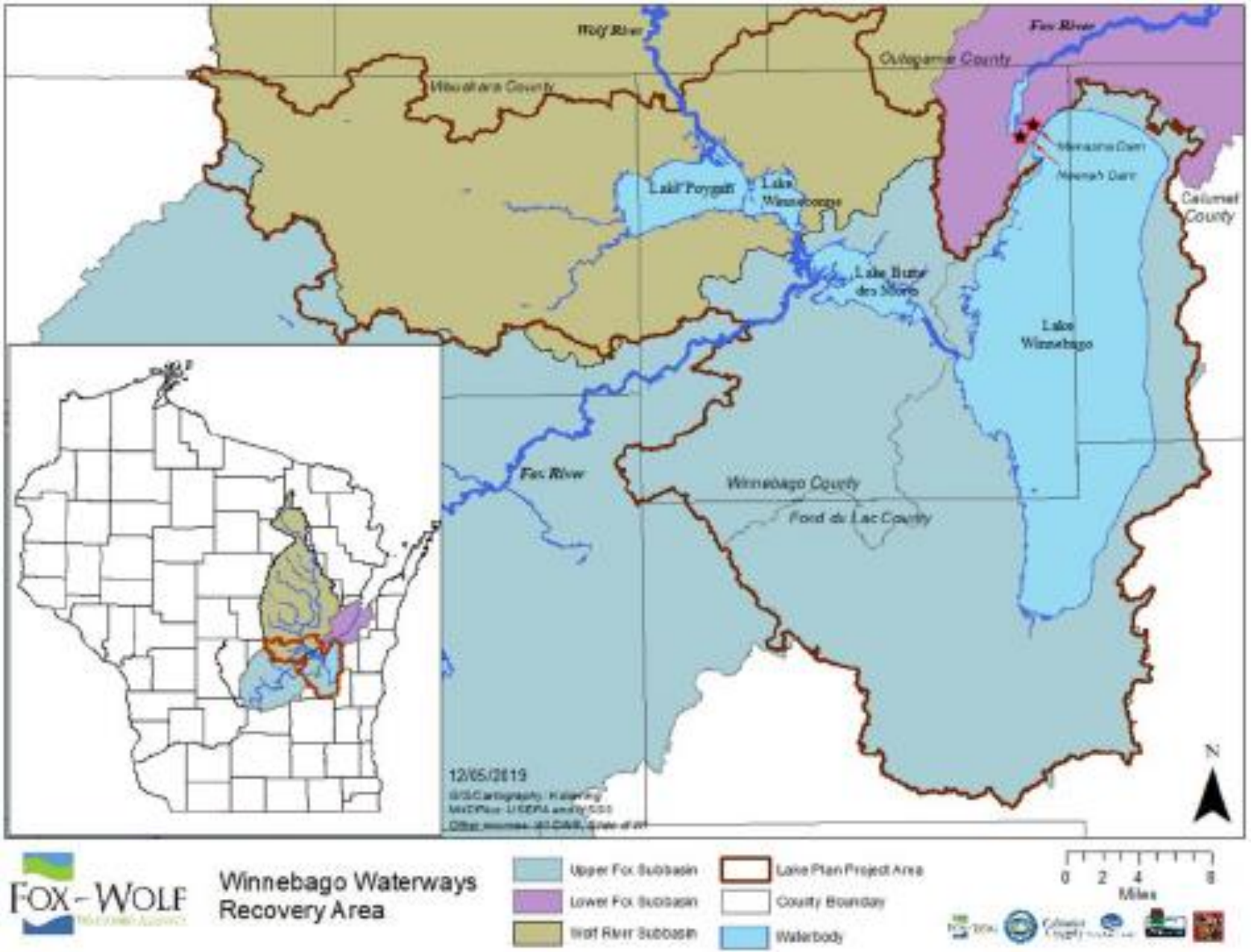
Sarah Brenner
WI Dept. of Natural Resources
1300 W Clairemont Ave
Eau Claire, WI 54703
Sarah.Brenner@wisconsin.gov
(715) 492-0928

8. Appendices

Appendix A: Maps

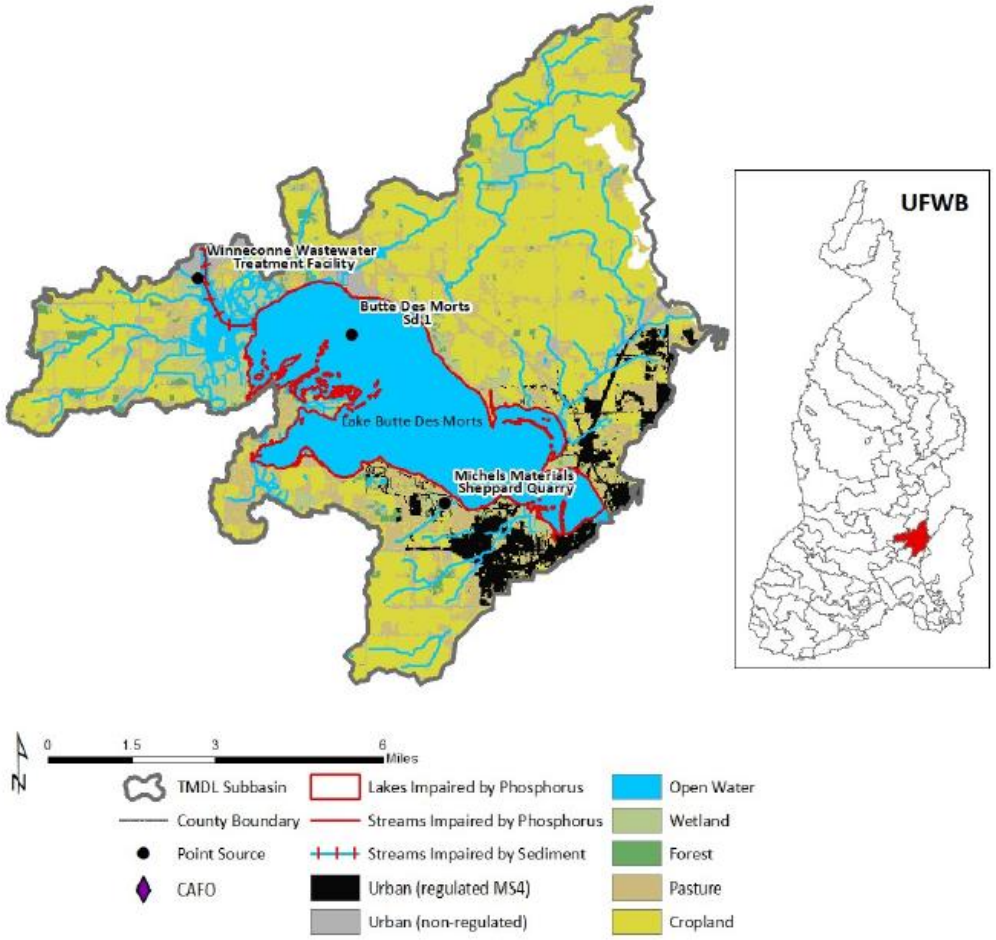


Location Map; Source: Fox-Wolf Watershed Alliance



https://drive.google.com/file/d/1Xu3F5MYDwshnJc6p91rGrHfvXyQt6LF2/view)

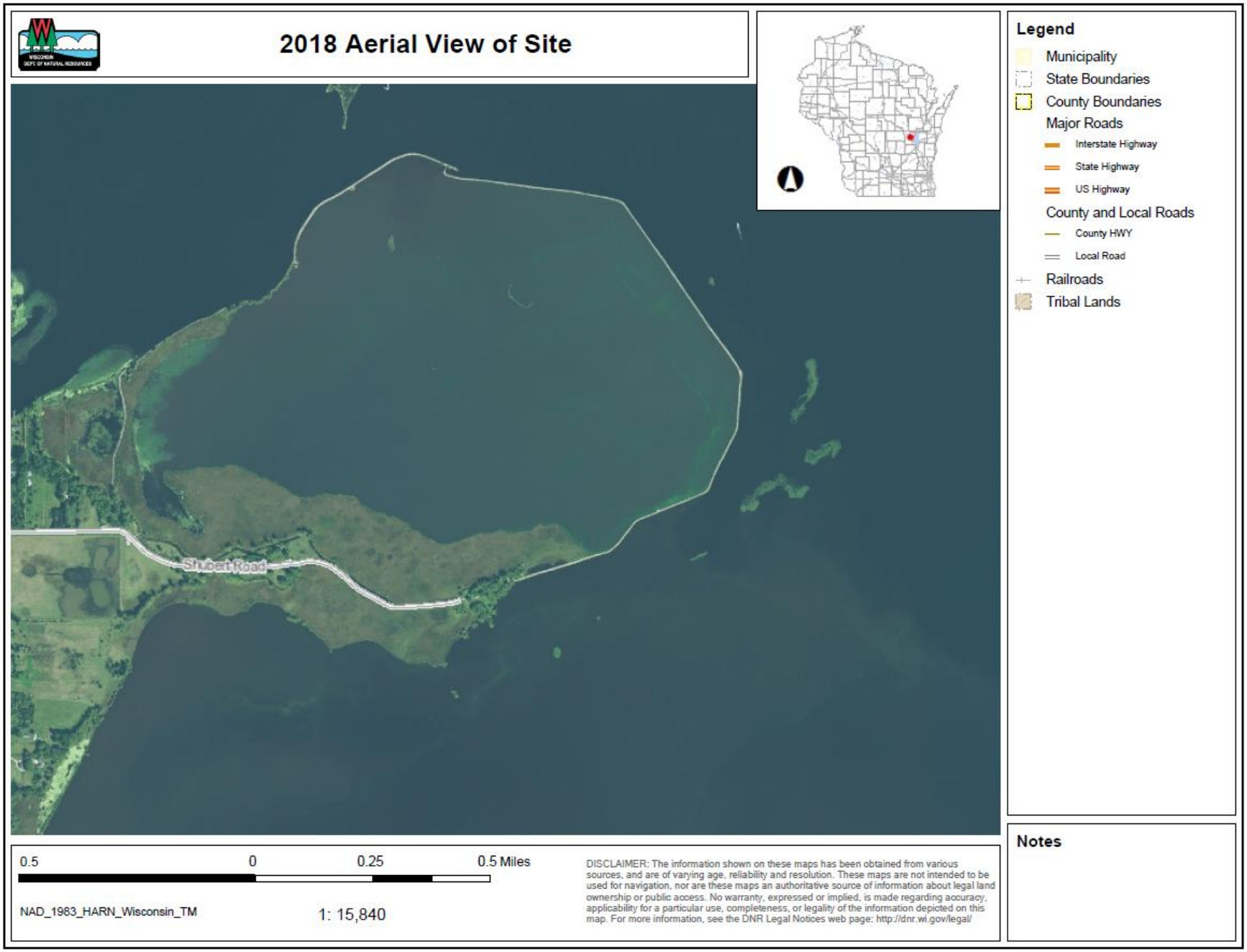
Winnebago Lakes Watershed Map, Source: Fox-Wolf Watershed Alliance



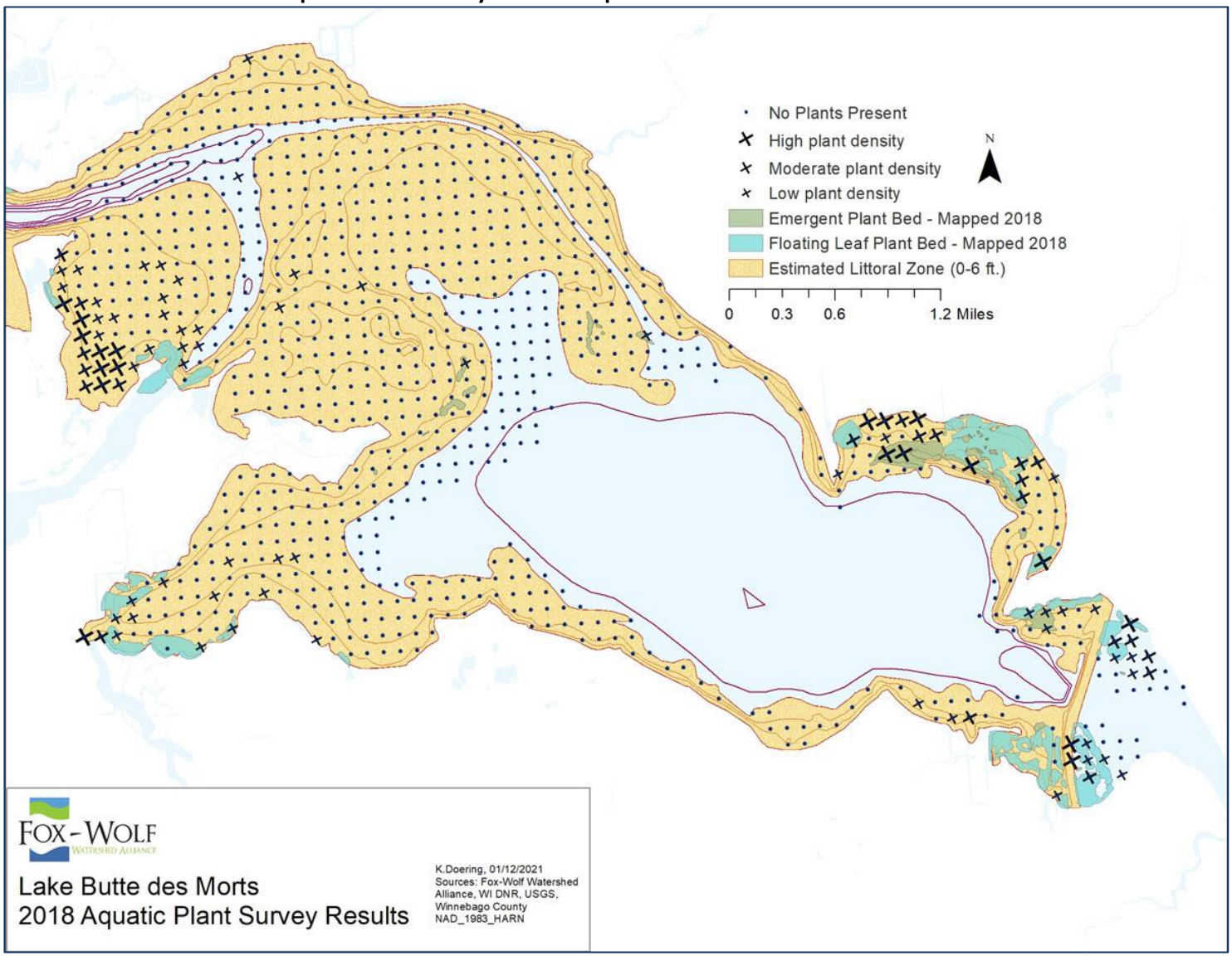
Units	Total	Wetland	Cropland	Pasture/Grassland	Urban
Acres	32,517	3,075	18,595	6,990	3,877
%	100	9	57	22	12

TMDL Subbasin - Lake Butte des Morts Land Use Map & Summary, Source: Fox-Wolf Watershed Alliance

Appendix B: Aerial Site Map

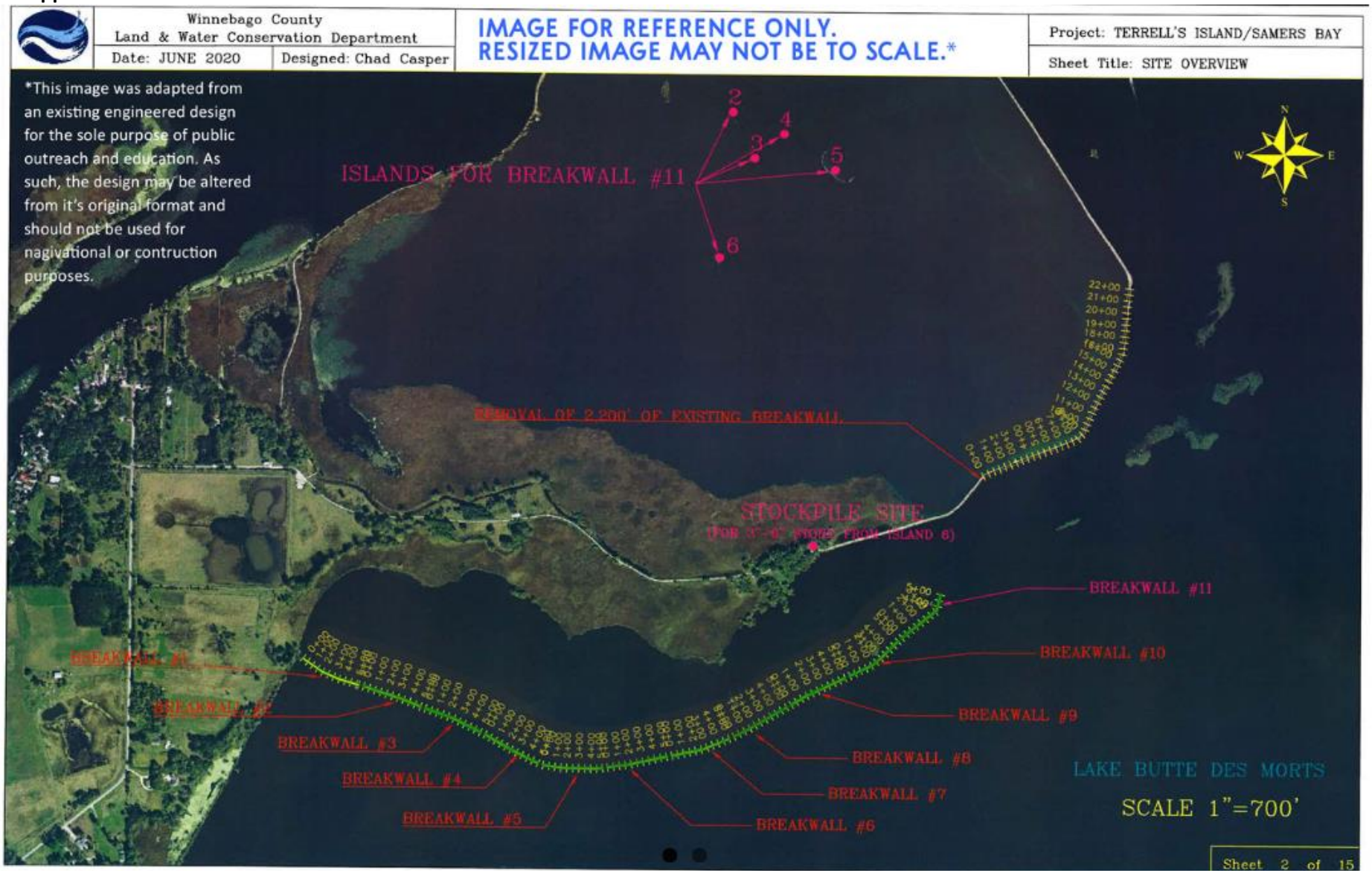


Appendix C: Lake Butte des Morts 2018 Aquatic Plant Survey Results Map



Map of Lake Butte des Morts that shows results from the 2018 Aquatic Plant PI Survey and the 2018 Emergent/Floating-leaf Plant Mapping effort. The estimated littoral zone is shown in orange. The small dots represent sample locations visited during the PI survey where no plants were found. The X symbols represent locations where plants were found during the PI survey. Plant abundance at those locations is indicated by size of the X symbol. Emergent and floating leaf plant beds are shown in polygons of green and blue.

Appendix D. Site Plan



Phase 1 (not federally funded): Removal of islands, removal of existing breakwall, and construction of new breakwall sections 6-11 with recovered rock.

Phase 2 (federally funded): Construction of breakwall sections 1-5 with new rock