Plan Name: FOX LAKE WATERSHED NONPOINT SOURCE IMPLEMENTATION PLAN Plan Date: Nov 2023 Watershed HUC: Fox Lake (070900010902) and Alto Creek (070900010901)

Background Information

Fox Lake is a 2,713-acre unstratified (shallow) drainage lake, impounded by an 11-foot dam at the lake's southern outlet to Mill Creek. Before the outlet dam was originally constructed in 1845, open water would have only existed in the current "deep hole" area of the lake and the now-shallowest regions of the lake were originally fertile prairie, riparian lands (Fox Lake Historical Society), and shallow marshlands dominated by native species such as wild rice.

The average in-lake Total Phosphorus (TP) concentration for the 2022 growing season was 128 μ g/L, more than three times the impairment threshold of 40 μ g/L for unstratified (shallow), lowland drainage lakes.

This watershed-based plan describes current land use and conditions for Fox Lake and its major tributaries: Alto Creek, Cambra Creek, Drew Creek and an unnamed intermittent tributary draining the southeast portion of the watershed. The plan contains a prioritization strategy for various management practices to reduce external nonpoint source pollution sources within the Fox Lake and Alto Creek HUC 12 watersheds over the next twenty years (2022-2042). Both HUC 12 watersheds are identified within the US EPA approved 2011 Rock River TMDL Report as needing Total Phosphorus and TSS reductions from nonpoint sources to meet Wisconsin's water quality standards.

This plan does not prioritize in-lake management practices to meet its Rock River TMDL based reduction goals. Rather, it recognizes reducing internal sources of phosphorus and sediment loading to Fox Lake will also be necessary to further improve Fox Lake's water quality, over time and also limit further degradation of the lake water quality and beneficial uses. Fox Lake internal phosphorus and sediment loading sources, and possible mitigation measures, were comprehensively evaluated by Hey and Associates within a May 2008 report entitled, *Fox Lake Management Strategy Evaluation Report and Recommendations for Future Action*, and the 2017 Fox Lake Long-Range Aquatic Plant Management Plan, developed by Ecological Research Partners. Many of the 2008 and 2017 report findings and recommendations remain applicable to Fox Lake today (2023).

1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve the load reductions in this plan (and any other goals identified in the watershed based plan). Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including rough estimate of number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control).

 \boxtimes Plan meets this requirement:

Pages 10-28, 30-33, 37-40, 63 of plan reflect element 1 criteria. The plan identifies the types and extent of external nonpoint source pollutant sources, as well as legacy phosphorus areas, within the Fox Lake and Alto Creek HUC 12 watersheds that need to be reduced (over the next 20 years) to meet the 2011 Rock River TMDL Report derived Total Phosphorus and TSS reductions. The plan also recognizes Fox lake has internal sources of phosphorus and sediment loading, that also need to be reduced, over time, to improve Fox Lake's water quality.

Section 2C summarizes the need for total phosphorus (TP) reduction in concurrence with the Rock River TMDL and related effects on dissolved oxygen with multiple models and projections to support. Watershed is decently characterized in Section 2A. The addition of historical and current land use is a nice touch.

Multiple water quality models presented with justifications. Additional graphs explaining the assumptions present primarily within the STEP-L model. Section 6 Implementation Plan supports these with multiple phosphorus-reduction-related BMPs.

□Plan <u>does not</u> meet this requirement. The following information is required:

2. An estimate of load reductions expected for the recommended management measures described in item 3 (below). Estimates should be provided at the same level as in item 1 above (e.g., total load reduction expected for dairy cattle feedlots or acres of row crops under improved nutrient management or sediment control).

 \boxtimes Plan meets this requirement:

The plan contains multiple pollutant load reduction estimates to make significant progress towards, or meet, the Rock River TMDL 40% TP reduction goal for the Fox Lake watershed – see pages 32-36 (STEPL), 37-40 (FLUX), 44-47 (BATHTUB), 19-28 (WQ monitoring results) and 53-57 (Load Reduction and Interim Milestones – Table 5). The plan's load reduction estimates are consistent with element 2 and help also meet elements 3, 7 and 9.

The plan prioritizes reducing external and legacy sources of phosphorus in each HUC 12 watersheds and then states management of the in-lake biological community of Fox Lake - to support and maintain a clear-water state characterized by low algae, dense aquatic vegetation, and a healthy game fish population – will also be necessary over the next 20 years. One load reduction estimate in plan describes reduction of internal and external phosphorus sources in the watershed will be necessary to meet in lake TP criteria (40 ug/L).

Section 6 Implementation Table summarizes suggested load reductions for each project applicable. Recommend adding narrative descriptions to explain choices in selecting load reduction/BMP amounts shown in plan.

 \Box Plan <u>does not</u> meet this requirement. The following information is required

3. Description of the NPS management measures that will need to be implemented to achieve load reductions in item 2, and identification (using a map or description) of the critical areas in which those measures will be needed to implement the plan.

 \boxtimes Plan meets this requirement:

Pages 49-52, 53-57 (table 5), 58-62 (agriculture and legacy) 63-69 (urban), 70-76 (in-lake management practices) reflect element 3 criteria. Critical areas in the two HUC 12 watersheds for agricultural and non-agricultural BMPs and also legacy phosphorus source areas are identified in the plan. The plan describes many watersheds, including Fox Lake, do not have uniform loading rates; pollutant loads often vary spatially (e.g., by

crop field) and temporally (e.g., by season/storm event) - which leads to some watershed areas having higher pollutant loading than others. Because of this, the plan describes more pollutant reduction may be achieved than estimated by STEP-L or other models when BMPs are adopted in critical areas. The plan prioritizes reducing external and legacy sources of phosphorus in each HUC 12 watersheds and then states management of the in-lake biological community of Fox Lake - to support and maintain a clear-water state characterized by low algae, dense aquatic vegetation, and a healthy game fish population – will also be necessary over the next 20 years.

Section 4 covers critical areas suggested and Figure 31 shows many of the critical areas suggested that do not seem to cover a majority of the watershed. Unable to confirm at this time where all BMPs on non-ag land will be implemented. Section 6 Implementation Table and Section 7 cover additional lists and descriptions of the BMPs to be implemented.

Recommend amending narrative with more detailed description on how agricultural lands with high risk/high opportunity were selected other than through modeling and talking with them as in Appendix B.

□ Plan <u>does not</u> meet this requirement. The following information is required:

4. Estimate of the amounts of technical and financial assistance needed, costs, and/or the sources and authorities that will be relied upon to implement this plan.

☑ Plan partially meets this requirement, please see missing information below Pages 53-57 (table 5), 84-87 on plan are consistent with element 4 criteria. During the plan's 20 year schedule, FILLPARD (in conjunction with NRCS, Dodge County, DNR or other partners/consultants) will continue to play a primary role in offering technical and financial assistance to landowners in the watershed to help implement practices and meet plan milestones.

Section 10 summarizes and describes the suites of available funding sources adequately. Implementation table provides category to denote funding source per project that, if updated, will allow enhanced trackability of funding.

☑ Plan <u>does not</u> meet this requirement. The following information is required:

Plan does not describe what authorities will be relied upon to implement the plan. Please review (and include) recommended DNR NR 151 language shown in Section 7, page 59, of DRAFT plan to fully meet element 4 criteria. Plan does not describe/include estimated monitoring costs. Please review DNR recommended language within section 9 and table 5 of plan related to monitoring costs.

5. An information/education component used to enhance public understanding of the project and early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.

☑ Plan partially meets this requirement; see missing information below

Pages 6, 48, 55-57 (tables 4 and 5) and Appendix A of plan are partially consistent with element 5 criteria. Section 6 outlines education and outreach material for agricultural management programs and incentives for other management programs. Section 3 summarizes the input from multiple stakeholder meetings prior to plan development.

☑ Plan <u>does not</u> meet this requirement. The following information is required:

Plan does not describe what future information & education activities/strategy will be relied upon to help public understanding of plan goals, pollution sources/critical areas and implementation milestones. Section 3 summarizes the input from multiple stakeholder meetings prior to plan development, but does not detail exact future plans for community education or engagement beyond disseminating data to the public . More direct mention of methods and intended use to educate public are needed.

Section 6 - detail is lacking for urban BMPs and re-suspension reduction/management in Implementation table for carp and wake reduction.

Please review/include the recommended DNR information and education language shown in Section 3, page 49-50 of DRAFT plan to fully meet element 5 criteria.

6. A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

 \boxtimes Plan meets this requirement:

Pages 34-35, 55-57, 78-80 of plan confirm the plan has a 20-year schedule. Section 6 outlines estimated annual financial costs with estimated project milestones per project with 5-year intervals over 20 year time period.

□ Plan <u>does not</u> meet this requirement. The following information is required:

7. A description of interim, measurable milestones for determining whether the NPS management measures or other control actions are being implemented.

 \boxtimes Plan meets this requirement:

Pages 33-34, 55-57, 78-82 reflect element 7 criteria. Section 6 Implementation Table outlines additional project milestones/goals. Section 8 outlines major milestones identified by stakeholders. Section 5 also provides additional narrative for interim milestones.

Recommend section 8A be revised to confirm if FLILPARD or other partners will create annual reports, who will review them and whether it will be publicly available or primarily used for internal evaluation purposes.

□ Plan <u>does not</u> meet this requirement. The following information is required:

8. A set of criteria that can be used to determine whether load reductions are being achieved over time and substantial progress is being made toward attaining WQ standards and, if not, the criteria for determining whether the plan needs to be

revised, or if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

☑ Plan partially meets this requirement; see missing information below.

Pages 19-28, 29-31, 37-43 and 78-83 reflect element 8 criteria. The plan summarizes historic and current (2022-23) WQ monitoring efforts and results for Fox Lake and its major stream tributaries (using primarily chemistry, but also some lake physical and biological measurements). Collectively, these measurements can serve as a baseline to measure progress against after plan implementation milestones are completed over the plan first ten years. The plan also describes planned WQ monitoring actions will be taken and what numeric TP criteria will be used to measure progress and evaluate plan implementation.

Section 9 outlines the adaptive management and quality assurance programs.

☑ Plan <u>does not</u> meet this requirement. The following information is required:

Plan does not describe what criteria will be used to determine if/when the plan needs to be revised due to limited progress – due to funding/staff shortfalls, limited landowner participation and/or adoption of practices. Please review (and include) recommended language shown in Section 8 and 9, page 78-83 of DRAFT plan to fully meet element 8 criteria.

9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against criteria established in item 8 immediately above.

Plan partially meets this requirement; see missing information below.

Pages 19-28, 29-31, 37-42 and 78, 81-83 reflect element 9 criteria. See comments for element 8 above. This plan also recognizes that, after focusing on reducing external sources of P loading in the watershed, aquatic plant management and reducing internal TP sources - within the lake and selected wetland areas in the watershed - will also be y be necessary to measure improvements Fox Lake water quality, over time, and to meet Wisconsin's TP and nuisance algae standards for shallow lakes. Such in lake-practices are identified within the 2017 Fox Lake Long-Range Aquatic Plant Management Plan, developed by Ecological Research Partners and a Hey and Associates May 2008 report entitled, Fox Lake Management Strategy Evaluation Report. Many of the 2008 and 2017 report findings and recommendations remain applicable to Fox Lake today (2023).

☑ Plan <u>does not</u> meet this requirement. The following information is required:

Plan needs to clarify monitoring methods and numeric criteria that will be used to evaluate water quality monitoring results. Please review (and include) recommended monitoring language shown in Section 9 and table 5 of DRAFT plan to fully meet element 9 criteria. Section 9 needs to reference relevant Wisconsin water quality standards and clarify how the criteria will be used, in part, to evaluate water quality monitoring results, within annual reports and also to assess plan implementation with DNR and other partners. Additional text describing relationship with Citizen Lake Monitoring Network would also improve section 9, especially for in-lake monitoring.