

Yahara WINS Matrix Tool for Calculating Phosphorus Reductions

Yahara WINS Executive Committee Meeting 9/16/2026

Background: WINS adaptive management plan describes several models approved for quantifying phosphorus reductions from different sources. Phosphorus reductions associated with agricultural cropland practices are estimated using SNAP+, the standard nutrient modeling software used in Wisconsin. As of 2025, SNAP+ was used for managing over 36,000 ac. of cropland conservation practices for reducing phosphorus runoff from the Yahara watershed, such as cover crops and reduced tillage. Each year our implementing partners rely on agronomists and crop advisors to review SNAP+ files for verifying model settings and accounting of the phosphorus reductions achieved through implementing conservation practices. This annual review occurs between December and March (after the fall harvest and before spring planting), which is short time window when considering the number of farms participating and acres of conservation. For Yahara Pride Farms alone, they need to verify the records of 76 farms and over 30,000 acres with conservation practices every year. It will become more challenging in the future to efficiently quantify phosphorus reductions as the number of farms and acres increase. Reviewing nutrient management plans in SNAP+ for calculating WINS annual mass phosphorus reductions can be cumbersome and repetitive as crop rotations with conservation practices become standardized for each farm.

This idea to develop a more efficient way for calculating annual mass phosphorus reductions has already been successfully addressed by the NEW Watershed Program (Green Bay's adaptive management program). NEW water worked with Tilth Agronomy to develop a matrix of standard phosphorus reduction values specific to the conservation practices and the areas of the watershed they're applied. This is intended to simplify the phosphorus reduction calculation by multiplying the standard value (lbs./ac.) by the number of acres it was implemented, rather than working through every nutrient management plan in SNAP+ to quantify phosphorus reductions for each individual conservation practice. The method now used by NEW water has been approved by WDNR

There is a desire by Yahara WINS implementing partners to also have a more efficient way to calculate phosphorus reductions in the Yahara watershed. As a result, implementing partners want standard phosphorus reduction values for conservation practices to be calculated using existing SNAP+ data generated by them (implementing partners). Most common practices implemented will have standard values developed, including cover crops, no-till, strip-till, and low disturbance manure injection (LDMI). Each practice will be calibrated based on crop rotation type (livestock farm or grain farm), most common soil types and other cropland variables so each conservation practice may have multiple standard

values. Tilth Agronomy is developing the standard reduction values following the same process they used for developing NEW water's matrix. Tilth estimates the total cost of development is \$10k-15k and will be completed in January 2027 for calculating reductions from 2026 implementation.

Considerations

- The Matrix tool is expected to be used by all implementing partners for more consistency in calculating phosphorus reductions.
- Yahara Pride Farms is leading the development of the Matrix tool, working directly with Matt Brugger at Tilth Agronomy.
- The Matrix tool is expected to reduce the administrative cost of calculating phosphorus reductions which means more money is available for implementing conservation practices.
- Matt Brugger developed the Matrix tool for NEWater that was approved by DNR. Matt will use the same methodology for developing WINS Matrix.
- DNR approval is required before use.

Request

WINS implementing partners are requesting \$10k-15k to fund the development of a Matrix Tool for the Yahara Watershed to simplify annual accounting of mass phosphorus reductions.

Recommendation

WINS recommends approval of the funding request with the following conditions:

1. Total cost to develop the tool does not exceed \$15,000.
2. All implementing partners agree to use the tool for calculating phosphorus reductions as designed.
3. Yahara Watershed Matrix tool receives DNR approval for use and approves the addition of the tool in *Part 3: Phosphorus Reducing Practices* of the adaptive management plan that outlines the approved models to be used for phosphorus reduction.

Option 1: Approve partial funding from WINS and request equal funding contributions from implementing partners (~ \$5k each).

Option 2: Deny funding request and continue current accounting methods.



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Upper Midwest Water Science Center
1 Gifford Pinchot Drive
Madison, WI 53726

September 2, 2026

Mr. Martin Griffin
Director of Ecosystem Services
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, WI 53713-3398

Dear Mr. Griffin:

Attached for your review is the Joint Funding Agreement (JFA) and detailed funding table supporting continued operation and maintenance of the four streamflow and water-quality monitoring stations on Sixmile and Dorn Creeks as part of the Yahara Watershed Improvement Network (WINS) project. The agreement also includes funding for the creation and maintenance of a dashboard illustrating water-quality trends for Dane County streams. The proposed agreement covers the period January 1, 2027 through December 31, 2031.

The total cost for this work is \$708,640, of which \$595,180 is provided by the Madison Metropolitan Sewerage District and \$113,460 by the U.S. Geological Survey. All work conducted under this agreement will be performed on a fixed-price basis, with invoices issued quarterly.

If the terms of this agreement are acceptable, please sign and return the JFA to Todd Stuntebeck at tdstunte@usgs.gov. Reach out to Todd at the indicated email address if you have any questions.

Sincerely,

Steven M. Peterson
Director, U.S. Geological Survey, Upper Midwest Water Science Center

Enclosure
27NKJFA010

**U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations**

**Customer #: 6000000585
Agreement #: 27NKJFA010
Project #: NK00LZD
TIN #: 39-6005509**

Fixed Cost Agreement YES[X] NO[]

THIS AGREEMENT is entered into as of January 1, 2027, by the U.S. GEOLOGICAL SURVEY, Upper Midwest Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the Madison Metropolitan Sewerage District party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation for negotiated deliverables (see attached), herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of \$0.00

- (a) \$113,460 by the party of the first part during the period
January 1, 2027 to December 31, 2031
- (b) \$595,180 by the party of the second part during the period
January 1, 2027 to December 31, 2031
- (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: \$0

Description of the USGS regional/national program:

- (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
- (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (<https://www.usgs.gov/office-of-science-quality-and-integrity/fundamental-science-practices>).

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR

Customer #: 6000000585
Agreement #: 27NKJFA010
Project #: NK00LZD
TIN #: 39-6005509

Water Resource Investigations

9. Billing for this agreement will be rendered quarterly. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

USGS Technical Point of Contact

Name: Todd Stuntebeck
Supervisory Physical Scientist
Address: One Gifford Pinchot Drive
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Customer Technical Point of Contact

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USGS Billing Point of Contact

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Email: MartinG@madsewer.org

U.S. Geological Survey
United States
Department of Interior

Madison Metropolitan Sewerage District

Signature

By _____ Date: 9/02/2026

Name: Steven M Peterson
Title: Center Director

Signatures

By _____ Date: _____

Name:
Title:

By _____ Date: _____

Name:
Title:

By _____ Date: _____

Name:
Title:

2027-31 Yahara WINS Monitoring Program

Data Collection Site and Scope of Work	USGS	Yahara WINS	Total
1. Dorn Creek at Hwy Q			
- Continuous water level and discharge			
- Water quality sampling for daily loads computation (via uvGAM) and adherence to WisCALM sampling guidelines			
- ~40 samples/yr. analyzed for total P, dissolved ortho-P, Nitrate+Nitrite, TKN, Ammonia, and suspended solids (MMSD lab, paid directly by WINS)			
Subtotal	23,870	125,190	149,060
2. Dorn Creek at Hwy M			
- Continuous water level and discharge via index-velocity methods			
- Water quality sampling for daily loads computation (via uvGAM) and adherence to WisCALM sampling guidelines			
- ~40 samples/yr. analyzed for total P, dissolved ortho-P, Nitrate+Nitrite, TKN, Ammonia, and suspended solids (MMSD lab, paid directly by WINS)			
Subtotal	29,860	156,650	186,510
3. Sixmile Creek at Hwy 19			
- Continuous water level and discharge			
- Water quality sampling for daily loads computation (via uvGAM) and adherence to WisCALM sampling guidelines			
- ~40 samples/yr. analyzed for total P, dissolved ortho-P, Nitrate+Nitrite, TKN, Ammonia, and suspended solids (MMSD lab, paid directly by WINS)			
Subtotal	23,870	125,190	149,060
4. Sixmile Creek at Hwy M			
- Continuous water level and discharge via index-velocity methods			
- Water quality sampling for daily loads computation (via uvGAM) and adherence to WisCALM sampling guidelines			
- ~40 samples/yr. analyzed for total P, dissolved ortho-P, Nitrate+Nitrite, TKN, Ammonia, and suspended solids (MMSD lab, paid directly by WINS)			
Subtotal	29,860	156,650	186,510
5. Dane County Water-Quality Dashboard / Publishing uvGAM model and archival			
Dashboard would be similar to the Great Lakes Basin River Water-Quality Trends (and upcoming Milwaukee Met dashboard). uvGAM model and archive necessary before loads can be published via uvGAM. Dashboard published in late 2027/early 2028, and updated again in 2 years.			
Subtotal	6,000	31,500	37,500
Grand Totals	113,460	595,180	708,640

September 15th, 2026 Executive Committee Meeting.

Agenda Item Report:

2027 Draft Budget

Attachment:

2027DraftBudgetExecutiveCommitteeSept2026Mtg.xls

Background:

The draft budget represents the efforts of the Yahara WINS president, Yahara WINS treasurer, and the District's watershed coordinator on allotment of funds for the Yahara WINS adaptive management project in 2027.

The budget spreadsheet has three tabs. One tab for the draft 2027 budget (with embedded notes), one tab for a 5-year budget approved from 2023-2027 (with embedded notes), and one tab that reflects the expected 2027 IGA payment revenue.

The following are areas of the proposed 2027 budget that were modified as compared to the [2026 budget](#) and previous budgets

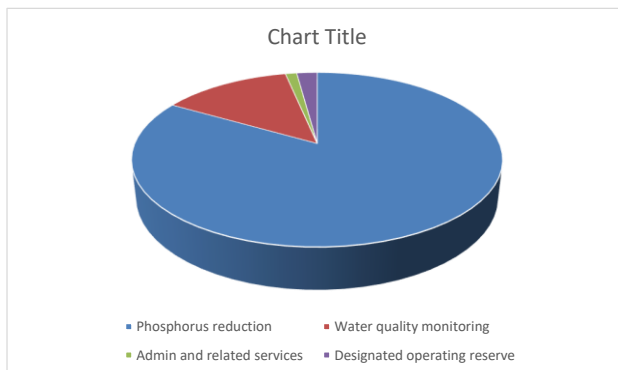
- Partner agreements with Dane County LWRD and Yahara Pride Farms both increased from 2026 levels, starting in 2027
- Changes in IGA member contributions increased the 2027 IGA revenue as compared to 2026.
- Watershed Prioritization project budget capacity continues into the 2027 budget. The project scope was approved for two years and impacts the 2026 and 2027 budgets.
- As a result of the long-term data set generated by Yahara WINS, analytical services costs have decreased due to changes in water quality sampling and modeling methodology instituted by USGS resulting in less samples during high flow events.
- Phosphorus accounting matrix joint project with Yahara Pride Farms and Dane County LWRD to streamline phosphorus credit accounting was added to the 2027 budget.
- The amount designated for the operating reserve identifies a lower contribution in 2027 compared to the amount designated for 2026 (and the amount designated in the 5 year budget from 2023-2027), due to increases in cost for installing practices as part of partner agreements and water quality monitoring as required under the adaptive management plan.

Recommendation:

Approve draft 2027 budget as presented and allow the president to send to IGA membership as draft in preparation for the October budget meeting when the final budget will be presented and voted on.

2027 Draft Proposed Budget (Rounded to the nearest \$100)

Projected unencumbered carryover from 2026	\$0
Revenue	
IGA participants	\$1,689,660
Income from grants, MOUs, etc.	\$0
MGE Foundation	\$5,000
Savings account interest	\$4,000
Total Revenue	\$1,698,660
Total Revenue plus unencumbered carryover	\$1,698,660
Expenditures	
<i>Phosphorus reduction</i>	
Dane County phosphorus reduction services agreement	\$640,000
Rock County phosphorus reduction services agreement	\$150,000
Yahara Pride Farms phosphorus services agreement	\$625,000
Phosphorus Reduction Subtotal	\$1,415,000
<i>Water Quality Monitoring/Modeling</i>	
Water quality monitoring analytical services (MMSD)	\$30,000
USGS joint funding agreement	\$120,000
Rock River Coalition water quality monitoring	\$47,500
Watershed Prioritization Project (Agrograph Contract)	\$15,000
Phosphorus Accounting Matrix (YPF & DC LWRD)	\$15,000
Water Quality Monitoring/Modeling Subtotal	\$227,500
<i>Supporting Services</i>	
Financial audit	\$11,000
Communications	\$5,000
Legal services agreement	\$4,000
Supporting Services Subtotal	\$20,000
<i>Transfer of funds to designated operating reserve</i>	\$36,160
Total Expenditures	\$1,698,660
Revenue minus expenditures (potential unencumbered carryover for 2028)	\$0



Phosphorus reduction	\$1,415,000
Water quality monitoring	\$227,500
Admin and related services	\$20,000
Designated operating reserve	\$36,160
	\$1,698,660

