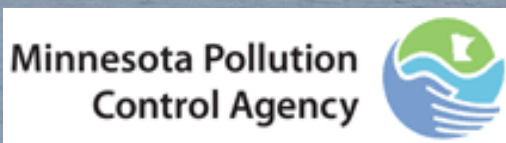


Addendum to the Implementation Plan for the Lake St. Croix Nutrient Total Maximum Daily Load

Prepared for:
The St. Croix Basin Water Resources Planning Team

June 2014



OVERVIEW

The St. Croix Basin Water Resources Planning Team, in cooperation with the Minnesota Pollution Control Agency and the Wisconsin Department of Natural Resources, prepared a Total Maximum Daily Load for phosphorus loading to Lake St. Croix. This group also prepared an Implementation Plan to achieve the TMDL. One of the goals of the Implementation Plan was to meet the nine required elements of a watershed management plan as prescribed by the United States Environmental Protection Agency (EPA). The EPA reviewed the Implementation Plan and found that it met the requirements for eight of the nine elements. The one element that was determined by EPA to not meet the requirements was:

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

The EPA comments indicated that the county implementation schedules included in the Implementation Plan for attaining load reductions varied by county, as did the Best Management Practices (BMPs) identified to achieve the needed reductions.

In response to this comment, and in an effort to have the Implementation Plan meet the requirements for all nine elements of a watershed management plan, the Basin Team Implementation Committee prepared an addendum to the Implementation Plan. The addendum restates the overall schedule for reductions, the approaches being taken by both Minnesota and Wisconsin, and updates of targeted implementation activities to reduce non-point sources and schedules for the Wisconsin counties.

The implementation schedule includes an interim goal of achieving a 20 percent reduction in phosphorus loads to Lake St. Croix by 2020. At that time, as part of an adaptive management approach, the Basin Team will assess the progress made, new understanding from monitoring data, and lessons learned from implementation activities. A schedule will then be established for attaining the full 27 percent reduction needed to meet the TMDL.

We are confident that this addendum provides a reasonably expeditious schedule for implementation activities to address non-point sources within the Lake St. Croix basin. This is a large and complex watershed and implementation will need to be led by local representatives, such as the counties. It is our intention to provide a robust yet flexible approach for implementing reduction strategies to meet TMDL goals, and we believe that this addendum supplements the Lake St. Croix Implementation Plan to fulfill our intention.

Respectfully submitted,
The St. Croix Basin Implementation Committee

ADDENDUM TO THE IMPLEMENTATION PLAN FOR LAKE ST. CROIX NUTRIENT TOTAL MAXIMUM DAILY LOAD

PURPOSE

The objective of this addendum to the Lake St. Croix Implementation Plan is to clarify and provide additional information related to the schedule to reduce phosphorus loading to Lake St. Croix. The goals for the entire basin are reiterated, the differing implementation approaches in each Minnesota and Wisconsin are discussed, and detailed schedules are presented for priority counties in Wisconsin.

BASIN-WIDE GOALS AND SCHEDULE FOR LAKE ST. CROIX

Lake St. Croix was listed on both the Minnesota and the Wisconsin 2008 303(d) Impaired Waters List due to eutrophication (excess phosphorus). A TMDL for phosphorus in Lake St. Croix was developed through a collaborative effort among the Minnesota Pollution Control Agency (MPCA), Wisconsin Department of Natural Resources (WDNR) and the St. Croix Basin Water Resources Planning Team. The Lake St. Croix Nutrient TMDL has undergone public notice, review and comment and agency approval (approved by EPA in August, 2012). The Implementation Plan to meet the TMDL was developed and issued in October 2012, with a revision issued in February 2013.

The baseline loading of phosphorus to Lake St. Croix, for a period in the early 1990s, was estimated to be 460 metric tons/yr. In order to achieve the TMDL of 360 metric tons/yr, a reduction of approximately 123 metric tons/yr, or 27 percent, from baseline conditions is needed.

In 2004, the Basin Team agreed on a goal of reducing 20 percent of the phosphorus load to Lake St. Croix by 2020. This goal remains the basis of current efforts within the basin, and serves as an interim goal on the way to attaining the required TMDL reduction of 27 percent. The Implementation Plan laid out the approach and timeframe for meeting the interim goal and the TMDL. This included an adaptive management approach. The Basin Team will assess progress in 2020 towards attainment of the interim goal. At that time, based on the progress made, new understanding from monitoring data, and lessons learned from implementation activities, a schedule will be established for attaining the full 27 percent reduction needed to meet the TMDL.

The history of phosphorus loading to Lake St. Croix and the reductions required to meet the interim goal in 2020 and the TMDL are shown in Figure 1. Table 1 presents each county's baseline watershed runoff phosphorus load as well as loads and required reductions to meet the interim goal in 2020 and the TMDL.

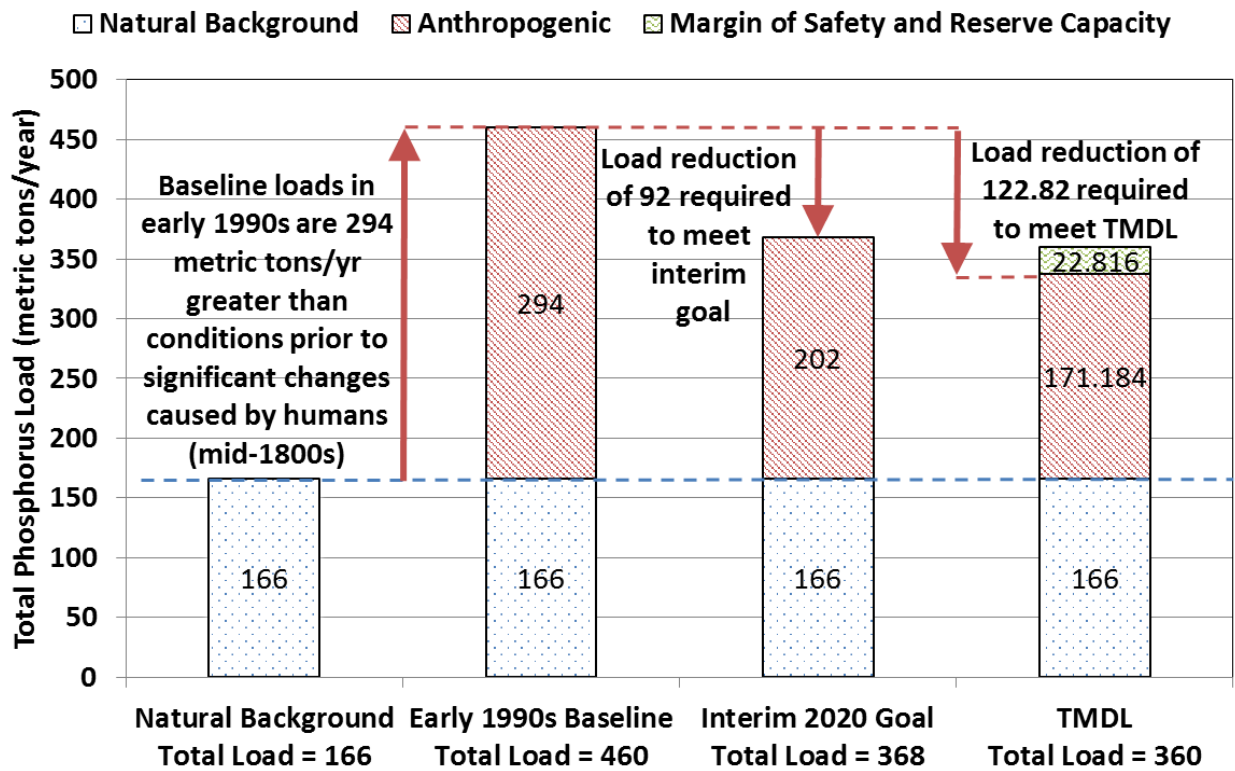


Figure 1. Loading and Load Reduction Summary and Timeline

Table 1. Watershed Runoff Loads and Goals by County

County	Basin Area (acre)	State	Baseline Watershed Runoff Phosphorus Load (lbs/yr)	Interim Phosphorus Load Goal (20% reduction from Baseline by 2020) (lbs/yr)	Final TMDL Phosphorus Load Goal (27% reduction from Baseline) (lbs/yr)	Phosphorus Reduction Required to meet Interim Goal (lbs/yr)	Phosphorus Reduction Required to meet TMDL (lbs/yr)
Aitkin	200,665	MN	18,955	16,217	15,255	2,738	3,700
Anoka	36,912	MN	4,931	3,742	3,324	1,189	1,607
Barron	35,545	WI	7,738	5,927	5,291	1,811	2,447
Bayfield	185,089	WI	16,902	15,707	15,287	1,195	1,615
Burnett	562,172	WI	87,975	72,125	66,556	15,850	21,419
Carlton	229,671	MN	26,928	23,867	22,792	3,061	4,136
Chisago	279,247	MN	68,168	52,027	46,356	16,141	21,812
Douglas	365,876	WI	34,368	32,929	32,423	1,439	1,945
Isanti	51,492	MN	12,142	9,388	8,421	2,754	3,721
Kanabec	329,189	MN	50,293	42,328	39,530	7,965	10,763
Mille Lacs	64,781	MN	6,053	5,081	4,740	972	1,313
Pierce	38,448	WI	14,580	10,526	9,101	4,054	5,479
Pine	884,545	MN	117,329	101,828	96,382	15,501	20,947
Polk	605,513	WI	160,976	121,934	108,217	39,042	52,759
Ramsey	636	MN	214	169	153	45	61
Sawyer	96,119	WI	11,832	10,689	10,288	1,143	1,544
St. Croix	335,485	WI	132,626	96,528	83,845	36,098	48,781
Washburn	434,610	WI	61,979	54,091	51,319	7,888	10,660
Washington	173,093	MN	47,032	37,626	31,322	9,406	15,710
Basin Totals	4,909,088	---	881,021	712,730	650,602	168,291	230,419

IMPLEMENTATION SCHEDULE APPROACHES

Appendix B of the Implementation Plan presents each county's approach to meeting their reduction goals. The counties described prior efforts to reduce phosphorus loading, identified priorities for furthering phosphorus reduction, and prepared a schedule for their planned implementation activities. The approaches that were defined on a county-level basis are intended to meet reduction goals in *Table 1*. While Minnesota and Wisconsin share a common objective for restoring and protecting watersheds in their respective states, they differ in their programmatic approach to watershed management. The approach each state is taking to implement the Lake St. Croix TMDL is described below.

Minnesota Approach

In the State of Minnesota, the MPCA has responsibility for ensuring that water quality standards are met within each watershed. For Lake St. Croix specifically, the MPCA plans to achieve the goals of the Lake St. Croix TMDL and Implementation Plan through Minnesota's statewide watershed approach. Within the St. Croix Basin the MPCA will be working with local counties, cities, and governmental agencies to develop a Watershed Restoration and Protection Strategy (WRAPS) for each of the major 8 digit watersheds. However, within Washington County WRAPS will be targeted on a smaller hydrologic scale.

These WRAPS documents will be implemented on a 10 year cycle. Throughout the cycle, WRAPS will summarize the monitoring and assessment work within each of the watersheds, discuss the identified stressors affecting the biological community, identify all TMDLs that were addressed in the watershed, and identify strategies necessary to achieve the TMDLs (restore) and protect bodies of water. These strategies are developed with input from local cities, counties, Soil and Water Conservation Districts, interested citizens, and other state and local governments.

The strategies identified in the WRAPS document are then used to guide the development of local water plans which will prioritize and target implementation activities within a county or watershed management organization. These local water plans will layout local priorities and the activities they will implement over a 10 year period. Many of the actions local counties or watershed management organizations in Minnesota implement are based on the work that comes out of TMDLs, WRAPS, and TMDL Implementation Plans.

Since on the ground restoration and protection is handled by local SWCDs, counties, watershed organizations, and Cities; the MPCA believes that implementation of the Lake St. Croix TMDL will be addressed as other nested TMDLs are addressed throughout the watershed, and through the efforts of local water plans in the State of Minnesota.

For more information on the watershed approach visit the MPCA website at:

<http://www.pca.state.mn.us/irypf30>

How will the MPCA track progress made towards the Lake St. Croix TMDL and Implementation Plan?

In 2013, the Minnesota Legislator passed legislation that now requires the MPCA to report every other year, starting in 2016, on the progress toward implementation milestones and water quality goals for all adopted TMDL's, and where available, WRAPS.

The MPCA and local partners also will have to ability to track progress toward meeting the goals through the extensive monitoring network that was established throughout the St. Croix Basin in Minnesota. The MPCA is currently collecting annual loading data from the pour point of each of the major watersheds. Local Watershed Management Organizations are also doing this on many of the streams they have as well. The loading information can then be used to compare the TMDL load reduction targets to the actual monitored data to see if progress is being made.

Wisconsin Approach

The approach in Wisconsin is to continue to implement activities on a county-by-county basis. Focus is being given to five counties that are the largest contributors to the phosphorus loading from Wisconsin to Lake St. Croix. These counties include Polk, St. Croix, Burnett, Washburn, Pierce, and Douglas and account for 93.1% of the Wisconsin load to Lake St. Croix. Each county has listed goals for phosphorus reduction, compiled information on prior efforts towards phosphorus reduction, and identified key players in the implementation of their schedules within Appendix B of the Lake St. Croix TMDL Implementation Plan.

In this effort to provide additional information on the Implementation Plan schedule, the priority counties were given an opportunity to provide more detailed implementation schedules, which are shown on the following pages of this addendum.

Polk County

ACTIVITY	IMPLEMENTATION DATES	ESTIMATED COST	ESTIMATED PHOSPHORUS REDUCTION* (LBS/YR)
Horse Creek/Cedar Lake Projects: 1. Incentives*** 2. 5,000 acres in Nutrient Management Plans (NMPs) 3. 5 BMPs** 4. 1 FTE for 8 years	2013-2020	1. \$20,000 2. \$280,000 3. \$100,000 4. \$528,000	1. 200 2. 5,000 3. 100 4. N/A
Long Lake Project 1. 100 acres in NMPs 2. 2 ponds	2013-2014	1. \$5,000 2. \$200,000	1. 100 2. 60
E. Balsam Lake Project 1. 1,000 acres in NMPs 2. 2 BMPs**	2013-2015	1. \$56,000 2. \$40,000	1. 1,000 2. 40
County Wide Projects 1. 1,000 shoreline restorations 2 FTE 2. 43,450 acres in NMPs 2 FTE 3. 40 BMPs** 4. 10 ponds 1 FTE – Prof. Eng. 5. Incentives*** 1 FTE - FLWC Mgr 6. LiDAR	2014-2020	1. \$7,200,000 \$1,056,000 2. \$2,480,000 \$1,056,000 3. \$800,000 4. \$1,000,000 \$660,000 5. \$80,000 \$528,000 6. \$220,000	1. 1,000 2. 43,450 3. 800 4. 200 5. 800 6. N/A
Project Totals		\$12,481,000	52,750 lbs/yr
7 additional FTE staff		\$3,828,000	
Total Required		\$16,309,000	

*Phosphorus reduction estimates based on 1 lb/ac for NMPs, 1 lb/shoreline restoration, 20 lb/pond (retention or detention), and 20 lb/BMP.

**BMP's include barnyard runoff management, filter strips, animal waste systems, field buffers, etc.

***Incentives include grid soil sampling, field buffers, grassed waterways, stalk nitrate testing, and nutrient management.

St. Croix County

ACTIVITY	IMPLEMENTATION DATES	ESTIMATED COST	ESTIMATED PHOSPHORUS REDUCTION (LBS/YR)
DATCP Cost Shared Projects (Willow River Watershed) <ol style="list-style-type: none"> 1. 890 Acres NMP 2. 5 Manure Pit Abandonments 3. 10 grassed Waterways 4. 2 Shoreline Restorations 	2013-2014	<ol style="list-style-type: none"> 1. \$60,000 2. \$43,000 3. \$48,000 4. \$50,000 	<ol style="list-style-type: none"> 1. 2,140 2. 250 3. 200 4. 1,200
Dry Run Creek/Farmer Led Project (Willow River Watershed) <ol style="list-style-type: none"> 1. 2 Grassed Waterways 2. 120 acres cover crops 3. 120 acres NMP 	2013-2014	<ol style="list-style-type: none"> 1. \$8,500 2. \$2,000 3. \$3,360 	<ol style="list-style-type: none"> 1. 40 2. 240 3. 120
Willow River Watershed Wide <ol style="list-style-type: none"> 1. 4800 feet shoreline restorations 2. 16,060 acres NMP 3. 8 grade stabilization structures 4. 24 grassed waterways 5. 24 manure pit abandonments 6. Farmer Led Incentives 	2014-2020	2.5 FTE (\$1,170,000) <ol style="list-style-type: none"> 1. \$192,000 2. \$448,000 3. \$48,000 4. \$115,200 5. \$206,000 6. \$210,000 	<ol style="list-style-type: none"> 1. 4,800 2. 16,060 3. 400 4. 480 5. 1,200 6. 720
Totals		2.5 FTE @ \$1,170,000 Project Costs: \$1,434,060	27,850

Burnett County

ACTIVITY	IMPLEMENTATION DATES	ESTIMATED COST	Status
Wood River/Memory Lake Project includes NR 151 farm survey, inventory of bank erosion and stormwater runoff sites within the Wood River Watershed	2012-2013	Funded through a WDNR lake planning grant.	County work provides grant match. Some funds provided to the county.
Encourage participation, develop conservation plans, design BMPs, supervise installation of agricultural practices	2013-2020	2 FTE	BMPS listed below cannot be implemented without additional staff.
Nutrient Management Planning (4,400 acres)	2012-2020	\$123,200 (plus FTE above)	Very limited DATCP funding available. (\$4 - \$12,000/year ?)
Install Agricultural BMPs Conservation Tillage Barnyard Improvement Grade Stabilization Stream bank Stabilization Manure Storage Facility Closure Rotational Grazing Etc.	2012-2020	\$240,000 additional (plus FTE above)	Approximately \$30,000 currently available annually through DATCP funding. Additional staff needed to spend beyond current allocation.
Outreach to urban and lakeshore owners	2013-2020	1 FTE	Contract \$ could be substituted to carry out this task.
Install Urban BMPs	2013-2020	Engineering and Installation costs	Initial Stages

Washburn County

ACTIVITY	IMPLEMENTATION DATES	ESTIMATED COST	Status
Staff person to encourage participation, design BMP's, supervise installation of BMP's	2013-2020	1 FTE \$480,000	Position needed to complete field work
Shoreland/Streambank BMP's Shoreline Protection Habitat Restoration Critical Area Stabilization Urban BMP's Rain Gardens Detention Basins Rural BPM's Manure Storage Facility Closure Rotational Grazing Other practices	2013-2020	\$350,000	Currently only receiving \$20,000/yr from DATCP
Totals		1FTE+\$830,000 (includes salary)	

Pierce County

ACTIVITY	IMPLEMENTATION DATES	ESTIMATED COST	ESTIMATED PHOSPHORUS REDUCTION (LB/YR)
20 acres of Grassed Waterways	2014-2021	\$58,240 (.1 FTE/Yr) + \$60,000	286
10 Grade Stabilization Structures	2014-2021	\$58,240 (.1 FTE/Yr) + \$100,000	276
2000 acres Conservation Plan Updates	2014-2021	\$145,600 (.25 FTE/Yr)	2259
3000 acres of Nutrient Management Plans	2014-2021	\$145,600 (.25 FTE/Yr) + \$84,000	3000
2 Feedlot BMPs	2014-2021	\$50,000	622
Totals		\$407,680 (FTE costs) + \$294,000	6443

Douglas County

ACTIVITY	IMPLEMENTATION DATES	ESTIMATED COST	ESTIMATED PHOSPHORUS REDUCTION (LB/YR)
300 Shoreline Restorations	2014-2020	FTE: \$225,000 C/S: \$3,000,000	300
900 ac NMP	2014-2020	C/S: \$25,200	900
10 ponds*	2014-2020	C/S: \$600,000	200
30 BMPs***	2014 – 2020	N/A	600
1 FTE Watershed Coordinator	2014 - 2020	FTE: \$450,000	N/A
1 FTE PE	2014-2020	FTE: \$660,000	N/A
LiDAR	2014-2020	C/S: \$300,000	N/A
Totals		FTE: \$1,335,000 C/S: \$3,925,200	2,000

*** Phosphorous reduction estimates based on:**

- 1 lb/ac for NMPs
- 1 lb/shoreline restoration,
- 20 lb/retention pond
- 20 lb/BMP

**Ponds may be for detention, retention, or infiltration

***BMPs include filter strips, runoff control, forest management