



Adaptive Management for the Yahara Watershed

Memorandum of Understanding (11/03/2011 draft)

Between Madison Metropolitan Sewerage District, Dane County, the City of Madison, and the Wisconsin Department of Natural Resources.

1. Background

The Wisconsin Department of Natural Resources (WDNR or the department) has developed numeric water quality criteria for phosphorus. These criteria were used as the basis for developing a total maximum daily load (TMDL) for the Rock River Basin. The TMDL was approved by EPA in September, 2010. The TMDL assigns phosphorus allocations for point sources, MS4s and nonpoint sources within the Rock River Basin. In most, but not all cases, point sources and MS4s will be required to reduce phosphorus loads to comply with the TMDL. Nonpoint sources will also be required to reduce phosphorus loads to comply with the TMDL.

Chapter NR 217 of the Wisconsin Administrative Code identifies the implementation framework for establishing effluent standards and limitations, including water quality based effluent limitations, for phosphorus in effluent discharged to surface waters of the state. NR 217.18 allows a point source regulated under NR 217 to use a watershed adaptive management option to comply with water quality criterion, subject to WDNR approval. WDNR may approve and authorize the adaptive management option if the point source demonstrates and the department concurs that all of the following conditions are met:

- (a) The exceedance of the applicable phosphorus criterion in s. NR 102.06 is caused by phosphorus contributions from both point sources and nonpoint sources.
- (b) Either the sum of the nonpoint sources and the permitted municipal separate storm sewer system contribution of phosphorus to the receiving water is at least 50 percent of the total contribution within the watershed of the receiving water where the applicable phosphorus criterion in s. NR 102.06 is exceeded; or the permittee demonstrates that the applicable phosphorus criterion cannot be met in the watershed without the control of phosphorus from nonpoint sources.

(c) Documentation that the proposed water quality based effluent limit in the applicant's permit will require filtration or other equivalent treatment technology to achieve compliance.

(d) The point source has submitted an adaptive management plan that identifies specific actions to be implemented that will achieve compliance with the applicable phosphorus criterion in s. NR 102.06 through verifiable reductions of phosphorus from point and nonpoint sources in the watershed.

Adaptive management may represent a cost effective option for point sources and MS4 communities, and others to meet phosphorus load reductions required in the Rock River TMDL. Implementing an adaptive management pilot project in the Yahara Watershed will provide information that can be used by participants to determine whether, and under what conditions, participating in a full scale adaptive management project in the Yahara Watershed makes sense. The Wisconsin Department of Natural Resources and USEPA Region 5 will participate in the pilot project as a means of gaining experience with the watershed adaptive management option, which may be used to inform future projects at the state or national level.

2. Parties

The parties to this Memorandum of Understanding ("the MOU") are the Madison Metropolitan Sewerage District (MMSD or the District), Dane County, the City of Madison, the Wisconsin Department of Natural Resources (WDNR), their successors and assigns.

3. Purpose

The purpose of this Memorandum of Understanding is to identify areas of agreement between the parties related to conducting an adaptive management project in the Yahara watershed. Unless otherwise noted below or modified in writing by all of the parties, areas of agreement identified in Section 4 of this MOU are applicable to both a pilot and a full scale adaptive management project.

4. Areas of Agreement

- a. The Rock River TMDL will be used to determine phosphorus allocations for nonpoint, MS4's and point sources with contributions to reaches located within the Yahara Watershed.
- b. The phosphorus baseline for nonpoint in the Yahara Watershed will be based on the most recent information available. Specifically, baseline for nonpoint will be determined using results from the Yahara Clean SWAT model, with an adjustment made to account for agricultural BMPS put in place during the period of 2009-2011.
- c. Phosphorus allocations for nonpoint, MS4s and point sources will be based on the allocations contained in the approved Rock River TMDL.
- d. Compliance with required phosphorus load reductions, and by extension, compliance with applicable water quality criteria for phosphorus and TSS will be determined by calculation using the best available modeling tools. In general, agricultural BMPs characterized as soft practices will be modeled at the field scale using SNAP-Plus and at the watershed level (when appropriate) using SWAT. Urban

BMPs will generally be modeled using SLAMM or the P8 Urban Catchment Model. These models may not be appropriate for the full range of agricultural and urban BMPs. Other models may be substituted as deemed appropriate, subject to agreement by the parties to this MOU.

- e. WDNR will establish a protocol for developing site specific water quality criterion by administrative rule. A site specific criterion for phosphorus will be developed for Badfish Creek consistent with this protocol.
- f. Phosphorus mass limitations placed in the permit of any participant in a full scale adaptive management project in the Yahara Watershed will be derived from the relevant load or wasteload allocation in the Rock River TMDL. The limitation will be placed in permits at the time of permit reissuance.
- g. Phosphorus concentration limitations placed in the permits of point sources at the time of permit reissuance will be consistent with the limitations specified for point sources in the adaptive management section of NR 217.
- h. If a best management practice (BMP) funded under an adaptive management pilot or a full scale adaptive management project subsequently becomes mandated by local, state and/or federal law, the phosphorus and TSS reduction associated with that BMP will continue to be credited against the total reduction required. However, phosphorus reduction credits cannot be double counted (i.e. multiple parties cannot use the same credit to offset their required reductions).
- i. All parties will explore the possibility of developing a watershed based permit for the Yahara Watershed or an alternate mechanism that facilitates coordinated decision making within the Yahara Watershed.
- j. All parties will track staff hours and associated costs, and other expenditures (including the value of in-kind contributions) associated with the development and implementation of the adaptive management pilot.

5. Adaptive Management Pilot Project

The District, the City of Madison, and Dane County will work cooperatively to develop and implement an adaptive management pilot project within the Yahara Watershed. The pilot project will be conducted in the Six Mile Creek subwatershed (see Figure 1). Objectives of the pilot project include, but are not limited to the following:

- a. Engaging customers/community when developing the framework for the pilot.
- b. Clearly defining and communicating expectations regarding a full scale adaptive management project.
- c. Assessing the level of community support/acceptance for a full scale adaptive management project.
- d. Evaluating the cost, performance and the ability to implement specific BMPs.
- e. Evaluating the administrative aspects of working with a broker(s), farmers and others who may be responsible for identifying, installing and/or maintaining BMPs.

- f. Collecting monitoring and modeling data to assess water quality impacts associated with phosphorus, nitrogen, total suspended solids, and other parameters that may be of interest.
- g. Developing partnerships needed to support implementation of a full scale adaptive management project, with roles and responsibilities clearly defined.
- h. Identifying ancillary benefits that may be derived from installing BMPs.
- i. Developing a strategic communication approach.

All parties will work to identify county, state, federal, foundation and/or other sources of funding that could be targeted to nonpoint source control practices in an adaptive management pilot or in a full scale adaptive management project within the Yahara Watershed.

WDNR and EPA will work to identify opportunities for providing in-kind support in carrying out activities associated with the pilot. Examples could include providing staff support for reviewing plans/reports, conducting monitoring efforts, assisting with communication and outreach efforts, and other similar activities.

Planning for the pilot project will take place in 2012, with implementation beginning in 2013. The pilot project will last 3 years. Progress reports will be developed on an annual basis.

6. Evaluation of Pilot Project

The District, the City of Madison, and Dane County will use information gathered during the pilot project to determine if they will move to full scale implementation of adaptive management in the Yahara Watershed. Each party will independently assess whether they will participate in a full scale project. The determination will consider such factors as:

- a. Cost/Affordability:
 - i. Whether adaptive management represents a cost effective option based on experience gained during the pilot.
 - ii. Whether a sufficient level of local, state, federal, foundation and other funds have been committed to, or can be reasonably expected to be committed to the Yahara Watershed to support nonpoint BMPs.
- b. Technical feasibility:
 - i. Has the pilot demonstrated from a practical standpoint there is sufficient BMP capacity to support the required phosphorus and total suspended solids reductions?
 - ii. Do the monitoring and modeling results demonstrate reasonable potential for water quality improvements?
- c. Administration:
 - i. Can the county and/or another entity effectively fill the role of broker?
 - ii. Are contracts or other legal tools used in the pilot effective in maintaining adherence to BMPs on the part of the credit generator?
- d. Partnerships:

- i. Whether a sufficient number of partners have agreed to participate in a full scale project and whether the level of participation is sufficient to reasonably expect that a full scale project would be successful?
- e. Regulatory:
 - i. Have regulatory barriers been removed (e.g. has a site specific phosphorus criterion for Badfish Creek been developed and implemented)?
 - ii. Are there additional regulations that have been developed or are anticipated that are a deterrent to pursuing a full scale adaptive management project?
 - iii. Do DNR and EPA still support the adaptive management concept?
- f. Community acceptance:
 - i. Has the strategic communication plan been effective in reaching out to the community as a whole?
 - ii. Is there broad based community support for moving forward with a full scale adaptive management project?
- g. Net environmental benefit:
 - i. Has the pilot project resulted in a net environmental benefit in the target watershed?

7. General Conditions

- a. Madison Metropolitan Sewerage District, Dane County, the City of Madison, and WDNR will each designate a representative to lead and coordinate implementation of this MOU.
- b. EPA Region 5 will be invited to participate in the adaptive management pilot as an “interested party”.
- c. The effective date of this MOU is the date of the latest signature below.
- d. This MOU will remain in effect until September 30, 2030 unless otherwise agree to in writing by all parties.
- e. Other parties may be added to this MOU as participants in the pilot project by affixing their signature to the signature block.
- f. It is anticipated that this effort will result in other partnerships and the need for additional MOUs.
- g. The parties agree that this MOU can be amended if amendments are agreed to in writing by all parties.

For the Madison Metropolitan Sewerage District

By: _____

D. Michael Mucha
Chief Engineer and Director

Date

For the City of Madison

By: _____

(insert name)

Date

For Dane County

By: _____

(insert name)

Date

For the Department of Natural Resources

By: _____

**Cathy Stepp
Secretary**

Date

Figure 1-Location of the Adaptive Management Pilot Project

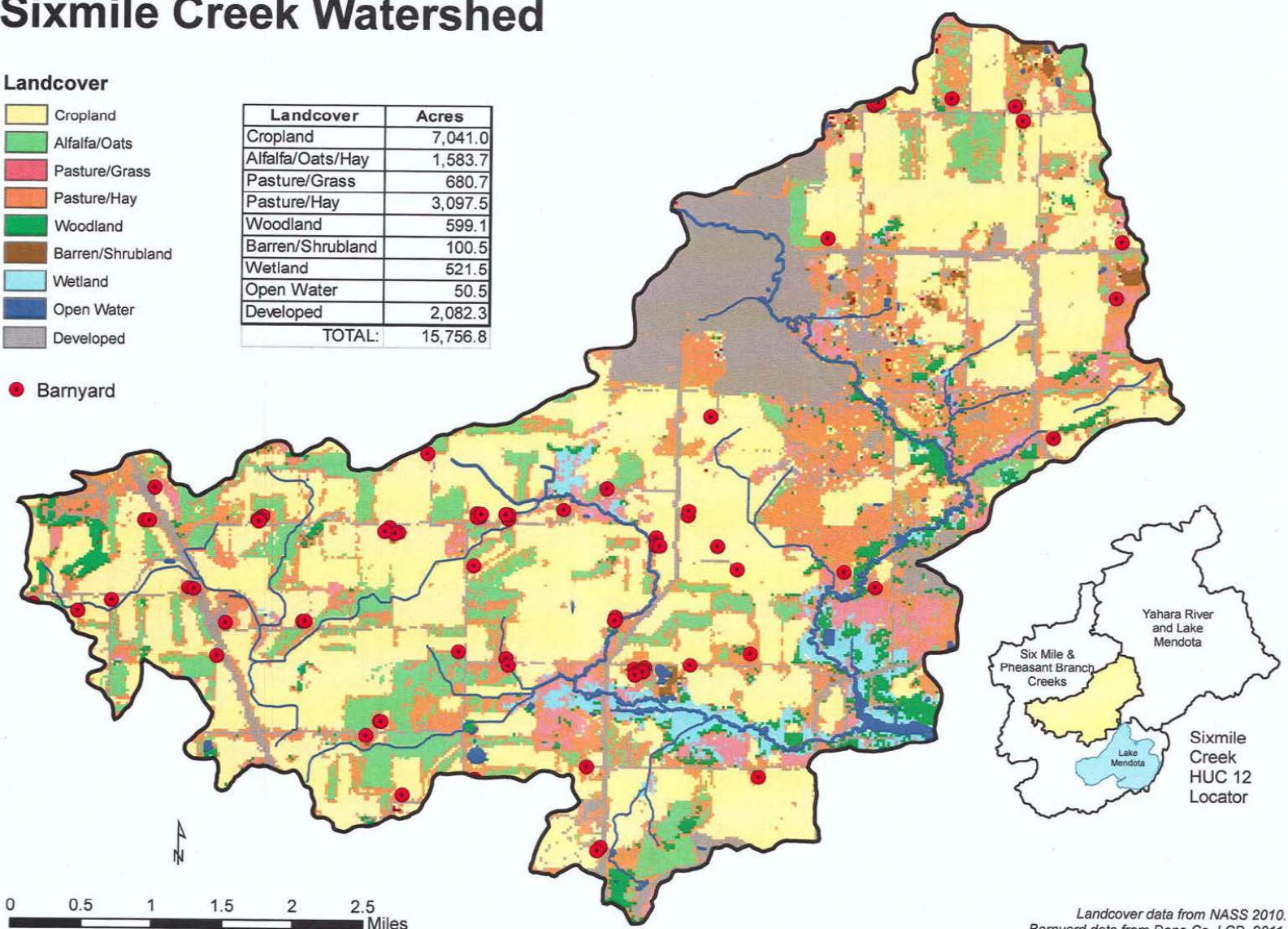
Sixmile Creek Watershed

Landcover

- Cropland
- Alfalfa/Oats
- Pasture/Grass
- Pasture/Hay
- Woodland
- Barren/Shrubland
- Wetland
- Open Water
- Developed

| Landcover | Acres |
|------------------|-----------------|
| Cropland | 7,041.0 |
| Alfalfa/Oats/Hay | 1,583.7 |
| Pasture/Grass | 680.7 |
| Pasture/Hay | 3,097.5 |
| Woodland | 599.1 |
| Barren/Shrubland | 100.5 |
| Wetland | 521.5 |
| Open Water | 50.5 |
| Developed | 2,082.3 |
| TOTAL: | 15,756.8 |

- Barnyard



Landcover data from NASS 2010.
 Barnyard data from Dane Co. LCD, 2011.
 Map created August 15, 2011 by Dane Co. LWRD.
 G:\ArcMap\LCD\WRB\WatershedData\SixmileCreek.mxd