Nine Key Element Watershed Plan
Little Lake Wissota
Chippewa County, Wisconsin

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Chippewa County, Wisconsin

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a. A Total Maximum Daily Load (TMDL) for the Little Lake Wissota Embayment of Lake Wissota, Chippewa County, Wisconsin; WDNR Schreiber and Clayton, 2010.

b. Stormwater Management –Construction Site Erosion Control and Post-Construction Ordinance; Chippewa County Code of Ordinances, Chap 12

c. Chippewa Falls Urban Area Stormwater Management Plan; Chippewa County LCFM Masterpole, 2007.

d. Preliminary Inventory of Land Use and Major Sources of Nonpoint Source Water Pollution in the Lower Yellow River, Paint Creek, and Stillson Creek Basins;

e. Water Budget For Lake Wissota, Moon Bay, and Little Lake Wissota, Chippewa County, Wisconsin; UWEC Tinker, 1995

f. WPDES Permit #WI-S050075-2

g. The Distribution and Density of Aquatic Plants in Lake Wissota Chippewa County, Wisconsin; WDNR Borman, 1991.

h. Lake Wissota Planning Survey Report; Braun, 2009

i. Lake Wissota Aquatic Plant Management Plan; Braun, 2010

j. Cooperative Agreement Between The Jacob Leinenkugel Brewing Company and the Chippewa County Department of Land Conservation Committee to Implement the Little Lake Wissota Stewardship Project; 2011

k. Community Foundation of Chippewa County Restricted Pass Through Fund Agreement; 2011

l. Community Foundation of Chippewa County Restricted Pass Through Fund Restated Agreement; 2017

m. Memorandum Of Understanding To Conduct Water Quality Sampling As A Contributing Component Of The Lake Wissota Stewardship Project; 2013

n. Memorandum Of Understanding To Conduct Water Quality Sampling As A Contributing Component Of The Lake Wissota Stewardship Project; 2014

o. Memorandum Of Understanding To Conduct Water Quality Sampling As A Contributing Component Of The Lake Wissota Stewardship Project; 2015

p. Memorandum Of Understanding To Conduct Water Quality Sampling As A Contributing Component Of The Lake Wissota Stewardship Project; 2016

q. Memorandum Of Understanding To Conduct Water Quality Sampling As A Contributing Component Of The Lake Wissota Stewardship Project; 2017

r. Wisconsin Administrative Code Chapter 92

s. Effects of Late-Winter Drawdown on Benthic Invertebrate Community Structure in the Littoral Zone of Lake Wissota, Wisconsin; Delong and Mundahl, 1994

t. Lake Wissota Diagnostic and Feasibility Analysis; Brakke, 1996

u. Little Lake Wissota Watershed: Field-Level Non-Point Source Pollution Reduction & Hydrologic Restoration Project Study Report; Olson, Dahlby, Jensen, and Masterpole, 2010.

v. Post drawdown Composition of the Benthic Invertebrate Community of Lake Wissota, Wisconsin; Swanson, 2010

w. A Comparison of the Distributions and Densities of Aquatic Plants in Lake Wissota, Chippewa County, Wisconsin in 1989, 2005, and 2009; Swanson, 2010

I. INTRODUCTION

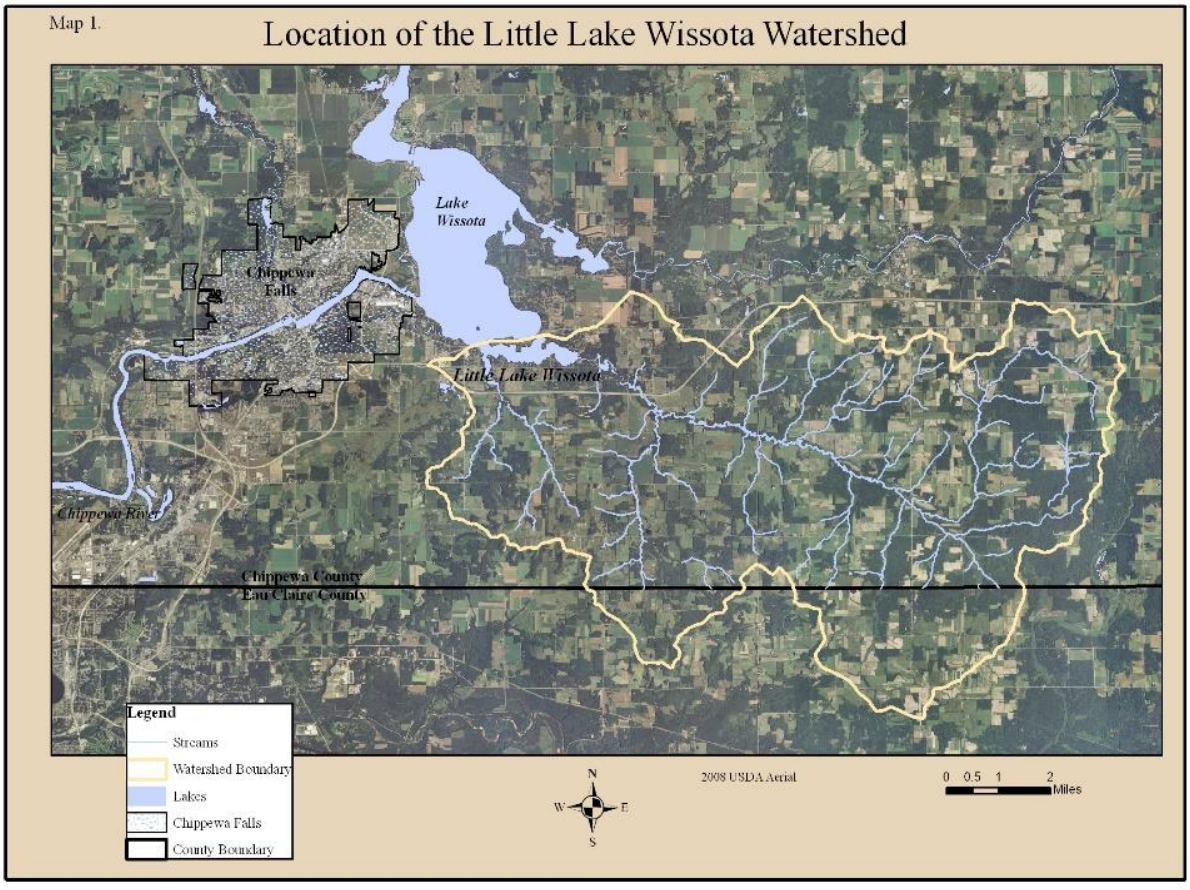
1.1 Characteristics of Little Lake Wissota

Little Lake Wissota is a 400 acre eutrophic embayment of Lake Wissota, an impoundment of the Chippewa River near Chippewa Falls, Wisconsin (Hydrologic Unit Code 07050005, Wisconsin Waterbody Identification Code 2152800).

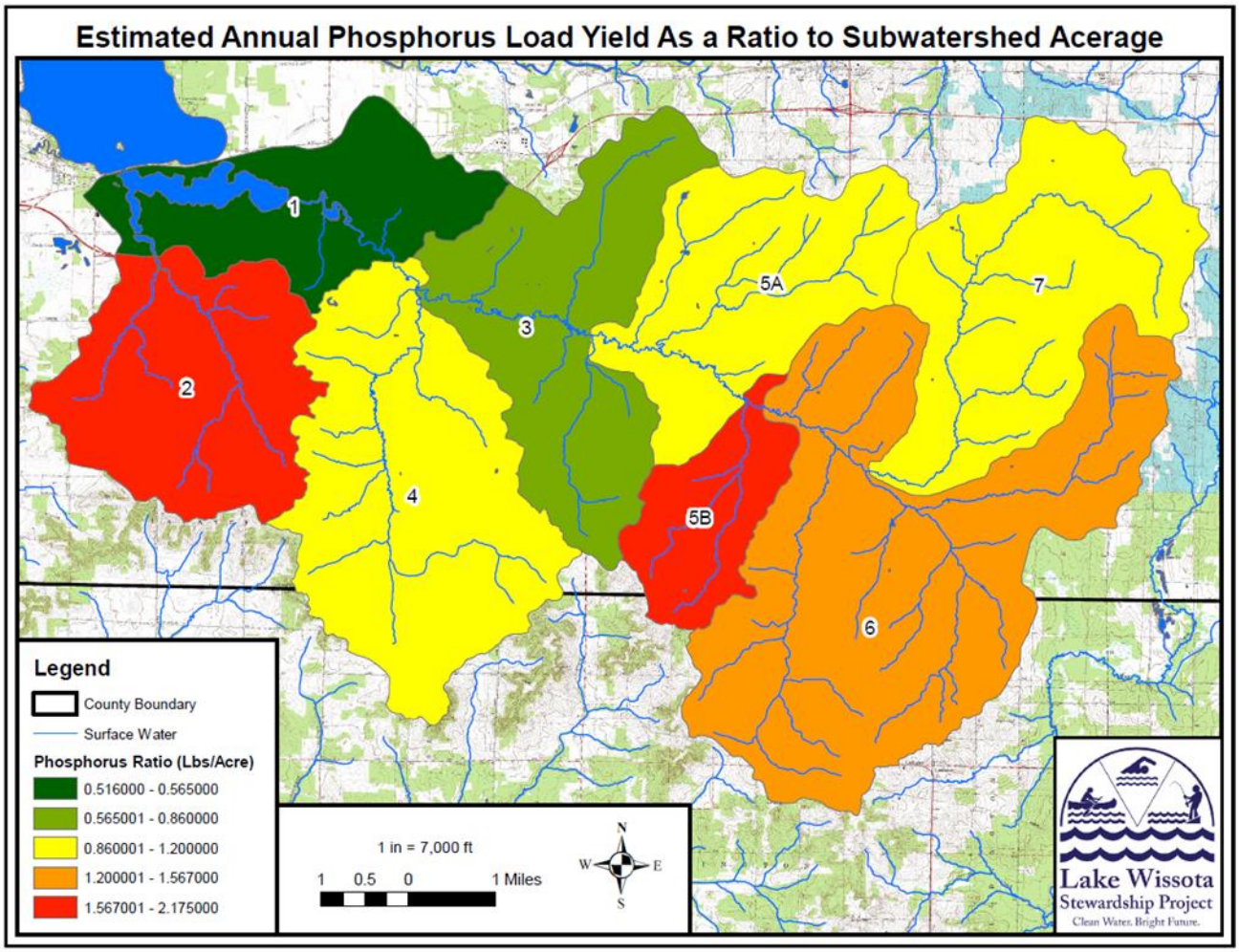
Map 1 shows the location of the Little Lake Wissota Watershed.

The lake was placed on the Wisconsin 303(d) impaired waters list in 1998. Paint and Stillson Creeks are the primary source of surface water inflow to Little Lake Wissota. Land cover in the watershed is primarily agricultural and forest.

Map 1



Map 2 Little Lake Wissota and Subwatersheds and estimated phosphorus loads



A Total Maximum Daily Load (TMDL) was developed by the WDNR and approved by EPA in 2010. This TMDL identified water quality goals and waste load allocations that will reduce the severity and extent of algae blooms in Little Lake Wissota. The TMDL establishes pollution reduction goals for sediment and phosphorus of 262 tons of sediment and 3,000 lbs. of phosphorus per year. The WDNR has established 48 ppb phosphorus as the numeric target for this TMDL. The State determined that this phosphorus target corresponds to a summer mean chlorophyll-a target concentration of 20 ppb and a Secchi depth of 1.5 meters. The TMDL calls for a 34% reduction in the annual phosphorus load and a 26% reduction in sediment. These targets represent 70% of baseline conditions which is reflective of a 30% seasonal (May-September) phosphorus load reduction.

Links to this information is provided as:

-TMDL Link: https://dnr.wi.gov/water/projectDetail.aspx?key=99031713
-WDNR Water Qty Assessment of Little Lake Wissota-
https://dnr.wi.gov/water/waterDetail.aspx?key=16248

1.2 Project History

The Little Lake Wissota Stewardship Project was established in 2009 as a community effort to encourage water conservation and improve the water quality of Little Lake Wissota. It was a short-term watershed management project, sponsored by the Jacob Leinenkugel Brewing Company and Chippewa County. It was supported through direct contributions by area residents, Businesses, and civic organizations.

In 2017, it was decided that the Little Lake Wissota Stewardship Project would be extended by Five (5) years, sponsored by the Lake Wissota Improvement and Protection Association, to continue pursuing sediment and phosphorus loading goals outlined in the 2010 TMDL.

The Lake Wissota Stewardship Project's primary objectives are to:

-Serve as a bridge to a full scale TMDL implementation
-Reduce phosphorus & sediment loads to target levels
-Increase the number of clean water days during May-September
-Continue to sponsor & evaluate a new voluntary public/private business model for lake & watershed management

The Chippewa County Land & Water Resource Management Plan's Agricultural Non-Point Source Water Pollution Control's Goals and Objectives describes the County's intent to "*Participate in a DNR sponsored effort to implement TMDL's that have been developed for the Little Lake Wissota Watershed*".

The Lower Chippewa River Basin Water Quality Management Plan, (1989), states that "*Water Resource Management should conduct an assessment of the phosphorus and algae relationships in the Yellow River and Paint Creek Bays. This assessment should estimate the decrease needed in phosphorus loadings to improve water quality. The feasibility of achieving this reduction in phosphorus loading through Agricultural Non-Point source and Urban Point Source water pollution controls should be determined*."

1.3 Purpose of Document

The purpose of this document is to:

-Outline research conducted in the Little Lake Wissota Watershed

- Document what has been completed from 2009-2017 through the Little Lake Wissota Stewardship Project

-Plan what will be implemented through the Lake Wissota Stewardship Project in the coming years to achieve TMDL sediment and phosphorus goals

-Meet Requirements of EPA and WDNR

-Facilitate access to State and Federal grant opportunities to implement the watershed management plan

Figure 1 shows the Lake Wissota Stewardship Project logo.

Figure 1

II. EPA PLAN REQUIREMENT

Element 1 - The Causes and Sources of Pollution in the Little Lake Wissota Watershed

"An identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed." (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, **DATE**, Pages 2-15)

The following documents were used in the development of this element:

-Chippewa Falls Urban Area Stormwater Management Plan, (Chippewa County LCFM, 2007).
-A Total Maximum Daily Load (TMDL) for the Little Lake Wissota Embayment of Lake Wissota, Chippewa County, Wisconsin. (WDNR, 2010).

1. The Existing Causes and Sources of Pollution in the Little Lake Wissota Watershed

There are two major pollutant sources that have been identified through the TMDL planning process:

1. Urban stormwater point sources regulated under WPDES WI-S050121-1 and,

2. Agricultural non-point sources generated from the contributing Paint and Stillson Creek HUC-12 watersheds, as delivered to Little Lake Wissota.

The causes of the impairment and the pollution sources that need to be controlled to achieve the required load reductions have been previously defined in the following documents:

1. Chippewa Falls Urban Area Stormwater Management Plan; Chippewa County, (LCFM, 2007).
2. A Total Maximum Daily Load (TMDL) for the Little Lake Wissota Embayment of Lake Wissota, Chippewa County, Wisconsin, (WDNR, 2010).

The language contained in the previously referenced planning documents that serve to identify the causes of impairment and pollutant sources that need to be controlled to achieve the load reductions, and the extent to which they are present in the watershed, are provided in the following sections.

1.1 The Existing Urban Point Source Causes, Sources, and Estimates of Pollution

The primary causes of impairment and urban point source pollutants from urban sources are sediment and phosphorus, conveyed in urban runoff to Little Lake Wissota from the MS4 stormwater drainage network.

Table 1 documents the annual load, annual load allocation, and TMDL daily load for phosphorus from urban point sources (highlighted).

Table 1

Category	Current Annual Phosphorus Load (Pounds)	Annual Phosphorus Load Allocation (pounds)	TMDL for Phosphorus (pounds/day)
Nonpoint Sources*	8,832	5,810	15.92
Point Sources			
Town of Lafayette MS4**	60	60	0.16
General Permit	13	13	0.04
Reserve Capacity for General Permits		19	0.05
Totals:	8,905	5,902	16.17

*Based on 10-year average SWAT modeled phosphorus load from nonpoint sources.
**MS4 collection system currently captures 95-99% of stormwater phosphorus load.

The TMDL further states that "The annual point source load to Little Lake Wissota from the stormwater conveyance system is approximately 60 lbs. of phosphorus and 10 tons of sediment based on a Source Loading and Management Model (SLAMM) analysis of the drainage area. The annual point source MS4 waste load allocations is set at 60 lbs. of phosphorus and 10 tons of suspended solids.", (TMDL, pg. 9)

Map 3 shows the MS4 Stormwater Management Area for Town of Lafayette and Little Lake Wissota. Table 2 documents the results from an initial dry weather outfall field screening.

Map 3

Table 2

OUTFALL ID	SUB-BASIN	RECEIVING WATER	DNR MNGT CLASS	OUTFALL DESCRIPTION	OUTFALL SIZE/TYPE	ILLICIT DISCHARGE TO MS4	STORMWATER DISCHARGE AT OUTFALL
MAJOR							
GL2-1	Glen Loch	Duncan Creek	Exceptional	Storm Main	Ditch line	No	Dry
GL2-3	Glen Loch	Duncan Creek	Exceptional	Road Ditch - Cty S	36"	No	Dry
CF10-1	Chippewa River	Chippewa River		BMP Outfall - Hwy 178	12"	No	Seepage Baseflow
CF10-2	Chippewa River	Chippewa River		Escarpment Channel	48"	No	Dry
CH2-5	Wissota	Lake Wissota		BMP Outfall - Cty I	24"	No	
LW3-5	Wissota	Little Lake Wissota	303d	Escarpment Channel	12"	No	Dry
LW3-6	Wissota	Little Lake Wissota	303d	Escarpment Channel	12"	No	Dry
LW3-7	Wissota	Little Lake Wissota	303d	Escarpment Channel	12"	No	Seepage Baseflow
LH2-1	Lake Hallie	Lake Hallie	303d	Remnant Channel	(2) - 48"	No	Dry
BC9-1	Chippewa River	Chippewa River		BMP Outfall - Hwy 29	48"	No	Seepage Baseflow
HA2-1	Hallie	Groundwater	Wellhead	Depression	Depression	No	Seasonable Infiltration
MINOR							
CF10-3	Chippewa River	Chippewa River	WPDES	ES	12"		<0.1 CFS
CF10-4	Chippewa River	Chippewa River	WPDES		12"		<0.1 CFS
CH1-1	Chippewa River	Chippewa River		Escarpent Channel	12"	No	Potential Future
CH2-3	Wissota	Lake Wissota		Escarpent Channel	12"	No	Potential Future

1.2 The Existing Agricultural Non-Point Source Causes, Sources, and Estimates of Pollution

The primary causes of impairment and agricultural non-point source pollutants are sediment and phosphorus, conveyed in runoff to Little Lake Wissota from the Paint Creek and Stillson Creek HUC 12 sub-watersheds.

The estimates of the extent of agricultural non-point sources of pollution were documented through water quality monitoring by the WDNR and the U.S. Army Corps of Engineers in 2001-2003.

Table 3 summarizes the annual load, annual load allocation, and TMDL daily load for phosphorus for agricultural non-point sources (highlighted).

Table 3

Category	Current Annual Phosphorus Load (Pounds)	Annual Phosphorus Load Allocation (pounds)	TMDL for Phosphorus (pounds/day)
Nonpoint Sources*	8,832	5,810	15.92
Point Sources			
Town of Lafayette MS4**	60	60	0.16
General Permit	13	13	0.04
Reserve Capacity for General Permits		19	0.05
Totals:	8,905	5,902	16.17

*Based on 10-year average SWAT modeled phosphorus load from nonpoint sources.
**MS4 collection system currently captures 95-99% of stormwater phosphorus load.

Table 4 documents the measured sediment and phosphorus loads and yields by land use in the Little Lake Wissota Watershed.

Table 4

Land Cover	Area (ha)	Area (%)	Total Phosphorus Yield (lbs/ha/yr)	Sediment Yield (tons/ha/yr)	Total Phosphorus Load (lbs/yr)	Sediment Yield (tons/yr)
Pasture	1,792	10%	0.401	0.011	719	20
Water	203	1%	NA	NA	NA	NA
Row Crop Ag	6,565	38%	1.051	0.303	6,903	1,990
Wetlands-Mixed	1,248	7%	0.478	0.016	597	21
Forest-Mixed	7,015	40%	0.073	0.004	505	31
Residential-Medium Density	657	4%	0.238	0.021	156	14
Totals:	17,480				8,880	2,076

Table 5 documents the percent of land use / land cover by subwatershed in the Little Lake Wissota Watershed.

Table 5

	Little Lake Wissota Stewardship Project						8/9/2016
	Landuse/Land Cover					Dairy Operations	Feedlots
	Urban	Cropland	Pasture/Hay	Forest	Wetland	& # of cows	
Subwatershed 1	680.74	903.41	7.56	1,412.31	135.84	0 (0)	0
Subwatershed 2	274.10	2,695.77	0.00	1,609.78	18.42	3 (225)	3
Subwatershed 3	276.81	2,329.88	9.02	2,497.25	95.06	4 (300)	1
Subwatershed 4	341.68	3,652.54	22.26	2,810.81	67.97	1 (75)	2
Subwatershed 5a	214.55	2,576.64	5.50	1,640.09	48.56	2 (150)	1
Subwatershed 5b	80.22	1,014.15	69.71	798.55	16.67	4 (300)	4
Subwatershed 6	576.29	4,602.57	43.80	5,143.26	165.93	16 (1200)	10
Subwatershed 7	171.95	2,791.39	9.38	2,704.38	59.49	4 (300)	3

*Table 5 subwatersheds are shown on Map 2

Table 6 documents the soil and management characteristics by subwatershed in the Little Lake Wissota Watershed.

Table 6

	Little Lake Wissota Stewardship Project Soil & Management Characteristics				8/10/2016
	Rainfall Factor	Area Wghtd K Factor	Area Wghtd LS Factor	Area Wghtd C Factor	P Factor
Subwatershed 1	137.0	0.142	0.491	0.184	1.0
Subwatershed 2	137.0	0.293	0.930	0.263	1.0
Subwatershed 3	137.0	0.193	0.543	0.209	1.0
Subwatershed 4	137.0	0.260	0.777	0.236	1.0
Subwatershed 5a	137.0	0.236	0.523	0.249	1.0
Subwatershed 5b	137.0	0.259	0.997	0.220	1.0
Subwatershed 6	137.0	0.285	0.769	0.207	1.0
Subwatershed 7	137.0	0.284	0.614	0.200	1.0

*Table 6 Subwatersheds are shown on Map 2

Table 7 documents the No. of Agriculture related animals in the Little Lake Wissota Watershed.

Table 7

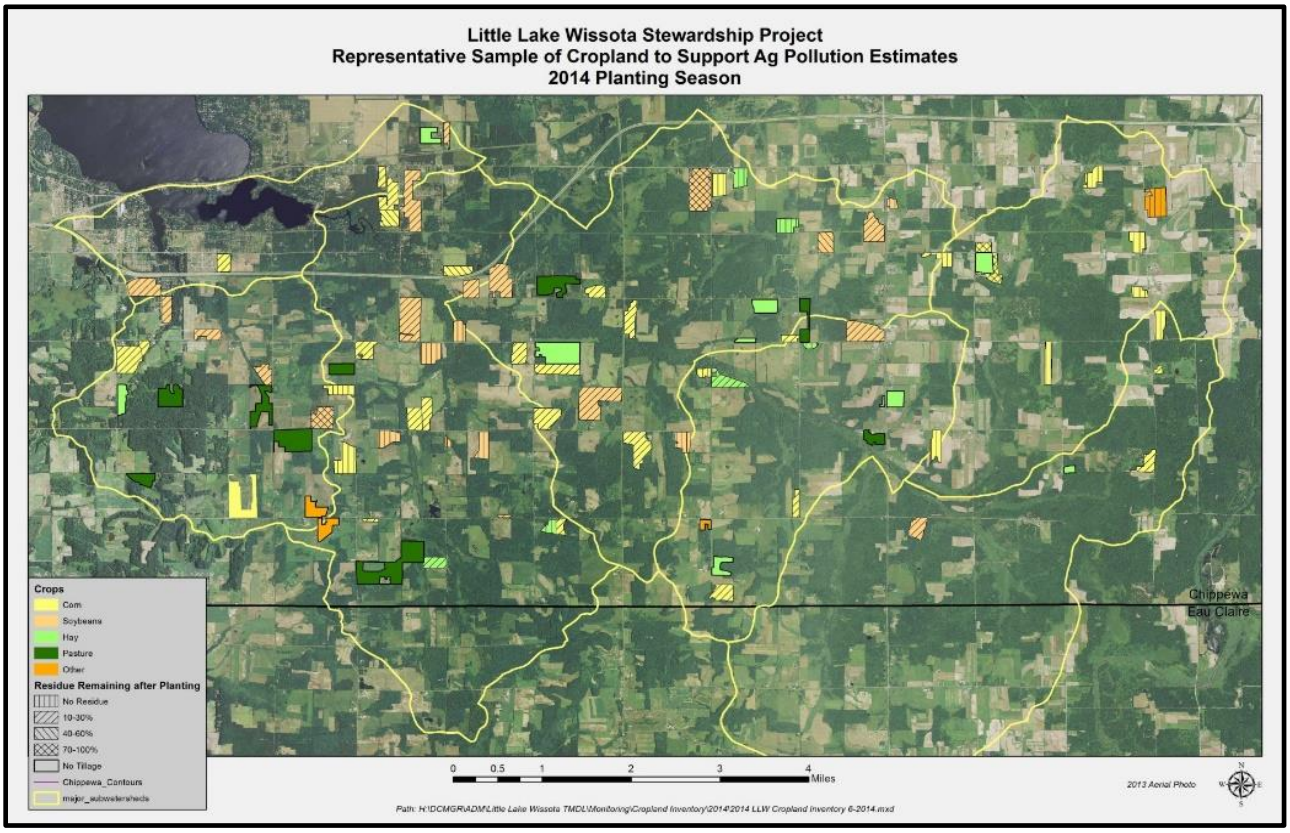
	Little Lake Wissota Stewardship Project							8/9/2016
	Area (ac.)	Ratio	No. of Animals					
			Dairy	Beef	Hogs	Sheep	Poultry	Horses
Subwatershed 1	3,674.74	0.006215	0	0	0	0	0	0
Subwatershed 2	4,608.99	0.007796	225	36	19	7	38	19
Subwatershed 3	5,205.29	0.008804	300	40	21	8	43	21
Subwatershed 4	6,853.62	0.011592	75	53	28	10	57	27
Subwatershed 5a	4,488.84	0.007592	150	35	18	7	37	18
Subwatershed 5b	1,978.93	0.003347	300	15	8	3	16	8
Subwatershed 6	10,525.64	0.017803	1,200	82	43	16	88	42
Subwatershed 7	5,731.96	0.009695	300	44	24	9	48	23

*Table 7 subwatersheds are shown on Map 2

In 2010, the Little Lake Wissota Watershed: Field Level Non-Point Source Pollution Reduction & Hydrologic Restoration Project Study Report, ( ) conducted research on phosphorus level present in soil in the watershed. Study results are shown in the following maps and tables.

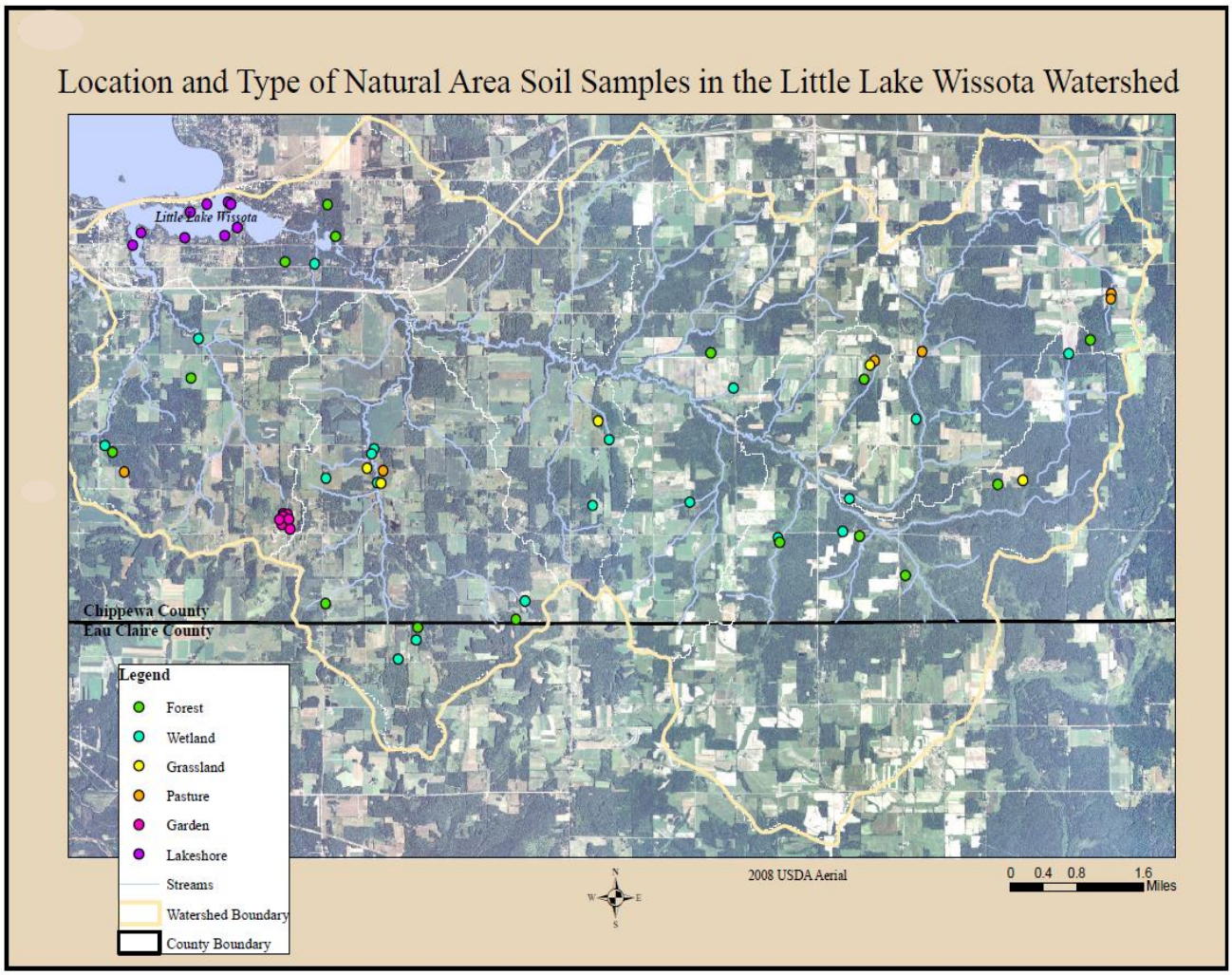
Map 4 shows a representative sample of cropland to support agriculture pollution estimates during the 2014 planting season.

Map 4



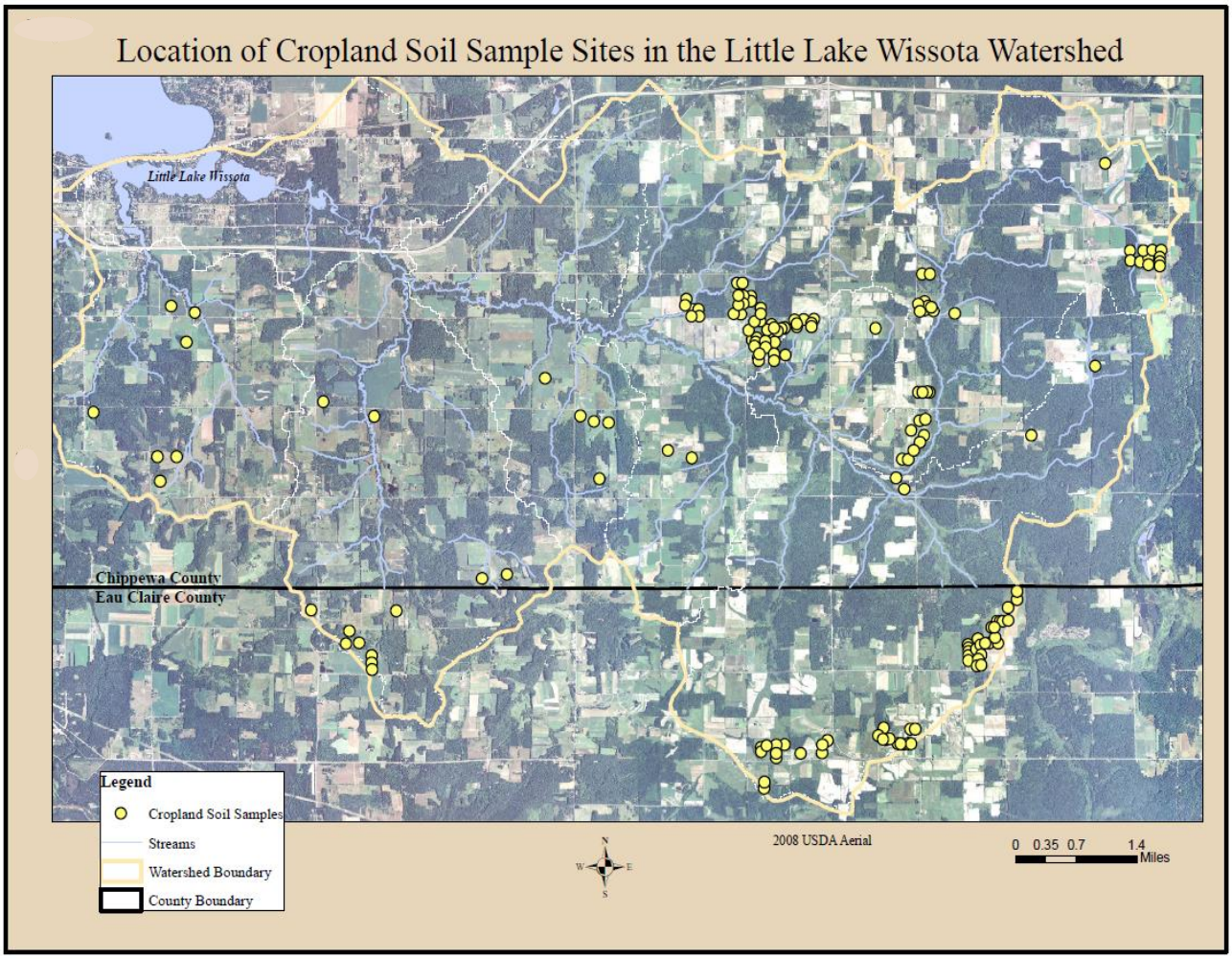
Map 5 shows the location and type of natural area soil samples in the Little Lake Wissota Watershed.

Map 5



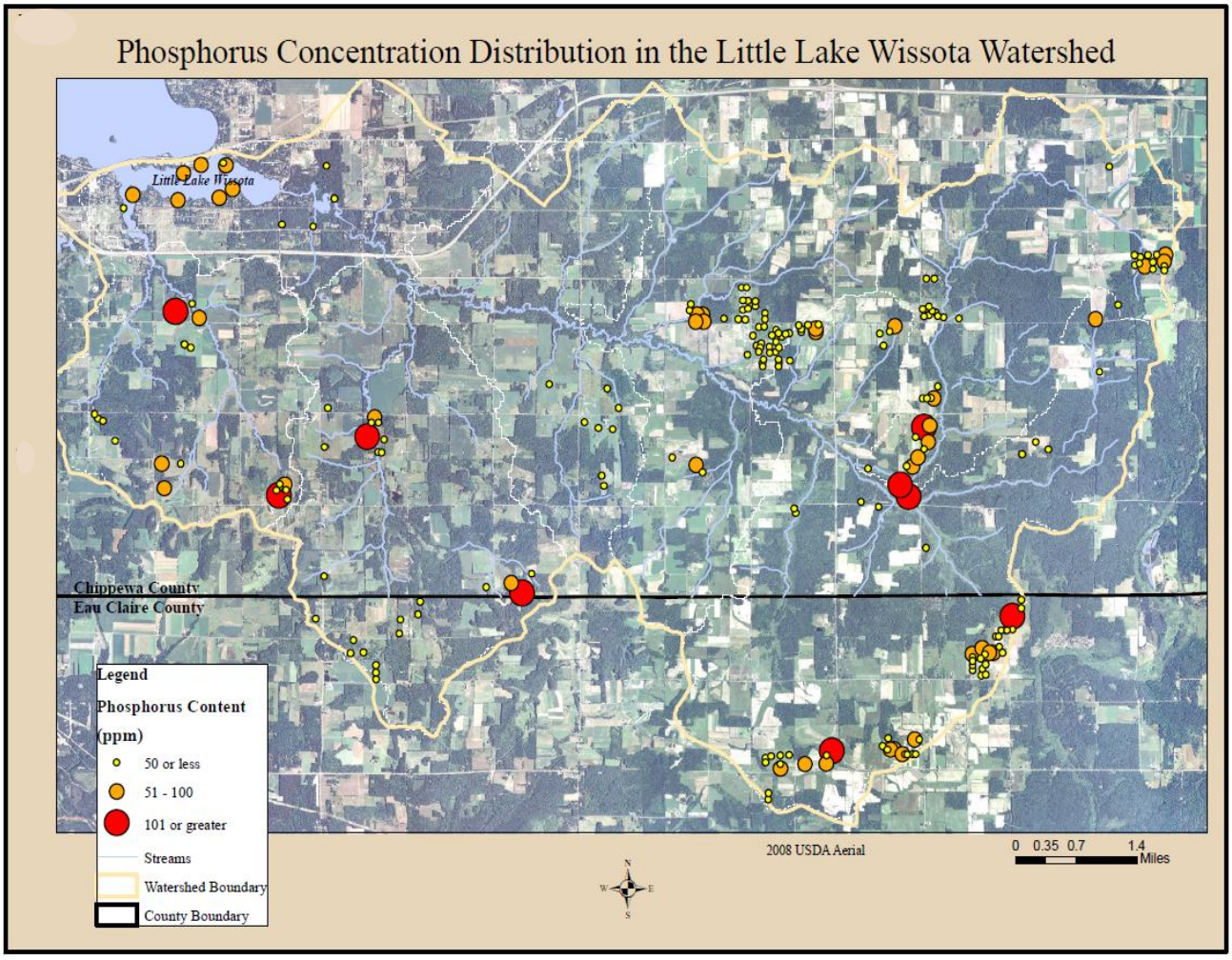
Map 6 shows the location of cropland soil sample sites in the Little Lake Wissota Watershed.

Map 6



Map 7 shows the phosphorus concentration distribution in the Little Lake Wissota Watershed.

Map 7



The TMDL states the following:

"*Phosphorus is dissolved in the water or bound to sediment particles, and once in the system, this phosphorus becomes available to plants and algae. The lake's relatively shallow depth, phosphorus-laden sediments and excessive water column phosphorus levels contribute to significant algal blooms during the growing season*.", (TMDL, pg. 2).

"*The annual sediment load to Little Lake Wissota was estimated at 1,323 and 1,041 tons in 2001 and 2002, respectively. Sediment deposited in Little Lake Wissota contributes phosphorus to the water column via recycling under anoxia or high pH conditions (both which exist in the lake during summer). Laboratory derived internal phosphorus loading rates were moderate under anoxic conditions suggesting some potential for phosphorus flux from bottom sediments (USACE 2004). A summary of the various loads for Agricultural Non-Point sources in the watershed are shown in Table* 3.", (TMDL, pg. 5).

1.3 The Future Watershed Pollution Causes and Sources to Consider

It is important to take into consideration the changes in agricultural trends in the watershed. After examining area agriculture projections, there is a growing trend in small family dairy farms transitioning into larger cash grain, hog, and poultry outfits. Agricultural trends such as these can increase tillage intensity, frequency and nutrient applications, which will put a further strain on area water resources and create great non-point source impacts to Little Lake Wissota, such as increased nutrient loading and algae blooms.

The existing sources of impairment and TMDL management goals for Little Lake Wissota have been adequately established and will be applied as a basis for future lake and agricultural non-point source water pollution control efforts.

There are no proposed changes or refinements from the existing watershed management plan approach.

Figure 2 shows a blue-green algae bloom on Lake Wissota (Photographed 8/13/2018, D. Barrickman)

Figure 2

Element 2 - The Load Reductions Expected From The Management Measures

"*An estimate of the load reductions expected from management measure*s", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, **DATE**, Page 2-15).

The following documents were used in the development of this element and are as follows:

1. A Total Maximum Daily Load (TMDL) for the Little Lake Wissota Embayment of Lake Wissota, Chippewa County, Wisconsin, (WDNR, Schreiber and Clayton, 2010).

2. Chippewa Falls Urban Area Stormwater Management Plan, (Chippewa Co. LCFM, 2007).

2. The Existing Watershed Load Reductions from Management Measures

2.1 The Existing Urban Point Source Load Reductions

The urban load reductions needed to meet designated uses in Little Lake Wissota were estimated in the Chippewa Falls Urban Area Stormwater Management Plan and the Little Lake Wissota TMDL.

Results of the SWAT modeling conducted under the TMDL show that the "*MS4 collection system currently captures 95-99 % of stormwater phosphorus load*." (TMDL, page 12).

*"Modeling results indicate that within the project area as a whole, approximately 92% of the runoff and 97% of the Total Suspended Solids load is being controlled by the physical nature of the existing MS4 drainage network and existing stormwater management facilities", (*LCFM Stormwater Plan, page 18).

The SWAT estimates of pollutant load from the urban area are consistent with previous pollution load estimates conducted through the Chippewa Falls urban area stormwater planning using the SLAMM model.

A pollutant loading analysis was conducted by Ayres Associates using the SLAMM runoff model to estimate the pollution source load reductions expected from stormwater management measures, and model policy guidance, provided by the Department of Natural Resources (DNR, 6/6/06). To do this, two (2) model runs were conducted.

An initial "No Controls" model run was conducted to estimate the mass load of Total Suspended Solids (TSS), which could be anticipated assuming curb and gutter (pipe) drainage with no stormwater controls or best management practices (BMPs).

For comparison, a second “With Controls” model run was conducted to estimate the load of Total Suspended Solids (TSS), which could be anticipated based upon the physical characteristics of the existing storm sewer system and upon the extent of existing stormwater controls.

Map 8 shows the location of surface water outfalls and their drainage areas to Little Lake Wissota within the Lafayette Stormwater Management District.

Map 8

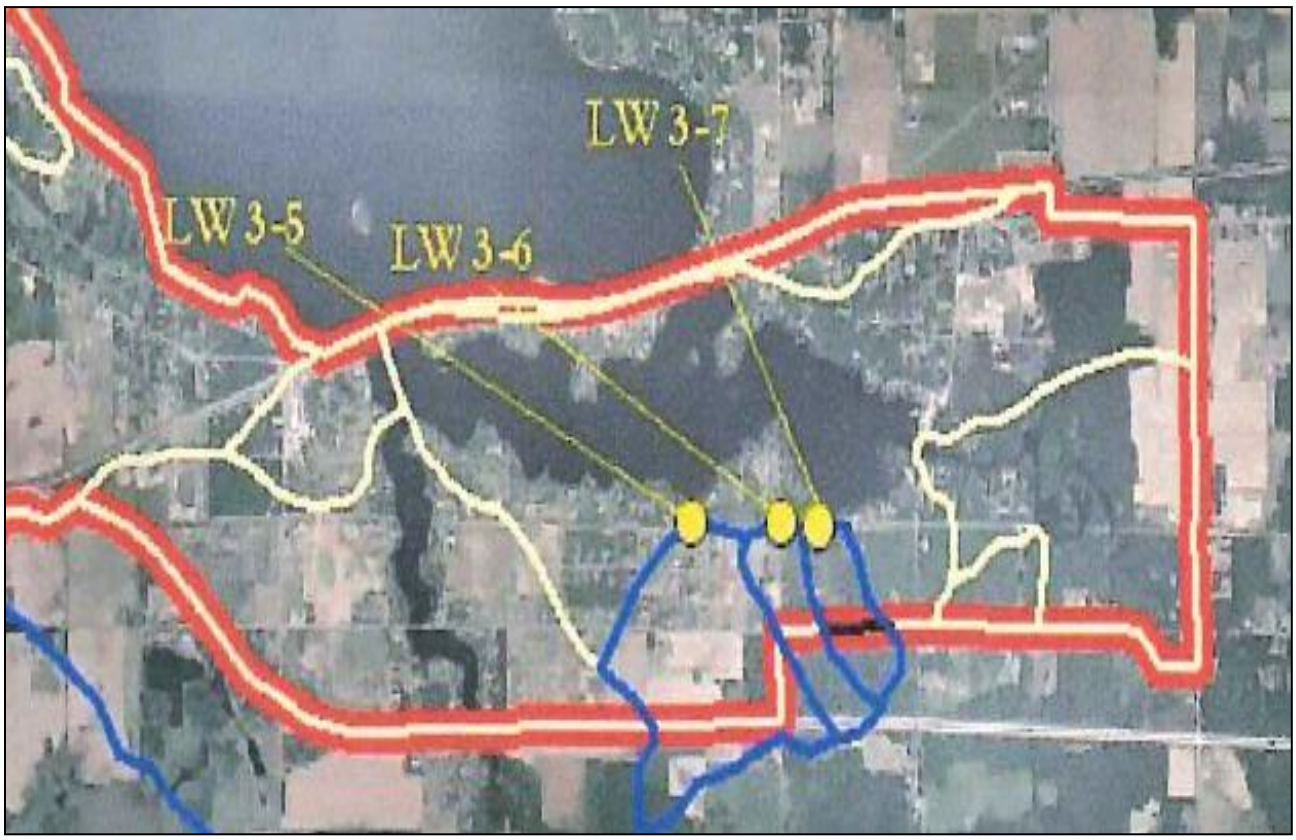


Table 8 documents a summary of SLAMM Model Results from the Chippewa County Joint Stormwater Management Plan, (Ayres Associates 2/28/06)

Table 8

Summary of Slamm Model Results

Chippewa County Joint Stormwater Management Plan

(Output Based on Field Verified Land Use with Drainage and Outfall Controls)

Basin Name	Basin Area (acres)	Runoff Before Controls (c.f.)	Runoff After Controls (c.f.)	Percent Runoff Reduction	TSS Before Controls (lbs)	TSS After Controls (lbs)	Percent Solids Reduction	TSS Concentration (lbs/acre)	Particulate Phosphorous Before Controls (lbs)	Particulate Phosphorous After Controls (lbs)	Percent Particulate Phosphorous Reduction	Particulate Phosphorous Concentration (lbs/acre)	Filterable Phosphorous Before Controls (lbs)	Filterable Phosphorous After Controls (lbs)	Percent Filterable Phosphorous Reduction	Filterable Phosphorous Concentration (lbs/acre)
BC3	70.74	1157157	0	100%	25735.0	0.0	100%	0.0	59.4	0.0	100%	0.00E+00	8.3	8.3	0%	0.1175
BC4	95.5	1561933	0	100%	34743.0	0.0	100%	0.0	80.2	0.0	100%	0.00E+00	11.2	11.2	0%	0.1176
BC5	0.95	15536	0	100%	345.6	0.0	100%	0.0	0.8	0.0	100%	0.00E+00	0.1	0.1	0%	0.1175
BC6	80.21	1338959	50244	96%	29973.6	322.6	99%	4.0	68.8	0.7	99%	8.16E-03	9.4	9.4	0%	0.1173
BC7	16.16	264662	0	100%	5886.0	0.0	100%	0.0	13.6	0.0	100%	0.00E+00	1.9	1.9	0%	0.1177
BC8	67.43	1266293	94912	93%	24179.0	617.0	97%	9.2	55.1	1.1	98%	1.70E-02	7.9	7.9	0%	0.1167
BC9	528.6	9758479	1405277	86%	161051.0	9029.3	94%	17.1	362.2	18.2	95%	3.45E-02	64.2	64.2	0%	0.1214
CF2	5.01	69650	0	100%	1298.0	0.0	100%	0.0	1.4	0.0	100%	0.00E+00	0.5	0.5	0%	0.0929
CF3	767.13	14841648	566061	96%	204101.0	3681.0	98%	4.8	396.6	6.8	98%	8.92E-03	91.5	91.5	0%	0.1192
CF4	436.84	8823360	1165000	87%	125994.8	7575.0	94%	17.3	107.6	14.1	93%	3.22E-02	43.8	43.8	0%	0.1004
CF5	0.21	3432.5	0	100%	76.4	0.0	100%	0.0	0.2	0.0	100%	0.00E+00	0.0	0.0	0%	0.1175
CF6	17.95	306438	7702	97%	6502.9	50.1	99%	2.8	15.0	0.1	99%	5.19E-03	2.1	2.1	0%	0.1173
CF7	43.6	706029	0	100%	15558.7	0.0	100%	0.0	35.0	0.0	100%	0.00E+00	5.1	5.1	0%	0.1159
CF8r	9.49	155233	0	100%	3452.0	0.0	100%	0.0	8.0	0.0	100%	0.00E+00	1.1	1.1	0%	0.1175
CF9	5.49	89804	0	100%	1996.8	0.0	100%	0.0	4.6	0.0	100%	0.00E+00	0.6	0.6	0%	0.1175
CF10	16.74	548481	520434	5%	3852.1	3345.0	13%	199.8	7.9	6.8	15%	4.05E-01	1.8	1.8	0%	0.1046
CF11	26.29	485962	0	100%	16980.0	0.0	100%	0.0	38.5	0.0	100%	0.00E+00	3.7	3.7	0%	0.1392
CH1	291.9	4774837	0	100%	106191.0	0.0	100%	0.0	245.2	0.0	100%	0.00E+00	34.3	34.3	0%	0.1175
CH2	799.52	14846048	866354	94%	275906.0	5634.0	98%	7.0	622.1	10.5	98%	1.31E-02	94.5	94.5	0%	0.1182
EC	416.48	9231070	1249450	86%	149536.1	8120.1	95%	19.5	326.1	15.1	95%	3.63E-02	47.9	47.9	0%	0.1150
GL1	45.34	940125	114887	88%	16068.0	746.8	95%	16.5	36.2	1.4	96%	3.06E-02	5.3	5.3	0%	0.1160
GL2	238.36	4522520	326754	93%	141539.2	2124.2	98%	8.9	323.7	4.0	99%	1.66E-02	27.8	27.8	0%	0.1166
GL3	101.02	1652461	0	100%	36751.0	0.0	100%	0.0	84.8	0.0	100%	0.00E+00	11.9	11.9	0%	0.1176
HA2	1456.03	28385952	1493480	95%	405894.7	9677.0	98%	6.6	767.5	22.4	97%	1.54E-02	169.2	169.2	0%	0.1160
HA3	377.18	10512367	1036408	90%	119862.2	7051.0	94%	18.7	225.6	13.3	94%	3.54E-02	44.6	44.6	0%	0.1181
HA4	111.51	1866807	0	100%	15851.0	0.0	100%	0.0	100.4	0.0	100%	0.00E+00	13.5	13.5	0%	0.1214
LH1	284.2	5238902	329293	94%	102002.8	2141.0	98%	7.5	232.4	4.0	98%	1.40E-02	33.2	33.2	0%	0.1167
LH2	442.71	9225852	865308	91%	128167.9	5627.0	96%	12.7	279.3	10.5	96%	2.36E-02	54.6	54.6	0%	0.1234
LON1	73.71	1599833	222548	86%	25968.0	1447.0	94%	19.6	58.2	2.7	95%	3.65E-02	8.5	8.5	0%	0.1157
LW1	86.39	1799812	218519	88%	30597.0	1421.0	95%	16.4	68.9	2.6	96%	3.06E-02	10.0	10.0	0%	0.1160
LW2	462.14	9031336	785538	91%	149714.0	5095.0	97%	11.0	340.1	9.7	97%	2.09E-02	56.2	56.2	0%	0.1215
LW3	737.32	15662915	1822184	88%	263528.3	11840.3	96%	16.1	591.3	22.1	96%	3.00E-02	85.7	85.7	0%	0.1162
SF1	172.39	3074266	145907	95%	62167.0	948.6	98%	5.5	142.3	1.8	99%	1.02E-02	20.2	20.2	0%	0.1171
SF2	36.04	632064	0	100%	14057.0	0.0	100%	0.0	32.4	0.0	100%	0.00E+00	4.5	4.5	0%	0.1175
TR2	21.96	443791	0	100%	13593.0	0.0	100%	0.0	29.3	0.0	100%	0.00E+00	3.4	3.4	0%	0.1567
TOTALS	8347.14	164935915	13336260	92%	2717123	86493	97%	10.4	5848.6	167.9	97%	2.01E-02	978.3	978.3	0%	0.1172

Explanatory Note #1

Explanatory Note #1 - "Total Acres in the Watershed" is the total developed acres in the watershed that are located within the boundary of the Storm Water Management Area (SMA).

Explanatory Note #2

Explanatory Note #2 - SLAMM Model output reported as "Filterable Phosphorus" is commonly referred to as "Dissolved Phosphorus" when used in water resource management applications.

Results of the modeling effort support the following conclusions, as noted in the Chippewa Falls Urban Area Stormwater Management Plan, (LCFM 10/10/07))

1. Given the physical features of the landscape, distributed land use pattern, and the disconnected nature of the stormwater drainage system, the developed portions of the project area now generate relatively minor volumes of stormwater and agricultural non-point source pollution, as compared to the adjoining incorporated areas with curb and gutter and storm sewer infrastructure.

2. The amount of stormwater runoff and agricultural non-point pollution generated in the project area varies by location. The modeling effort has identified the location of critical source areas where pollution control can be most effective, and the location of watersheds which contribute the highest pollutant loads to surface waters.

3. The existing surface drainage network and structural stormwater management practices have been very effective in reducing the pollutant load of total suspended solids and total phosphorus delivered to surface waters.

    A. Modeling results indicate that within the project area as a whole, approximately 92% of the runoff and 97% of the total suspended solids load is being controlled by the physical nature of the existing MS4 drainage network and existing stormwater management facilities.

    B. The watersheds, which generate the highest pollutant loads, are those that have a higher proportion of their area dedicated to industrial and commercial uses. These watersheds are largely situated along the STH 124/US Hwy 53 commercial corridor and are internally drained with no direct channel connection to surface waters.

    C. The load of total suspended solids to surface waters of high management concern, including Duncan Creek, Little Lake Wissota, and Lake Hallie, range from 5,000 – 12,000 lbs./yr. The loads of dissolved phosphorus delivered to these surface waters range from 11-25 lbs.

4. The developed portions of the stormwater management are now in full compliance with the developed urban area performance standards of NR151.13(2), which require a 20% pollution reduction by 2008, and a 40% pollution reduction by 2014.

    This is due in large part to stormwater infiltration which occurs in stormwater retention basins situated in sandy soils.

5. The stormwater planning inventory and modeling effort have identified the location of internally drained areas, and areas where ponding routinely occurred during spring snowmelt conditions.

    These areas now serve to store and infiltrate runoff. It is reasonable to assume that these areas provide important points of groundwater recharge and serve to reduce flood peaks.

2.2 The Existing Agricultural Non-Point Source Load Reductions

The anticipated agricultural non-point source load reductions associated with assumed management measures and scenarios to meet designated uses in Little Lake Wissota were estimated in the Little Lake Wissota TMDL.

Table 9 documents the SWAT Model simulated seasonal phosphorus loads under various management scenarios in the Little Lake Wissota Watershed.

Table 9

Management Scenario	Seasonal Phosphorus Load (pounds)	Percent of Baseline Phosphorus Load (%)
Baseline condition	4,374	100
All cash crop to corn (no soybeans)	4,323	99
All cash crop to no till	3,796	87
10% cropland conversion to horse farms, CRP, etc.	3,713	85
All agriculture soils to optimum Bray P-1*	3,131	72
No till + optimum Bray P-1	2,888	66
No till, optimum Bray P-1, 10% cropland conversion	2,227	51

* Bray P-1 is a soil chemistry testing method commonly used in Wisconsin to measure soil phosphorus availability to crops.

The TMDL concludes "*Based on the relationship between in-lake goals and phosphorus loading from the watershed, a 34% reduction in the annual phosphorus load and 26% reduction in the sediment load from Agricultural Non-Point sources are needed to achieve the in-lake water quality goals*.", (TMDL, page 9)

2.3 The Future Watershed Load Reductions Expected

2.3.1 The Future Urban Point Source Load Reductions Expected

The existing SLAMM modeling, that defines the type and efficiency of the urban point source management measures necessary to achieve load reductions, provides an adequate basis for future watershed management efforts. There are no proposed changes or refinements from the existing watershed management plan approach.

2.3.2 The Future Agricultural Non-Point Source Load Reductions Expected

The existing SWAT modeling, that defines the type and efficiency of the agricultural non-point source management measures necessary to achieve load reductions, provides an adequate basis for future watershed management efforts. Load reductions will be further outlined in Element 3 of this plan using various models and model scenarios.

Element 3 - A Description of Management Measures to be Implemented

"*A description of the Agricultural Non-Point source management measures that will need to be implemented to achieve load reductions in Element 2, and a description of the critical areas in which those measures will be needed to implement this plan*.", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15)

The following documents were used in the development of this element and are as follows:

-Chippewa County Construction Site Erosion Control and Post-Construction Ordinance,
-Chippewa County Storm Water Management Ordinance
-A Total Maximum Daily Load (TMDL) for the Little Lake Wissota Embayment of Lake Wissota, Chippewa County, Wisconsin, (WDNR, Schreiber and Clayton, 2010).

3.1 The Existing Management Measures that are Implemented

All practices that have been installed thus far are outlined in the following sections. These conservation best management practices are all contributing toward the phosphorus and sediment reduction goals set in the TMDL.

The TMDL concludes:
"Based on the relationship between in-lake goals and phosphorus loading from the watershed, a 34% reduction in the annual phosphorus load and 26% reduction in the sediment load from Agricultural Non-Point sources are needed to achieve the in-lake water quality goals.", (TMDL, page 9).

3.2 The Existing Urban Point Source Management Measures that are Implemented

The urban stormwater area that drains to Little Lake Wissota was identified and outfalls were mapped.

Site specific stormwater management recommendations were provided for consideration:

> *"•Evaluate the size, capacity, and outlet evaluations of culverts which convey storm water north across 54th Avenue to open channel outfalls to Little Lake Wissota.*
>
> *•As part of the Little Lake Wissota 303d TMDL planning process, evaluate the feasibility of adopting a zero discharge storm water standard to eliminate the potential for pollutant loads generated from new development located in and outside of the storm water planning area."* (Chippewa Falls Urban Area Stormwater Management Plan, 2007; page 31).

Map 9 shows the Town of Lafayette stormwater management area, outfalls within the management area, and the areas that feed those outfalls.

Map 9

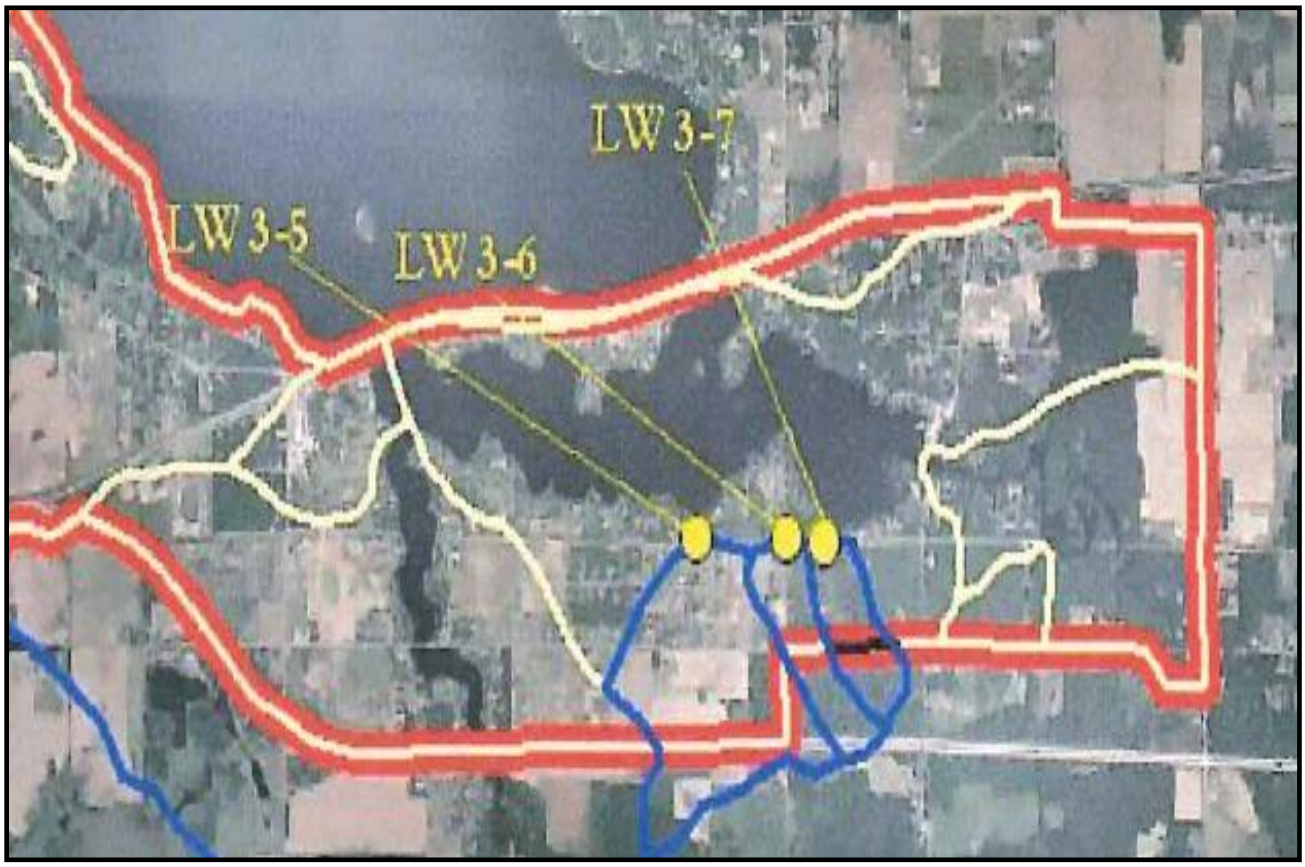


Table 10 documents the results from initial dry weather outfall field screening.

Table 10

RESULTS OF THE ILLICIT DISCHARGE DETECTION AND STORMWATER OUTFALL INVENTORY DRY WEATHER SCREENING PROCESS

OUTFALL ID	SUB-BASIN	RECEIVING WATER	DNR MNGT CLASS	OUTFALL DESCRIPTION	OUTFALL SIZE/TYPE	ILLICIT DISCHARGE TO MS4	STORMWATER DISCHARGE AT OUTFALL
MAJOR							
GL2-1	Glen Loch	Duncan Creek	Exceptional	Storm Main	Ditch line	No	Dry
GL2-3	Glen Loch	Duncan Creek	Exceptional	Road Ditch - Cty S	36"	No	Dry
CF10-1	Chippewa River	Chippewa River		BMP Outfall - Hwy 178	12"	No	Seepage Baseflow
CF10-2	Chippewa River	Chippewa River		Escarpment Channel	48"	No	Dry
CH2-5	Wissota	Lake Wissota		BMP Outfall - Cty I	24"	No	
LW3-5	Wissota	Little Lake Wissota	303d	Escarpment Channel	12"	No	Dry
LW3-6	Wissota	Little Lake Wissota	303d	Escarpment Channel	12"	No	Dry
LW3-7	Wissota	Little Lake Wissota	303d	Escarpment Channel	12"	No	Seepage Baseflow
LH2-1	Lake Hallie	Lake Hallie	303d	Remnant Channel	(2) - 48"	No	Dry
BC9-1	Chippewa River	Chippewa River		BMP Outfall - Hwy 29	48"	No	Seepage Baseflow
HA2-1	Hallie	Groundwater	Wellhead	Depression	Depression	No	Seasonable Infiltration
MINOR							
CF10-3	Chippewa River	Chippewa River	WPDES	ES	12"		<0.1 CFS
CF10-4	Chippewa River	Chippewa River	WPDES		12"		<0.1 CFS
CH1-1	Chippewa River	Chippewa River		Escarpent Channel	12"	No	Potential Future
CH2-3	Wissota	Lake Wissota		Escarpent Channel	12"	No	Potential Future

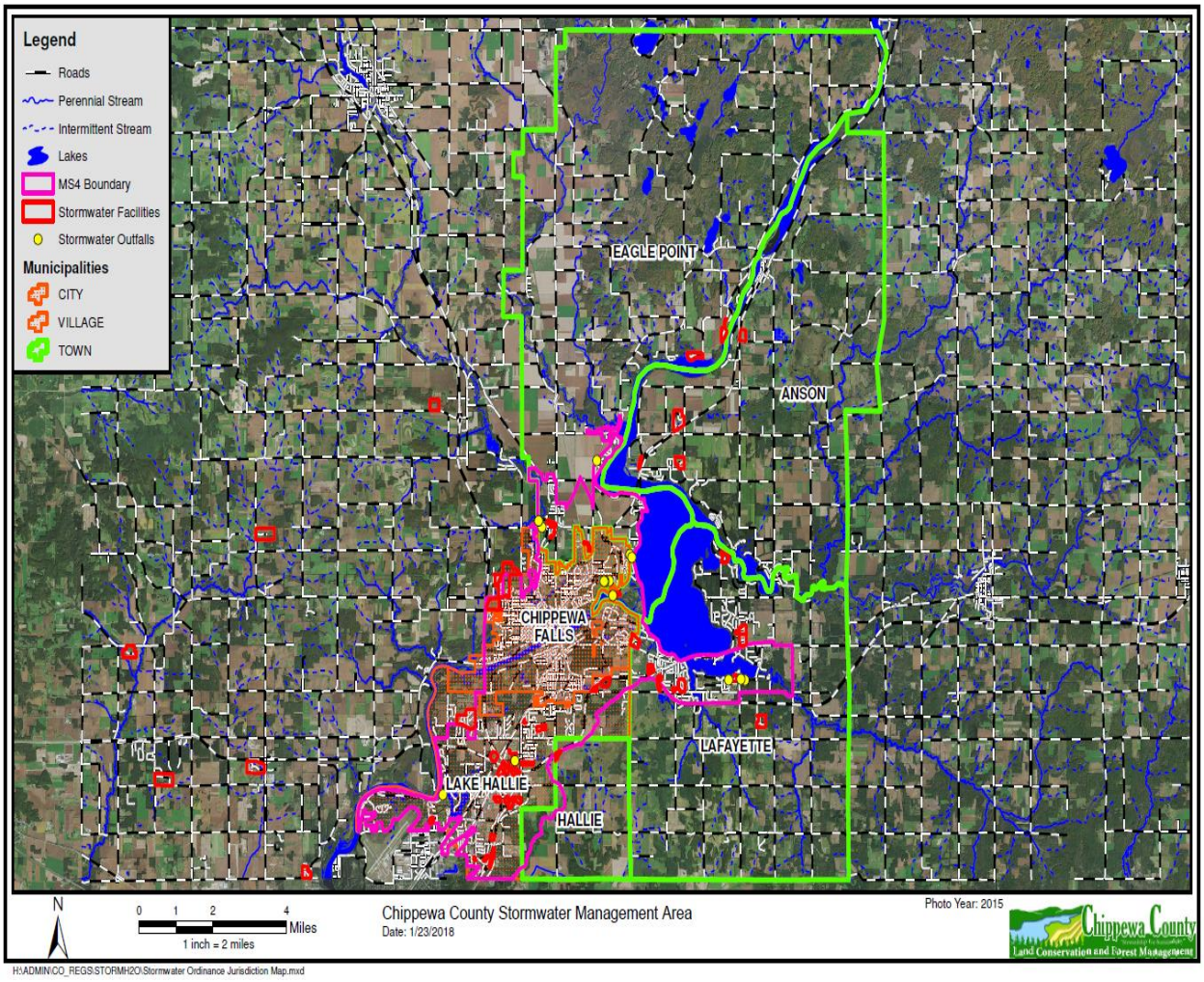
Urban control measures that will need to be implemented to achieve urban load reductions were identified through an urban storm water planning process.

3.3 Illicit Discharge and Elimination

An illicit discharge program has been developed to detect and remove illicit discharges to the road ditch network (MS4). This program was jointly implemented by the permitted municipalities. As part of planning process to achieve load reductions, a description of the critical areas was developed and is shown in the following map.

Map 10 shows the Chippewa County Stormwater Management Area, including the affected municipalities, stormwater facilities, stormwater outfalls, and MS4 boundaries.

Map 10



Under the joint approach, the responsibility for monitoring and detecting illicit discharges is assigned to the municipality that is currently responsible for routine street and highway maintenance. The responsibility for eliminating and, if necessary, regulating the sources of illicit discharges, when detected, is assigned to the Chippewa County Planning and Zoning Department. The responsibility for monitoring stormwater discharges at storm water outfalls is assigned to the Chippewa County Department of Land Conservation & Forest Management.

The specific responsibilities of each municipality and agency under the Illicit Discharge Detection and Elimination Program is incorporated into a Chapter 66.03 intermunicipal working agreement, which was developed to implement the joint stormwater program.

The core elements of the illicit discharge program, including procedures for illicit discharge detection, monitoring, and enforcement is incorporated into a construction site and post construction stormwater ordinance which applies to the stormwater management area.

To initiate the illicit discharge program, the location of all road ditch surface water connections were mapped to identify the points of potential stormwater discharge. A field review of these mapped connections was then conducted to document the size, physical construction, and condition of each outfall. A list of "major outfalls" subject to WPDES monitoring requirements was then generated using definitional criteria, listed in Wisconsin Administrative Code NR216.

Results of the outfall inventory show that there are twelve (12) major outfalls which discharge to five (5) unique water resource units, as defined by the Department of Natural Resources. In addition to these major outfalls, four (4) minor outfalls were identified as being important in ongoing water resource management efforts. These minor outfalls receive direct discharge from existing stormwater ponds or have the immediate potential to become major outfalls based upon anticipated development.

The location of all major and minor outfalls in the project area, and the extent of the contributing ditch network (MS4) is shown on Map 9.

Using the list of major stormwater outfalls, an initial dry season field screening was conducted during a dry weather period of May 24-26, 2006.

As part of the screening process, information was collected to describe the characteristics of each major outfall using photographs and a standardized data collection form. When present, the volume and properties of the dry weather discharge were documented using a narrative description.

As part of this process, the ditch lines and storm sewers, which convey runoff to each of the major stormwater outfalls, were then mapped. Each of the contributing reaches of the road ditch networks were inspected to detect any observable sources of illicit discharge. Specific efforts were made to document any points where a ditch line connects to a piped stormwater conveyance by way of a crop inlet or stormwater drain.

Results of the initial inventory and screen process showed no illicit connections or sources of illicit discharge to any of the ditch lines which convey runoff to waters of the state.
Results of the dry weather screening process documented a base flow discharge at only one of the sixteen (16) outfalls (#CF 10-4). That discharge was determined to be attributed to an air coolant discharge currently regulated through an active WPDES permit.

Figure 3 shows a stormwater outfall that leads to Little Lake Wissota.

Figure 3

A free-standing database has been created for each major outfall to support ongoing illicit discharge monitoring and outfall screening.

Each municipality conducts a routine inspection of road ditch lines under its jurisdiction to detect illicit discharges. Inspections of the road drainage network are scheduled to coincide with the routine evaluations of municipal road surfaces, completed under the Wisconsin Pavement Assessment Program (PACER). Results of these illicit discharge detection inspections are recorded on an attachment to standardized PACER forms. These records are filed annually with Chippewa County Department of Land Conservation and Forest Management to facilitate WPDES reporting.

The Chippewa County Department of Land Conservation & Forest Management conducts an annual dry weather evaluation of each major outfall. These dry weather inspections are scheduled to coincide with the annual inspections of the road ditch networks conducted by the municipalities.

The need for water sampling is evaluated based upon the frequency of observed discharges at each outfall. Water quality sampling is limited to that necessary to meet WPDES permit requirements or to document the stormwater pollutant load in support of a specific water resource management initiative.

3.4 Construction Site Pollution Control and Post Construction Stormwater Management

Chippewa County, acting on behalf of the affected municipalities, has developed, implemented, and will enforce a program to reduce the discharge of sediment from construction sites and to control the quality of stormwater discharges from areas being developed and redeveloped.

This stormwater management program will be implemented through a combined construction site pollution control and stormwater management ordinance. This ordinance is based upon state model ordinances to meet the prescribed requirements and standards of NR216, NR151, and the WPDES permit.

This ordinance was adopted on December 12, 2017, to augment and be consistent with similar ordinances previously adopted by Eau Claire County, the City of Chippewa Falls, and the Town of Lafayette.

Under the management approach, the responsibilities for ordinance administration and enforcement are delegated to the Chippewa County Planning and Zoning Department. Technical support, including responsibility for stormwater plan review and infrastructure-based construction inspection, is delegated to the Chippewa County Department of Land Conservation & Forest Management. To avoid redundancy, the County coordinates its efforts, plan review, and inspection with the City of Chippewa Falls and appropriate state regulatory agencies when joint jurisdictions apply.

Responsibility for administration of the erosion control provisions of the Uniform Dwelling Code (UDC), during the subsequent development phases, is administered by the Chippewa County Planning and Zoning Department, and will be conducted as part of the routine sanitary and construction permitting process.

The jurisdictional coverage of the stormwater ordinance will extend to the boundaries of each municipality, unless a more confined boundary is requested by the municipality. To encourage consistency, adjoining towns in the urbanizing area (Wheaton and Anson) that participate in County Comprehensive Zoning, are provided the opportunity to have the ordinance applied to their jurisdiction.

Table 11 documents a summary of agency responsibilities to support construction site pollution control and post construction stormwater ordinances.

Table 11

SUMMARY OF AGENCY RESPONSIBILITIES TO SUPPORT
CONSTRUCTION SITE POLLUTION CONTROL AND
POST CONSTRUCTION STORMWATER ORDINANCES

	STATE			COUNTY			MUNICIPALITIES			DEVELOPER
PROGRAM AREA AND ACTIVITY	DNR	COM.	DOT	Zoning	LCC	Highway	C.F.	L. Hallie	Towns	
Stormwater Permit Administration & Enforcement										
Permit Adm./Enforcement	X			X						
Stormwater Plan Development										X
Stormwater Plan Review	X				X					
Stormwater BMP Installation										
Layout										X
Construction	X				X					X
As-Built Inspection					X					X
Stormwater Infrastructure Management										
BMP Inspection					X					X
BMP Maintenance										X
Illicit Discharge and Outfall Monitoring										
Road Ditch Network					X	X	X	X	X	
Major Outfalls					X					
Enforcement				X						
Administration	X				X					

3.5 Pollution Prevention

Each affected municipality, subject to terms of the WPDES permit, developed and implemented a pollution prevention program.

The program was developed following a standardized format and includes procedures for the following:

1. Routine inspection and maintenance of municipal-owned or operated structural stormwater management facilities to maintain their pollutant removal operating efficiency.

2. Routine street sweeping and catch basin cleaning.

3. Proper disposal of street sweeping and catch basin cleaning waste.

4. Application of road salt, sand, and other deicers at the minimum rate necessary to maintain public safety.

5. Proper management of leaves and grass clippings.

6. Stormwater pollution prevention planning for municipal garages, storage areas, and other municipal sources of stormwater pollution.

The urban stormwater plan identified urban best management practices and management measures to reduce agricultural non-point source pollution. The Town of Lafayette has developed and implemented an urban stormwater management pollution prevention program under WPDES permit WI-S05121-1 to limit runoff from new development, monitor illicit discharge, and monitor stormwater outfalls to Little Lake Wissota.

"When possible, stormwater runoff will be management to maximize infiltration and improve groundwater recharge." (Chippewa Falls Urban Area Stormwater Management Plan, LCFM, 10/10/07, page 26).

"Irrespective of watershed location, stormwater runoff in undeveloped and developing areas will be managed to maintain the existing pattern of surface drainage, and the area's existing capacity for depressional storage and groundwater infiltration."

"*This will be done by maintaining the integrity of the natural drainage network and by maintaining the storage and infiltration capacity of natural depressions where surface ponding and groundwater infiltration now occur.",* (Chippewa Falls Urban Area Stormwater Management Plan, 10/10/07, page 28).

"The Town of Lafayette requires all new land divisions and development to have on-site stormwater treatment, and due to sandy soils and high level of infiltration, it is anticipated there will be very little discharge from future developments.", (TMDL, page 9).

Table 12 documents the core responsibilities of cooperating municipalities and agencies under the joint permit and associated stormwater management program.

Table 12

SUMMARY OF CORE RESPONSIBILITIES OF COOPERATING MUNICIPALITIES AND AGENCIES UNDER THE JOINT PERMIT AND ASSOCIATED STORMWATER MANAGEMENT PROGRAM

	COUNTY			MUNICIPALITIES		
PROGRAM AREA AND ACTIVITY	Zoning	LCC	Highway	Lake Hallie	L. Hallie/Eagle Point	Lafayette
Public Education and Outreach						
Public Information/Outreach		X				
Targeted Education		X				
Chippewa Valley Stormwater Forum		X		X	X	X
Public Participation						
Public Meetings		X				
Stormwater Coordinating Committee	X	X	X	X	X	X
Illicit Discharge Detection and Elimination						
Annual Training			X	X	X	X
Annual Ditchline Inspection			X	X	X	X
Annual Outfall Inspection		X				
Regulatory Response/Enforcement	X					
Construction Site/Stormwater Ordinance						
Permit Administration	X					
Plan Review		X				
Construction Inspection		X				
Regulatory Enforcement	X					
Pollution Prevention/Water Quality Model						
Annual BMP Inspection		X				
Storm Sewer System Map						
Collect/Maintain Data (BMP'S)		X				
Update/Maintain Drainage System Map/GIS		X				
Permit Reporting and Administration						
WPDES Permit Admin/Reporting		X		X	X	X

3.6 The Existing Agricultural Non-Point Source Management Measures that are Implemented

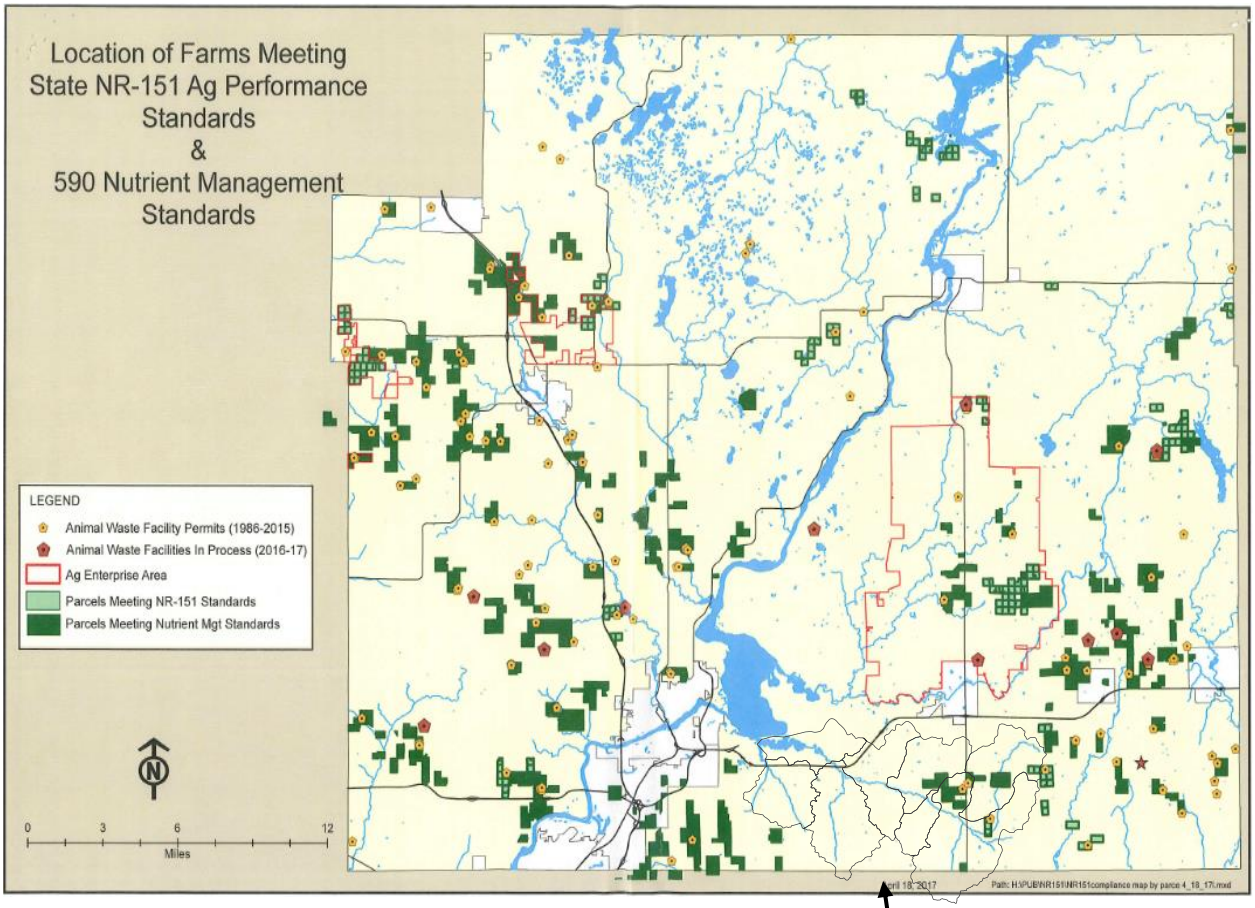
3.6.1 NR151 and NR590 Tracking

The Chippewa County Department of Land Conservation and Forest Management has been active in tracking the existing agricultural non-point source management measures that are currently in place as of 2019.

The department keeps records of all farms and land that meet all agricultural performance standards and prohibitions in NR151. A map of all parcels that meet NR151 requirements is shown below.

Map 11 shows the location of farms meeting all State NR-151 Ag Performance Standards & 590 Nutrient Management Standards in Chippewa County and the Little Lake Wissota watershed.

Map 11



Little Lake Wissota Watershed

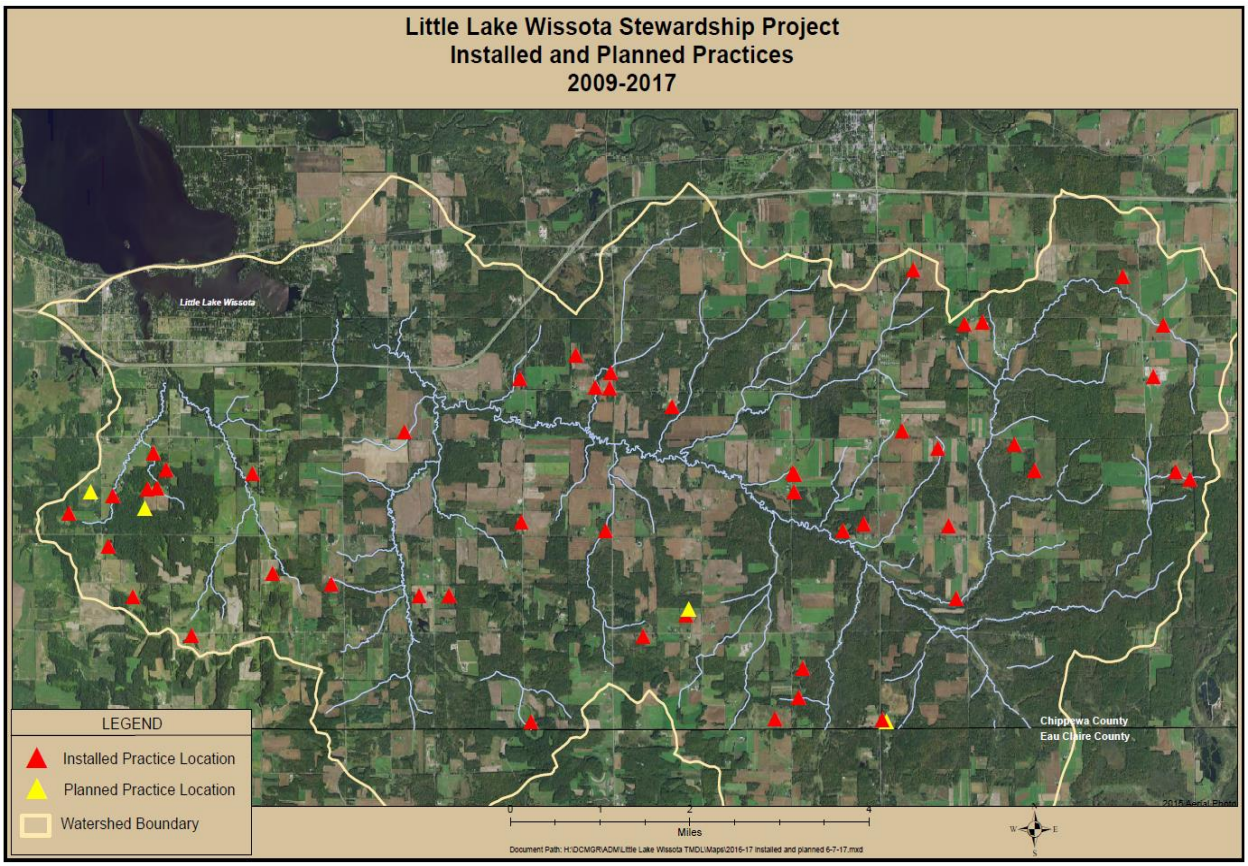
This plan recognizes that farms and land can fall out of compliance with NR151 performance standards over time and may require additional verification of NR151 compliance over time.

3.6.2 Lake Wissota Stewardship Project Conservation Practice Installations

The Little Lake Wissota Stewardship Project, which operates under the Chippewa County Department of Land Conservation and Forest Management, has tracked all conservation projects installed in the Little Lake Wissota Watershed. This includes wetland restorations, stream buffers, groundwater scrapes, and barnyard improvement projects. A map showing the location of all Lake Wissota Stewardship conservation projects in the watershed is shown below.

Map 12 shows the locations of stream buffers, wetland restorations, and sediment detention basins installed in the Little Lake Wissota Watershed

Map 12



3.6.3 Little Lake Wissota Stewardship Project Stream/Wetland Buffers

The Little Lake Wissota Stewardship Project has installed 31 Stream and Wetland Buffers in the Little Lake Wissota Watershed from 2009-2017. Figure 4 below is an example of a stream buffer.

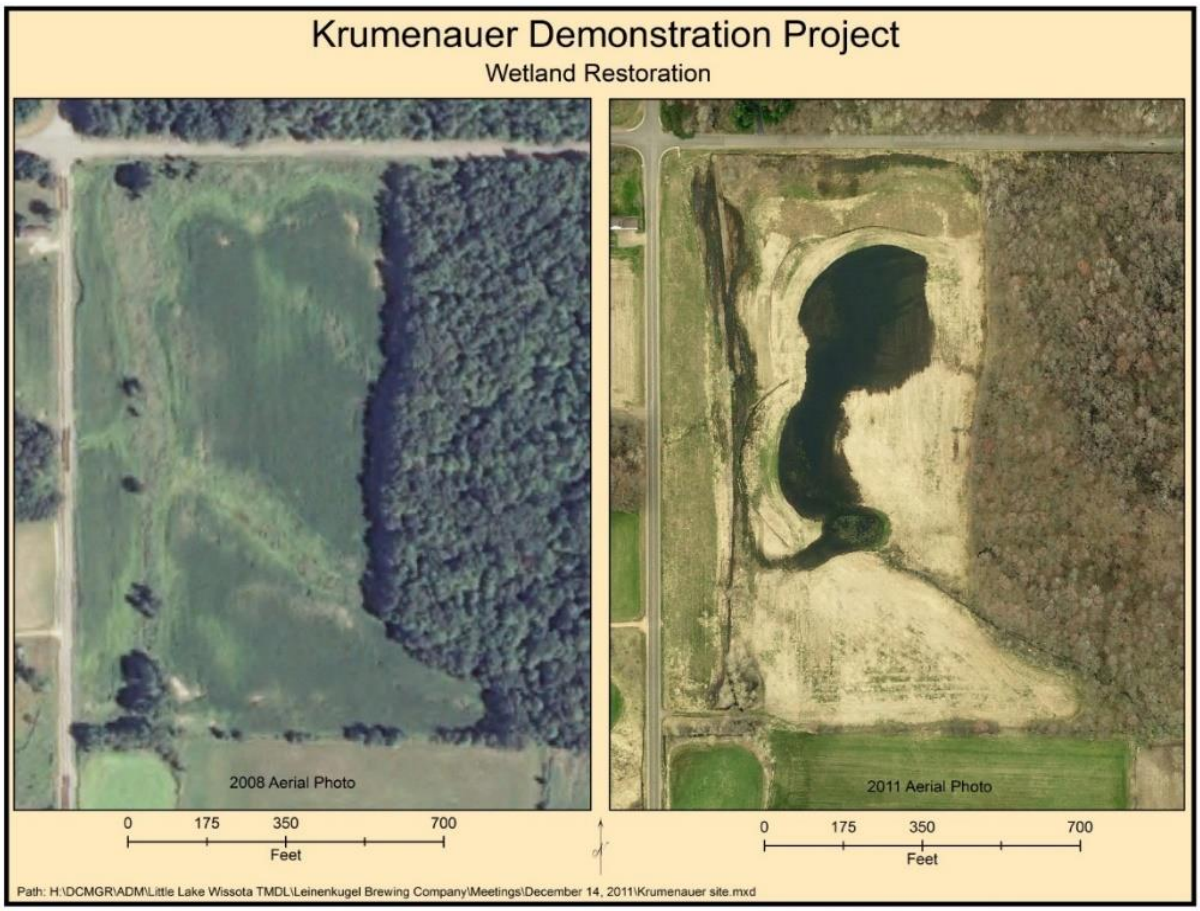
Figure 4

3.6.4 Little Lake Wissota Stewardship Project Wetland Restorations

The Little Lake Wissota Stewardship Project has installed one (1) large wetland restoration in the Little Lake Wissota Watershed from 2009-2017.

Figure 5 shows the before and after aerial photos of the Krumenauer wetland restoration in the Little Lake Wissota Watershed.

Figure 5



3.6.5 Little Lake Wissota Stewardship Project Sediment Detention Basins

The Little Lake Wissota Stewardship Project has installed 38 sediment detention basins in the Little Lake Wissota Watershed from 2009-2017.

Figure 6 shows a newly installed sediment detention basin in the Little Lake Wissota Watershed.

Figure 6

3.6.6 Little Lake Wissota Stewardship Project Barnyard Improvement Projects

The Chippewa County Department of Land Conservation and Forest Management has periodically assisted farmers in barnyard improvement projects funded through state and federal cost share opportunities. In 2014, there was a large barnyard improvement project in the Little Lake Wissota Watershed. This project consisted of a new manure storage facility and the roofing of areas with high animal concentration. The project decreased the need for winter manure application and also drastically reduced the amount of nutrient export to an area of concentrated flow that was a direct conduit to surface water.

Figure 7 shows engineered plans for a barnyard improvement project in the Little Lake Wissota Watershed.

Figure 7

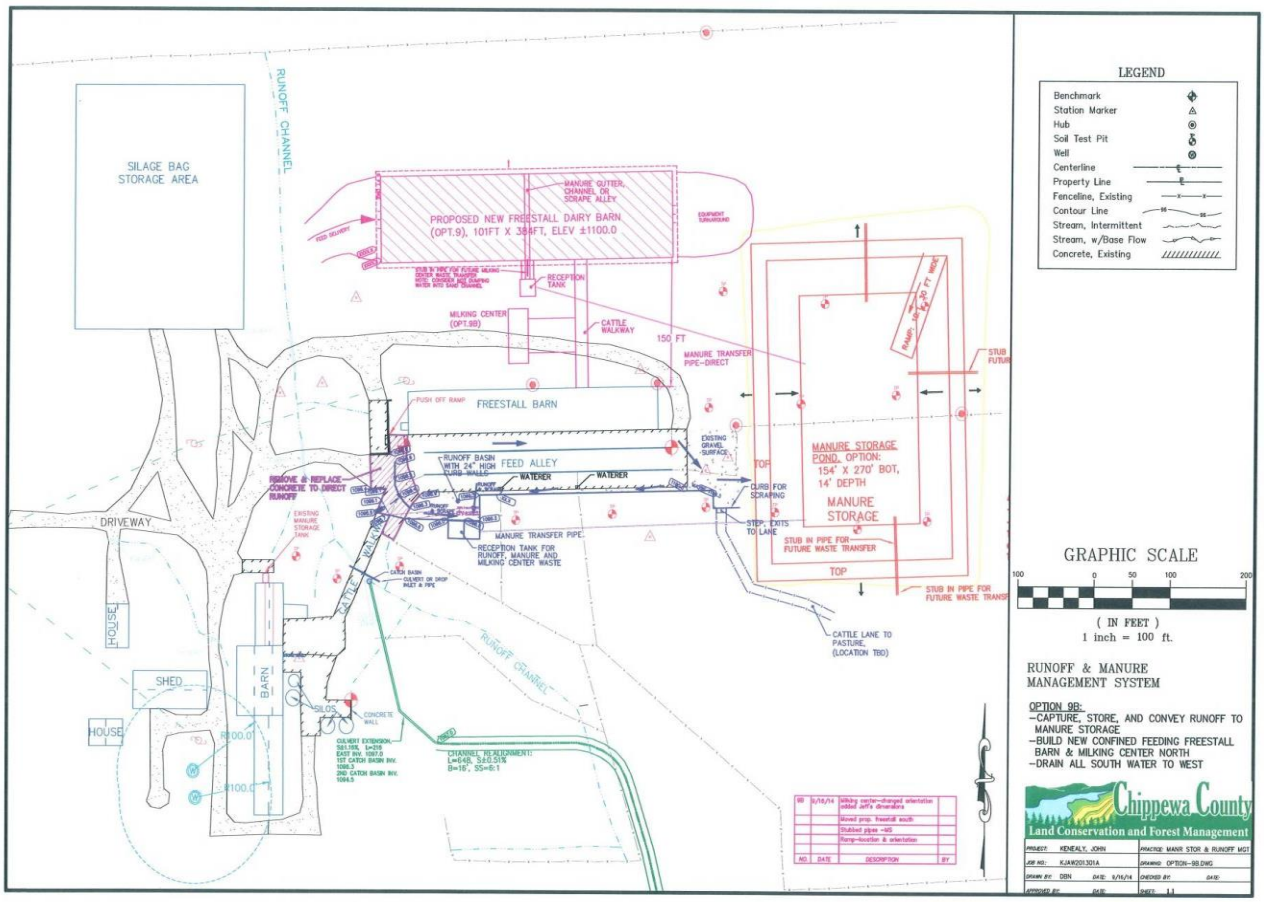


Figure 8 shows a photo from the inside of a covered area.

Figure 8

Figure 9 shows a photo of the inside of the new manure storage facility.

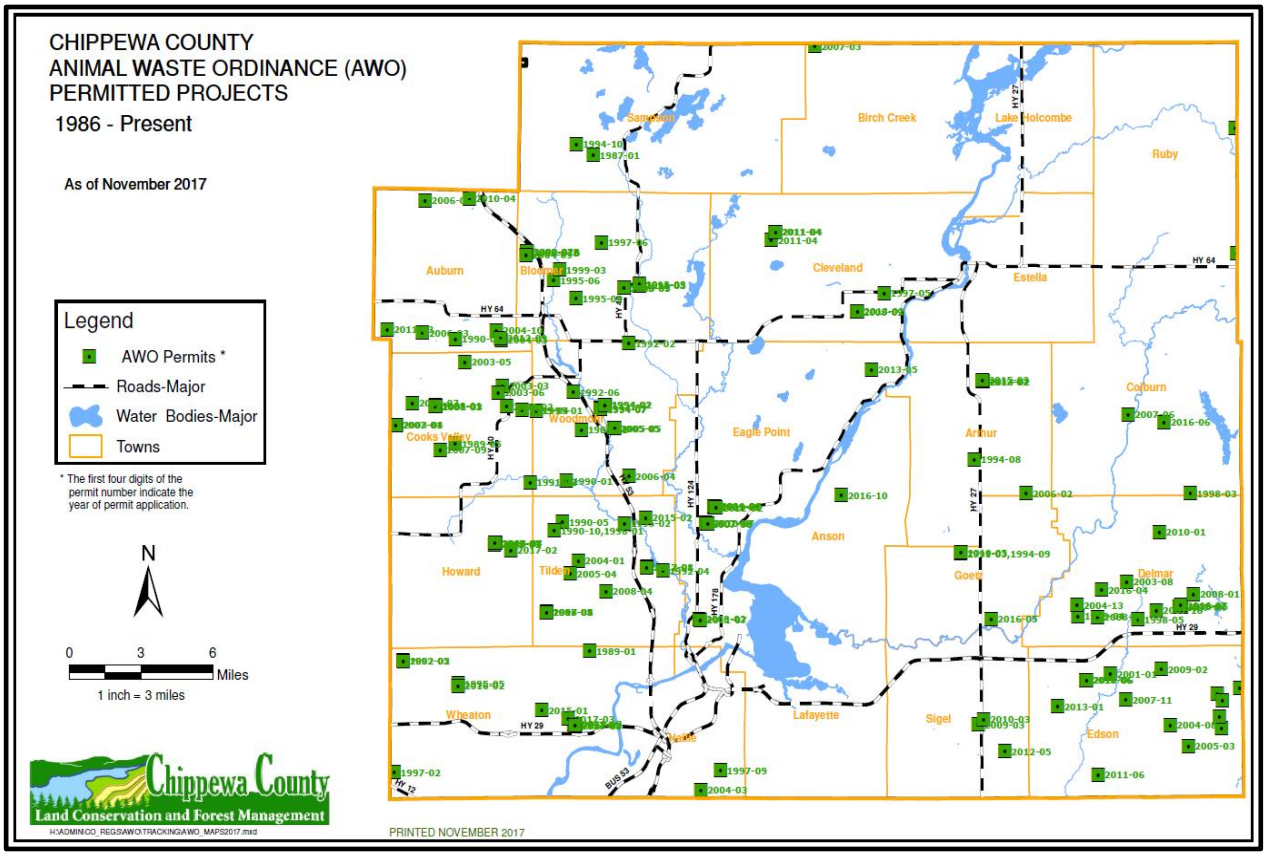
Figure 9

3.6.7 Chippewa County Animal Waste Ordinance

Chippewa County Department of Land Conservation and Forest Management developed an animal waste ordinance in 1986. Any storage structures built or modified after 1986 are required to be permitted and approved by LCFM staff review.

Map 13 shows the locations of animal waste ordinance permitted projects in Chippewa County, 1986 to present.

Map 13



3.6.8 Chippewa County Farmland Preservation Program/Agricultural Enterprise Area

The Wisconsin Farmland Preservation Program (FLP) provides state income tax credits to farmers who meet program requirements. Program requirements include meeting soil and water conservation standards, and using the land for agriculture only.

By law, no new Farmland Preservation contracts are being developed. If a landowner had an active contract in place before the law changed, the state continues to honor the contract.

The old Farmland Preservation Program has been replaced with Agriculture Enterprise Areas (AEAs).

In Chippewa County, farmers with an active Farmland Preservation contract are required to annually certify that they are meeting requirements of their contract. A reminder letter is sent to individual landowners in the spring.

3.7 The Proposed Management Measures to be Implemented

3.7.1 The Urban Point Source Management Measures That Will Need to be Implemented

Chippewa County will continue to implement the requirements of WPDES WI-S050121-1 stormwater permit.

The stormwater management program will be implemented through a combined construction site pollution control and stormwater management ordinance. This ordinance is based upon state model ordinances to meet the prescribed requirements and standards of NR216, NR151, and the WPDES permit.

The ordinance was adopted by the Chippewa County Board of Supervisors on December 12th, 2017.

The existing sources of urban point pollution for Little Lake Wissota have been adequately mapped and will be applied as a basis for future lake and water pollution control efforts.

There are no proposed changes or refinements from the existing watershed management plan approach.

3.7.2 The Proposed Agricultural Non-Point Source Management Measures to be Implemented

In 2017, it was decided that the Little Lake Wissota Stewardship Project would be extended for another 5 years. The Lake Wissota Stewardship Project will continue improving hydrologic conditions and reducing phosphorus and sediment loading in the watershed. Project areas will be prioritized and addressed by continuing to work in the lowlands by installing stream buffers and wetland restorations, but also working in the uplands to provide cost sharing for reduced tillage, cover crop, and increased residue farming practices to reduce phosphorus and sediment loads and bring agricultural land into NR151 compliance. In order to concentrate our conservation efforts on areas to achieve the most efficient use of funds, it was necessary to use **SWAT, STEPL, PRESTO**, and **EVAAL** modeling to identify conservation practices and locations for practices.

The Soil and Water Assessment Tool (SWAT) is a public domain model jointly developed by USDA Agricultural Research Service (USDA-ARS) and Texas A&M AgriLife Research, part of the Texas A&M University System. SWAT is a small watershed to river basin-scale model to simulate the quality and quantity of surface and ground water, and predict the environmental impact of land use, land management practices, and climate change. SWAT is widely used in assessing soil erosion prevention and control, non-point source pollution control, and regional management in watersheds.

STEPL calculates nutrient and sediment loads from different land uses and the load reduction that would result from the implementation of various best management practices (BMP's). STEPL does not indicate individual areas in which conservation practice can or should be implemented.

EVAAL prioritizes areas within a watershed that may be vulnerable to water erosion. Unlike STEPL, EVAAL calls out individual locations within the watershed that water and soil conservation practices can and should be applied.

PRESTO The Pollutant Load Ratio Estimation Tool (PRESTO) is a statewide GIS-based tool that compares the average annual phosphorus loads originating from point and nonpoint sources within a watershed. The comparison provides a screening tool for industrial and municipal dischargers to determine one of the conditions of eligibility for adaptive management as part of s. NR 217.18, Wisconsin Administrative Code.

PRESTO was designed to be easily modified, transparent to the end user, and provide a consistent result based on readily available datasets. PRESTO performs three basic functions: watershed delineation, nonpoint source loading estimation, and point source loading aggregation. The PRESTO outputs include a delineated watershed, watershed land cover composition, the estimated average annual nonpoint source and measured point source phosphorus loads (pounds per year), and the ratio of point to nonpoint phosphorus at a watershed outlet.

SWAT Analysis Results

A SWAT Analysis was run as part of TMDL development in the Little Lake Wissota Watershed.

"The SWAT analysis indicates that a combination of agricultural changes including conversion of cropland to no-till, managing soil phosphorus levels to plant needs and conversion of a portion of cropland to non-cropland uses (i.e. horse pasture, rural residential, CRP, etc.) could theoretically result in an approximate 49% reduction in the baseline phosphorus load."

Table 13 documents the SWAT model simulated seasonable phosphorus loads under various management scenarios in the Little Lake Wissota Watershed.

Table 13

Management Scenario	Seasonal Phosphorus Load (pounds)	Percent of Baseline Phosphorus Load (%)
Baseline condition	4,374	100
All cash crop to corn (no soybeans)	4,323	99
All cash crop to no till	3,796	87
10% cropland conversion to horse farms, CRP, etc.	3,713	85
All agriculture soils to optimum Bray P-1*	3,131	72
No till + optimum Bray P-1	2,888	66
No till, optimum Bray P-1, 10% cropland conversion	2,227	51

* Bray P-1 is a soil chemistry testing method commonly used in Wisconsin to measure soil phosphorus availability to crops.

Table 14 documents the annual and daily total phosphorus load and waste load allocations for the Little Lake Wissota Watershed.

Table 14

Category	Current Annual Phosphorus Load (pounds)	Annual Phosphorus Load Allocation (pounds)	TMDL for Phosphorus (pounds/day)
Nonpoint Sources*	8,832	5,810	15.92
Point Sources			
Town of Lafayette MS4**	60	60	0.16
General Permit	13	13	0.04
Reserve Capacity for General Permits		19	0.05
Totals:	8,905	5,902	16.17

*Based on 10-year average SWAT modeled phosphorus load from nonpoint sources.
**MS4 collection system currently captures 95-99% of stormwater phosphorus load.

Table 15 documents the annual and daily sediment TMDL load and watershed allocations for the Little Lake Wissota Watershed.

Table 15

Category	Current Annual Sediment Load (tons)	Annual Sediment Load Allocation (tons)	TMDL for Sediment (tons/day)
Nonpoint Sources*	1,008	742.8	2.04
Point Sources			
Town of Lafayette MS4**	10	10	0.03
General Permit	2.2	2.2	<0.01
Reserve Capacity for General Permits		3.2	<0.01
Totals:	1,020.2	758.2	2.08

* Based on 10-year average SWAT modeled sediment load.
** MS4 collection system currently captures 95-99% of stormwater sediment load.

STEPL Modeling

Introduction

The Spreadsheet Tool for Estimating Pollutant Load (STEPL) model is an EPA accepted approach for estimating nutrient and sediment loads within a watershed using landcover and pollutant load reductions from the implementation of various BMP's. Inputs to the model include land use/land cover, USLE soil characteristics, animal units, and climate.

Methods

Table 16 documents the data and sources used in the Little Lake Wissota STEPL model.

Table 16

Model Input	Source/Explanation
Watershed Land Use Area	2015 USDA National Land Cover Dataset
Input Agricultural Animals	2015 Agricultural Census of Chippewa County
Septic System Data	Parcels with > $20,000 improvement on tax records
USLE Parameters	Area weighted average analysis for each watershed
Average Soil Hydrologic Groups	WEB Soil Survey, USDA SSURGO Database, Area Weighted Analysis
Climate Data	National Climatic Data Center (Chippewa Falls, WI Station)
Irrigation Area	WIS DNR High Capacity Well Dataset
Buffer Data	Field-by-Field aerial image analysis to determine 35'buffer occurrence rates
Tillage/Residue Data	Field-by-Field Tillage/Residue Checks conducted by LCFM staff 2012-2015
Cover Crop Data	Data acquired from USDA on cost sharing
Nutrient Management Plan Data	Chippewa County LCFM NMP Tracking Database and USDA Cost share Data
Watershed Boundary	USGS HUC 12 Data, subdivided into 8 sub watersheds

Results

Table 17 documents BMP nutrient and sediment reduction efficiencies for various management practices in the watershed on their own, and combined using the STEPL model. As best management practices are combined on the same field/acre, the reduction efficiency rate goes up significantly.

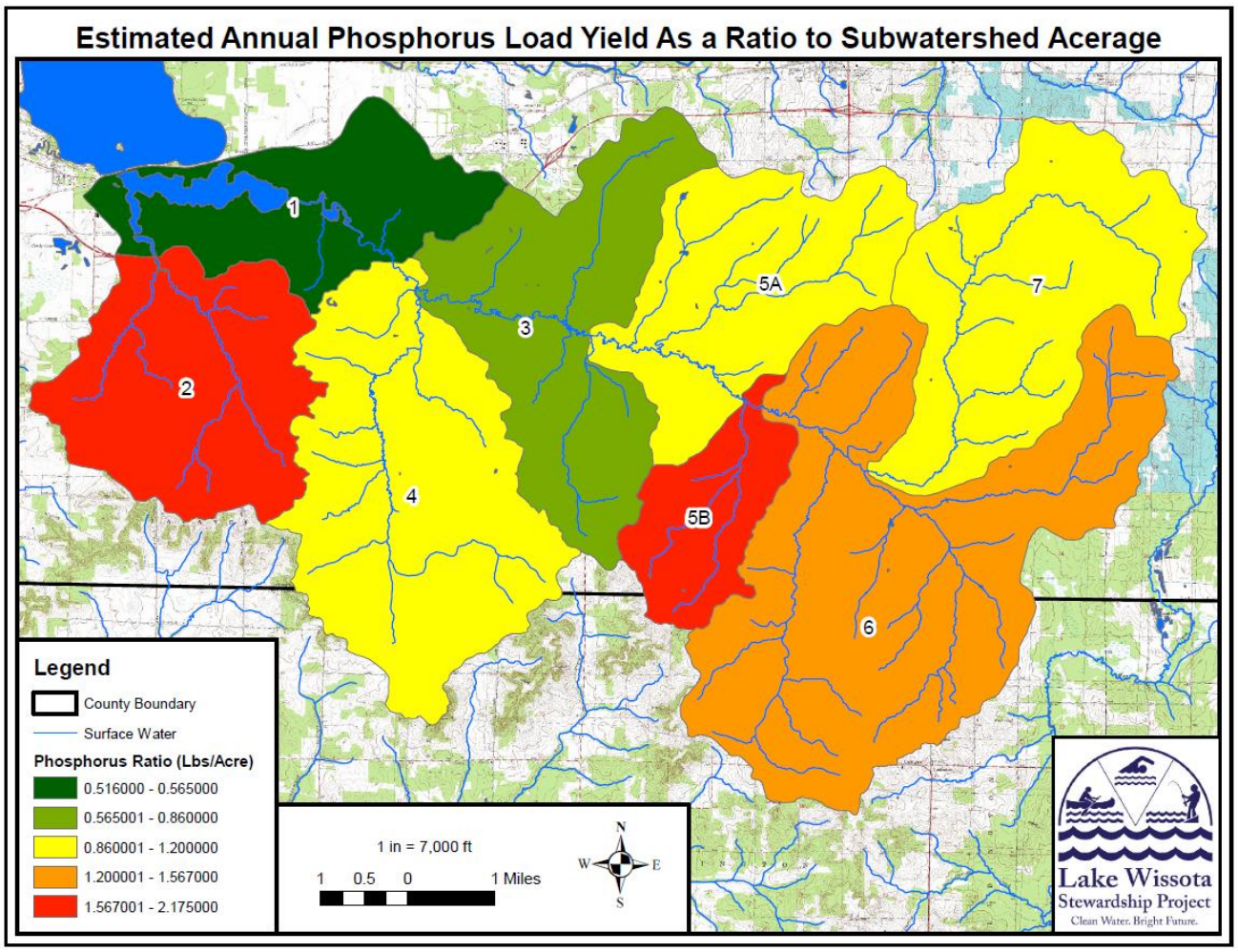
Table 17

BMP & % Efficiency Table	Nitrogen	Phosphorus	BOD	Sediment	E. coli
Buffer (35ft wide)	33%	43%	ND	53%	ND
Conservation Tillage 1 (30-59% Residue)	15%	35%	ND	40%	ND
Cover Crop (Group Traditional Normal Planting Time) (High Till only for TP and Sediment)	19%	7%	ND	10%	ND
Land Retirement	89%	80%	ND	95%	ND
Nutrient Management 1	15%	45%	ND	ND	ND
Streambank Stabilization and Fencing	75%	75%	ND	75%	ND
30-59% Residue + 35ft Buffer	33%	53%	ND	62%	ND
Nutrient Management Plan+30-59% Residue+35ft Buffer	51%	64%	ND	69%	ND
Nutrient Management Plan+35ft Buffer	38%	56%	ND	53%	ND

The STEPL model is not a site-specific model, therefore it cannot be used to evaluate individual farms. It does, however, provide a means of comparing subwatersheds in order to target management efforts. Results of the STEPL model analysis are shown in the following maps and tables.

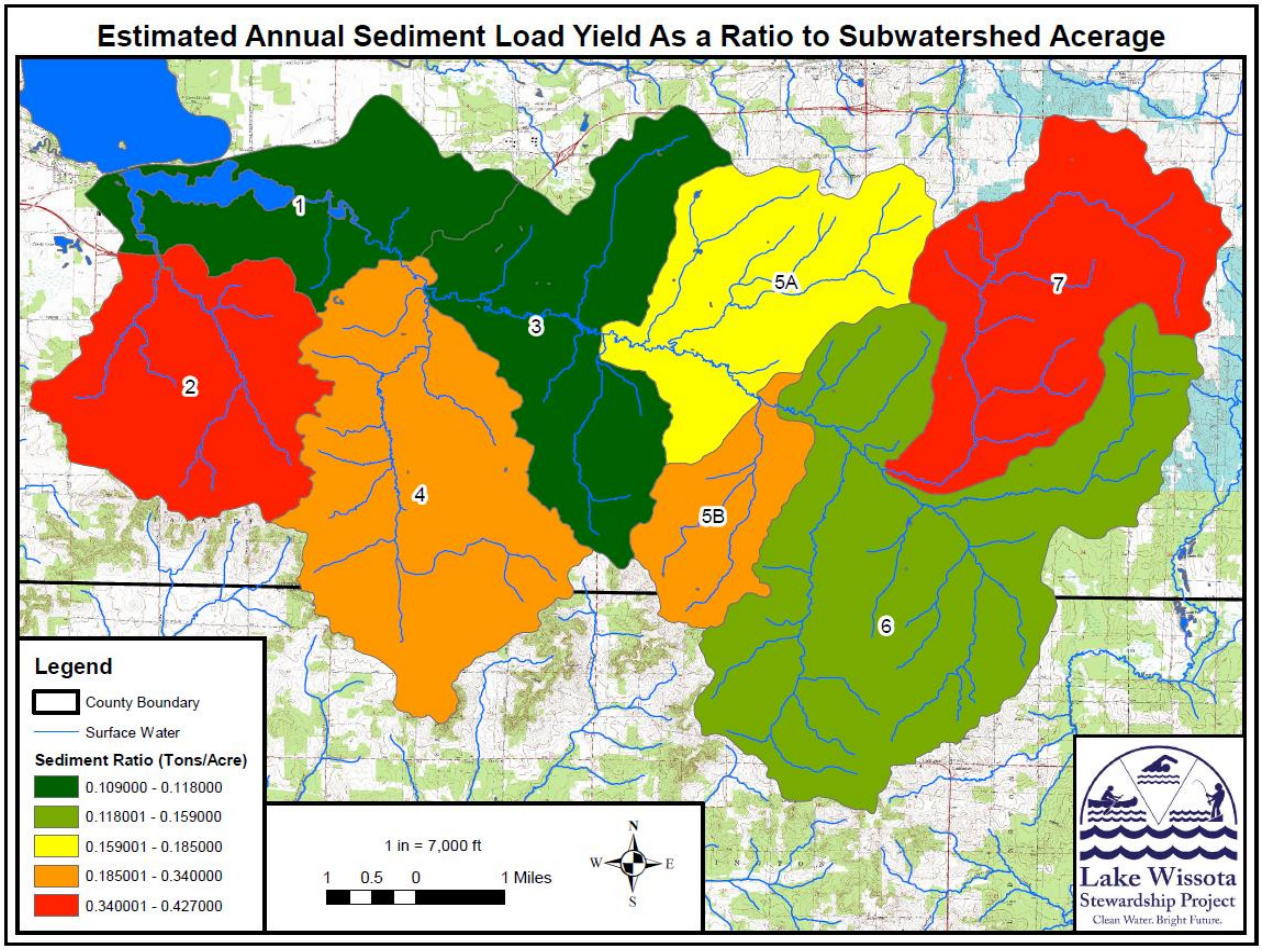
Map 14 shows the estimated annual phosphorus load yield as a ratio to subwatershed acreage.

Map 14



Map 15 shows the estimated annual sediment load yield as a ratio to subwatershed acreage.

Map 15



The following tables and graphs show the output data from the STEPL Model. These tables and figures are communicated as load by watershed and load by land use.

Table 18 and figure 10 document the STEPL model results for baseline/current conditions in the Little Lake Wissota Watershed (2018). The results are based upon 49% (10,005 out of 20,566) of cropland acres in the watershed having one or more management practices implemented. Figure 10 describes the types and number of current management practices used in STEPL.

Figure 10

Estimate an area-weighted combined efficiency of multiple BMPs (in parallel) across a watershed		
Enter total treated land use area	10005.00	Cropland
Enter the subarea treated by each selected BMP type (upto 20 varying frequency of treatment allowed)		
Treatment	Area (ac)	Select a BMP Type
1	50.00	Conservation Tillage 1 (30-59% Residue)
2	20.00	Nutrient Management 1 (Determined Rate)
3	30.00	Buffer - Grass (35ft wide)
4	100.00	Cover Crop 2 (Group A Traditional Normal Planting Time) (High Till only for TP and Sediment)
5	780.00	NMP+35Buff
6	7423.00	30Res+35Buff
7	1602.00	NMP+30Res+35Buff

Table 18

Baseline STEPL Results for the Little Lake Wissota Watershed																		
N Load (no BMP)	P Load (no BMP)	BOD Load (no BMP)	Sediment Load (no BMP)	E. coli Load (no BMP)	N Reduction	P Reduction	BOD Reduction	Sediment Reduction	E. coli Reduction	N Load (with BMP)	P Load (with BMP)	BOD (with BMP)	Sediment Load (with BMP)	E. coli Load (with BMP)	%N Reduction	%P Reduction	%BOD Reduction	%Sed Reduction	%E. coli Reduction
lb/year	lb/year	lb/year	t/year	Billion MPN/year	lb/year	lb/year	lb/year	t/year	Billion MPN/year	lb/year	lb/year	lb/year	t/year	Billion MPN/year	%	%	%	%	%
210917.7	68549.5	410669.8	13387.6	0.0	31970.4	16097.7	25117.7	3924.6	0.0	178947.3	52451.8	385552.1	9463.0	0.0	15.2	23.5	6.1	29.3	0.0

Table 19 documents the STEPL model output results for the Little Lake Wissota Watershed by current (2018) land use.

Table 19

Sources	N Load (lb/yr)	P Load (lb/yr)	BOD Load (lb/yr)	Sediment Load (t/yr)	E. coli Load (Billion MPN/yr)
Urban	14595.48	2253.52	56689.57	335.13	0.00
Cropland	117156.97	39122.99	256547.89	8925.91	0.00
Pastureland	971.95	124.74	3072.42	21.60	0.00
Forest	4425.19	2400.17	10774.40	180.36	0.00
Feedlots	40802.30	8160.46	54403.07	0.00	0.00
User Defined	0.00	0.00	0.00	0.00	0.00
Septic	995.44	389.88	4064.73	0.00	0.00
Gully	0.00	0.00	0.00	0.00	0.00
Streambank	0.00	0.00	0.00	0.00	0.00
Groundwater	0.00	0.00	0.00	0.00	0.00
Total	**178947.33**	**52451.76**	**385552.09**	**9463.01**	**0.00**

Chart 1 documents N, P, and BOD load within the Little Lake Wissota watershed with current (2018) BMPs (lb/yr)

Chart 1

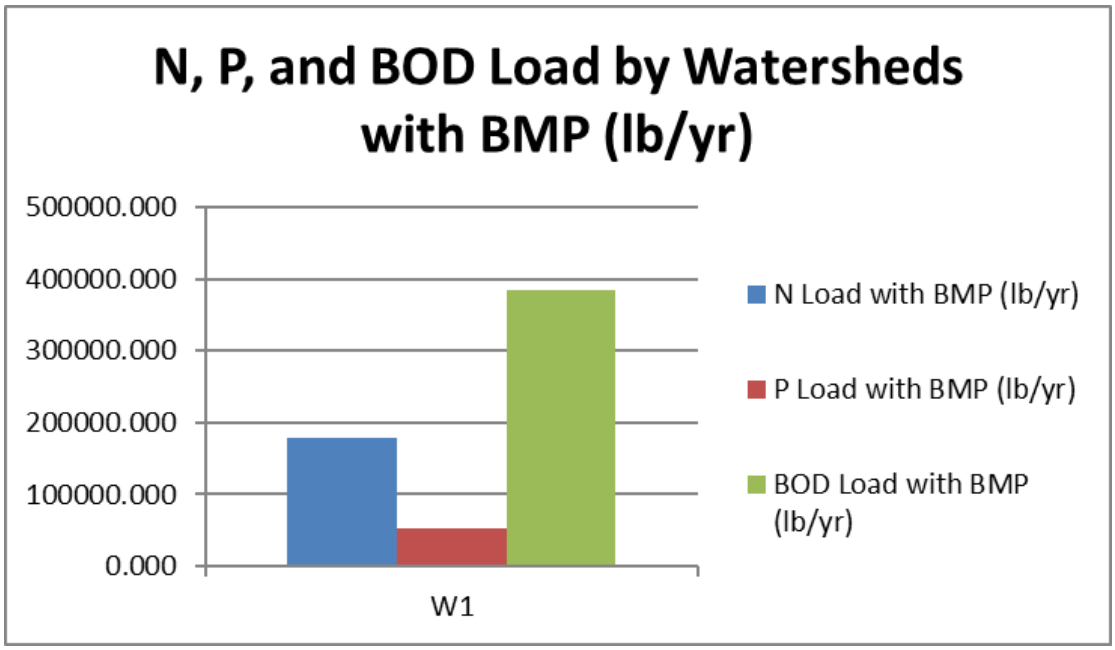


Chart 2 documents the sediment load by watershed with current (2018) BMPs in the Little Lake Wissota Watershed.

Chart 2

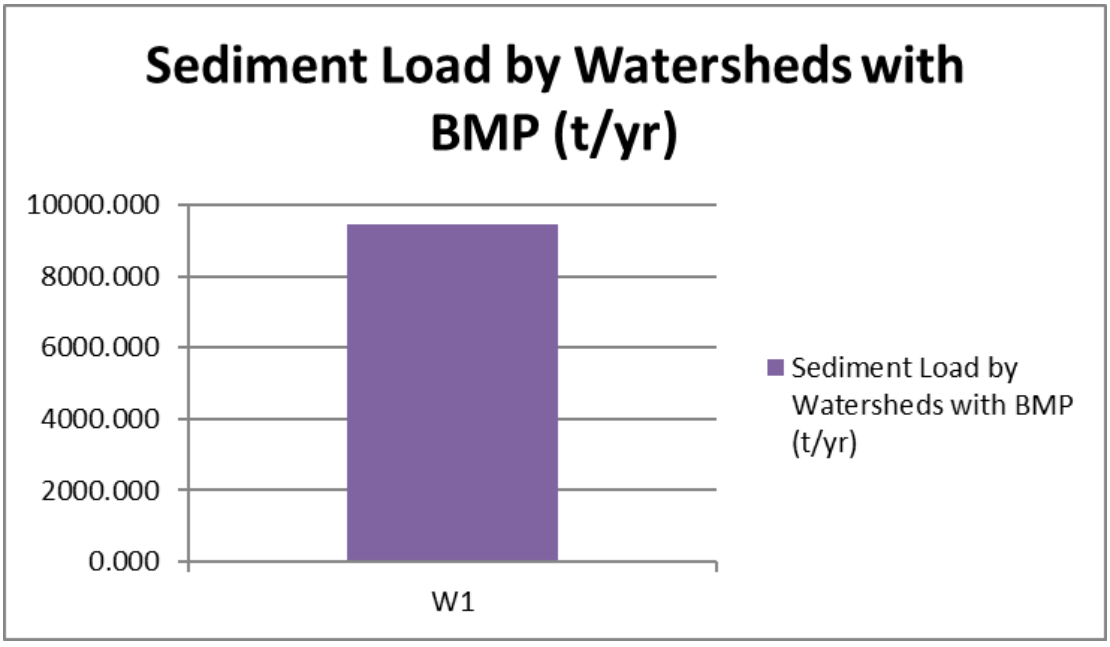


Chart 3 documents N, P, and BOD load reductions from current (2018) practices implemented within the Little Lake Wissota Watershed.

Chart 3

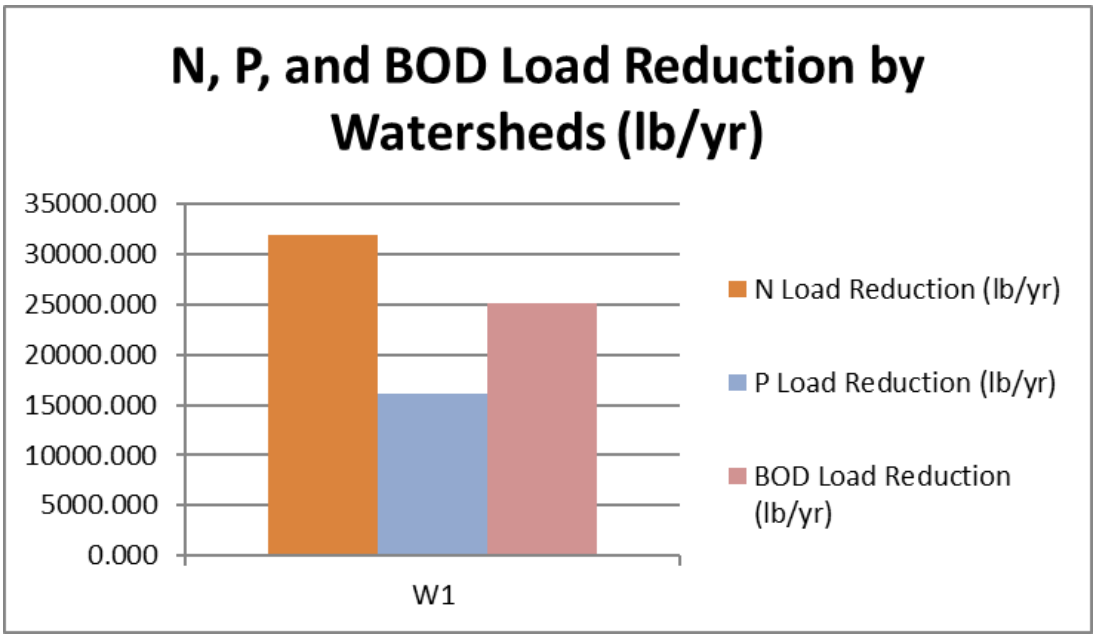


Chart 4 documents the sediment load reduction from current (2018) practices implemented within the Little Lake Wissota Watershed.

Chart 4

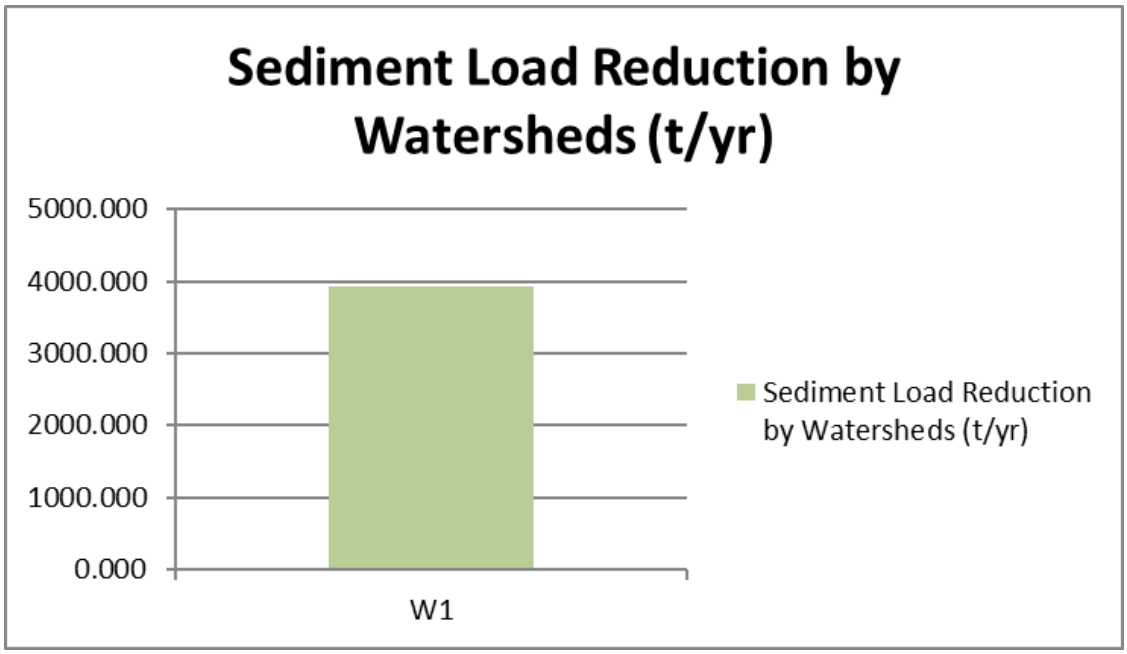


Chart 5 documents the total P load by land uses with current (2018) BMPs in the Little Lake Wissota Watershed.

Chart 5

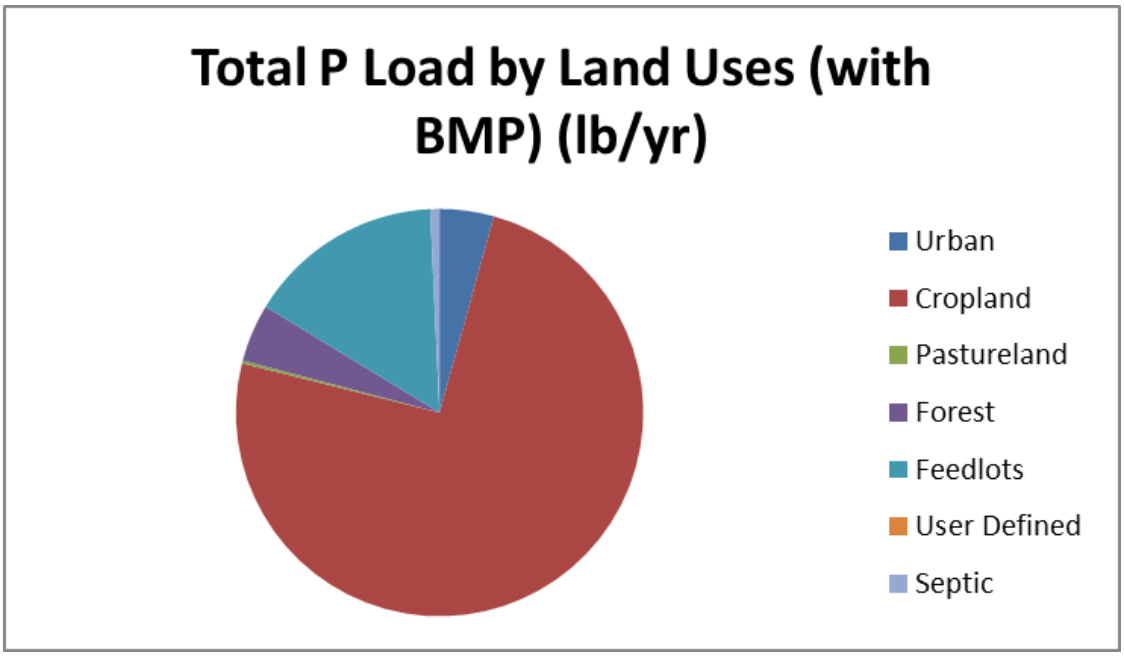


Chart 6 documents the total sediment load by current (2018) land uses (with BMP) (t/yr).

Chart *6*

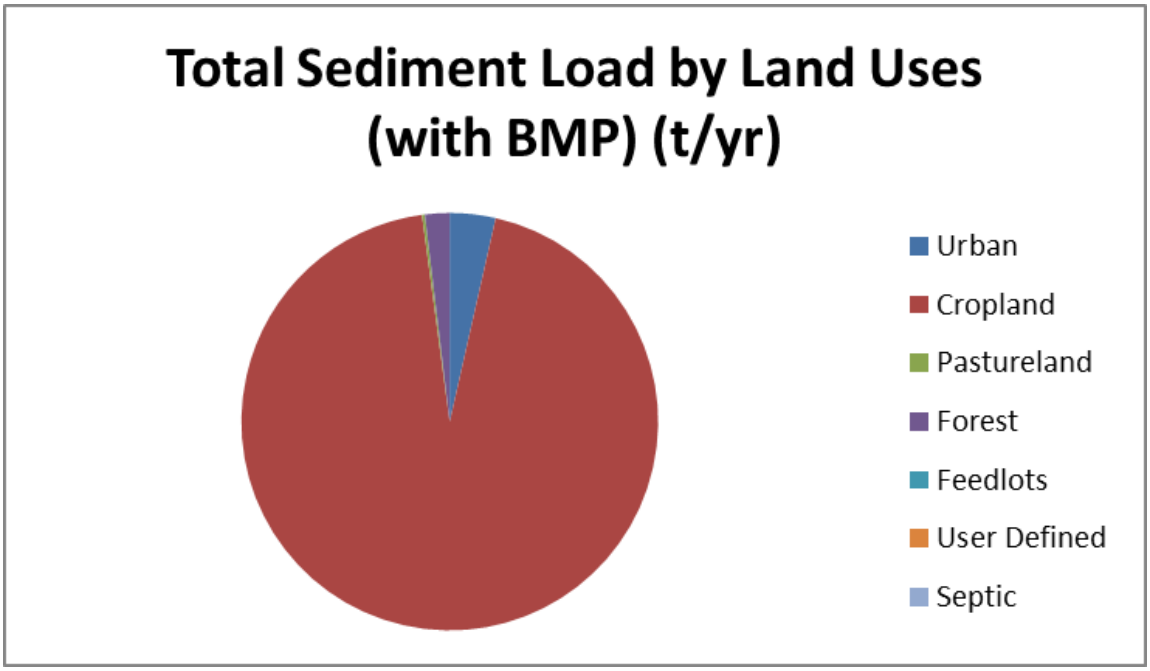
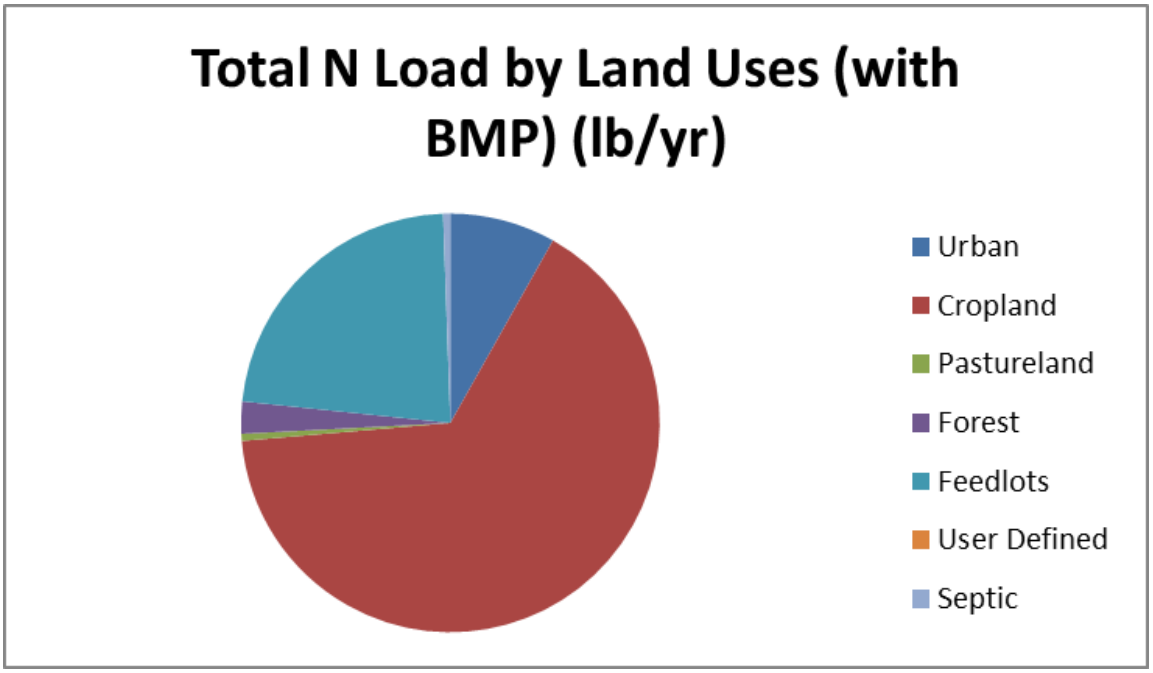


Chart 7 documents the total N load by current (2018) land uses in the Little Lake Wissota watershed.

Chart 7



For this plan, the STEPL model was amended after the initial baseline run to estimate how many acres of new or additional practices in the watershed could achieve the TMDL 34% phosphorus reduction goal. Table 20 contains six different individual or combined of best management practices, number of acres the practice is implemented and estimated pollutant reduction. Some STEPL model results are similar to SWAT model conservation practice reductions shown in Table 13.

Table 20

BMP	N Load (lb/yr)	P Load (lb/yr)	BOD Load (lb/yr)	Sediment Load (t/yr)
NMP*	8357.87	4827.48	-131.67	-20.57
10,541 acres	4.7%	9.2%**	0.0%	-0.2%
30% Residue*	16677.15	10825.83	16882.86	2637.95
10,511 acres	9.3%	20.6%**	4.4%	27.9%
Buffer - 35' Grass*	29781.85	13934.77	22340.72	3490.74
10,531 acres treated	16.6%	26.6%**	5.8%	36.9%
NMP + Buff - 35 ' Grass*	32600.74	15315.74	22330.15	3489.09
11,341 acres	18.2%	29.2%**	5.8%	36.9%
30% Residue + Buff 35 ' Grass*	31757.11	16669.02	26300.10	4109.39
17,984 acres	17.7%	31.8%**	6.8%	43.4%
30%Res+NMP+Buff-35'Grass*	42817.11	19137.19	29340.91	4584.52
12,163 acres	23.9%	36.5%	7.6%	48.4%

**=

* = Assumes 100% of cropland acres in watershed have this practice or the baseline 2018 practices shown in Figure 10.

**=Implementation of this BMP, in addition to figure 10 existing 2018 baseline practices, in the watershed will not meet the 34% TMDL phosphorus reduction goal.

Table 21 – Pollution load reductions from Waste Management System BMP on feedlot acres

	N Load (lb/yr)	P Load (lb/yr)	BOD Load (lb/yr)	Sediment Load (t/yr)
Feedlots BMPs - applied to priority – 50% of feedlot acres in watershed	16320.92	3672.21	0.00	0.00

Table 22 – Phosphorus reduction in watershed with acres of new practices and existing 2018 practices

Buffer area = 35ft x 800ft=28,000 sq ft=.64 acres; each buffer treats/receives runoff from 40 cropland acres

New Practice (Acres) Acres with Practices	Phosphorus Reduction and Cropland Acres with New Practice			
	100%	75%	50%	25%
NMP	9.2%	6.9%	4.6%	2.3%
10,541 acres	10,541	7,905	5,270	2,635
30% Residue	20.6%	15.5%	10.3%	5.2%
10,511 acres	10,511	7,833	5,255	2,628
Buffer - 35' Grass	26.6%	20.0%	13.3%	6.7%
10,531 treated acres*	10,531	7,898	5,265	2,632
*= cropland acres treated by buffer; buffer total acreage=168 acres				
NMP + Buff - 35 ' Grass	29.2%	21.9%	14.6%	7.3%
11,341 treated acres*	11,341	8,505	5,670	2,835
*= cropland acres treated by buffer; buffer total acreage=181 acres				
30% Residue + Buff 35 ' Grass	31.8%	23.9%	15.9%	8.0%
17,984 treated acres*	17,984	13,488	8,992	4,496
*= cropland acres treated by buffer; buffer total acreage=287 acres				
30%Res+NMP+Buff-35'Grass	36.5%	27.4%	18.3%	9.1%
12,163 treated acres*	12,163	9,122	6,081	3,041
*= cropland acres treated by buffer; buffer total acreage=195 acres				

Legacy Phosphorus and Modeling P Reductions

One challenge that presents itself to improving water quality within agricultural dominated watersheds is legacy phosphorus in the cropland soils and stream channels.

In recent years, scientists and watershed managers are finding that water quality is not responding as well as expected to implemented conservation practices (Sharpley et al 2013). They are attributing this slower and smaller response to legacy phosphorus, primarily from cropland soils.

Legacy phosphorus is used to describe the accumulated phosphorus that can serve as a long-term source of P to surface waters. Legacy phosphorus in a soil occurs when

phosphorus in soils builds up much more rapidly than the decline due to crop uptake. In stream channels, legacy phosphorus can result from upland sediment erosion followed by sediment deposition of particulate phosphorus, sorption of dissolved phosphorus onto riverbed sediments or suspended sediments, or by incorporation into the water column (Sharpley et al 2013). Therefore, water quality may not improve/respond to implementation of conservation practices in a watershed as quickly as expected due to remobilization of legacy phosphorus hot spots. Legacy phosphorus is a factor that will be considered in the Little Lake Wissota watershed when water quality modeling and monitoring is completed to assess plan implementation.

Over this plan's ten-year schedule, it is important to monitor the functionality of cropland and other BMPs implemented in the watershed periodically after their installation. Over time, BMPs can become less efficient at achieving designed pollutant reductions due to several factors.

According to the ***USEPA Technical Memorandum #1: Adjusting for Depreciation of Land Treatment when Planning Watershed Projects***, natural variability, lack of proper maintenance and unforeseen consequences are primary causes of BMP depreciation. Considering how erratic and unpredictable weather patterns are increasingly becoming, checking BMPs in the watershed will be critical for assessing their performance. BMP performance data will be used to evaluate plan implementation, modeled load reduction estimates and to help determine if substantial progress is or is not being made toward attaining water quality standards.

To ensure installed BMPs are operated/maintained/performing over time, the Chippewa County Department of Land Conservation and Forest Management will monitor the condition and efficiency of selected conservation practices implemented in the watershed. This will be accomplished, in part, by using a Geographic Information System (GIS). Periodic BMP inspections will be conducted, especially after significant weather events, to determine if practices are continuing to function properly and reduce pollutant loads. Visual inspections and other methods of verification, as described in the U.S. Environmental Protection Agency Technical Memorandum #1, Adjusting for Depreciation of Land Treatment When Planning Watershed Projects, will be utilized during BMP inspections.

In the first two years of plan implementation, the Lake Wissota Stewardship Project will consult with DNR to evaluate LANDSAT satellite data and remote sensing technology to tract the implementation of cropping practices in the watershed. All data will be tracked in a way that facilitates smooth input into future STEPL models to show changes in nonpoint source pollution loads.

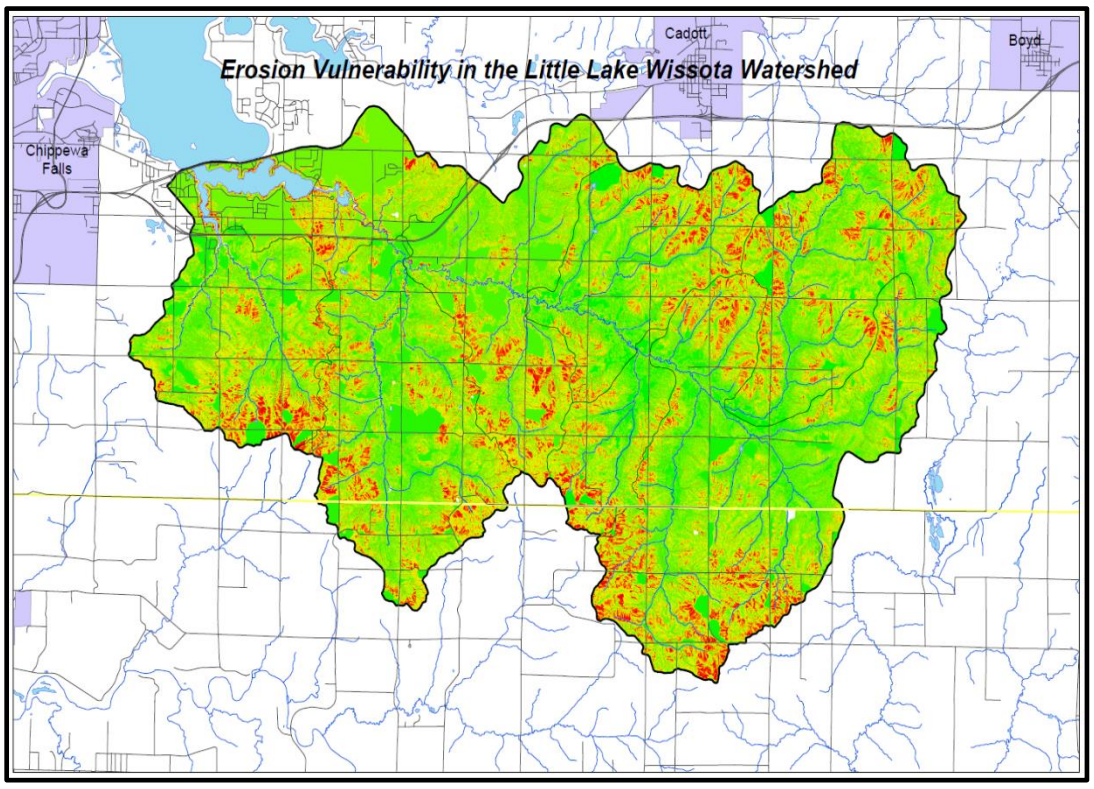
EVAAL Analysis Results

Analysis of critical areas in the watershed where practices may need to be implemented have been compiled using the EVAAL tool.

The EVAAL tool uses topography, soil type, rainfall, land cover, cropland types, and stream power to determine the risk of sheet erosion, rill erosion, and gully erosion. Areas not hydrologically connected to surface waters via surface flow are deprioritized.

Map 16 shows the potential for erosion vulnerability in the whole Little Lake Wissota Watershed. Applying Map 15 sub-basin watershed boundaries and maps 18-22 data with Map 16 will be used to prioritize areas for additional or new practices in the watershed.

Map 16



Red = High Erosion Risk Area; Orange+Yellow= Medium Erosion Risk Area; Green= Low Erosion Risk Area

Using Satellite Data to estimate crop residue levels on agricultural lands within the watershed

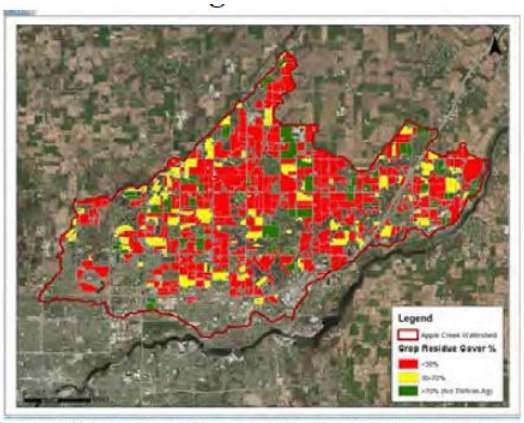


Figure 28. Crop Residue Cover Estimates based on Normalize Difference Tillage Index (March 2015, May 2015, Oct 2015

PRESTO Analysis Results

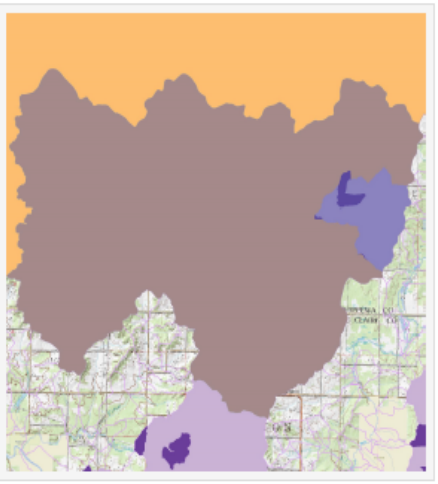
The Pollutant Load Ratio Estimation Tool (PRESTO) is a statewide GIS-based tool that compares the average annual phosphorus loads originating from point and nonpoint sources within a watershed. The comparison provides a screening tool for industrial and municipal dischargers to determine one of the conditions of eligibility for adaptive management as part of s. NR 217.18, Wisconsin Administrative Code.

Map 17 shows the PRESTO Watershed Report run by DNR staff in the summer of 2018.

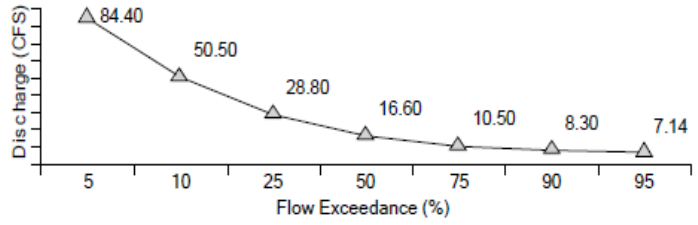
Map 17

PRESTO-Lite Watershed Delineation Report

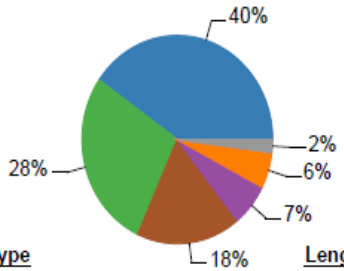
Reach ID: 200134537	
Watershed Name: South Fork of Paint Creek-Paint Creek	
Waterbody Name: Paint Creek	
HUC08: Lower Chippewa River	
Watershed Area: 57.6 mi²	
Average Annual Precipitation: 31.26in	



Stream Flow

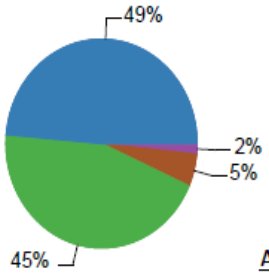


Tributary Stream Type



Type	Length
Cool-Cold Headwater	71270 ft
Macroinvertebrates	49286 ft
Coldwater	31227 ft
Cold Mainstem	11685 ft
Cold Headwater	9811 ft
Cool-Cold Mainstem	3527 ft
Large River	0 ft
Warm Headwater	0 ft
Warm Mainstem	0 ft

Landcover



Type	Area
Agriculture	27.75 mi²
Forest	25.51 mi²
Urban	2.87 mi²
Wetland	0.93 mi²
Grassland	0.28 mi²
Barren	0.21 mi²

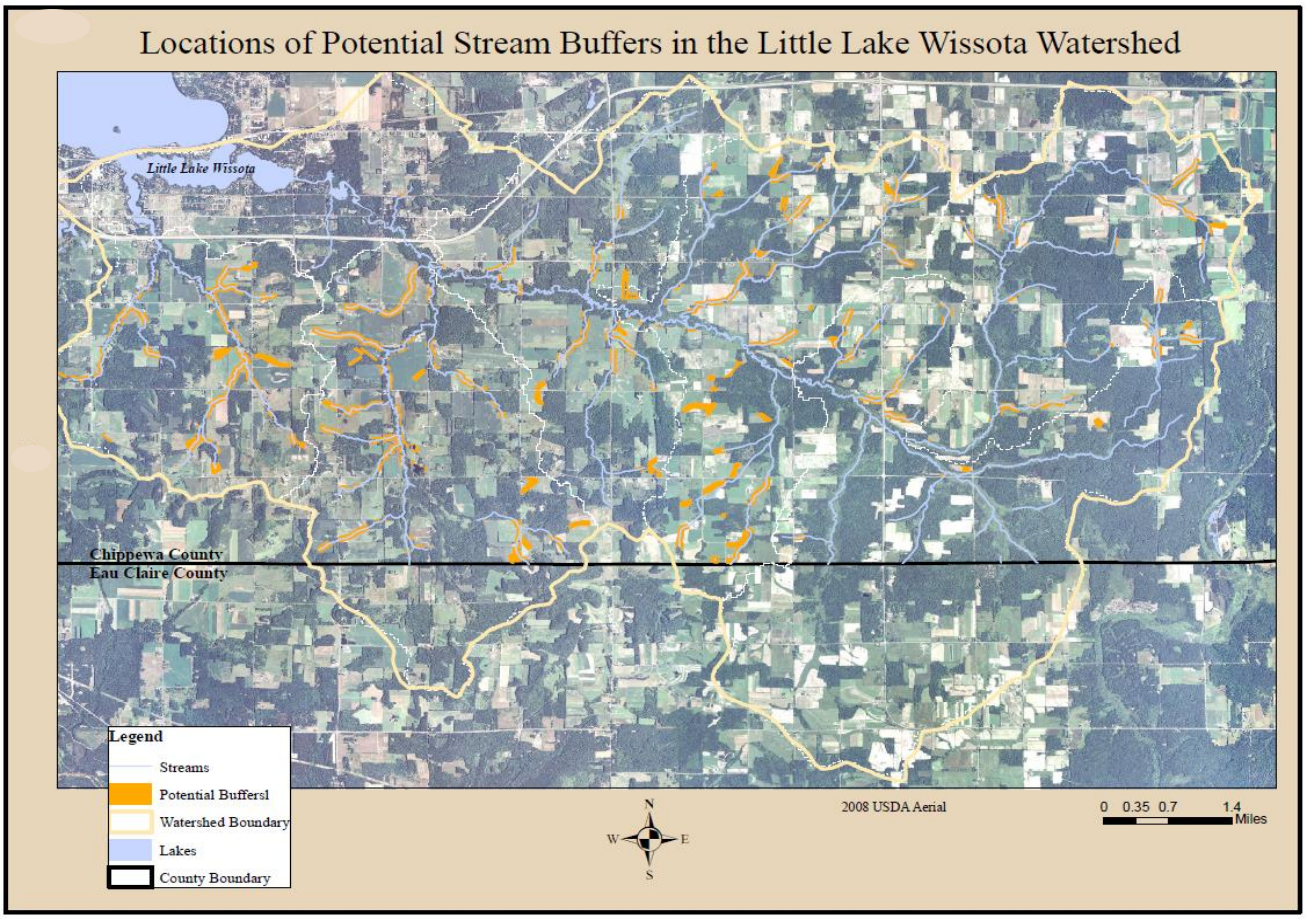
PRESTO Phosphorus Load Estimate

Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	9,158 (4,324 - 19,396) lbs
Number of Facilities (Individual Facility Information below)	0
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	0lbs
Most Likely Point : Nonpoint Phosphorous Ratio	0% : 100%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	0% : 100%

Maps produced during the ”Field-Level Non-Point Source Pollution Reduction & Hydrologic Restoration Project Study Report” in 2014 are consistent with areas shown in modeling efforts, using multiple models, to install lowland conservation practices such as stream buffers and wetland restorations. Targeted sites to install wetland restorations and stream buffers are identified in the following maps.

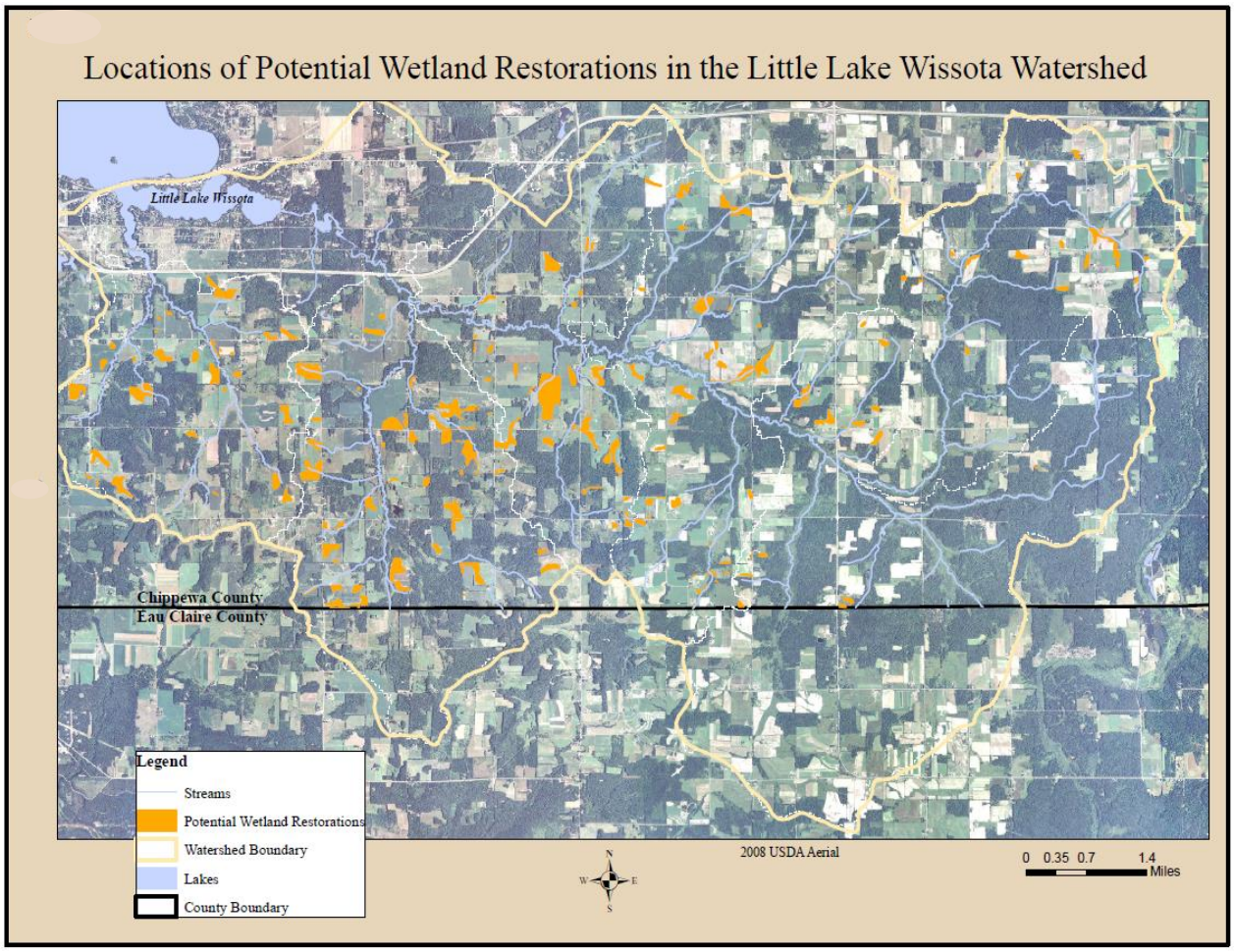
Map 18 shows the locations of potential stream buffers in the Little Lake Wissota Watershed.

Map 18



Map 19 shows locations of potential wetland restorations in the Little Lake Wissota Watershed.

Map 19

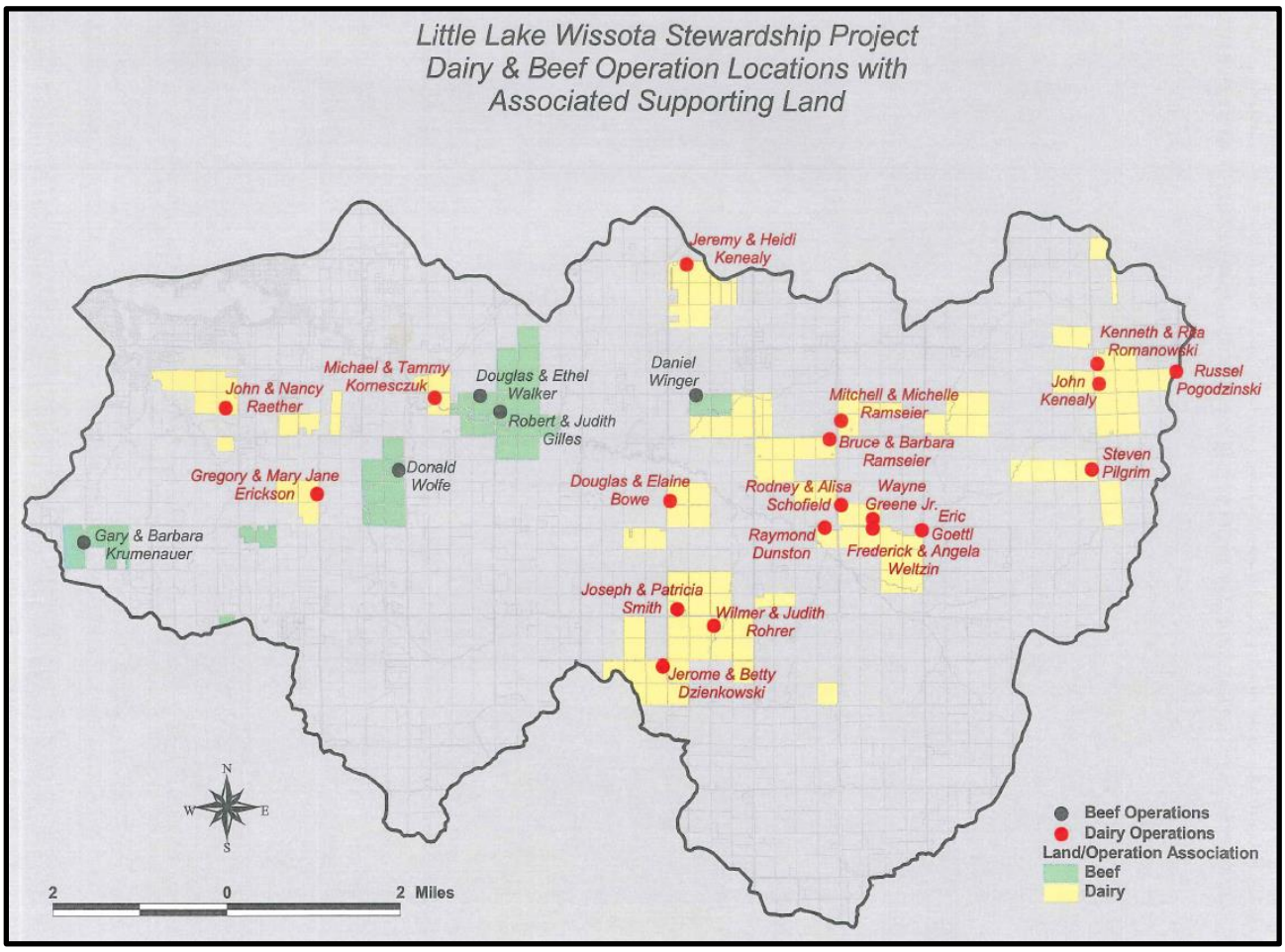


Other parameters were also used to identify critical sites in the watershed to install conservation best management practices.

The first of these parameters was location of land that is being used to support dairy/beef and cash grain crop operations.

Map 20 shows dairy and beef producers and associated land in the Little Lake Wissota Watershed.

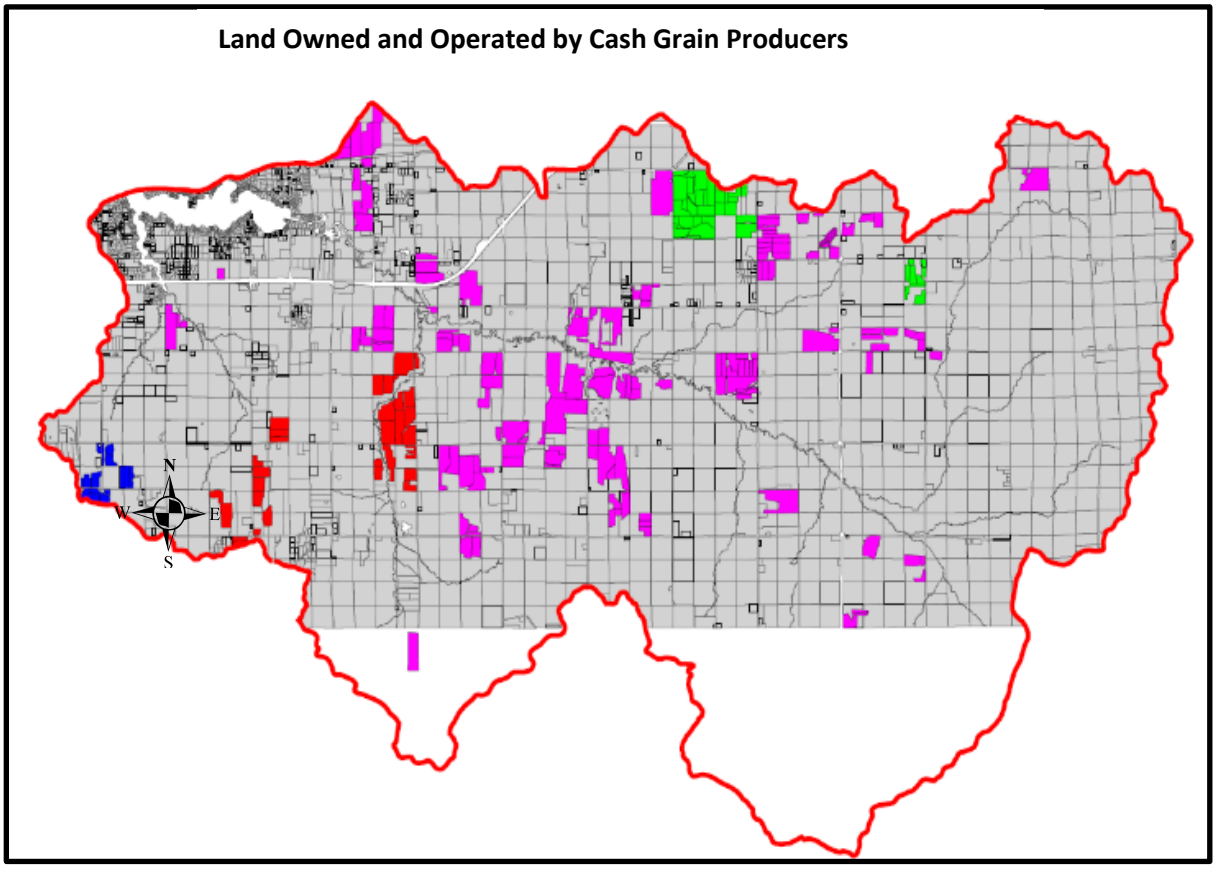
Map 20



The second of these targeted areas was land and property management to determine which of the cash grain operators were owned and operated by given producers and which were individually owned and subject to lease by cash grain operators.

Map 21 shows the location of fields used for cash grain operations in the Little Lake Wissota Watershed.

Map 21

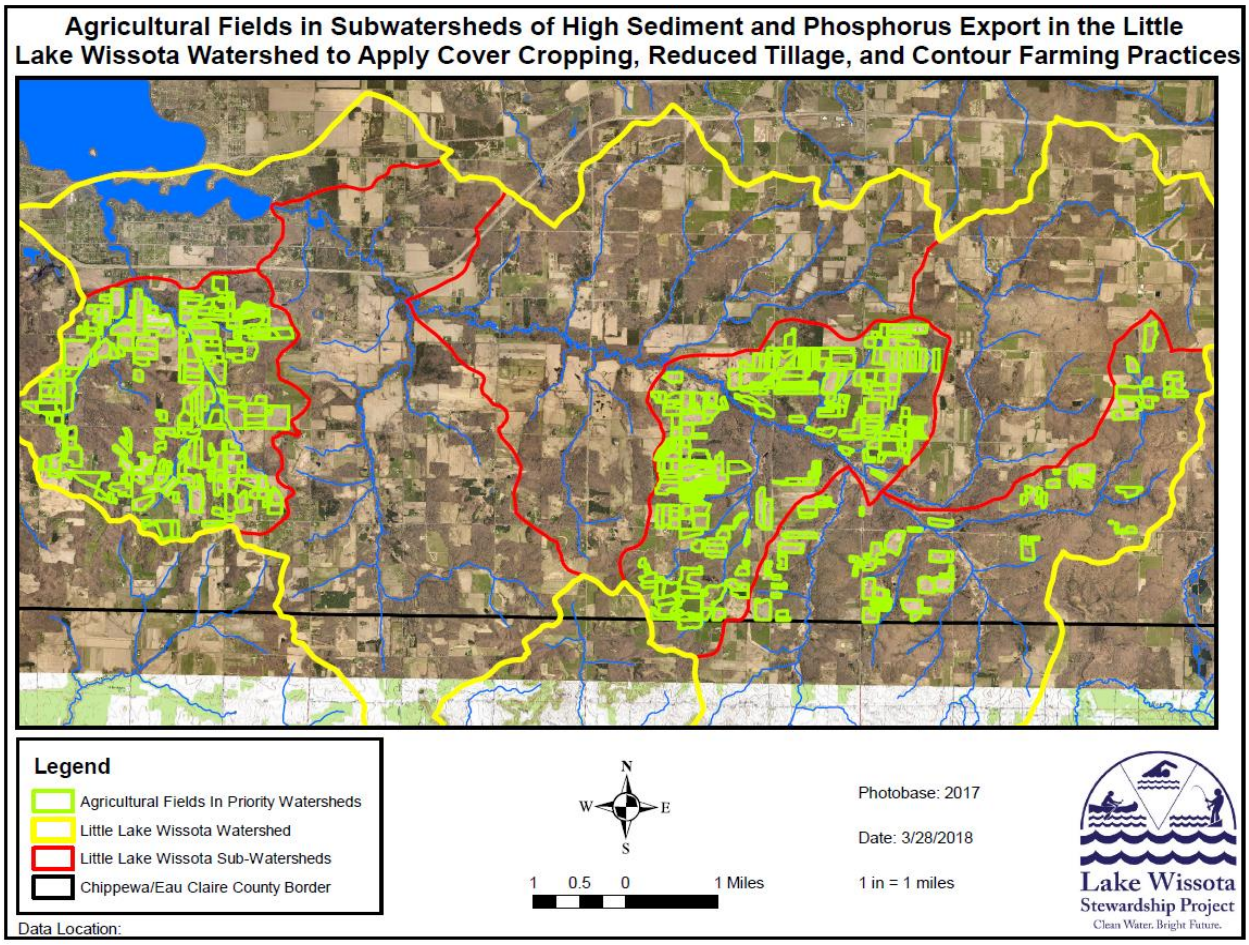


In the future, The Lake Wissota Stewardship Project will work to accelerate an approach for full farm NR151 evaluation and treatment instead of individual site treatment. This approach will streamline the process for installing conservation on the land and allow for greater amounts of nutrient reduction.

The project will continue to install conservation projects in the lowlands such as stream buffers and wetland restorations but will also expand to include upland cropland BMPs such as contour farming, filter strips, and cover crops. Feedlot/Barnyard improvement projects will be perused as necessitated by NR151 evaluations. Areas to focus on in order to gain the most environmental benefits from upland practices have been identified in the map below.

Map 23 shows agricultural fields in sub watersheds of high sediment and phosphorus export in the Little Lake Wissota Watershed to apply cover cropping, reduced tillage, and contour farming practices in the future.

Map 23



The tree (3) subwatersheds shown in Map 23 contain priority fields for promotion of new or additional practices due to areas of high sediment and phosphorus export, areas of high erosion potential as determined through STEPL modeling, EVAAL tool and existing land uses.

Element 4 - The Estimates of Technical and Financial Assistance, Costs, and Authorities

"*An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this pla*n.", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15).

The following documents were used in the development of this element and are as follows:

-Document: JLBC Cooperative Agreement
-Document: Authorization to Implement Lake Wissota Stewardship Project,
-Document: Community Foundation Pass Through Agreement,
-Document: DNR Chap 92., Soil and Water Conservation and Animal Waste Management

4.1 The Existing Technical and Financial Assistance, Costs, and Authorities

4.1.1 The Existing Non-Point Source Technical and Financial Assistance, Costs, and Authorities

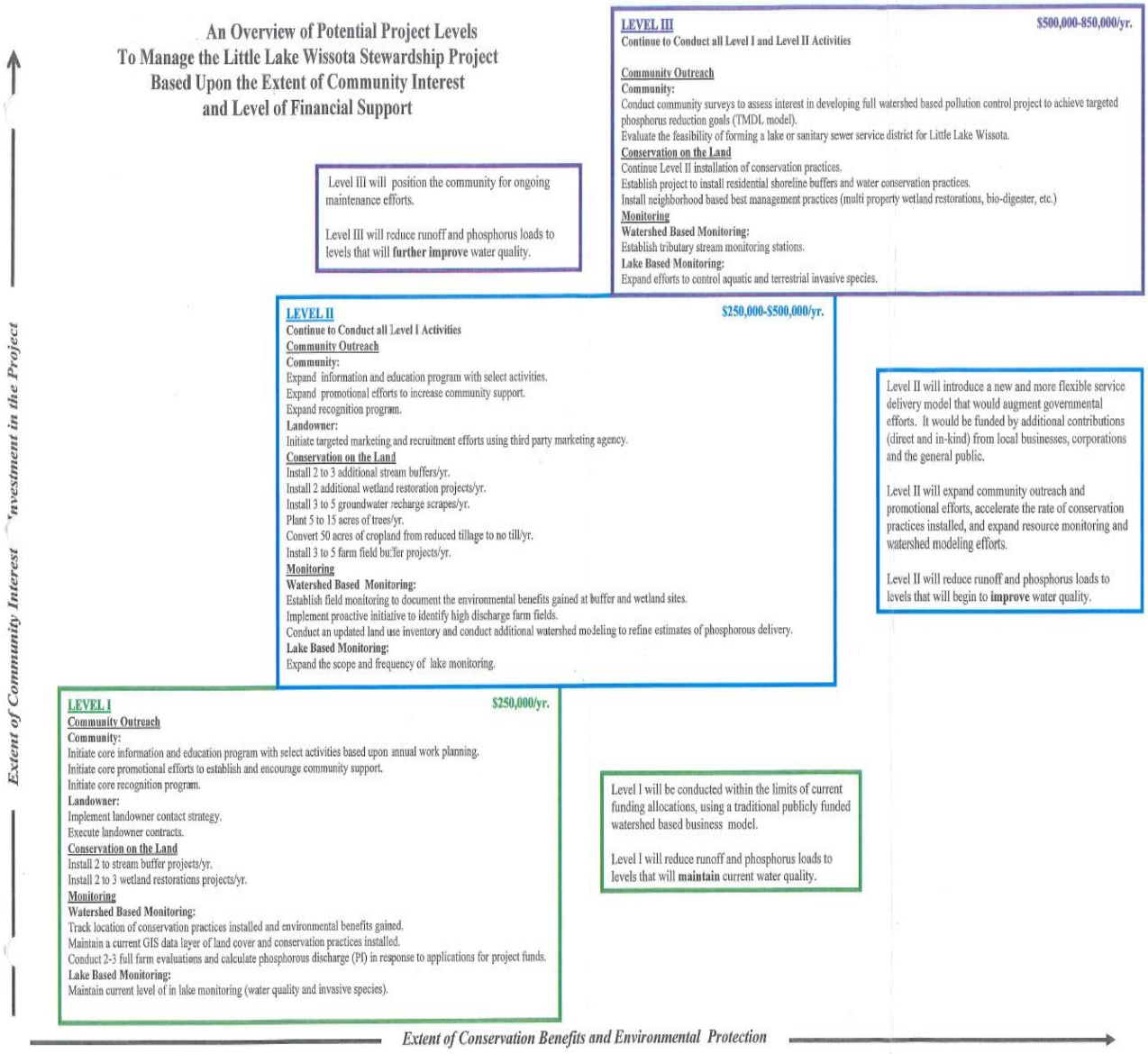
The Little Lake Wissota Stewardship Project was developed to determine and provide the type and amount of technical and financial assistance needed to implement a watershed management plan that would meet water quality goals and waste load allocations to reduce the severity and extent of algae blooms in Little Lake Wissota.

The project was a public/private business model to achieve water quality goals. The Little Lake Wissota Stewardship Project worked with Jacob Leinenkugel's Brewing Company. All funds were distributed through the Community Foundation of Chippewa County.

The Lake Wissota Stewardship Project used a three-tiered approach based upon the extent of community interest and investment in the project, and the extent of conservation benefits and environmental protection.

Figure 11 shows an overview of potential project levels to manage the Little Lake Wissota Stewardship Project based upon the extent of community interest and level of financial support.

Figure 11



Funding sources were sought from a wide range of state, federal and private entities (Little Lake Wissota Stewardship Project, Revenue and Expenditures Summary).

Chart 8 documents the Little Lake Wissota Stewardship Project Financial Sources from 2009-2016.

Chart 8

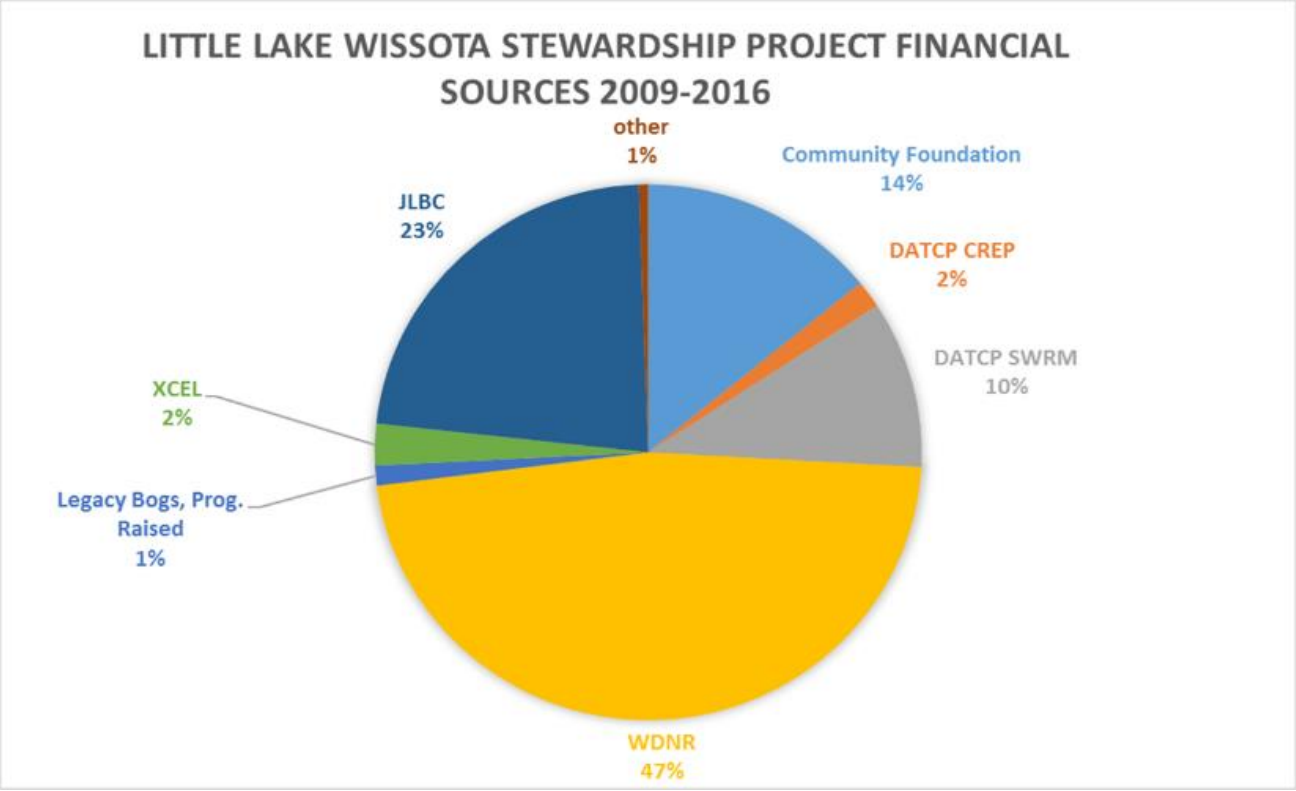


Table 24 documents the Little Lake Wissota Stewardship Project Revenue and Expenditures Summary.

Table 24

LITTLE LAKE WISSOTA STEWARDSHIP PROJECT
REVENUE AND EXPENDITURES SUMMARY

	2009	2010	2011	2012	2013	2014*
STARTING BALANCE: ①	$7,575	$12,117	$21,489	$41,689	$43,810	$20,191
REVENUE SOURCES:						
JLBC ②	$10,000	$50,000	$50,000	$50,000	$50,000	$50,000
XCEL ③	$15,000		$15,000	$15,000		
Huebsch				$1,000		
Community Foundation ④				$50,000		$47,600
Non Lapsing Funds						$20,191
Wi Northern Railroad					$5,000	
Legacy Bogs					$15,000	
DATCP - SWRM ⑤	$1,000	$16,658	$31,597	$34,602	$24,239	$30,377
DATCP - CREP ⑥		$10,990	$5,493	$1,147		
DNR Lakes Planning Grant	$12,000					
DNR TRM Grant 11						
DNR TRM Grant 12				$9,618	$7,486	$27,167
Audit Reversing Entry ⑦		$10,000				
SUBTOTAL	$38,000	$87,648	$102,090	$161,367	$101,725	$175,335
EXPENSES:						
Conservation Specialist ⑧		$35,825	$36,608	$37,884	$41,120	$55,200
Watershed Specialist ⑨				$31,200	$45,600	$45,492
Easement & Cost Share Payments	$17,040	$27,648	$37,091	$41,967	$24,239	$63,051
Natural Resource Inventories ⑩	$16,418		$8,193			
Project Costs (info/educ materials)		$628		$5,230	$2,540	$5,068
Tree Planting						$2,175
Northland Excavating (gw scrapes)				$42,965	$25,252	$25,720
Monitoring					$769	$2,103
SUBTOTAL	$33,458	$64,101	$81,892	$159,246	$139,520	$198,809
ENDING BALANCE:	$4,542	$23,547	$20,198	$2,121	-$37,795	-$23,474
FINAL ENDING BALANCE	$12,117	$21,489	$41,689	$43,810	$20,191	

GRANTS:						
TRM Grant TRC-LC19-09000-11			$147,750.00	$147,750.00	$137,362.00	
TRM Grant TMD-L/LC119-09000-12			$883,500.00	$873,882.11	$845,819.44	$825,271.69
Community Foundation			$20,309.11	$18,751.11	$96,364.23	$173,183.69

*Unaudited
Ending balance: -$23,474 will be covered by outstanding reimbursements deposited in 2015.

2/11/2015

4.1.2 The Existing Urban Point Source Technical and Financial Assistance, Costs, and Authorities

There were new public costs associated with meeting the WPDES permit requirements. To limit these costs, the participating municipalities agreed to implement a joint coordinated storm water program. To finance and distribute the costs of the program, each municipality budgeted and accounted for all facets of the joint storm water program by establishing a segregated storm water program budget. To assure consistency, the municipalities were encouraged to use a standardized set of expenditures and related revenue accounts.

4.2 The Proposed Estimates of Technical and Financial Assistance, Costs, and Authorities

4.2.1 The Proposed Urban Point Source Technical and Financial Assistance, Costs, and Authorities

Chippewa County Department of Land Conservation and Forest Management will continue to distribute the costs of the WPDES stormwater permit to the affected and participating municipalities. No other refinements will be made at this time.

4.2.2 The Proposed Non- Point Source Technical and Financial Assistance, Costs, and Authorities

The TMDL reduction goals are to reduce phosphorus by 3,000 pounds, and sediment by 262 tons annually to achieve the in-lake water quality goals.

To meet the TMDL pollution reduction goals in the next 10 years, the estimates of technical and financial resources needed are as follows:

-The equivalent of 1.0 Full time Employee (FTE).
-Technical support from Chippewa County LCFM employees/other cooperating agencies.
-A total revenue of $6,500,000 to meet TMDL goals.

All cost share rates are calculated using current 2020 rates.

Scenario	# of Acres	Cost Share Rate	Total Cost
STEPL Scenario #1			
Nutrient Management plans	10,541 acres	10$/acre	$105,541.00
STEPL Scenario #2			
>30% Residue	10,511 acres	15$/acre	$157,665.00
STEPL Scenario #3			
35 ft Grass Buffer	10,531 acres	188$/acre	$31,584.00
STEPL Scenario #4			
35 ft grass buffer	11,341 acres	188$/acre	
Nutrient Management Plan	11,341 acres	10$ /acre	$147,438.00
STEPL Scenario #5			
35ft grass buffer	17,984 acres	188$/acre	
>30% Residue	17,984 acres	15$/acre	$323,716.00
STEPL Scenario #6			
35ft grass buffer	12,163 acres	188$/acre	
Nutrient Management plans	12,163 acres	10$/acre	
>30% Residue	12,163 acres	15$/acre	$340,208.00

* = Buffer area = 35ft x 800 ft = 28,000 sq ft = 0.64 acres; each buffer treats/receives runoff from 40 cropland acres

Budget and cost share estimates were determined based on the following:

-The historical record of the best management practices installed in the project area and the associated costs during the 2009-2017 project implementation period.
-The type of best management practice (structural or cropping) that would be funded.
-The anticipated number of farms that would be evaluated to determine compliance with NR151 performance standards, and the practices that would be installed with the funds.
-Cost share portions of each project will come from the landowner or local contributions from community donations.

To contain costs for cropping practices, the following measures will be used:

-To achieve maximum efficiency and environmental benefit, lowest cost upland cropping practices will be administered as a priority.
-Full farm treatments will be encouraged to meet NR151 standards.
-Maximum cost share limits will be set to be consistent with flat rates used by the USDA as eligible under the EQUIP program.

To contain costs for structural practices, the following measures will be used:

-A general excavating contractor with direct experience installing sediment basins, diversions, and wetland restorations in the project area will be contracted for all earth work.
-Project construction plans with be developed for all contracted work.
-Flat rates will be used for all wetland restorations and stream buffers.

The following cost containment measures will be used for both structural and cropping best management practices:

-To achieve compliance with NR151 performance standards, all farms seeking funds will be required to participate in an NR151 evaluation to identify needs.
-Other sources of funding will be used instead of and in conjunction with these funds to gain maximum environmental benefit efficiency.
-Any complex designs exceeding $30,000 will be put out for competitive bids.

From 2009-2017, the average cost for phosphorus reduction was about $2,846 per pound. This estimate was based upon sediment basin, riparian or wetland restoration practices, not cropland practice.

As in the past, the Lake Wissota Stewardship Project will rely on a broad range of funding sources from public and private sources.

Table 25 documents the Little Lake Wissota Stewardship Project funding source timeline.

Table 25

	2018	2019	2020	2021	2022
Project Administration, Planning, Coordination	LWIPA Community Foundation				
Conservation on The Land	CREP DATCP SEG DATCP BOND	TMDL Large Scale TRM	Wetland Mitigation in Lieu Fee Program		
Monitoring	Wisconsin DNR		Lake Planning		
Outreach					

The Lake Wissota Stewardship Project will continue to rely on its associations with the Chippewa County Land Conservation and Forest Management Department, along with the rights granted in Wisconsin Administrative Code Chapter 92.

Element 5 - The Information and Education Component

"*An information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the Agricultural Non-Point source management measures that will be implemented*.", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15).

5.1 The Existing Information and Education Component

5.1.1 The Existing Urban Point Source Information and Education Component

The Chippewa County Department of Land Conservation and Forest Management participates in the "Rain To Rivers" educational outreach program.

"Rain to Rivers...Wise Choices for Cleaner Waters," is an education campaign sponsored by Rain to Rivers of Western Wisconsin, a partnership between several local and county governments who are all required to have state permits to regulate storm water. Rain to Rivers also receives support and assistance from UW-Extension, and the Wisconsin Department of Natural Resources. Rain to Rivers facilitates the coordination of information and education programs among the different members. A cooperative agreement is in place between members that identifies the scope of the group's tasks and responsibilities.

Members meet monthly, and meeting locations rotate through the various member jurisdictions. Meeting agendas are comprised of various project updates, reports from UW-Extension and WDNR partners, identifying and mobilizing for potential I&E opportunities, and occasional tours.

The regional UW-Extension Natural Resource Educator is a member of the forum and contributes to educational programs. WDNR staff attend Rain to Rivers meetings, primarily in an advisory capacity to ensure that programs meet expectations for permit programs.

5.1.2 The Existing Agricultural Non-Point Source Information and Education Component

An Information & Education strategy has been developed and include goals, messages, target audiences, delivery mechanisms.

A detailed summary of outreach activities, including target audiences, message, responsibility party, cost, etc., is developed annually by the Little Lake Wissota Project Team (Little Lake Wissota Stewardship Project; 2015 Outreach Activities).

Table 26 documents the Little Lake Wissota Stewardship Project; Information & Education Strategy", (LCFM, 2010).

Table 26

Goal 1. Increase public appreciation of the land and water resources in the basin.					
Message	**Target Audience**	**Delivery Mechanism**	**Date**	**Resp. Party**	**Cost**
There are diverse and local recreational opportunities.	General Public Tourists	Chippewa County Tourism Guide	2011		
Our land and water resources makes this area a great place to live.	Landowners	Lake Fair	Annual	LWIPA	
	General Public	creek signs		LCFM	$10,000
Clean and plentiful water is a community asset.					
Goal 2. Increase public awareness that the Little Lake Wissota Stewardship project is a community effort to improve water quality.					
Message	**Target Audience**	**Delivery Mechanism**	**Date**	**Resp. Party**	**Cost**
Everyone is responsible for improving the quality of our resource	General Public, Sponsors				
Everyone can participate.	Landowners, Shoreland owners	website, workshop	continual spring	LWIPA	$250
We need your help.	Sponsors	meeting	winter	LBC	$250
Progress is being made.	All	annual report	winter	LCFM	$500
Goal 3. Increase public awareness of the local ecology and bio-diversity.					
Message	**Target Audience**	**Delivery Mechanism**	**Date**	**Resp. Party**	**Cost**
There are many native plant communities in the basin.	Landowners	Lake fair display	summer	LWIPA LCFM	$200
Wetlands provide unique habitat and ecological functions.	Landowners	Tour	fall	LBC LCFM	$1,000
Many different species of wildlife live in the basin.	General public Landowners	Tour	fall	LBC LCFM	
Goal 4. Inform landowners of project opportunities.					
Message	**Target Audience**	**Delivery Mechanism**	**Date**	**Resp. Party**	**Cost**
Financial and technical assistance are available.	Ready, willing & able landowners	direct mailing, direct contacts	continual	LCFM	$10,000/ annually
Wetland restoration & stream buffers promote bio-diversity.					
Conservation easements are a financial incentive to permanently protect investment.	Ready, willing & able landowners	direct contacts	continual	LCFM	$10,000/ annually

Direct Mailings

From 2009-2017, as project capacity increased, the Little Lake Wissota Stewardship Project systematically sent direct mailings to potential conservation project sites. The direct mailings were completed on a subwatershed basis and served to give anybody with improvable lands access to funding and cost sharing opportunities.

Canoes for a Cause

Each year, the Little Lake Wissota Stewardship Project hosts a volunteer tree planting event with Jacob Leinenkugel Brewing Company through the "Canoes for A Cause" national event.

The "Canoes for A Cause" event is held annually at a local venue on Lake Wissota. Participants are bused to 2-4 individual locations throughout the watershed to plant trees at current buffer installation projects.

Figures 11 and 12 show volunteers before and during a "Canoes for a Cause" tree planting event.

Figure 12

Figure 13

Environmental Watershed Curriculum

As part of the Duncan Creek Watershed Project, Chippewa County LCFM developed a water resource-based curriculum at a grade school level. This curriculum was implemented to campers at Wisconsin Farmers Union Kamp Kenwood on Lake Wissota in the fall of 2018. In 2019, the Chippewa County LCFM signed a 3 year contract with Wisconsin Farmers Union Foundation to develop and implement a watershed based education curriculum. Watershed curriculum implementation will continue with the WFU Foundation in 2020 and 2021.

Project Signage

In the fall of 2017, the Little Lake Wissota Stewardship manufactured 9 signs to recognize landowners for their commitment to water quality and help the public recognize conservation efforts in the watershed. Signs were installed at high traffic project locations along state and county highways.

Figure 14 shows a sign installed in a high traffic area at a tree planting and wetland scrape.

Figure 14

5.2 The Proposed Information and Education Component

5.2.1 The Proposed Urban Point Source Information and Education Component

Chippewa County Department of Land Conservation and Forest Management will continue to participate in Rain to Rivers. No other refinements will be made at this time.

5.2.2 The Proposed Agricultural Non-Point Source Information and Education Component

As the project moves into 2020, it is anticipated that more educational and informational components will be added.

Signs at the location of conservation projects will continue to be installed to recognize landowners for their permanent commitment to water quality in the watershed.

The Little Lake Wissota Stewardship Project team will continue to develop annual outreach activities. There are no proposed changes or refinements from the existing watershed management plan approach.

The Lake Wissota Stewardship Project will continue to work with Leinenkugel's Brewing Company to hold the "Canoes for A Cause" volunteer tree planting event each spring.

Table 27 documents the Lake Wissota Stewardship Project Education/Outreach activities in the Little Lake Wissota Watershed 2018-2028.

Table 27

Lake Wissota Stewardship Project Education/Outreach Activities in the Little Lake Wissota Watershed 2018-2028						
Activity	**Target Audience**	**Cost**	**Timeline (Years)**			**Agencies**
			0-3	**3-7**	**7-10**	
Project Location Signage	General Public	$600/sign	2 signs	2 signs	2 signs	LWSP, LCFM
Website	General Public	$500	Develop	Upkeep	Upkeep	LWSP, LCFM, LWIPA
Facebook Page	General Public	$500	Develop	Upkeep	Upkeep	LWSP, LCFM, LWIPA
Annual Meeting	Project Participants, Donors, Lake Association, General Public	$500/year	1 meeting	1 Meeting	1 Meeting	LWSP, LWIPA, LCFM
Public Booths	Event Attendees	$150/year	2 booths	2 booths	2 booths	LWSP, LCFM, LWIPA
Pamphlet	Donors, Lake Residents, General Public	$1000	Develop	Update	Update	LWSP, LCFM
Watershed Tour	General Public, Donors	$1000/tour	1 tour	1 tour	1 tour	LWSP, LCFM
Watershed Curriculum Implementation	Kamp Kenwood Attendees, Local Children	$2000/year	3 camp seasons	3 camp seasons	3 camp seasons	LWSP, LCFM, WFU
Canoes for a Cause Volunteer Tree Planting Event	General Public	$1000/year	3 events	3 events	3 events	LWSP, LCFM
Direct Mailings	Potential Project Participants	$500/Year	4 Watersheds	4 Watersheds	8 Watersheds	LWSP, LCFM
Direct Contacts	Potential Project Participants	$500/year	4 Watersheds	4 Watersheds	8 Watersheds	LWSP, LCFM
Rain to Rivers	LCFM Staff	$500/year				LWSP, LCFM

Element 6 - The Schedule For Implementing the Management Measures

"*A schedule for implementing the Agricultural Non-Point source management measures identified in this plan that is reasonably expeditious*.", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15).

6.1 The Existing Schedule for Implementing the Management Measures

6.1.1 The Existing Urban Point Source Schedule for Implementing the Management Measures

The Chippewa Falls Area Stormwater Management plan can be found here:

https://www.co.chippewa.wi.us/home/showdocument?id=2468

The Chippewa County Stormwater Management Ordinance can be found here:

http://www.co.chippewa.wi.us/Home/ShowDocument?id=18921

All Implementation measures and schedules can be found at stormwater tab of the Chippewa County Department of Land Conservation and Forest Management Website as they are updated:

https://www.co.chippewa.wi.us/government/land-conservation-forest-management/land-water-conservation/stormwater-management

6.1.2 The Existing Agricultural Non-Point Source Schedule for Implementing the Management Measures

An annual work planning process was conducted every December with the Little Lake Wissota Stewardship Project team. The Project Team was comprised of agency personnel, Jacob Leinenkugel Brewing Co. management, Miller-Coors management, and stakeholders. The Project assesses the progress and projects of the current year and reviews a work plan for the upcoming year. Adjustments to the project approach are discussed and the results of the planning session are then systematically implemented. A sample work plan is included below. All 2018 work plan items were completed and a 2019 Lake Wissota Stewardship Project work plan is now in implementation. Work plans during the TMDL implantation schedule will be very similar to the work plan below.

Table 29 documents the 2020 Lake Wissota Stewardship Project Team Work Plan on the following 2 pages.

Table 29

2020 LWSP Watershed Specialist WORK PLAN

LAKE WISSOTA STEWARDSHIP PROJECT	January				February				March				April				May				June				July				August				September				October				November				December			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project Planning, Coordination, & Reporting																																															
Arrange & participate in project team meetings																																															
Participate in weekly watershed team meetings																																															
Prepare product deliverables, participate in monthly planning/contract meetings																																															
Prepare reports; participate in monthly LW Project Team meetings																																															
Prepare reports; participate in annual LW Project Sponsor meeting																																															
Participate in Monthly Chippewa County CREP Meetings																																															
Participate in weekly LCFM Department Meetings																																															
Prepare annual work plan*																																															
Prepare annual budget																																															
Prepare and Present Annual Report/Community Recognition Meeting																																															
Conduct annual Project Evaluation																																															
Assist the project team to plan & implement the annual project work plan & activities schedule																																															
Develop draft & final annual work plan (1/2/20-1/30/20)																																															
Continue to implement 5 year project budget/annual budget planning framework																																															
Develop strategy for community giving with focus on area businesses/corporations																																															
Implement strategy for commhnity giving with focus on area businesses/corporations																																															
Prepare grant applications & solicit contributions from the community as needed to generate revenue to support the LLWSP																																															
Develop Grant Applications for contracted projects																																															
As required:																																															
-DNR Wetland Mitigation In-Leiu Grant (Due 2/28/2020)																																															
- Implement 2018 River Planning Grant (Applied 12/6/2018, Awarded 2/19/19, $10k, YR/MB)																																															
-Implement 2018 DNR Large Scale TRM Grant (Applied 4/12/18, Awarded 7/27/18, $185k, LLW)																																															
-Apply for DNR Large Scale TMDL TRM Grant (Yellow River, Goal for April 2020)																																															
-Accept and spend 2020 DNR MDV Grant																																															
-Addition grant opportunites as they become available																																															
Prepare land & watershed plans to advance TMDL & Lake Management objectives for Little Lake Wissota and Moon Bay of the Yellow River																																															
Prepare EPA 9-key Element Watershed Plan for LLW																																															
-Submit plan to EPA																																															
-Receive Notice of Acceptance																																															
Prepare EPA 9-key Element Watershed Plan for Moon Bay/Yellow River																																															
- Press Release																																															
-Kickoff Meeting																																															
-Resource Inventory																																															
-STEPL Modeling																																															
-EVALL Modeling																																															
-Stakeholder Meeting																																															
-Receive Stakeholder Feedback																																															
- Write 9 Key Element Plan																																															
-Submit Plan to Regulatory Authority																																															
Community Outreach																																																
Contract & inform landowners in watershed of program participation opportunities																																																
Conduct outreach per landowner list via monthly work plan/tracking log																																															
Send recruitment letter to eligible landowners																																															
-Conduct phone call follow-up																																															
Develop site map & preliminary plan proposal																																															
Schedule on-site evals & conduct eligibility determinations																																															
Prepare initial cost estimates; determine funding sources																																															
Community Awareness																																															
Tree planting Volunteer Event (Canoes for a Cause)																	9																														
Plan and Host Community LWSP Watershed Tour																																															
Present at Lake Association Annual Meeting													8																																		
LWSP booth at lake association annual picnic																							20																								

LAKE WISSOTA STEWARDSHIP PROJECT	January				February				March				April				May				June				July				August				September				October				November				December			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Refine, Expand, and Implement Watershed Curriculum with Wisconsin Farmer Union Foundation																																															
Create LWSP Pamphlet																																															
Northern Wisconsin State Fair Booth																																															
Participate in introductory Farmer Led Meetings																																															
Conservation on the Land																																															
Dev. project designs, secure permits, assist in contract dev., & provide construction oversight																																															
(Pursue contracting & installs per L.O. list via monthly work plan log)																																															
Schedule site visits to review pre. plan with L.O.																																															
Modify pre. plan																																															
Develop MOU & L.O. signature of intent																																															
Develop construction plan and/or tree planting plan																																															
Develop & submit storm water permit																																															
Send final shapefiles to Lisa R. for contract development																																															
Stake sites and review with contractor																																															
Conduct post construction inspection																																															
Monument easements																																															
Execute NR151 Evaluations for all project participtants																																															
Monitoring Activities																																															
Land Based																																															
Maintain monthly client & project tracking spreadsheets & maps																																															
Compile environmental benefits worksheets; individual project installs																																															
Compile/Update annual environmental benefits report																																															
Research/Develop inspection report for scrapes																																															
Conduct site inspection on select scrapes																																															
Lake Based																																															
Little Lake Wissota																																															
(Serve as liaison between Co., Boy Scout Troops, & WI Citizen Lake Monitoring Network to complete LWSP water quality monitoring)																																															
Schedule/Conduct BSA monitoring orientation																																															
Schedule/Conduct BSA field training																																															
Participate & supervise in sampling events, as needed to assure quality control																																															
-Secchi Depth & Temperature Profile																																															
-Secchi Depth & Temperature Profile & Water Sampling																																															
Conduct/supervise monthly sampling events																																															
Receive & compile sample results																																															
Select and Contact BSA Troop for 2020																																															
Yellow River Moon Bay																																															
Participate & supervise in sampling events, as needed to assure quality control																																															
-Secchi Depth & Temperature Profile																																															
-Secchi Depth & Temperature Profile & Water Sampling																																															
Receive & compile sample results																																															
Prepare sample trend analysis/graphic																																															
Conduct/supervise monthly sampling events																																															
Stream Based																																															
Determine Locations for Stream Monitoring with DNR Staff																																															
Develop Stream Monitoing Protocol and Dates																																															
Plan and Host Training Date with DNR Staff and Volunteers																																															
Conduct/Supervise Monthly Sampling Events																																															
Collect Flow Rate Data To Put Data in Context																																															
Dock Based																																															
Edit Sampling Criteria and Questions																																															
Edit Reporting Technique and Standard Format																																															
Determine 2020 Locations and participants																																															
Send email about training/techniques																																															
Compile data and create graphic																																															

The table below shows the current project goals, components, and partners involved in completing those goals. Experience working with these partners helped to create an accurate implementation schedule into the future.

Table 30 documents the proposed goals and partners involved in implementing management measures in the Little Lake Wissota Watershed.

Table 30

Project Component	**Goal**	**Partners Involved**
Project Planning/ Coordination/Reporting	-Complete annual work planning and budgeting, apply for grants, and track/evaluate progress	LCFM, LWIPA, Corporate Sponsors
Conservation on the Land	-Install Upland and Lowland conservation practices to reduce sediment and phosphorus loads to TMDL determined levels at amounts defined in STEPL modeling	LCFM, NRCS, FSA, DNR, Private Donors
Monitoring	-Continue to facilitate CLMN Lake monitoring in Little Lake Wissota -Continue to facilitate WAV Stream Monitoring in the Little Lake Wissota Watershed	DNR, Boy Scouts, Community Volunteers
Community Outreach	-Work with local educational institutions and environment based non-profits to efficiently and effectively educate community members of all ages	Local Educational Institutions, Non-Profits

6.2 The Proposed Schedule for Implementing the Management Measures

6.2.1 The Proposed Urban Point Source Schedule for Implementing the Management Measures

The Chippewa County Department of Land Conservation and Forest Management will continue to implement the schedule from the WPDES Permit. No other changes are proposed at this time.

6.2.2 The Proposed Agricultural Non-Point Source Schedule for Implementing the Management Measures Project Goals

The revised goals for the next phase of the project, 2018-2024, are as follows:

-Reduce phosphorus and sediment loading in the watershed with conservation practices for cropland and other sources to achieve reduction goals outlined in the Little Lake Wissota TMDL.

-Continue to facilitate and complete quality lake and stream monitoring efforts.

-Increase public awareness of the economic and ecological importance of good surface water quality and how good land and water practices affect water quality.

6.2.3 Proposed Project Schedule

In order to reach TMDL goals in 10 years for phosphorus and sediment within the watershed, the project team will need follow the schedule in Table 31.

There are no proposed changes or refinements from the existing watershed Project Team strategy and approach.

Table 31 documents the schedule to implement in order to reach TMDL phosphorus and sediment load reductions in the Little Lake Wissota Watershed. The schedule includes what kinds of practices, and how many acres per year need to be installed in order to reach the goal.

Table 31

Project Component	**Goal**	**Partners Involved**	**Due Date**
Project Planning/ Coordination/Reporting	-Complete annual work planning and budgeting, apply for grants, and track/evaluate progress	LCFM, LWIPA, Corporate Sponsors	By January 15th of each year
Conservation on the Land	-Install Upland and Lowland conservation practices to reduce sediment and phosphorus loads to TMDL determined levels at amounts defined in STEPL modeling	LCFM, NRCS, FSA, DNR, Private Donors	6300 Lbs P by 2022 12600 Lbs P by 2025 19000 Lbs P by 2028
Monitoring	-Continue to facilitate CLMN Lake monitoring in Little Lake Wissota -Continue to facilitate WAV Stream Monitoring in the Little Lake Wissota Watershed	DNR, Boy Scouts, Community Volunteers	MOUs by March of Each Year, all DNR CLMN/WAV Monitoring dates sampled by volunteers
Community Outreach	-Work with local educational institutions and environment based non-profits to efficiently and effectively educate community members of all ages	Local Educational Institutions, Non-Profits	Fulfill yearly community outreach goals by December 31st of each year

Table 32 documents the proposed goals and partners involved in implementing management measures in the Little Lake Wissota Watershed.

Table 32

Lake Wissota Stewardship Project BMP Installation Activities in the Little Lake Wissota Watershed 2020-2030						
Activity	**Measured in**	**Funding Sources**	**Timeline (Years)**			**Agencies**
			0-3	**3-7**	**7-10**	
Nutrient Management Plans	# of acres covered under a Nutrient Management Plan	CREP, DNR, NRCS, FSA, EQUIP, TRM, SWRM, Community Foundation	4,054 Acres	4,054 Acres	4,054 Acres	LWSP, LCFM, NRCS, DATCP, FSA, DNR
Buffer Plantings	# of acres treated with vegetated buffers	CREP, DNR, NRCS, FSA, EQUIP, TRM, SWRM, Community Foundation	4,054 Acres	4,054 Acres	4,054 Acres	LWSP, LCFM, NRCS, DATCP, FSA, DNR
Cropping Practices	# of acres of reduced tillage, cover crops, and high residue	CREP, DNR, NRCS, FSA, EQUIP, TRM, SWRM, Community Foundation	4,054 Acres	4,054 Acres	4,054 Acres	LWSP, LCFM, NRCS, DATCP, FSA, DNR

6.3.4 Project Implementation Evaluation

An annual work planning process assesses the progress and projects of the current year and reviews a work plan for the upcoming year. Adjustments to the project approach are discussed and the results of the planning session are then systematically implemented. This work planning session will happen on a yearly basis. There should be adjustments to the implementation plan schedule in 2021, 2024, and 2028.

Element 7 - The Interim, Measurable Milestones for Implementation Success

"*A description of interim measurable milestones for determining whether Agricultural Non-Point source management measures or other control actions are being implemented*.", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15).

The following documents were used in the development of this element and are as follows:

-Document: CREP Environmental Benefit Report Summary, ( ).

7.1 The Existing Measurable Milestones for Implementation Success

7.1.1 The Existing Urban Point Source Measurable Milestones

Measurable milestones under the urban point source pollutant category are communicated to the Wisconsin DNR by the Chippewa County Land Conservation and Forest Management Department via the annual report required under the WPDES Permit. This annual report updates the status of the Chippewa Falls Urban Area Stormwater Management Plan.

7.1.2 The Existing Agricultural Non-Point Source Measurable Milestones

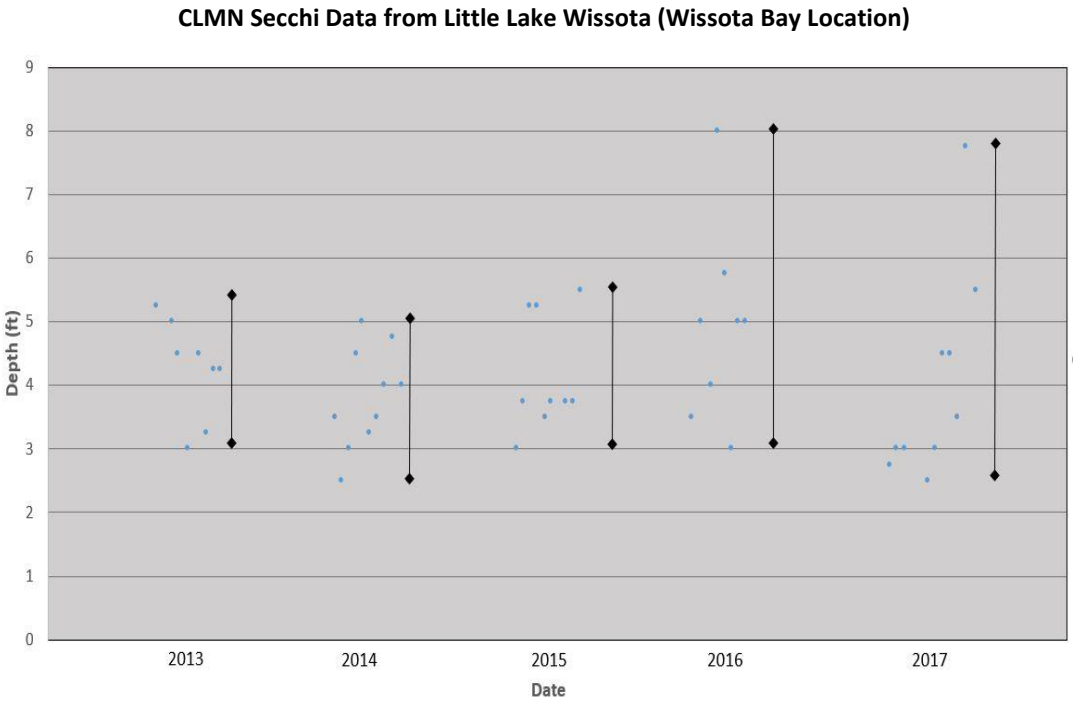
The Little Lake Wissota Stewardship Project evaluates progress using three (3) main elements: Conservation on the Land, Monitoring, and Community Outreach.
An analysis of annual activities is conducted each year and adjustments are made.
Progress and milestones are also currently tracked for the project.

Monitoring

The monitoring component is tracked in the Wisconsin DNR CLMN water quality database and internally in an Excel Spreadsheet. Our internal spreadsheet ensures that we can see trends and visualize the data that is obtained from the Boy Scouts throughout each summer.

Chart 9 documents the Secchi Disk monitoring results from 2013-2017 at the Wissota Bay CLMN monitoring location.

Chart 9



Community Outreach

The education and outreach component is tracked internally with a yearly assessment of outreach activities.

Conservation on the Land

The conservation on the land component is currently tracked through CREP Environmental Benefit summaries, and a project tracking sheet. The project tracking sheet is where we record results for each conservation practice from the Environmental Benefit Sheets. Phosphorus and sediment reduction are tracked on a project by project basis, as well as groundwater infiltration and number of trees planted. SB=Stream Buffer, WT= Wetland Restoration or Scrape.

Table 33 documents the Little Lake Wissota Stewardship Project – Master Monitoring Database (First page only).

Table 33

Little Lake Wissota Stewardship Project - Master Monitoring Database (6/12/2017)

Landowner	Location	SB	WT	# of Acres	# of Trees	Easement	Year	Phosphorus Reduction (lbs.)	Sediment Reduction (tons)	Groundwater Infiltration (gal.)
G. Krumenauer	T28N R8W Sect. 26	√		9.0	2700	Y	2009	15.0	7.2	
G. Krumenauer	T28N R8W Sect. 26		√	8.8		Y	2009	10.0	6.6	1,300,000
2009 Totals				17.8	2700			25.0	13.8	1,300,000
R. Schafer	T28N R8W Sect. 23	√		6.5	2500	Y	2010	12.3	5.0	
R. Schafer	T28N R8W Sect. 23		√	3.7		Y	2010	3.1	0.5	2,433,935
2010 Totals				10.2	2500			15.4	5.5	2,433,935
S. Olson	T28N R8W Sect. 22	√		10.1	7800	Y	2011	28.3	8.8	
M. Gilles	T28N R6W Sect. 11	√		4.4	1500	Y	2011	30.0	12.4	
M. Gilles	T28N R6W Sect. 11		√	17.9		Y	2011	54.0	18.9	4,678,301
P. Snyder	T28N R8W Sect. 23	√		2.2	1100		2011	23.3	10.0	
D. Mayer	T28N R7W Sect. 30	√		2.9			2011	16.0	6.0	
2011 Totals				37.5	10400			151.6	56.1	4,678,301
J. Mower	T28N R8W Sect. 26	√		5.5	2750	Y	2012	30.6	13.0	
C. Chapek	T28N R6W Sect. 24	√	√	3.7	250	Y	2012	1.1	0.1	287,827
W. Dohms	T28N R6W Sect. 10		√				2012	6.5	2.2	889,050
J. Jones	T28N R7W Sect. 22		√				2012	1.0	0.1	259,887
Wm Brick	T28N R8W Sect. 36		√	6.9	500	Y	2012	2.4	0.3	814,813
J. Boyea	T28N R7W Sect. 35		√	5.2		Y	2012	4.8	1.5	1,148,152
E. Goettl	T28N R6W Sect. 29		√				2012	3.5	1.5	301,501
J. Bachman	T28N R7W Sect. 30		√	1.8		Y	2012	1.6	0.6	933,431
J. Peck	T28N R7W Sect. 21		√				2012	2.8	1.2	377,421
T. Weiss	T28N R7W Sect. 36		√	11.1		Y	2012	5.5	1.6	841,025
2012 Totals				34.2	3500			59.8	22.1	5,853,107
C. Evjen	T28N R7W Sect. 14		√				2013	1.8	0.3	653,406
J. Melville	T28N R7W Sect. 28		√	3.3		Y	2013	1.6	1.2	1,812,268
K. Lancette	T28N R7W Sect. 29		√	2.6	500	Y	2013	1.6	1.2	983,144
J. Kries	T28N R7W Sect. 16		√	6.0		Y	2013	2.2	1.0	404,102
B. Oberle	T28N R6W Sect. 21		√	0.9		Y	2013	6.3	2.2	2,759,248
S. Ramsaier	T28N R6W Sect. 17		√	1.5		Y	2013	2.5	1.5	1,271,846
2013 Totals				14.3	500			16.0	7.4	7,884,014

7.2 The Proposed Measurable Milestones for Implementation Success

7.21 The Proposed Urban Point Source Measurable Milestones

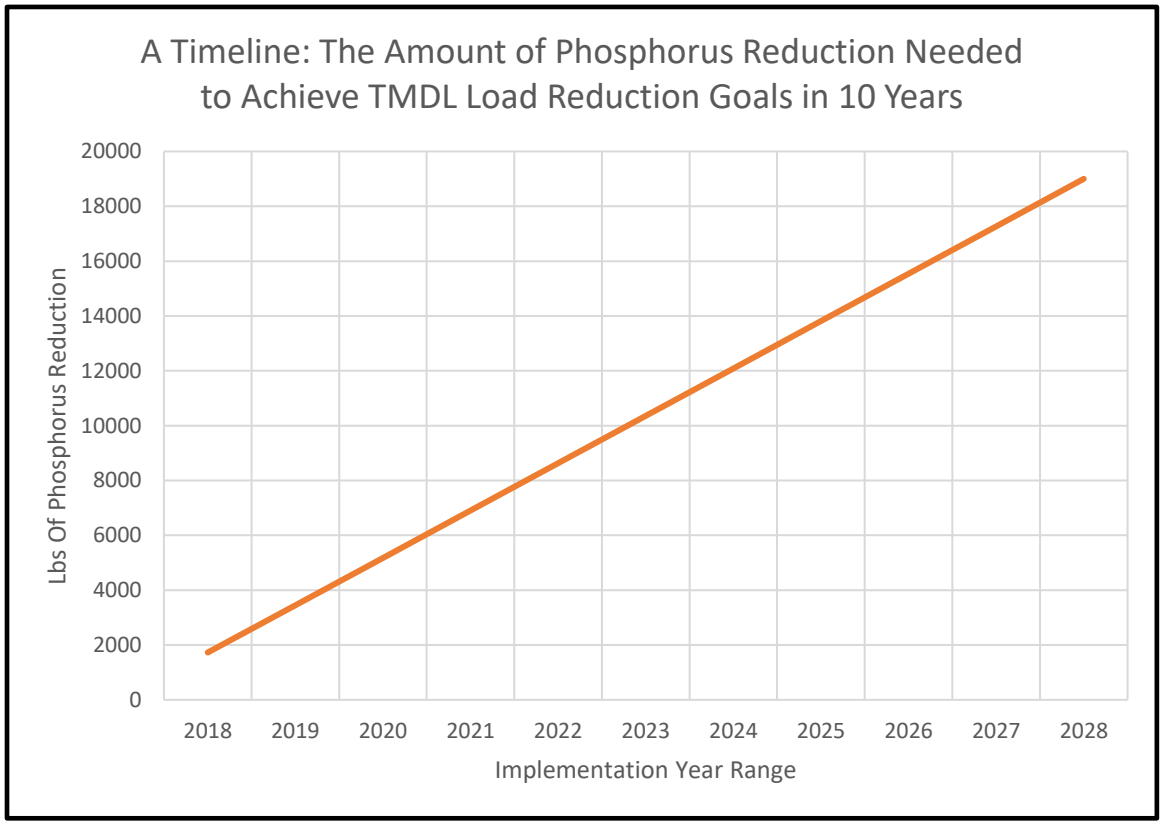
The WPDES Permit states that, "*The permittee shall maintain compliance with the measurable goals for the programs*…." The goals are stated in Section 2 of the stormwater permit. Measurable milestones will be outlined, as required, in the annual stormwater report. No other further refinements are proposed at this time.

7.2.2 The Proposed Agricultural Non-Point Measurable Milestones

-Monitoring Milestones- See figures 14 and section 9
-Practice Milestones – see table 32
-Annual Summaries/Mid-Project Review.
-Schedule for Load Reductions- see table 31 and chart 10+11
-The Lake Wissota Stewardship Project will also continue to track its environmental benefit summaries in the Master Monitoring Database.

Chart 10 documents the approximate lbs. of P reduction needed to achieve TMDL load reduction goals in ten (10) years, compared to the amount of reduction required per year to reach the goal.

Chart 10



The LWSP will rerun the STEPL Model in 2023 and 2028 with updated data sets and implementation records to access pollution reductions achieved in the watershed.

Element 8 - The Criteria to Determine if Load Reductions Are Being Achieved

"*A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards*.", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15).

8.1 The Existing Criteria to Determine if Load Reductions are Being Achieved

8.1.1 The Existing Urban Point Source Criteria to Determine if Load Reductions are Being Achieved

In order to determine if load reductions from urban point sources are being achieved, a framework was set up in the WPDES permit. An excerpt from the WPDES permit is below.

1.5.4.4 In accordance with the applicable compliance schedule specified in section 1.5.4.1 or 1.5.4.2, the permittee shall submit a tabular summary that includes the following for each MS4 drainage boundary associated with each TMDL watershed as identified under section 1.5.4.3.1.3 and for each pollutant of concern:

1.5.4.4.1 The permittee's percent reduction needed to comply with its TMDL waste load allocation from the no-controls modeling condition. The no-controls modeling condition means taking no (zero) credit for storm water control measures that reduce the discharge of pollutants.
1.5.4.4.2 The modeled MS4 annual average pollutant load without any storm water control measures.
Note: This model run is comparable to the no-controls condition modeled for the developed urban area performance standard of s. NR 151.13, Wis. Adm. Code.
1.5.4.4.3 The modeled MS4 annual average pollutant load with existing storm water control measures.
1.5.4.4.4 The percent reduction in pollutant load achieved calculated from the no-controls condition determined under section 1.5.4.4.2 and the existing controls condition determined under section 1.5.4.4.3.
1.5.4.4.5 The existing storm water control measures including the type of measure, area treated in acres, the pollutant load reduction efficiency, and confirmation of the permittee's authority for long-term maintenance of each.

Language in the permit states that the stormwater system must operate within the MS4 limits outlined in the TMDL.

8.1.2 The Existing Agricultural Non-Point Source Criteria to Determine if Load Reductions are being Achieved

When the Little Lake Wissota Stewardship Project model was developed, it was immediately oblivious that quantifying the load reductions from individual conservation projects and comparing it against TMDL goals was crucial.

Streambank buffer and wetland restoration pollution reductions were estimated using the USDA/DATCP CREP Environmental Benefit Report Summary.

Infiltration estimates were calculated the Soil Survey of Chippewa County, Wisconsin, (DATE) and USDA TR-55 Urban Hydrology for Small Watersheds, (DATE).

A summary of the Little Lake Wissota Stewardship Project "Master Monitoring Database" includes the best management practice, number of acres, year installed, and pollution reduction for phosphorus and sediment. The summary also includes an estimate of groundwater infiltration. SB= Stream Buffer. WT= Wetland Restoration or Wetland Scrape

Table 34 documents an excerpt of the Little Lake Wissota Stewardship Project Master Monitoring Database. This database tracks project environmental impacts on a project-by-project and year-by-year basis.

Table 34

Little Lake Wissota Stewardship Project - Master Monitoring Database (6/12/2017)

Landowner	Location	SB	WT	# of Acres	# of Trees	Easement	Year	Phosphorus Reduction (lbs.)	Sediment Reduction (tons)	Groundwater Infiltration (gal.)
G. Krumenauer	T28N R8W Sect. 26	√		9.0	2700	Y	2009	15.0	7.2	
G. Krumenauer	T28N R8W Sect. 26		√	8.8		Y	2009	10.0	6.6	1,300,000
2009 Totals				**17.8**	**2700**			**25.0**	**13.8**	**1,300,000**
R. Schafer	T28N R8W Sect. 23	√		6.5	2500	Y	2010	12.3	5.0	
R. Schafer	T28N R8W Sect. 23		√	3.7		Y	2010	3.1	0.5	2,433,935
2010 Totals				**10.2**	**2500**			**15.4**	**5.5**	**2,433,935**
S. Olson	T28N R8W Sect. 22	√		10.1	7800	Y	2011	28.3	8.8	
M. Gilles	T28N R6W Sect. 11	√		4.4	1500	Y	2011	30.0	12.4	
M. Gilles	T28N R6W Sect. 11		√	17.9		Y	2011	54.0	18.9	4,678,301
P. Snyder	T28N R8W Sect. 23	√		2.2	1100		2011	23.3	10.0	
D. Mayer	T28N R7W Sect. 30	√		2.9			2011	16.0	6.0	
2011 Totals				**37.5**	**10400**			**151.6**	**56.1**	**4,678,301**
J. Mower	T28N R8W Sect. 26	√		5.5	2750	Y	2012	30.6	13.0	
C. Chapek	T28N R6W Sect. 24	√	√	3.7	250	Y	2012	1.1	0.1	287,827
W. Dohms	T28N R6W Sect. 10		√				2012	6.5	2.2	889,050
J. Jones	T28N R7W Sect. 22		√				2012	1.0	0.1	259,887
Wm Brick	T28N R8W Sect. 36		√	6.9	500	Y	2012	2.4	0.3	814,813
J. Boyea	T28N R7W Sect. 35		√	5.2		Y	2012	4.8	1.5	1,148,152
E. Goettl	T28N R6W Sect. 29		√				2012	3.5	1.5	301,501
J. Bachman	T28N R7W Sect. 30		√	1.8		Y	2012	1.6	0.6	933,431
J. Peck	T28N R7W Sect. 21		√				2012	2.8	1.2	377,421
T. Weiss	T28N R7W Sect. 36		√	11.1		Y	2012	5.5	1.6	841,025
2012 Totals				**34.2**	**3500**			**59.8**	**22.1**	**5,853,107**
C. Evjen	T28N R7W Sect. 14		√				2013	1.8	0.3	653,406
J. Melville	T28N R7W Sect. 28		√	3.3		Y	2013	1.6	1.2	1,812,268
K. Lancette	T28N R7W Sect. 29		√	2.6	500	Y	2013	1.6	1.2	983,144
J. Kries	T28N R7W Sect. 16		√	6.0		Y	2013	2.2	1.0	404,102
B. Oberle	T28N R6W Sect. 21		√	0.9		Y	2013	6.3	2.2	2,759,248
S. Ramseier	T28N R6W Sect. 17		√	1.5		Y	2013	2.5	1.5	1,271,846
2013 Totals				**14.3**	**500**			**16.0**	**7.4**	**7,884,014**

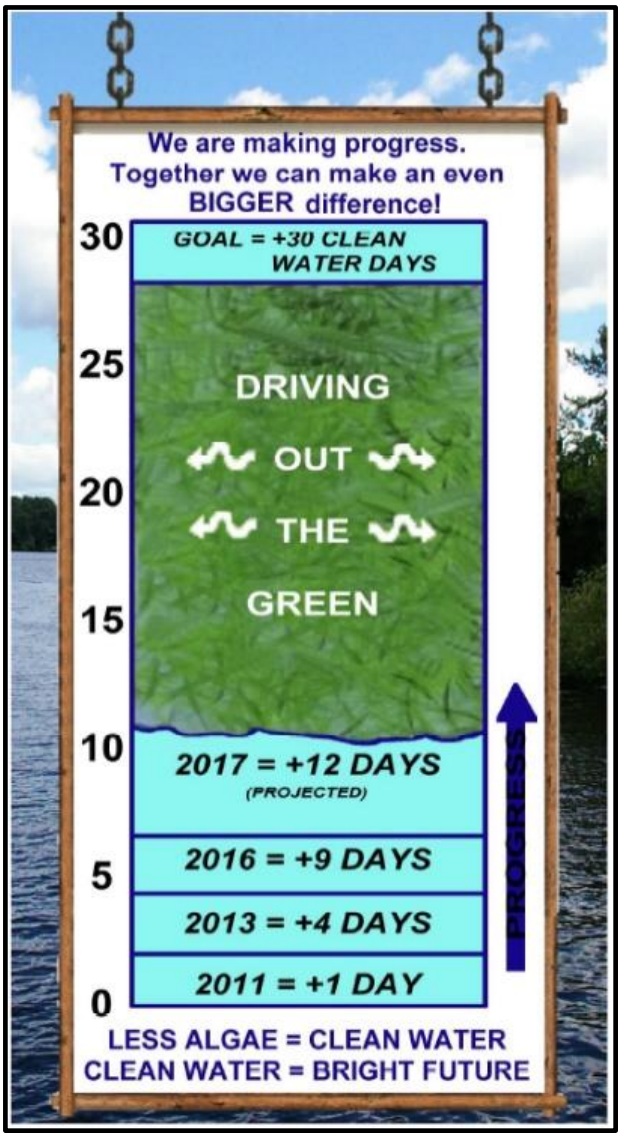
R. Kohls	T28N R6W Sect. 31	Little Lake Wissota	√		5.2	1500	Y	2014	17.1	7.4	
Tietz/Ferguson	T28N R6W Sect. 23	Little Lake Wissota	√		0.9	400	Y	2014	8.3	3.9	
Tietz/Ferguson	T28N R6W Sect. 23	Little Lake Wissota	√		7.6	3000	Y	2014	25.8	11.8	
B. Ramseier	T28N R6W Sect. 19	Little Lake Wissota		√				2014	15	11.2	4,505,022
M. Robbins	T28N R6W Sect. 19	Little Lake Wissota		√	3.2		Y	2014	4.2	1.8	969,780
R. Bowe	T28N R7W Sect. 17	Little Lake Wissota		√	1.2		Y	2014	3.8	2.3	1,149,425
R. Bowe	T28N R7W Sect. 17	Little Lake Wissota	√		2.17	1850	Y	2014	14.7	5.6	
A. Bunn	T28N R7W Sect. 15	Little Lake Wissota		√	3.3		Y	2014	2.5	1.9	1,886,468
B. Kriese	T28N R7W Sect. 15	Little Lake Wissota	√		0.9	600	Y	2014	9.6	4.3	
J. Munroe *	T28N R6W Sect. 21	Little Lake Wissota	√		29.1		Y	2014			
L. Ramseier *	T28N R6W Sect. 21	Little Lake Wissota	√		11		Y	2014			
B. Oberle *	T28N R6W Sect. 21	Little Lake Wissota	√		9.5		Y	2014			
2014 Totals					**74.07**	**7350**			**101**	**50.2**	**8,510,695**
Pat Pfaff	T28N R6W Sect. 9	Little Lake Wissota	√		6.1	700	Y	2015	3.8	1	
A. Bunn	T28N R7W Sect. 15	Little Lake Wissota	√		0.9	750	Y	2015	2.5	2.4	
David White	T28N R8W Sect. 24	Little Lake Wissota	√		2.9		Y	2015	5.2	3.4	
David White	T28N R8W Sect. 24	Little Lake Wissota	√		14.1	10500	Y	2015	15.1	9.8	
David White	T28N R8W Sect. 24	Little Lake Wissota		√	2		Y	2015	2.2	1.5	1,572,955
Mike Glomski	T28N R7W Sect. 15	Little Lake Wissota	√		13.3	2650	Y	2015	9.6	1	
Mike Glomski	T28N R7W Sect. 15	Little Lake Wissota		√	2		Y	2015	4	2.5	1,256,383
Richard Nelson	T28N R6W Sect. 8	Little Lake Wissota	√		1.6		Y	2015	2.2	1.2	
Richard Nelson	T28N R6W Sect. 8	Little Lake Wissota		√	0.61		Y	2015	3.8	1.4	867,900
Jeff Kenealy ^	T28N R6W Sect. 14	Little Lake Wissota						2015	196	288	
Jason Higley	T28N R7W Sect. 18	Little Lake Wissota		√	0.52			2015	2.5	1.3	1,002,356
2015 Totals					**44.03**	**14600**			**246.9**	**313.5**	**4,699,594**
Steve Vuchetich	T28N R6W Sect. 31	Little Lake Wissota	√		2.5	450	Y	2016	4.5	2.7	
Steve Vuchetich	T28N R6W Sect. 31	Little Lake Wissota		√	0.75		Y	2016	7	2.1	1,384,569
Mike Erickson	T28N R7W Sect. 30	Little Lake Wissota		√				2016	1.2	1	1,593,453
Randy Sonnentag	T28N R8W Sect. 23	Little Lake Wissota	√		2.1	1500	Y	2016	2.9	0.4	
Randy Sonnentag	T28N R8W Sect. 23	Little Lake Wissota		√	0.5		Y	2016	2.3	1.3	372,305
Steve Frederick	T28N R8W Sect. 23	Little Lake Wissota	√		1.2	200	Y	2016	2.4	0.4	
Steve Frederick	T28N R8W Sect. 23	Little Lake Wissota	√		3.7		Y	2016	4.4	0.6	
Steve Frederick	T28N R8W Sect. 23	Little Lake Wissota		√	0.6		Y	2016	0.7	0.2	1,670,462
Wayne Greene	T28N R6W Sect. 19	Little Lake Wissota		√	0.7			2016	4.25	3.5	2,138,060
Drilling/Dressel	T28N R7W Sect. 28	Little Lake Wissota		√	0.47		Y	2016	1.2	1.04	1,143,660
Drilling/Dressel	T28N R7W Sect. 28	Little Lake Wissota		√	0.74		Y	2016	2.9	1.99	2,332,052
Geoff Steiger	T28N R6W Sect. 8	Little Lake Wissota		√				2016	3	2.6	1,720,921
Geoff Steiger	T28N R6W Sect. 8	Little Lake Wissota		√				2016	3	2.7	2,074,825
2016 Totals					**13.26**	**2150**			**39.75**	**20.53**	**14,430,307**
David Antczak	T28N R6W Sect. 32	Little Lake Wissota	√		9.8	6800		2017	2.9	0.5	
David Antczak	T28N R6W Sect. 32	Little Lake Wissota		√	0.3			2017	1.3	0.8	726,259
Scott Bremenss	T28N R6W Sect. 19	Little Lake Wissota	√		1.7	1200		2017	7.1	2.6	
Bruce Ramseier	T28N R6W Sect. 19	Little Lake Wissota	√		0.77	550		2017	2.1	0.64	
Greg Hirsch	T28N R7W Sect. 26	Little Lake Wissota	√		7.9	5750	Y	2017	17.37	4.6	
Greg Hirsch	T28N R7W Sect. 26	Little Lake Wissota	√		7.1	grass	Y	2017	15.2	3.9	
Greg Hirsch	T28N R7W Sect. 26	Little Lake Wissota		√	0.3		Y	2017	1.2	0.9	1,498,732
Steve Frederick	T28N R8W Sect. 23	Little Lake Wissota		√	0.4			2017	0.76	0.6	1,373,649
2017 Totals					**28.27**	**14300**			**47.93**	**14.54**	**3,598,640**
David Pedersen	T30N R06W Sect. 33	Yellow River	√		5.4	2700		2018	9.5	4.7	
David Pedersen	T30N R06W Sect. 33	Yellow River		√	12.7			2018	12.4	6.1	4,706,816
Michael Erickson	T28N R07W Sect. 30	Little Lake Wissota		√	0.25			2018	4.1	2.4	1,001,659
Ashly Steinke	T30N R06W Sect. 2	Yellow River	√		7.2	5040		2018	44.4	21.4	
David Pedersen	T30N R06W Sect. 33	Yellow River	√		9.1	6400		2018	9.1	4.1	
2018 Totals					**37.85**	**15390**			**83.7**	**40.8**	**6,912,133**
Greg Hirsch	T28N R7W Sect. 26	Little Lake Wissota	√		7	4950	Y	2019	6.9	3.1	
Gunderson	T30N R06W Sect. 32	Yellow River	√		7.5	4150		2019**	17.3	8.3	
Vandermolen	T30N R06W Sect. 22	Yellow River	√		3.9	Grass		2019**	4.4	2.1	3,252,982
Vandermolen	T30N R06W Sect. 22	Yellow River		√	5.14			2019**	18	2.6	
Panzer	T28 R06W Sect. 8	Little Lake Wissota	√		0.5	Grass		2019**	2.3	1.4	
Olson	T29N R06W Sect. 18	Yellow River	√		5.65	Grass		2019**	17.5	9.7	
Roycraft	T28N R07W Sect. 14	Little Lake Wissota	√		2.9	1250		2019	2.9	1.3	
Roycraft	T28N R07W Sect. 14	Little Lake Wissota		√	0.3			2019	1.3	0.8	1,203,658
Spaeth	T31N R05W Sect. 33	Yellow River	√		15.8	7000	Y	2019**	17.38	7.9	
2019 Totals					**48.69**	**17350**			**87.98**	**37.2**	**4,456,640**

Results of the Master Monitoring Database were analyzed to be accurate, if not low, by an independent, site specific study conducted by a private lake consulting firm in 2015. The Appendix X of plan contains the 2015 site specific study results.

The Lake Wissota Stewardship Project also tracks and communicates its progress in "Clean Water Days." Clean water days are a way to communicate the pollutant load reductions achieved through the project to the public.

Figure 15 shows the "Driving Out the Green" graphic used to demonstrate gains in "Clean Water Days" through projects installed by the Little Lake Wissota Stewardship Project.

Figure 15



"Clean Water Days" were calculated by Wisconsin DNR by relating the associated chlorophyll response from nutrient loading to the lake. Clean Water Days apply to times when water quality is limited by algae growth, generally from June-September.

"Clean Water Days" are calculated with the following assumptions:

-There are 30 days per year that Little Lake Wissota is unsafe to swim in due to algae blooms – between June 1 and September 30 summertime period
-3,000 lbs of phosphorus, as outlined in the TMDL, need to be reduced.
-3,000 lbs reduction and 30 unsafe days divide to 100 lbs of phosphorus input per unsafe day.
-One" Clean Water Day" = 100 lbs of phosphorus reduction from the Master Monitoring Database.

Water quality monitoring – for total phosphorus and chlorophyll-A within Little Lake Wissota and streams leading to the lake (see section 9 of plan) will help to confirm if estimated phosphorus reductions from practices implemented within the watershed are occurring over time.

8.2 The Proposed Criteria to Determine if Load Reductions are Being Achieved

8.2.1 The Proposed Urban Point Source Criteria to Determine if Load Reductions are being Achieved

The Chippewa County Department of Land Conservation and Forest Management will continue to implement the load allocation requirements from the WPDES Permit. No other changes are proposed at this time.

8.2.2 The Proposed Agricultural Non-Point Source Criteria to Determine if Load Reductions are being Achieved

In order to strengthen the set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining TMDL goals, the project team will complete an annual review of implementation and progress towards the end goal. The project team will also develop a set of criteria to measure the effectiveness of our outreach and education project component.

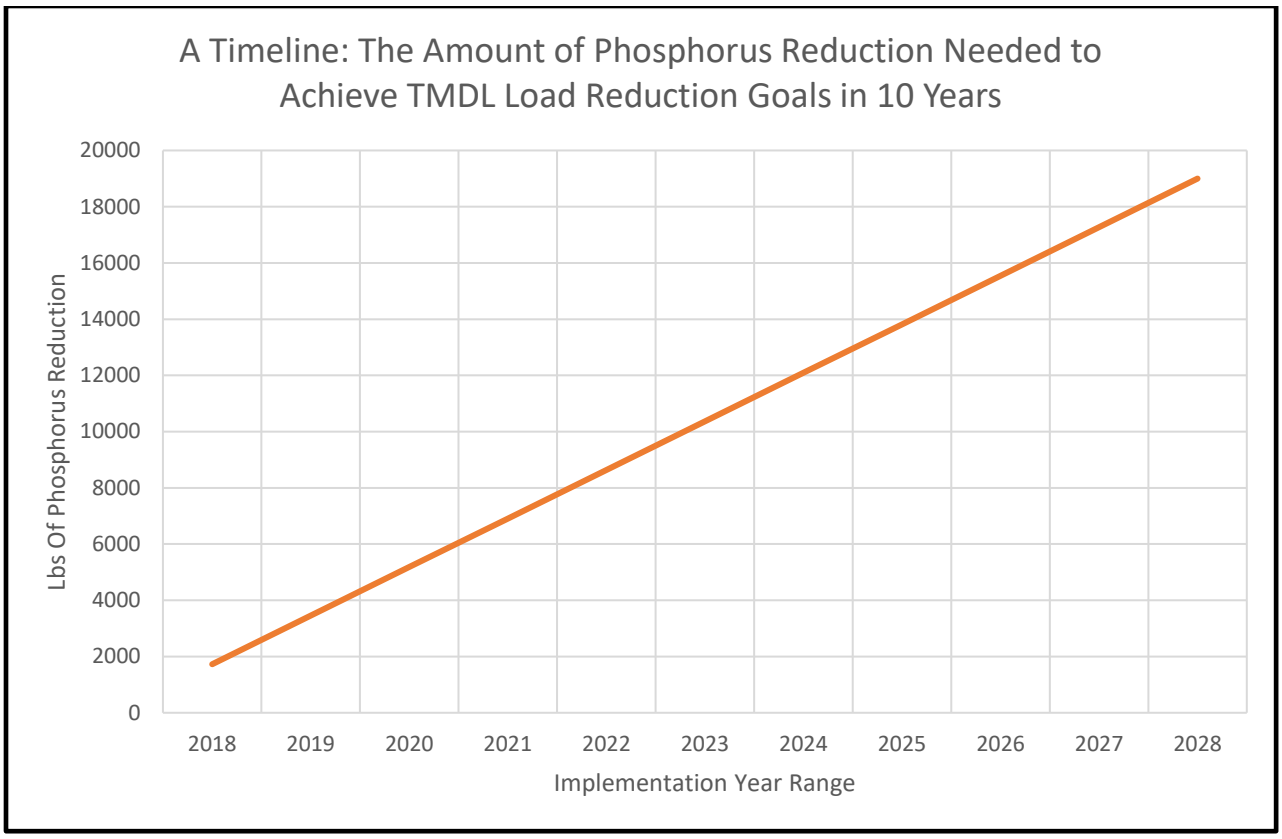
In early 2018, the project team set goals for the amount of phosphorus, sediment, and water infiltration changes to expect in the next 10 years. These yearly benchmarks will serve as a clear and concise way for the project team to evaluate its performance. These goals are shown in the table below.

Since 2018, the LWSP has been working with WI DNR to establish a total phosphorus stream monitoring program in the Little Lake Wissota Watershed. DNR has indicated that using these concentration results, we will be able to see changes in pollutant loads in the future.

The LWSP will also rerun the STEPL Model in 2023 and 2028 with updated data sets and implementation records to access pollution reduction in the watershed.

Chart 11 shows the timeline for the amount of phosphorus reduction needed to achieve TMDL load reduction goals in 10 years.

Chart 11



The proposed implementation schedule for the Little Lake Wissota Stewardship Project will require ten (10) years of BMP planning, design and installation. Over this time span, individual farms will be assessed to determine the location and efficiency of existing BMPs, current management practices, and potential critical sites of pollution. The farm operations will also be assessed to determine whether they are in compliance with the State of Wisconsin's agriculture performance standards, in accordance with the Department of Natural Resources, Chapter NR 151.

All BMPs that are contracted under the Lake Wissota Stewardship Project will be planned, designed, and installed by certified staff with the appropriate training. This rule ensures that qualified staff are involved in the decision-making process and insures that selected BMPs and their application is appropriate for the existing conditions. When a farm operator has agreed to the installation of a BMP, they will be required to sign a cost-share assistance agreement, an operations and management agreement, and have their farm evaluated for the NR151 standards. This ensures that the farm operator understands their responsibility for the proper and continued operation of the BMP.

As the Lake Wissota Stewardship Project progresses, it will be important to monitor the functionality of all BMPs after their installation. Over time, BMPs can become less efficient at achieving designed pollutant reductions due to several factors. According to the U.S. Environmental Protection Agency, natural variability, lack of proper maintenance, and unforeseen consequences are primary causes of BMP depreciation.

There are several key indicators of the Little Lake Wissota Watershed Implementation Plan that will be carefully tracked and monitored to determine if sufficient progress is being made and milestones are being achieved. Those indicators include:

-The number of conservation measures installed are not meeting milestones by Year 3.
-In-stream and In-Lake water quality is not responding to conservation measures by Year 5.

The Lake Wissota Stewardship Project will take the lead responsibility of monitoring plan implementation progress by tracking the following plan components:

1. Information and education activities and participation.

2. Pollution reduction levels from installed BMP's.

3. Administrative review.

Element 9 - The Monitoring Component to Evaluate Implementation Effectiveness

"*A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under Element 8, immediately above.*", (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Page 2-15).

The following documents were used in the development of this element and are as follows:

-Document: 2013 Boy Scout Monitoring MOU.
-Document: 2014 Boy Scout Monitoring MOU
-Document: 2015 Boy Scout Monitoring MOU
-Document: 2016 Boy Scout Monitoring MOU
-Document: 2017 Boy Scout Monitoring MOU
-Document: 2018 Boy Scout Monitoring MOU

9.1 The Existing Monitoring Component to Evaluate Implementation Effectiveness

9.1.1 The Existing Urban Point Source Monitoring Criteria to Evaluate Implementation Success

Every other summer, Chippewa County LCFM interns conduct a site inspection during dry periods on all stormwater facilities included under the MS4 permit. During these inspections the inspectors take photos and fill out inspection sheets for all ponds, inlets, outlets, and berms in the stormwater system. Any oblivious issues regarding function, sedimentation, erosion, maintenance, illicit discharge, and invasive species are noted.

9.1.2 The Existing Agricultural Non-Point Source Monitoring Criteria to Evaluate Implementation Success

Lake Monitoring

Every year, the Department of Land Conservation & Forest Management has contracted the Chippewa Valley Council of Boys Scouts of America to monitor Little Lake Wissota.

The monitoring program is conducted using the program framework and standardized procedures provided through the Wisconsin Citizen Lake Monitoring Network (CLMN).

Figure 16 shows the data recording sheet used by the Wisconsin Citizens Lake Monitoring Network to record Secchi and chemical lake monitoring data in Little Lake Wissota.

Figure 16

State of Wisconsin
Department of Natural Resources

Wisconsin Citizen Lake Monitoring Network - Secchi & Chem
Form 3200-099 (R 2/10)

Notice: Information is collected under s. 33.02, Wis. Stats. Personally identifiable information, including names of volunteers, will be broadly distributed in conjunction with lakes data.

Waterbody #	**Storet #** (Use separate form for each site)	Lake Name	County	Year

Toll-free Secchi Line Phone: 1-888-947-3282

Names of each volunteer who sampled on each date	**Date** Use 4 digits, e.g., May 19 is 0519	**Time** Round to nearest hour	**Secchi Depth** Round to nearest quarter of a foot	**Hit Bottom** 1=Yes 2=No	**Lake Level** 1=High; 2=Low; 3=Normal; 4=Gauge	**Lake Level** If gauge, enter numerical level	**Appearance** 1=Clear 2=Murky	**Water Color** 1=Blue; 2=Green; 3=Brown; 4=Red; 5=Yellow	* **Percep-tion** 1 - 5	**Date Entered**
Observations:										
Observations:										
Observations:										
Observations:										

Date:		
Depth	Temp. F	D.O.
No spring chl sample		

Date:		
Depth	Temp. F	D.O.
Vol. filtered for chl: mls		

Date:		
Depth	Temp. F	D.O.
Vol. filtered for chl: mls		

Date:		
Depth	Temp. F	D.O.
Vol. filtered for chl: mls		

***Perception** = Perception of the amount of algae in the water at your sample location:

1=Beautiful, could not be any nicer

2=Very minor aesthetic problems; excellent for swimming and boating enjoyment

3=Swimming and aesthetic enjoyment of lake slightly impaired because of high algae levels

4=Desire to swim & level of enjoyment of lake substantially reduced because of algae; would not swim, but boating is OK

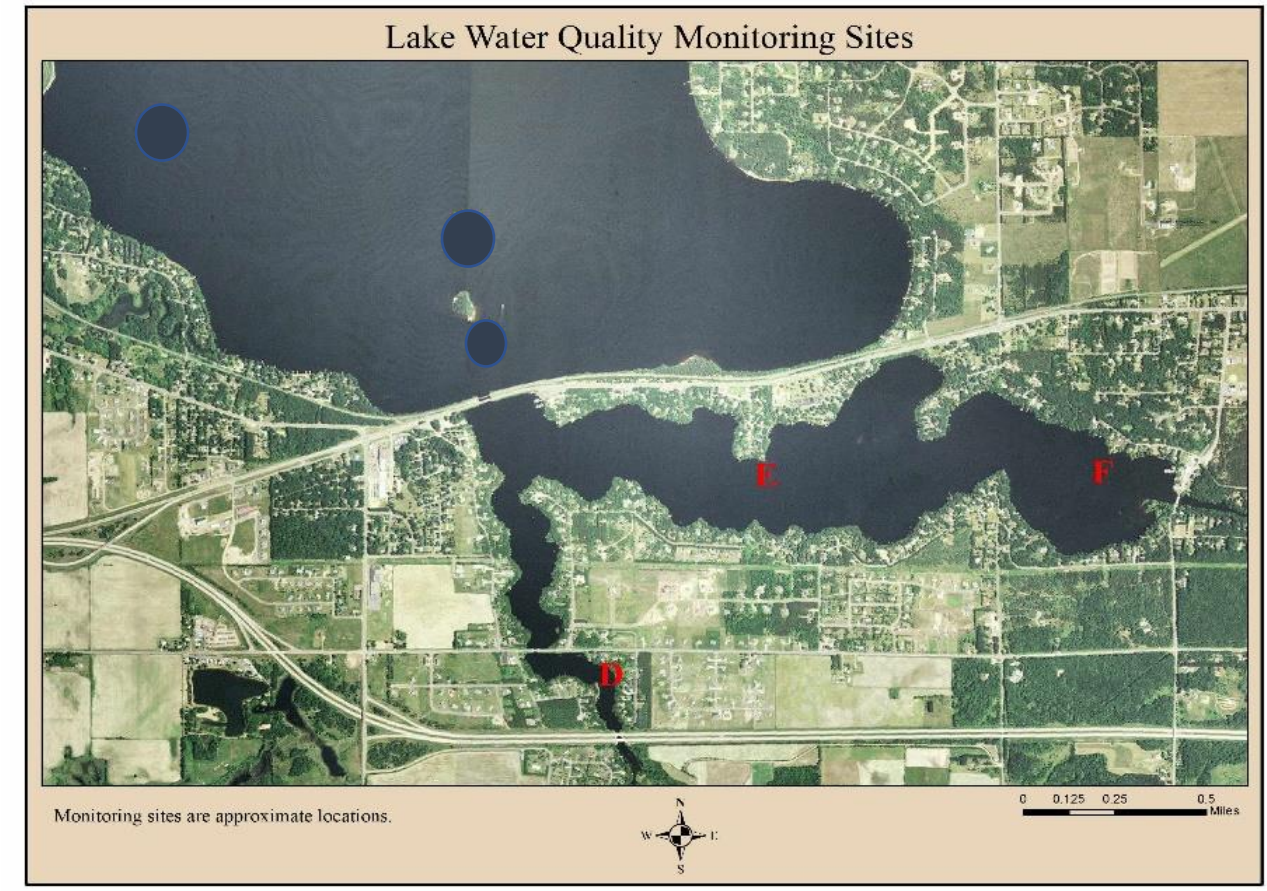
5=Swimming and aesthetic enjoyment of lake substantially reduced because of algae levels

If you call in the data, mail the original (blue) copy in the postage paid envelope (or to Citizen Lake Monitoring Network, WI DNR, PO Box 7921, Madison WI 53703) by November 1.
If you enter the data on the web, keep a copy for your records. There's no need to mail a paper copy. The Citizen Lake Monitoring web site is: dnr.wi.gov/lakes/clmn

Those sites to be sampled and monitored, under agreement by the participating troop under this project, are shown on the following map.

Map 19 shows locations of Citizen Lake Monitoring Network monitoring sites in the Little Lake Wissota.

Map 19



All sites are monitored two (2) times per month beginning approximately April 15 and ending approximately September 15.

Secchi disk and temperature readings are taken at each site during every monitoring event.

Water quality samples for total phosphorus and chlorophyll are taken four (4) times throughout the summer (June through September). These samples are taken at the time that Secchi disk and temperature readings are made. Water quality samples are processed and submitted to the State Lab of Hygiene following prescribed procedures.

The data collected is entered into the Wisconsin Department of Natural Resources Citizen Lake Monitoring Network database.

Figure 17 shows a Wisconsin DNR staff member teaching CLMN methods to a Chippewa Falls Boy Scout Troop in the Winter of 2018.

Figure 17

9.2 The Proposed Monitoring Criteria to Evaluate Implementation Effectiveness

9.2.1 The Proposed Urban Point Source Monitoring Criteria to Evaluate Implementation Success

The Chippewa County Department of Land Conservation and Forest Management will continue to inspect stormwater facilities bi-annually and facilitate illicit discharge inspections for the participating municipalities.

9.2.2 The Proposed Agricultural Non-Point Source Monitoring Criteria to Evaluate Implementation Success

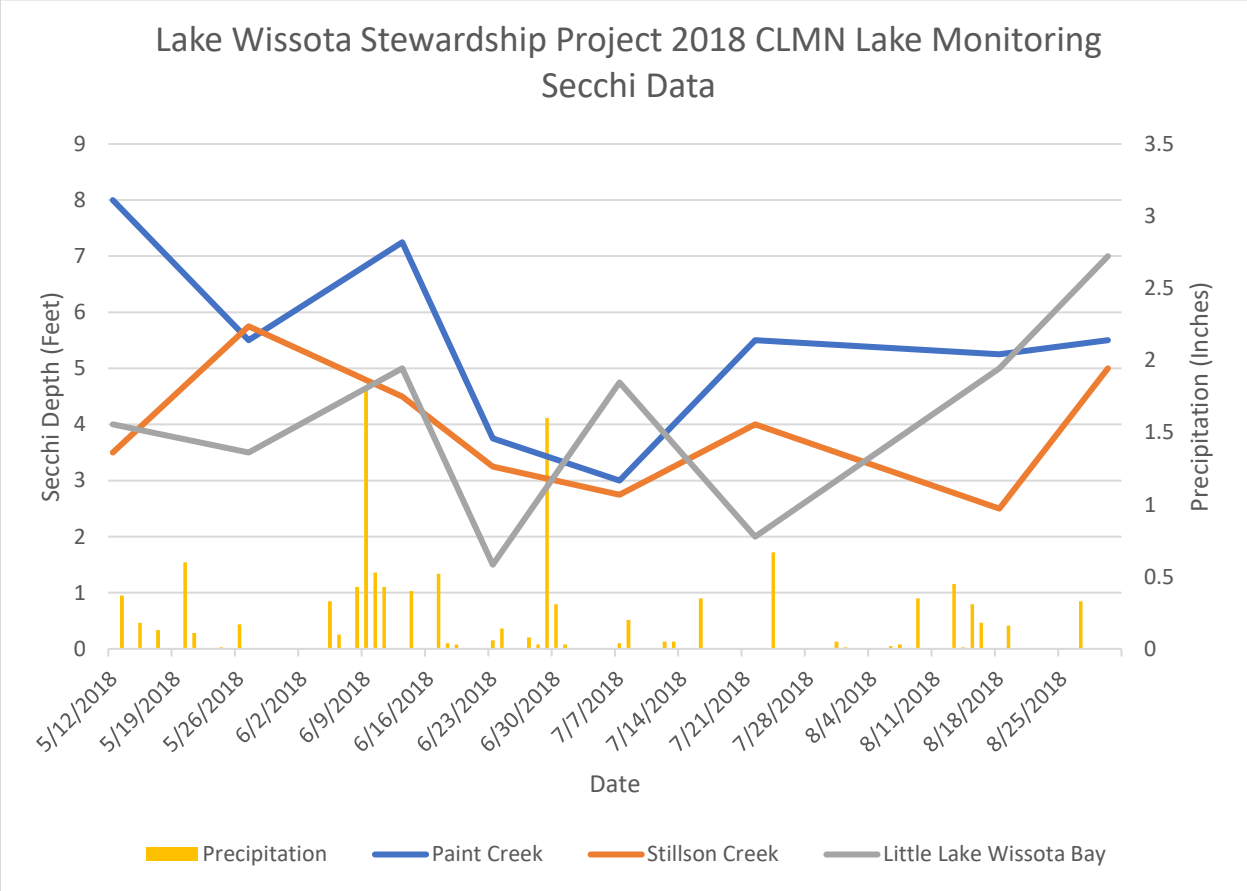
Lake Monitoring

As in the past, The Department of Land Conservation & Forest Management will continue to pursue and implement agreements with the Chippewa Valley Council of Boys Scouts of

America to monitor Little Lake Wissota through the DNR Citizen Lake Monitoring Network program from 2018-2028.

Chart 12 shows the 2018 Little Lake Wissota Secchi data collected by local Boy Scout Troops. Precipitation added to X-axis to put data in context. Current and up to date Secchi Monitoring can be found on the Wisconsin DNR Surface Water Data Viewer: https://dnrmaps.wi.gov/H5/?Viewer=SWDV

Chart 12



- 2019 Secchi Data was collected but has not been entered into the DNR Surface Water Data Viewer as of 7/21/2020. Once entered, up to date data can be found here: https://dnrmaps.wi.gov/H5/?Viewer=SWDV

Secchi Disk Interim Milestones			
Current Secchi (AvgDepth)	**Year 3**	**Year 7**	**Year 10**
3ft	4ft	5ft	6ft

Stream Monitoring

The Lake Wissota Stewardship Project Team has also been working with Wisconsin DNR staff in early parts of 2018 to initiate and complete total phosphorus and biological sampling in the watershed. The locations for these sampling efforts are attached. The samples will be collected by volunteers and sent to the State Lab of Hygiene for analysis of water chemistry parameters. Monitoring locations are shown on the following map.

Map 20 shows the locations of 2018 in stream total phosphorus and biological monitoring in the Little Lake Wissota Watershed.

Map 20

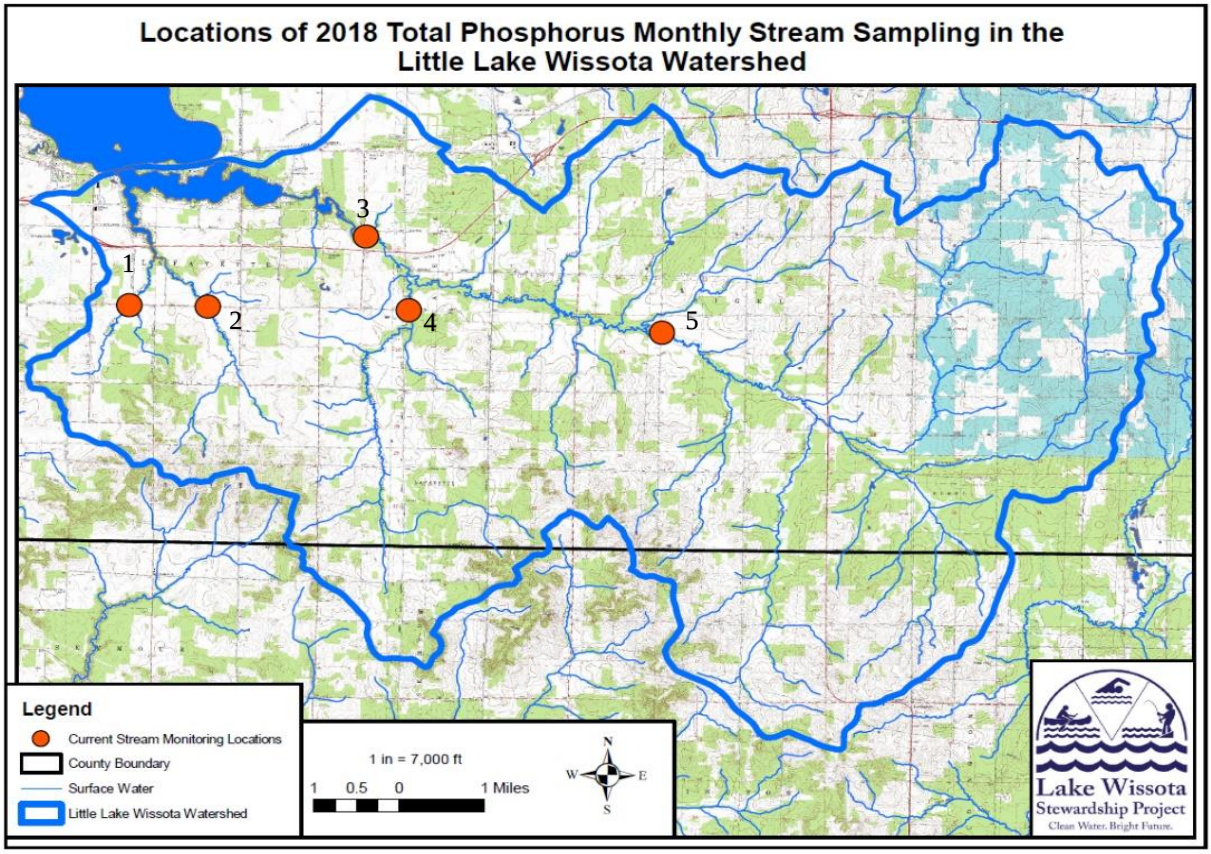
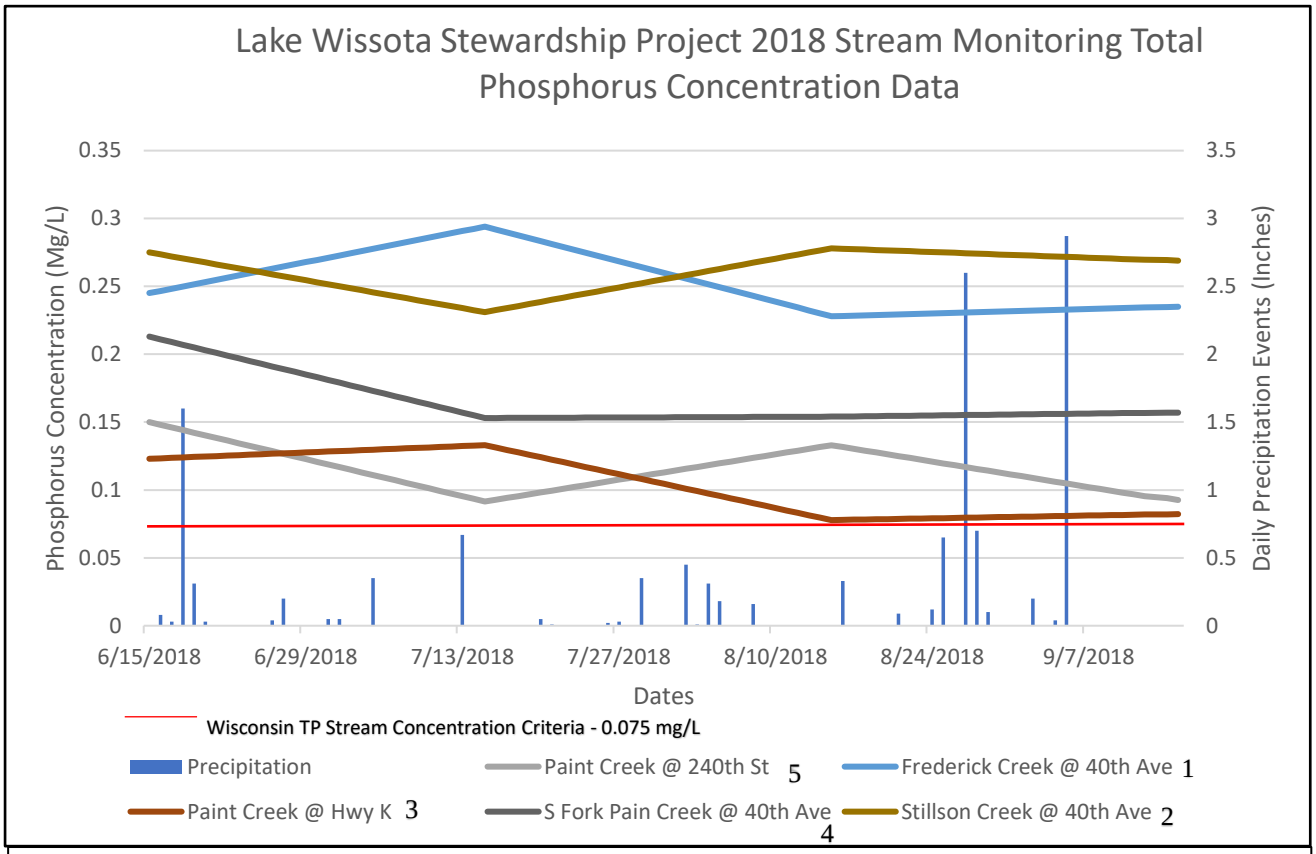


Chart 13 shows the 2018 and 2019 Little Lake Wissota total phosphorus data. Precipitation is added to X-axis to put data in context.

Chart 13



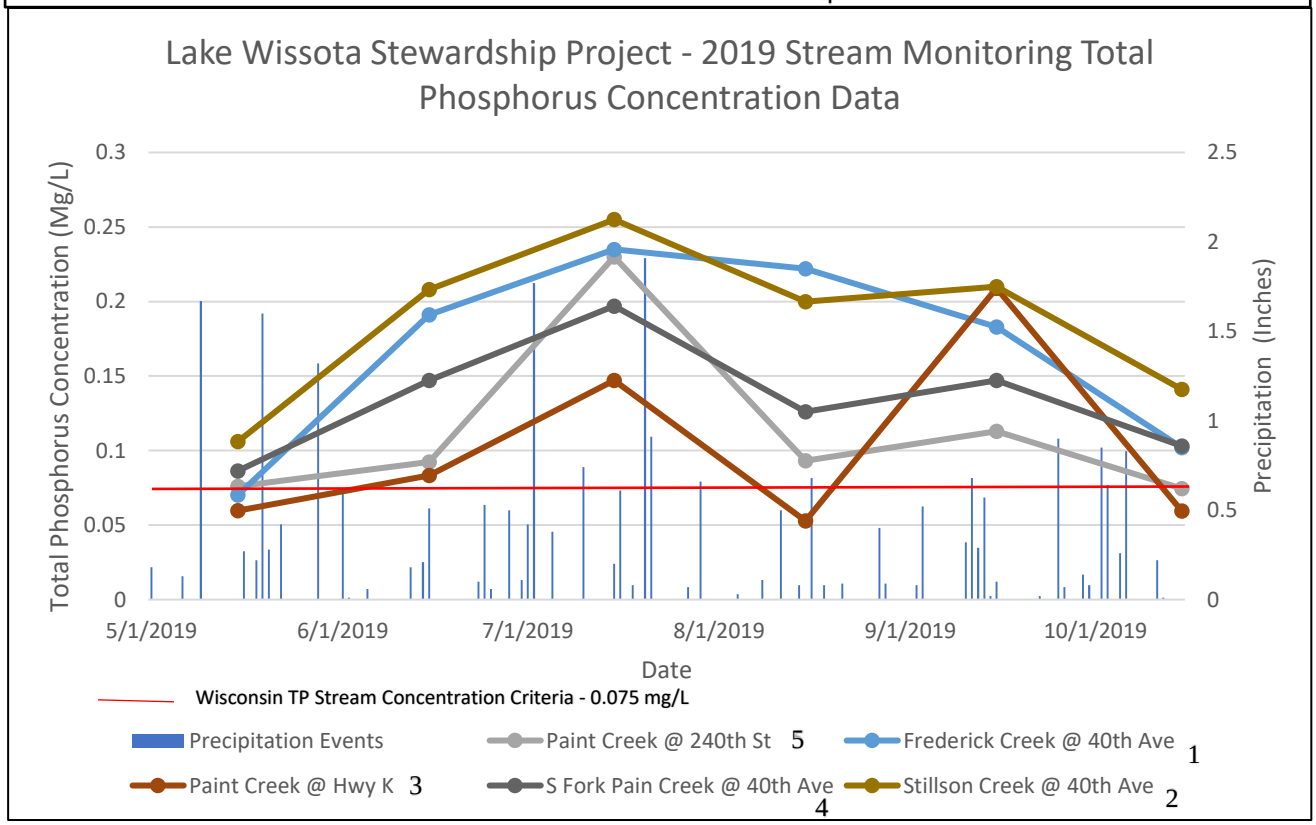


Table 35 – Table showing interim milestones for TP stream monitoring values

	Current TP (mg/L)	Target TP (mg/L)	Year 3	Year 7	Year 10
Site 1	.167	.075	TBD	TBD	.075
Site 2	.186	.075	TBD	TBD	.075
Site 3	.109	.075	TBD	TBD	.075
Site 4	.134	.075	TBD	TBD	.075
Site 5	.113	.075	TBD	TBD	.075

*= All TP values are expressed as median of samples taken between May-Oct months

TBD= To Be Determined. Stream TP sampling results can vary over time based upon climate, stream flow, and type/extent of practices implemented and maintained upgradient of sampling site(s). Evaluating stream TP concentrations will require looking at multiple years of sampling results for trends/patterns of increasing or decreasing TP levels within the streams.

WI DNR will be conducting a Targeted Watershed Assessment (TWA) of the LLW watershed upon approval of the nine-key element plan. The TWA design involves monitoring at the HUC 12 scale, with approximately five to six sites sampled per watershed (HUC 12), at which chemistry, macroinvertebrates, fish, habitat, and flows/water level data are collected. These core indicators will be supplemented by pour point water chemistry grabs samples during the growing season (May through October) from 2018 to 2020.

Dock Monitoring

Starting in the summer of 2018, the Lake Wissota Stewardship Project plans to work with the Lake Wissota Improvement and Protection Association to implement an "End of the Dock" observation program. Lakefront property owners will go to the end of their dock at a consistent time interval. During the sampling events, the landowners will fill out a lake perception rating that is consistent with the CLMN lake perception rating parameters.

Rating Parameters are outlined in the table below. Results will be reported in an online environment and be compiled at the end of the year to examine trends.

Figure 18 shows the monitoring parameters for volunteers to report water conditions on a weekly basis from the end of their docks.

Figure 18

Appearance	1=Clear
	2= Murky
Water Color	
	1= Blue
	2=Green
	3= Brown
	4= Red
	5= Yellow
Perception	1= Beautiful, could not be any nicer
	2= Very minor aesthetic problems; excellent for swimming and boating enjoyment
	3= Swimming and aesthetic enjoyment of lake slightly impaired because of high algae levels
	4= Desire to swim & level of enjoyment of lake substntially reduced because of algae; would not swim, but boating is Ok
	5= Swimming and aesthetic enjoyment of lake substantially reduced because of algae levels
Lake Level 2	1= High
	2= Normal
	3= Low
Wind Direction	N= Wind from North
	NE= Wind from North-east
	E= Wind from East
	SE= Wind from South-east
	S= Wind from South
	SW= Wind from South-west
	W= Wind from West
	W

Figure 19 and 20 show an algae bloom on Lake Wissota, taken by a dock monitoring volunteer.

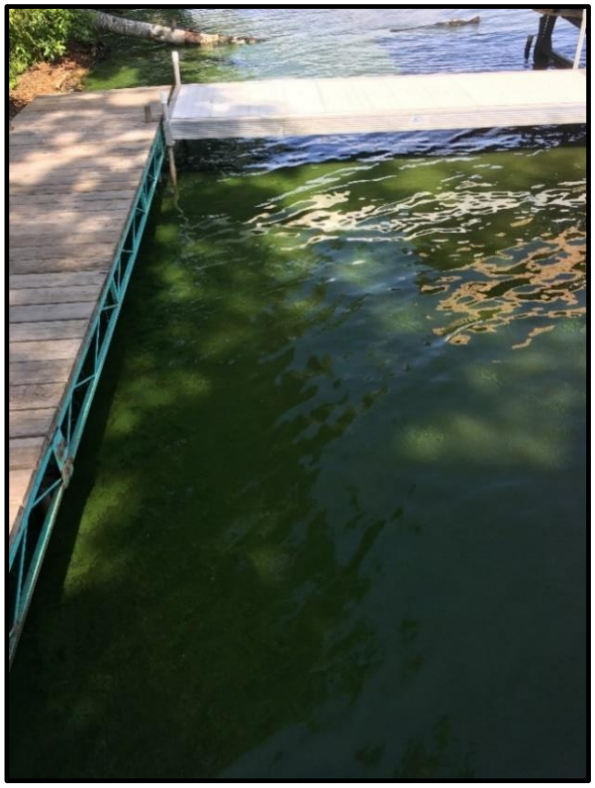


Figure 19

Figure 20

Water Quality Monitoring Progress Evaluation

This plan recognizes that estimated pollutant load reductions and expected improvement in water quality or aquatic habitat may not occur immediately following implementation of practices due to several factors (described below) that will need to be taken into consideration when evaluating water quality data. These factors, in additional to climatic and stream flow variation that occurs during stream sampling can affect or mask progress that plan implementation has made elsewhere. Consultation with the DNR and Water Quality biologists will be critical when evaluating water quality or aquatic habitat monitoring results. Employing a multi-year trend analysis will be necessary when evaluating stream TP concentration levels.

Milestones for pollutant load reductions are shown in Table 35. If the stream target values/goals for water quality improvement are not being achieved over time, then the water quality targets or timetable for pollutant reduction in this plan will need to be evaluated and adjusted as necessary.

The following criteria will be evaluated when water quality and aquatic habitat monitoring is completed after implementation of practices in the watershed:

• Changes in land use or crop rotations within the same watershed where practices are implemented (i.e., increase in cattle numbers, tillage intensity, corn silage acres, and/or urban areas can negatively impact stream or lake quality and water quality improvement efforts)

• Location in watershed where land use changes or crop rotations occur. (Where are these changes occurring in relation to implemented practices and sampling sites?)

• Watershed size, location where practices are implemented and location of monitoring sites.

• Climate, precipitation and soil conditions that occurred before and during monitoring periods. (Climate and weather patterns can significantly affect growing season, soil conditions, and water quality)

• Frequency and timing of monitoring.

• Percent of watershed area (acres) or facilities (number) meeting NR 151 performance standards and prohibitions.

• Percent of watershed area (acres) or facilities (number) that implement and maintain implemented practices over time.

• Extent of gully erosion on crop fields within watershed over time. How many are maintained in perennial vegetation vs. plowed under each year?

• How “Legacy’ sediments already within the stream and watershed may be contributing P and sediment loads to stream?

• Presence and extent of drain tiles in watershed area in relation to monitoring locations. Do these drainage systems contribute significant P and sediment loads to receiving streams?

• Does monitored stream meet IBI and habitat criteria but does not meet TMDL water quality criteria?

• Are targets reasonable? Load reductions predicted by models could be overly optimistic

III. CONCLUSION OF 9-KEY ELEMENT PLAN FOR LITTLE LAKE WISSOTA WATERSHED

1. The purpose of this document is to outline research conducted in the Little Lake Wissota Watershed, document what has been completed from 2009-2017 through the Little Lake Wissota Stewardship Project, and plan what will be implemented through the Lake Wissota Stewardship Project in the coming years to achieve TMDL sediment and phosphorus goals.

2. Little Lake Wissota is a highly studied watershed due to its high recreational value and its proximity to densely populated areas.

3. A TMDL for the Little Lake Wissota Watershed was completed by the Wisconsin DNR in 2010. The TMDL, along with this document, will serve as management guidelines for decreasing phosphorus and sediment pollution in the watershed.

4. Seven (7) years of successful TMDL implementation was completed from 2009-2017, co-sponsored by Jacob Leinenkugel Brewing Company and the Chippewa County Department of Land Conservation and Forest Management. An additional five (5) years will be added, cosponsored by the Lake Wissota Improvement and Protection Agency and the Chippewa County Department of Land Conservation and Forest Management.

5. BMPs will be prioritized and addressed by continuing to work in the lowlands by installing stream buffers and wetland restorations, but also working in the uplands to provide cost sharing for reduced tillage, cover crop, and increased residue farming practices in order to bring farms into NR151 compliance.