

**Water Quality Credit Trading White Paper**  
**Prepared for the Green Bay Metropolitan Sewerage District (GBMSD)**  
**Prepared by CH2M HILL, February 11, 2011**

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## **Background**

The Wisconsin Department of Natural Resources (WDNR) has promulgated new state-wide numeric criteria for total phosphorus (TP) (NR 102.06). In addition, WDNR modified NR 217 to include procedures for developing Wisconsin Pollutant Discharge Elimination System (WPDES) permit limits for TP for the new criteria (Subchapter III of NR 217). These actions will ultimately result in substantially lower TP limits in WPDES permits throughout the state. Furthermore, WDNR is developing Total Maximum Daily Loads (TMDLs) for TP in a number of watersheds, including the Lower Fox River and Lower Green Bay (June 2010 Draft TMDL). This draft TMDL, which reflects instream TP targets consistent with the applicable new criteria, suggests an anticipated TP effluent limit for GBMSD would be approximately 0.20 mg/L or less.

Although Wisconsin has been considering water quality credit trading for more than a decade (e.g., statutory language and pilots in Wolf/Fox River, Rock River, and Red Cedar River watersheds; see <http://dnr.wi.gov/runoff/pt/>) it has not yet been implemented, except to a limited extent with the City of Cumberland in the Hay River watershed. This is largely because historical Great Lakes water quality agreements and original NR 217 TP requirements for point sources were not costly enough to create an economic driver for trading. It is likely, however, that the very stringent new effluent TP limits will make the economics of trading more favorable in Wisconsin. In fact, the Natural Resources Board, as part of its approval of the new criteria and WPDES procedures, has directed WDNR to assemble a stakeholder group and develop a trading framework including rules or guidance to facilitate watershed based trading, and to report back to the Board no later than July, 1 2011. To meet this directive, the WDNR has established a stakeholder group including GBMSD. The Natural Resources Board also directed WDNR to develop guidance for TMDL implementation so that implementation is consistent with NR 217.

## **Purpose and Organization of White Paper**

This paper was prepared to guide and support GBMSD's assessment of the feasibility of trading to assist with water quality improvement in the Fox River watershed. It is based in part on a review of other U.S. trading programs and how they relate to Wisconsin's new rules as discussed in a February 2009 multi-stakeholder workshop sponsored by GBMSD. (see below and Appendix A). The paper also addresses the development of and final issuance of the TP criteria and the Lower Fox River/Lower Green Bay TMDL.

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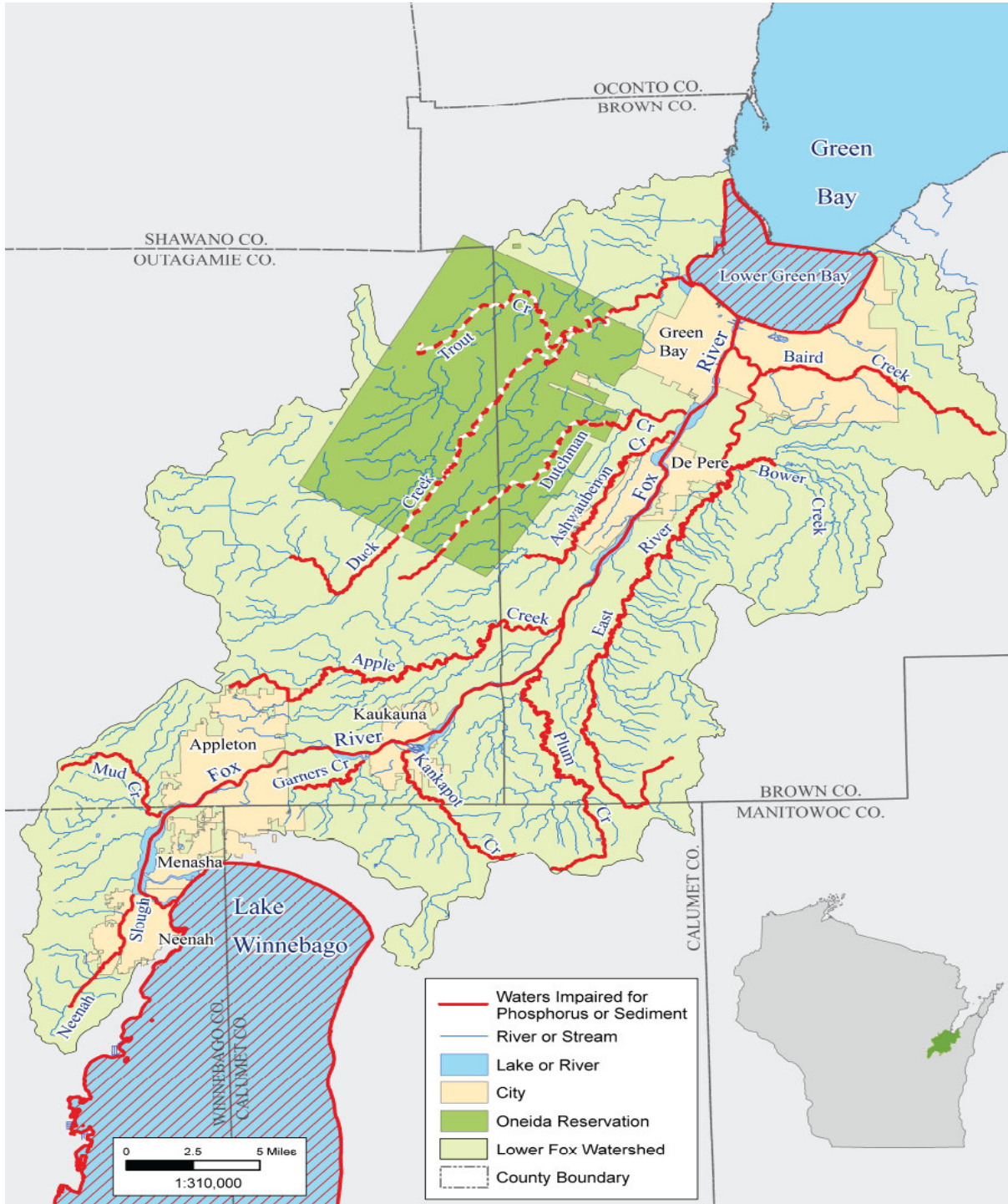
This paper is primarily focused on GBMSD's situation and watershed, the Lower Fox River (Exhibit 1), although the larger Upper Fox/Wolf River watershed also may be considered to be included in the trading area. Also, this paper focuses on phosphorus, but most of the issues are applicable to trades involving other pollutants, such as nitrogen, sediment, dissolved oxygen, and temperature.

Although the Natural Resources Board has directed WDNR to develop a statewide trading framework in Wisconsin, it is assumed for this paper's focus, however, that GBMSD will initially investigate the feasibility of trading in its own watershed while coordinating with other entities outside the watershed that may also have interest in a broader trading framework for Wisconsin. This approach is consistent with WDNR's statement that the WDNR has limited internal resources to further develop watershed-specific trading program(s) in relation to the new phosphorus criteria.

The remainder of this paper is organized in the sections listed below.

- Summary of February 2009 Credit Trading Workshop
- Description of Potentially Applicable Trading Frameworks and Key Components
- Strategies to Develop Trading Frameworks
- Conclusions and Next Steps
- Appendix A: February 2009 Credit Trading Workshop Notes

**EXHIBIT 1**  
Lower Fox River Watershed (Source: WDNR)



## Summary of 2009 Phosphorus Credit Trading Workshop

As previously stated, this paper is based in part on the discussions that occurred during the Phosphorus Credit Trading Workshop sponsored by GBMSD and held in Madison on February 18, 2009. Workshop attendees included representatives from GBMSD and other municipal wastewater treatment facilities (WWTFs), WDNR, outside legal counsel to selected WWTF agencies, and environmental advocacy organizations. See Appendix A for workshop notes.

### Workshop Structure

The workshop was organized by the topics listed below.

- **Water Quality Credit Trading and Watershed Permitting Across the U.S.** – This module provided an overview of both point-point and point-nonpoint trading through the presentation of descriptions of selected existing programs shown in Exhibit 2. The module was tailored to feature aspects of particular interest and relevance to Wisconsin, and demonstrate the key conditions listed in Exhibit 3 that need to be in place or developed for successful trading.
- **Highlights of Wisconsin Experiences to Date** – This module summarized the experience of the three pilots in the Red Cedar River, Fox/Wolf River, and Rock River watersheds, as well as experiences since 2000 involving the City of Cumberland (Red Cedar River) trading for nonpoint source phosphorus credits through the Soil and Water Conservation District (SWCD).
- **Trading in Wisconsin** – This module provided a facilitated discussion of trading opportunities and issues in Wisconsin by working through the major program design elements and options shown in Exhibit 4.
- **Wrap Up and Next Steps** – This module provided an opportunity for open dialogue to revisit concepts and issues already discussed, to raise new questions and comments, and to confirm how GBMSD and other attendees would like to proceed, individually and collectively, with respect to advancing trading opportunities.

#### EXHIBIT 2

##### U.S. Water Quality Trading Programs Featured at the Workshop

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|--|--|
| <ul style="list-style-type: none"> <li>• Point-Point               <ul style="list-style-type: none"> <li>– Connecticut Nitrogen Credit Exchange</li> <li>– Virginia Nutrient Credit Exchange</li> <li>– Neuse River Compliance Association, NC: Nitrogen</li> <li>– Tar Pamlico Basin Association, NC: Nitrogen and Phosphorus</li> <li>– Clean Water Services, OR: Dissolved Oxygen</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Point-Nonpoint               <ul style="list-style-type: none"> <li>– Clean Water Services: Temperature</li> <li>– Lower Boise River, Idaho: Phosphorus</li> <li>– Great Miami River, Ohio: Phosphorus</li> </ul> </li> <li>• Stormwater Credit Trading               <ul style="list-style-type: none"> <li>– Local initiatives in NC, TN, TX</li> <li>– North Carolina Ecosystem Enhancement Program</li> </ul> </li> </ul> |
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**EXHIBIT 3**

## Basic Conditions for Water Quality Credit Trading Opportunities

1. **Driver for action:** desired or required water quality improvements
2. **Understanding of water quality:** knowledge about causes, sources, and relative load contributions.
3. **Alternative feasible solutions:** more than one combination of enhanced treatment, best management practices, and/or restoration projects.
4. **Greater cost-effectiveness:** sufficient differences in relative cost-effectiveness across the various options among the feasible solutions.
5. **Market warrants investment:** scale and scope of the expected credit market and potential cost-savings sufficient to warrant proportional investment development and operation.
6. **Equal or better results:** science-based assessments and program rules ensure net benefits compared to not trading.
7. **Stakeholder-endorsed framework:** if conditions 1 through 6 are met, regulatory, policy, administrative framework for trading can be developed and implemented.

**EXHIBIT 4**

## Major Program Design Elements

- Trading baselines
- Trading area(s)
- Pollutant reduction options
- What's creditable
- Supply and demand relationships
- Relative economics within and across source sectors
- Trading frameworks
- Point-point models
- Point-nonpoint models
- Implementation mechanisms
- Liability
- Risk management
- Credit certification
- Delivery factors and trading ratios
- Upstream-Downstream directionality
- Credit life
- Reconciliation period
- Length of trade
- Financial arrangements
  - Credit by credit
  - Pooled purchasing
- Administration costs
- Credit pricing

**Workshop Conclusions**

GBMSD and other attendees drew several conclusions from the workshop discussion. Selected items that informed this paper are presented below. Other items that were specific to the now completed criteria and TMDL development process are included as they were discussed at the time of the workshop in the notes provided in Appendix A.

- **Workshop Value** – There was general consensus that the workshop had been valuable in providing information about existing programs and initiatives and helping the attendees better understand the analyses and decisions needed in Wisconsin to support trading in one or more watersheds.
- **WDNR's Role** – At the time of the workshop, WDNR was not pursuing trading. However, WDNR representatives said that though they did not intend to lead a trading

program, they may have interest in becoming a partner with a multi-stakeholder coalition willing to fund the development of a trading program. WDNR is believed to have some flexibility and discretion in a variety of areas with respect to setting baselines, trading areas and other program components including the ability to address trading differently when a TMDL exists. A list is needed of policy and other decisions WDNR will have to make to help advance development of a trading framework and ultimately enable trading. (As noted earlier, the Natural Resources Board has directed WDNR to develop guidance for rules or a trading framework by July 2011. WDNR has convened a trading workgroup to assist.)

- **Multi-Sector Support** – A broad range of support for trading, in one or more watersheds, would likely be necessary to advance trading, technically and politically. Key sectors include municipal and industrial point sources, organizations with environmental and conservation constituencies, and agricultural.
- **Municipal Discharger Collaboration** – Collaboration among municipal dischargers and with other sectors will be of significant value in advancing their interests. In particular, some believed that it would help the trading effort for municipalities to have a consistent voice on the issues. It was also believed that working with representatives from other sectors with different or conflicting positions was ultimately beneficial. The importance to the Lower Boise program of having key environmental group support was cited as an example.

## Potentially Applicable Trading Frameworks and Key Components

Based on discussion at the workshop and a review of documents related to the phosphorus criteria rule-making and Lower Fox River/Lower Green Bay TMDL, GBMSD and other stakeholders have reason, at least initially, to simultaneously pursue developing trading frameworks for both point-point and point-nonpoint trading that include the trading program elements and design features identified in Exhibit 4 that are described below. A strategy for developing these frameworks is presented in the next section and addresses the key decisions, analyses, and collaboration that will be needed to further evolve and refine these frameworks for adoption and implementation. It is possible during the execution of this strategy, as the regulatory and technical parameters for trading become more clear, that one or both frameworks will require fundamental changes to be viable, or that one or both types of trading may become unattractive or infeasible.

The presentation of the frameworks is organized into four sections.

- **How the TP Rules and TMDL Might Influence Trading**-The adoption of TP criteria in NR 102.06 establishes new goals for all streams and the mainstem Fox River. These criteria were included in the Draft TMDL as the explicit targets that will need to be met. The Draft TMDL proposed mass-based wasteload allocations (WLAs) for the point sources, including GBMSD. Also of importance are the implementation procedures for the new TP criteria recently established in NR 217. The relationships between water quality-based effluent limits (WQBELs) and TMDLs (NR 217.16) allows for TMDL based limits to be used in lieu of WQBELs even if less stringent than the WQBELs, and because it also appears to provide the option for mass-only limits which could be essential to successful trading. The watershed adaptive management option (NR 217.18) is also

important because it provides a more flexible approach which apparently could include trading.

- **Fundamental Phosphorus Credit Trading Framework Elements for GBMSD** – These include elements that will be necessary whether GBMSD pursues point-point or point-nonpoint, or both types of trading opportunities.
- **Point-Point Phosphorus Credit Trading Framework for GBMSD** – These include elements necessary to support point-point trading, in addition to the fundamental elements. Some or all of them may be needed or desired to also support point-nonpoint trading, depending on how GBMSD may individually or collectively, with other dischargers, approach point-nonpoint trading.
- **Point-Nonpoint Phosphorus Credit Trading Framework for GBMSD** – These include elements necessary to support point-nonpoint trading, in addition to the fundamental elements, assuming there is a point-point trading framework in place. To the extent that GBMSD ultimately only pursues point-nonpoint trading, some of the elements presented under the point-point framework would need to be included in the point-nonpoint framework.

#### **How the TP Rules and TMDL Might Affect Trading**

The NR 102 criterion for streams is 0.075 mg/L TP, whereas the criterion for the mainstem Fox River is 0.10 mg/L. In the absence of a TMDL, these would be translated into water quality-based effluent limits (WQBELs) using the procedures at NR 217.13 and 217.14. However, as specified at NR 217.16, TMDL-based limits can be used in lieu of the WQBELs that would otherwise be established (even if those WQBELs would be more stringent). The rationale behind allowing the TMDL-based limits to be used in lieu of WQBELs is that the TMDL will lead to ultimate attainment of designated uses in the watershed. This is of further importance for trading because NR 217.14 stipulates that WQBELs deemed necessary by NR 217.15 and calculated using NR 217.13 procedures must be expressed as concentration limits, at a minimum, and also possibly supplemented by mass limits. Given these new procedures in NR 217, it appears that it will be important to establish TMDLs for phosphorus in watersheds where trading may occur, and for those TMDLs to specify mass-based allocations. These mass-based allocations can then be used in WPDES permits in lieu of concentration-based WQBELs. This will be important because mass limits establish what the individual or collective trading cap(s) will be. Trading programs for phosphorus all use a mass approach because dischargers have different effluent flow rates and concentrations, and determining trade equivalency requires a mass approach (flow times concentration). Although some trading programs also include concentration limits, these concentration limits usually are in place primary as a fall-back mechanism to be reverted to in the event that the trading program is unable to establish enough viable mass trades to meet the overall watershed goals. But it is the mass limits that provide the foundation for trading.

The mass-only TMDL based limits applicable to GBMSD as identified as WLAs in the June 2010 Draft TMDL for the Lower Fox River/Lower Green Bay are shown below:

- De Pere Facility = 4,943 pounds per year (lb/yr) and 13.5 lb/day
- Green Bay Facility = 17,349 lb/yr and 47.5 lb/day

The daily WLAs were derived in the TMDL by dividing the annual WLAs by 365 days (as noted in Central States WEA comments on the Draft TMDL, it would be more technically defensible to use a statistical procedure to translate between annual and daily WLAs, per EPA guidance<sup>2</sup>).

As noted in GBMSD's comments on the Draft TMDL, one of the most significant concerns with the draft is that critical implementation details are not included. One of those details is how the above WLAs would be implemented in WPDES permits. Although NR 217.16 does not specify the averaging period for TMDL based limits, it would appear based on NR 217.14 that the shortest time period would be monthly, with annual limits also possible. Use of TMDL based annual limits only in the WPDES permit, and as the credit trading time-period, would be consistent with a number of other established NPDES permits and nutrient trading programs in the U.S.

GBMSD also noted in its comments on the Draft TMDL that it is not reasonable to develop and implement a TMDL only for the Lower Fox River/Lower Green Bay, without a concurrent, integrated TMDL process for the Upper Fox/Wolf River basin. The two basins are connected at Lake Winnebago. This is important from a trading perspective because the geographic scope of the trading program is generally constrained to TMDL boundaries.

Another substantive implementation detail that obviously is missing from the Draft TMDL is explicit language authorizing trading. As discussed elsewhere in this paper, this could be a critical element for the establishment of a successful trading program.

Another major addition to NR 217 is the watershed adaptive management option (NR 217.18). The stated purpose of this option is to "*...achieve the phosphorus water quality criteria in s. NR 102.06 in the most economically efficient manner, and as soon as possible, taking into consideration the contributions of phosphorus from point and nonpoint sources in the watershed.*" [NR 217.18(1)]

This option is available at a permittee's request, and the permittee is primarily responsible for developing and implementing the watershed plan.

Although trading is not explicitly identified in NR 217.18, it certainly appears that trading could be a primary or secondary mechanism for implementing the plan and engaging the "*anticipated partners*" which can include "*...other permittees and nonpoint sources, or other partners, including municipal and county governments, in the watershed*" [NR 217.18(2)(d)3.].

A permittee's use of this adaptive management option also requires that interim effluent limits for phosphorus be met (0.5 mg/L as a six-month average, and 1.0 mg/L as a monthly average), with an allowance of up to three permit cycles (15 years with 5-year permit cycles, longer if one or more of the reissuance permits is administratively extended) to achieve the NR 102.06 criteria in the watershed. The De Pere and Green Bay Facilities already meet these interim limits, and thus TMDL mass limits would dictate treatment requirements. Use of this option also requires watershed monitoring by the permittee and/or partners to document progress towards meeting the criteria. Such monitoring is not normally mandated within trading programs per se, although TMDL implementation does traditionally require monitoring to assess progress. The key in this case is that the permittee (and other partners) will largely be responsible for ensuring that monitoring occurs in compliance with the plan.

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<sup>2</sup> U.S. Environmental Protection Agency. "Options for Expressing Daily Loads in TMDLs," June 22, 2007.

Although the adaptive management option would appear to allow for trading as part of the watershed plan, it is also important that the broader trading framework (and regulations as needed) allow for trading separate from the adaptive management option. This is because the adaptive management option may not be feasible in all watersheds and that should not necessarily preclude trading. Also, the level of effort required for the watershed plan likely will not be necessary to implement trading in many watersheds (especially in the case of more simplified point-point trading processes).

### **Fundamental Phosphorus Credit Trading Framework Elements for GBMSD (for Point-Point or Point-Nonpoint Trading)**

- **External Authorization for GBMSD to Engage in Trading.** This can be effected in one or more ways: statutory permission; authorization in GBMSD's individual WPDES permit and/or a future general or watershed permit; relevant state policy documents (general, trading-specific, and for example, State Revolving Fund); and/or provision of trading option in the TMDL document. It is likely at least two, if not more, will be needed and/or desired. As noted above, trading is not authorized in the June 2010 Draft TMDL, a significant omission.
- **Internal Authorization for GBMSD to Engage in Trading.** If necessary and/or desired, there are various options and perhaps required mechanisms for GBMSD to give itself permission to engage in trading, including but not limited to: GBMSD Commission resolutions; Executive Director's orders; development of policy guidance consistent with the GBMSD Strategic Plan; capital improvement plans; facilities plans; and master plans.
- **GBMSD's Phosphorus Trading Baseline.** The trading baseline is the mass loading value for a defined period (e.g., annual) above which higher loads must be offset (e.g., with credit purchases) and below which lower loads may generate credits that might be traded or banked. A mass loading cap, established by a formal TMDL allocation (WLA or LA), or calculated similarly for point sources,<sup>3</sup> would directly establish a phosphorus trading baseline as described above. Alternatively, the baseline could be calculated by subtracting the mass target reduction from the annual average baseline value.
- **Planning and Trading Tools** – Even with a small number of participants, a tailored spreadsheet tool would be needed to forecast several years forward of estimated trading scenarios and track actual trades. With a larger number of participants, and multiple possible scenarios, a more sophisticated tool will be likely be desired. This can be separate from or integrated with the tool(s) developed to conduct the market assessment recommended under the development strategy. It also can be separate from or integrated with tools to help facilitate reporting to participants, WDNR, and others.
- **Reporting** – At a minimum, regulators have generally required monthly Discharge Monitoring Reports (DMRs) to track credits and debits, even where compliance is judged on an annual basis, as well as a consolidated reconciliation of the annual trading activity. The annual report to WDNR may be the same report provided to participants, internal stakeholders, and the public. By requirement or preference, additional expanded reports and/or summaries may also be prepared and disseminated. Some

<sup>3</sup> For example: specified concentration limit in mg/L x 365 days/yr x Design MGD x conversion factor of 8.34 = annual mass loading cap in pounds.

programs have established web sites as a way to support reporting obligations that can also serve recruitment and education purposes.

- **Funding Development and Implementation**—Funds will be needed to conduct the technical work necessary to develop the best program to match the expected trading opportunities. Upon implementation, there will be annual administrative costs to support planning, trading, and reporting functions. Existing programs have funded the development phase with a combination of discharger and state and/or federal contributions, and typically fund the implementation phase with participants' fees. Exhibit 5 presents ranges of development costs of some existing programs.

#### EXHIBIT 5

##### Benchmarks of Water Quality Credit Trading Program Development Costs

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The trading frameworks and development and implementation strategies recommended in this paper will require financial resources to evaluate and execute. Existing programs and efforts still in the feasibility or pilot stage represent a broad range of financial and in-kind investments. The investment is determined by a variety of factors, including but not limited to: available resources; cost-savings at stake with trading as compared to without; the availability and quality of existing technical analyses and data compared to need; and the number of parties with an interest in the prospective program.

The following examples are provided as benchmarks, based on some of CH2M HILL's experience.

- **Clean Water Services Dissolved Oxygen and Temperature Credit Trading Programs**—CWS spent about \$500,000 over about 18-months for contracted services for technical and legal analyses needed to develop their trading framework, technical and legal justification, and permit language. Additionally, at least five CWS staff dedicated a significant portion of their time to this effort over the period.
  - **Virginia Nutrient Credit Exchange Program**—The Exchange spent between \$1M and \$1.5M for contracted technical and legal support to develop the economic justification for the proposed program, develop the trading scenarios and Exchange framework, and negotiate the details of the program with prospective participants and regulators. In-kind support from a core group of discharger representatives that managed the technical work has not been quantified.
  - **Lower Boise River Phosphorus Trading Framework**—Stakeholders collectively invested between \$300,000 and \$400,000 over 1999-2001 to conduct the technical analysis, stakeholder involvement, and framework mechanism development that would support trading in the basin. Additional in-kind support from stakeholders has not been quantified.
  - **Sacramento Regional County Sanitation District Mercury Offset Feasibility Study**—The District invested approximately \$550,000 in contracted technical support to evaluate alternative offsets projects, manage the stakeholder involvement program, and develop elements of the proposed trading framework. The District dedicated one staff person at least half-time over the two year study period. Additional in-kind contributions from District staff and other stakeholders have not been quantified.
  - **Cape Fear River Association Targeted Watershed Grant**—Under a grant from EPA, the Association invested approximately \$1.3M over a roughly four year period, including at least \$400,000 in in-kind contributions to conduct the study entitled: A Nutrient Credit Trading Framework for the Jordan Lake Watershed: Using Market-Based Mechanisms to Make Watershed Restoration More Cost-Effective. The study included a detailed market assessment of point-point and point-nonpoint source trading opportunities, extensive stakeholder involvement, 30% design of six stormwater BMPs, and development of a detailed trading framework.
  - **Lake Lewisville/Hickory Creek Watershed Water Quality Credit Pilot Studies**—Over a five year period a study team including the City of Denton and its technical consultants invested approximately \$900,000, including at least \$225,000 in in-kind contributions for a phased evaluation of credit trading opportunities in the Lake and Creek watersheds that included sediment, phosphorus, and nitrogen credits. The work included water quality modeling, market assessments, regulatory analysis, and trading framework development.
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## Point-Point Phosphorus Credit Trading Framework for GBMSD

- **Potential Trading Partners** - All point sources in Lower Fox River/Lower Green Bay Basin received WLAs in the Draft TMDL, with the same mass units and time scales as listed above for GBMSD. These include municipal and industrial WWTF dischargers and urban stormwater permittees (“MS4” permittees). Each MS4 permittee has an individual WLA that covers all applicable outfalls within the individual MS4 permittee’s jurisdiction. Each of these would be potential trading partners.
- **Trading Area** – Assuming the area is at least the Lower Fox River/Lower Green Bay to begin with, an evaluation would be done to determine if there are a sufficient number of other point sources with which to trade. If necessary to create a viable market, the area could be expanded to include some or all of the Upper Fox/Wolf River.
- **Permit Mechanisms** – The most convenient approach would be to have WDNR issue a general or watershed permit that covered the point sources eligible to participate in trading. General and watershed permits are available for and have been used for a variety of reasons and situations that do not include trading. However, an important advantage of using them to help implement a trading program is that trading can be authorized for a number of permittees at once, without having to re-open each individual permit. These are especially helpful in establishing collective wasteload allocations or compliance “bubbles.” When these types of permits cover multiple facility owners, they contain provisions for the pollutant(s) being traded; the permittees would still have individual permits that cover non-traded pollutants and all other general conditions. This is the model in place governing the Connecticut and Virginia point-point nutrient trading programs. In situations where a single owner is engaging in trading involving his own facilities, his watershed permit can encompass both non-trading and trading provisions. This is the type of permit issued to Clean Water Services that covers all of its operations, including four wastewater treatment plants, an MS4 program, a point-point dissolved oxygen trading program for two of the plants, and a point-nonpoint temperature credit trading program.
- **Specification of Compliance Metrics** – The permit mechanism would need to specify the manner in which compliance would be determined. The two basic options are: compliance with individual WLAs, where credits would need to be explicitly exchanged among participants to offset loads above individual WLAs (used in the Connecticut and Virginia programs); or compliance with a collective WLA, where credits would not have to be explicitly exchanged, so long as the participants’ total load is below the sum of the individual WLAs (used in the North Carolina programs for the Neuse and Tar-Pamlico River basins). The decision will largely be based on participants’ preference as well as which approach WDNR is willing to support. Trading baselines will need to be set for all participants, as described above for GBMSD, and the method should be consistent across all dischargers.
- **Trading Management and Execution Mechanisms** – This can be accomplished through informal means, but most programs typically adopt the “association” model, under which point sources use an existing or new specifically-chartered organization to

provide a decision-making and administrative structure for establishing rules and policies, conducting planning, executing trades, and consolidating reporting.

- **Rules and Policies** – These will need to be established to be reflective of and support the selected permit mechanisms, compliance metrics, and management approach. These would include member agreements that specify “association” services and participant’s obligations. These would also spell out the details of planning for and executing trades, such as projecting and/or “promising” offers to buy or sell, and how overages and shortfalls will be managed. Additionally, they should cover situations where new participants may join after the initial sign up period, and where existing members wish to exit the program.
- **Credit Pricing** – Consistent with the permit mechanism and compliance metrics selected, participants in the trading program will either need to individually or collectively set prices. There are a variety of ways to do so and the choice will depend on preference and availability of data for the pricing basis. It is generally helpful to perform a market assessment as part of developing the trading program to ensure sufficient control cost differentials and financial incentives exist for trading (discussed later in this paper). Once the program is implemented, some programs follow a “managed” price strategy where a broker or exchange sets prices for a given trading period, while others follow more of a free market strategy where trading partners establish prices with each other on a trade-by-trade basis. For example, the Virginia Nutrient Credit Exchange bases its prices on a proxy for chemical costs and sets them on a five year rolling basis. The Connecticut Nitrogen Credit Exchange sets an annual price based on the average unit removal cost, inclusive of capital and operation and maintenance, for that year. In contrast, the Lower Boise phosphorus trading program expects buyers and sellers will negotiate and set credit prices between themselves.

### **Point-Nonpoint Phosphorus Credit Trading Framework for GBMSD**

- **Potential Trading Partners** – Load allocations (LAs) in the Draft TMDL for the Lower Fox River/Upper Green Bay Basin are identified for each source category including agriculture, non-regulated urban stormwater (where MS4 permits are not applicable), and natural background. These are “lumped” allocations within each sub-basin meaning, each source category has a single LA within each sub-basin. The mass units and time periods used for nonpoint source LAs are the same as WLAs for point sources.
- **Trading Area** – Assuming the area is at least the Lower Fox River/Lower Green Bay basin to begin with, an evaluation would be done to determine if there are a sufficient number of other nonpoint sources with which to trade. If necessary to create a viable market, the area could be expanded to include some or the entire Upper Fox/Wolf River basin. The trading area for point-point trading and point-nonpoint trading could be different.
- **Individual or Collective Point Source Planning and Purchasing** – With or without a point-point trading association or informal coalition, point sources could identify and execute nonpoint source credits trades individually, with or without consultation or coordination. If a discharger association is established – and one could be even if only point-nonpoint trading is pursued – then the participating dischargers would have the opportunity at a minimum to collectively identify nonpoint source credits, and even

make collective purchases if they so desired. The larger the scale and scope of nonpoint source trading is expected to be, the more desirable and cost-effective it will be to have some centralized functions and services for the point source buyers.

- **Nonpoint Source Sector(s) Facilitators/Brokers** – The larger the scale and scope of nonpoint source trading is expected to be, the more necessary it will be to aggregate functions that identify candidate sellers, and also possibly help execute trades, through one or more organizations that serve the credit sellers and/or credit buyers. The Clean Water Services and Great Miami River programs provide examples of the structure and benefits of these types of facilitated and brokered arrangements.
- **Clear Nonpoint Source Baselines** – To support the market assessment and ongoing trading, baselines for nonpoint source credit creation will need to be clear to the potential sellers as well as buyers, and any facilitators/brokers. One of the key questions that has been raised regarding agricultural nonpoint source baselines in Wisconsin is the applicability of runoff performance standards for crop and livestock producers (i.e., the Phosphorus Index, PI) per NR 151.04. Croplands, pastures and winter grazing areas are to comply with a PI of 6 or less over the accounting period, and may not exceed 12 in any individual year. If the PI serves as a trading baseline, such that credit can only be generated for further reductions below the PI of 6, for example, then that will substantially reduce how many credits may be available. It was noted in the discussion in the February 2009 workshop (see Appendix A) that NR 151 standards only apply if cost-share funding is available. This is a critical policy decision for the state framework and Fox River watershed trading feasibility.
- **Pre-Approved BMPs** – Decisions and documentation for BMPs pre-approved by cognizant entities (WDNR, dischargers, facilitators) should include definitions/specifications, pre-estimated/pre-approved load reductions (by BMP size/other specification), and any other information necessary to help establish eligibility and confirm conformance. Provisions also may be established to allow potential credit sellers to propose other BMPs, subject to sufficiently documenting their estimated and/or actual performance.
- **Contracts** – Credit delivery and performance agreements will need to be in place to define separate and mutual obligations and liabilities between the buyer(s) and seller(s). The scope of these would be consistent with the model chosen. For example, if GBMSD (individually or with other dischargers) works through a broker, such as a SWCD, GBMSD or the collective of dischargers may only have a contract with the broker, and the broker would have contracts with the individual sellers. With or without a broker, individual contracts between the buyer and seller may also be necessary or desired.
- **Liability** – In addition to contractual issues among buyers and sellers regarding such things as credit delivery, pricing, etc., contracts and the point sources' permit(s) will need to specify which entity, the buyer or the seller, holds ultimate responsibility for providing the credited reductions. Under many models, NPDES permittee credit buyers retain ultimate responsibility, irrespective of contractual agreements with point or nonpoint source sellers. This is the case for point source traders in the Lower Boise Program. In these situations, there is usually some grace period or back-up credit bank to maintain compliance when credit purchases have followed protocols but failed to

deliver under human error or force majeure. In other models, once the credit buyer makes his purchase, his entire compliance obligation is satisfied. This is the case for nutrient credit purchases from North Carolina's Ecosystem Enhancement Program.

- **Certification and BMP Monitoring**— Most programs involving nonpoint source credits have established some mechanism to provide an initial certification of the BMP credits before or simultaneous with the sale. This assures the buyer (and other participants and observers) that the BMP has actually been installed properly and merits the credit level given or assigned. Most programs also have established a mechanism to provide ongoing, periodic re-certifications or audits of the credited BMPs to provide assurances that the BMP is still performing at a level consistent with its credited reductions. Third parties are generally contracted to perform such services, to reduce or eliminate any conflict and to provide the necessary level of expertise that may be necessary to certify BMP performance.

## **Strategies to Develop Trading Frameworks**

Based on discussion at the February 2009 workshop, the list below identifies key issue areas or "tracks" that could be established to advance trading in the Fox River watershed:

- Regulatory/Policy Development;
- Review and Selection of Trading Program Framework;
- Coordination of Trading Program Development with TMDL Process; and
- Technical Evaluations

Each of the four tracks is further discussed below.

### **Regulatory/Policy Development**

#### ***Need for Legislation and/or Rule***

Existing legislation already authorizes trading in "pilot" watersheds. The City of Cumberland has been using this authorization for TP credit trading in their watershed for a number of years. It is conceivable that GBMSD could also undertake trading via the Fox/Wolf trading pilot watershed program, likely coupled with further authorization in the WPDES permits for the Green Bay and De Pere WWTFs. At the workshop, however, WDNR indicated that the Cumberland example is on a very small scale, and may not serve as the best model for other larger scale trading.

It should be noted that in some states, trading is occurring without extensive (or any) verbiage in statute or in a separate trading rule. Oregon is one example where water quality credit trading is authorized in TMDLs (which are essentially rules in Oregon) and subsequently in individual NPDES permits. Idaho has minimalist trade authorization language in statute and rule, with more detailed language in guidance, TMDLs, and individual and general NPDES permits.

The recent changes to NR 102 and 217 do not explicitly address trading, although trading would appear to be applicable to the adaptive management option under NR 217.18. The trading framework currently being worked on by WDNR and the stakeholder group should address this issue, and also make it apparent that trading can also be done outside of the adaptive management option. Also, there are obvious linkages between this trading framework and the TMDL implementation guidance development process, and those linkages should be addressed by both work groups.

### ***Point Source Limit Scheme and Point Source Trading Baselines***

The specific details of how the upcoming TP criteria will be implemented in WPDES permits have been identified in NR 217 for WQBELs derived directly from the criteria. However, NR 217 also provides that TMDL based limits can be used in lieu of these WQBELs. Many of the details of how TMDL limits will be implemented in permits and trading are not included in NR 217 and thus will be addressed by the trading and TMDL implementation stakeholder workgroups. It will be important not only to track this process, but to be actively engaged so that key trading elements are considered and included. Important limits-related questions are listed below.

- What is the averaging period for limits (annual, seasonal, monthly)? Longer-duration limits generally simplify trading, but precedents exist for shorter time frames.
- Will they be mass-based, concentration-based, or both? Mass-based trading is more flexible and most common. Very stringent concentration-based limits (e.g., 0.2 mg/L or lower) will likely preclude trading, but use of the interim concentration limits under the NR 217.18 adaptive management option, coupled with mass-only limits from a TMDL, would appear more workable for GBMSD.
- Will it be possible to use a watershed or bubble approach for entities that are responsible for more than one facility (like GBMSD Green Bay and De Pere facilities)? Bubbling multiple individual WLAs under a single group compliance WLA would facilitate GBMSD trading between its own facilities (if beneficial).
- When will permits for Green Bay and De Pere facilities likely contain water quality-based effluent limits (WQBELs) for TP? Presumably this will be driven by the TMDL rather than the individual permits separate from the TMDL, unless the TMDL is delayed significantly and WDNR moves ahead in the interim with individual WQBELs.

### ***Nonpoint Source Trading Baselines***

As discussed earlier, establishment of nonpoint sources' trading baselines, especially as they pertain to agricultural and stormwater (MS4) sources, will be important to resolve early. The applicability and interpretation of NR 151 is a particularly critical issue. Baselines that are too onerous may preclude the feasibility of trading with these potential source groups in the Fox River watershed. This is another key item that should be further explored by stakeholders' legal counsels.

### **Review and Selection of Trading Program Framework**

The general outlines of the recommended frameworks to support point-point and point-nonpoint source phosphorus credit trading were presented above. These should be reviewed and adjusted as necessary in light of known information and preferences prior to beginning the other tracks of this strategy. The resulting draft frameworks can be used to guide and inform the other activities and analyses recommended. As noted in the introduction to the frameworks, it is expected that they will be revised and refined in an iterative process concurrent with the preliminary, interim, and final outcomes of the other elements of the overall strategy.

At an appropriate point during the process, a draft framework document consistent with the statewide framework now being developed, but more specific to GBMSD and the Fox River Basin, can be prepared and circulated among key stakeholders for review and

comment. That draft could be refined and developed into a proposed framework and subjected to a formal review and approval process. The specific path of this process will depend in significant part on what materials will be used to define and document the framework. For example, if all or a portion of the framework needs to be included in an individual and/or general permit, a certain path would be proscribed. If the framework is embodied in a plan or memoranda of agreement, a different path would be followed. Ultimately, in whole or in part, the salient concepts, necessary language, and implementing provisions of the framework will need to be included in the documents and agreements based on the requirements and preferences of participants and regulators.

### **Coordinate Trading Program Development with TMDL Process**

In most TMDL-driven trading programs, the TMDL document explicitly and clearly authorizes trading as an optional compliance mechanism. This is because the TMDL explicitly identifies numeric WLAs for each point source, which are then incorporated into their NPDES permits. If the TMDL does not authorize trading, then it can be construed that the individual WLAs must be complied with literally by each permittee unless the TMDL itself is formally modified for alternative WLAs. This process would be excessively cumbersome for widespread trading given that EPA must approve all TMDLs and substantive changes to WLAs.

Consequently, the ongoing TMDL process should include trading considerations and authorization in a general sense at a minimum. If possible, it could incorporate Fox River watershed specific trading provisions, such as watershed-specific trading ratios and point source limit scheme. One way to facilitate this would be to have trade scenarios included in any TMDL modeling that is conducted.

As noted earlier, the June 2010 public comment draft TMDL for the Lower Fox River/Lower Green Bay did not include any language or scenario analyses pertaining to trading. This is a significant omission and should be included in future versions of the TMDL. The stakeholder workgroups for trading and TMDL implementation should address these issues.

### **Technical Evaluations**

#### ***Credit Market Assessment for Fox River Watershed***

The credit market assessment involves three basic evaluations covering each of the applicable individual and categorical source sectors that could be included in a point-point or point-nonpoint trading program. Additionally, this assessment could be conducted in three phases to allow for refining the analyses and staging resource investments consistent with apparent opportunities or lack thereof. The assessment could begin focusing on the Lower Fox River watershed, and expand it to include some or all of the Upper Fox/Wolf River as indicated by the results of the phased market assessment.

The three evaluations that are generally conducted stepwise, although with some overlap, are described below.

- **Credit Demand and Supply Capacity Assessment**— This involves identifying the prospective buyers and sellers, assigning assumed trading baselines, and estimating their individual and collective demand and/or supply of credits, as applicable, under a defined range of scenarios. For example, the initial assessment would include: GBMSD's

facilities, other municipal dischargers such as Neenah, Menasha, Appleton, Kaukauna, and others; paper mills on the Fox River; and possibly the City of Green Bay and other MS4 and/or nonpoint stormwater sources; along with agricultural and other nonpoint sources. Much of this information is included in the Draft TMDL for the Lower Fox River/Lower Green Bay. Although nonpoint sources are characterized as lumped loads within each sub-basin, this information will be useful for this assessment.

- **Development of Control Cost Estimates** – For the individual and categorical sources included in the credit capacity assessment, it will be necessary to develop pollutant reduction cost estimates so that relative cost-effectiveness can be compared (see below). These estimates typically include lifecycle costs for nonpoint source BMPs and can include land acquisition costs as consistent with expected credit projects. Where sources have multiple control options, such as treatment to two effluent concentration levels, the multiple options should be evaluated. For BMPs, cost estimates are usually developed in a manner that facilitates comparison and scaling, such as on a per acre basis.
- **Evaluation of Relative Cost-Effectiveness and Feasible Trading Scenarios** – Using the results of the credit capacity estimate and the control cost estimates, the relative cost-effectiveness of the various control options among the sources can be compared. This provides the basis to develop one or more trading scenarios that appear feasible from a technical and economic perspective.

As suggested in the introduction to the outline of the market assessment, a phased approach would involve some number of increasingly detailed assessments. For example, an initial “screening” could be prepared just for the Lower Fox River, using readily available data for point sources and categorical or aggregated estimates for nonpoint sources from the TMDL and/or literature. The results of that screening could lead to a more rigorous assessment that included newly provided data from point sources and refined nonpoint source data provided by prospective participants.

### ***Calculated Nonpoint Source Credits***

As discussed at the February 2009 workshop, the Lower Boise trading program established a mechanism for a more cost-effective way for small-scale agricultural BMPs to generate TP credits. As highlighted in the framework recommendations, a similar calculated credit BMP list would facilitate trading in the Fox River watershed also. This is a technical development process that should be initiated after it has been established in the market analysis that there is likely to be sufficient agricultural nonpoint source credits in the Fox River watershed.

### ***Trading Ratios***

Since trading involves one party doing more than they have to, and creating credits, to make up for another party not doing as much as they otherwise would, and having debits, it is important that the trading program ensure that the credits and debits are equivalent. Sometimes, nutrient load reductions in one location are more or less beneficial to water quality than in another location. Also, there can be some uncertainty in the level of nutrient reduction that will actually be achieved by the credit seller, compared to what the credit buyer could have achieved. Oftentimes, BMP performance and load reductions are based on estimates and cannot be practically or accurately documented.

To address these issues, one or more types of trading ratios can be used to define equivalency or provide additional certainty between the credit and debit side of a trade. For

example, a ratio of 2:1 would mean that a BMP would have to deliver two pounds of nutrient reduction for every one pound it would be credited with. As such, trading ratios are often named and defined by the type of equivalency they are targeting, for example: location; delivery; and uncertainty.

Establishing location ratios for the Fox River watershed may be fairly straightforward. If only the Lower Fox River watershed (Exhibit 1) is included in the trading program, the ratio could be more easily established, potentially in concert with further development of the TMDL and associated modeling. Within this area, it is even possible that the location ratio might be 1:1 everywhere, as noted at the workshop. If the market analysis indicates that more credits may be needed than likely available in the Lower Fox River, and the trading area extends to include the Upper Fox/Wolf River, then determining ratios would be more complicated, likely due to the hydrology of the larger area, including the existence and location of Lake Winnebago. In a number of trading programs (e.g., Lower Boise River), trading ratios have been established using science-based methods and not arbitrarily chosen simply to provide an unquantified factor of safety. Keeping in mind that many trading programs are driven by TMDLs (or TMDL-like processes), and that these TMDLs already must include an implicit and/or explicit margin of safety, then it is reasonable that trading program ratios be supportable on their technical merits.

## Next Steps

GBMSD sponsored the trading workshop in February 2009 to share information about other trading programs around the country and provide a forum for stakeholders to discuss how trading options could help implement the new phosphorus criteria (NR 102.06), implementing procedures (NR 217), and Draft TMDL. In the period between the workshop and the release of this paper, GBMSD has been active in the TMDL development process for the Lower Fox River/Lower Green Bay, and is a member of both the trading and TMDL implementation stakeholder workgroups. GBMSD is making this White Paper available to these workgroups to advance the education, outreach, and other goals of the workgroups as well as the development of the ultimate framework and guidance that WDNR adopts.

This paper provides the following key messages as stakeholders move forward evaluating trading and TMDL issues and developing recommendations for WDNR:

- Both point-point and point-nonpoint frameworks should be pursued until a credit market analysis shows that one or both are infeasible.
- Trading should be an option that helps sources more cost-effectively implement their permit and TMDL responsibilities, rather than a correction for inequitable requirements.
- The most successful trading programs are customized to existing state, local, and watershed situations and this paper outlines the building blocks that will be necessary to tailor for GBMSD and Wisconsin.
- Stakeholders with successful trading programs generally have achieved this through a collaborative process that did not dwell on perceived obstacles to trading, but instead focused on solving problems and creating opportunities.

# February 2009 Credit Trading Workshop Notes

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## Workshop Discussion Highlights

This Appendix presents the highlights of CH2M HILL's workshop notes that incorporate GBMSD comments. These notes are generally presented under the topical groupings for program design elements and options used for the "Trading in Wisconsin" module. The notes were current following the February 2009 workshop, but the criteria and TMDL development process and events may have overtaken some of the specific questions, concerns, and suggestions. They purposefully have not been updated or otherwise revised for appending to this white paper in the interest of preserving the original discussion.

### Trading Baselines

- Existing and new phosphorus criteria, along with NR 217, will be the source of mass-based baselines for point sources. NR 217 is not a technology standard imposed by EPA and therefore would not impose a technology floor, unless WDNR deemed it so.
- Whether or not NR 151 will set the baseline for nonpoint sources, both agricultural and municipal stormwater sectors, is a key issue to resolve at the outset of evaluating the feasibility of trading program. One issue is that the requirements do not apply to the agricultural sector unless cost-share funding is available. In the absence of a policy decision specific to trading, a dual baseline might be interpreted – one for those with cost-share, and one for those without. It will be desirable to have a consistently applied baseline so that the playing field is level among nonpoint sources. If NR 151 agricultural standards are the baseline across the board, it is suspected that the availability of nonpoint source credits, and therefore the ability to support point-nonpoint trading, will be greatly diminished.
- NR 151 requirements apply to the municipal stormwater sector, without regard to cost share; however, they are a state and not federal requirement and could be waived as the baseline for trading at the state's discretion.

### Trading Areas

- For watersheds without TMDLs, a trading area can be defined by the Hydrologic Unit Code (HUC) developed by the U.S. Geologic Survey. For example, the entire Lower Fox River HUC shown in Exhibit 1 is the 8-digit code, 04030204. A smaller subwatershed defined by a 12-digit HUC (HUC 12) might be a reasonable starting point for considering trading area size. For watersheds with a TMDL, the TMDL could set a default definition for the maximum trading area that might be contracted, subdivided, or expanded on a case by case basis.
- Upstream-downstream directionality or limitations were not viewed as significant for most watersheds, unless there were local water quality concerns at an outfall.

- For GBMSD, everything is essentially upstream. GBMSD could start by examining the Lower Fox River as a trading area, and expand the area further into the Wolf/Upper Fox River as needed and as could be technically supported.

### **Pollutant Reduction Options and Creditability**

- It is generally expected that the technology exists for publically owned treatment works (POTWs) to reach the effluent concentrations being considered; however, compliance through point source upgrades will involve significant capital expenditures and increase operation and maintenance costs.
- It is generally believed that capacity exists within the agricultural sector to generate phosphorus reductions.
- At the same time, cities are having trouble demonstrating Total Suspended Solids (TSS) compliance with the state's stormwater requirements in NR 151. This invokes the concept of cities purchasing TSS credits from a BMP that generated both phosphorus and TSS reductions. It also invokes the concept of a city installing a BMP and claiming the TSS reductions for NR 151 compliance, but selling any "extra" phosphorus reductions as credits to POTWs.

### **Determining Reductions**

- It is generally believed that sufficient information exists from a variety of programs to estimate phosphorus reductions from different nonpoint source BMPs. Snap Plus and Phosphorus Index are two tools that were mentioned that could assist the calculations.
- Similar to the approach used in the Lower Boise, there was broad interest in establishing a list of BMPs "pre-approved" as creditable along with pre-calculated or formulaic pollutant reduction assumptions.

### **Expected Supply and Demand Relationships**

- The supply-demand relationship for point-nonpoint trading in any given trading area will depend on: (1) the final phosphorus criteria, how they are translated into mass-based allocations for POTWs, and what a POTW's credit demand would be; compared to (2) the availability of nonpoint source credits, as influenced by the combination of available capacity (i.e., acreage not already controlled with BMPs), and the baseline for credit creation. It was speculated that in some circumstances POTW demand might be greater than the available nonpoint source supply. This will need to be further evaluated.

### **Relative Economics Among Source Sectors**

- The relative economics were not known, but there is believed to be sufficient data for both point and nonpoint sources to support such analysis.

### **Trading Frameworks: Point-Point and Point-Nonpoint**

- There was interest in the concept of a point source "trading association": either specific to a watershed; or an umbrella organization that could support point-point and/or point-nonpoint trading in multiple watersheds across the state.

- It is not believed that the state is in a financial position, or prefers, to play a lead role in facilitating trading, such as Connecticut is doing.
- For point-nonpoint trading, there was broad interest in the concept of a “middle-man,” such as the function served by the Barron County SWCD services in Cumberland, WI; for Clean Water Services, OR; and for the Miami Conservancy District, OH programs. However, there was concern that the watershed delineations were such in many instances that this approach would need to involve more than one SWCD or similar middle-man. This seemed cumbersome, and potentially costly. It was not believed that an umbrella SWCD entity existed that could provide a single broker for the point source sector in a given watershed.
- An interest was also expressed in piggybacking on existing structures and systems serving the nonpoint source sector to take advantage of relationships, familiarity, and cost-efficiencies.

### **Liability Models and Risk Management**

- There was interest in the third-party credit verification models used in Ohio, Oregon, and Idaho. There is a general consensus among those programs’ participants that the approach is successful.
- Comments were made that trading contracts between point and nonpoint sources need to be strong enough to maintain the credit commitment, including under circumstances when reversion to farming (i.e., BMP decommissioning) became more economically attractive than credit generation (for example, if commodity prices increase).
- One liability and risk management approach discussed would involve a POTW already owning or newly purchasing the land on which a creditable BMP is sited. A related option would be for a companion jurisdiction of the POTW to own/buy the land (e.g., city, county). However, the implications for the applicable baseline would need to be evaluated. For example, if a POTW buys agricultural land to take it out of production and/or to install BMPs, NR 151 requirements probably no longer apply but if a POTW wants to put a BMP on city/county land, then the stormwater control baseline of NR 151 may well apply.

### **Delivery Factors and Location Ratios**

- There was a general sense that the availability and quality of data across the state’s watersheds varied, with respect to sufficiency to develop delivery factors and location ratios. It is believed sufficient information exists for the Milwaukee River, Lower Fox River, and Rock River watersheds, but maybe not the Wisconsin River watershed.
- Delivery factors/location ratios may not be necessary in every instance. For example, they might not be needed for trading restricted to the Lower Fox River, but might be if the trading area encompassed the Wolf/Upper Fox River.

### **Uncertainty Ratios**

- It is generally believed that sufficient information exists to evaluate the uncertainty that may be associated with the most common BMPs. Whether an uncertainty ratio was

needed would depend on an evaluation of the conservativeness that may already be embedded in the assumed pollutant removal efficiencies.

### **Credit Life, Reconciliation Period, Trade Term Duration**

- There was a general sense that trading arrangements needed to be of sufficient term duration to provide the buying POTW with the amount of certainty needed to trade in lieu of upgrading, or in combination with an upgrade that would not by itself enable the plant to meet its wasteload allocation (WLA) at the outfall. This trade duration could be determined either by defining credit life, or by the number of years' worth of annualized credits that would be bundled together in a deal.
- Tying trade duration to permit terms points to at least five years. Alternatively, trade duration could be tied to the BMP life, which could be 10, 15 (such as for Conservation Reserve Enhancement Program [CREP]), or even 20 years.

### **Financial Arrangements**

- Point-nonpoint trading may involve a POTW spending money outside of its service area. The Clean Water Service (CWS) program is one example of that happening successfully and with customers' understanding and support.
- Funds will be needed to develop and implement any program. Existing programs have relied on a variety of funding sources, such as self-funding through individual POTW contracts, or forming an Association and collecting member fees, and grants (state, federal, private). Once the program is set up, there are a variety of ways to pay for administrative expenses. For example, CWS pays for one staff-person at the local SWCD as part of its program fees. The Virginia Nutrient Credit Exchange charges members' fees that cover all services, regardless of trading activity or lack thereof, based on a four-tiered MGD fee system. Administrative fees can also be rolled into the individual transaction costs or credit prices.
- The question was asked whether POTWs could use State Revolving Fund (SRF) to purchase nonpoint source-generated credits. It is not certain, but CH2M HILL does not believe there is an example of this to serve as precedent. The sense among the workshop attendees was that it was already or could be allowed under the Wisconsin SRF loan program.
- WDNR indicated that the concept of using state bond authority to fund nonpoint source phosphorus reductions had been discussed among bond counsel, WDNR, and SRF staff, but no formal decision has been made.
- Many believed that funds for nonpoint source BMPs are going unused, such as CREP and state funds, because the economic incentives to participate, compared to farm income, are not sufficient.

### **Credit Pricing**

- Credit pricing for nonpoint source reductions could be informed by a number of information sets, including: what the state pays for nutrient management; publicly available information on BMP installation and maintenance costs; cost/economic return of alternative uses of the land (e.g., farming); and NR 151 cost-share values.

- Prices could be fixed, managed within a range, or completely free to fluctuate based on market circumstances.
- It was generally agreed that credit sales pricing information would have to be made publicly available.

### **The Phosphorus Rule**

- There was some debate about how much or how little language regarding trading should be included in the Rule. Some expressed interest in a minimalist approach under which the concept of trading and some type of authorization for trading might be included, but other details would be left for further development and inclusion in other mechanisms, such as NPDES permits, the TMDL documents, and policy statements. Others felt that the Rule was a good opportunity to establish the framework for trading in Wisconsin as specifically as possible, especially in areas where consistency across watersheds was desirable and possible. It was noted that some environmental groups thought the Rule should focus on the criteria and standards exclusively. To the extent that the process involved (trying to get) agreement on trading language for the Rule detracted from their focus, they would want to divert trading provisions to other mechanisms.

### **Timeline for Development Trading Framework**

- The Rule-making process for phosphorus criteria has already begun. Discussions have taken place regarding what the Rule should/could say about trading (see above). Additionally it is possible a statutory revision is needed (to existing language or insertion of new language) to support trading – this would need to synchronize with the legislative calendar. Beyond those timelines, it could take one to two years, depending on the scope and scale, to complete the technical work, conduct stakeholder outreach, and develop the necessary implementation mechanisms (e.g., NPDES permit language, trading agreements) to get to the point where trading could begin.