BOARD OF WATER AND SOIL RESOURCES

Support of Watershed Nutrient Reduction Planning through Tools and Resources: User Survey

04/29/2025

Table of Contents

Background Information and Objectives

Decision support tools and models have been developed and used in watersheds throughout the State of Minnesota for the purposes of: source assessment of nutrient and sediment load contributions at different watershed scales, Best Management Practices (BMPs) implementation scenarios development to meet nutrient and sediment load reduction goals, and for local selection, targeting, and siting of BMPs Minnesota has invested considerably in the development of the watershed decision support models and tools i.e., Prioritize, Target, Measure Application (PTMApp), Hydrological Simulation Program-FORTRAN (HSPF), and Hydrological Simulation Program-FORTRAN -Scenario Application Manager (HSPF-SAM). Additional investment has been made for the Watershed Nitrogen and Phosphorus Reduction Planning Tool Spreadsheet (NP-BMP.xls) and Agricultural Conservation Planning Framework (ACPF) and others.

The Board of Water and Soil Resources (BWSR) and the Minnesota Pollution Control Agency (MPCA) established an interagency agreement to carry out the project titled "Support watershed nutrient reduction planning through tools and resources". As part of the interagency project agreement BWSR staff collaborated closely with MPCA staff and worked on a multi-agency effort to conduct a tool user-assessment of local and state agency staff.

Purpose of the effort was to conduct a watershed tool user assessment to better understand the barriers and challenges to using the existing versions of the tools and applications based on watershed models. Findings from the tool user assessment will help in developing clear and consistent guidance and training materials for tool use. The results of this work will also be used for the revision of Minnesota Nutrient Reduction Strategy (NRS) as well as the implementation of NRS and local comprehensive watershed management plans (CWMPs).

Developing and conducting assessment

Tool user assessment was directed at reaching staff at the local watershed level with a range of experiences with tool use, state and federal agency staff who have needs that tools can potentially address, and experienced users of the tools in consulting firms who could benefit from tool use but have not been using the tools.

The Minnesota BWSR staff worked closely with staff from MPCA, Minnesota Department of Agriculture (MDA), and other agencies and organizations to develop the user tool assessment survey questionnaire (Attachment-1). An online survey was created and distributed to staff working for local government units including Soil and Water Conservation Districts (SWCD), Watershed Districts (WD), Watershed Management Organizations, and counties. Survey was also distributed to staff working for municipal governments, academic institutions, state and federal agencies, Non-profit organizations, and others that included private consultants and professional service providers. The tool user assessment was aimed at identifying both successes and difficulties in using the watershed tool and models and to identify whether the difficulties were found with previous versions or with the more recent versions of the applications.

After the completion of the online survey, BWSR staff worked with MPCA staff to undertake personal and small group interviews with local government practitioners. These follow-up conversations included additional questions specific to the tools, but also focused on questions related to nutrient reduction efforts and local staff

capacity needs to implement aspects of the NRS. Contractors assisted and supported agency staff with notetaking during the interviews and developed a separate report on the main themes and recommendations. This separate report is included as stand-alone document as part of appendices to the 2025 revised NRS.

Watershed managers in Minnesota have a wide range of models and tools to support water resource management.   The following tools and models were included in the assessment to gauge the knowledge and usage of these programs.

1. Hydrologic Simulation Program Fortran Scenario Application Manager (HSPF SAM)

2. Watershed Pollutant Load Reduction Calculator (WPLRC)

3. Minimal Impact Design Standards (MIDS)

4. Smart Salting Assessment Tool (SSAT)

5. NP BMP Tool

6. Prioritize Target Measure Application Web Application (PTMApp Web App)

7. Prioritize Target Measure Application Desk Top Application- (PTMApp Desk Top)

8. Prioritize Target Measure Application Benefits Estimator And Summary Tool (PTMApp BEAST)

9. Pollutant Load Estimation Tool – (PLET)

10. Revised Universal Soil Loss Equation 2 (RUSLE2)

11. Water Erosion Prediction Project (WEPP)

12. Board of Water and Soil Resources Estimators (BWSR Estimators)

13. Subsurface Sewage Treatment System Estimator (SSTSE)

14. Agricultural Conservation Planning Framework Tool (ACPF)

15. Daily Erosion Project (DEP)

16. Soil Water Assessment Tool (SWAT)

17. Wetland Restoration Effectiveness Tool (WRET)

18. Stormwater Management Model (XP SWMM)

19. Natural Resource Conservation Service Engineering Tools (NRCS Engineering Tools)

20. Minnesota Hydrology Tools (MN Hydrology Tools)

21. Source Loading and Management Model (WinSLAMM)

Documentation of tool user assessment findings

The following section describes the findings of the tool user assessment, and recommendations regarding how the tools, guidance, training, and other resources can be improved to address issues identified in the user assessment.

The tools user assessment survey was taken by 87 participants. However, 13 out of 87 participants partially completed the survey and didn't answer all the questions. Table 1 provides the number of participants from various organizations who responded to tool user assessment survey. It is encouraging to see the active participation from local government unit and state agency staff.

Table 1. Number of participants from various organizations.

Agency/Organization	Responses
Soil and Water Conservation District (SWCD)	31
Watershed District (WD)	4
Watershed Management Organization (WMO)	0
Academic Institution	2
County	0
City	0
State Agency	31
Federal Agency	1
Non-Profit	0
Other (please specify)	5
Total=	**74**

Figure 1 shows the scale of familiarity for each tool in the tool user assessment survey and Table 2 provides the number of responses as how familiar participants are with various tools and models. Nearly 50 percent of the respondents were very familiar and somewhat familiar with Hydrologic Simulation Program FORTRAN Scenario Application Manager (HSPF SAM), Watershed Pollutant Load Reduction Calculator (WPLRC), Prioritize Target Measure Application Web Application (PTMApp Web App), Prioritize Target Measure Application- Desk Top Application (PTMApp Desk Top App), PTMApp Benefits Estimator And Summary Tool (PTMApp BEAST), Revised Universal Soil Loss Equation (RUSLE2), BWSR Estimators, and Natural Resource Conservation Service Engineering Tools (NRCS Engineering Tools). These are the primary tools that staff are using for watershed management and conservation work and there will be a focused effort from BWSR and agency partners to enhance support and training on these tools. BWSR and MPCA will develop a plan to provide the information related to capabilities

and limitations of each tool at a central location and conduct training and outreach sessions at local conferences.
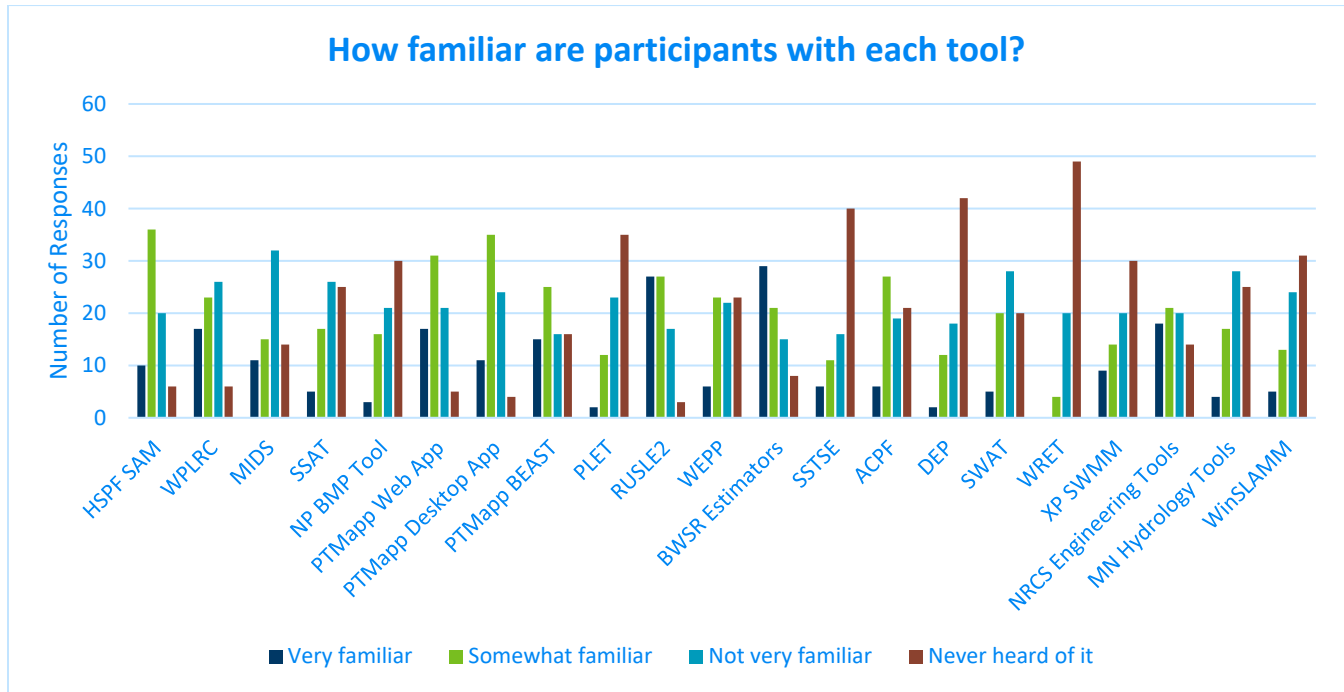
Figure 1. Level of familiarity with models and tools.

Table 2. Number of responses as how familiar participants are with various tools and models.
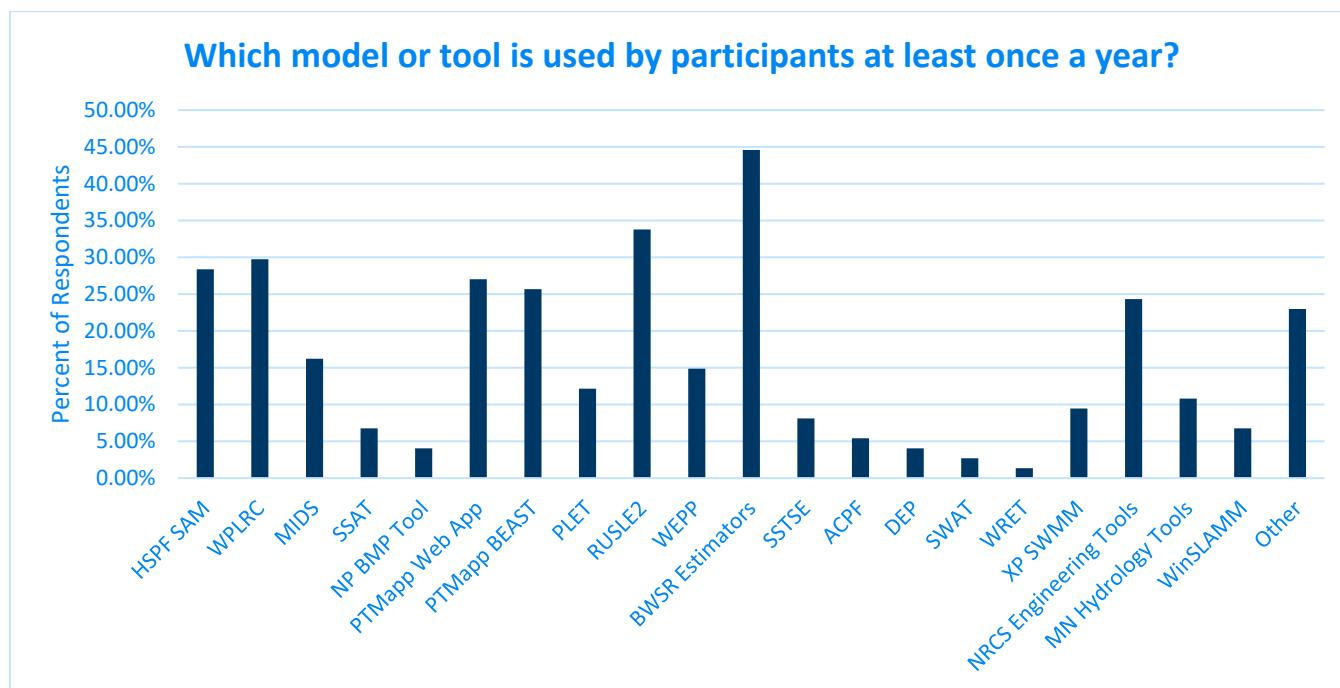
Tool or Model	Very Familiar	Somewhat Familiar	Not Very familiar	Never Heard of it.	Total
Hydrologic Simulation Program Fortran Scenario Application Manager (HSPF SAM)	10	36	20	6	72
Watershed Pollutant Load Reduction Calculator (WPLRC)	17	23	26	6	72
Minimal Impact Design Standards (MIDS)	11	15	32	14	72
Smart Salting Assessment Tool (SSAT)	5	17	26	25	73
NP BMP Tool	3	16	21	30	70
Prioritize Target Measure Application Web Application (PTMApp Web App)	17	31	21	5	74
Prioritize Target Measure Application Desk Top Application- (PTMApp Desk Top)	11	35	24	4	74
Prioritize Target Measure Application Benefits Estimator And Summary Tool (PTMApp BEAST)	15	25	16	16	72

Pollutant Load Estimation Tool – (PLET)	2	12	23	35	72
Revised Universal Soil Loss Equation 2 (RUSLE2)	27	27	17	3	74
Water Erosion Prediction Project (WEPP)	6	23	22	23	74
Board of Water and Soil Resources Estimators (BWSR Estimators)	29	21	15	8	73
Subsurface Sewage Treatment System Estimator (SSTSE)	6	11	16	40	73
Agricultural Conservation Planning Framework Tool (ACPF)	6	27	19	21	73
Daily Erosion Project (DEP)	2	12	18	42	74
Soil Water Assessment Tool (SWAT)	5	20	28	20	73
Wetland Restoration Effectiveness Tool (WRET)	0	4	20	49	73
Stormwater Management Model (XP SWMM)	9	14	20	30	73
Natural Resource Conservation Service Engineering Tools (NRCS Engineering Tools)	18	21	20	14	73
Minnesota Hydrology Tools (MN Hydrology Tools)	4	17	28	25	74
Source Loading and Management Model (WinSLAMM)	5	13	24	31	73

P8, QUAL2K model, HydroCAD, HEC-HMS, HEC-RAS, HEC-SSP, HEC-DSSVUE, HEC-METVUE, HEC-EFM, HEC-GRIDUTIL, ERDC, PCSWMM, EPA-SWMM, FLUX, Bathtub, GSSHA, Model My Watershed, Cropland Data Layer, SPARROW, StreamStats, Wind Erosion Prediction System (WEPS), MPCA's Street Sweeping Calculator were other tools or models specified by participants.

Figure 2 shows the percent of participants that used a particular model or tool at least once a year. HSPF SAM (28 percent), WPLRC (30 percent), PTMApp Web Application (27 percent), PTMApp BEAST (26 percent), RUSLE2 (34 percent), BWSR Estimators (45 percent), and NRCS Engineering Tools (24 percent) are the models and tools that are used at least once a year by more than 20 percent survey participants. Higher rates of usage will result in greater proficiency and adoption of tools by watershed managers over time. To build on this assessment, BWSR and MPCA plan to periodically survey watershed managers to gather trends on which tools are gaining traction and being adopted over time.
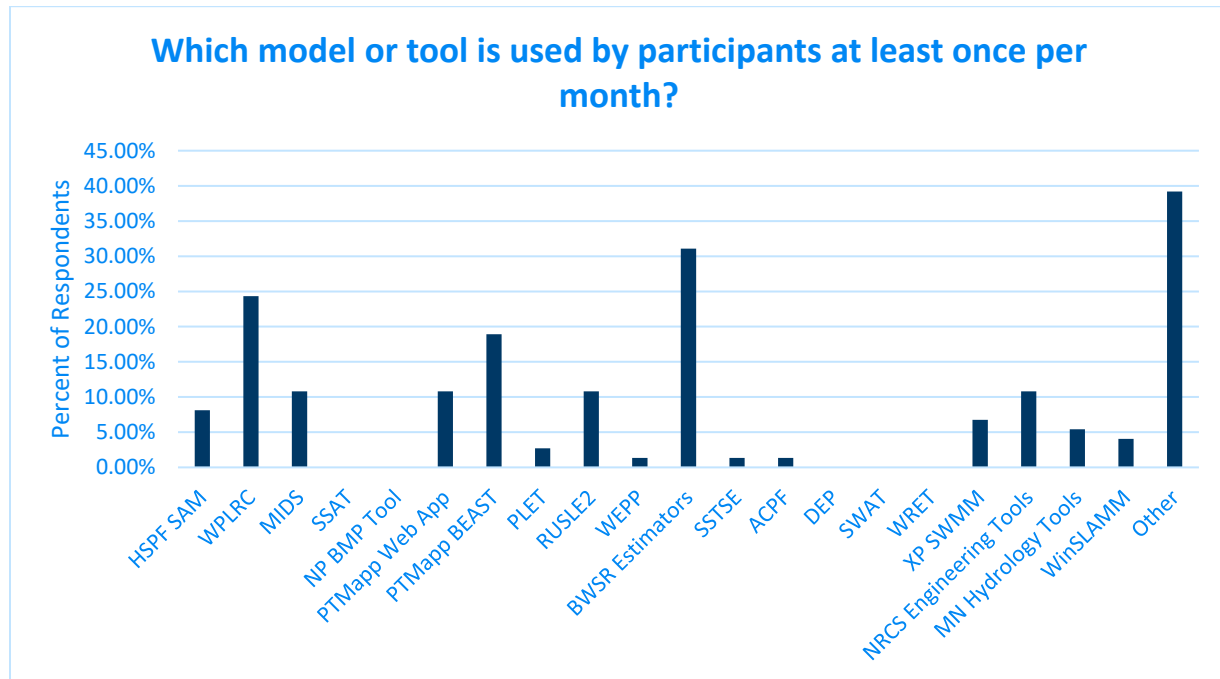
Figure 2. Percent of participants used a model or tool at least once a year.

Other tools or models specified by participants that they had used at least once a year include: P8, QUAL2K model, HydroCAD, HEC-HMS, HEC-RAS, HEC-SSP, HEC-DSSVUE, HEC-METVUE, HEC-EFM, HEC-GRIDUTIL, ERDC, PCSWMM, EPA-SWMM, FLUX, Bathtub, GSSHA, Geographic Information System (GIS) based pollutant hotspot and delivery assessment, PTMApp-Desktop, Model My Watershed, Cropland Data Layer, SPARROW, StreamStats, Wind Erosion Prediction System (WEPS), and MPCA's Street Sweeping Calculator.

Figure 3 shows the percent of participants that used a model or tool more frequently (at least once per month). The tools most frequently used include: HSPF (8 percent), WPLRC (24 percent), PTMApp Web Application (11 percent), PTMApp BEAST (19 percent), RUSLE2 (11 percent), BWSR Estimators (31 percent), Stormwater Management Model (XP-SWMM) (7 percent), and NRCS Tools (11 percent).
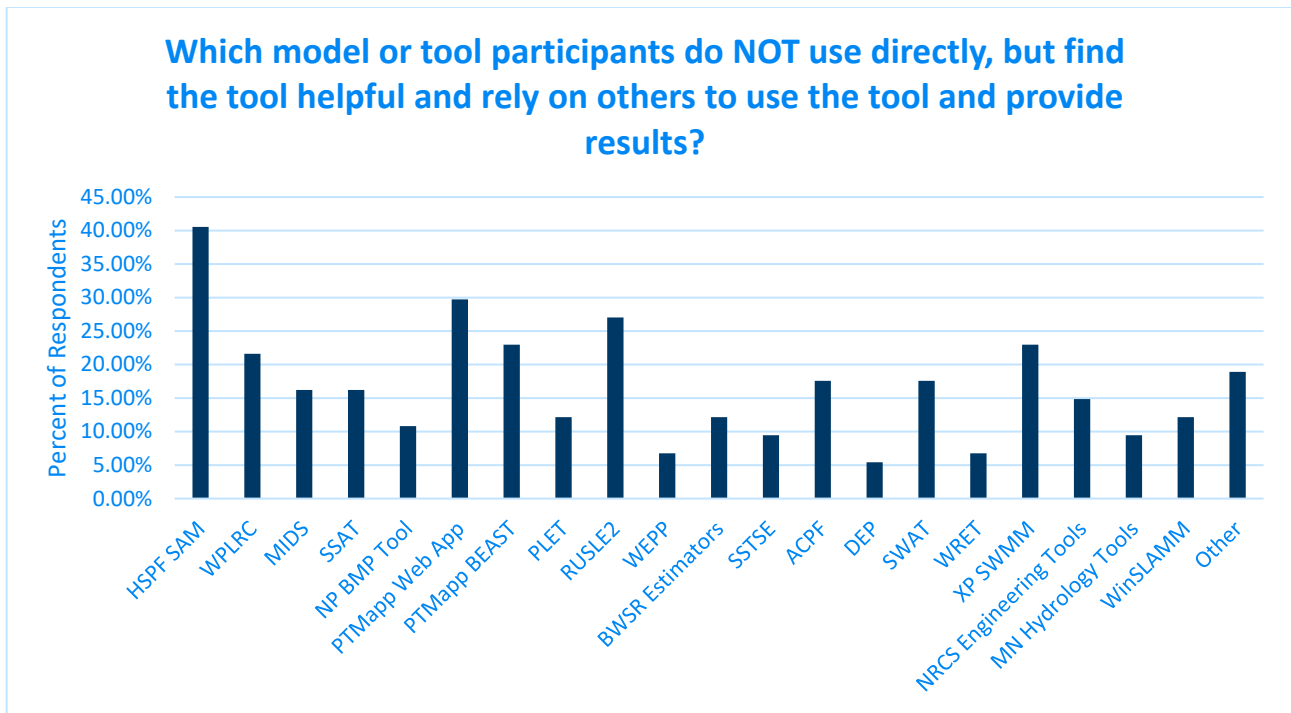
Which model or tool is used by participants at least once per month?

Other tools or models used by participants at least once per month, but from a lower percentage of participants include: P8, Hydro CAD, HEC-HMS, HEC-RAS, HEC-DSSVUE, PCSWMM, and Geographic Information System (GIS) based pollutant hotspot and delivery assessment.

Figure 4 shows the percent of participants that find a particular model or tool helpful and rely on others to use to provide results. HSPF SAM (41 percent), WPLRC (22 percent), PTMApp Web Application (30 percent), PTMApp BEAST (23 percent), RUSLE2 (27 percent), BWSR Estimators (12 percent), ACPF tool (18 percent), Soil and Water Assessment tool (SWAT) (18 percent), XP-SWMM (23 percent) and NRCS Engineering Tools (15 percent) are the models and tools that participants find helpful on individual basis but rely on others to use it and provide results.

Figure 4. Percent of participants find a particular model or tool helpful but rely on others to use to provide results.

Which model or tool participants do NOT use directly, but find the tool helpful and rely on others to use the tool and provide results?

P8, Bathtub, PTMApp desktop are other models or tools that participants find helpful on individual basis but rely on other to use it and report results.

Figure 5 shows the percent of participants that used a particular model or tool for watershed planning. The models and tools that are used more frequently for watershed planning purpose are: HSPF SAM (40 percent), WPLRC (30 percent), PTMApp Web Application (42 percent), PTMApp BEAST (31 percent), RUSLE2 (14 percent), BWSR Estimators (15 percent), ACPF tool (7 percent), Soil and Water Assessment tool (SWAT) (9 percent), XP-SWMM (12 percent) and NRCS Engineering tools (13 percent).

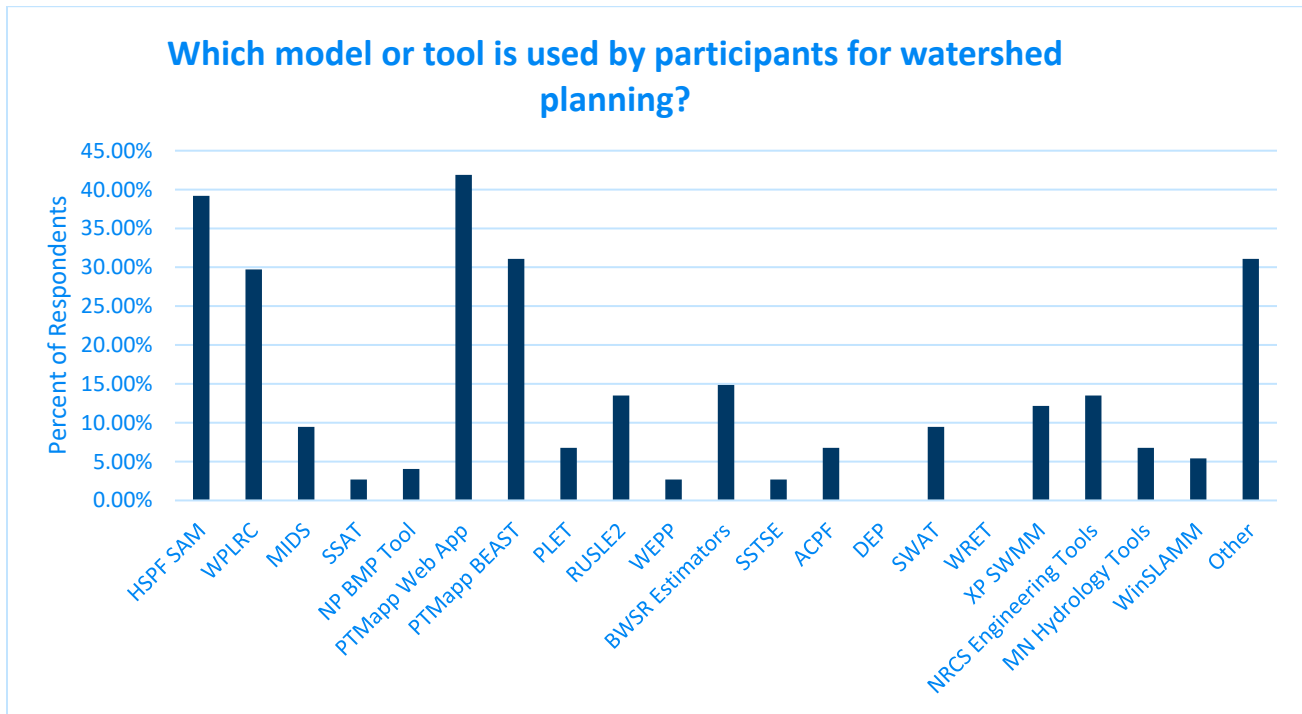**Figure 5. Percent of participants used a particular model or tool for watershed planning.**

Figure 6 show the percent of participants that used a particular model or tool for reporting environmental outcomes for grant reporting. The models and tools that participants used most to report environmental outcomes for grant reporting include: HSPF SAM (8 percent), WPLRC (16 percent), PTMApp Web Application (16 percent), PTMApp BEAST (28 percent), RUSLE2 (22 percent), BWSR Estimators (43 percent), XP-SWMM (5 percent), NRCS Engineering Tools (3 percent) and Source Loading and Management Model -WinSLAMM (4 percent).

Figure 6. Percent of participants that used a particular model or tool for reporting environmental outcomes for grant reporting.
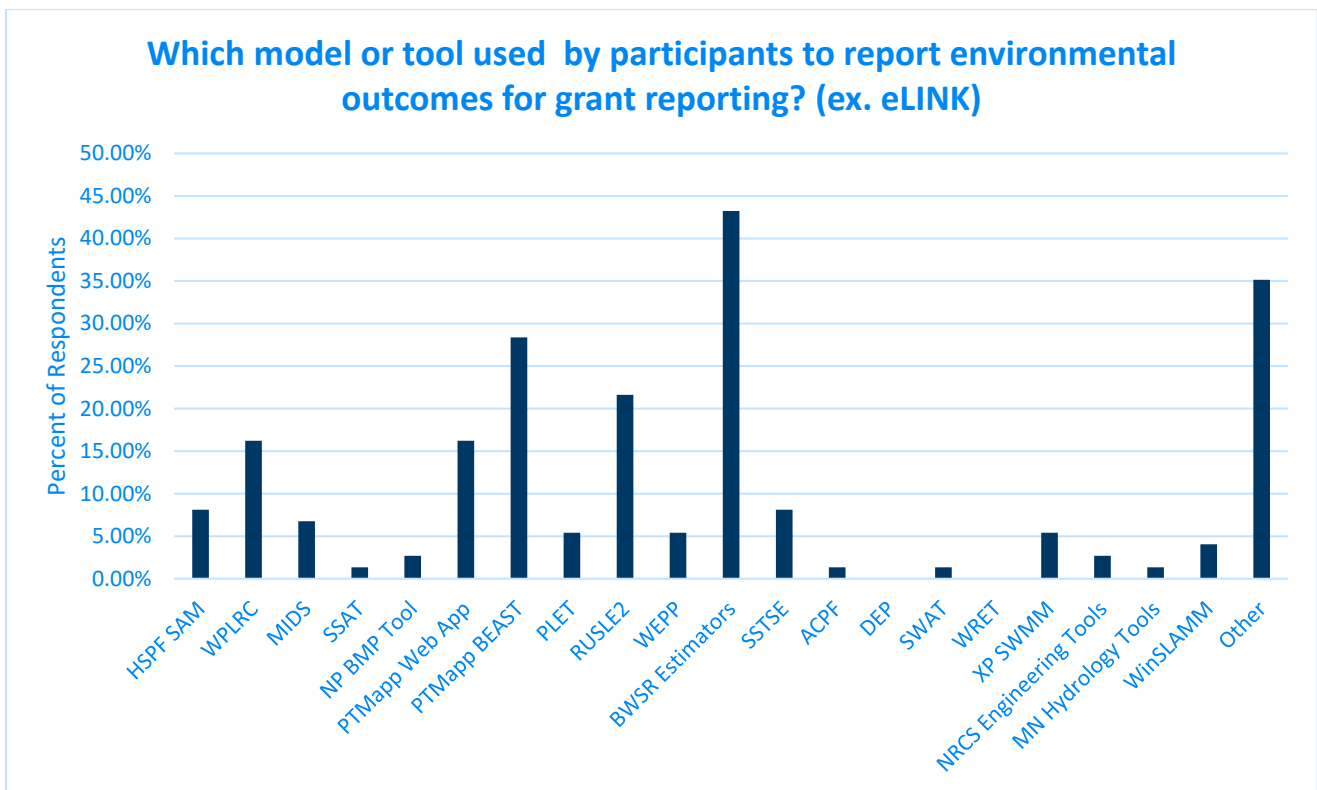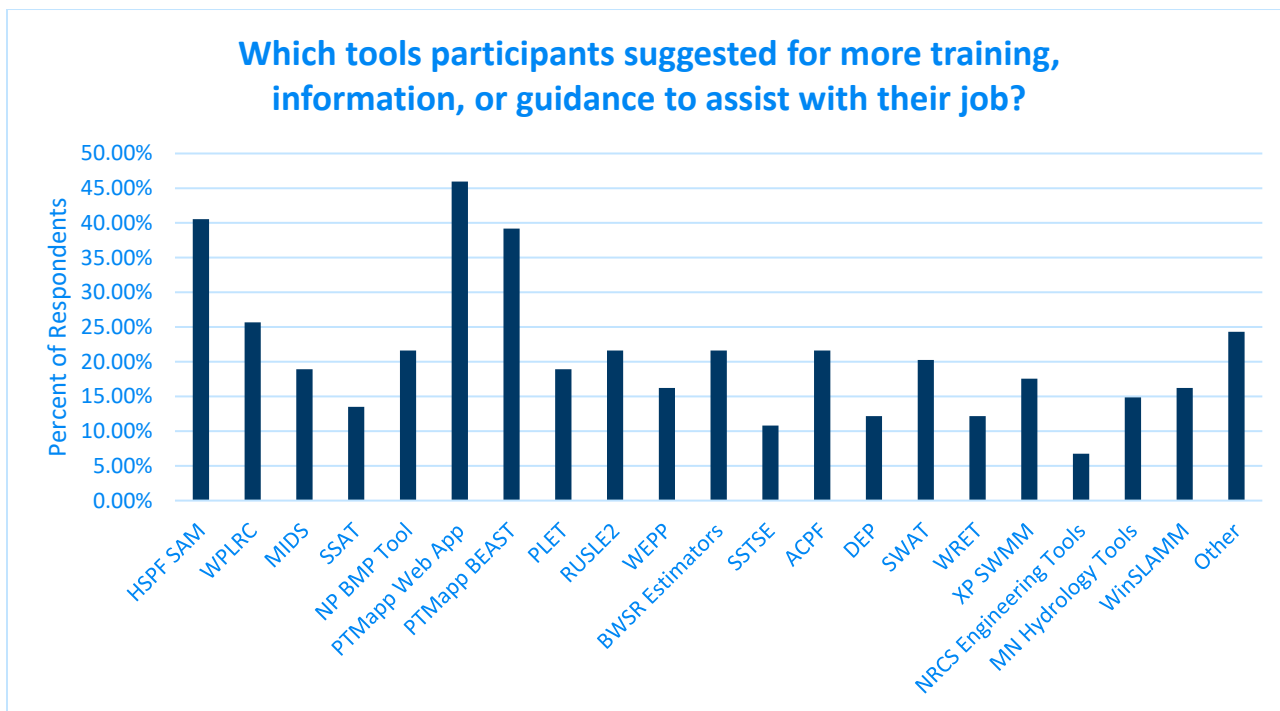

Figure 7 shows the percent of participants that suggested for more training, information, or guidance on model or tool on their job. The models and tools for which participants suggested for more training, information and guidance include: HSPF SAM (41 percent), WPLRC (26 percent), PTMApp Web Application (46 percent), PTMApp BBEAST (40 percent), RUSLE2 (22 percent), BWSR Estimators (22 percent), ACPF tool (22 percent), SWAT (21 percent), XP-SWMM (18 percent), Minnesota Hydrology Tool (15 percent), NRCS Engineering Tools (7 percent), and Source Loading and Management Model-WinSLAMM (16 percent).

Figure 7. Percent of participants that suggested for more training, information, or guidance on models or tools.

From a total of 66 participants who responded to the question whether they would like to be part of focus group to provide input to state agencies, 19 (30 percent) participants were willing to be part of focus group to provide input to state agencies. From a total of 66 participants who responded to the question whether they have assisted with models or tools training as trainer, 18 (27 percent) have assisted with models or tools training as trainer and are willing to be trainer. BWSR, MPCA, and partner agencies will form an advisory work group that includes local government partners to better focus develop and training for watershed tools.

Figure 8 shows the percent of participants that have basic proficiency or skills with Environmental Systems Research Institute Inc. (ESRI) Arc Pro 3.X or higher, ESRI Arc GIS Online Environment (AGOL), data analysis and statistics with spreadsheets or other tools, and operating global positioning system (GPS) Survey equipment. BWSR will work with the Minnesota Association of Soil and Water Conservation Districts (MASWCD) and Minnesota Watersheds organizations to develop strategies to increase the basic proficiency and skills of the staff with ESRI GIS tools to meet future water resource needs.

Figure 8. Percent of participants that have basic proficiency or skills for ESRI-GIS tools and Data Analysis.
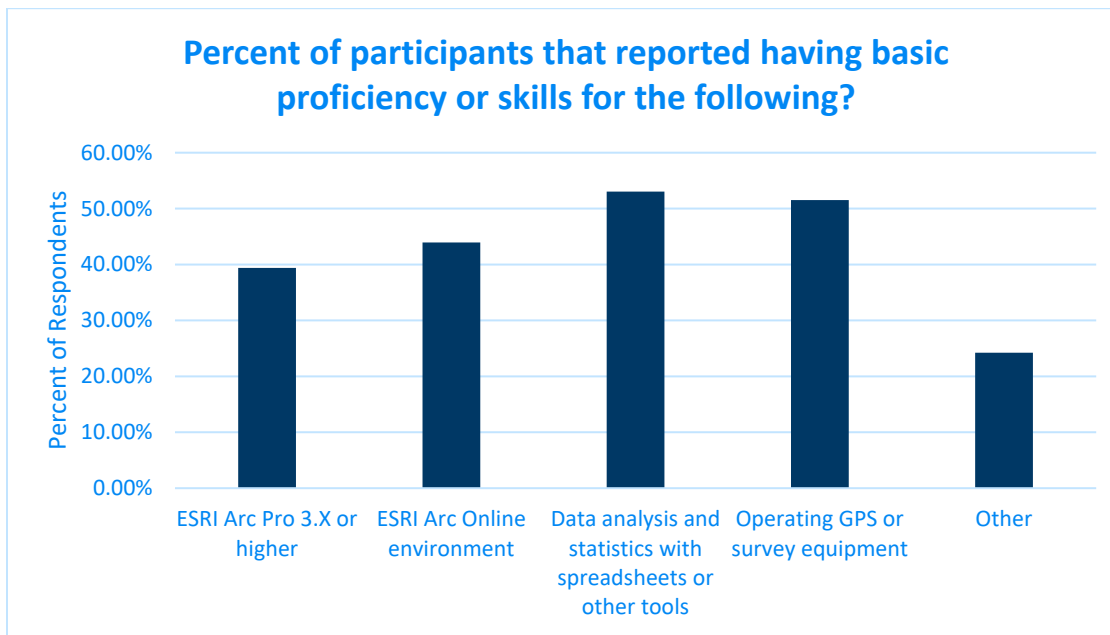

Table 3 provides the data on percent of participants that suggested for training on topics of Training on web-based tools for analysis and reporting, Technical GIS based training for outputs from tools like ACPF or PTMApp, data analysis and dashboard development, environmental outcomes, field data collection using the ESRI Arc Collector application for models and tool inputs, and others. Figure 9 show the percent of participants that are interested in training topics.

Table 3. Percent of Participants suggested for training.

Topic	Percent Responses
Training on web-based tools for analysis and reporting	71
Technical GIS based training for outputs from tools like ACPF or PTMApp	62
Data analysis and dashboard development	45
Environmental outcomes	58
Field data collection using Arc Collector for models and tool inputs	33
Other	3

Figure 9 Percent of participants that are interested in training topics.

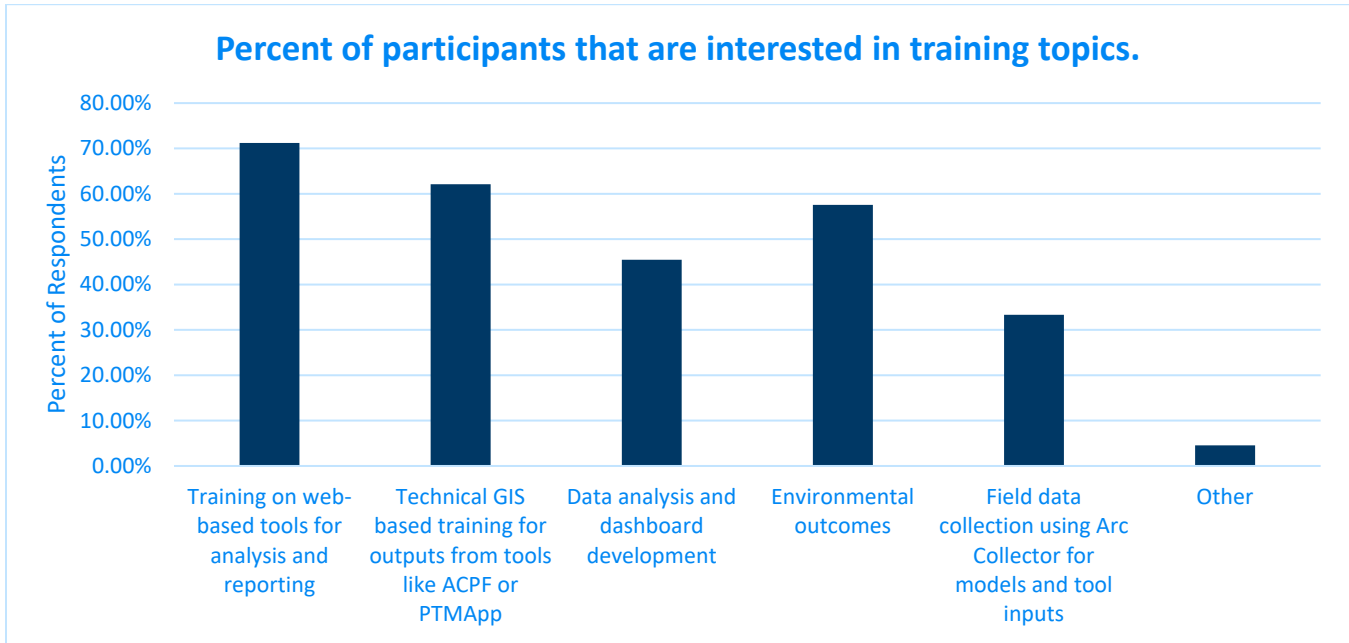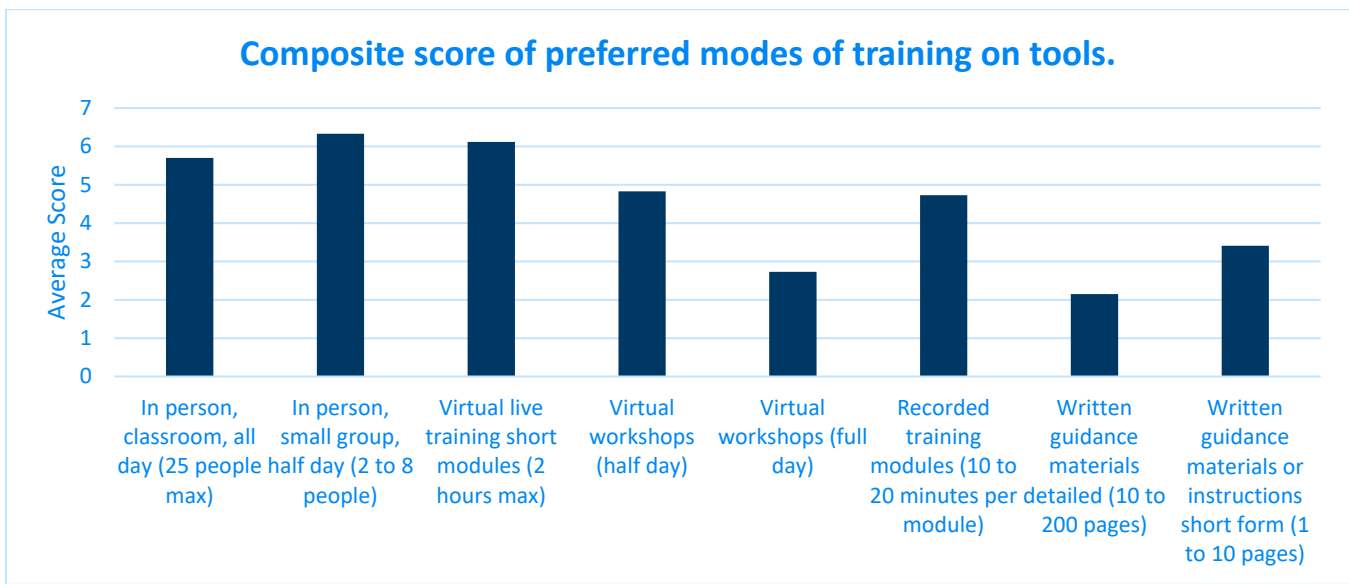**Percent of participants that are interested in training topics.**

Figure 10 shows the composite score of preferred mode of training. In person small group (2 to 8 people) half day training was the most preferred mode of training followed by virtual live training with short modules of 2 hours max. In person all day classroom setting for 25 people max was the third most preferred mode of training followed by half day virtual workshop and recorded training modules (10 to 20 minutes max). BWSR, MPCA, and partner agencies will be working closely to determine next steps for training and develop a framework based on feedback from this assessment.

Figure 10. Composite score of preferred mode of training.

Composite score of preferred modes of training on tools.

Summary of Findings

The tools user assessment survey was well received and completed by 87 participants. However, 13 out of 87 participants partially completed the survey and didn't answer all the questions. Out of 74 participants who completed the tools user assessment survey, 42 percent participants were from local unit of governments and 42 percent of participants were from state agencies. It is encouraging to see the active participation from local government unit and state agency staff. The following are the main findings from this survey:

- Nearly 50 percent of the respondents were very familiar and somewhat familiar with HSPF SAM, WPLRC, PTMApp Web App, PTMApp Desk Top App, PTMApp BEAST, RUSLE2, BWSR Estimators, and NRCS Engineering Tools. These are the primary tools that staff are using for watershed management and conservation work.
- Following models/Tools are used at least once a year by survey participants: HSPF SAM (28 percent), WPLRC (30 percent), PTMApp Web App (27 percent), PTMApp BEAST Tool (26 percent), RUSLE2 (34 percent), BWSR Estimators (45 percent), and NRCS Engineering Tools (24 percent).
- HSPF SAM, WPLRC, PTMApp Web App, PTMApp BEAST Tool, RUSLE2, BWSR Estimators, ACPF tool, SWAT, XP-SWMM, and NRCS Engineering Tools are the models and tools that participants find helpful on individual basis but rely on others to use it and provide results.
- HSPF SAM, WPLRC, PTMApp Web App, PTMApp BEAST Tool, RUSLE2, BWSR Estimators, ACPF tool, SWAT, XP-SWMM and NRCS Engineering tools are the most common tools/models used by participants for watershed planning.
- BWSR Estimators are used by 43 percent of the participants, followed by PTMApp BEAST tool by 28 percent, RUSLE2 by 22 percent, WPLRC and PTMApp Web Application both by 16 percent, HSPF SAM by 8 percent, and XP-SWMM by 5 percent of the participants to report environmental outcomes.
- The models and tools for which participants suggested for more training, information and guidance include: PTMApp Web Application (46 percent), PTMApp BEAST Tool (40 percent), HSPF SAM (41 percent), WPLRC (26 percent), RUSLE2 (22 percent), BWSR Estimators (22 percent), ACPF (22 percent), SWAT (21 percent), XP-SWMM (18 percent), Minnesota Hydrology Tool (15 percent), NRCS Engineering Tools (7 percent), and Source Loading and Management Model-WinSLAMM (16 percent).
- A total of 30 percents participants were willing to be part of focus group to provide input to state agencies to provide guidance on training. A total of 27 percent had assisted with models and tools training in the past and are willing to be part of team to provide training.
- A total of 71 percent participants suggested for training on web-based tools for analysis and reporting followed by 62 percent for Technical GIS based training for outputs from tools like ACPF or PTMApp, 58 percent for environmental outcomes, 45 percent for Data analysis and dashboard development, and 33 percent for field data collection using Arc Collector for models and tools input.
- In person half day training to small group of 2 to 8 people was suggested the most preferred of modes for training on tools and models. In person all day training to a group of 25 maximum participants and two hours maximum virtual online training were suggested as the second and third preferred modes of training. Half day workshop and recorded training modules (10 to 20 minutes per module) were suggested as fourth preferred modes of training. Written guidance material (1 to 10 pages short instructions) was also suggested as one of the preferred modes of training on models and tools.

Recommendations

Following recommendations are provided regarding how the tools, guidance, training, and other resources can be improved to address issues identified in the user assessment.

- There should be a focused effort from BWSR, MPCA, and partner agencies to enhance support and training on these tools. BWSR, MPCA, and partner agencies should develop a plan to provide the information related to capabilities and limitations of each tool at a central location and conduct training and outreach sessions at local conferences.
- BWSR, MPCA, and partner agencies should also work closely to determine next steps for training and develop a framework based on feedback from this assessment.
- The formation of a user group on watershed model and tool decision support that includes state agency staff, including MNIT, local governments, University of Minnesota and Minnesota State Colleges and Universities (MNSCU), and non-governmental organizations (NGOs). This user group would help provide feedback to BWSR and MPCA on critical topics and future work items to focus on that will help support the NRS and the Minnesota Water Management Framework.
- Since 30 percent of participants are willing to be part of focus group to provide input to state agencies and 27 percent of the participants had assisted with models and tools training in the past and are willing to be part of team to provide training on models and tools, BWSR, MPCA, and partner agencies should form an advisory work group that includes local government partners to better focus on developing training material and provide training for watershed tools.
- Higher rates of usage will result in greater proficiency and adoption of tools by watershed managers over time. To build on this assessment, BWSR and MPCA should plan to periodically survey watershed managers to gather trends on which tools are gaining traction and being adopted over time and evaluate the impacts of increase training and support long term.
- BWSR, MPCA and partner agencies should work with the Minnesota Association of Soil and Water Conservation Districts (MASWCD) and Minnesota Watersheds organizations to develop strategies to increase the basic proficiency and skills of the staff with GIS tools to meet future water resource needs. Utilize venues such as BWSR Academy and the annual conventions of these organizations to provide training and to get wider user feedback.
- A combination of in person small group (2 to 8 people) half day training, virtual live training with short modules of 2 hours max, in person all day classroom setting for 25 people max, half day virtual workshop and recorded training modules (10 to 20 minutes max) should be used to provide ongoing training on model and tools.

.

Attachment-A User Tool Assessment Survey Questionnaire

Background Information: State of Minnesota along with federal agencies and academic institutions have invested considerably in the development of the watershed decision support tools i.e., Prioritize, Target, Measure Application (PTMApp) (BWSR) and Hydrologic Simulation Program Fortran-Scenario Application Manager (HSPF-SAM) (MPCA), Nitrogen Phosphorus Best Management Practices (NP-BMP), (University of Minnesota), Agricultural Conservation Program Framework (ACPF) (USDA-ARS) and others.

Some of these decision support models and tools have been used in state of Minnesota watersheds for the purposes of siting and selecting Best Management Practices (BMPs), developing nutrient and sediment load reduction outcome scenarios using combinations of BMPs, and reporting outcomes.

Minnesota Pollution Control Agency (MPCA) in collaboration with Board of Water and Soil Resources (BWSR), lead a multi-agency effort to conduct a tool user-assessment to better understand the barriers, challenges, and opportunities in using the existing tools. Results of tool user assessment will provide the scope of developing clear and consistent user guidance document for tool use and other helpful resources for nutrient reduction planning and implementation.

Survey Purpose: To provide input on the use of watershed models and tools for support of the Minnesota Nutrient Reduction Strategy and WRAPS and 1W1P development and updates. Information from this survey will help inform future training for local, state, and federal staff, future development and enhancements of current tools for watershed management, identify areas to improve the tools and make them more user friendly, and identify individuals who would like to be a part of a focus group to provide feedback to the State of Minnesota on this topic over time. Online survey questions.

    Q1. Name:

    Q2. E-mail:

    Q3. Organization:

General Survey Questions Regarding All Models and Tools

    Q4. What type of organization do you work for?
        Soil and Water Conservation District (SWCD),
        Watershed District (WD),
        County,
        Watershed Management Organization (WMO),
        City,
        State Agency,
        Federal Agency,
        University,
        Non-Profit, or
        Others

Q5. How familiar are you with each tool listed below? (Very familiar, somewhat familiar, not very familiar, never heard of it)

Hydrologic Simulation Program Fortran Scenario Application Manager - HSPF SAM (MPCA)
- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

Watershed Pollutant Load Reduction Calculator (MPCA)
- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

Minimal Impact Design Standards - MIDS (MPCA)

- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

Smart Salting Assessment Tool (MPCA)
- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

NP BMP Tool (MPCA/U of M)
- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

Prioritize Target Measure Application- PTMApp Web Application (BWSR)
- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

Prioritize Target Measure Application- PTMApp Desk Top Application (BWSR)
- Very familiar
- Somewhat familiar
- Not very familiar
- never heard of it

Prioritize Target Measure - PTMApp BEAST Tool (BWSR)

    Very familiar

    Somewhat familiar

    Not very familiar
    never heard of it

Pollutant Load Estimation Tool - PLET (US EPA)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Revised Universal Soil Loss Equation- RUSLE2 (USDA)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Water Erosion Prediction Project-WEPP (USDA)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

BWSR Estimators (BWSR)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Subsurface Sewage Treatment System Estimator (U of M/BWSR)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Agricultural Conservation Planning Framework Tool - ACPF (Iowa State/U of M)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Daily Erosion Project – DEP (BWSR/U of M/Iowa State)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Soil Water Assessment Tool – SWAT (USDA)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Wetland Restoration Effectiveness Tool – WRET (U of M)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Stormwater Management Model – XP SWMM (US EPA, private firms)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

NRCS Engineering Tools (USDA NRCS)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Minnesota Hydrology Tools (MN DNR)

    Very familiar
    Somewhat familiar
    Not very familiar
    never heard of it

Source Loading and Management Model – WinSLAMM (PV & Associates), and

Very familiar
Somewhat familiar
    Not very familiar
    never heard of it

and Others: Write it.

Q6. Which model or tool do you use at least once a year? (check box for all that apply)

- Hydrologic Simulation Program Fortran Scenario Application Manager - HSPF SAM (MPCA)
- Watershed Pollutant Load Reduction Calculator (MPCA)
- Minimal Impact Design Standards - MIDS (MPCA)
- Smart Salting Assessment Tool (MPCA)
- NP BMP Tool (MPCA/U of M)
- Prioritize Target Measure Application- PTMApp Web Application (BWSR)
- Prioritize Target Measure - PTMApp BEAST Tool (BWSR)
- Pollutant Load Estimation Tool - PLET (US EPA)
- Revised Universal Soil Loss Equation- RUSLE2 or
- Water Erosion Prediction Project -WEPP (USDA)
- BWSR Estimators (BWSR)

- Subsurface Sewage Treatment System Estimator (U of M/BWSR)
- Agricultural Conservation Planning Framework Tool - ACPF (Iowa State/U of M)
- Daily Erosion Project – DEP (BWSR/U of M/Iowa State)
- Soil Water Assessment Tool – SWAT (USDA)
- Wetland Restoration Effectiveness Tool – WRET (U of M)
- Stormwater Management Model – XP SWMM (US EPA, private firms)
- NRCS Engineering Tools (USDA NRCS)
- Minnesota Hydrology Tools (MN DNR)
- Source Loading and Management Model – WinSLAMM (PV & Associates), and
- Other (Write)

Q7. Which model or tool do you use more frequently (at least once per month)? (check box for all that apply)
- Hydrologic Simulation Program Fortran Scenario Application Manager - HSPF SAM (MPCA)
- Watershed Pollutant Load Reduction Calculator (MPCA)
- Minimal Impact Design Standards - MIDS (MPCA)
- Smart Salting Assessment Tool (MPCA)
- NP BMP Tool (MPCA/U of M)
- Prioritize Target Measure Application- PTMApp Web Application (BWSR)
- Prioritize Target Measure - PTMApp BEAST Tool (BWSR)
- Pollutant Load Estimation Tool - PLET (US EPA)
- Revised Universal Soil Loss Equation- RUSLE2 or
- Water Erosion Prediction Project -WEPP (USDA)
- BWSR Estimators (BWSR)
- Subsurface Sewage Treatment System Estimator (U of M/BWSR)
- Agricultural Conservation Planning Framework Tool - ACPF (Iowa State/U of M)
- Daily Erosion Project – DEP (BWSR/U of M/Iowa State)
- Soil Water Assessment Tool – SWAT (USDA)
- Wetland Restoration Effectiveness Tool – WRET (U of M)
- Stormwater Management Model – XP SWMM (US EPA, private firms)
- NRCS Engineering Tools (USDA NRCS)
- Minnesota Hydrology Tools (MN DNR)
- Source Loading and Management Model – WinSLAMM (PV & Associates), and
- Other (Write)

Q8. Which model or tool do you NOT use directly, but you find it a helpful tool and you rely on others to use it and provide results to you? (check box for all that apply)
- Hydrologic Simulation Program Fortran Scenario Application Manager - HSPF SAM (MPCA)
- Watershed Pollutant Load Reduction Calculator (MPCA)
- Minimal Impact Design Standards - MIDS (MPCA)
- Smart Salting Assessment Tool (MPCA)
- NP BMP Tool (MPCA/U of M)
- Prioritize Target Measure Application- PTMApp Web Application (BWSR)
- Prioritize Target Measure - PTMApp BEAST Tool (BWSR)

- Pollutant Load Estimation Tool - PLET (US EPA)
- Revised Universal Soil Loss Equation- RUSLE2 or
- Water Erosion Prediction Project -WEPP (USDA)
- BWSR Estimators (BWSR)
- Subsurface Sewage Treatment System Estimator (U of M/BWSR)
- Agricultural Conservation Planning Framework Tool - ACPF (Iowa State/U of M)
- Daily Erosion Project – DEP (BWSR/U of M/Iowa State)
- Soil Water Assessment Tool – SWAT (USDA)
- Wetland Restoration Effectiveness Tool – WRET (U of M)
- Stormwater Management Model – XP SWMM (US EPA, private firms)
- NRCS Engineering Tools (USDA NRCS)
- Minnesota Hydrology Tools (MN DNR)
- Source Loading and Management Model – WinSLAMM (PV & Associates), and
- Other (Write)

Q9. Which model or tool do you use for watershed planning? (check box for all that apply)
- Hydrologic Simulation Program Fortran Scenario Application Manager - HSPF SAM (MPCA)
- Watershed Pollutant Load Reduction Calculator (MPCA)
- Minimal Impact Design Standards - MIDS (MPCA)
- Smart Salting Assessment Tool (MPCA)
- NP BMP Tool (MPCA/U of M)
- Prioritize Target Measure Application- PTMApp Web Application (BWSR)
- Prioritize Target Measure - PTMApp BEAST Tool (BWSR)
- Pollutant Load Estimation Tool - PLET (US EPA)
- Revised Universal Soil Loss Equation- RUSLE2 or
- Water Erosion Prediction Project -WEPP (USDA)
- BWSR Estimators (BWSR)
- Subsurface Sewage Treatment System Estimator (U of M/BWSR)
- Agricultural Conservation Planning Framework Tool - ACPF (Iowa State/U of M)
- Daily Erosion Project – DEP (BWSR/U of M/Iowa State)
- Soil Water Assessment Tool – SWAT (USDA)
- Wetland Restoration Effectiveness Tool – WRET (U of M)
- Stormwater Management Model – XP SWMM (US EPA, private firms)
- NRCS Engineering Tools (USDA NRCS)
- Minnesota Hydrology Tools (MN DNR)
- Source Loading and Management Model – WinSLAMM (PV & Associates), and
- Other (Write)

Q10. Which model or tool do you use to report environmental outcomes for grant reporting? (ex. eLINK), and

Q11. Which tools do you need more training, information, or guidance on for your job? (check box for all that apply)
- Hydrologic Simulation Program Fortran Scenario Application Manager - HSPF SAM (MPCA)
- Watershed Pollutant Load Reduction Calculator (MPCA)

- Minimal Impact Design Standards - MIDS (MPCA)
- Smart Salting Assessment Tool (MPCA)
- NP BMP Tool (MPCA/U of M)
- Prioritize Target Measure Application- PTMApp Web Application (BWSR)
- Prioritize Target Measure - PTMApp BEAST Tool (BWSR)
- Pollutant Load Estimation Tool - PLET (US EPA)
- Revised Universal Soil Loss Equation- RUSLE2 or
- Water Erosion Prediction Project -WEPP (USDA)
- BWSR Estimators (BWSR)
- Subsurface Sewage Treatment System Estimator (U of M/BWSR)
- Agricultural Conservation Planning Framework Tool - ACPF (Iowa State/U of M)
- Daily Erosion Project – DEP (BWSR/U of M/Iowa State)
- Soil Water Assessment Tool – SWAT (USDA)
- Wetland Restoration Effectiveness Tool – WRET (U of M)
- Stormwater Management Model – XP SWMM (US EPA, private firms)
- NRCS Engineering Tools (USDA NRCS)
- Minnesota Hydrology Tools (MN DNR)
- Source Loading and Management Model – WinSLAMM (PV & Associates), and
- Other (Write)

General Survey Questions Regarding Training on All Models and Tools

Q12. Which are the top three tools that you would like to know more about?

1.
2.
3.

The following training questions will relate specifically to each of these three.

Q13. (Optional) Provide of an example of a successful training that helped you understand how to use a model or tool or describe what an ideal training would be for you.

Q14. Would you like to be in a focus group to be interviewed to provide input to state agencies (BWSR, MPCA, MDA, MDH, and DNR) and University staff over time on this topic? (Yes/No)

Q15. Have you assisted with model and tool training as a trainer in the past or would you like to be a trainer (Yes/No). If yes, please describe.

Q16. Do you have basic proficiency or skills for the following? (check box for all that apply)
- ESRI Arc Pro 3.X or higher
- ESRI Arc Online environment.
- Data analysis and statistics with spreadsheets or other tools
- Operating GPS or survey equipment
- Other (write-in)

Q17. What training topics are you interested in? (check all the apply)

- o Training on web-based tools for analysis and reporting
- o Technical GIS based training for outputs from tools like ACPF or PTMApp
- o Data analysis and dashboard development
- o Environmental outcomes
- o Field data collection using Arc Collector for models and tool inputs
- o Other (write-in)

Q18. What are preferred modes of training? (rate 1 (lowest desired) to 5 (highest desired) select all that apply or rank)
- o In person, classroom, all day (25 people max)
  - Rate 1 (lowest desired) to 5 (highest desired)
- o In person, small group, half day (2 to 8 people)
  - Rate 1 (lowest desired) to 5 (highest desired)
- o Virtual live training short modules (2 hours max)

  - Rate 1 (lowest desired) to 5 (highest desired)
- o Virtual workshops (half day)
  - Rate 1 (lowest desired) to 5 (highest desired)
- o Virtual workshops (full day)
  - Rate 1 (lowest desired) to 5 (highest desired)
- o Recorded training modules (10 to 20 minutes per module)
  - Rate 1 (lowest desired) to 5 (highest desired)
- o Written guidance materials detailed (10 to 200 pages)
  - Rate 1 (lowest desired) to 5 (highest desired)
- o Written guidance materials or instructions short form (1 to 10 pages)

  - Rate 1 (lowest desired) to 5 (highest desired)
- o Other: (write-in)
  - Rate 1 (lowest desired) to 5 (highest desired)

Narrative write-in responses

Q19. What tool do you use the most or use the results from the most? What do you find that you like about it and what shortcomings do you find?

Q20. How do your favorite tools/applications support your work with WRAPS/319/1W1P/WBIF and other types of work? What are some gaps or metrics that they are deficient in that would help you, your organization, or your partners?

Q21. What is the best way that the state (BWSR, MPCA, MDA, DNR) and the federal government (USDA, EPA) can provide data and support for these applications?

Q22. How can the state make the data and outputs from these applications more accessible? Are apps like MPCA's Tableau-based apps and other ESRI based applications (AOL, PTMApp web) helpful?

Q23. Should there be a stronger connection between these applications and reporting/tracking systems (ex. eLINK, NRCS Tool Kit, MS4Front)? Please describe.