2015

Progress Report

Lake St. Croix
Total Maximum Daily Load

January 11, 2017

wq-iw6-04x

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On the cover:
Elizabeth Belz – "The Yankee" To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Left:
Joan Benner – "Moonlit walk on the beach" (St. Croix River Association 2015 photo contest Second Place: People – Adult division)
To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Prepared for

the St. Croix Basin Water Resources Planning Team

In a New Light artist Kayden, 14 - "Look at me"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

Protecting the St. Croix

Our Vision

The St. Croix River and its watersheds are healthy, cherished, and protected, by law and by choice.

Our Mission

Share science and policy to guide partners and citizens who restore, manage, and protect the land and water resources of the St. Croix Basin.

Member organizations include:

St. Croix National Scenic Riverway – National Park Service
Minnesota Department of Natural Resources
Minnesota Pollution Control Agency
Wisconsin Department of Natural Resources
St. Croix Watershed Research Station – Science Museum of Minnesota
University of Wisconsin Extension
University of Wisconsin – River Falls
Wisconsin Department of Agriculture
Minnesota Department of Agriculture
The Nature Conservancy

East Metro Watershed Partners

Natural Resource Conservation Service

United States Geological Survey

Metropolitan Council Environmental Services

St. Croix River Association

Kinnickinnic River Land Trust

Wisconsin County Land and Water Resource Departments

- Barron Soil and Water Conservation Department
- Bayfield Land and Water Conservation Department
- Burnett Land and Water Conservation Department
- Douglas Land Conservation Department
- Pierce Land Conservation Department
- Polk County Land and Water Resources
- Sawyer Zoning and Conservation
- St. Croix Resource Management
- Washburn Land and Water Conservation Department

Minnesota Board of Soil and Water Resources and local member organizations

- Aitkin Soil and Water Conservation Department
- Anoka Conservation Department
- Brown's Creek Watershed District
- Carlton Soil and Water Conservation Department
- Carnelian - Marine - St. Croix Watershed District
- Chisago Soil and Water Conservation Department
- Comfort Lake - Forest Lake Watershed District
- Conservation Corps MN & IA
- Isanti County
- Isanti Soil and Water Conservation Department
- Kanabec Soil and Water Conservation Department
- Middle St. Croix River Watershed Management Organization
- Mille Lacs Soil and Water Conservation Department
- Pine Soil and Water Conservation Department
- Ramsey County
- Snake River Watershed Management Board
- South Washington Watershed District
- St. Louis, North Soil and Water Conservation Department
- Valley Branch Watershed District
- Sunrise River Water Management Organization
- Washington Conservation District
- Washington County

Overview

National Park Service Photo – St, Croix River Mainstem below Kinnickinnic State Park

This is the first progress report on phosphorus reduction activities in the St. Croix Basin by partners in Wisconsin and Minnesota since US EPA approval of the Lake St. Croix Total Maximum Daily Load in 2012 and the subsequent Implementation Plan approval in 2015. Although this report is required as part of EPA's approval of the Implementation Plan, it is also a good way for all partners involved to track our progress and learn from each other as we work to protect the water quality and habitat of the excellent water resources that comprise the St. Croix Basin.

This first effort reports accomplishments mainly from survey responses from the County Land and Water Resource Departments in the Basin on Best Management Practices (hereafter BMPs) and educational efforts. *It is very likely that many more projects were completed by a myriad of partners and individuals than what is reported herein.* Our upcoming challenge is to secure uniform quantification methods and a basin-wide tracking system for more complete and accurate future reports.

There was a very wide range of activities undertaken to lower the phosphorus discharged in the basin and improve the health of all waters and the St. Croix in particular. These included:

- forestry practices and education
- agricultural practices including grassed waterways, gully erosion correction, soil health and tillage practice improvements, manure storage correction, and nutrient management
- lake management planning, shoreland buffer and habitat restoration
- rural and urban stormwater practices including raingardens, infiltration strips, and larger scale MS4 projects
- land protection, native plantings, and prairie restoration
- wastewater treatment plant upgrades and phosphorus limits implemented in discharge permits
- educational efforts in all of the categories above

Table 1 summarizes the types of activities by county and includes reduction and investment figures in instances where these results were reported and quantifiable.

Table 1. Activities Summary

				Management Practices and Activities				
		Estimated Phosphorus Reduction	Investment	Shoreline/ Riparian	Education	Agricultural	Forestry	Urban/ Residential
County	State	(lbs)			Attendance	Acres		
Aitkin	MN			Planned for 2016				
Anoka	MN	No projects identified for 2015						
Barron	WI					662		
Bayfield	WI	No projects identified for 2015						
Burnett	WI	963	$230,000; 1 FTE*	1300 feet	360	666	X	X
Carlton	MN		0.6 FTE	X		X	X	
Chisago	MN			X		X	X	X
Douglas	WI	No projects identified for 2015						
Isanti	MN	No projects identified for 2015						
Kanabec	MN		72 hours	X	80			X
Mille Lacs	MN	No projects identified for 2015						
Pierce	WI		0.3 FTE		Farmer-Led Council	12		
Pine	MN			X	X	X	X	
Polk	WI			X	Farmer-Led Council	5959		X
Ramsey	MN	No projects identified for 2015						
St. Croix	WI	1053	1056 hours	X	11,095; Farmer-Led Council	X		X
Sawyer	WI	No projects identified for 2015						
Washburn	WI		$63,749; 1960 hours	557 feet; 0.5 acres	753	X		
Washington	MN	873	$145,000**	X	X	28		X
E-Link	MN	10560	For 2003 - 2015 See page 22 for more information.					

** Full Time Employment*
***Middle St. Croix Watershed Organization information only.*

St. Croix Timeline

of Land Use Change and Legislative Action

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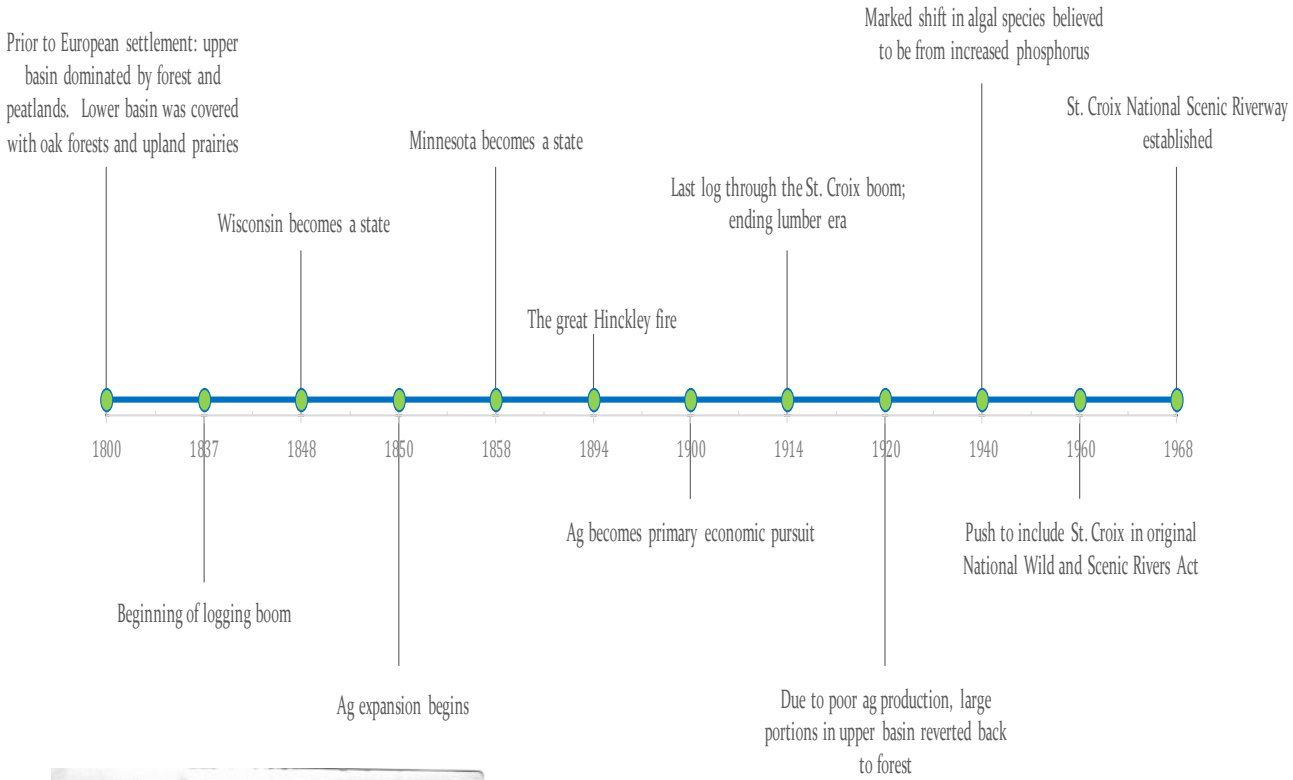
Aaron Carlson



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US Department of Agriculture

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In a New Light: artist Nick, 14 - "Peace on the River" Please visit: http://nwpltd.org/inanewlight/

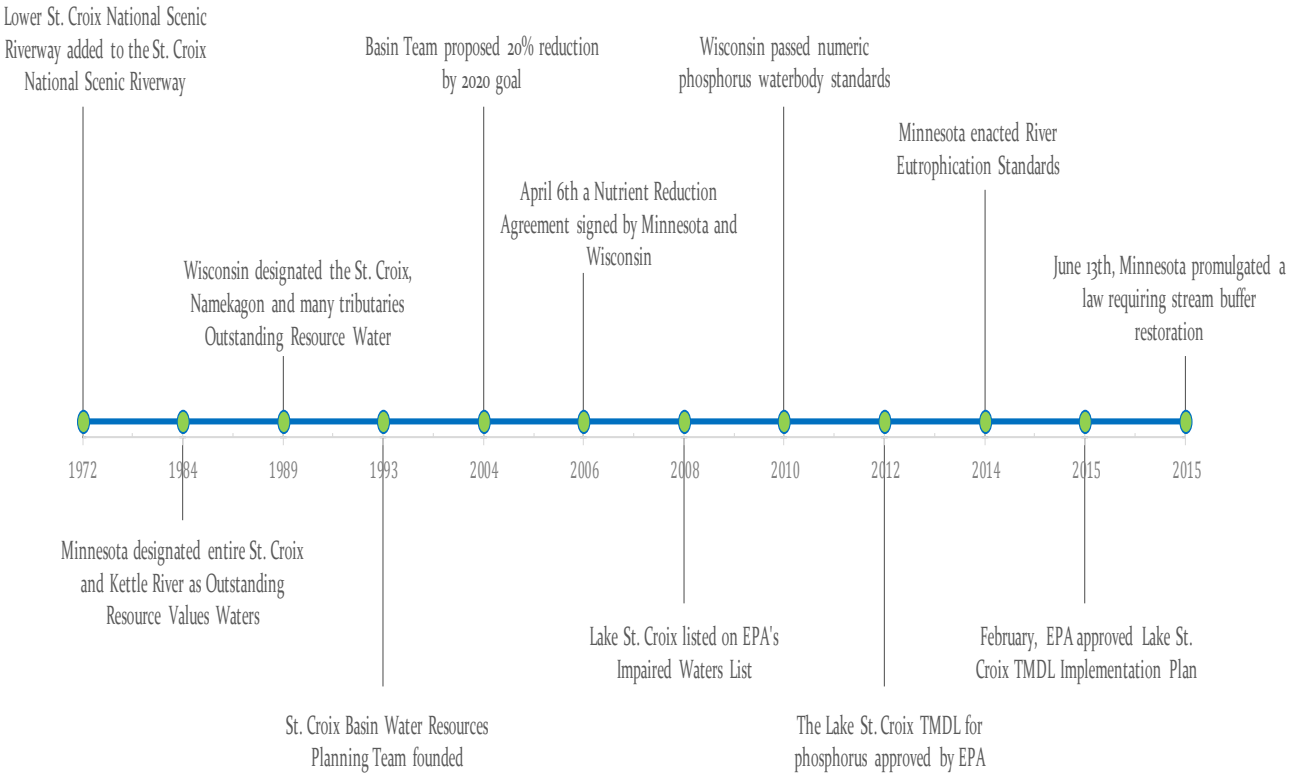

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Photo via Good Free Photos

Introduction

Background

The St. Croix River basin (Figure 1) represents a large area—approximately 7,760 square miles —with 44 percent of the basin land area (excluding water and wetlands) located within Minnesota and 56 percent within Wisconsin. The St. Croix River originates near Solon Springs, Wisconsin, and flows west and south more than 160 miles until it joins the Mississippi River at Prescott, Wisconsin. Lake St. Croix is a naturally-impounded riverine lake in the lower 25 miles of the St. Croix River.

Figure 1. St. Croix Watershed and Location Map

The St. Croix River and Lake St. Croix are highly valued resources that provide exceptional recreational opportunities and support a highly diverse ecology of aquatic and terrestrial species. However, over the years eutrophication, or nutrient enrichment, has occurred in Lake St. Croix due to excess phosphorus loading from the watershed. This loading drives nuisance algae blooms which diminish the health and use of the lake.

The federal Clean Water Act requires states to identify water bodies or stream segments that are not meeting state water quality standards and designated uses, and place them on the USEPA impaired waters list. Once listed, the State is required to quantify the amount of a specific pollutant that a listed water body can receive without violating applicable water quality standards and to distribute that allowable load among the sources of the designated pollutant. The maximum allowable pollutant quantity is referred to as the Total Maximum Daily Load (TMDL). A TMDL is the sum of the allowable loads of a single pollutant from all contributing sources. The Lake St. Croix TMDL (for excess phosphorus) was approved by EPA in May 2012; the Implementation Plan was approved in February 2015.

This TMDL was a collaborative effort among the Minnesota Pollution Control Agency (MPCA), Wisconsin Department of Natural Resources (WDNR) and the member organizations of the St. Croix Basin Water Resources Planning Team (St. Croix Basin Team).

The primary components of the TMDL were largely based on the results of past lake and nutrient loading studies. The TMDL included establishing the water quality targets for Lake St. Croix (Table 2).

Table 2. Lake St. Croix Water Quality Standard

Water Quality Parameter	**Standard**
Total phosphorus, µg/L	40
Chlorophyll-a, µg/L	14
Secchi disc transparency, m	1.4

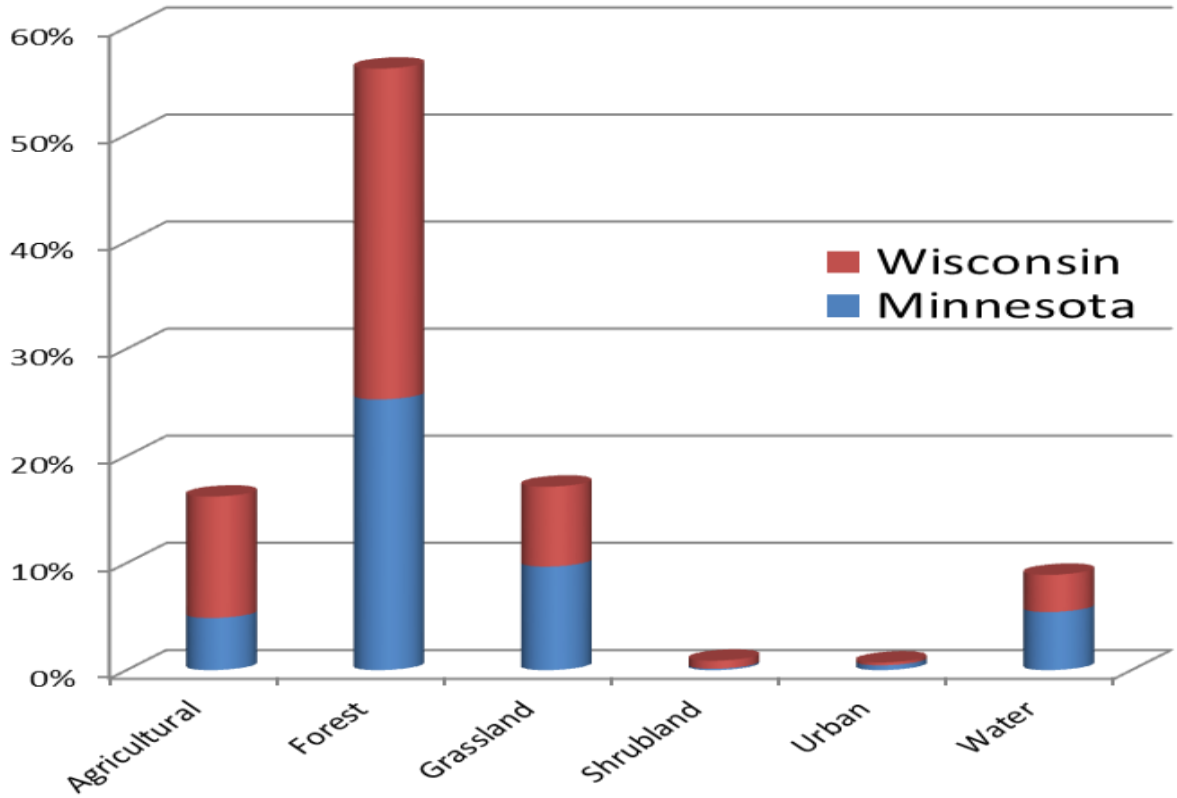
The TMDL determined that, in order to meet these goals, the phosphorus loading to Lake St. Croix could not exceed 360 metric tons of phosphorus per year. This loading target is more than twice the estimated natural background phosphorus load of 166 metric tons per year.

Land Use

Forests are the main land cover in the St. Croix Basin. Grassland and agricultural land are next. Water (including wetlands), shrublands and urban areas make up the remainder of the Basin (Figure 2). Note that "urban" land use / land cover is *not* synonymous with "city" or "municipal" area. There are 25 regulated Municipal Separate Storm Sewer Systems (MS4s) in the Basin, but their areas are mostly non-urban (~90% non-urban on average). At the same time, most of the Basin's urban area is *not* in these

25 MS4s, but in other, smaller communities (which account for ~80% of the Basin's urban area).

Figure 2. St. Croix Watershed land use



Basin Phosphorus Loadings and Goals

The average in-lake water quality for Lake St. Croix over the period from 1998 to 2006 was 51 µg/L total phosphorus, 20.5 µg/L chlorophyll-a (a measure of algae) and 1.2 m Secchi disk (a measure of water clarity).

The primary components of the TMDL were largely based on these results. The key outcomes of these studies and the TMDL were:

- Lake St. Croix's total annual loading capacity needed to meet an in-lake total phosphorus water quality standard of 40 µg/L is 360 metric tons/yr.
- The lake's loading (using a 1990s baseline) was 460 metric tons/yr, meaning a 100 metric ton/yr reduction would be needed. However, this TMDL adopts a margin of safety and a reserve capacity which increases the needed load reduction to about 123 metric tons/yr. This equates to an overall needed phosphorus load reduction of 27 percent.

Reduction Strategies Recap

Paul Earney – "Who's on first? "(St. Croix River Association 2015 photo contest Third Place: Wildlife – Adult division) To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Summarized from the Lake St. Croix TMDL Implementation Plan

Point Sources

Wastewater Treatment Plants (WWTPs) have made significant progress in improving the effectiveness of their facilities and removing phosphorus from their discharges. Most facilities have permits that include TMDL Waste Load Allocation limits (WLAs), water quality based effluent limits (WQBEL) or Technology Based Effluent Limits (TBL) for phosphorus.

If a community or industry needs further reductions of phosphorus in its WWTP discharge various strategies may be considered to further reduce the total wastewater phosphorus load, including:

- Foster local education on individual, community, and commercial efforts to reduce sources of phosphorus entering wastewater treatment systems
- Identify the number of communities in the basin that are using phosphorus-based strategies for corrosion control in water mains, estimate the amount of phosphorus lost to receiving waters, and examine alternatives to polyphosphates
- Promote and facilitate regionalization of wastewater treatment systems through the development of comprehensive sewer system management plans for areas of the basin where existing sewage treatment practices, such as septic fields and holding tanks, are releasing excessive nutrients.

Municipal Separate Storm Sewer Systems (MS4s) may take several years to fully achieve the respective WLAs. Implementation may be viewed as a 4-step process:

Step 1: Understand Existing Conditions

Develop an estimate of the existing loading of phosphorus from the regulated MS4 land area to the St. Croix River or its tributaries.

Step 2: Determine Required Reductions

The TMDL WLA for MS4s is based on attaining an average annual loading rate to the St. Croix River or its tributaries of 0.338 lb/ac/yr over the regulated MS4 land area.

Step 3: Identify and Target Best Management Practices

The MS4 should identify and target BMPs for implementation.

Step 4: Demonstrate Compliance

There are two options for demonstrating compliance with the TMDL WLA:
1) monitoring
2) performance-based assessment.

General Permits for construction and industrial stormwater activities are considered in compliance with provisions of the TMDL if they obtain a Construction and/or Industrial General Permit under the NPDES program and properly select, install and maintain all BMPs required under the permit.

Concentrated Animal Feeding Operation (CAFO) actions include confirmation of continued compliance with their permit conditions. Their permits do not allow the release of any runoff containing pollutants from their production areas and must comply with manure and nutrient management requirements for croplands.

Nonpoint Sources

Shoreline/Riparian areas of both Minnesota and Wisconsin are protected to a certain degree by the enforcement of shoreline ordinances established at state and local levels. These rules limit shoreline and riparian landowners to specific building codes, vegetation management and possible detrimental activities within riparian areas. During the summer of 2015 the Wisconsin legislature approved Act 55. Act 55 prohibits counties from enacting shoreland ordinance provisions more restrictive than the State law and reduces other shoreland protections. Small land use practices such as developing and maintaining shoreland buffers and controlling runoff can still benefit the quality of Lake St. Croix, even if they are no longer required practices as part of Wisconsin zoning actions.

Jenna Hall – "Hillside Farms" To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Continued water resource education will also be critical to reducing phosphorus loading from shoreline/ riparian properties.

Agriculture is the dominant land use in the St. Croix Basin and provides critically important economic and social value. Significant improvements in agricultural practices, such as nutrient management, soil health improvement, cover crops,

Patricia Brannan – "Peace in the Valley" (St. Croix River Association 2015 photo contest Second Place: Landscape – Adult division) To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

conservation tillage, and buffer strips have provided opportunities for farmers to make changes that can reduce the amount of phosphorus leaving their lands and entering the adjacent waters. However, additional efforts need to be assessed and implemented to further reduce phosphorus loads. There are still many opportunities through soil health improvement, cropping techniques and runoff controls.

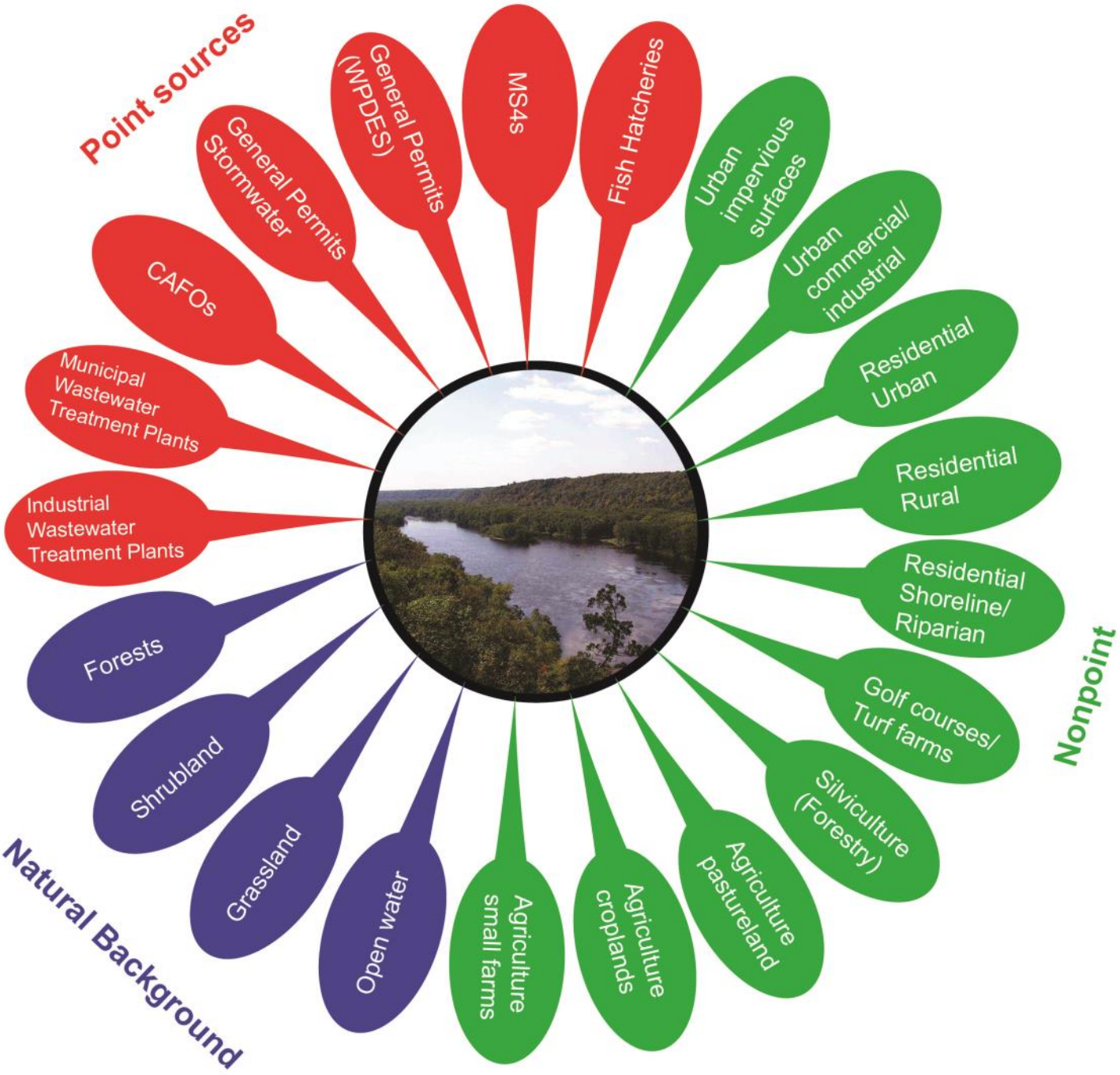
Forestry management activities are an important part of the state economies of both Wisconsin and Minnesota. Reductions in phosphorus loadings from this sector are attainable and should continue to be implemented. Careful planning of forest management activities and mindful consideration of potential water quality impacts during forest road construction, harvesting and other management practices can help reduce phosphorus inputs to surface waters.

Urban/Rural residential (Non-MS4) communities can follow the 4-step process outlined above for MS4 communities. There are many infiltrative and treatment practices that can help reduce stormwater runoff in small communities and residential and commercial areas.

Education and involvement of citizens on water resource issues is critical in achieving support for implementation activities and achieving progress, especially for nonpoint source reductions through:

Environmental/Water Resource Education
Public Involvement
Civic Governance
Social Marketing
Technical Assistance
Public Outreach
Civic Engagement
Commercial Advertising
Training/Workshops

Sources of phosphorus to the St. Croix



Basin-wide Partnership Initiatives

In a New Light artist Craig, 13 - "Sparkling Marigold"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

St. Croix Basin Water Resources Planning Team (Basin Team)

The St. Croix Basin Team unites the efforts of partners in both states to protect the water quality and habitat of the St. Croix. The team meets quarterly to coordinate protection efforts. Shortly after the team was formed in 1993, it named nutrient inputs to the basin as the number one threat to water quality, and has spearheaded development of the TMDL and Implementation Plan.

The Implementation Committee (formerly the Nutrient Subcommittee) was formed in 2006 to carry out the work outlined in the MPCA-WDNR Nutrient Reduction Agreement. The team meets monthly and includes members from nearly all of the Basin Team partners listed at the front of this report. In 2015 the team sponsored Civic Governance training for interested County Departments, provided BMP evaluation model training for the Spreadsheet Tool for Estimating Pollutant Loads (STEPL), and evaluated a possible GIS-based BMP tracking system.

The Basin Team's Monitoring and Assessment Committee meets regularly, reviewing monitoring underway by each partner agency, and identifying further efforts needed to track progress with the phosphorus reduction goal and other initiatives. A Basin Team Monitoring Plan was compiled in 2006 and updated every few years as needed.

2015 St Croix Basin Conference

On April 20, 2015 the 16th annual "Protecting the St. Croix" conference, now labeled as the 'St. Croix Summit" was held in Stillwater, Minnesota. Over 150 people attended, mostly from resource agencies and partner groups. The theme for the year was "Changing Climate, Changing Times". Summit speakers covered topics from climate change to the arts, all as they relate to the St. Croix Basin. Keynote speakers included Minnesota climatologist Mark Seeley and Ramsey County Policy & Planning Director

Pat Chiconis – "Fox" (St. Croix River Association 2014 photo contest First Place: Wildlife – Adult division) To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Ryan O'Connor. The conference is sponsored by the St. Croix River Association and the member organizations of the Basin Team.

United States Geological Survey (USGS)

USGS Staff are developing a model for Lake St. Croix and continuing monitoring in the lake. USGS also operates stream gages on the mainstem of the St. Croix and major tributaries with funding from the Metropolitan Council and the Stillwater Bridge Mitigation fund. The stream gages are used to calculate nutrient loads entering and leaving Lake St. Croix, which is one means of monitoring the effectiveness of implemented practices to reduce nutrient loading into Lake St. Croix.

St. Croix Watershed Research Station – Science Museum of Minnesota

With direction from the Basin Team, staff members of the St. Croix Watershed Research Station of the Science Museum of Minnesota are working on two projects that will further inform the Basin Team's efforts in nutrient control: a Soil and Water Assessment Tool (SWAT) model evaluating basin-wide land cover scenarios and a "State of the Basin" report summarizing assessment of recent water quality data from Lake St. Croix.

Wisconsin Farmer-Led Councils

Farmer-Led Council program was developed by the University of Wisconsin Extension and Wisconsin DNR, based on a proven system developed and in use in the state of Iowa. The program was initiated:

- to improve water quality in the Red Cedar and St. Croix River basins through reduced phosphorus and sediment loading;
- to increase farmer knowledge on, and engagement with, water quality issues, including the adoption of conservation practices;
- to develop leadership around water quality among farmers in the selected sub-watersheds;
- to develop a unique collaborative model of water quality improvement through farmer engagement that can be replicated in watersheds throughout the Upper Mississippi River Basin and nationwide.

Phosphorus pollution reductions and the expansion of farm conservation activities will occur by way of an innovative, farmer-directed conservation incentives program.

There are three Farmer-Led Watershed Councils (FLWCs) in the St. Croix River basin: the Horse Creek Watershed (Polk County), the Dry Run Creek watershed (St. Croix County), and the South Kinnickinnic Watershed (Pierce County). In 2015 these watershed councils focused primarily on soil health, cover crops, and grass waterway promotion as mechanisms to reduce phosphorus runoff. All three groups met several times to plan outreach and education activities, and to create an incentives offering to

other watershed farmers. Edge-of-field monitoring continues in all three watersheds. Specific activities included the following:

Soil Health: In March 2015 the Horse Creek Watershed sponsored a well-attended seminar on soil health and cover crops. In the spring, the group offered incentive payments to farmers for both standard soil sampling and Haney soil health test samples. The council hosted a field day in mid-summer to help farmers understand their soil test results and learn more about soil health.

Cover Crops: The farmer-led groups in Pierce and Polk counties installed on-farm cover crop and no-till test plots to help local farmers understand best practices and compare in-field tillage vs. no-till, and cover crops vs. no cover crops. These plots are planned to stay in the ground for at least 5 years for longer-term results. Both groups hosted multiple field days throughout the growing season to introduce area farmers to the on-farm experiments.

Grassed Waterways: In St. Croix and Pierce counties the groups offered grassed waterway installation cost-sharing as part of their conservation incentives programs. Several thousand feet of grassed waterways were installed using cost-share funds.

Mary Piontek –"Misty Morning" To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Natural Resource Conservation Service Projects

The Natural Resource Conservation Service (NRCS) provides funding and technical support to landowners and local conservation departments.

In Minnesota, 707 practices and in Wisconsin 1192 practices were installed in 2015 across the St. Croix Basin. The list of practices and map of project locations is included in Table 3 and Figures 4 and 5.

Table 3 . NRCS Practices and numbers for Minnesota and Wisconsin

NRCS Practice	MN	WI	NRCS Practice	MN	WI
Access Control	1	1	Pumping Plant	2	1
Brush Management	4	7	Residue & Tillage Management, No-Till	43	55
Conservation Cover	16	4	Residue & Tillage Management, Reduced-Till	-	54
Conservation Crop Rotation	248	529	Restoration and Management of Rare and Declining Habitats	7	3
Cover Crop	18	80	Roof Runoff Structure	2	2
Critical Area Planting	13	8	Roof & Covers	-	1
Diversion	4	-	Seasonal High Tunnel System for Crops	3	5
Early Successional Habitat Development/Management	10	-	Spoil Spreading	-	5
Fence	18	13	Sprinkler System	-	1
Field Border	1	-	Stormwater Runoff Control	5	1
Forage and Biomass Planting	8	3	Stream Crossing	-	1
Forage Harvest Management	20	2	Subsurface Drain	4	-
Forest Management Plan – Written	7	2	Tree/Shrub Establishment	13	8
Forest Stand Improvement	7	10	Tree/Shrub Pruning	-	5
Grade Stabilization Structure	1	-	Tree/Shrub Site Preparation	1	1
Grassed Waterway	1	15	Underground Outlet	12	2
Grazing Management Plan – Written	1	-	Upland Wildlife Habitat Management	64	39
Heavy Use Area Protection	2	7	Waste Facility Closure	2	3
Hedgerow Planting	3	-	Water and Sediment Control Basin	6	6
Integrated Pest Management (IPM)	1	50	Waste Storage	-	1
Lined Waterway or Outlet	5	1	Waste Transfer	-	1
Livestock Pipeline	13	9	Water Well	1	-
Mulching	10	9	Watering Facility	15	3
Nutrient Management	-	187	Well Decommissioning	1	1
Obstruction Removal	4	2	Wetland Restoration	-	1
Prescribed Burning	9	1	Wetland Wildlife Habitat Management	7	6
Prescribed Grazing	88	47	Windbreak/Shelterbelt Establishment	6	-

Figure 4. Minnesota NRCS St. Croix River Basin Applied Practices FY 2015

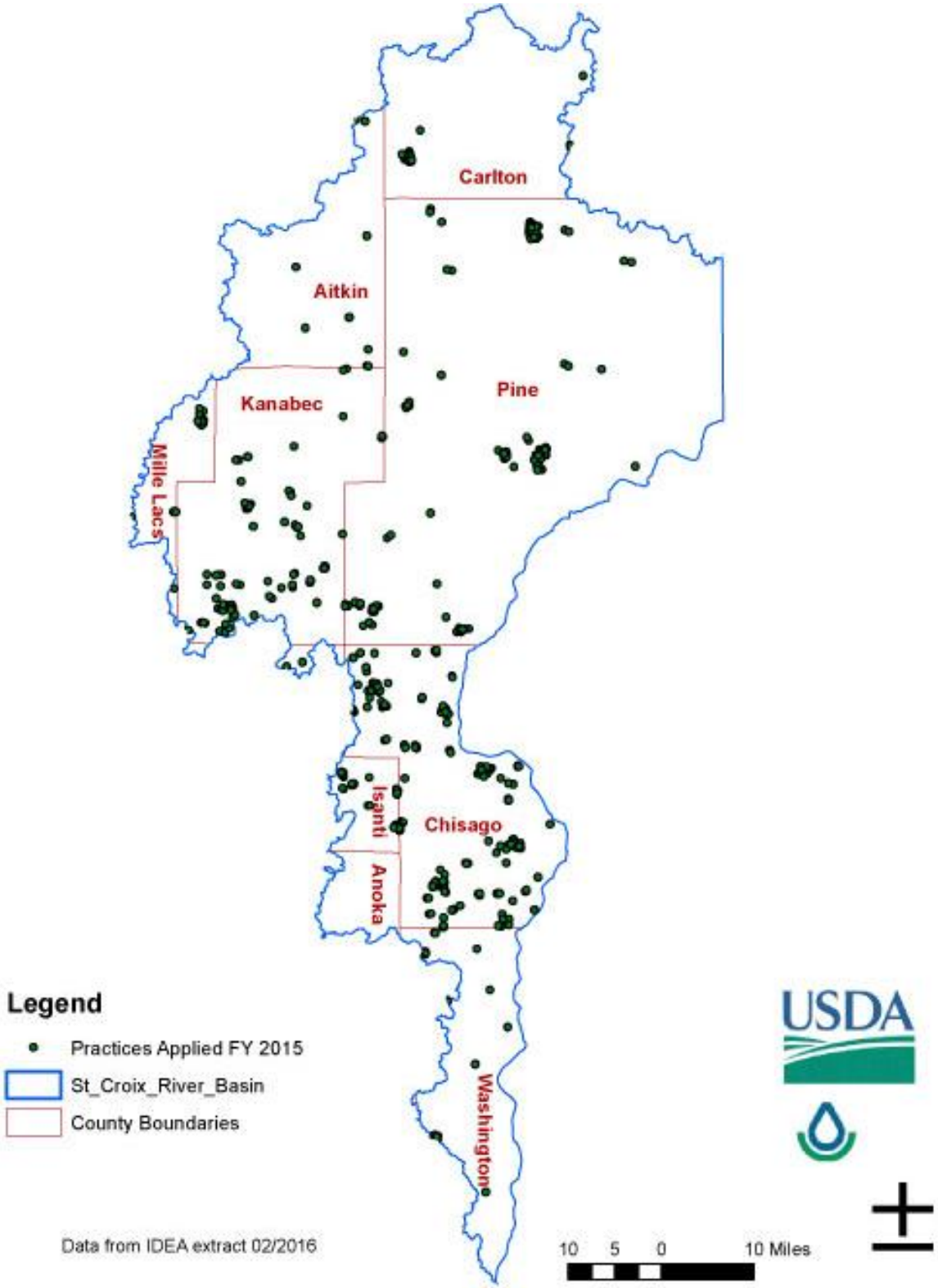
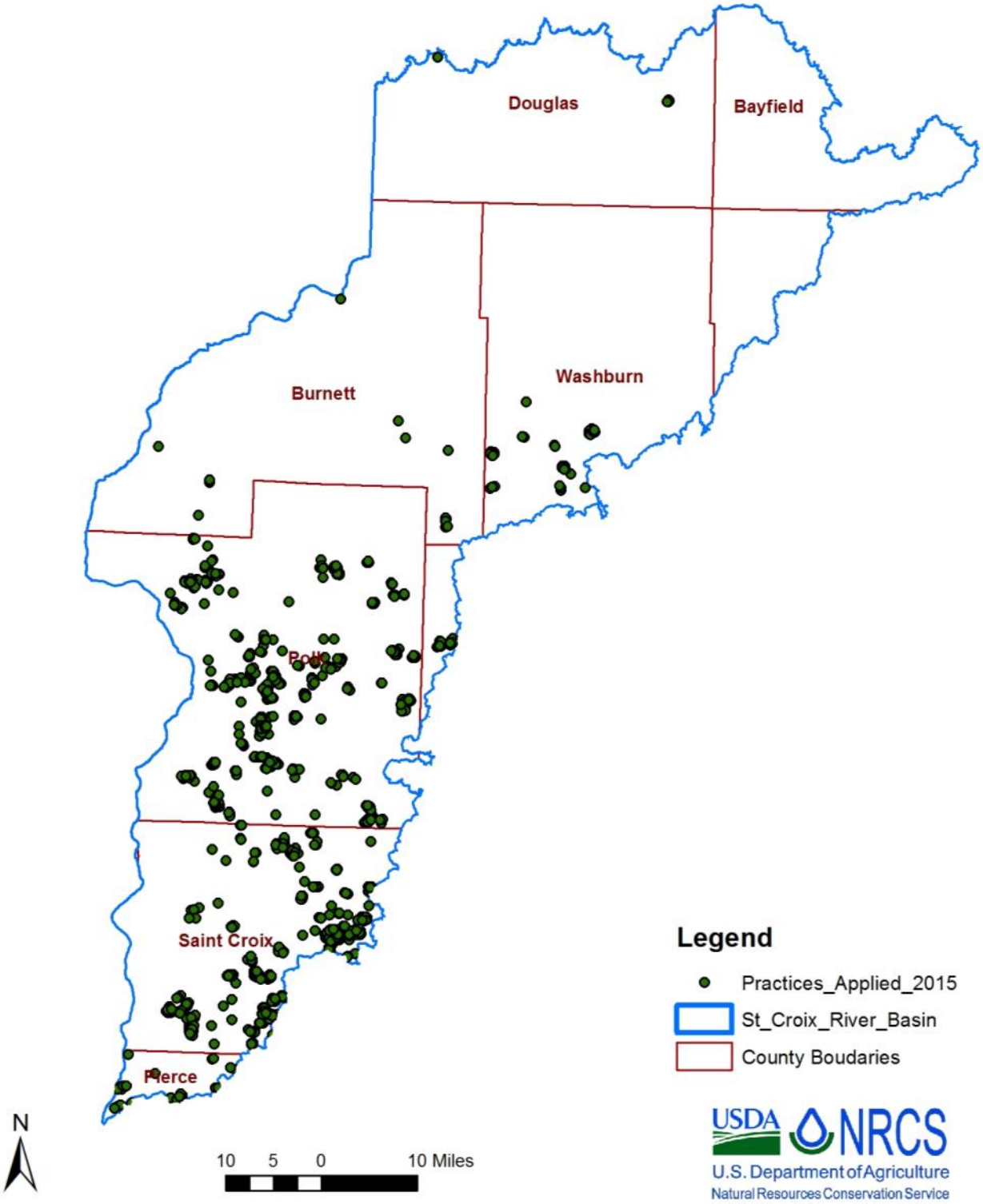


Figure 5. Wisconsin NRCS St. Croix River Basin Applied Practices FY 2015



Minnesota Board of Water and Soil Resources and Local Watershed Organizations

History

The Minnesota Board of Water and Soil Resources (BWSR) was created in 1987, when the Legislature combined the Soil and Water Conservation Board with two other organizations with local government and natural resource ties: the Water Resources Board (established in 1955) and the Southern Minnesota Rivers Basin Council (established in 1971).

Therese Scheller – "Feeling a bit peckish" To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Mission / Overview

The Minnesota Board of Water and Soil Resources (BWSR) consists of 20 members, including local government representatives that deliver BWSR programs, state agencies, and citizens. The board sets a policy agenda designed to enhance service delivery though the use of local government. Board members, including the board chair, are appointed by the governor to four-year terms.

> *The board is the state's administrative agency for 90 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers.*
>
> *The BWSR mission is to improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners.*

Core functions include implementing the state's soil and water conservation policy, comprehensive local water management, and the Wetland Conservation Act as it relates to the 41.7 million acres of private land in Minnesota.

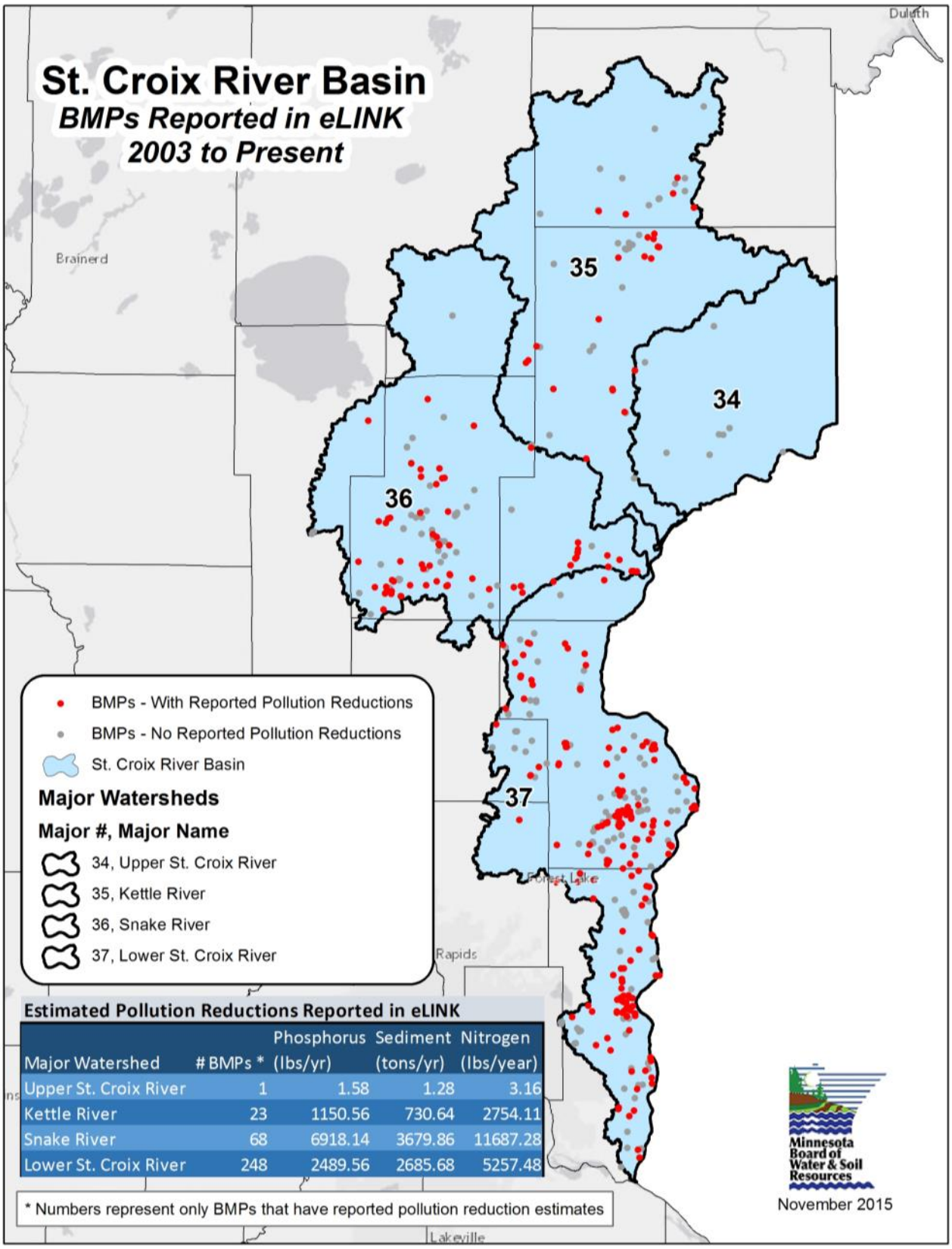
BWSR tracks the conservation accomplishments (described below) of the many organizations under its umbrella.

eLINK (Web-based Conservation Tracking System Development)

Dating back as early as 1986, the Board of Water & Soil Resources (BWSR) has required reports from local units of government that indicate progress made in protecting the state's resources. Throughout the years, the method to complete this reporting has changed, first from paper reports (1986-1996), to floppy disk submission (1997-2002) and finally to the online eLINK database (2003-2012).

In 2012, BWSR started development of a new web-based system to track statewide conservation to replace dated technology and address increased demands. With eLINK, BWSR, local government partners, and stakeholders in conservation can *manage* grants; and *track* conservation projects and grants, indicators and pollution reduction benefits,

Figure 6. eLINK Tracking System



Estimated Pollution Reductions Reported in eLINK

Major Watershed	# BMPs *	Phosphorus (lbs/yr)	Sediment (tons/yr)	Nitrogen (lbs/year)
Upper St. Croix River	1	1.58	1.28	3.16
Kettle River	23	1150.56	730.64	2754.11
Snake River	68	6918.14	3679.86	11687.28
Lower St. Croix River	248	2489.56	2685.68	5257.48

* Numbers represent only BMPs that have reported pollution reduction estimates

cumulative grant funding over a period of years; and *map* locations of projects on a statewide, or on a county, watershed, or individual-project basis.

Minnesota BWSR St. Croix River Pollutant Reduction reporting 2003 to Present

Figure 6 entitled "Minnesota St. Croix River Pollutant Reduction Reporting 2003 to Present" depicts the locations of BMP's reported to BWSR (through eLINK) as being installed from 2003 to November 2015 for Minnesota's Major Watersheds draining to the St. Croix River. The reported estimated pollutant reductions, by major watershed, for Phosphorus, Sediment and Nitrogen, due to the installation of those BMP's are identified in the figure's table.

The BMP projects identified in this table, as reported in eLINK, are from projects that received funding in the form of grants administrated primarily by BWSR. Reporting via eLINK is required via the grant agreement that each grant recipient must enter into to receive funds.

There are also other BMP Projects that have been installed in Minnesota within the St. Croix River Basin by local cities, counties, SWCD's, watershed districts and watershed management organizations that were installed without BWSR administrated grant funds that are not included in the attached figure.

The map in Figure 6 shows the locations of St. Croix Basin phosphorus reduction activities tracked in eLINK, and quantified in the embedded table.

For further information, "BWSR Snapshots" contains articles on some of the different grant projects that have been done with Clean Water Funds (CWF) and other funding. Several of the stories are on St. Croix Basin projects. The website can be reached from the BWSR homepage under BWSR media center or this link: http://www.bwsr.state.mn.us/news/webnews/

Also each project that is funded by a CWF grant has a Clean Water Story that summarizes the project and pollutant removals. Right now only stories up through 2013 are posted; here is the link to these stories: http://www.bwsr.state.mn.us/cleanwaterfund/stories/

County Land Conservation Departments

Activities reported by participating counties in both states are summarized in Section 5 of this report, titled "Nonpoint Source Projects by County."

The Nature Conservancy (TNC)

TNC's focus in the St. Croix is on protection – and mostly in the headwaters. While it is somewhat difficult to show how protection work *reduces* P loading in the Basin, we can demonstrate how it *prevents future conversion* of low phosphorus export land cover types such as forests, to high P export land cover types, such as agriculture. This is the primary objective of our strategic plan in the St. Croix basin – how do we prevent future impairments/loadings? How do we keep our healthy watersheds from converting and crossing an impairment threshold?

To do this, we are working with partners on land protection. For the 'nuts and bolts' of our work, we've assisted in the following projects:

Crystal Spring Scientific and Natural Area – 85 acres protected, completed in 2015. Washington County

Snake River-Sikora –12 acres protected, completed in 2015. Kanabec County

For both of these projects, TNC provided financial assistance. Both properties are held by the MN DNR.

St. Croix River Association (SCRA)

2015 Top Accomplishments:

Pollution reduction: St. Croix River Association leveraged resources to implement eight best management practices to reduce phosphorus pollution by over 237 lbs and sediment by more than 270 tons. Practices include shoreline restoration, infiltration basins, native vegetation plantings, and gully stabilization throughout the Minnesota side of the watershed using Clean Water Fund grants. The SCRA also acquired an additional $300,000 in Clean Water Act 319 funding to continue additional pollution reduction activities through 2018.

Protection: SCRA was awarded a $50k Bush Foundation grant to "Keep the Woods in the Northwoods," a program designed to work with woodland owners to protect critical forests for water quality. SCRA also worked to develop a Pipeline Safety Task Force to identify oil pipeline risks in the St. Croix headwaters area and hosted a Pipeline Safety public forum with a panel of experts. More than 140 citizens were in attendance.

Collaboration & Information Sharing: SCRA partnered with the St. Croix Basin Team to host the 2015 St. Croix Summit: "Changing Climate, Changing Times", with over 150 people in attendance. An additional 500 people were reached through water quality workshops, forums, and outreach activities.

Point Sources

In a New Light artist Jordan, 17 - "Badger"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

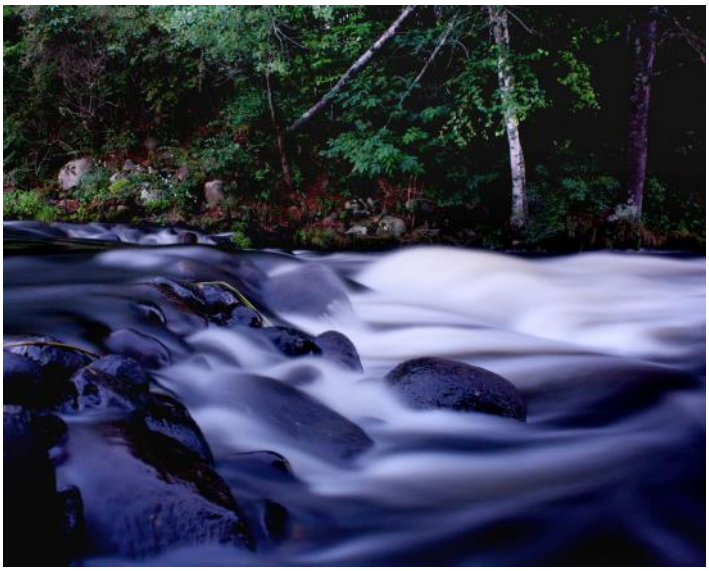
Wastewater Treatment Plants

Required reduction of 17.92 metric tons/yr phosphorus from baseline to meet the TMDL

In the St. Croix TMDL, larger wastewater treatment facilities were assigned specific waste load allocations (WLAs), while facilities with low flows or low concentrations of phosphorus were given individual allocations as well as grouped together in an aggregate WLA. Wastewater treatment facilities in both states have made significant progress in improving the effectiveness of their facilities and removing phosphorus from their discharges.

Wisconsin – There are currently twelve municipal and industrial facilities with individual WLAs and twelve included in the aggregate WLA. Statewide WPDES (Wisconsin Pollutant Discharge Elimination System) permits now include water quality based effluent phosphorus limits that are based on the phosphorus stream standard for each specific receiving water. In the St. Croix Basin, facilities are required to meet a water quality based limit (WQBEL) or the technology based limit (TBL) (depending on which is more restrictive) as well as the limit based on the WLA.

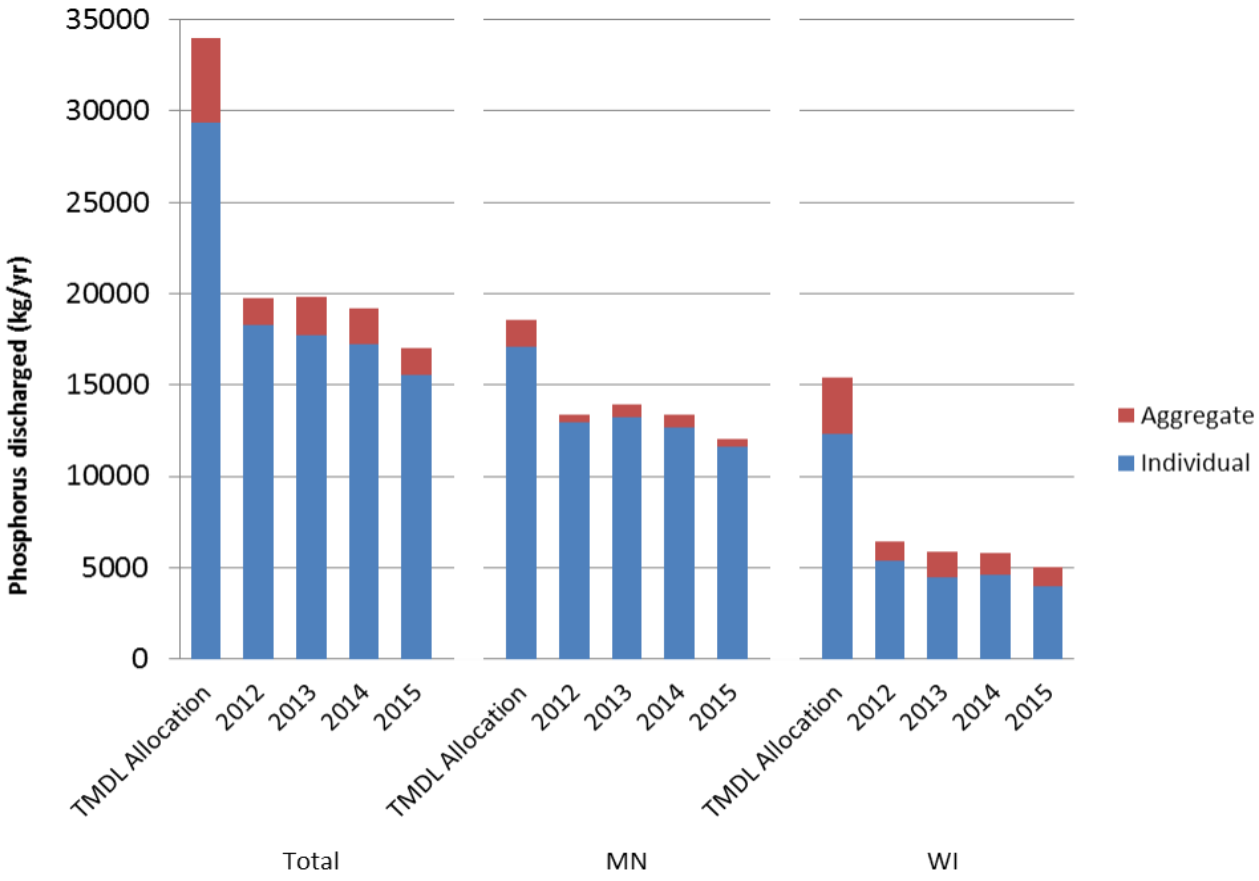
Minnesota - There are currently twenty municipal and industrial facilities with an individual WLA and seven included in the aggregate WLA in Minnesota.



In a New Light artist Derek, 17 - "Streaming Life"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

Figure 7 shows that the point source discharges from wastewater treatment facilities are consistently well below the TMDL allocation (first bar in each set) both across the basin as a whole (first set of bars) and in each individual state (second and third set).

Figure 7. Waste Load Allocations & Wastewater Treatment Phosphorus Discharge Levels



Municipal Separate Storm Sewer Systems (MS4s)

Required reduction of 4.055 metric tons/yr phosphorus from baseline to meet the TMDL
The requirement for regulated MS4 communities to meet the WLAs in the TMDL is enforced through the NPDES permitting process. There are 3 MS4s listed in the TMDL report for Wisconsin and 21 for Minnesota. Because there aren't standardized reporting mechanisms between states and facilities, reductions are not being quantified in the 2015 report; more detail will be sought for 2016.

Construction and Industrial Runoff

Required reduction of 0.076 metric ton/yr phosphorus from baseline to meet the TMDL
Construction and Industrial stormwater activities are considered in compliance with provisions of the TMDL if they obtain a Construction and/or Industrial General Permit under the NPDES program and properly select, install and maintain all BMPs required

under the permit. Since compliance is based on BMP implementation, it is not possible to quantify reductions achieved, but instead regulatory agencies must rely on permit compliance to achieve the reductions listed.

Concentrated Animal Feeding Operations

No required reduction of phosphorus from baseline to meet the TMDL.
As of December 2015, there were 10 permitted concentrated animal feeding operations (CAFOs) in the St. Croix Basin. The number of CAFOs will fluctuate as farms expand, change operation, or stop production.

Since there is no phosphorus allocation allowed for the production areas at CAFOs, and the permits require that the cropland be operated under a Nutrient Management Plan, it is not possible to quantify reductions for this sector. However, there is potential for soil conservation measures and non-point phosphorus reduction through proper manure handling, improved cropping practices (such as improved soil health, year-round cover crops, no-till planting, etc.) on the large farms as well as on the smaller ones that don't require CAFO permits.

Sarah Lilja – "Taylor's Falls Princess" To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Nonpoint Source Projects by County

Cody Christenson – "Nashville Warbler" (St. Croix River Association 2014 photo contest First Place: Wildlife – Youth division) To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Where available, summaries from County Land and Water Conservation Departments with land area in the basin are shown below. We recognize that there are more partner organizations in both states doing phosphorus reduction efforts, along with Watershed Districts and water planning agencies. We have included county data as reported in a general survey on staffing, funding, BMPS and other activities completed in 2015.

Aitkin (MN)

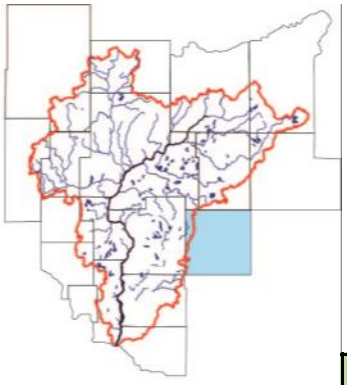
TMDL WLA – 15,300 lbs/yr
Needed reduction – 3,700 lbs/yr
20% by 2020 – 2,700 lb/yr
Annual reduction - 100 lbs/yr for 30 yrs or 270 lbs/yr for 10 yrs
Land area in the basin - 200,665 acres

Aitkin did not have any projects installed in the St. Croix Watershed in 2015. They are preparing for shoreland buffer and rain garden projects that will be installed in 2016 on Big Pine Lake.

Anoka (MN)

TMDL WLA – 3,300 lbs/yr
Needed reduction – 1,600 lbs/yr
20% by 2020 – 1,200 lb/yr
Annual reduction - 40 lbs/yr for 30 yrs or 120 lbs/yr for 10 yrs
Land area in the basin - 36,912 acres

Unknown - No information submitted



Barron (WI)

TMDL WLA – 5,300 lbs/yr
Needed reduction – 2,400 lbs/yr
20% by 2020 – 1,800 lb/yr
Annual reduction - 60 lbs/yr for 30 yrs or 180 lbs/yr for 10 yrs
Land area in the basin - 35,545 acres

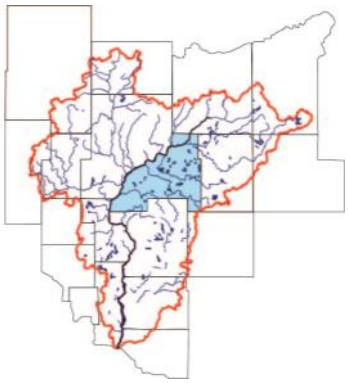
Agriculture

Practice	HUC 12	Est. P reduction/ project	Total
Nutrient Management	Upper Apple		662 Acres

Bayfield (WI)

TMDL WLA – 15,300 lbs/yr
Needed reduction – 1,600 lbs/yr
20% by 2020 – 1,200 lb/yr
Annual reduction - 40 lbs/yr for 30 years or 120 lbs/yr for 10 years
Land area in the basin - 185,089 acres

Unknown - No information submitted



Burnett (WI)

TMDL WLA – 67,000 lbs/yr
Needed reduction – 21,000 lbs/yr
20% by 2020 – 16,000 lb/yr
Annual reduction - 500 lbs/yr for 30 yrs or 1,600 lbs/yr for 10 years
Land area in the basin - 562,172 acres

Shoreline/ Riparian

Practice	HUC 12	Estimated P reduction/project	Total	Units (acres, feet etc.)
Increase infiltration (i.e. remove impervious surfaces)		1 rock trench 0.17 lbs/year	.017 lbs/year	#1
Other: Fishsticks (fish habitat structures)		NA – habitat		5 tree drops
13 protected buffers		?		1300 ft

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs		5 Lake Associations – water quality	150
		2 Lake Associations – fishsticks & buffers	100
		3 Lake Associations – AIS plans & surveys	60
Civic Engagement		5 town boards – Farmland Preservation Program/Ag	50

Agriculture

Practice	HUC 12	Estimated P reduction/ project	Total	Units (acres, feet etc.)
Cover Crops		150#	450#	600 acres
Nutrient Management		114#	456#	600 acres
Other: Roofed animal housing		18.3#	18.3#	20,000 sq. ft
Pasture management		39#	39#	65 acres

Investments

	Shoreline	Agriculture	Other
Funding sources for BMPs and projects	- DATCP - DNR - Private	- DATCP - NRCS - County	- DATCP - DNR - County
Funding sources for staff	- DATCP - DNR - County	- DATCP - County	- DATCP - DNR - County
Full time staff hours	0.25 FTE		0.75 FTE

Carlton (MN)

TMDL WLA – 23,000 lbs/yr
Needed reduction – 4,000 lbs/yr
20% by 2020 – 3,100 lb/yr
Annual reduction – 100 lbs/yr for 30 yrs or 310 lbs/yr for 10 yrs
Land area in the basin - 229,671 acres

Practices (Said information is in eLINK)

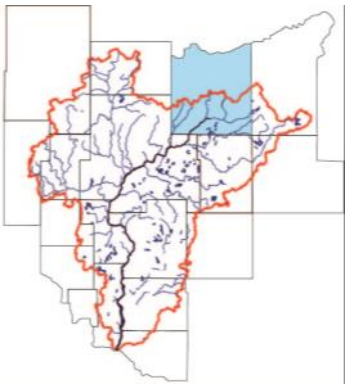
Investments

	Total
Funding sources for BMPs and projects	State Cost Share and Cisco Lakes II Grant
Funding sources for staff	SWCD General Fund and Cisco Lakes II
Full time staff hours*	.6 FTE

Chisago (MN)

TMDL WLA – 46,400 lbs/yr
Needed reduction – 21,800 lbs/yr
20% by 2020 – 16,200 lb/yr
Annual reduction - 500 lbs/yr for 30 yrs or 1,600 lbs/yr for 10 yrs
Land area in the basin - 279,247 acres

Practice (Information is included in eLink)



Douglas (WI)

TMDL WLA – 32,000 lbs/yr
Needed reduction – 1,900 lbs/yr
20% by 2020 – 1,400 lb/yr
Annual reduction - 50 lbs/yr for 30 yrs or 140 lbs/yr for 10 yrs
Land area in the basin - 365,876 acres

Unknown - No information submitted

Isanti (MN)

TMDL WLA – 8,400 lbs/yr
Needed reduction – 3,700 lbs/yr
20% by 2020 – 2,800 lb/yr
Annual reduction - 90 lbs/yr for 30 yrs or 280 lbs/yr for 10 yrs
Land area in the basin - 51,492 acres

Unknown - No information submitted

Kanabec (MN)

TMDL WLA – 39,500 lbs/yr
Needed reduction – 10,800 lbs/yr
20% by 2020 – 8,000 lb/yr
Annual reduction - 270 lbs/yr for 30 yrs or 800 lbs/yr for 10 yrs
Land area in the basin - 329,189 acres

Shoreline/ Riparian

Program	HUC 12	Program Name/ Topic	Audience #s
Civic Engagement	07300040302	Information Gathering 4/11/15	20

Urban/Rural residential

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs		Water Fair for 5th Graders	60

Investments

	Shoreline Project
Funding sources for BMPs and projects	Clean Water Fund
Funding sources for staff	Clean Water Fund
Full time staff hours*	72

Shoreland gully erosion control project on Fish Lake

Mille Lacs (MN)

TMDL WLA – 4,700 lbs/yr
Needed reduction – 1,300 lbs/yr
20% by 2020 – 1,000 lb/yr
Annual reduction - 30 lbs/yr for 30 yrs or 100 lbs/yr for 10 yrs
Land area in the basin - 64,781 acres

No projects identified for 2015; a potential project is planned for 2016.

Pierce (WI)

TMDL WLA – 9,100 lbs/yr
Needed reduction – 5,500 lbs/yr
20% by 2020 – 4,100 lb/yr
Annual reduction - 140 lbs/yr for 30 yrs or 410 lbs/yr for 10 yrs
Land area in the basin - 38,448 acres

Agriculture

Practice	HUC 12	Estimated P reduction/ project	Total	Units (acres, feet etc.)
Waterways	070300051105			12.0 acres
Manure storage closures and manure storage construction	070300051105			1 manure closure

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs	070300051105 &	Farmer-Led Watershed Meetings	4 meetings

Investments

	Agriculture
Funding sources for BMPs and projects	DATCP, County & McKnight Foundation
Funding sources for staff	DATCP, County, DNR
Full time staff hours*	.30

Pine (MN)

TMDL WLA – 96,400 lbs/yr
Needed reduction – 20,900 lbs/yr
20% by 2020 – 16,200 lb/yr
Annual reduction - 500 lbs/yr for 30 yrs or 1,550 lbs/yr for 10 yrs
Land area in the basin - 884,545 acres

Summary of Phosphorus reduction activities in Pine County last year includes:

- Purchase and rental of a no-till drill – used extensively through the year
- Completion of two shoreline restorations
- One erosion and runoff management plan on a farm
- Numerous workshops for management of manure and no till drilling in partnership with NRCS and U of M Extension
- One Minnesota Ag Water Quality Farm certified (for further information see: http://www.mda.state.mn.us/awqcp)
- Completed 5 forest stewardship plans with best management practices included

Madi Anderson – "A Tunnel of Golden Leaves" To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/

Polk (WI)

TMDL WLA – 108,000 lbs/yr
Needed reduction – 53,000 lbs/yr
20% by 2020 – 39,000 lb/yr
Annual reduction – 1,300 lbs/yr for 30 yrs or 3,900 lbs/yr for 10 yrs
Land area in the basin - 605,513 acres

Shoreline/ Riparian

Practice	HUC 12	Estimated P reduction/ project	Total
Erosion control – Shore-line Plan review	Upper Apple Horse Creek		Pipe and Bone Lakes Big Lake
Buffer plantings – Shore-	Trade River		Coon Lake
Lake Management Plans – Data collection	Balsam Branch Upper Apple Horse Creek		Loveless Lake Big Blake Lake Lotus Lake
Lake Management Plans –	Balsam Branch		Long Lake and Wapogasset

Agriculture

Practice	HUC 12	Estimated P reduction/ project	Total
Cover Crops			
Nutrient Management	Upper Apple North Fork Clam Horse Creek Squaw L/Horse Creek Balsam Branch Lower Apple		709 acres 1,244 acres 739 acres 278 acres 157 acres 500 acres
Streambank Stabilization	Balsam Branch		1 gully
Clean water diversions	Balaam Branch Balsam Branch Upper Apple		1 WASCOB* 1 survey for water control structure 1 WASCOB
Manure storage closures and manure storage con-struction	Beaver Brook Clam River Apple/Willow River Balsam Branch Lower Apple Lower Apple		1 closure 3 closures 1 closure 1 plan & review 1 plan & review 1 barnyard survey and plan
Other: Conservation Plans	Upper Apple Horse Creek Squaw Lake		790 acres 923 acres 219 acres

*WASCOB - Water and Sediment Control Basins

Polk (WI) cont.

Urban/Rural residential

Practice	HUC 12	Estimated P reduction/ project	Total
Stormwater pollution prevention planning and implementation (non-MS4)	Trout Brook Squaw Lake Osceola Creek Beaver Brook Horse Creek North Fork Clam		1 SWEC* permit 1 SWEC permit 1 SWEC permit 1 SWEC permit 1 SWEC permit 1 SWEC permit
Other: Nonmetallic mine compliance review	County wide		64 inspections

* SWEC - Storm Water Erosion Control

Investments

	Shoreline
Funding sources for BMPs and projects	Healthy Lakes grant
Funding sources for staff	
Full time staff hours*	

Ramsey (MN)

TMDL WLA – 150 lbs/yr
Needed reduction – 60 lbs/yr
20% by 2020 – 45 lb/yr
Annual reduction – 1.5 lbs/yr for 30 yrs or 4.5 lbs/yr for 10 yrs
Land area in the basin – 636 acres

Unknown - No information submitted

St. Croix (WI)

TMDL WLA – 84,000 lbs/yr
Needed reduction – 49,000 lbs/yr
20% by 2020 – 36,000 lb/yr
Annual reduction – 1,200 lbs/yr for 30 yrs or 3,600 lbs/yr for 10 yrs
Land area in the basin - 335,485 acres

Shoreline/ Riparian

Practice	HUC 12	Estimated P reduction/project	Total
Repaired septic systems	70500051002	2	2 lbs.
	70300051101	2	4 lbs.
	70500070504	2	6 lbs.
	70300051008	2	10 lbs.
	70300051007	2	2 lbs.

Program	HUC 12	Program Name/ Topic	Audience #s
Civic Engagement	070300051008	Bass Lake-Lake Management Plan	20

Agriculture

Practice	HUC 12	Estimated P reduction/project	Total
Cover Crops	070300051004	161	161 lbs
	070300051004	28	28 lbs
	070300051004	40.8	40.8 lbs
Nutrient Management	070300051004	110.7	110.7 lbs
	070300051007	17.1	17.1 lbs
Waterways	070300051007	493	493 lbs
Streambank Stabilization	070300051008	19.6	19.6 lbs
Manure storage closures and manure storage construction	070300051004	100lbs/4 closures	4 closures

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs	070300051004	Farmer Led I&E/ Soil Health	125
Civic Engagement	070300051004	Civic Governance/Interstate agency	128
Other: New Richmond Middle School	070300051007	Environmental career fair	64

St. Croix (WI) cont.

Urban/Rural Residential

Practice	HUC 12	Estimated P reduction/project	Total
Stormwater pollution prevention planning and implementation (non-MS4)	070300050908	46	46 lbs.
Installation of rain gardens/wetlands/ retention basins	070300051007	3	12 lbs.

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs		Youth education programs	5746
Civic Engagement	070300050905	Scenic Riverway Zoning Compliance	12
Other: Sanitary system required maintenance & reporting	County-wide	St. Croix County Private Onsite Wastewater Treatment (POWTS) 3-year pumping program to monitor maintenance	5,000 POWTS property owners of 15,000 total POWTS systems

Investments

	Shoreline	Agriculture	Urban
Funding sources for BMPs and projects	Private	DATCP cost share / McKnight Foundation	Private
Funding sources for staff	DATCP/County	DATCP / NFWF	DATCP/ County
Full time staff hours*		1056 hours	

Highlights

Margaret Orf Family Land Acquisition

In 2015, the St. Croix Community Development Department purchased 14 acres, with approximately 1,400 feet of shoreline on the Northwest side of Bass Lake. Although undeveloped, the site was used for livestock grazing which was a direct source of phosphorus pollution to the lake. With just over 400 acres of open water, Bass Lake is one of the only lakes left in this part of the State with outstanding water quality. This property will be restored to native oak savannah and be open to the public for low-impact recreation use.

This project utilized St. Croix River Crossing Bluffline Mitigation funds from the MN-DOT provided to St. Croix County for acquisition or easements that protect water quality and provide outdoor recreation along the St. Croix River or on waterbodies in close proximity.

St. Croix (WI) cont.

14 acres purchased from the Margaret Orf Family; view of Bass Lake (Fall 2015)

C.A. and Jeanette Richards Acquisition

In 2015, the St. Croix Community Development Department purchased 53.29 acres on the St. Croix River, containing 1,300 feet of river frontage and 2,000 feet of scenic bluffline, undeveloped and undisturbed woodland. The property contains areas with steep slopes, eroding gullies and limited vegetation. The acquisition of this property will allow the county to install soil conservation practices and restore/enhance native habitat with the ultimate goal to reduce erosion and sedimentation and help improve the water quality of the St. Croix River.

This project also utilized St. Croix River Crossing Bluffline Mitigation funds from the MN-DOT provided to St. Croix County for acquisition or easements that protect water quality and provide outdoor recreation along the St. Croix River or on waterbodies in close proximity.

St. Croix River Shoreline-looking north

Upland habitat

Sawyer (WI)

TMDL WLA – 10,300 lbs/yr
Needed reduction – 1,500 lbs/yr
20% by 2020 – 1,100 lb/yr
Annual reduction - 40 lbs/yr for 30 yrs or 110 lbs/yr for 10 yrs
Land area in the basin – 96,119 acres

No projects identified for 2015.

Washburn (WI)

TMDL WLA – 51,300 lbs/yr
Needed reduction – 10,700 lbs/yr
20% by 2020 – 7,900 lb/yr
Annual reduction - 260 lbs/yr for 30 yrs or 790 lbs/yr for 10 yrs
Land area in the basin - 434,610 acres

Shoreline/ Riparian

Practice	HUC 12	Estimated P reduction/ project	Total
Erosion control Shoreline protection	070300020311, 070300020401, 070300020406, 070300020305		507 feet
Clean water diversion	070300020203		50 FEET
Buffer plantings	070300020406,		0.5 Acres

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs	Lake Assn's, conferences, meetings News articles 2-Schools	Shoreline Restoration/Erosion Control Exhibit/Displays Importance of Water Quality/Native shorelines	100 50
Civic Engagement	Lakeshore owners	Anticipating a shoreline restoration in 2016 with help from LWCD	3
Other:	Lake Assn's Meetings News Articles Schools/Scouts	Workshops: Clean Boats Clean Water (CBCW), Citizen Lake Monitoring Network Exhibits/Displays AIS ID presentations Purple Loosestrife Control Efforts Japanese Knotweed Control Efforts Buckthorn Control Workshops Terrestrial Education Workshops CBCW Inspections Purple Loosestrife Control Efforts	400 200

Washburn (WI) cont.

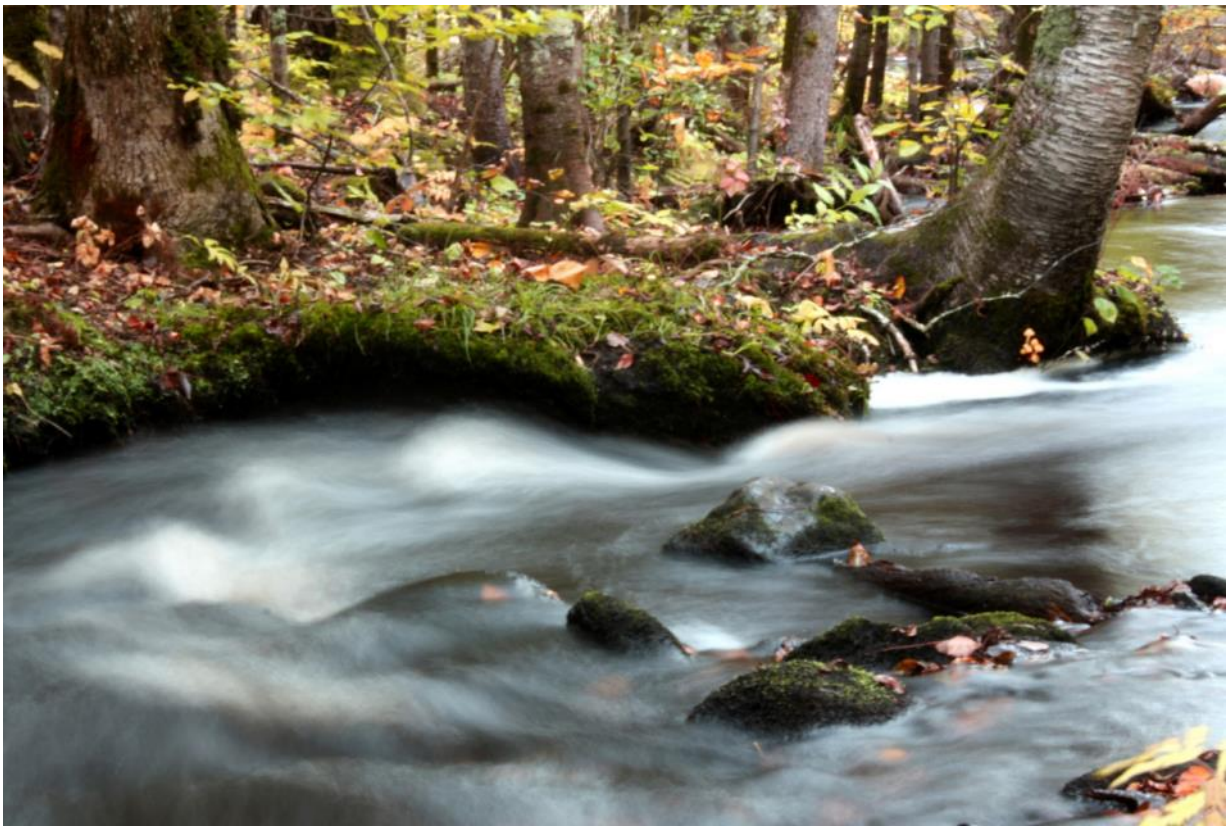
Agriculture

Practice	HUC 12	Estimated P reduction/ project	Total
Other: Watering facility, pipeline & fence for rotational grazing	070300020305		1 unit, 700 feet pipeline, 2300 feet fence
Well abandonments	070300010403 070300010801		2 wells

Investments

	Shoreline	Agriculture	Other
Funding sources for BMPs and projects	SWRM* $16441.21	SWRM $4188.4	
Funding sources for staff	SWRM $34,320	SWRM $8,800	AIS $17,000
Full time staff hours	1560	400	1470

* Soil and Water Resource Management



In a New Light artist Dakota, 15 - "Around the Bend"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

Washington (MN)

TMDL WLA – 31,300 lbs/yr
Needed reduction – 15,700 lbs/yr
20% by 2020 – 9,400 lb/yr
Annual reduction - 310 lbs/yr for 30 yrs or 940 lbs/yr for 10 yrs
Land area in the basin - 180,582 acres

Report from the Middle St. Croix Watershed Management Organization
The MSCWMO completed 22 projects for a reduction of 18 lbs. annual load reduction.

Shoreline/ Riparian

Practice	HUC 12	Estimated P reduction/ project	Total
Repaired septic systems	07030005	11 projects	Included in overall county report below

Urban/Rural residential

Practice	HUC 12	Estimated P reduction/ project	Total
Installation of rain gardens/wetlands/ retention basins	07030005	.22	1.3 Pounds/year
Containment/prevention of sediment erosion	07030005	Yes	15 Projects
Proper design and inspection/ maintenance septic systems	07030005	Yes, Washington County requires for property sales.	
BMPs for street and road construction and development	07030005	Yes	15 Projects
Other: Stormwater and ESC Ordinance	07030005	?	10 Communities

Program	HUC 12	Program Name/ Topic	Audience #s
Education Programs	07030005	Yes through East Metro Water Resources Education Program	

Investments

	Urban
Funding sources for BMPs and projects	$10,000
Funding sources for staff	$135,455
Full time staff hours*	1.0

Washington (MN) cont.

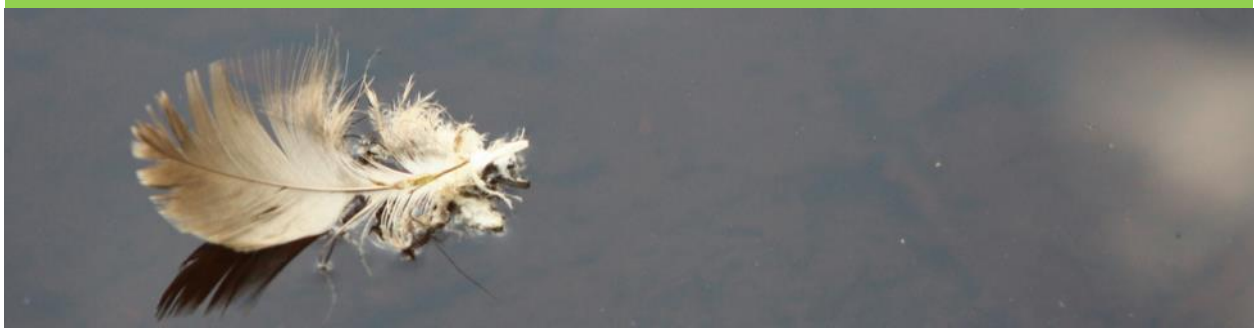
Report from Washington Conservation District

Washington Conservation District, working with local watershed organizations, completed many projects in all of the categories above. The estimated total phosphorus reduction for quantifiable projects in 2015 was 873 lbs. The table below shows the types of projects installed and the resulting phosphorus reduction.

	Rural Residential	AG BMPs	Urban BMPs	Grand Total
Bioinfiltration			3	3
Education			11	11
Filtration - Dry Vegetated Swale			2	2
Filtration - IESF			1	1
Filtration - Shoreline Buffer / Stabilization			29	29
Filtration - Wet Vegetated Swale			3	3
Grassed Waterway		96		96
Infiltration Basin			3	3
Infiltration Trench				
Invasive Species Removal			0	0
Pollution prevention - Native Landscaping			15	15
Prairie Restoration/Reconstruction		60		60
Raingarden			19	19
Septic System Replacement	582			582
Stormwater re-use and rainwater harvesting			19	19
Streambank and Shoreline Protection		14		14
Terrace		16		16
Urban BMPs			0	0
Grand Total	582	185	106	873

In a New Light artist Travis, 13 - "Deer in the river"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

Other Comments and Concerns from County Surveys



In a New Light artist Travis, 13 - "Drifting"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

Current and future concerns – From the responses we received future concerns rest mostly with securing staff and funding to implement practices in all contributing non-point sectors. Here are some specific comments from County Land Conservation Department surveys:

- In 2016 St. Croix County expects to see one of their Concentrated Animal Feeding Operation (CAFO) operations expand from 2500 animal units to 8800 animal units.
- Carlton County feels almost every year there are conservation projects implemented that affect phosphorus loads. From nutrient management, to feedlot improvements, to erosion reduction, each has phosphorus reduction ties due to the high "native" phosphorus levels in Kettle River area soils.
- Burnett County feels the lack of funding for staff is a concern.

Quantification Goals/Options in the Future – Currently there are many different types of systems that track projects:

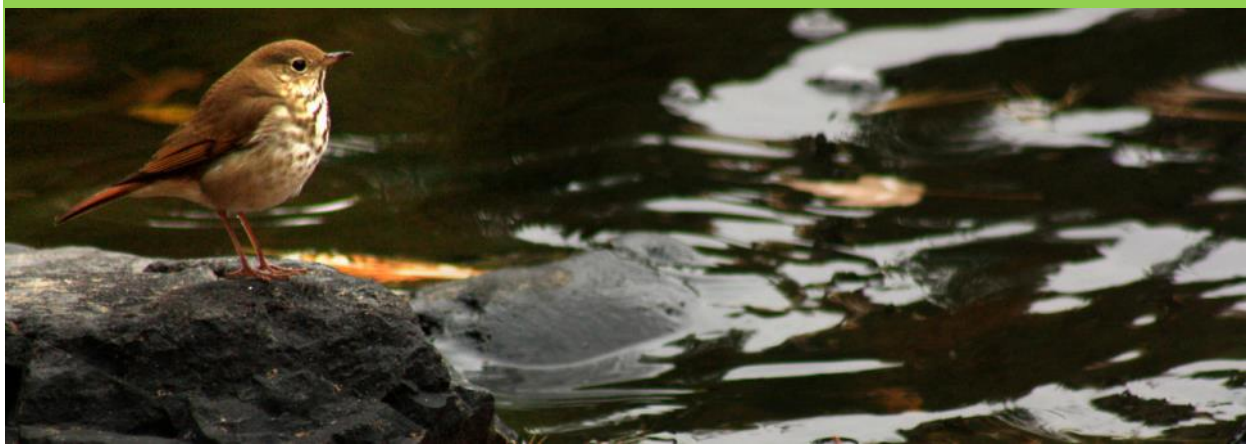
- Washburn County has been tracking Soil and Water Resource Management (SWRM) projects on Excel by landowner, landowner files and project plans. Aquatic Invasive Species (AIS) treatment areas are tracked as geographic information system (GIS) layer. In the future they will change to some extent. Inspections and projects will be put onto a GIS layer. However investigation results and projects will still be tracked on Excel by landowner with corresponding project and compliance information kept on file, both digitally and as hard copies.
- MN Counties use E-link, with no changes anticipated.
- St. Croix - Currently projects are tracked by Township, Range and section. In 2015 Spreadsheet Tool for Estimating Pollutant Loads (STEPL) was used for evaluating BMP reductions. The County plans to change in 2016 to Transcendent/GIS/STEPL.

- Carlton County observation - A unified "system" of tracking reductions would be good.
- Pierce County - Conservation Best Management Practices are tracking in a GIS based system. STEPL model will be completed for all BMP's in 2016.
- Burnett County currently uses hardcopy landowner files but will be moving to GIS database.

Tracking TMDL implementation would clearly be improved by a compatible database for project modeling and tracking in all agencies across the basin. Due to the lack of uniform tracking, many projects were done, but the phosphorus reduction accomplished hasn't been quantified.

Mike Chrun – "Thanks WPA" (Interstate Park) To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-

Appendix



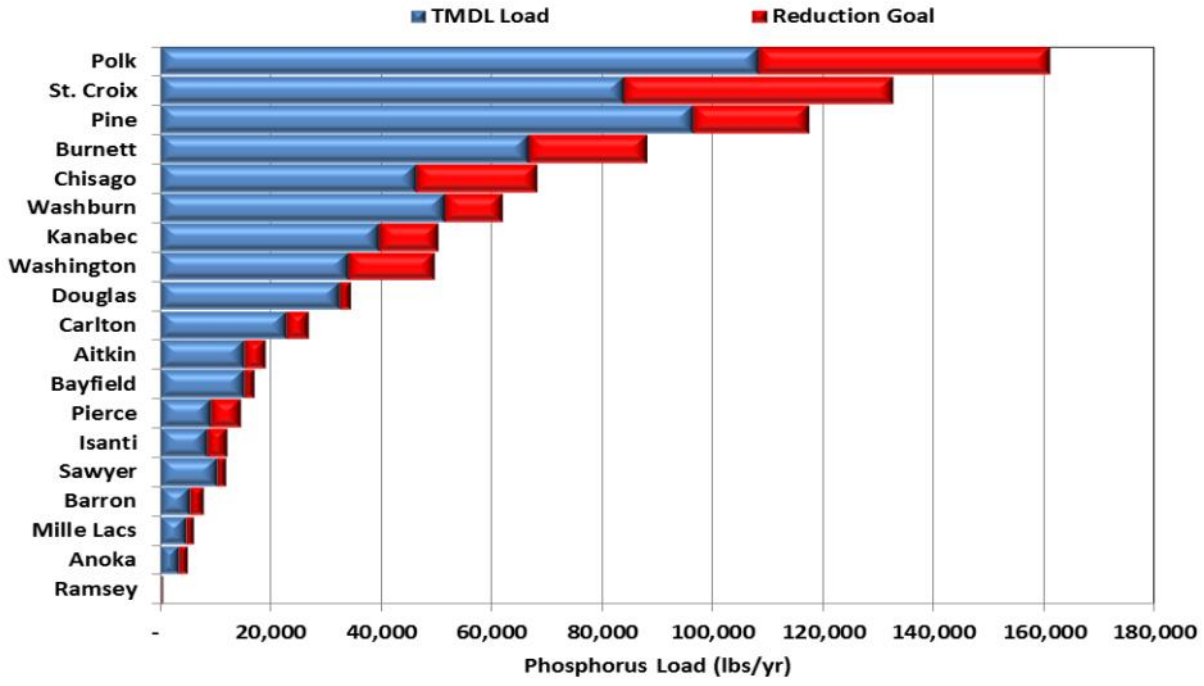
In a New Light artist Isabella, 16 - "Seeing New Things"
Visit: http://nwpltd.org/inanewlight/ for more information about this inspirational program for young people at risk.

TMDL Implementation Plan – Reductions needed by County

(Excerpted from the Lake St. Croix TMDL Implementation Plan, October 2012, pages 33 and 34).

The Lake St. Croix TMDL presents a summary of phosphorus loading and required load reductions by major sub - watershed. For purposes of implementation and management of nonpoint source reduction measures, phosphorus loadings were calculated for each of the 19 counties within the Basin.

Figure 8. County Phosphorus Loads and Reduction Goals



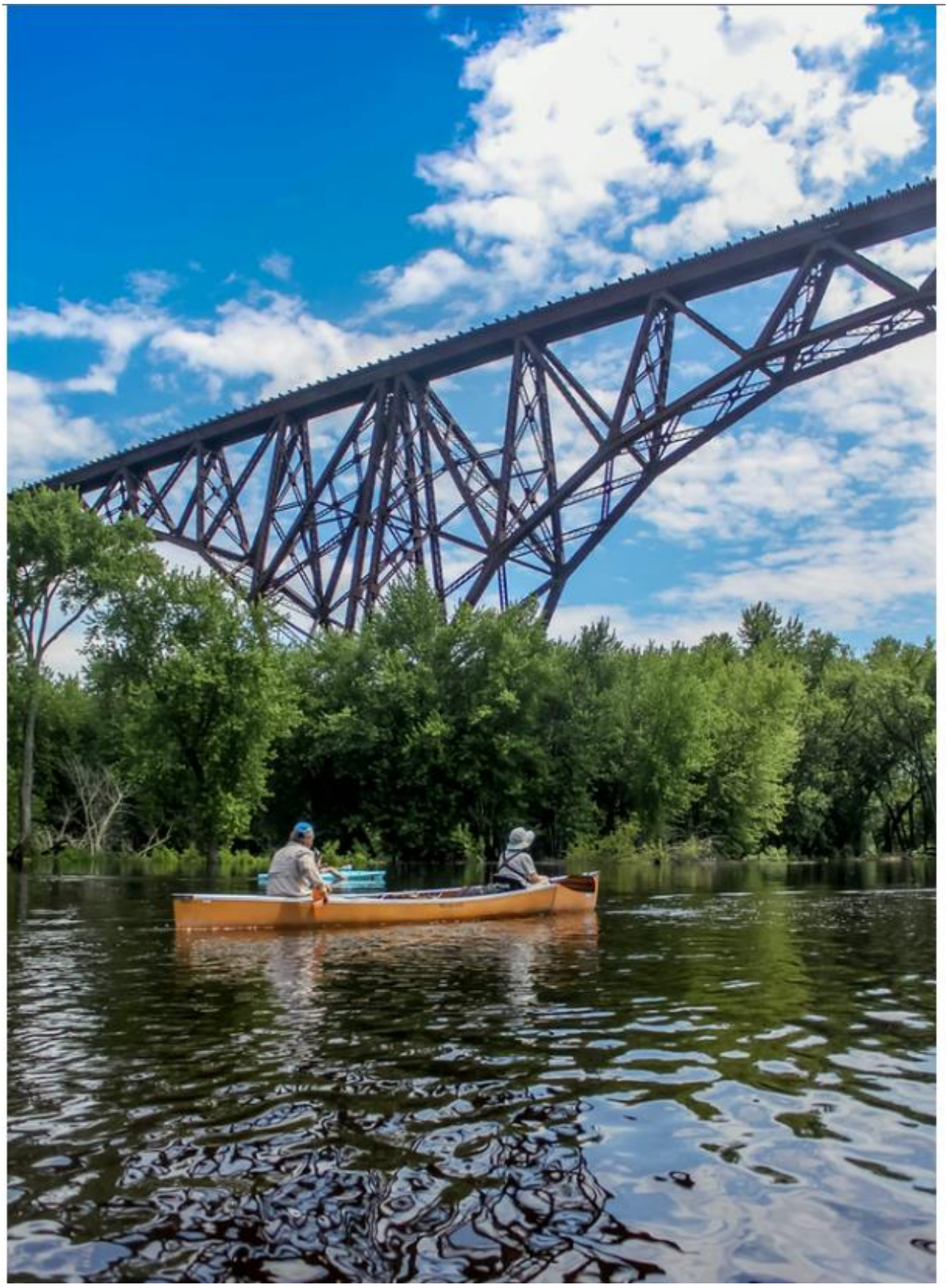
The St. Croix Basin Partners agreed in 2006 to reduce the phosphorus load to Lake St. Croix by 20% by 2020. This goal remains the basis of efforts within the basin and serves as an interim goal for attaining the required TMDL reduction of 27%. An annual goal for phosphorus reduction projects was developed to guide counties in their efforts. This goal was based on attaining the 20% by 2020 goal over a 10 to 30 year period and is presented in Table 4 and Figure 8.

While each county is assigned an allowable load and reduction goal in this Implementation Plan, there are opportunities for redistributing the allowable loads and reductions. Individual counties may identify cost-effective opportunities to go beyond these goals, or local water bodies may have water quality goals requiring greater reductions than what is required by the Lake St. Croix TMDL. Other counties may face challenges that result in meeting reduction goals being cost-prohibitive or simply not possible. Effective evaluation and targeting of reduction opportunities, tracking of implementation activities, and monitoring of improvements will be necessary to assess the need for and/or benefits of redistribution of the allowable loads.

Table 4. Reductions needed by County

County	Basin Area (acre)	State	Phosphorus Load (lbs/yr)	Phosphorus Reduction Goal (lbs/yr)	20% by 2020 Goal (lbs/ yr)	Annual Reduction Goal (lb/yr per yr)
Aitkin	200,665	MN	18,995	3,700	16,217	91 - 274
Anoka	36,912	MN	4,931	1,607	3,742	40 - 119
Barron	35,545	WI	7,738	2,447	5,927	60 - 181
Bayfield	185,089	WI	16,902	1,615	15,707	40 - 120
Burnett	562,172	WI	87,975	21,419	72,125	528 - 1,585
Carlton	229,671	MN	26,928	4,136	23,867	102 - 306
Chisago	279,247	MN	68,168	21,812	52,027	538 - 1,614
Douglas	365,876	WI	34,368	1,945	32,929	48 - 144
Isanti	51,492	MN	12,142	3,721	9,388	92 - 275
Kanabec	329,189	MN	50,293	10,763	42,328	265 - 796
Mille Lacs	64,781	MN	6,053	1,313	5,081	32 - 97
Pierce	38,448	WI	14,580	5,479	10,526	135 - 405
Pine	884,545	MN	117,329	20,947	101,828	517 - 1,550
Polk	605,513	WI	160,976	52,759	121,934	1,301 - 3,904
Ramsey	636	MN	214	61	169	1.5 - 4.5
Sawyer	96,119	WI	11,832	1,544	10,689	38 - 114
St. Croix	335,485	WI	132,626	48,781	96,528	1,203 - 3,610
Washburn	434,610	WI	61,979	10,660	54,091	263 - 789
Washington	180,582	MN	49,642	15,728	38,003	388 - 1,164

Pat Chiconis – "Spring's First Blush" (St. Croix River Association 2015 photo contest First Place: Landscape – Adult division) To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/



Elizabeth Belz – “Canoe High Bridge” To see more beautiful St. Croix Basin photos visit http://www.scraphotos.org/Photo-Contests/