Yahara WINS

Progress through partnership

2017 Annual Report

Kaci Baillies of Dane County Land and Water Resources Department collects a water sample.

Project background

The Yahara Watershed Improvement Network, known as Yahara WINS, is a groundbreaking initiative to achieve clean water goals for the Yahara Watershed. In this effort, community partners led by Madison Metropolitan Sewerage District are collaborating on a strategy called watershed adaptive management in which all sources of phosphorus in a watershed work together to reduce phosphorus. The effort began in 2012 as a pilot project and in 2017 transitioned to a full scale effort.

The 20 year adaptive management project aims to achieve permit requirements and regional Clean Water Act goals identified through the Rock River Total Maximum Daily Load by 2036. To accomplish these goals, the group facilitates partnerships, conducts outreach, pools resources to fund phosphorus reducing practices in the watershed, analyzes stream samples and works with the Wisconsin Department of Natural Resources to address regulatory needs for the project.

As the project moves forward, progress for each year is expected to vary due to a changing combination of new practices and existing practices that continue to hold back phosphorus.

Changing precipitation patterns and runoff intensity also may affect water quality data compiled through monitoring and volunteer sampling activities. Over time, however, the Yahara WINS project is designed to produce real results.

More information about the activities and partners featured in this report is available on the Yahara WINS webpage, http://www.madsewer.org/Programs-Initiatives/Yahara-WINs.

About the district

Madison Metropolitan Sewerage District began work on adaptive management in 2012, when it collaborated with partners to initiate a successful four-year pilot project. The district is pursuing adaptive management to comply with phosphorus requirements in its Clean Water Act discharge permit. Compared with upgrades to the treatment plant, adaptive management offers the potential for a more comprehensive and less expensive route to clean water. The district is one of the first wastewater treatment plants to use adaptive management and is committed to the success of this approach as it works to cost-effectively meet clean water standards.

President's message

During its first full year of operation, the Yahara WINS partnership has demonstrated to all of us the incredible results we can achieve by working together, sharing our knowledge and pursuing opportunities for progress toward common goals.

The Yahara WINS partnership connects counties, cities, villages, towns, wastewater treatment plants, farmers and environmental groups. The diverse perspectives we bring strengthen our ability to solve complex challenges and identify innovative solutions.

While we may not be able to predict the full array of phosphorus reducing tools and practices that will be producing results at the conclusion of the 20 year project, we can estimate that our collaborative approach will save local residents $13.5 million per year while achieving better environmental results than any single entity could accomplish. Reducing phosphorus at the source is far more cost effective than spending on expensive infrastructure and energy to recover phosphorus from our waters.

To maintain the engagement of our partners and the momentum necessary to reach our goals over the 20 year lifespan of the project, part of our work involves highlighting the achievements of project participants. Given our strategy of facilitating on-the-ground practices that deliver long-term phosphorus reductions, we believe each year's achievements will compound for even greater benefits over time. As my predecessor Dave Taylor puts it, long-term practices are like "the gift that keeps on giving."

Ultimately, our collaborative effort is designed to keep some 96,000 pounds of phosphorus out of the region's waterways each year. We look forward to learning from each other and encouraging additional participation as we move ahead. We hope you find the following summary of our progress helpful. More information about the activities and partners featured in this report is available on the Yahara WINS webpage, www.madsewer.org/yaharawins.

Martye Griffin
Yahara WINS President
Director of Ecosystem Services, Madison Metropolitan Sewerage District

Martye Griffin

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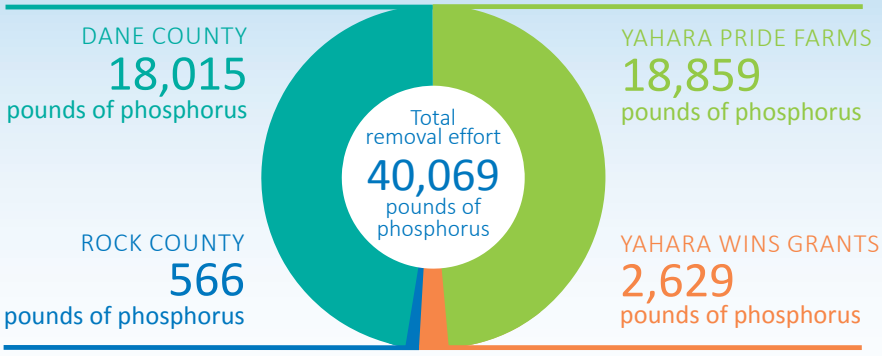
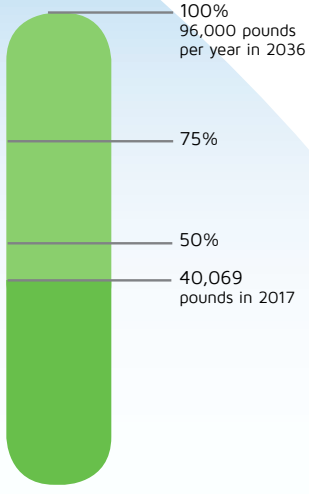


Figure 2. 2017 results



To achieve project goals, the reduction in pounds must be repeated each year with the goal of increasing reductions annually to 96,000 by 2036.

Year in review

During 2017, work by the Yahara Watershed Improvement Network and its partners kept more than 40,000 pounds of phosphorus from area surface waters, more than 40 percent of the total reduction of 96,000 pounds per year needed over the next 20 years to meet project goals.

The reduction, shown in Figures 1 and 2, came from a combination of efforts by farmers, Dane County, Rock County and area communities to implement practices aimed at capturing nutrients and reducing runoff.

Phosphorus reduction totals included 18,859 pounds held back by members of Yahara Pride Farms, 18,015 pounds reported by Dane County; 566 pounds reported by Rock County and 2,629 pounds as a result of grants funded by Yahara WINS (Figure 1). Practices implemented by farmers that contributed to the savings ranged from planting cover crops and harvestable buffers to stabilizing stream banks and using low-disturbance manure injection. Local municipalities and homeowners made further reductions through leaf management, erosion control and storm water management.

While the results from the partnership's first full year of operation in 2017 represent a significant reduction in phosphorus from the documented practices, annual variability in precipitation, the timing of storms and the severity of runoff from spring thaws also affect phosphorus loading in the Yahara Watershed. Meanwhile, the region's surface waters continue to be affected by legacy phosphorus in sediment and surrounding wetlands.

For these reasons, progress made through phosphorus reducing practices may not be evident in sampling reports during the early years of the project. Over the 20 year length of the project, however, implementation of new and continued practices is expected to achieve water quality goals.

Beyond the documented phosphorus reductions during 2017, Yahara WINS gained partners, encouraged innovation and increased communications capacity. These developments will help the project build momentum in the years to come.

Other highlights from 2017 include:

- New partnerships and agreements with Columbia County, Rock County, Town of Burke and Clean Lakes Alliance.
- Introduction of a new innovation grant program through Yahara WINS to encourage new practices to reduce phosphorus.
- Implementation of conservation practices by Yahara WINS partners, including Dane County and Yahara Pride Farms.
- Additional communications capacity, including the development of an informational video about the project.

Conservation buffers on either side of this stream control soil erosion from both wind and water. By trapping sediment, buffers reduce the amount of phosphorus entering the water.

Participation grows in 2017

The partnership at the core of the Yahara WINS project welcomed a new member in 2017 while retaining all original signatories. By signing the project's intergovernmental agreement, the Town of Burke joined 23 other governmental bodies that are contributing funds to the project. The agreement enables municipalities with requirements to reduce phosphorus or sediment to meet their requirements through Yahara WINS reductions.

In addition to the intergovernmental agreement participants, Yahara WINS continues to draw support from partners in the watershed that share a commitment to phosphorus reduction. Other partners contributing to the project include local county conservation departments, which facilitate the implementation of phosphorus-reducing conservation practices, and nonprofit organizations that donate money or time to various aspects of the project. Several new partnerships or agreements with partners were developed in 2017, as described below.

Rock County joins Yahara WINS

The Yahara Watershed includes 26,100 acres in Rock County. Joining Yahara WINS has allowed Rock County conservation staff members to direct efforts toward phosphorus reductions in their portion of the watershed. Yahara WINS and Rock County entered into a service agreement in mid-2017, and county staff hit the ground running.

In just six months, county conservation specialist Chris Murphy and county staff members achieved remarkable success. The first county project involved installation of 13.5 acres of harvestable buffers, which resulted in a combined reduction in phosphorus of 566 pounds per year at a cost of $12.96 per pound of phosphorus reduced.

Projects planned for 2018 include:

- 321 feet of streambank restoration on Badfish Creek;
- Three additional harvestable buffers totaling nearly 15 acres; and
- Conversion of 11 acres of annual cropland to a perennial forage mix of grasses and legumes that will reduce runoff to Badfish Creek.

Rock County continues to push the program forward and already has landowners committed to future participation in 2018.

Clean Lakes Alliance contributes to progress

Funding contributed by the Clean Lakes Alliance in 2017 will help target efforts to keep phosphorus out of Lake Mendota and waters downstream. Clean Lakes Alliance, a Yahara WINS partner, is focused on implementing the phosphorus reduction goals outlined in its 2012 Yahara CLEAN (Capital Lakes Environmental Assessment and Needs) Strategic Action Plan for Phosphorus Reduction, which overlaps with the goals of Yahara WINS.

To support these common goals, Clean Lakes Alliance contributed $100,000 toward phosphorus-reducing practices in the northern part of the Yahara Watershed. In 2017, Yahara WINS directed this additional funding to four specific projects:

- A grant to Yahara Pride Farms to purchase a low disturbance manure injection tanker. Dane County provided matching funds.
- A five-year contract extension for harvestable buffers.
- Incentives for landowner participation in a cover crop program that will use aerial seeding for three years.
- A grant to Yahara Pride Farms for a solid manure composting project.

In late 2017, Yahara WINS and Clean Lakes Alliance agreed to extend the memorandum of understanding and accompanying financial support into 2018.

Water bubbles to the surface from deep underground at the Frederick Springs, part of the Pheasant Branch Conservancy. The flow is an important source of quality water to Pheasant Branch Marsh on the north shore of Lake Mendota.

Columbia County service agreement

Some 17,700 acres or 5.2 percent of the Yahara Watershed land base lies in Columbia County. While the area represents a relatively small portion of the watershed, meeting phosphorus reduction goals will require efforts throughout the entire watershed, including Columbia County.

In late 2017, Yahara WINS and Columbia County worked on potential service agreement language. Similar to the agreements with Dane County and Rock County, the service agreement outlines the activities and expectations for Columbia County in exchange for Yahara WINS funding. The agreement, which will run from 2018 to 2020, provides a total of $105,000 to support implementation of phosphorus reducing practices in the Columbia County portion of the watershed.

Grants encourage innovation, adaptive practices

Yahara WINS has offered grants for urban and rural phosphorus reduction projects since 2013. For the first time in 2017, the partnership offered innovation grants to encourage new or unproven practices with applicability throughout the watershed.

One project was awarded funding in 2017 – the Friends of Lake Kegonsa's leaf management education and collection project. Leaf management is an important but sometimes overlooked component of managing urban phosphorus contributions and this project established leaf management in an area close to Lake Kegonsa where no program had existed.

During 2017, Yahara WINS also provided a total of $32,000 through two conventional grants to reduce 250 pounds per year of phosphorus, or more than 5,000 pounds over the projects' lifespans.

Dane County's "Suck the Muck" program aims to remove phosphorus-laden sludge from the bottom of area streams to prevent the legacy deposits of the nutrient from reaching Lake Mendota. Plans call for the $12 million project to assess 33 miles of streams. For more about the project, visit: https://lwrd.countyofdane.com/legacy-sediment-project.

Legacy phosphorus reduction key to future

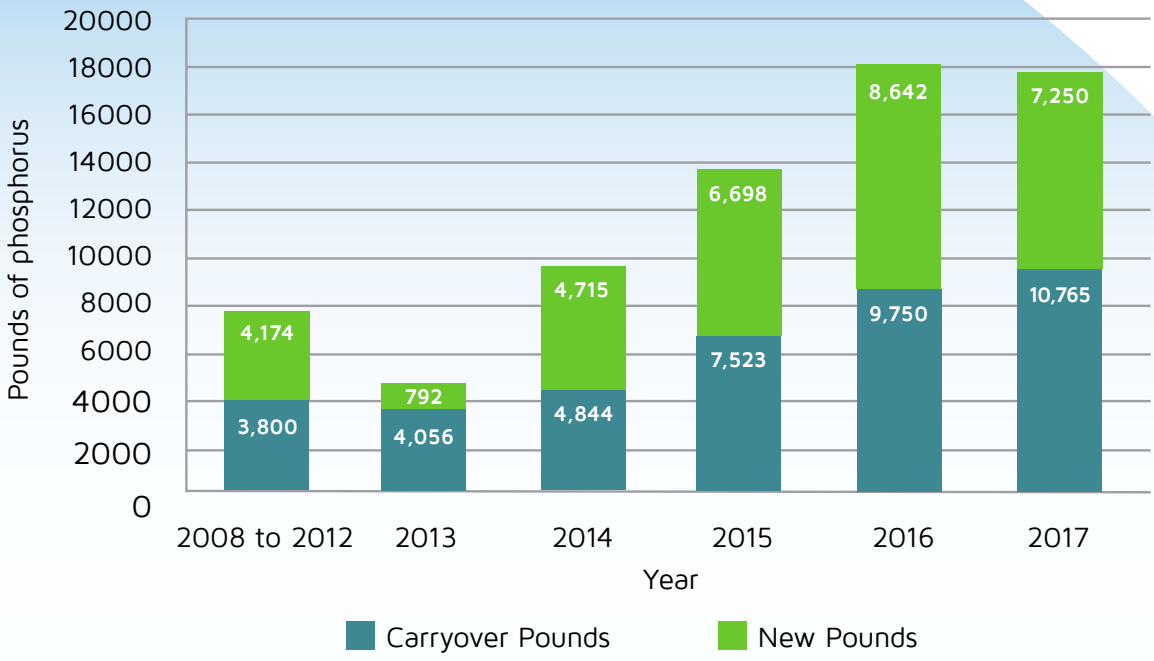
While Yahara WINS is funding projects that prevent additional contributions of phosphorus to local waterways, Dane County is taking action to mitigate phosphorus contributions of the past. The county is advancing a four year, $12 million initiative to remove phosphorus-containing sediment from streams in the Yahara Watershed. The initiative is expected to remove 870,000 pounds of phosphorus.

Legacy sediment containing high levels of phosphorus has long been recognized for its role in diminishing water quality in the Yahara River watershed. Yahara WINS funded a study by UW–Madison's water resources management practicum and, along with an evaluation of the impact of legacy sediment by county and Wisconsin Department of Natural Resources staff, the work confirmed that legacy sediment continues to impair local waterways as phosphorus leaches out of these historical deposits.

Water quality goals for the Yahara Watershed related to phosphorus will not be met without addressing legacy sediment that contains phosphorus. Dane County estimates that without removal of this accumulated sediment, it would take 99 years to achieve water quality goals.

The sediment removal initiative, called "Suck the Muck," is designed to accelerate progress toward clean water in the watershed. The first project is targeting Dorn Creek, in the upper part of the watershed. Preliminary site design and engineering work related to the Dorn Creek project was conducted in 2017, and sediment removal efforts began in spring of 2018. Additional information on this project can be obtained from John Reimer at Dane County.

Figure 3. Dane County Yahara Watershed phosphorus reductions



Cover crops, shown here taking root among cornstalks, hold soil in place after the grain is harvested.

Cover crops contribute to success

When corn is harvested for silage, very little plant residue is left on the soil, making the fields vulnerable to erosion and phosphorus loss. These fields also commonly receive manure applications.

Cover crops, which reduce erosion and phosphorus loss by stabilizing soil, offer a practical solution. Yet getting them planted while temperatures are warm enough for them to germinate and take root can be difficult because farmers are busy with harvest during the fall.

A major project during 2017 involved using grant funds awarded to Dane County by the Regional Conservation Partnership Program to evaluate aerial seeding of cover crops. Aerial seeding of cover crops allows for earlier and more efficient planting, frees up farmers' time and helps the crops become established before winter.

Yahara WINS provided a $500 bonus to farmers who agreed to use of aerial seeding for cover crops over a three-year period. While 16 farmers with 1,860 acres participated in the Regional Conservation Partnership Program cover crop program in 2017, nine of them also participated in the aerial seeding effort. These nine farmers accounted for 1,169 acres of cover crops planted, with an estimated phosphorus reduction of 1,169 pounds in 2017.

Dane County

Yahara WINS provides funding for Dane County's Land and Water Resources Department to assist landowners with the implementation of conservation practices that reduce phosphorus runoff. This is the sixth year that the Land and Water Resources Department has collaborated with Yahara WINS on phosphorus reduction efforts.

Key Dane County accomplishments in 2017 include:

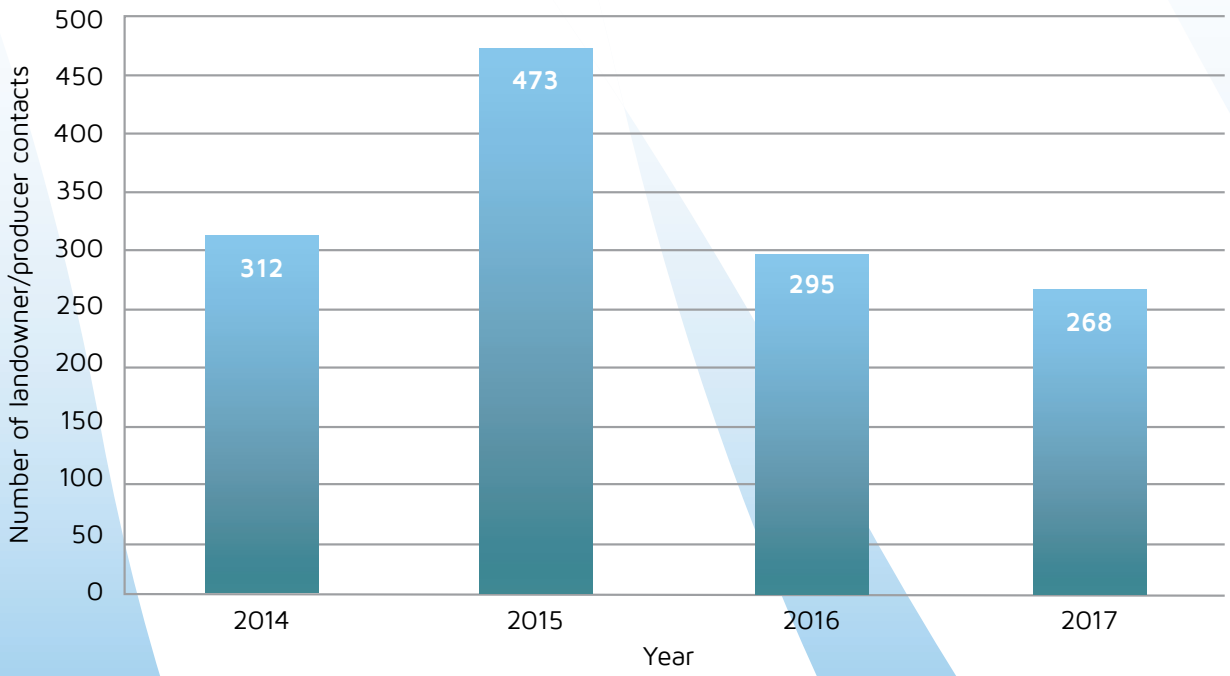
- A total reduction of 18,015 pounds of phosphorus from conservation practices implemented in past years that are still in place (carryover) and practices implemented in 2017 (new) (Figure 3).
- Assisting 268 landowners and others in the Yahara watershed with implementation of phosphorus-reducing practices and environmental compliance.
- Implementing and tracking more than 450 conservation practices and systems that reduce phosphorus delivery to nearby surface waters.

In 2017, a number of practices were focused in the northwestern portion of the watershed, while others were in the Door Creek area.

- Tracking more than 45,800 acres of fields with nutrient management plans in the Yahara watershed. The plans are field-specific strategies that outline the location, timing, and quantity of manure or fertilizer application to minimize runoff.
- Establishing the Dane County Grazer's Network to educate area producers and landowners about the benefits of managed grazing.
- Entering into 50 cost-share agreements for conservation practices and systems within the Yahara watershed.
- Allocating more than $800,000 in cost-share assistance within the Yahara watershed (Figure 5).

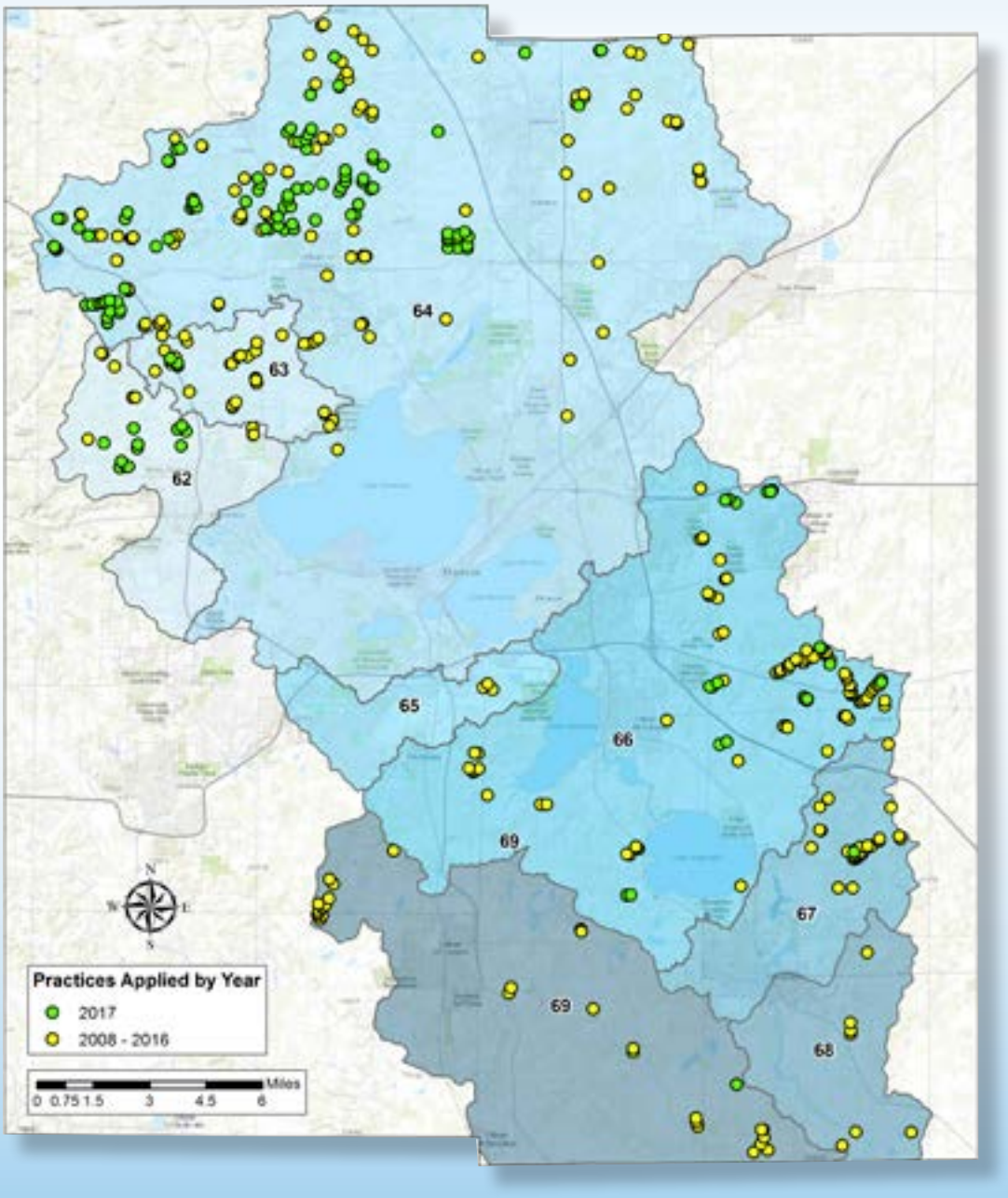
The full Dane County progress report for 2017, which is one of the county's requirements under the Yahara WINS service agreement, is available on the Yahara WINS website at www.madsewer.org, search "Yahara WINS."

Figure 4. Number of landowners/producers within the Yahara Watershed contacted by Dane County Land and Water Resource staff each year since 2014



Dane County practices applied by year

Dane County funded or facilitated practices in rural and urban settings designed to prevent phosphorus from reaching area surface waters. The map depicts practices put into place from 2008 to 2016 as well as projects implemented during 2017.



Proper compost spreading including use of buffer strips at the bottom of slopes helps keep nutrients in place.

Yahara Pride Farms success continues

Yahara WINS continued its successful partnership with Yahara Pride Farms, a local farmer-led group promoting agricultural conservation practices, for a fifth straight year. The 2017 agreement provided $110,000 to Yahara Pride Farms for cost-share funding on practices implemented by farmers including cover crop planting, strip tillage and headland manure stacking.

A maximum of $25,000 was available for supporting activities including data collection, farm evaluations, phosphorus reduction modeling activities, education and outreach activities and farmer engagement. As shown in Figure 6, Yahara Pride Farms used these funds to reduce predicted phosphorus runoff by more than 18,000 pounds in 2017 through a variety of conservation practices.

Figure 5. Amount of Dane County cost share funding allocated by year since 2014

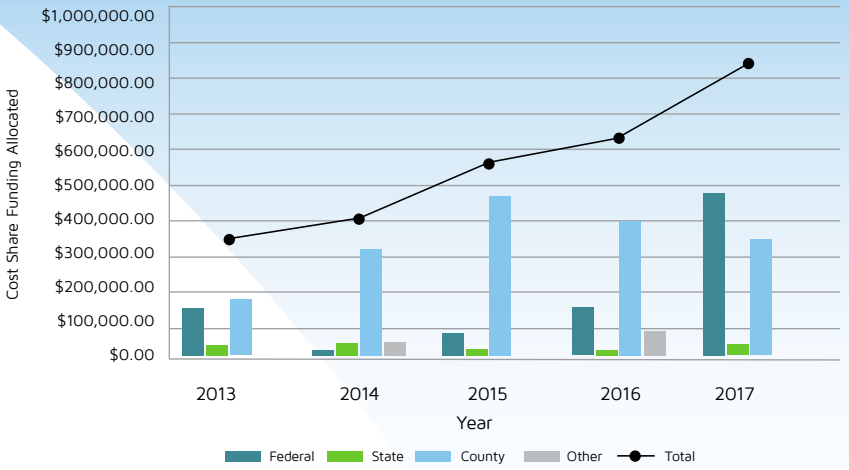
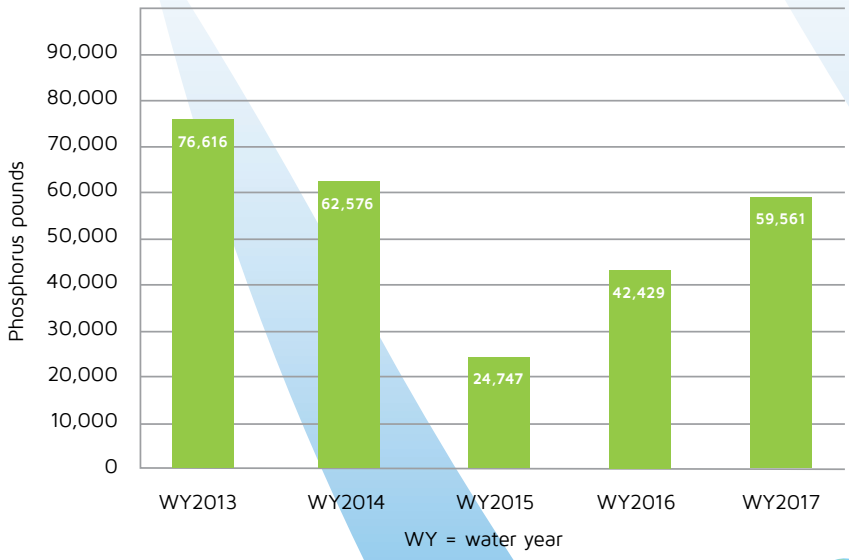


Figure 6. Summary of 2017 Yahara Pride Farms phosphorus reductions

Practice	Average phosphorus reduction (pounds per acre)	Total predicted phosphorus reduction (pounds in 2017)
Cover crops	1.8	7,300
Low-disturbance deep tillage plus cover crop	2.2	1,981
Low-disturbance manure injection	0.9	6,039
Strip tillage	0.8	1,458
Headland stacking of manure	2.1	665
Combined practices	0.9 (additional)	1,416
	Total	18,859

Figure 7. Annual tributary phosphorus loads to Lake Mendota



Multiple conservation practices at work

One informative takeaway from Yahara Pride Farms' work is the effectiveness of combining multiple conservation practices on one farm. In 2017, Yahara Pride offered a bonus payment for farms that implemented a combination of cover crops and either strip tillage or low-disturbance manure injection. In all, a total of 66 fields totaling 1,704 tillable acres implemented a combination of practices. After correcting for the individual practices, the combination of practices averaged an additional phosphorus reduction of 0.9 pounds per acre compared to individual practices. (Figure 6)

Over the past five years, Yahara Pride Farms has accomplished significant reductions in predicted phosphorus runoff, summarized in Figures 8, 9 and 10 by practice.

Figure 8. Cover crops

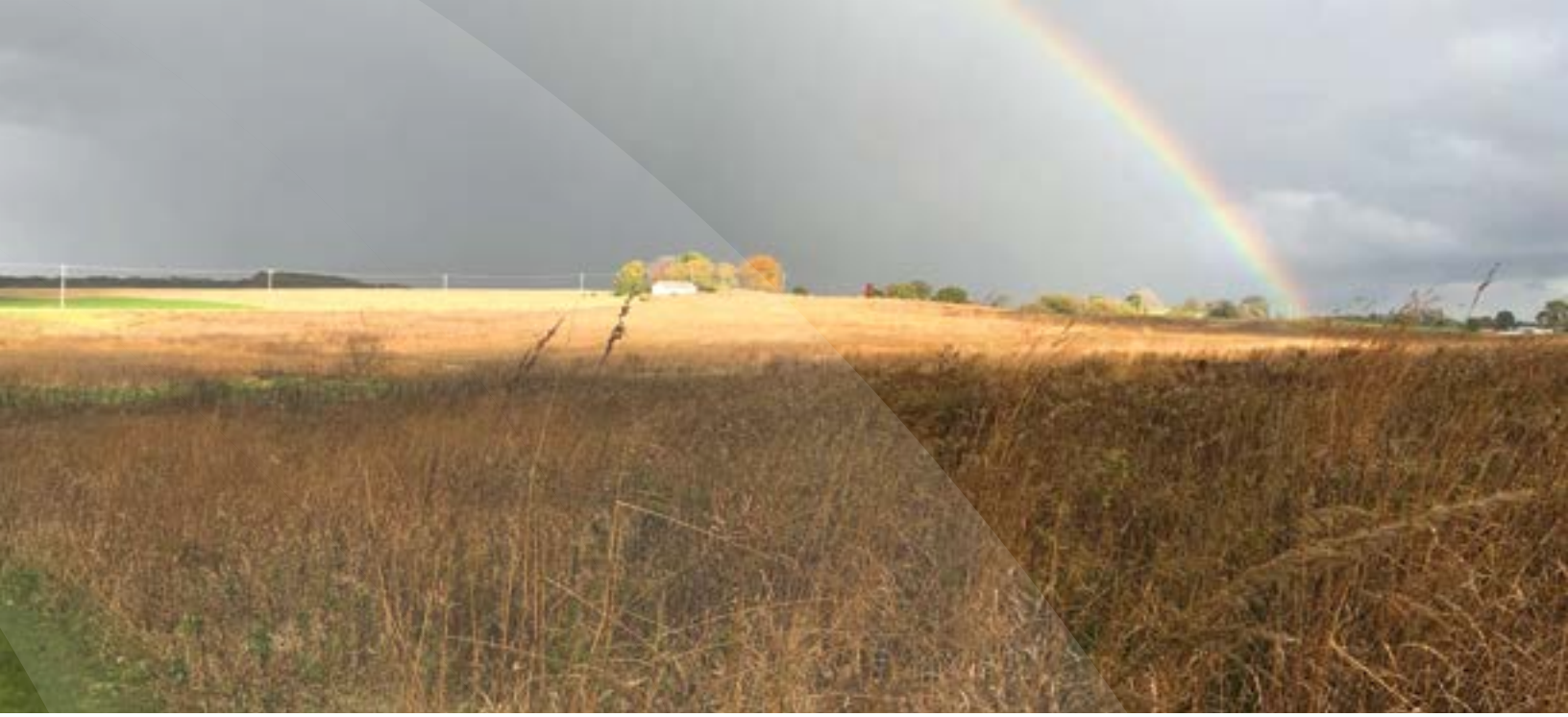
Year	2013	2014	2015	2016	2017
Farms	20	37	35	37	33
Fields	80	53	160	290	212
Acres	2,436	4,732	4,908	5,851	4,483
Acres (lbs./acre)	0.7	0.8	1.8	1.5	1.8
Total prediction (in pounds)	1,730	3,691	6,572	7,130	7,300

Figure 9. Low-disturbance manure injection

Low disturbance manure injection program	2013	2014	2015	2016	2017
Number of farms	11	14	4	7	15
Number of fields	20	20	32	76	223
Tillable acres in program	361	841	566	1,203	3,885
Average phosphorus reduction (lbs./acre)	1.0	0.6	1.9	0.9	1.4
Total phosphorus reduction (in pounds)	357	530	1,081	1,106	6,039

Figure 10. Strip tillage

Strip tillage program	2013	2014	2015	2016	2017
Number of farms	3	3	3	3	4
Number of fields	11	15	20	21	35
Tillable acres in program	156	253	1,489	917	1,829
Average phosphorus reduction (lbs./acre)	1.4	0.9	0.8	0.9	0.8
Total phosphorus reduction (in pounds)	225	220	1,221	703	1,458



Practices that conserve soil and prevent phosphorus from reaching surface waters promise improved water quality for the region. Here, a restored prairie in Pheasant Branch Conservancy separates farmland from wetlands and a marsh on the north shore of Lake Mendota.

Partnerships enable exploration

To encourage innovative conservation practices, Yahara WINS also awarded Yahara Pride Farms grants to explore promising manure management options: low-disturbance manure injection and solid manure composting.

Low disturbance manure injection

The practice of low disturbance manure injection involves subsurface application of manure, meaning that manure is injected into soil rather than applied to the top layer. This practice provides soil with nutrients while reducing the amount of manure (and associated phosphorus) that will be carried away by surface runoff. It isn't applicable on all farm fields, such as steep slopes, so it is unkown how well it will work for all farms.

As local farmers have experimented with injection and found ways to make it work for their farms, demand for the practice is growing. However, uncertainty about applicability and the cost of the equipment remain barriers to implementation. To address these barriers, Yahara WINS, with the assistance of the Clean Lakes Alliance, and Dane County, provided matching $56,260 grants in 2017 to Yahara Pride Farms for the purchase of a low disturbance manure injection tanker, which will be available for use by farmers in the Yahara Watershed. This grant allows multiple farmers to gain experience in using the equipment without having to make a large upfront capital individual investment. The goal is to lead to more widespread adoption of this liquid manure application practice, which is expected to result in less runoff of phosphorus from manure when compared to more traditional liquid manure management practices.

Solid manure composting

In December 2017, Yahara WINS, with assistance from the Clean Lakes Alliance, agreed to provide financial support for a two-year Yahara Pride Farms project that evaluates composting of "solid" manure or bedding pack. Dane County is also providing financial support. Solid manure typically accounts for 20 to 25 percent of the total manure generated by a dairy farm.

Composting solid manure reduces the volume of manure that needs to be applied, allowing farmers to target manure application to times when there is less runoff risk. In addition, preliminary data shows that the composting process causes dissolved phosphorus to "stick" to particulate matter, binding phosphorus in the composted product and reducing phosphorus in runoff.

The project has the potential to change the way solid manure is managed. Among other things, information generated as part of this project will help farmers better assess composting as a manure management alternative by providing information on the operational, economic and environmental aspects of manure composting.

Keeping gutters free of leaves during storms produces a significant reduction in the volume of nutrients reaching lakes, rivers and streams.

Water quality monitoring key

A robust water quality monitoring program is an important aspect of the Yahara WINS watershed adaptive management project. Progress toward phosphorus reduction goals is based on actual phosphorus reduction practices put in place and the resulting phosphorus reductions calculated using approved models.

Water quality monitoring, a required element of adaptive management projects, demonstrates the impact of on-land phosphorus reduction practices on in-stream water quality over time. Yahara WINS supports substantial water quality monitoring throughout the basin, including permanent installations and a citizen monitoring program.

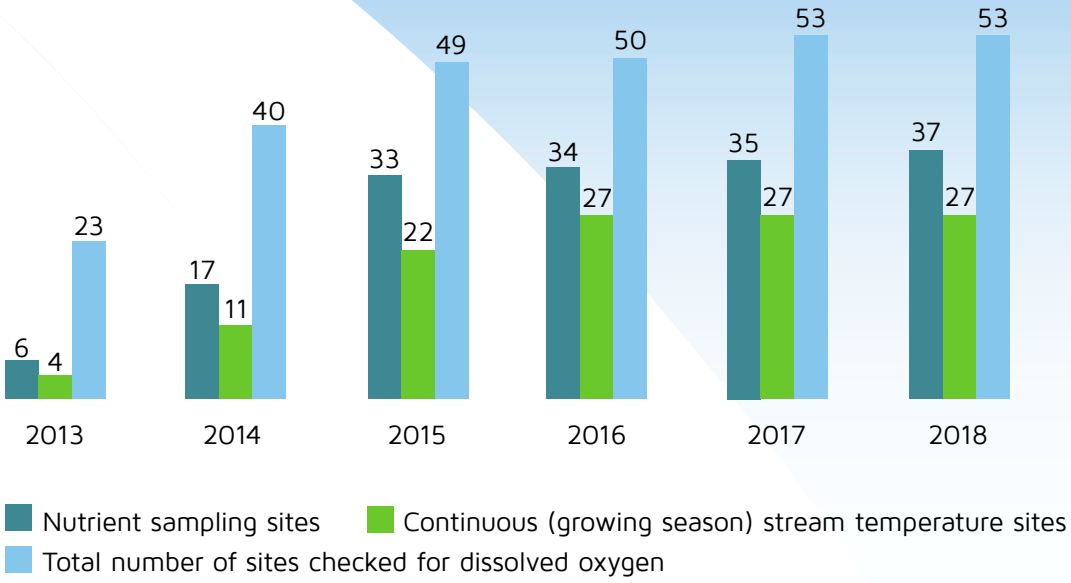
In 2017 alone, Yahara WINS analyzed more than 733 water quality samples for phosphorus. The monitoring data, along with data compiled during previous years of the project, will serve as baseline and trend data to gauge the project's success going forward.

Many Yahara WINS partners provide monitoring services to assess in-stream water quality and the health of fish and aquatic life in local waterways. The U.S. Geological Survey and the Rock River Coalition work with Yahara WINS to collect samples used to assess in-stream water quality and Wisconsin DNR is providing in-kind services to assess the biological health of streams in the Yahara River basin.

Figure 11. Median total phosphorus concentrations for U.S. Geological Survey sites reported in milligrams per liter during the growing season.

Year	2013	2014	2015	2016	2017
Dorn Creek at Hwy Q	0.10	0.13	0.11	0.15	0.17
Dorn Creek at Hwy M	0.22	0.26	0.25	0.28	0.24
Sixmile Creek at Hwy 19	0.22	0.34	0.13	0.31	0.19
Sixmile Creek at Hwy M	0.14	0.20	0.18	0.25	0.17
Yahara River at Fulton		0.14	0.19	0.11	0.11

Figure 12. Rock River Coalition volunteer stream monitoring stations



2017 stream data

From the beginning of the pilot project in 2012, the U.S. Geological Survey has been providing water quality sampling for the Yahara WINS project under a joint funding agreement. Currently, there are five USGS gauging stations in the Yahara River watershed used for adaptive managment. USGS collects water quality samples from these stations to help evaluate water quality trends.

Figure 11 summarizes the median phosphorus concentration for each monitoring site during the growing season (May through October), which is the basis for Wisconsin's phosphorus criteria. For Dorn and Sixmile, the criterion is 0.075 mg/l while for the Yahara River at Fulton, the criterion is 0.10 mg/L.

The addition of the Yahara WINS stations improved the overall monitoring of water bodies in the Yahara River Watershed and completed the picture of the phosphorus inputs to Lake Mendota. The measured phosphorus loads entering Lake Mendota from the four major tributaries is available and shown in Figure 7 on page 10, for the last five years.

The total phosphorus loading in a given year depends on a variety of factors, including the amount, intensity and timing of precipitation. If heavy precipitation occurs during a time of year when runoff is more likely, phosphorus loading may increase; during a drier year, or a year in which precipitation occurs during a time when runoff is less likely, phosphorus loading may decrease. Over the course of the 20 year Yahara WINS project, a downward trend is anticipated.

Rock River Coalition efforts expand

For the fifth consecutive year in 2017, Yahara WINS provided funding to the Rock River Coalition to support a citizen volunteer water quality monitoring program in the Yahara River Watershed. Samples collected by the volunteers help tell a more detailed story about the current conditions in the watershed and indicate changes over time. For the 2017 monitoring year:

- Volunteers monitored 53 stream stations on a monthly basis for dissolved oxygen concentrations, stream temperature, water clarity and stream flow (when possible). Volunteers also use a biotic index to assess stream health.
- Volunteers established 27 stream stations to monitor continuous water temperatures using automated data loggers.
- Volunteers collected and delivered samples from 35 stations that serve as active nutrient sampling sites. The district's lab analyzes the samples for total phosphorus, total suspended solids, total Kjeldahl nitrogen, ammonia, nitrate, nitrite and ortho-phosphorus.

More information about the Rock River Coalition's work can be found at www.rockrivercoalition.org.

DNR's Kim Kuber, Jim Amrhein and George Johll use stream shocking as one means to assess the health of the aquatic environment.

DNR works to assess fish, aquatic life

As a signatory of the intergovernmental agreement, Wisconsin DNR is required to make an annual contribution to the Yahara WINS project in lieu of a financial contribution. DNR has agreed to provide biological monitoring services that exceed those the agency normally would undertake in the watershed.

Yahara WINS has invested heavily in monitoring chemical indicators of stream health, such as phosphorus and dissolved oxygen levels. The biological monitoring complements this chemical monitoring and will increase Yahara WINS' understanding of and focus on water quality improvement.

DNR's work focuses on stream biology including fish, macroinvertebrates and habitat. Each year, the department provides Yahara WINS a report identifying key findings at the monitored sites.

Intergovernmental agreement supports expectations

To achieve water quality standards, the Total Maximum Daily Load phosphorus calculation developed for the Rock River by the Wisconsin Department of Natural Resources provides a phosphorus reduction budget for cities, towns, villages and other entities including Madison Metropolitan Sewerage District that lie in the Yahara Watershed. An intergovernmental agreement among these entities establishes the legal and administrative framework for participation. The agreement specifies the proportion of funding that each participant is responsible for, project governing bodies, the administrative structure of the project and "off ramps" for participants every five years. Participants contribute funds to the project in proportion to the amount of phosphorus they each must reduce to meet targets.

IGA participants include:

- **Towns** – Blooming Grove, Cottage Grove, Dunn, Middleton, Westport, Burke.
- **Villages** – Cottage Grove, DeForest, Maple Bluff, McFarland, Shorewood Hills, Waunakee, Windsor.
- **Cities** – Fitchburg, Madison, Middleton, Monona, Stoughton, Sun Prairie.
- **Others** – Madison Metropolitan Sewerage District, Village of Oregon Waste Water Treatment Plant, Stoughton Utilities, University of Wisconsin–Madison, Wisconsin DNR.

Communications capacity expands

Yahara WINS worked to become more visible and understandable to community members in 2017. One goal for Yahara WINS is to assist partners in communicating the group's activities to their boards, commissions and residents to cultivate support for the project.

A major step to enhance communications involved creation of an informational video in 2017. Yahara WINS contracted with Pigorsch Media to produce the video, which provides information about Yahara WINS and its benefits to community members and the watershed. The video is ideal for schools, civic organizations, stakeholders, community meetings, conservation groups, public access cable channels and more. The video is available on the Yahara WINS website.

Other Yahara WINS communications in 2017 included a newsletter and a press release. In 2018, Yahara WINS will be working with Madison Metropolitan Sewerage District communications professionals to develop a strategic communications plan to guide future communication.

Transitions

During 2017, two of the original guiding forces of the Yahara WINS project retired. First, on June 2, Dave Taylor retired from the Madison Metropolitan Sewerage District, officially ending his tenure as president of Yahara WINS.

After retiring, Taylor signed on as a consulting director to guide the initiative through its transition from pilot to full-scale project. Then, on July 21, Kevin Connors, Dane County's Land and Water Resources director also retired.

Taylor and Connors provided years of vision and guidance. Through their dedication and the solid foundation for the project, the momentum continues.

Laura Hicklin was promoted to lead the Land and Water Resources Department and joined the Yahara WINS executive committee as an advisory member. Kathy Lake, the district's pollution prevention manager, assumed the role of president of the executive committee until the end of 2017 when Martin Griffin was hired as the district's director of ecosystem services and assumed the role of executive committee president.

Other agreements

In addition to the intergovernmental agreement, the Yahara WINS project maintains service agreements with Dane, Rock and Columbia counties as well as other agreements with a variety of participating entities (Figure 13).

Figure 13.

Type of agreement	Description
MOU with Town of Dunn	Agreement for annual contributions to Yahara WINS by Town of Dunn, which has already met TMDL requirements.
MOU with Town of Burke	Agreement for annual contributions to Yahara WINS by Town of Burke.
MOU with Town of Westport	Agreement for annual contributions to Yahara WINS by Town of Westport for compliance with total suspended solids requirements and project support.
Legal services agreement	Contract with Stafford Rosenbaum for retention of general legal counsel.
Joint funding agreement with U.S. Geological Survey	Five year agreement between U.S. Geological Survey and Madison Metropolitan Sewerage District using Yahara WINS funding for water quality monitoring by the federal agency.
MGE Foundation pledge	Contribution from Madison Gas and Electric Foundation to provide funding to Yahara WINS over three years.
Columbia County service agreement	Two year service agreement with Columbia County for cost-share funds to cover phosphorus reducing practices and county staff time to support implementation.
Dane County service agreement	Five year service agreement with Dane County Land and Water Resources Department to fund county staff and provide bonus payments based on phosphorus reductions resulting from implementation of practices.
Rock County service agreement	Three year service agreement with Rock county for cost-share funds to cover phosphorus reducing practices and county staff time to support implementation.
Yahara Pride Farms grant agreement	Agreement for annual contribution to Yahara Pride Farms to support implementation of phosphorus reducing practices on farms.
Rock River Coalition contract	Contract with Rock River Coalition to support volunteer monitoring program, water quality sampling and data management services.
DNR service agreement	Agreement with DNR as an intergovernmental agreement member to provide in-kind water monitoring and habitat assessment services in lieu of DNR's allocated cost contribution.
Madison Metropolitan Sewerage District agreement	Agreement with the district for water quality testing on samples collected by Rock River Coalition and USGS as part of the adaptive management project.
Clean Lakes Alliance MOU	Agreement specifying an annual contribution from Clean Lakes Alliance to Yahara WINS to support farms adopting phosphorus reducing practices in the upper part of the Yahara river watershed.

Yahara WINS finances on track

Yahara WINS' annual budget for 2017 totaled nearly $1.5 million, reflecting the contributions of the intergovernmental agreement partners. Yahara WINS used the funds to support phosphorus-reducing practices, water quality monitoring, contract with a consulting director and expand communications activities.

Yahara WINS will collect an amount based on loadings identified in the Rock River TMDL from partners each year over the 20 year project period. Over time, the cost per pound of phosphorus reduced is expected to increase. To balance future expenditures with projected income, the Yahara WINS executive committee established a designated operating reserve policy. In 2017, Yahara WINS moved $480,000 of designated operating reserve funds into a segregated account.

Revenue from the partners totaled approximately $41,000 less than the amount budgeted for 2017. Two partners – the City of Middleton and Village of DeForest – submitted updated storm water modeling information in 2017 that resulted in a reduction of the costs allocated to these communities.

As a result of the recalculation, Middleton and DeForest also will receive credit for overpayments made in 2017. These credits were offset by the receipt of a $100,000 grant from the Clean Lakes Alliance through a memorandum of understanding and the addition of the Town of Burke as a new intergovernmental agreement member.

2017 Budget (numbers rounded to nearest $100)

Unencumbered carryover from 2016	$87,000
Revenue	
IGA participants	$1,467,000
Contributions from non-IGA participants	$17,300
Savings account interest	$1,200
Total Revenue	**$1,485,500**
Expenditures	
Legal services agreement	$20,000
Dane County phosphorus reduction services agreement	$450,000
Columbia County phosphorus reduction services agreement	$40,000
Rock County phosphorus reduction services agreement	$40,000
Yahara Pride Farms phosphorus reduction services agreement	$110,000
USGS joint funding agreement	$75,000
Water quality monitoring analytical services (MMSD)	$35,000
General P reduction practice funding	$120,000
Phosphorus reduction grant program	$100,000
WINS staffing	$43,500
Rock River Coalition water quality monitoring	$27,000
Financial audit	$7,000
Communications	$15,000
Miscellaneous	$10,000
Total Expenditures	**$1,092,500**
Contribution to designated operating reserve fund	$480,000

2018 budget supports continued progress

For 2018, the Yahara WINS budget totals just over $1.5 million, reflecting a slight increase in revenue from new signatories to the intergovernmental agreement.

Expenditures for phosphorus reduction through service agreements with Dane County, Columbia County are all set to increase, as are agreements with Yahara Pride Farms. Expenditures for legal services and miscellaneous supporting services are set to decrease.

For 2018, a transfer of $315,000 to a designated operating reserve was budgeted. By gradually building the reserve fund, the intergovernmental agreement participants seek to ensure that an adequate amount of money will be available in the latter years of the project when per pound phosphorus reductions are expected to grow more costly.

Executive committee guides Yahara WINS

For 2017, members of the Yahara WINS executive committee included:

Voting members

Kathy Lake, president, Madison Metropolitan Sewerage District

Gary Huth, vice president, City of Middleton

Jeff Rau, treasurer, Village of Oregon

Greg Fries, secretary, City of Madison

Tom Wilson, at-large, Town of Westport

Nonvoting members (named in IGA as advisory)

Jeff Endres, Yahara Pride Farms

Laura Hicklin, Dane County

James Tye, Clean Lakes Alliance

Nonvoting members

Paul Kent, attorney

Dave Taylor, consulting director

2018 Budget (numbers rounded to nearest $100)

Unencumbered carryover from 2017	$14,500.00
Revenue	
IGA participants	$1,438,400
Income from grants, other MOUs, etc.	$50,000
MGE Foundation	$5,000
Savings account interest	$1,200
Total Revenue plus unencumbered carryover	**$1,509,100**
Expenditures	
Phosphorus reduction	
Dane County phosphorus reduction services agreement	$540,000
Columbia County phosphorus reduction services agreement	$50,000
Rock County phosphorus reduction services agreement	$180,000
Yahara Pride Farms phosphorus services agreement	$130,000
Yahara Pride Manure Composting Grant	$21,400
General P reduction practice funding	$20,000
Phosphorus reduction grant program	$34,200
Subtotal	**$975,600**
Water Quality Monitoring or modeling	
Water quality monitoring analytical services (MMSD)	$40,000
USGS joint funding agreement	$75,000
Rock River Coalition water quality monitoring	$25,000
Subtotal	**$140,000**
Supporting Services	
WINS staffing	$46,000
Financial audit	$7,500
Communications	$12,000
Miscellaneous	$5,000
Legal services agreement	$8,000
Subtotal	$78,500
Transfer of funds to designated operating reserve	$315,000
Total Expenditures	**$1,509,100**
Revenue minus expenditures (potential unencumbered carryover to 2019)	$0

Yahara WINS
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Compiled by Madison Metropolitan Sewerage District