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FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Water Resource Management, Bureau of Watershed Management

Water Quality Credit Trading: A Report to the Governor and Legislature



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EXECUTIVE SUMMARY

As required by the 2005 Florida Watershed Restoration Act, this report contains the Department of Environmental Protection's (Department) recommendations for a framework for the Florida's Water Quality Credit Program. The report was prepared after extensive consultation with a policy advisory committee consisting of representatives of regulated interests, environmental organizations, water management districts, and local governments (see Appendix E for a list of members). The report also contains recommendations for specific legislative or rule changes needed to ensure that pollutant trades meet state and federal requirements in the FWRA, federal Clean Water Act, and U.S. Environmental Protection Agency's Trading Policy.

Water quality credit trading is an innovative, voluntary approach to restoring and protecting water quality more efficiently. It is based on the fact that different sources in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities facing higher pollution control costs to meet the pollutant loading reductions for impaired surface waters required by the state's Total Maximum Daily Load (TMDL) Program by purchasing environmentally equivalent (or superior) reductions from another source at a lower cost, thus achieving the same water quality improvement for less.

Water quality credit trading can be a useful tool in implementing TMDLs by reducing overall costs; aiding in the development of more cost-effective pollutant reduction and/or treatment measures; providing economic incentives for innovation and emerging technologies to restore impaired waters; achieving greater efficiency in improving Florida's waters; speeding up the restoration of impaired waters; improving water quality and providing other environmental benefits; and providing an important mechanism to accommodate the increased pollutants from new growth. Initially, the state's Water Quality Credit Trading Program will focus on nutrients and dissolved oxygen-related parameters, which are well suited to water quality credit trading.

While trading implies some sort of "right," there is no long-term right to discharge pollutants. However, the incorporation of a pollutant allocation in a permit vests the permittee with a temporary authorization to discharge that can be traded.

Florida's trading program will be, at least initially, implemented within the Department's existing National Pollutant Discharge Elimination System (NPDES) Program. Trades will be incorporated into individual permits for the buyer and, if applicable, the seller; the certification of credit generation will be conducted as part of the permit application review process; and credit-generating activities will be evaluated using standard compliance and enforcement procedures.

Trading can effectively be implemented via the NPDES permitting program with minimal legislative changes [including revision of the equitable abatement provision and revision of 403.088(2)(f), F.S., to allow the Department to issue Administrative Orders as part of permit revisions]. However, there are many policy and technical issues that must be addressed to ensure that trading is both cost-effective and environmentally protective, and rulemaking will be needed to establish the administrative process for the credit trading program.

While this report includes many important recommendations that will help guide subsequent rulemaking (see Appendix A), the details of the rule cannot be determined at this time given uncertainty in the specifics of the trading program. To address this uncertainty, the Department proposes to initiate a pilot water quality credit trading program in the Lower St. Johns River Basin. The pilot would last for approximately one year (through December 2007), at which time the Department would initiate rulemaking.

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I. INTRODUCTION

Purpose of Report

The 2005 Florida Legislature directed the Florida Department of Environmental Protection (Department) to submit a report no later than November 30, 2006, containing recommendations on water quality credit trading rules and the proposed basis for equitable, economically based agreements and the accounting and tracking of pollution credits (Section 403.067[8], Florida Statutes [F.S.]).¹ This report, prepared after extensive consultation with and assistance from a policy advisory committee (PTPAC, see Appendix E), addresses the statutory directive and provides recommendations for a framework for Florida's Water Quality Credit Trading Program. These recommendations are designed to meet all state and federal Clean Water Act (CWA) requirements to protect and preserve state surface waters. Water quality credit trading can be a useful tool to expedite the restoration of impaired waters under the state's Total Maximum Daily Load (TMDL) Program because it allows pollutant sources to find more cost-effective pollutant reduction/treatment measures (**Appendix B** provides background information on the TMDL Program). However, many important policy issues must be addressed to ensure that trading is both cost-effective and environmentally protective. These include how to promote cooperative relationships to reduce overall pollution reduction costs, how to accurately measure the pollution reduction benefits and value the resulting "credits," how to account for trading transactions over time, and how to ensure success, including the enforcement of agreements.

The Department envisions that a water quality credit trading rule will be needed to implement the program. This rule language will be very important to establish the administrative process for water quality credit trading and to ensure that trades are consistent with all applicable legal requirements. However, the Department acknowledges the importance of flexibility during the development of the program because trading will likely need to be tailored to basin-specific issues and because the program will need to evolve over time. As such, the trading framework and rules will be designed with this flexibility in mind.

What is water quality credit trading?

Water quality credit trading is a **voluntary**, economically based approach to achieving water quality goals more efficiently. It is based on the fact that different sources of the same pollutant in the same watershed may face substantially different costs to control that pollutant. Trading allows those facilities or sites facing higher pollution control costs to achieve necessary pollutant reductions by purchasing environmentally equivalent (or superior) reductions from another source of the same pollutant that can achieve the reductions at a lower cost. The objective of a water quality credit trading program is to facilitate these economic exchanges to reduce pollution and clean up polluted waters faster and at a lower overall cost. **Appendix C** provides details on the history and economics of trading programs in the United States.

Pollution control is expensive. It is especially costly where waterbodies (including lakes, rivers, streams, and estuaries) are already polluted and need to be cleaned up to protect public health, improve drinking water supplies, re-establish fishing stocks and other critical wildlife habitat, or

¹ Chapters 99-223 and 99-353, Laws of Florida, as amended by Chapter 2000-130, Laws of Florida; creating and amending Section 403.067, F.S. (Florida Watershed Restoration Act, or FWRA). The FWRA provides the Department with the authority to adopt rules for "procedures for pollutant trading among the pollutant sources to a water body or water body segment, including a mechanism for the issuance and tracking of pollutant credits. Such procedures may be implemented through permits or other authorizations and must be legally binding." The 2005 FWRA amendments required that, prior to adopting rules for pollutant trading and no later than November 30, 2006, the Department prepare and submit a report to the Governor, the President of the Senate, and the Speaker of the House of Representatives containing "recommendations on such rules, including the proposed basis for equitable economically based agreements and the tracking and accounting of pollution credits or other similar mechanisms." The amendments also required that the recommendations "be developed in cooperation with a technical advisory committee that includes experts in water quality credit trading and representatives of potentially affected parties."

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restore recreational opportunities. In Lake Okeechobee, for example, these restoration costs alone are estimated at nearly \$xx billion; in the Lower St. Johns River (LSJR), they are estimated at over \$1 billion.

Some methods of pollution control are less expensive to implement than others. However, depending on the unique characteristics of a given watershed, the nature of the pollution problems, and the varying types of pollutant sources, the most cost-effective solution will vary. A water quality credit trading program—just like Florida’s overall water quality protection program—must be flexible enough to account for this variability.

One issue that must be understood clearly is that there is no right to pollute under Florida law. Any permit or other license to discharge pollutants is a conditional authorization, limited in time and subject to change. Thus, water quality credit trading cannot involve nor does it imply the trading of pollution “rights.” It is, instead, an economic exchange to achieve lower net costs or other practical alternatives for meeting water quality standards. Any rights stemming from a pollutant trade are limited to enforceable contractual rights under Florida law.

Benefits of Trading

The economic savings from water quality credit trading can be substantial. The *National Cost to Implement Total Maximum Daily Loads (TMDLs) Draft Report* estimates that flexible approaches to improving water quality, such as water quality credit trading, could save \$900 million annually (U.S. Environmental Protection Agency [EPA], August 2001). For example, in the LSJR Basin alone, nitrogen trading between publicly owned treatment works and local governments with municipal separate storm sewer systems (MS4s) could save hundreds of millions of dollars because upgrading domestic wastewater treatment facilities, while expensive, is much more cost-effective than retrofitting urbanized drainage systems in Jacksonville to meet the load reductions required by the TMDL². As this example illustrates, trading capitalizes on the control cost differentials among and between sources and on economies of scale. Market-based approaches can also create economic incentives for innovation and emerging technologies to restore Florida’s waters, leading to greater efficiency in improving water quality.

Water quality credit trading can achieve water quality and environmental benefits as well. Given the finite financial resources available to industry and government, the restoration of Florida’s impaired waters can be accelerated because potentially unaffordable cost burdens on individual pollution sources are reduced, and because the cooperative relationships built through water quality credit trading agreements foster shared responsibility and commitment. In fact, high costs could preclude the restoration of some waters, and the flexibility provided by water quality credit trading may be the only way to reduce pollutants sufficiently to meet restoration goals.

Water quality credit trading also provides a mechanism to accommodate new growth, including increased pollutant loadings from urban stormwater and new domestic and industrial wastewater discharges. Florida has one of the strongest stormwater programs in the nation (it was the first state, and today is one of only nine states, to require stormwater from all new development and redevelopment to be treated [see **Appendix D** for background information on federal and state stormwater programs]); however, new development continues to increase pollutant loadings in most basins.³ While TMDL allocations may be adjusted to address growth, water quality credit trading provides a way for the owners of new or increased discharges to buy credits from existing sources in a basin without increasing the overall pollutant loading.

² For example, a study conducted by wastewater treatment providers and cities in the LSJR Basin showed that stormwater projects are a full order of magnitude more expensive per pound of nitrogen removed than projects at municipal wastewater treatment plants (WWTPs). The study revealed that the unit capital cost per unit of nitrogen (N) removed to upgrade municipal WWTPs from advanced secondary to advanced wastewater treatment (AWT) levels typically ranges from \$100 to \$300 per pound of nitrogen removed per year. In contrast, unit capital costs to install stormwater controls range from approximately \$2,000 to over \$4,000 per pound of N per year.

³ While there are specific areas in Florida where postdevelopment loading must equal predevelopment loading, applicable stormwater rules for most areas only require 80% removal of the increased loading.

Parameters Addressed under Florida's Trading Program

Most water quality credit trading programs in the nation have focused on nutrients, including nitrogen and phosphorus, and to a lesser extent, dissolved oxygen (DO)—demanding parameters. Nutrients are well-suited for water quality credit trading because the impacts of elevated nutrients are typically widespread and due to cumulative loading. Nutrient TMDLs are also typically expressed using annual or seasonal loads,⁴ allowing the temporal flexibility needed for trading. In contrast, TMDLs for many other pollutants are usually expressed as concentrations because they are designed to prevent concentrations that would lead to toxicity to aquatic life (metals, for example) or impacts on recreational uses (coliform bacteria). As such, TMDLs for metals and coliform are not well suited for water quality credit trading.

While the Pollutant Trading Policy Advisory Committee (PTPAC) recommended that the Department not specifically eliminate any parameters from consideration for trading, the Department recommends focusing the initial phase of the state's trading program on nutrients and DO-related parameters. This approach will meet the largest demand for trading, while at the same time allowing the program to mature before addressing more challenging parameters. It will also help address some of the concerns expressed by EPA in its Water Quality Trading Policy (see the next section). While EPA only precluded persistent bioaccumulative toxics (PBTs) from trading programs, it specifically recognized that nutrients and sediments are well suited for trading and noted that trades involving other parameters may pose a higher level of risk and should receive a higher level of scrutiny (a case-by-case evaluation, requiring prior approval from EPA) to ensure that water quality standards are met.

EPA's Water Quality Trading Policy

EPA has been a strong advocate for water quality credit trading.⁵ Its recommended critical elements of a credible trading program include the following:

- *Timely public access to information on trades,*
- *Public participation during program development and implementation,*
- *Mechanisms to monitor progress, evaluate program effectiveness, and revise the program as necessary,*
- *Legal mechanisms to facilitate trading,*
- *Clearly defined units of trade,*
- *Methods to quantify credits and address uncertainty,*
- *Compliance and enforcement provisions,*
- *Accountability for all trades, and*
- *Maintaining responsibility for National Pollutant Discharge Elimination System (NPDES) Program permittees to meet permit limits.*

EPA does not formally approve or disapprove programs. Instead, it oversees trading through existing programs over which it has specific authority under the Clean Water Act, including NPDES permit review, TMDL approval, and the review of revisions to water quality standards. The Department has followed EPA's recommendation for early consultation, and representatives from EPA Region 4 have participated in the development of this report.

⁴ EPA practice has been to allow states to express TMDLs as appropriate, including annual or seasonal loads, rather than maximum "daily loads," but there is some uncertainty in the program due to a recent D.C. Circuit case, which found that TMDLs must be expressed as daily loads. The EPA subsequently issued a policy memo stating that TMDLs must be expressed as daily loads, but that states can also express the TMDL in other terms and can indicate which expression is appropriate for implementation.

⁵ The EPA document, *Final Water Quality Trading Policy* (EPA, January 13, 2003), provides background information about trading objectives; addresses trading areas, pollutants and parameters traded, baselines for trading, and when trading may occur; describes how trading can be aligned with CWA requirements; lists the critical elements of credible trading programs; and describes EPA's oversight role in trading programs.

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The PTPAC recommended that the Department formally submit this report and any subsequent water quality credit trading rules to EPA as part of Florida's NPDES Program. Because Florida is authorized to administer this federal program, the state must submit to EPA all policies, rules, and statutes related to NPDES implementation, and water quality credit trading involving permittees authorized to discharge to state surface waters clearly meets this requirement. The Memorandum of Agreement (MOA) between the Department and EPA for the NPDES Program states, "Pollutant Trading shall be developed within the framework of EPA's 2003 Water Quality Trading Policy, or any subsequent revised national policy." The Department intends to submit any trading rules to EPA under the MOA, which would have the effect of requiring EPA to formally approve or disapprove the rule, and provide Florida with greater certainty that EPA will approve subsequent trades.

Fundamental Principles of Water Quality Credit Trading

Fundamental principles of water quality credit trading in Florida include the following:

- *The pollutant reductions to be achieved by trading partners must occur in the same basin where a TMDL has been adopted, or in another Department-approved area defined in a Basin Management Action Plan (BMAP)*
- *Trading programs must meet all CWA requirements, including achieving water quality criteria (i.e., specific thresholds for individual pollutants). Trades cannot result in localized "hot spots" where criteria are not met.*
- *As part of CWA requirements, all wastewater facilities must meet applicable technology-based effluent limitations (TBELs) or best available technology economically achievable (BAT) requirements, meaning that facilities cannot purchase credits to meet their TBEL requirements.*
- *Trades must be enforceable if a point source is involved.*
- *An organizational structure/marketplace is needed to process trades, track implementation, and monitor effectiveness.*
- *Tradable "credits" are only created when entities reduce their loading beyond their initial allocation, meaning that nonpoint sources will not typically generate credits for simply implementing the adopted⁶ best management practice (BMP) for their activity because their initial allocation will be calculated based on the load after the implementation of these adopted BMPs.*
- *Trading parties must be able to quantify or estimate the expected reduction in pollutant loadings to determine the amount of credits generated and available for trading.*

Public Participation

Public participation is a fundamental part of the Department's watershed management approach, as well as the TMDL and NPDES Programs, and the Department will provide many opportunities for public participation throughout the development and implementation of the trading program. This will be very important to address any public concerns that trading could potentially lessen environmental protection or cause hot spots. In particular, the BMAP development process is local and very public, involving a broad range of interested parties and seeking to identify and develop pollution reduction activities appropriate to specific local circumstances. **Appendix F** provides additional details on public participation activities specific to the trading program.

⁶ 6 BMPs for different agricultural commodities are adopted by the Florida Department of Agriculture and Consumer Services (DACCS), while BMPs for urban stormwater discharges have been adopted by the Department or water management districts (WMDs).

II. TRADING AND WATERSHED MANAGEMENT

When Trading May Occur

While this report focuses on trading that occurs after the development of detailed, source-specific allocations, some TMDLs will not include detailed allocations, and it may take up to two years or longer to develop source-specific allocations as part of the BMAP for an adopted TMDL. Given this long time frame and given the opportunities that will arise to seek out trading partners during the collaborative BMAP process, “trading” will likely occur both during and after BMAP development. However, trading that occurs before the adoption of the BMAP (“Pre-BMAP Trading”) is very different than the “formal” trading that occurs after the adoption of detailed allocations. In the case of Pre-BMAP trading, trading agreements result in changes to the detailed allocation that is adopted as part of the BMAP and subsequent formal trading is not needed.

Trading may also occur totally independent of the BMAP development process, as part of the wastewater permitting process.⁷ Examples include trading in un-impaired waters and trading that occurs through watershed-based permitting; both types of trading are discussed later in this report.

“Pre-BMAP” Trading Resulting in Changes to Allocations

At the beginning of the BMAP process, the Department and stakeholders attempt to determine a “reasonable and equitable” source-specific allocation. The allocation process addresses issues of fairness (by trying to ensure that assigned reductions reflect the prior treatment effort and overall load of each source) and only indirectly addresses economic considerations (using BAT as a way to level the playing field). The allocation process does not attempt to find or dictate the lowest-cost solution. This would be very difficult for the Department or stakeholders to determine, and it would not be fair to impose the burden of all pollutant reductions on a facility simply because it could implement those reductions at a lower cost than other facilities.

However, once the Department and stakeholders develop a preliminary source-specific allocation, Pre-BMAP trading could be used to evolve towards the lowest-cost alternative, which could be reflected in the final allocation adopted in the BMAP. The effect of a Pre-BMAP trade is very different from the effect of a formal trade because, at this point in the process, a Pre-BMAP trade would result in a change in the source-specific allocation. As this allocation would be expected to last for five years (the length of the watershed management cycle), Pre-BMAP trades should have more value than subsequent formal trades, which may need to be purchased on a yearly basis.

The level of documentation needed for Pre-BMAP trading will also be less than that required for formal trading, however, the Department will still need to track Pre-BMAP trades, establish the requirements for the trades, and ensure that the trading promotes the attainment of specific water quality targets for a waterbody. The documentation for point source trades should consist of a letter to the Department signed by both parties (1) noting that they agreed to a trade, (2) detailing how much load was traded and which party will receive the additional allocation, (3) providing the discharge location for each trading party, and (4) describing how the entity giving up part of its initial allocation will achieve its reduced allocation. For nonpoint source trades, the letter should also describe how the reduction in loading was calculated, noting the range in expected removal efficiencies for any BMPs used to reduce loading beyond that already required to meet the source’s TMDL obligations.

If trading partners in a Pre-BMAP trade decide they do not want to revise their source-specific allocations, they can instead establish trading agreements that would apply after the BMAP is

⁷ Permitted entities consist of domestic and industrial wastewater facilities with surface water discharges, major municipal stormwater systems (MS4s), certain other stormwater activities regulated under the NPDES Program, confined animal-feeding operations (CAFOs), and other activities that require permits to discharge to surface waters.

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adopted. These agreements would, of course, be subject to the same requirements as other “formal” trades completed after BMAP adoption.

“Formal Trading” Post-BMAP Adoption

Once the allocations are adopted as part of the BMAP, there will, of course, still be opportunities for water quality credit trading to continue to find the lowest-cost restoration solutions and to promote greater levels of reductions than would otherwise occur if each entity were independently required to implement reduction activities at its own facility to meet its pollutant removal goals. Two components of the adopted BMAP will provide critical elements for the subsequent formal trading: the *allocation* and the *implementation schedule*.

The allocation is critical because it establishes, either explicitly (point sources) or implicitly (nonpoint sources), the allowable loading for specific sources. Once this loading is authorized in an NPDES permit, it establishes a source’s “right” to a pollutant credit that can be traded. As discussed earlier, facilities are never granted a right to pollute—all permits are designed to ensure that an operation does not cause or contribute to violations of water quality criteria. Furthermore, any right associated with an authorization to discharge is a short-term right (typically five years) that can be revoked with cause. However, given the high costs of treatment facilities, sources need some level of certainty that their authorization will continue if they meet their permit limits. Similarly, trading parties need some level of certainty that their credits will have some lifespan in order for the credits to have value. The expectation is that the allocation will not be revised before the next watershed management cycle, and as such, the trading parties should have a minimum duration of five years. However, they should be aware that TMDLs could be revised during subsequent cycles as new information becomes available and that these revisions could lead to a revision of the allocations.

The implementation schedule is also critical because it establishes the time by which sources are required to meet their allocations. The time allowed will likely be source-specific, but alternatively, stakeholders could agree to a set compliance date for all facilities in the basin (three to five years, for example). If the facility plans to provide increased treatment, source-specific schedules would take into account the time needed for a source to design, finance, and implement a treatment upgrade. Under this approach, each permitted facility would be required to demonstrate to the Department why it needs the amount of time requested.

Facilities planning to meet their allocation via water quality credit trading will be required to identify the source from which they plan to purchase credits and will be subject to a compliance schedule in order to allow time for the seller to generate credits.⁸ For source-specific schedules, the facility will be required to provide information about the amount of time needed for the source to design, finance, and build the treatment upgrades needed to meet its allocation, and information about the time needed for its source of credits to generate the credits. The Department will determine on a case-by-case basis whether the time needed to obtain generated credits is reasonable and consistent with federal and state regulations.

BMAP-Independent Trading

In BMAP-Independent or TMDL-Independent Trading, the receiving water is either unimpaired, or the water has been listed but the TMDL and a facility-specific allocation have not yet been developed or adopted. While formal trading is not needed in either scenario because there is no “cap” on loading, some of the PTPAC members noted that elements of the trading program could, in addition to saving permittees money, facilitate the permitting process for discharges to surface waters, whether impaired or not. Specifically, PTPAC members thought facilities could

⁸ As described in **Appendix B**, the Department plans to reopen permits to incorporate the new allocation, and the permit revision for the facility will include an Administrative Order (AO) or Compliance Schedule, but the permittee will have to identify its source of credits before the permit and AO are issued.

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be allowed to demonstrate that their discharge will not cause or contribute to violations of water quality standards by demonstrating that their added load will be offset by other projects that reduce loading. This could be particularly useful in situations where the receiving water has limited assimilative capacity for nutrients because the process used to develop nutrient effluent limitations (water quality–based effluent limitations, or WQBELs) can be very complex, expensive, and time-consuming. In Chapter 13 of its *Permit Writer's Manual*, the Department already identified this type of reduction as an “offset” to distinguish it from water quality credit trading.

The EPA has also concluded that trading is an option in impaired waters prior to TMDL development and in unimpaired waters (EPA, 2006). For impaired waters, EPA policy recommends that any trades prior to TMDL development result in a net reduction in loading. In addition to meeting all standard permitting requirements), EPA requires that trades in unimpaired waters not increase loading, and concluded that antidegradation requirements would be met if any increase in loading was offset. To build on this previous guidance from EPA and the Department, the PTPAC recommended that the Department's wastewater staff revisit the permitting guidance in light of this report and incorporate the appropriate elements of the trading program.

III. IMPLICATIONS OF ALLOCATIONS AND TRADING

Implicit Rights Associated with Receiving an Allocation

The 2001 Allocation Technical Advisory Committee (ATAC) Report (see Appendix B) recommended that “long-term ‘rights’ to entities receiving allocations will eventually be needed to allow for water quality credit trading, which would provide a more efficient, market-driven approach to meeting allocations while also allowing for growth in the watershed.” However, both the full PTPAC membership and the Legal Issues Subcommittee concluded that there is no such thing as a long-term right to discharge pollutants. Even NPDES permit holders are only temporarily (up to five years) authorized to discharge under their permits, and this authorization can be revoked under certain circumstances.

Despite the absence of long-term rights, the PTPAC agreed that allocations—adopted either as a rule as part of a TMDL or as part of a BMAP—and their subsequent incorporation into a permit vest the permittee with a temporary authorization to discharge that can be traded. While many nonpoint sources are not required to obtain permits, they would also have the opportunity to generate and sell credits through cooperation with a permittee or, once the Generic Permits are available, through voluntary application for a Generic Permit for a credit-generating activity (see **Section VI**).

Given that the authorization is tied to the allocation and a permit, the duration of the “right to a credit” is obviously limited to the duration of the permit (five years). Of course, permits may be renewed, thereby extending the duration of credits, but permit holders and credit buyers would need to be aware that the permit limits may change if the allocation changes. Changes to allocations are possible because the Department plans to revisit TMDLs as part of the watershed management cycle, and could reduce allocations if there were unanticipated impacts or growth in the basin. Any reductions in the allocation could be incorporated into permits using reopener clauses, and a facility's ability to generate credits could be significantly reduced if its allocation decreases.

Revision of the Equitable Abatement Provision

The potential for allocations to change increases uncertainty for potential trading partners, which could discourage trading. Another factor that could significantly limit the long-term viability of trades is the “equitable abatement” provision in Subsection 62-4.242(4), F.A.C., which allows new discharges to petition the Department for an equitable (re)allocation of loadings so that the

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new source is permissible (see **Appendix H**). This provision was very progressive when it was adopted (1979) because it foresaw, well before the full impact of the TMDL Program was realized, the potential conflicts between permittees competing for the same assimilative capacity. However, the subsequent development of the TMDL Program, notably the BMAP process established in the 1999 FWRA and the 2005 revisions, provided separate mechanisms to address the allocation issues that the equitable abatement provision was designed to address. While the equitable abatement provision requires a fairly lengthy demonstration that addresses some equity issues, it has the potential to effectively negate the financial motivation for trading because new sources could petition for the reallocation of the TMDL rather than purchasing credits. It could also undermine the collaborative BMAP process because the Department could receive a petition requesting reallocation after the adoption of the BMAP. This would of course also have important workload ramifications for the Department because any additional reallocations would be very resource consuming.

To address this concern with the equitable abatement provision, the PTPAC recommended that the Department either request that the FWRA (Section 403.067, F.S.) be revised, or the Department initiate rulemaking to revise the rule provision such that it cannot be used if the Department has adopted a BMAP for the receiving water. In either case, the revision would need to clarify that any limitations to the equitable abatement provision would be limited to the pollutants addressed in the BMAP.

Higher Priority for Existing Sources During Reallocation

While the PTPAC concluded that there are no long-term rights associated with an allocation, it recommended that the Department give higher priority to pre-existing, permitted sources and nonpoint sources with prior allocations when re-evaluating allocations during subsequent watershed management cycles. This recommendation was in recognition of the significant investments that existing sources have made in their treatment facilities (and general infrastructure) to obtain their authorization to discharge. However, the PTPAC acknowledged that (a) some new sources may be sufficiently in the public interest (a new wastewater treatment plant [WWTP] that will replace septic tanks, for example) to warrant an allocation, and (b) a major type of “new” source will actually be expansions of existing sources that will need an additional allocation and may warrant a higher priority.

To address these cases where reallocation may be warranted, the PTPAC recommended that new sources be given an opportunity to receive an allocation if they are in the public interest. This would be similar to Florida’s consumptive use permitting, which gives higher priority to those seeking to renew an existing permit.⁹ However, Section 373.233, F.S., only allows a higher priority for existing uses when two or more competing applications are **equally** in the public interest. Furthermore, there are currently no public interest provisions related to the allocation process, either in Department rules or in the ATAC Report. As such, the PTPAC recommended that the Department develop either a guidance memo or a rule addressing the reallocation process and that it specifically include mechanisms to evaluate public interest. The PTPAC even considered making additional recommendations on a priority system, but concluded that the issue needed more detailed analysis that was outside the scope of its work.

⁹ Section 373.233 Competing applications.—(1) If two or more applications which otherwise comply with the provisions of this part are pending for a quantity of water that is inadequate for both or all, or which for any other reason are in conflict, the governing board or the department shall have the right to approve or modify the application which best serves the public interest. (2) In the event that two or more competing applications qualify equally under the provisions of subsection (1), the governing board or the department shall give preference to a renewal application over an initial application.

Transferability

Point Sources

The PTPAC concluded that any rights to a trading credit (initiated when the allocation was incorporated into a point source permit) can, in addition to being traded, be transferred to a new permittee for the rest of the permit cycle if the permit is officially transferred through appropriate Department rule provisions. This would address the case where a facility with an allocation is sold to a new owner who plans to continue to operate the facility under the existing permit, and would have the effect of continuing the allocation and priority assigned to the facility. However, this transfer process would not apply if the new owner did not plan to operate a sufficiently similar operation that it could operate under the same or a revised permit.

The PTPAC concluded that any rights associated with a permit should also be transferred if a facility accepts responsibility for a discharge in the same watershed but does not formally transfer the permit. This would be the case where a regional WWTP accepts the wastewater previously treated by a small package plant. While the regional WWTP's permit would remain in effect, the permit and Fact Sheet would be revised to reflect the fact that the WWTP was receiving a higher load (from the decommissioned smaller facility), was now responsible for the discharge, and was accordingly granted a higher allocation in its permit.

One additional case for point sources discussed by the PTPAC is the possible scenario where a permitted facility goes out of business before it makes arrangements to sell its credits. In this case, the bankruptcy court may consider the unused credits an asset of the business and will have the option to sell the credits for the remainder of the permit cycle. However, the PTPAC recommended that, if there are no bankruptcy proceedings and the legal owner does not request a permit transfer, then any unused allocation will be nontradeable for the remainder of the permit cycle for the original permit. In this case, the unused allocation should be returned to the public pool for reallocation during subsequent watershed management cycles.

Nonpoint Sources

By definition, nonpoint sources are not required to obtain NPDES permits. However, as mentioned in the previous section, nonpoint sources will have the opportunity to sell credits as part of a contract with a permitted point source that agrees to revise its permit to include a trading provision (see **Section VI** for additional details). As part of the application review, the Department will evaluate the validity of requested credits, including whether the nonpoint source has appropriate rights to the credit. Once a Generic Permit is available for the credit-generating activity, the nonpoint source will have the option to apply for the Generic Permit, which will initiate its right to participate in the trading program. The transfer of this right, for the remainder of the GP permit cycle, can then be accomplished by the new owner submitting a new Notice of Intent (NOI).

Liability Issues

Concerns about Liability and Enforcement

As noted in **Section I**, one of EPA's critical elements of a credible trading program is that states maintain their full enforcement authority over point sources that buy credits from nonpoint sources. While states always maintain enforcement authority over point sources, the key element of this recommendation is that EPA expects states to take enforcement action against a point source that meets its permit limits through purchased credits if its source of credits does not complete the activities needed to generate the credits. This is not an issue if the source of the credits is another point source because the seller's permit can be revised to reflect the trade, making the trade fully enforceable. However, EPA recommends that states incorporate specific conditions into NPDES permits to allow "appropriate, enforceable actions" to address potential nonperformance by any unpermitted trading partners (EPA, 2006).

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This concern is understandable when credits are purchased from nonpoint sources, given that trading could conceivably lessen EPA's regulatory authority to restore impaired waters. However, the PTPAC was concerned that extending the liability of noncompliance by credit sellers to the credit buyer could have a chilling effect on trading because buyers want certainty that the credits they purchase are valid and that regulatory authorities will not take enforcement action against them if the seller defaults on a trade agreement. To address this concern, the PTPAC (and the Legal Issues Subcommittee) considered three potential options: contracts between trading parties, the use of General or Generic Permits, and a certification process.

Contracts Between Trading Parties

While not specifically described in this report, the presumption is that trading parties (the buyer and seller) will independently negotiate a contract, or "trade agreement," for their trade. In addition to detailing the basics of the trade, these agreements could include provisions that would allow the buyer to recoup monetary damages if the seller defaulted, and the damages could include any penalties or administrative costs associated with enforcement actions taken against the buyer. However, the PTPAC concluded that these provisions, while helpful to the buyer, could not completely insulate buyers from the negative consequences of enforcement action, and that some other mechanism was needed to formally maintain liability with the credit seller if the seller was a nonpoint source.

Use of Generic Permits

To provide a mechanism to formally maintain liability with credit sellers, the PTPAC recommended that the Department develop Generic Permits for different credit-generating activities, including both un-regulated nonpoint sources and point sources subject to the NPDES Program.¹⁰ For nonpoint sources, application for the Generic Permit would expand the scope of the state permitting program to the activity. However, the Generic Permit would be voluntary for nonpoint sources, as it would only be required if they wished to participate in the trading program and sell credits. For point sources, the Generic Permits would be designed to provide a streamlined permitting option for activities that would otherwise be permitted under an individual permit. The General Permits would maintain the current regulatory scope of the NPDES Program—i.e., only facilities that would otherwise be required to obtain an NPDES permit would be given the option to obtain coverage under the NPDES Generic Permit.

In either case, the Generic Permits would provide the Department with the regulatory authority to take enforcement action against a seller who did not complete or maintain the management activities described in the Notice of Intent (NOI) that would generate credits. For the case of credit sellers covered under an NPDES Generic Permit, the trade would be treated the same as if the credit seller was permitted under an individual NPDES permit (see **Section VI**). However, for state Generic Permits, this extension of regulatory authority only partially addresses EPA's enforcement concerns, and the buyer's permit will still have to include a specific condition incorporating the credit-generating activity. As a result, the buyer will remain liable for the seller's nonperformance. However, the fact that a state-enforceable permit will be issued to the seller should give the buyer more confidence that the seller will perform and increase the buyer's willingness to enter into trades with nonpoint sources. Further, the state will have some enforcement discretion and will have the option of taking enforcement action against the seller before taking action against the buyer.

Both State and NPDES Generic Permits are adopted by rule, and are typically valid for five years after the applicant submits a NOI (presuming the Department grants the GP). Generic Permit holders could, of course, terminate their coverage under the Generic Permit if they decided they no longer wanted to participate in the trading program. However, the Generic

¹⁰ The Department would need to receive legislative authority to develop either GP; **Section VII** summarizes all requests for legislative changes.

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Permit rule should require the permittee to provide buyers with sufficient advance notice so they can arrange for other sources.

One of the complications of the Generic Permit concept is that there will likely be a lot of variability in the type of activities that would generate/sell credits, and the definitions for generic permits (Subsections 62-620.200(30) and (33), F.A.C.) state that "...all facilities covered by the generic permit involve the same type of operations, discharge the same type of waste, require the same monitoring, and are more appropriately controlled under a generic permit rather than an individual permit." As such, the Department will need to wait to develop the Generic Permits until candidate types of operations emerge. As described in **Section IV**, the Department anticipates that "restoration activities" will eventually be a significant source of credits. While the Department would like to encourage these activities by providing the streamlined permitting inherent in a Generic Permit, there is sufficient variability and uncertainty that it cannot be developed at this time. Until the Generic Permits are developed, restoration activities wishing to sell credits will have the option of applying for an individual permit.

Certification of Credits

The Department also considered a certification process in which the credit generator/seller would submit information about the proposed activities that are expected to reduce loading of the pollutant of concern, and the Department, or some other entity, would review the information and make a determination whether to certify the projected reduction in loading. This review process would be very similar to the Generic Permit review process, but would provide two important differences. First, the certification would provide greater flexibility to address the many types of potential operations because it would not be constrained by the scope of activities described in the rule for the Generic Permit. Second, the review process could be assigned to a different agency with more expertise with agricultural operations, such as the Natural Resources Conservation Service (NRCS) or the Department of Agriculture and Consumer Services (DACCS). These other agencies could conduct the certification review and forward the results to the Department for tracking purposes.

The limitation of this approach is that a permit would not be issued for the activity, and without statutory revisions, the certification process would not provide a mechanism for the Department to take enforcement against the credit generator/seller in the event they did not complete or maintain the proposed management activities. Section 403.067 (7)(b)2.h., F.S., does provide enforcement authority to the Department or a water management district if a nonpoint source discharger does not implement the BMPs they agreed to implement in the BMAP, but BMAPs are not likely to address all eventual credit-generating activities. As such, the certification process should provide some confidence to credit buyers that the credits are valid, but it would not wholly insulate buyers.

In addition to this concern about enforceability, the Department is also concerned about the potential workload implications for the certification process as it is not clear who would evaluate the requests for credits. Given these concerns, the Department does not recommend a certification process, and instead recommends that credit review be incorporated into the wastewater permitting process.

Limitations on the Transfer of Liability

While the PTPAC emphasized the importance of maintaining liability with credit sellers, even an individual permit or Generic Permit cannot fully insulate buyers from potential negative consequences if the seller defaults on its agreed-upon restoration activities. Where credits are purchased from nonpoint sources, the buyer will remain liable for any nonperformance by the seller (assuming the buyer fails to meet permit limits as a result). When credits are purchased

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from point sources, the permittee will still be required as part of the permit renewal process to comply with its permit limit as soon as practical (by finding another source of credits, increasing treatment or reuse, or reducing production). Credit buyers would be well advised to develop contracts for the life of the permit (or the full amount of time the credits are needed) and to include financial penalties if the seller defaults.

IV. GENERATING CREDITS AND LIMITATIONS ON CREDIT USE

Generation of Credits

Pollutant credits can only be generated when a source reduces its loading of a given pollutant below the allowable load under the TMDL or BMAP. For point sources, the allowable load is provided in the wasteload allocation for a facility, and credit generation is initiated when the point source agrees to reduce its permitted load below its wasteload allocation. However, for nonpoint sources, allocations will usually not be available for individual sources and will instead be provided as aggregate load allocations for all nonpoint sources or categories of nonpoint sources. Therefore, credit generation for nonpoint sources will be based on whether the source reduces its loading below the baseline expectation for the type of operation, which, in Florida, is the loading achieved after the implementation of adopted Best Management Practices for the operation.¹¹ This baseline expectation is, in fact, reflected in the load allocation because the load allocation will be calculated based on the presumption that 90% of the nonpoint sources implement required Best Management Practices.

Prospective Rather than Retroactive Generation of Credits

Credit generation for both point and nonpoint sources is prospective (credit generation is **initiated** when a source agrees to reduce its loading **in the future**), rather than retroactive (credits are generated whenever a source discharges less than its allocation or permit limit). This distinction is very important because the Department and the PTPAC believe that it would not contribute to the restoration of impaired waters if facilities were allowed to generate and sell credits whenever their actual discharge was some amount below their allocation. Wastewater facilities typically discharge below their actual permit limits to help avoid enforcement action, and the cushion below the permit limit provides an implicit margin of safety (MOS) that helps to protect the receiving water. To prevent this type of credit generation, credit generation will be initiated only after (a) for point sources, the permittee agrees to a permit revision that reduces its loading below its WLA, and (b) for nonpoint sources, the permittee receives authorization to generate credits under the buyer's wastewater permit or a Generic Permit for the credit-generating activity.

The PTPAC concluded that credits could be generated for activities that occurred before the permit revision or Generic Permit authorization, as long as the permittee provided adequate documentation that the reductions had occurred. For example, a facility that applied for credits in July of a given year could request that credits be generated starting on January 1 if it could demonstrate that its load had decreased by the start of the year. For an NPDES permittee, this documentation could come in the form of Discharge Monitoring Report (DMR) data, and for Generic Permit permit holders, it would have to be provided for under the NOI requirements for the Generic Permit. Some PTPAC members recommended that permittees should be required to make a multiyear commitment if they wished to receive credit for activities that occurred before the permit action.

¹¹ For agricultural operations, BMPs are developed and adopted by DACS, and for urban stormwater, BMPs have been adopted by the Department and WMDs.

Credit Use and Expiration

While the initiation of credit generation is prospective, credits are not actually generated (and cannot be used to meet the buyer's permit limit) until the management actions that will create the reductions are actually implemented. Furthermore, credits cannot be "banked" or accumulated for a period extending beyond the expression of the TMDL and must be applied to cover the same time frame in which they are generated (see the box below). For example, if the TMDL is expressed as a monthly load, then the credits could only be applied to cover another permittee's load reduction for the same month in which they were generated. For this reason, monthly trading, with its requisite monthly tracking, would be logistically challenging. However, many nutrient TMDLs are expressed as annual loads, and for these TMDLs, the credits can be applied to cover loadings for any time within the same year.

Sample Expressions of Nutrient TMDLs

Nutrient TMDLs are typically established on an annual basis. However, in cases where the impairment is clearly linked to loading in a given month or season, the TMDL may be expressed as monthly or seasonal loads. The table below shows how the same assimilative capacity could be expressed as annual, seasonal, or monthly loads, and describes the ramifications for trading in each scenario:

Expression of TMDL	TMDL	Temporal Constraints on Trading
Annual	100,000 pounds/year	Credits can be used any time in the same year that they were generated
Seasonal	24,000 pounds/summer season (July–Sept.)	Credits must be used in the same season that they were generated
Monthly	8,000 pounds/month throughout summer season	Credits must be used in the same month that they were generated

Role of Nonpoint and Entrepreneurial Sources in Florida's Trading Program

Because the baseline for nonpoint sources is based on the implementation of applicable BMPs for a given activity, it will be challenging for nonpoint sources in Florida to generate credits—they will have to either (a) implement some type of advanced Best Management Practice and demonstrate how it will be expected to reduce loading beyond the baseline, or (b) take land out of production or change crops. This is very different from some trading programs in other states, in which nonpoint sources are allowed to generate credits more readily and are then a key source of credits for point sources. While this makes Florida's trading program inherently different from some others, both the PTPAC and the Allocation Technical Advisory Committee felt very strongly that nonpoint sources should be required to implement Best Management Practices as part of their baseline expectation, analogous to Technology-Based Effluent Limitations for point sources, and that the trading program could still be effective.

While many farmers will elect not to participate in Florida's trading program, some farmers, for a variety of reasons, will decide to implement advanced BMPs or cooperate with the Department or a water management district (WMD) on regional stormwater treatment areas (RSTAs). These operations would have the opportunity to generate and sell credits. Farmers and other landowners may also enter into agreements with business operations that have developed new technologies to remove nutrients. The PTPAC thought that the trading program should be designed to accommodate, and in fact, provide incentives for, this type of entrepreneurial operation because it could be an important mechanism to reduce loadings to impaired waters. In this specific scenario, individual permits or, upon adoption, the proposed Generic Permits for credit-generating activities, could be used to cover the operation and formally generate the credits.

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The PTPAC also discussed whether instream treatment systems, such as shad harvesting or sediment dredging, should also be eligible to generate credits. While the PTPAC and the Department agreed that these types of operations can expedite the restoration of impaired waters, they acknowledged that these operations differ fundamentally from the operations described previously because they increase the assimilative capacity of an impaired waterbody but do not reduce the pollutant load to the waterbody. As such, the Department concluded that credits should only be generated for these activities in limited cases where the amount of reduction in the pollutant of concern can be accurately quantified and where in-stream treatment does not constitute more than 20% of the reduction in nutrients required under the TMDL.

Externally Funded Projects

One of the complicating factors when determining the amount of credits generated by a given restoration project or management activity is that in some cases the pollutant source will receive some external public funding to cover a percentage of the project costs. Examples include federal Section 319 funding for implementing nonpoint source BMPs, TMDL Water Quality Restoration Grants for urban stormwater retrofitting projects, U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) and DACS cost-share money to fund agricultural Best Management Practices, legislative appropriations earmarked for specific projects or to address specific waters, Water Management District (WMD) funding using ad valorem revenue, and Department of Transportation (DOT) funding of stormwater Best Management Practices. When external public funds are used, the PTPAC and the Department agree that the participating source should be eligible to generate credits for the percentage of funds it provided, not counting the amount of money the source contributed to meet its allocation. The public entity would then receive the remainder of the credits for the percentage it provided.

For example, a domestic wastewater facility could meet its allocation by upgrading to advanced secondary treatment at a cost of \$20 million, or it could exceed its allocation by 100 units by upgrading to advanced wastewater treatment (AWT) at a cost of \$40 million. If the facility decided to go to advanced wastewater treatment because it received a \$10 million legislative appropriation, it would only receive 50 units of credit because it paid for 50% of the additional costs of the project.

It should be noted that in this example, the state would have generated 50 units of credits, but it will be up to the individual public entity whether it decides to sell the credits (to generate revenue to fund additional projects, for example), return them to a general pool for allocation during the next watershed management cycle, or retire them so that the loading to the waterbody is below the TMDL. For the specific case where the public entity is the state, the Department recommends that the stakeholders in the basin be given an opportunity, as part of the BMAP development process, to provide input on how best to use the credits generated, but it would ultimately be the Department's decision on how to use the credits.

V. CALCULATING AND ADJUSTING CREDITS

Trading Ratios

As part of the application process (**Section VI**), applicants for water quality credits will have to document the proposed management activities that will lead to the pollutant reductions and demonstrate the amount of reduction expected. However, pollutant credits are often not generated on a pound-for-pound basis. Both the amount of credit actually generated (and available for sale) by a given reduction in loading and the amount of credits needed for a given trade may be adjusted for a number of factors.

Uncertainty Ratios for Estimated Credits

One of the largest potential sources of uncertainty in trading programs is the fact that reductions in loading from many nonpoint sources, especially agricultural dischargers, must be estimated because of the lack of data on the effectiveness of specific BMPs (caused by the diffuse nature of nonpoint discharges). The PTPAC expressed concern about this uncertainty and even contemplated limiting the initial program such that only “measured credits” (cases where the treatment methods allow for the water quality and quantity of the effluent to be monitored) would be allowed. However, the PTPAC ultimately decided that prohibiting “estimated credits” (cases where credits are estimated using literature values for the type of operation and BMP applied) would unnecessarily preclude participation by many nonpoint sources that could play an important role in restoration efforts. As such, the PTPAC recommended that the Department allow estimated credits but apply an Uncertainty Factor (UF) to ensure that nonpoint trades do not result in additional loading to impaired waters due to errors in the estimated reduction.

The PTPAC did not recommend a specific Uncertainty Factor, and instead recommended that the Department use best professional judgment (BPJ) to determine the appropriate factor for a given situation. The Department subsequently decided to establish default Uncertainty Factors of 3:1 (i.e., if 3 pounds of removal are projected, 1 pound of credit will be created) for agricultural-based credits and 2:1 for urban stormwater BMP-based credits, but allow for site-specific adjustments to the Uncertainty Factor depending on the amount of literature data available, the range seen in removal efficiencies, and the similarity of the proposed project to the operations studied in the literature. Uncertainty Factors should also take into account the level of confidence that the Best Management Practice will be properly designed, installed, and maintained, and the potential for failure of the Best Management Practice (EPA, 2006).

It should be noted that point sources will not have the option to provide estimated credits—they will be required to monitor their effluent throughout the effective period of the trade to ensure that the treatment system is achieving the estimated reductions and generating, at a minimum, the credit amount. Some nonpoint sources, however, will have the option of using either measured or estimated credits, and the Uncertainty Factors provide an incentive for these operations to actually measure their effluent because the seller will then generate more credits.

Retirement Factors

“Retirement Factors” (RFs) are used to adjust the amount of credits generated from a given reduction in loading. Some states use retirement factors to accelerate the restoration of impaired waters by retiring some percentage (10%, for example) of all credits generated. In such cases, these “retired” credits cannot be sold and lower the loading to a receiving water for the life of the credit.

The PTPAC recommended against the use of retirement factors because it thought these would create a disincentive for trades. As an alternative, some PTPAC members suggested a retirement factor that would apply to **ALL** sources in a basin in which a trading program was established, removing the disincentive for individual parties to enter into trades. This approach would have the same effect as an explicit margin of safety and would provide additional reasonable assurance that the waterbody would be restored. However, this approach would also reduce the allocations for existing sources, and the PTPAC did not reach consensus on the issue. The Department believes that either approach is reasonable and recommends that the stakeholders in the basin be given an opportunity, as part of the BMAP development process, to decide whether to use retirement factors or an explicit margin of safety. Regardless of whether Florida’s trading program uses retirement factors, environmental groups would have the option of buying credits to expedite the restoration of impaired waters.

Adjusting Credits for Location Effects

As noted in **Section I**, one of the fundamental principles of trading programs is that trades cannot lead to “hot spots” or areas where water quality standards are not met. However, the

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location of a given discharge affects the magnitude of its effect on the receiving water. For example, discharges far upstream of an impaired segment of a river may have less impact than a downstream discharge because nutrients may be removed through algal uptake as the water flows downstream. Given the likelihood that some potential trading partners will discharge at different locations, the trading program needs some way of adjusting trades to ensure that they will not result in a larger than projected impact at some critical location in a waterbody.

For trades involving sources that discharge to different locations, the amount traded will need to incorporate a Location Factor (LF) to ensure that trading does not result in an increased impact to a waterbody. For many nutrient TMDLs, Location Factors can be calculated using the water quality model that was used to develop the TMDL. For example, a series of model runs can be made with an identical load applied to different locations in the waterbody in succession, and then the relative amount of impact on the worst case segment can be calculated. **Appendix I** provides sample calculations for the application of Location Factors.

Use of Equivalency Factors

Equivalency Factors (EFs) are used to adjust trades for different forms of the same pollutant (EPA, 2006). Many nutrient TMDLs in Florida are expressed as total nitrogen or total phosphorus (TP), rather than the individual species of nitrogen and phosphorus, reducing the need for Equivalency Factors. In some cases, however, a TMDL may take into account the differential impact of different forms of nutrients, primarily related to their bioavailability (inorganic forms of nitrogen, such as ammonia or nitrate/nitrite, are more bioavailable than organic nitrogen). In these cases, Equivalency Factors are needed to ensure that any differences in the forms and bioavailability of nutrients do not lead to increased impacts on the receiving water.

Equivalency factors may also be useful for Dissolved Oxygen (DO) TMDLs where the effect of multiple pollutants [nutrients and Biochemical Oxygen Demand (BOD)] may be addressed. For these TMDLs, it would be possible to determine, through modeling and commonly understood chemical relationships, the relative effects of such parameters as BOD and ammonia on oxygen demand (e.g., typically, 1 pound of ammonia has the oxygen demand-causing potential of 2.3 pounds or more of BOD), and to develop Equivalency Factors that would allow trading of one parameter for the other.

VI. PERMITTING AND COMPLIANCE PROCESS

Trades Involving Two Point Sources

As noted in **Section II**, point source facilities can only generate credits by agreeing to revise a permit to be consistent with a reduced allocation, or in the case of a restoration project, by applying for a permit that provides reasonable assurance that the load to the impaired water will be reduced. Point sources that plan to purchase credits to meet their permit limits will also be required to revise the permit to allow for credit trading. While permits will be revised to accommodate trading, water quality credit trading will not affect any fundamental permitting requirements, and all facilities must meet antidegradation requirements and demonstrate that their discharge will not cause or contribute to violations of water quality standards.

Permit Requirements for Credit Generators/Sellers

Facilities with an individual permit will have two options to revise their permit to generate pollutant credits: either request the credits as part of the permit renewal application, or request a revision, which would reopen the permit. Similar information would be required for both scenarios, but the permittee would be allowed to select the administrative process that best fits its needs and permit cycle. The key objective is that the permit action allows the Department to review and authorize the credit generation (including analysis of the variability in treatment

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efficiency and the time needed before credits are generated); enter information about the generated credits into a Trade-Tracking Database; establish a new, lower load limitation reflecting the trade; establish monitoring requirements to confirm the achievement of the load reduction generating the credit; and provide enforcement authority if needed.

Permit Requirements for Credit Purchasers

Facilities that plan to meet their permit requirements, at least partially, through the purchase of credits will be required to apply for a permit revision (either as part of a renewal or as a revision) to incorporate the trade. When the source of credits is a point source, the permit would include a revised limit that takes the amount of purchased credits eligible into account, accounting for any needed adjustments. Because facilities must provide reasonable assurance that their permit will meet their permit limits, the buyer's permit will have to be issued after or simultaneously with the seller's permit, and the buyer will need to provide signed contracts with the seller indicating that it has purchased adequate credits. In this scenario, the permit does not need to include a specific condition for the trade, but the Fact Sheet or Statement of Basis for the permit would include information about the trade, including the proposed source(s) of credits and any adjustments. As described in **Section II**, the permit may include an Administrative Order (AO) or compliance schedule that provides the permittee with time before it is required to meet its wasteload allocation. If the facility is given time to meet the wasteload allocation, the compliance schedule should include an interim limit that holds the line on current loading.

Antibacksliding

Antibacksliding—a statutory provision that prohibits the renewal, reissuance, or revision of an existing NPDES permit containing limits that are less stringent than those in the previous permit—was raised as a potential concern. Antibacksliding is clearly not an issue the first time a more stringent WLA is incorporated into a permit for a credit buyer, but it could be if the permit is subsequently revised to allow the purchase of credits. However, EPA has consistently interpreted the federal antibacksliding provision [Section 402(o)(1)] to include several exceptions (including “new information”), and EPA's Trading Policy concluded that the antibacksliding provision “will generally be satisfied where a point source increases its discharge through the use of credits...in a manner consistent with provisions for trading under a TMDL.” While not specifically described in the Trading Policy, this conclusion should also be valid for credit sellers who decide to stop selling credits and request an increase in their permit limit.

Inspections and Enforcement Authority

Given that both the buyer's and seller's permits will be revised to reflect the trade, the Department's standard compliance procedures will be followed to ensure that both parties meet their permit limits. If the Department determines that the seller does not meet its reduced permit limit, the Department will take appropriate enforcement action against the seller.

Required Permit Revision if Buyer Elects to Change Source of Credits

While the PTPAC and the Department envision that buyers and sellers will develop long-term contracts, a buyer may want to change the source of its credits during the 5-year permit cycle. In this case, the buyer will be required to apply for a permit revision, so that the Department can evaluate the new source (whether there is reasonable assurance that the source has credits available), and to revise the Fact Sheet or Statement of Basis for the permit. This permit action would be a “minor revision” as long as the permitted effluent limits were not changed. As there would be costs associated with the permit action, the buyer would need to decide whether the costs of applying for and obtaining the permit revision were offset by the savings resulting from the change in the source of credits.

Trades Involving a Point Source Buyer and Nonpoint Source Seller

Basic Permitting Approach and Application Review

As noted in **Section III**, nonpoint sources can only generate credits by documenting that they have reduced their loading below the baseline expectation for their specific type of nonpoint source operation. However, until the Department develops generic permits for different types of credit generating activities, the buyer's permit will be revised to include a specific condition that would incorporate the nonpoint source control activities in the permit (once the generic permits are available, the trades will be implemented as described in **Section VI**, with the obvious exception being that the seller will apply for the generic permit rather than an individual permit). This approach would provide a mechanism to review documentation supporting the generation of credits, require appropriate monitoring or recordkeeping to verify credit generation, and allow the Department to take enforcement against the buyer in the event the seller failed to generate the necessary credits.

As part of the permit application, the buyer will be required to provide information about the nonpoint source activity that will generate the trade, including the baseline loading for the type of operation, a description of the management activities that will generate the reduction (which could include advanced Best Management Practices, taking land out of production,¹² or changing to a crop type with lower nutrient loading), and calculations (signed and sealed by a Professional Engineer) supporting the amount of credit generation.

If the trade is based on measured credits, the applicant will include a description of the proposed monitoring locations. Given that the amount of credit is relative to a baseline condition, the applicant must also provide monitoring data for the pre-BMP condition for at least one year, or alternatively provide influent monitoring for treatment facilities. If the applicant plans to use estimated credits, it must describe the basis for the estimates (whether they were based on literature values, watershed modeling output, or site-specific monitoring results), and provide calculations for the amount of credits generated, taking into account Location Factors, if needed, and either the default Uncertainty Factor or the applicant's requested Uncertainty Factor. The applicant will also need to provide information about whether the efficiency of the Best Management Practice will vary over time.

The Department will review the credit calculations, including any proposed Uncertainty Factors, inform the applicant whether the Department agrees or disagrees that a credit will be generated, and confirm or amend the amount of credit that would be generated based on the Department's approved Uncertainty Factor. The Department will then enter the information into a credit-tracking database.

Reporting Requirements and Recordkeeping

As described above, buyers requesting measured credits will be required to submit monthly Discharge Monitoring Reports (DMRs) demonstrating the loading reduction projected in the application. Buyers requesting estimated credits will not be required to provide DMR data but must keep records demonstrating that they are meeting any applicable Best Management Practice requirements and, as part of their permit, must agree to be subject to inspections by the Department. The Department may also require downstream monitoring to evaluate the effects of Best Management Practices on water quality and overall loading to the waterbody.

Appendix J provides details on the information that the Department will need to track on individual trades to ensure that generated credits are not sold to multiple parties.

¹² Credits for taking land out of production or crop changes will only be valid for one GP cycle. While the PTPAC concluded that credits could be given for crop changes and taking land out of production, regardless of whether the Department has regulatory authority to limit the reversal of the change, the Department's position is that the permit condition would specifically prevent landowners from selling credits and then selling their land to someone who changes to a more intensive land use.

Enforcement Authority

Integrating the nonpoint source control activity into the buyer's permit provides the Department with the needed enforcement authority if the credit seller does not complete the management activities that were the basis for its generated credits. The buyer will be fully liable for any trade failures, and the buyer will be expected to come back into compliance with its original wasteload allocation as soon as possible, in addition to paying appropriate penalties.

The 2005 FWRA revisions also provided the Department with enforcement authority for nonpoint source dischargers that do not complete the management actions stipulated in an adopted BMAP. This provides important enforcement authority to ensure the implementation of Best Management Practices that will provide the baseline expectation for nonpoint sources, but the Best Management Practices will likely not be detailed enough to describe individual trades; that is why the permit condition is needed.

Watershed-Based Permitting

Watershed-based permitting is another mechanism under which trading can occur (but it is different than the "formal" water quality credit trading described previously). While there are many different potential forms of watershed-based permitting, the fundamental tenet of watershed-based trading is that one permittee with multiple facilities/permits or multiple copermitees share some sort of aggregate cap. The co-permittees can establish a variety of arrangements that stipulate how to deal with individual permittees that exceed their specific allocation, but regulatory authorities typically do not take formal enforcement action unless the aggregate load is exceeded.

The PTPAC concluded that watershed-based permitting has the potential to give municipalities greater flexibility to meet their aggregate wasteload allocations (WLAs) and recommended that the Department evaluate watershed-based permitting, including the need for statutory authority or rulemaking. **Appendix G** provides additional details on the Department's conclusions.

VII. ADMINISTRATION OF THE TRADING PROGRAM

Initial Scope of Florida's Trading Programs

As discussed earlier, Florida's trading program will be, at least initially, implemented within the Department's existing NPDES Program. Trades will be incorporated into individual permits for the buyer and, if applicable, the seller; the certification of credit generation will be conducted as part of the permit application review process; and credit-generating activities will be evaluated using standard compliance and enforcement procedures. While this approach greatly simplifies the administration of the program, it still increases the workload for Department staff. The additional workload associated with implementing the trading program within the wastewater program includes permitting-related tasks, compliance and enforcement, rule development for GPs, and the creation of a Trade-Tracking Database. **Appendix K** provides additional details on this workload, as well as potential additional roles for the Department.

Additional Resources Needed for Program Administration and Development

While there is clearly a great deal of interest in trading, actual experience throughout the country indicates that relatively little trading is occurring. Thus the workload estimate to administer the trading program is uncertain because there is a lot of uncertainty about how much trading will occur. Given the proposed initial scope of the program, with trading implemented in wastewater permits, the Department does not anticipate a need for significant numbers of new staff (or money for contractual services) to implement trading. However, there will clearly be an increase

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in permitting workload and a need for technical expertise on trading issues, and staff will also be needed to develop the trading rule and any subsequent GPs.

The PTPAC recommended that the Department be provided adequate additional staff to coordinate the program. However, given the uncertainty in the amount of trading that will occur and the resultant increase in workload, the Department recommends that any decisions on the number of staff provided be deferred until after completion of a pilot program (see Section VIII), that would serve to better define the workload associated with implementing trades in wastewater permits.

VIII. CONCLUSIONS AND RECOMMENDATIONS FOR STATUTORY CHANGES

Conclusions

Based on input from the PTPAC, interested parties, and EPA, the Department is confident that 1) water quality credit trading can be an important tool for expediting restoration of Florida's impaired surface waters by reducing treatment costs and 2) trading can effectively be implemented via the National Pollutant Discharge Elimination System (NPDES) permitting program with minimal legislative changes (see next section). The initial trading program will consist of a trade tracking database maintained by the Department and bilateral agreements between buyers and sellers that are incorporated into the appropriate NPDES permit (both the buyer's and seller's permit for trades between two point sources, and the buyer's permit for trades between a point source buyer and a nonpoint source seller).

While only minimal statutory changes are needed to allow for this type of trading, there are many policy and technical issues that must be addressed to ensure that trading is both cost-effective and environmentally protective, including application of location and uncertainty factors. As such, rulemaking may be needed to establish the administrative process for pollutant trading. While this report includes many important recommendations that will help guide subsequent rulemaking, the details of the rule cannot be determined at this time given uncertainty in the specifics of the trading program.

To address this uncertainty, the Department proposes to initiate a pilot water quality credit trading program in the Lower St. Johns River Basin, as part of the BMAP development process for the nutrient TMDL for the river. This basin is particularly well-suited for a pilot because a) the watershed is large, with a large number (38) and variety of permitted facilities in the basin with significant cost differentials in treatment costs, b) the BMAP is actively under development, and c) stakeholders have expressed an active interest in participating in the pilot program. This pilot program would not waive any regulatory requirements for participants, but would help the Department identify and address trading issues within a limited geographic scope. The Department envisions that the pilot would last for approximately one year (through December 2007), at which time the Department would initiate rulemaking.

Recommendations for Statutory Changes

[We still need to expand the text to describe the following statutory changes:]

- **Revise the equitable abatement provision to limit its use if a BMAP has been adopted**

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- **Revise 403.088(2)(f) to specifically allow the Department to issue AOs as part of permit revisions**
- **Provide authority to conduct the pilot project in the LSJR (prior to development of a trading rule)**

REFERENCES

Citations still need to be completed, or alternatively we may simply delete text references.

U.S. Environmental Protection Agency. August 2001. *National Cost to Implement Total Maximum Daily Loads (TMDLs) Draft Report*.

———. January 13, 2003. *Final Water Quality Trading Policy*.

———. 2006.

Breetz et al. 2004.

Ellerman et al. 2000.

Shabman et al. 2002.

King et al. 2003.

APPENDICES

Appendix A: Recommendations for Florida's Water Quality Credit Trading Program

The Department developed a number of specific recommendations in cooperation with the Pollutant Trading Policy Advisory Committee (PTPAC) that consists of representatives of regulated interests, environmental organizations, water management districts, and local governments. The following recommendations represent a consensus between the Department and PTPAC (any PTPAC recommendations differing from those of the Department are in boldface type and underlined):

Legislation and Rulemaking

- *The Florida Watershed Restoration Act (FWRA) (Section 403.067, Florida Statutes [F.S.]) should be revised and the Department should initiate rulemaking to revise the equitable abatement provision, so that it cannot be used if the Department has adopted a Basin Management Action Plan (BMAP) to restore water quality in the receiving water. The provision allows new discharges to petition the Department for an equitable reallocation of loadings, so that the new source is permissible.*
- *Subsection 403.088(2)(f), F.S., should be revised to clearly allow the issuance of a permitting administrative order (AO) for revisions associated with the order.*

Permitting

- *Pre-existing, permitted sources and nonpoint sources with prior allocations should also be given higher priority when re-evaluating allocations during subsequent watershed management cycles. **The PTPAC requests that the Department develop either a guidance memo or a rule addressing the reallocation process and that it specifically include mechanisms to evaluate public interest.***
- *Several types of watershed-based permitting that allow facilities to operate under aggregate load limitations can be done without statutory or rule revisions.*
- *Some elements of the Water Quality Credit Trading Program can be used to expedite permitting in unimpaired waters, and the Department plans to revisit its permitting guidance related to the use of offsets in waters without a TMDL.*

Credits

- *The generation of pollutant credits will be initiated only after the following: (a) for point source sellers, the seller agrees to a permit revision that reduces its loading below its wasteload allocation (WLA), and (b) for nonpoint source sellers, the source receives authorization to generate credits under the buyer's wastewater permit or a General Permit (GP) developed for the activity.*
- *For trades between a point source buyer and a nonpoint source seller, the buyer's permit should include a condition incorporating the credit-generating activity of the nonpoint source, and the buyer will be liable for any nonperformance by the seller. The PTPAC notes that trading contracts between buyers and nonpoint source sellers cannot completely insulate buyers from the negative consequences of enforcement action in the event the seller defaults, and recommends that the Department develop GPs for Credit Generators/Sellers. The Department agrees with this approach, but will need to wait to develop the GPs until candidate types of operations emerge.*

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- *Facilities planning to meet their allocation via water quality credit trading should be required to identify the source from which they plan to purchase credits and will be subject to a compliance schedule in order to allow the seller time to generate credits.*
- *In addition to being traded, credits can be transferred to a new permittee for the remainder of the permit cycle if the permit is officially transferred through appropriate Department rule provisions. The credit can also be transferred if a facility accepts responsibility for a discharge but does not formally transfer the permit.*
- *Credits must be used during the same time frame that they are generated, consistent with the expression of a TMDL.*
- *When external public funds are used to fund facility upgrades or best management practices (BMPs), the participating source will be eligible to generate credits for the percentage of funds it provided, not counting the amount of money the source contributed to meet its allocation. The public entity would then receive the remainder of the credits for the percentage of funding it provided.*
- *Location Factors (LFs), or mathematical calculations that address the effects of location, should be required when trading partners discharge to different segments of a waterbody. However, the Department will use its best professional judgment whether to use LFs if they are not significantly different than a factor of 1. Further, LFs should not be used if they would increase the load to an impaired water above the adopted TMDL. **The PTPAC recommends that the Department consider revising the statutory definition of a TMDL to allow for the application of Location Factors that would increase the load above the TMDL (by expressing a TMDL as the effect of a load, rather than simply the load), after it develops more certainty with Location Factors and with the Water quality credit trading Program in general.***
- *Uncertainty Factors (UFs), which are calculations used to adjust for insufficient data on the effectiveness of specific Best Management Practices, should be used to account for the uncertainty associated with estimated credits for activities to control nonpoint source pollution. Default uncertainty factors should be 2:1 for urban stormwater Best Management Practices and 3:1 for agricultural Best Management Practices, but credit generators can provide data to support site-specific factors.*
- *Stakeholders in the basin should be given an opportunity, as part of the BMAP development process, to decide whether to use Retirement Factors or an explicit margin of safety (MOS). “Retired” credits cannot be sold, and thus the amount of loading to a receiving water is permanently reduced. An MOS, which is built into a TMDL, takes into account any uncertainty about the relationship between effluent limitations and water quality.*
- *Stakeholders in the basin should be given an opportunity, as part of the BMAP development process, to provide input on how best to use the credits generated from state funding, but the ultimate decision rests with the public entity providing the funds.*

Administration

- *The PTPAC recommend that the Department be provided adequate additional staff to coordinate the development of the Water Quality Credit Trading Program, and the Department agreed to evaluate staffing needs as part of the pilot program.*
- *Monetary information does not need to be tracked because it is not needed to ensure that trades are environmentally protective and may be proprietary.*

Appendix B. Florida's TMDL Program

Federal TMDL Program Requirements and the FWRA

Federal requirements for state TMDL programs are based on Section 303(d) of the federal CWA (see **Table B-1**). Section 303(d) requires states to submit lists of surface waters that do not meet applicable water quality standards ("impaired waters") after the implementation of technology-based effluent limitations or other water pollution control programs, and establish TMDLs for these waters on a prioritized schedule. TMDLs establish the maximum amount of a given pollutant or pollutants that a particular waterbody can assimilate without exceeding surface water standards (the "assimilative capacity").

In recognition of the important role of the TMDL Program in restoring state waters, the 1999 Florida Legislature passed the FWRA, which was subsequently revised in 2005. In addition to clarifying state legal authority for Florida's TMDL Program, the FWRA established a clear process for identifying and listing impaired waters and for developing, adopting, allocating, and implementing TMDLs (see **Table B-2** for details of the legislation).

Table B-1: Summary of CWA Requirements Related to the TMDL Program

Congress enacted the CWA in 1972 with the goal of restoring and maintaining the "chemical, physical, and biological integrity of the nation's waters." 33 U.S.C. § 1251(a). The ultimate goal of the CWA is to eliminate the "discharge of [all] pollutants into navigable waters." 33 U.S.C. § 1251(a)(1). The TMDL Program is an important step towards cleaning up Florida's surface waters. The CWA sets out the federal requirements that Florida must follow in implementing its TMDL Program under the FWRA. The CWA and the federal TMDL Program include the following provisions:

- *Requires states to establish water quality standards that will protect the public health and welfare. 33 U.S.C. § 1313(c)(2).*
- *Requires states to identify waters that do not meet applicable water quality standards (Water Quality Limited Segments, or WQLSs) and identify the pollutants causing the water quality threats. 33 U.S.C. § 1313(d)(1)(A-B).*
- *For each WQLS, the state must then establish the TMDL for each pollutant that can be introduced into that waterbody without violating water quality standards. 33 U.S.C. § 1313(d)(1)(C).*
- *Requires that each TMDL be established "at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." 33 U.S.C. § 1313(d)(1)(C).*
- *Requires states to update their 303(d) list of impaired waters (WQLSs) every two years, or else EPA will be required to develop a complete WQLS list and/or TMDLs for the impaired waters on behalf of the state. 33 U.S.C. § 1313(d)(2).*
- *Once the WQLS list and TMDLs are submitted to EPA for approval, EPA has 30 days to approve or disapprove them. If approved, the list and TMDLs are to be incorporated into the state's water quality management plan. 33 U.S.C. § 1313(d)(2).*

Table B-2: Summary of the FWRA (Section 403.067, F.S., as amended)

TMDL DEVELOPMENT AND ALLOCATIONS
<ul style="list-style-type: none"> • Establishes that the 303(d) list submitted to EPA in 1998 is for planning purposes only.
<ul style="list-style-type: none"> • Requires the Department to adopt 303(d) listing criteria (that is, the methodology used to define impaired waters) by rule.
<ul style="list-style-type: none"> • Requires the Department to verify impairments, evaluate whether proposed pollution control programs are sufficient to meet water quality standards, list the specific pollutant(s) and concentration(s) causing impairment, and adopt basin-specific 303(d) lists of impaired waters by Secretarial Order.
<ul style="list-style-type: none"> • The Department shall develop TMDLs for impaired waters unless the impairment is due solely to activities other than point and nonpoint sources of pollution. Prior to TMDL development, the Department shall coordinate with affected agencies and interests on data collection and analysis. The TMDL shall establish the amount of a pollutant that a waterbody or waterbody segment may receive from all sources without exceeding water quality standards.
<ul style="list-style-type: none"> • The TMDL shall include reasonable and equitable allocations between or among point and nonpoint sources that will help achieve applicable water quality standards. An "initial" allocation of allowable pollutant loads may be developed as part of the TMDL, with more detailed allocations established in the BMAP. Initial and detailed allocations shall be based on consideration of practical, environmental, legal, and economic factors (listed in the statute).
<ul style="list-style-type: none"> • TMDLs and allocations shall be adopted by rule by the Department Secretary. At least one public workshop must be held during the rule development process, in the vicinity of the applicable waterbody.
<ul style="list-style-type: none"> • Where additional data and analysis are needed to increase the scientific accuracy of the TMDL, the Department may adopt phased TMDLs, subject to change as additional data become available.
TMDL IMPLEMENTATION
<p>General</p> <ul style="list-style-type: none"> • TMDL implementation may include, but is not limited to, permitting and other existing regulatory programs; nonregulatory and incentive-based programs; other water quality management and restoration activities, such as Surface Water Improvement and Management (SWIM) plans or BMAPs; pollutant trading or other equitable economically based agreements; public works; and land acquisition.
<p>BMPs and Other Measures</p> <ul style="list-style-type: none"> • The Department and DACS may develop interim measures (IMs) and BMPs to address nonpoint source load allocations. If these BMPs are adopted by rule and the Department verifies their effectiveness, then implementation will provide a presumption of compliance with water quality standards for pollutants addressed by the practices. • Where water quality problems are demonstrated despite the implementation, operation, and maintenance of rule-adopted BMPs and other measures, the Department, a WMD, or DACS, in consultation with the Department, shall re-evaluate the measures.
<p>BMAPs</p> <ul style="list-style-type: none"> • The Department may develop a BMAP that addresses some or all of the watersheds and basins tributary to a TMDL waterbody. A BMAP shall be adopted in whole or in part by Secretarial Order, subject to Chapter 120. • A BMAP shall integrate existing water quality program strategies; incorporate agricultural BMPs; equitably allocate pollutant load reductions as appropriate; address future increases in pollutant loading; and identify an implementation schedule, feasible funding strategies, a basis for evaluating plan effectiveness, milestones for implementation, and a water quality monitoring component. • A BMAP may give load reduction credits to dischargers that have implemented load reduction strategies (including BMPs) prior to the development of the BMAP, include regional treatment systems or other public works as management strategies, and provide for phased implementation to promote timely, cost-effective actions. • Progress in achieving milestones shall be assessed every 5 years and the plan revised, as appropriate, in cooperation with basin stakeholders. • The BMAP process is intended to involve the broadest possible range of interested parties, and the Department shall assure that key stakeholders are invited to participate in the BMAP development process, holding at least one noticed public meeting in each basin. • Specific provision is made for implementation of BMAP strategies through applicable NPDES wastewater and stormwater permits, and through other existing permitting programs. • BMAP strategies are not subject to challenge under Chapter 120 when they are incorporated in identical form into an NPDES permit or permit modification. • Agricultural sources included in a BMAP must implement applicable BMPs or conduct water quality monitoring prescribed by the Department or a WMD. Failure to do so may subject the discharger to Department or WMD enforcement action.

Department's Watershed Management Approach

TMDLs will be developed and allocated as part of the Department's Watershed Management Approach, which rotates through all of the state's 52 basins over a 5-year period (**Figure B-1** and **Table B-3**). The approach includes a 5-phase watershed management cycle (**Figure B-2**). During the first phase of the cycle, the Department conducts a Preliminary Basin Assessment, which includes the development of a Planning List of potentially impaired waters for which TMDL assessments will be conducted. During the second phase of the cycle, targeted monitoring is conducted to help verify whether waters are in fact impaired and to develop data needed to calibrate and verify models for TMDL development. At the end of the second phase, waters that are verified as being impaired are placed on a basin-specific list of impaired waters (the Verified List), which is adopted by the Department through a Secretarial Order. TMDLs for priority¹³ impaired waters within the basin are developed and adopted by rule during the third phase of the cycle. BMAPs, which include the TMDL Implementation Plans, are then developed with extensive public participation during the fourth phase, which varies in duration in each basin. While the FWRA allows up to 5 years to develop BMAPS, most are expected to be completed within 2 years. The implementation of the activities specified in the BMAP begins in the fifth phase.

This cycle is an iterative process, and one of the key components of the watershed management process is that the effectiveness of management activities (TMDL implementation) will be monitored in successive cycles. Monitoring conducted in Phase 2 of subsequent cycles is targeted at evaluating whether water quality objectives are being met and whether the waters are no longer impaired. The Department also tracks the implementation of scheduled restoration activities, whether required or voluntary, to ensure continued progress towards meeting the TMDL.

TMDL Development, Allocation, and Implementation

TMDL Development

Assessment of Required Pollutant Load Reductions. As noted earlier, TMDLs determine the maximum amount of a given pollutant that a waterbody can assimilate without causing exceedances of water quality standards. Most TMDLs will be determined based on calculating how much loading of a pollutant a waterbody can assimilate and still meet the applicable numeric or narrative water quality criterion for the pollutant. In most cases, this "assimilative" capacity will be determined using computer modeling (both hydrodynamic and water quality models) that predict the fate and transport of pollutants in the receiving waters.

Modeling for the typical TMDL will include model setup, calibration, and verification, followed by a variety of model design runs that determine the assimilative capacity of the water. Following setup, the model is calibrated (initially for the hydrodynamics and then for water quality) by adjusting model coefficients and rate constants until model results accurately reflect measured flow and concentrations for parameters of interest. Model inputs will include measured values of pollutant loading from point sources (based on DMR data from permitted facilities), and watershed model estimates of pollutant loading from nonpoint sources. After the model is calibrated, it is verified (or validated) by running the model again for a different time frame and comparing model results with measured values without changing any of the model coefficients. These comparisons may be done informally using the BPJ of the modeler or may be based on a statistical analysis of the difference between model results and measured values.

¹³ Because TMDLs cannot be developed for all listed waters during a single watershed management cycle, waterbodies will be prioritized using the criteria in Rule 62-303, F.A.C.

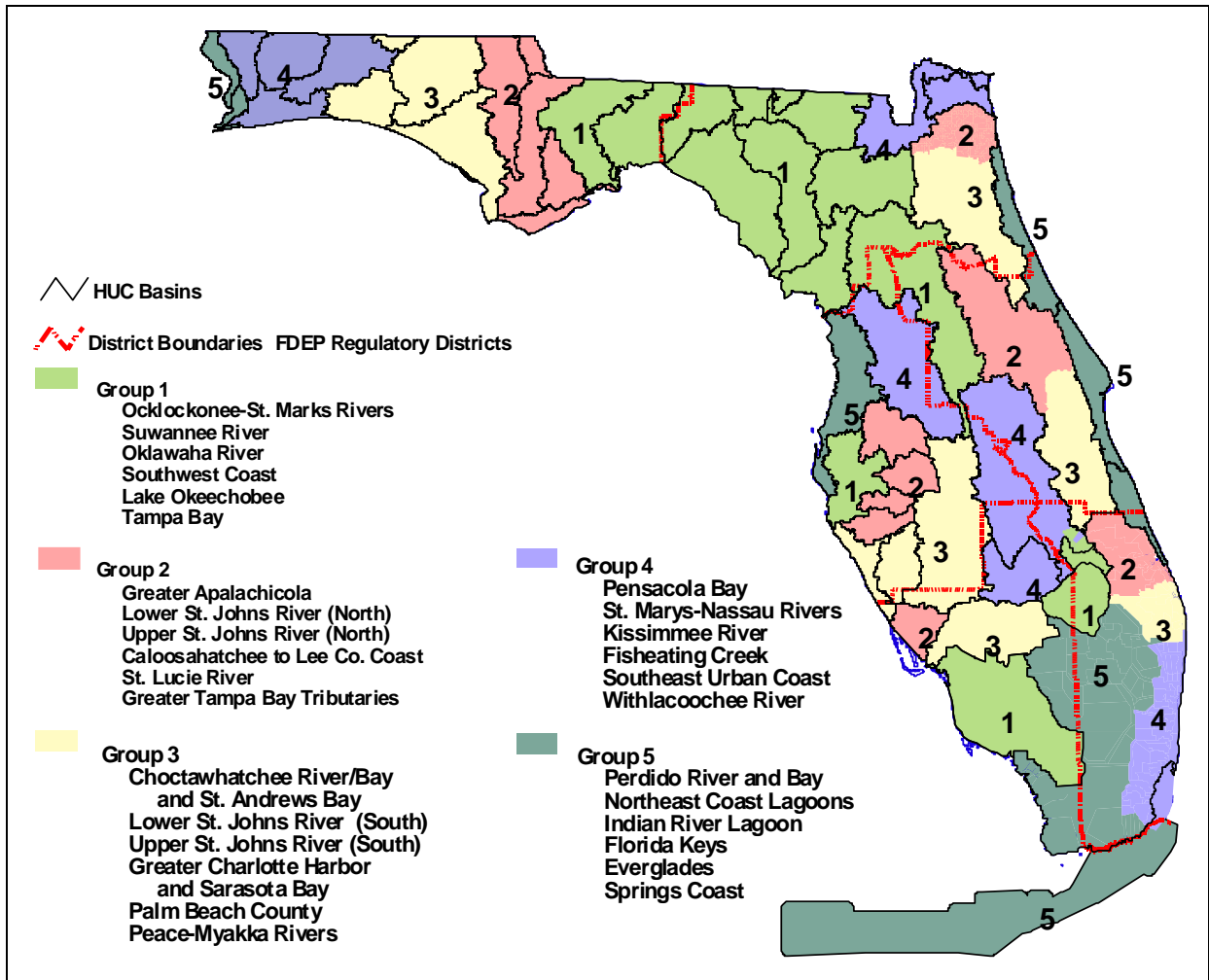


Figure B-1. The Watershed Management Schedule for the State's Basins

Table B-3: Schedule of Activities

	2000	2001	2001	2002	2002	2003	2003	2004	2004	2005	2005	2006	2006	2007	2007	2008	2008	2009	2009	2010
	FY 2000		FY2001		FY2002		FY2003		FY2004		FY2005		FY2006		FY2007		FY2008		FY2009	
BASIN GROUP																				
GROUP 1	PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5	
GROUP 2			PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2		PHASE 3		PHASE 4	
GROUP 3					PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2		PHASE 3	
GROUP 4							PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1		PHASE 2	
GROUP 5									PHASE 1		PHASE 2		PHASE 3		PHASE 4		PHASE 5		PHASE 1	

Basin Management Cycle: *5 phases*

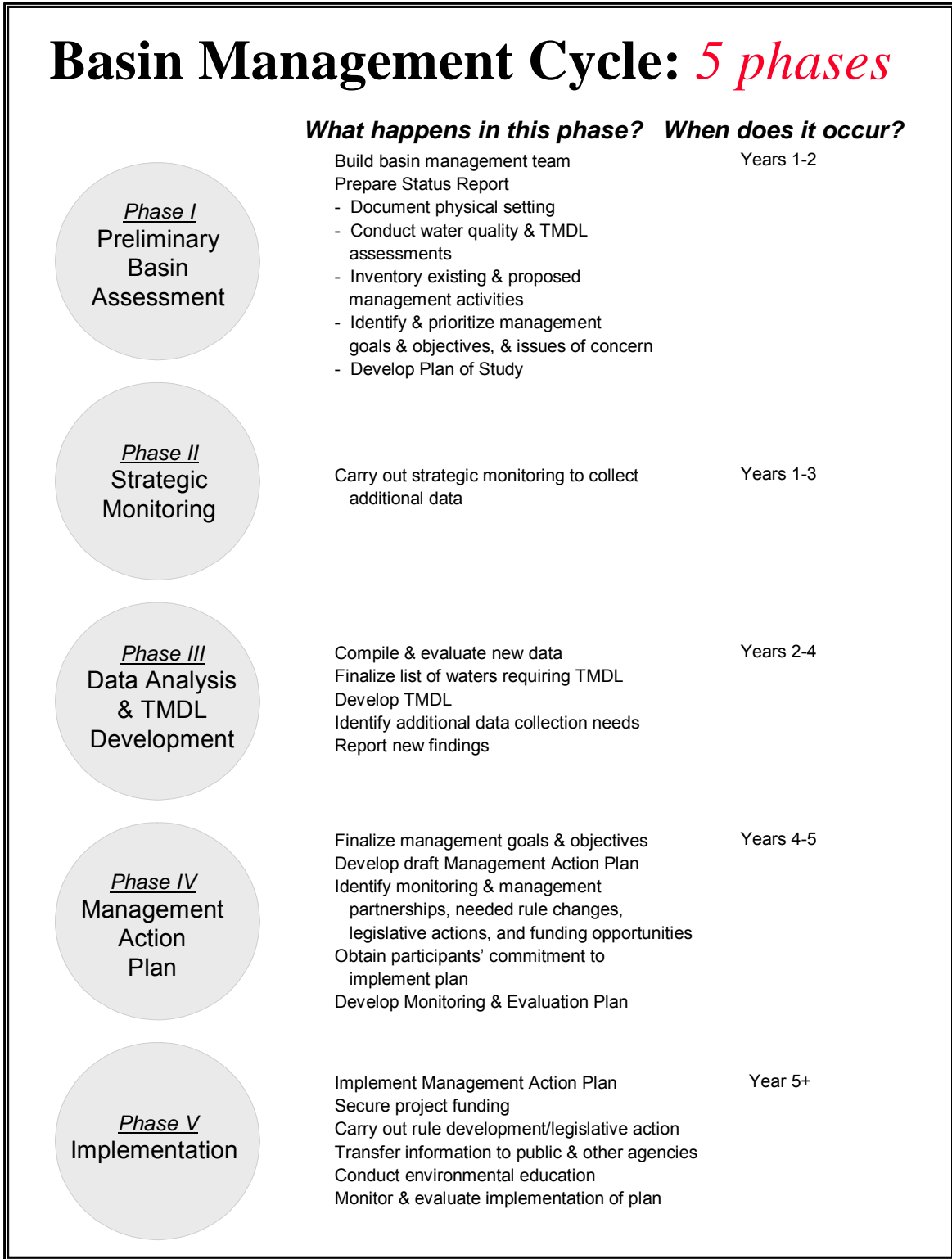


Figure B-2. Florida's Watershed Management Cycle

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Both the calibration and verification model runs evaluate the effect of current loadings on the receiving water. Once verified, a series of design runs are made to evaluate the effect of pollutant loadings under worst-case conditions. These typically occur at low-flow conditions in the receiving water for point sources and high flow, or more specifically, high rainfall¹⁴ conditions for nonpoint sources. To evaluate worst-case loadings, point source loadings are typically set at their full permitted load, which represents the maximum amount they can legally discharge. The model runs may also include scenarios that incorporate projected increased loadings from future land uses in the basin. To determine the assimilative capacity, the model is then run iteratively with progressively lower pollutant loadings until the applicable water quality criteria are met.

Pollutants of Concern. It is important to note that TMDLs will be developed for the pollutants that cause the impairment in the listed water. The pollutants causing the impairment, called the “pollutants of concern,” are included for each waterbody segment placed on the 303(d) list. In Florida, the most commonly listed pollutants of concern are nutrients, DO, and coliform bacteria. In some cases, waters may be impaired due to “pollution” resulting from physical alterations to the waterbody (such as dams or channelization) or changes in the flow of the water. TMDLs will not be developed for impairment due to pollution that is not the result of pollutant discharges. In other cases, a waterbody may be deemed to be potentially impaired due to bioassessment data. In these cases, the Department will be responsible for determining the actual pollutant causing the impairment before a TMDL can be developed for the waterbody.

Pollutant Sources. Pollutant sources are typically categorized into two major categories: point sources and nonpoint sources. Historically, the term “point sources” has meant discharges to surface waters that typically have a continuous flow via a discernable, confined, and discrete conveyance, such as a pipe. Domestic and industrial wastewater treatment facilities (WWTFs) are examples of traditional point sources. In contrast, the term “nonpoint sources” was used to describe intermittent, rainfall-driven, diffuse sources of pollution associated with everyday human activities, including runoff from urban land uses, agriculture, silviculture, and mining; discharges from failing septic systems; and atmospheric deposition.

However, the 1987 amendments to the CWA redefined certain nonpoint sources of pollution as point sources subject to regulation under EPA’s NPDES Program (see the box below). These nonpoint sources included certain urban stormwater discharges, including those from local government master drainage systems (which are better known as MS4s), construction sites disturbing one or more acres, and a wide variety of industries (see **Appendix D** for background information on the federal and state stormwater programs). To be consistent with CWA definitions, the term “point source” is used to describe traditional point sources (such as domestic and industrial wastewater discharges) **AND** stormwater systems requiring an NPDES stormwater permit when allocating pollutant load reductions required by a TMDL.

¹⁴ Specific worst-case conditions for nonpoint sources may be site-specific and may include storm events following drought conditions with low antecedent stream flows.

What Is the NPDES Program?

In 1995, EPA authorized the Department to implement the NPDES Program to permit surface water discharges, predominately from industrial and domestic wastewater facilities. When Florida took the NPDES Program, there were 726 individual NPDES permits throughout the state. Because of the state's pre-existing stringent water quality standards and rigorous permitting requirements, and commitment to reuse, Florida has eliminated 232 direct discharges to surface waters since receiving the authorization—a 32% reduction.

In October 2000, EPA authorized the Department to implement the NPDES stormwater permitting program to regulate point source discharges of stormwater into surface waters from certain municipal, industrial and construction activities. Through aggressive outreach and enforcement, the Department has brought more than 6,200 construction sites under permit—nearly 1,000 more sites than EPA addressed during the previous 8 years. Another 1,800 industrial sites are now under permit, along with more than 300 NPDES MS4s in the state. Even before NPDES, Florida had the most comprehensive stormwater treatment requirements in the nation through its Environmental Resource Permitting and Nonpoint Source Management Programs.

Expression of the TMDL. After the assimilative capacity of the impaired water is determined, the next step is to allocate acceptable loads among all of the known pollutant sources in a watershed so that appropriate control measures can be implemented and water quality standards achieved. A TMDL is expressed as the sum of all point source loads (WLAs), nonpoint source loads (load allocations, or LAs), and an appropriate MOS, which takes into account any uncertainty concerning the relationship between effluent limitations and water quality:

$$\text{TMDL} = \sum \text{WLAs} + \sum \text{LAs} + \text{MOS}$$

As discussed earlier, the stormwater discharges permitted under the NPDES Program are defined as point sources, and as such, they are also covered under the WLA. However, because wastewater and stormwater discharges are permitted differently, the WLA is broken out into separate subcategories for wastewater discharges and stormwater discharges regulated under the NPDES Program:

$$\text{TMDL} \cong \sum \text{WLAs}_{\text{wastewater}} + \sum \text{WLAs}_{\text{NPDES Stormwater}} + \sum \text{LAs} + \text{MOS}$$

It should be noted that the WLA for NPDES stormwater is typically expressed as a percent reduction, and the WLA for wastewater is typically expressed as mass per day. WLAs for stormwater discharges are typically expressed as percent reduction because it is very difficult to quantify the loads from MS4s (given the numerous discharge points) and to distinguish the loads from MS4s from other nonpoint sources (given the nature of stormwater transport). The permitting of stormwater discharges also differs from the permitting of most wastewater point sources. Because stormwater discharges cannot be centrally collected, monitored, and treated, they are not subject to the same types of effluent limitations as wastewater facilities, and instead are required to meet a performance standard of providing treatment to the MEP through the implementation of BMPs.

Margin of Safety. Both state law and federal regulations for the TMDL program require that TMDLs include a MOS that takes into account “any lack of knowledge concerning the relationship between effluent limitations and water quality.” EPA has allowed states either to establish an explicit MOS (typically some percentage of the assimilative capacity), or to establish an implicit MOS based on conservative assumptions in the modeling. To date, the Department has elected to establish an implicit MOS based on the fact that the predictive model runs incorporate a variety of conservative assumptions (they examine worst-case ambient flow

conditions and worst-case temperature, and assume that all permitted point sources discharge at their maximum permittable amount).

Allocation Process

Allocation Technical Advisory Committee (ATAC) Recommendations. In recognition of the importance of the allocation process, the 1999 FWRA required the Department to form an **Allocation Technical Advisory Committee** made up of representatives of key stakeholder groups and prepare a report to the Legislature and Governor by February 1, 2001, on a recommended allocation process. The resultant **Allocation Technical Advisory Committee Report**, which was based on the consensus of the **Allocation Technical Advisory Committee** membership, included a recommended allocation process that was designed to result in a “reasonable and equitable” allocation, as directed in the FWRA [Section 403.067(6)(b)1.-8.]

The **Allocation Technical Advisory Committee** recommended that the first step in achieving equity was to level the playing field in treatment effort between point and nonpoint sources. The **Allocation Technical Advisory Committee** recognized that traditional point sources are required to provide, at a minimum, technology-based treatment levels, and concluded that nonpoint sources should be expected to provide comparable minimum levels of treatment before any additional reductions or increased treatment was required for traditional point sources. The **Allocation Technical Advisory Committee** subsequently decided that the comparable minimum treatment for nonpoint sources should be the BMPs developed and adopted for that activity.

Allocation Technical Advisory Committee recommendations for the allocation process include the following:

- (1) *Prior investments in treatment technologies or reuse infrastructure should be taken into account in the allocation process by comparing the treatment provided to BAT requirements for the particular activity.*
- (2) *TMDLs should be developed using land use predictions for five years into the future, and allocations should, to the extent practical and appropriate, account for increased loadings due to growth.*
- (3) *Long-term “rights” to entities receiving allocations will eventually be needed to allow for Water quality credit trading, which would provide a more efficient, market-driven approach to meeting allocations while also allowing for growth in the watershed.*
- (4) *The initial allocation should assign responsibility for needed pollutant load reductions, but should not be prescriptive. While the assignment of responsibilities will, in part, be determined based on projections of how much the pollutant of concern would be reduced by the implementation of BMPs, the BMPs need not be implemented if another management activity can solve the problem more efficiently.*
- (5) *The Department should evaluate the major sources of the pollutant of concern and should use BPJ to decide whether all of the allocation steps are warranted.*
- (6) *The initial allocation process should generally take the following steps:*

Step 1: *Calculate the amount of pollutant reductions that would be achieved if (a) 45% of all agricultural and silvicultural operations in the basin and in upstream watersheds implemented the appropriate BMPs for their specific type of operation, (b) 45% of **all** urban areas met stormwater treatment requirements for new construction, and (c) 45% of the homes with septic tanks within the 100-*

year floodplain or that were documented to be contributing to the impairment were hooked up to a regional sewer system.

Step 2: *If the reductions projected for Step 1 were not sufficient to meet the TMDL, calculate the amount of additional reduction in pollutant loading that would be achieved if (a) 90% of all agricultural and silvicultural operations in the basin and in upstream watersheds implemented the BMPs for their specific type of operation, (b) 90% of **all** urban areas met stormwater treatment requirements for new construction, and (c) 90% of the homes with septic tanks within the 100-year floodplain or that were documented to be contributing to the impairment were hooked up to a regional sewer system.*

Step 3: *If the reductions for Step 2 were not sufficient to meet the TMDL, the third recommended step is to allocate reductions to **all** sources, except those where loading is at background levels or those that have provided treatment beyond BAT levels, in increments of 10% until the TMDL is met.*

Level of Detail of Allocations and Aggregating Allocations. If the necessary information is available, the initial allocation that is adopted with the TMDL rule will include specific allocations to permitted wastewater point sources and will be to the level of the major categories of nonpoint sources. However, in some cases, the Department will have insufficient information to allocate to specific wastewater point sources and may adopt the TMDL with aggregate wasteload and load allocations (WLAs and LAs, for point sources and nonpoint sources, respectively), rather than specific allocations for individual wastewater facilities or nonpoint sources. The allocations are also sometimes aggregated to allow flexibility during the development of the BMAP, so that reductions from one discharger can be shifted to another as long as the total reductions in loading required by the TMDL are obtained. However, a more detailed allocation may be developed during Phase 4 of the watershed management cycle and adopted, via Secretarial Order, as part of the BMAP. This more detailed allocation is needed for both point and nonpoint sources to ensure that appropriate control measures will be implemented and water quality standards achieved.

Key BMAP Components and TMDL Implementation for Point Sources

While BMAPs will be tailored to best fit the site-specific situation in each basin, all BMAPs will include core components that will help ensure that the TMDLs will be implemented. Key components include the following:

- *A description of the main sources of the pollutant of concern, and an estimate of loading from each source,*
- *An allocation to the main sources, with the level of detail of the allocation varying in each basin, but generally being as detailed as practical,*
- *A listing and description of the existing and proposed management actions that are designed to reduce pollutant loading and achieve the TMDL,*
- *An implementation schedule, which includes interim milestones and addresses funding and permitting,*
- *A basin monitoring plan, which summarizes the proposed ambient monitoring that will assess changes in water quality over time and tracks plan implementation, and*
- *Adaptive management measures, including water quality thresholds that would prompt plan revisions.*

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Basic Permitting Strategy for Incorporating BMAP WLAs in Permits. The Department's general permitting strategy for incorporating facility-specific WLAs from BMAPs is to incorporate the new permit limits in the applicable NPDES permits at their first renewal after BMAP adoption, unless they will not be renewed within two years, in which case the permits will be reopened and revised. Under state and federal regulations, these renewed or revised permits will need to include applicable effluent limits that are consistent with the assumptions and requirements of any available WLA for the discharge, whether based on a WQBEL, an adopted TMDL, or an adopted BMAP.

As a result of Florida's reasonable assurance requirements, and because the permittee will need time to meet the new limitation (assuming that the TMDL or BMAP allocation is more stringent than the current effluent limit), the renewed or revised permits will be accompanied with a permitting Administrative Order, as authorized in Subsection 403.088(2)(f), F.S. The Administrative Order will include a schedule for achieving compliance with the new effluent limits, consistent with 40 CFR 122.47 and the BMAP implementation schedule, and will include interim limits that, at a minimum, will hold the line on loading from the facility. It will also address whether the permittee will use "trading" for meeting all or part of the new effluent limits. It should be noted that Subsection 403.088(2)(f), F.S., is silent regarding the issuance of an Administrative Order when a permit is revised. The Department and PTPAC recommend that this subsection be revised to clearly allow the issuance of a permitting Administrative Order for revisions that are associated with the order. The permit revisions to incorporate the new effluent limits will be "substantial revisions" and will be publicly noticed.

Appendix C: History and Economics of Trading Programs in the United States

History of Trading Programs

Water Trading Programs

There has been great interest in credit trading under the CWA permitting program over the last 25 years, and approximately 40 different trading programs have been established across the country (Breetz et al., 2004). While several states, including Michigan, Connecticut, Colorado, Oregon, and Idaho have established statewide trading policies or rules, most of the trading programs have focused on specific, local watersheds, and as a result, there has been a great deal of variation in the types of trading programs that have evolved. Some of this variation is readily highlighted by the examination of three of the best-known trading programs: the Lake Dillon Trading Program in Colorado, the Tar-Pamlico Trading Program in North Carolina, and the Long Island Sound Trading Program in Connecticut.

Lake Dillon Trading Program in Colorado. The Lake Dillon Trading Program was the first point-source-to-nonpoint-source trading program in the nation. The program was established in 1984 as part of an overall phosphorus control program for the lake that capped loading at 1982 levels. The program allows domestic wastewater facilities, four of which comprise approximately half of the load to the lake, to meet their required reductions through trading with nonpoint sources in the basin. Nonpoint source credits are certified based on site-by-site determinations, and the Colorado Water Quality Control Commission is responsible for maintaining and monitoring nonpoint source controls. While the program was projected to result in significant cost savings, only two trades have occurred to date. Trading has been limited because increased treatment at the domestic wastewater facilities resulted in little demand for the credits, but the program anticipates increased trading in the future as the population continues to grow.

Tar-Pamlico Trading Program in North Carolina. The Tar-Pamlico Nutrient Trading System was formed in 1989 in response to water quality problems in the Pamlico River Estuary due to excessive nutrient loadings from agricultural nonpoint sources and domestic wastewater facilities. The program established the Tar-Pamlico Basin Association, which consisted of 12 domestic wastewater facilities and 1 industrial wastewater facility, and established an aggregate cap on nitrogen and phosphorus loads from the association. If the association does not meet its aggregate cap, it must purchase offsets by paying into the state's Agriculture Cost-Share Program for Nonpoint Source Pollution Control, a statewide program that pays farmers up to 75% of the cost of implementing approved BMPs (funds are earmarked for use in the Tar-Pamlico Basin). This approach reduces transaction costs for buyers because the state is responsible for arranging nonpoint source projects and verifying load reductions. However, to date, the association has met its aggregate cap each year and has not needed to purchase offsets. While this program is widely cited as an example of a trading program, it should be noted that it would more accurately be described as a watershed permit (described under **Section II, Watershed-based Permitting**).

Long Island Sound Trading Program in Connecticut. Connecticut's Long Island Sound Trading Program was established to address low DO in Long Island Sound. The program, which is designed in conjunction with the Long Island Sound TMDL that requires a 58% reduction in TN loading by 2014, established a "nitrogen credit exchange program" for the 84 domestic wastewater facilities that discharge to the sound. The program is implemented through a General Permit, which establishes an annual limit for each facility each year, and a Nitrogen Credit Advisory Board, which sets the price of credits, compliance schedule, and EFs

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that take into account the different location of each facility. Facilities are required to meet their annual load limit, or purchase credits by July 31 of the following year. The State Revolving Fund (SRF) Program serves as the banker for the program, paying facilities that are under their cap and accepting money from credit purchases. Any surplus funds are then available for loans to domestic wastewater facilities under the SRF Program. The program is expected to save nearly \$200 million over the initial implementation period of the TMDL, but it is not clear how the program ensures compliance with the TMDL because facilities are allowed to purchase credits even if there is no surplus.

Air Trading Program

Much of the interest in water trading programs have been generated by the success of the sulfur dioxide (SO₂) allowance market that was developed under Title IV of the 1999 amendments to the Clean Air Act. The amendments established a cap on SO₂ emissions that represented a 50% reduction from 1980 emissions. EPA allocated the allowable emissions to existing sources based primarily on their past emissions (the allocations were expressed as “allowances,” which allow the holder to discharge 1 ton of SO₂), and allowed the recipients to use, sell, or even bank the allowances as they saw fit. The sources were no longer subject to technology standards and the only requirements were that they monitor and report emissions, and that they own enough allowances at the end of each year to cover their emissions. In contrast, new facilities that begin operating after 1995 were not allocated allowances and were required to purchase them to operate.

Under the program, allowances can be purchased by anyone on the open market as a commodity, and transactions are handled by the Chicago Board of Trade. Trading parties are required to notify EPA to have allowance transfers recorded, and EPA tracks allowance transfers in the Allowance Tracking System (ATS).

The program is considered a success because the cap has been maintained, and total savings are estimated at over \$20 billion from 1995 to 2007 (Ellerman et al., 2000). Further, there have been no instances of noncompliance, at least partially because the low price of allowances provides utilities with a cheaper compliance option (Shabman et al., 2002).

While the program has been very successful, it is important to note the fundamental differences between the SO₂ trading program and CWA trading programs. Most notably, the scope of the trading area for the SO₂ program is much larger (airsheds comprising the contiguous United States) than the potential trading areas for a given TMDL, which will vary depending on the watershed. This means that the number of potential buyers and sellers will be much smaller for water trading. The SO₂ trading program also does not address compliance with local air quality standards, while water trading programs will have to be designed to prevent in-stream areas where water quality standards are not met.

Other differences include the following:

- (1) The SO₂ program allows allowances to be “banked” for use in subsequent years, and this could not be allowed in the water program because it could result in exceedance of the TMDL and further impairment of the receiving waterbody.*
- (2) The CWA does not allow waiver of technology-based controls, which is allowed under the SO₂ program.*
- (3) The size of the regulated facilities is generally very large in the SO₂ program, with emissions measured in tons, while the size varies considerably in the water trading program.*
- (4) The number of regulated sources is relatively small in the SO₂ program compared with the number of permitted sources in the water trading program.*

- (5) *The air emissions for eligible trading parties are all monitored (mobile sources, like cars, are not part of the trading program), while loads from many potential trading parties in the water program cannot be measured directly.*
- (6) *Finally, Florida's permitting programs must have reasonable assurance that effluent limits will be attained before permits can be issued, which means the Department must have detailed information about treatment facilities and the source of credits.*

Economics of Trading

While the types of trading programs vary widely, the one consistent trend is that, despite the great interest in trading, relatively little trading is taking place. Most significantly, the trades that have occurred have primarily been trading between two permittees, rather than the free market trading exemplified by the SO₂ program (King et al., 2003). Some authors (Shabman et al., 2002) have suggested that water trading programs would be more active if they were designed like the SO₂ allowance trading program. The program allows for more of a free market because it shifts more of the responsibility of pollution control decisions from the regulator to the discharger. However, as just described, there are fundamental differences between the SO₂ and CWA programs that preclude CWA trading programs from emulating the SO₂ program. Further, King et al. (2003) concluded that, while institutional obstacles are significant, they are of secondary importance and can be overcome.

King et al. (2003) concluded that the biggest obstacles to trading are inadequate supply and demand of credits. Supply-side obstacles will definitely be more likely in Florida where nonpoint sources will not generate credits by implementing approved BMPs (see **Section IV, Role of Nonpoint and Entrepreneurial Sources in Florida's Trading Program**), but this could be a strength of the program because low-cost credits from nonpoint sources could otherwise hinder innovation in treatment technologies. Demand-side obstacles relate to many factors, but the biggest historical obstacle is that relatively few TMDLs have been developed and fully implemented. However, the Department is actively developing and adopting TMDLs, and the caps on loading they provide will increase pressure on pollutant sources and stimulate demand such that trading will increase, particularly in areas experiencing rapid growth.

Appendix D: Background Information on Federal and State Stormwater Programs

In 1982, Florida became the first state in the country to implement statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The Stormwater Rule, as authorized in Chapter 403, F.S., was established as a technology-based program that relies on the implementation of BMPs that are designed to achieve a specific level of treatment (i.e., performance standards) as set forth in Rule 62-40, F.A.C. In 1994, the Department's stormwater treatment requirements were integrated with the stormwater flood control requirements of the WMDs, along with wetland protection requirements, into the Environmental Resource Permit (ERP) regulations.

Chapter 62-40 also requires the state's WMDs to establish stormwater pollutant load reduction goals (PLRGs) and adopt them as part of a SWIM plan, other watershed plan, or rule. Stormwater PLRGs are a major component of the load allocation part of a TMDL. To date, stormwater PLRGs have been established for Tampa Bay, Lake Thonotosassa, the Winter Haven Chain of Lakes, the Everglades, Lake Okeechobee, and Lake Apopka. No PLRG had been developed for Newnans Lake at the time this report was prepared.

In 1987, the U.S. Congress established Section 402(p) as part of the federal Clean Water Act Reauthorization. This section of the law amended the scope of the federal NPDES permitting program to designate certain stormwater discharges as "point sources" of pollution. The EPA promulgated regulations and began implementation of the Phase I NPDES stormwater program in 1990. These stormwater discharges include certain discharges that are associated with industrial activities designated by specific standard industrial classification (SIC) codes, construction sites disturbing 5 or more acres of land, and master drainage systems of local governments with a population above 100,000, which are better known as MS4s. However, because the master drainage systems of most local governments in Florida are interconnected, EPA implemented Phase I of the MS4 permitting program on a countywide basis, which brought in all cities (incorporated areas), Chapter 298 urban water control districts, and the Florida Department of Transportation (DOT) throughout the 15 counties meeting the population criteria. The Department received authorization to implement the NPDES stormwater program in 2000.

An important difference between the federal NPDES and the state's Stormwater/Environmental Resource Permitting Programs is that the NPDES Program covers both new and existing discharges, while the state's program focus on new discharges only. Additionally, Phase II of the NPDES Program, implemented in 2003, expands the need for these permits to construction sites between 1 and 5 acres, and to local governments with as few as 1,000 people. While these urban stormwater discharges are now technically referred to as "point sources" for the purpose of regulation, they are still diffuse sources of pollution that cannot be easily collected and treated by a central treatment facility as are other point sources of pollution, such as domestic and industrial wastewater discharges. It should be noted that all MS4 permits issued in Florida include a reopener clause that allows permit revisions to implement TMDLs when the implementation plan is formally adopted.

Appendix E: Pollutant Trading Policy Advisory Committee

As directed by the 2005 amendments to the FWRA, this report was developed in cooperation with a PTPAC consisting of representatives of key stakeholder groups in Florida, including regulated interests, environmental organizations, WMDs, and local governments. The Department solicited nominations for PTPAC membership by letter to parties on the Department's TMDL Program distribution list and to parties with prior interest in the TMDL Program. Members were selected primarily based on their knowledge about the TMDL Program and Water quality credit trading, and whether they could effectively represent a significant constituency that would be affected by the TMDL Program. Membership was limited in an attempt to ensure that the PTPAC was not too large for effective meetings and discussion. **Table E-1** lists the names and affiliations of PTPAC members.

All PTPAC meetings were noticed in the Department's "Official Notices" Web application or the *Florida Administrative Weekly* (FAW), and notices were emailed to the distribution list of interested parties for the PTPAC. The PTPAC met approximately monthly from November 2004 through July 2005, every other month from September 2005 through July 2006, and monthly from July to October 2006. During the first meeting, the PTPAC developed a list of trading related issues to be addressed and then discussed the issues during subsequent meetings. Once consensus was reached on the main policy issues, Department staff and selected PTPAC members prepared the first draft of the report, and subsequent meetings focused on reviewing the draft report.

Table E-1. Members of the PTPAC and their Affiliations

Name	Stakeholder Group Represented
Rebecca O'Hara	Florida League of Cities
Linda Shelley	Florida Home Builders Association
J. Allison DeFoor, II, D. Min.	Environmental Groups
Ron Stewart	Florida Pulp and Paper Association
Kurt Spitzer	Florida Stormwater Association
Rick Renna	Florida Department of Transportation
Robert McConnell	Public Drinking Water Supply Utilities
Stephen R. Lienhart, P.E.	Local Government
Avinash Patwardhan, Ph.D.	Florida Engineering Society/Agricultural/Local Government
Jacob F. Stowers	Local Government (Pinellas County)
Casey Fitzgerald	Water Management Districts
Thomas Helgeson, P.E.	FWEA and FWEA Utility Council
Paul K. Steinbrecher, P.E.	JEA/Florida Manufacturers Association (FMA)
Rich Budell	Agriculture
Don Loop	Environmental Groups
Mike Branch	Silviculture

Appendix F: Public Participation

Importance of Public Participation

The Department recognizes that public participation will be critical to the success of the state's Water Quality Credit Trading Program. In particular, providing opportunities for the public to participate in and learn about the program will be very important to address any concerns by the public and environmental community that trading could potentially lessen environmental protection or cause hot spots. Such concerns are expected with any new program, particularly when it has the potential to allow regulated sources to increase their discharges to impaired waters by purchasing credits from unregulated sources. However, the Department is confident that the trading program described in this report will be environmentally protective and will help speed up the restoration of Florida's impaired waters, and plans to address any concerns about the program through education and outreach. Public participation is a fundamental part of the Department's watershed management approach, as well as the TMDL and NDPEs Programs, and the Department plans to provide multiple opportunities for public participation throughout the development and subsequent implementation of the program.

Opportunities for Public Participation

Meetings with the Environmental Community To Discuss Draft Report

The Department anticipated concerns about trading by the environmental community and actively solicited representation from the environmental community in the PTPAC. Unfortunately, representatives of statewide environmental groups did not accept offers to formally participate in the PTPAC, and the selected individual, who represented a local environmental group for the St. Johns River, missed many meetings due to illness. To address this lack of participation, the Department plans to meet with representatives of the environmental community in November to summarize the draft report, solicit their feedback, and try to address any specific concerns they may have. **We still need to arrange this meeting.**

PTPAC Process

As noted in Section I, all PTPAC meetings were noticed to the public and the public was allowed to actively participate in the meetings. In addition to noticing the meetings in the Department's TMDL Website and official notices system or Florida Administrative Weekly (FAW), the Department sent emails announcing all meetings and providing meeting materials to a distribution list of interested parties that currently has more than 350 names. The Department also prepared detailed summaries of each meeting and created a PTPAC Website that provided links to PTPAC meeting materials, including agendas, meeting summaries, and copies of presentations.

Rulemaking

Additional opportunities for public participation will be provided in any subsequent rulemaking activities for a water quality credit trading rule, including at least one public workshop and public hearing for rule adoption. The adoption of the trading rule will, of course, also provide a formal point of entry for interested parties to challenge the rule. Any rulemaking to develop and adopt GPs for credit generation will provide similar points of entry.

Public Participation During BMAP Development and Adoption

Another mechanism for public participation in the trading program will be during the collaborative BMAP development and adoption process. As stakeholders work together to refine allocations and select the appropriate control activities designed to implement the TMDL,

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they will also have opportunities to identify potential trading partners. The BMAP will also include a chapter addressing water quality credit trading that will provide direction to stakeholders and a forum to discuss basin-specific trading issues. Finally, the adoption of the BMAP by Secretarial Order provides a formal point of entry for interested parties to challenge any trading provisions they feel are inappropriate.

Points of Entry as Part of Permitting Process

Points of entry to challenge individual trades will, of course, also be provided as part of standard permitting process. Any permits authorizing trades will specifically acknowledge the trade in the Fact Sheet or Statement of Basis for the permit that is included in the public notice for the draft permit.

Trade Tracking Database and Annual Reports on Trading Program

Finally, two key elements of the public participation process will be the Trade-Tracking Database and the Annual Report on the Trading Program. The Trade-Tracking Database on the Department's Website will provide the public with information about how many credits have been generated and about individual trades, including the trading parties, amount traded, and which permits have been revised to incorporate trades.

The Department also plans to prepare a brief annual report on trading activities summarizing trades for the year, noting how many credits were exchanged, providing estimates of the cost savings, and addressing whether any changes are needed in the program, including possible candidate operations for Generic Permit development. However, it should be noted that financial information about the cost of credits and the savings resulting from trades will be voluntary, and as such, the Department's ability to fully assess the economic benefits of trading could be limited.

Appendix G: Watershed-based Permitting

The Department concluded that key types of watershed-based permitting could be done without statutory or rule revisions, including the following:

- (a) *Individual permits for a facility with multiple outfalls (“intraplant permitting”), which can be readily addressed by providing an aggregate WLA for the entire facility.*
- (b) *Watershed-based individual permits for a single permittee, usually a municipality, with multiple wastewater facilities (each with an individual permit and WLA) within a watershed, which could be done by providing an aggregate WLA for all of the facilities and developing an additional umbrella permit (processed as an individual wastewater permit) that would address compliance with the aggregate WLA. The existing individual permits would remain in effect, but each would be reopened and revised to note the umbrella permit. Location Factors, discussed in **Section V**, would be needed if the outfalls for the different facilities were in different locations.*
- (c) *Watershed-based individual permits for a single permittee with both wastewater and NPDES stormwater permits (EPA’s “Integrated Municipal NPDES Permits”). Permitting would be very similar to (b), but the BMAP would need to provide information on how to translate the expression of the WLA for the MS4 from a percent reduction to loading, so that the Department could establish an aggregate load limitation in the umbrella permit.¹⁵*

Watershed-based individual permits could also be used to address multiple permittees (each with an individual permit and WLA) within a basin. Permitting would be very similar to that of one permittee with multiple facilities in the basin, but the umbrella permit would list all of the copermitees and the Department would take enforcement action against all copermitees if the aggregate loading limit was violated. The advantage of this approach is that the co-permittees could work out internal trading arrangements that compensated permittees that were under their individual permit limit and assessed fees for those that were above their individual permit limit. Rulemaking would be needed to allow for watershed-based GPs because GPs are adopted by rule. However, the Department concluded that such GPs are not needed given the option of developing individual umbrella permits focused on the specific pollutant of concern for a TMDL.

¹⁵ MS4s cannot use trading to meet maximum extent practicable (MEP) requirements.

Appendix H: Section 62-4.242, F.A.C., Equitable Abatement

(4) Equitable Abatement.

(a) It shall be Department policy to further protect and enhance the quality of those surface waters whose quality has been artificially lowered below the quality necessary to support their designated uses. For such waters, no new activity or discharge shall be issued a Department license to construct unless the applicant affirmatively demonstrates that:

1. Water quality standards once achieved would not be violated as a result of the proposed activity or discharge;
 2. The proposed activity or discharge is necessary or desirable under federal standards;
- and
3. The proposed activity or discharge is clearly in the public interest.

(b) To allocate equitably the relative levels of responsibility for abatement among persons directly discharging significant amounts of pollutants into waters which fail to meet one or more of the water quality criteria applicable to those waters, it is necessary to determine the amounts of those pollutants contributed by each of those persons and to consider all factors relevant to the equitable allocation of that responsibility. The following provisions of this section prescribe the means by which the Department, upon the petition of a license applicant, will equitably allocate among such persons the relative levels of abatement responsibility of each for abatement of those pollutants and by which it will establish for each of those persons, if necessary, an abatement program and schedule to accomplish any abatement determined necessary under the provisions of this Section.

(c)1. For a surface water body, or portion thereof, which is determined by the Department to fail to meet one or more of the water quality criteria applicable to that water body, an applicant for a license to construct or operate a stationary installation to discharge wastes which contributes, or will contribute, to that failure may petition the Department in writing for an equitable allocation of the relative levels of responsibility for abatement among the stationary installations which discharge significant amounts of one or more of the pollutants which contribute to the failure of those waters to meet the water quality criterion (a) specified in the petition.

2. The applicant shall identify in the petition the location of each of the existing stationary installations which it wishes the Department to consider and the legal name and mailing address of the owners of each of those stationary installations.

3. The county government within which each stationary installation identified under subparagraphs 1. and 2. of this paragraph is located shall be given notice of the proceeding, as shall the municipality, if the stationary installation is located within a municipality.

4. The Department may identify any other owners of existing stationary installations which it deems necessary to allocate equitably the relative levels of responsibility for abatement of pollutants which contribute to the failure of those waters to meet any criterion specified in the petition.

5. Those owners identified by the petitioner and the Department shall be joined as parties in the licensing proceeding. Nothing shall preclude any party from requiring the joinder, as a party to the proceeding, of the owner of any other existing stationary installation upon written motion and an affirmative demonstration that such stationary installation is discharging significant amounts of one or more pollutants which contribute to the failure of the subject water body to meet any criterion specified in the petition. A motion for joinder shall be filed within 20 days of receipt by the movant of notice that it has been joined in the proceeding.

(d) License applications filed by the petitioner, or any other party, for waste discharges which are identified pursuant to Subsection paragraph (2)(c) above in the equitable allocation process under this Section shall be deemed incomplete or the subject of a dispute of material fact for purposes of Chapter 120, F.S. However, if an application for renewal of an existing

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license has been timely filed with the Department, the existing license shall remain in full force and effect until such time as a new or modified license has been issued pursuant to paragraph (2)(k).

(e) Prior to determining the most equitable allocation of responsibility for abatement under subparagraph (f), the Department shall determine the percentage and quantification of the total contribution and the contribution by each of the stationary installations identified under paragraph (c) of the pollutants identified under paragraph (c) which contributes to the failure of the subject waters to meet the water quality criterion specified in the petition. Provided, however, that the Department, upon petition by an affected party pursuant to Section 62-3.031, F.A.C., may establish more appropriate less stringent criteria upon which to base quantification calculations. For the purpose of performing quantification calculations, the Department shall assume waste discharges entering the water body from an adjacent state as a separate point source of pollution.

(f) The following factors shall be considered by the Department in determining the most equitable allocation among the parties identified pursuant to paragraph (c) of the relative levels of responsibility of each for abatement of the pollutants with which the petition is concerned:

1. The percentage and quantification of the abatement achieved by abatement techniques previously undertaken, if any, by each of those stationary installations and the costs previously incurred, if any, with respect to each, along with any economic or production benefits gained from said abatement techniques.

2. The identification and estimated cost of alternative abatement techniques available for each stationary installation. Identified techniques shall include:

(i) Those techniques which would abate the level of pollutants to the degree required by the quantities of contributed pollutants determined under paragraph (e), or the maximum degree possible, if the degree required is not presently attainable.

(ii) Those techniques which would abate additional quantities of pollutants beyond the quantities determined under paragraph (e) and the approximate percentage of additional abatement which could be provided.

3. The economic and production impacts of additional abatement on each party, if any.

4. Other environmental impacts of available abatement techniques.

(g) In determining the percentages and quantities under paragraph (e), the Department shall use the best scientific and technical information, methods, and data in the possession of the Department.

(h) Each party to the licensing proceeding shall provide the Department, and each other party except as provided by Section 403.111, F.S., with any information which is requested by the Department and necessary for the determination under paragraphs (e) and (f). With regard to the determination under subparagraph (f)2.(ii), however, parties shall only be required to provide that information within their possession at the time of the Department's request. The Department shall make available to a party any information in its possession, and shall provide reasonable assistance to any party in identifying that information which would assist the party in complying with the Department's request.

(i) Each party shall undertake a program approved by the Department to abate the quantity of contributed pollutants for which it is determined responsible under Subsection (e). Such abatement program shall include but not be limited to, a quantified effluent limitation, best management practices or specific techniques for abatement, and a schedule for commencement and completion of the required abatement. In establishing an abatement schedule, the Department shall consider the previous abatement efforts and their costs, the reasonable remaining usable life of the discharge facility, and any commitments for phasing out the discharge from the facility.

(j) An abatement program required under paragraph (i) may include the agreement of one owner to undertake additional abatement on behalf of another owner. When such an agreement has been executed fully and filed in writing with the Department within a reasonable

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period of time set by the Department, the agreement shall be recognized in the licenses of the signatory parties to the extent that it satisfies the levels of abatement, determined for those parties under paragraph (e).

(k) Each party shall be issued an appropriate license of modified license, which shall include any abatement program required of the party and approved under paragraph (i), as well as any other conditions authorized by Chapter 403, FS.

Specific Authority: 373.016, 373.171, 403.061, 403.062, 403.087, 403.088, 403.504, 403.704, 403.804, 403.805, FS.

Law Implemented: 373.016, 373.171, 403.021, 403.061, 403.087, 403.088, 403.101, 403.111, 403.121, 403.141, 403.161, 403.182, 403.502, 403.702, FS.

History: New 3-1-79, Amended 5-14-81, 9-30-82, 3-31-83, 4-9-84, 11-29-84, 12-11-84, 5-8-85, 7-22-85, 8-31-88, 10-4-89, Formerly 17-4.242, Amended 1-23-95.

Appendix I: Sample Calculations for the Application of Location Factors

Sample Calculations

Table I-1 shows sample LFs that were calculated for the freshwater portion of the St. Johns River (for purposes of assessment, the river was divided into segments with waterbody identification numbers [WBIDs], and LFs were calculated for each.).

Table I-1. Sample LFs for the Freshwater Portion of the St. Johns River

Entry WBID of Pollutant	LF
I	0.52
J	0.65
K	1.00
L	0.90
M	0.90

Application of LFs

Once calculated, the LFs can be readily used to adjust the amount needed for a given trade. For example, if a point source discharging to WBID J wanted to offset 100 units of total nitrogen (TN) and found a willing trading partner who discharged to WBID I, the amount of credits the discharger in WBID J would have to purchase would actually be:

$$\begin{aligned}
 \text{Number of Credits Needed} &= \text{Number of TN Pounds to Offset} \times [\text{Buyer's LF (WBID J)}/\text{Seller's LF (WBID I)}] \\
 &= 100 \times [0.65/0.52] \\
 &= 125 \text{ units of TN}
 \end{aligned}$$

This same formula works for trading parties in any pair of WBIDs. For example, if a point source discharging to WBID L wanted to offset 100 units of TN and found a willing trader who discharged to WBID I, the amount of credits the discharger in WBID L would have to purchase would be:

$$\begin{aligned}
 \text{Number of Credits Needed} &= \text{Number of TN Pounds to Offset} \times [\text{Buyer's LF (WBID L)}/\text{Seller's LF (WBID I)}] \\
 &= 100 \times [0.90/0.52] \\
 &= 173 \text{ units of TN}
 \end{aligned}$$

In both of these examples, a unit discharge at the location of the source purchasing credits had more of an impact on the waterbody than the same unit load would have if discharged at the location of the source selling the credits, and the result was that the buyer had to purchase extra credits. These trades could just as easily have been reversed. However, the Department concluded that trading factors less than 1 should not be allowed because they could increase loading to the impaired water. The PTPAC noted that this increased load should not lead to a greater impact on the impaired water because the LFs would address the location effect. The PTPAC acknowledged that trades that remove loadings from areas with a greater impact on the receiving water should generally be encouraged. However, the PTPAC Legal Issues Subcommittee concluded that allowing the load to increase above the TMDL was not consistent

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with the current statutory definition of a TMDL. The Department and PTPAC also felt that LFs should be used conservatively (to increase the amount of credits needed) during the early phases of the program. However, the PTPAC recommends that the Department reconsider this issue, including potentially revising the statutory definition of a TMDL, after it develops more certainty with LFs and with the trading program in general.

This position on LFs does not preclude trading where the seller's location has more of an impact on the river than the buyer's location. For example, if the reverse of the first trade was proposed (i.e., the source in WBID I wanted to purchase loads from the source in WBID J), then the trading ratio would default to 1 rather than 0.8. In this case, the source in WBID I would purchase 100 units of TN from the source in WBID J, rather than purchasing only 80 units of TN.

It is important to note that, if there are multiple pollutants of concern (TN and total phosphorus [TP], for example), separate LFs will have to be calculated for each pollutant. TP loads must be offset with TP credits, and TN loads must be offset with TN credits. The credits can be purchased from separate sources as long as the appropriate LFs are applied for the location of the discharger generating the credit and the location of the purchaser.

In the event that LFs are not available for a waterbody, the PTPAC concluded that trading should be limited to sources within the same WBID. The PTPAC also recommended that the Department evaluate the precision of the LFs, and use its BPJ whether to use LFs if they are not significantly different than a factor of 1.

Appendix J: Trade Tracking

While the permitting information described in **Section VI** for point and nonpoint sources, respectively, provide important information about the amount of credits generated and about planned trades, the Department will also need to track detailed information about individual trades to ensure that generated credits are not sold to multiple parties. Information tracked related to credit sellers would include the following:

- (1) *Seller's name, location, permit number, and receiving water (WBID),*
- (2) *The pollutant being traded, and the expression of the TMDL (annual, monthly, or seasonal),*
- (3) *The seller's WLA,¹⁶ which constitutes the baseline, the new permit limit authorizing a reduced discharge level, and the amount of credits generated,*
- (4) *A brief description of the actions that generated the credits,*
- (5) *The effective date of the permit, and the date when credits will start to be generated, and*
- (6) *The amount of credits traded to date and any adjustments for location.*

Information tracked related to credit buyers would include the following:

- (1) *Buyer's name, location, permit number, and receiving water (WBID),*
- (2) *The pollutant being traded, and the expression of the TMDL (annual, monthly, or seasonal),*
- (3) *The buyer's WLA, which constitutes the baseline, the new permit limit authorizing an increased discharge level, and the amount of credits purchased,*
- (4) *A brief description of the source of credits, including the permit number of the seller (if permitted) or the name of the nonpoint source that generated the credits,*
- (5) *When the source of credits is a nonpoint source, the uncertainty factor used,*
- (6) *The effective date of the permit, and the date when credits will be available for use, and*
- (7) *The amount of credits purchased to date.*

As noted in **Appendix E**, the Trade-Tracking Database will be made available on the Department's Website to provide public access to information on the trading program. This information should help alleviate the public's concerns about the program and will also serve as an important source of information to prospective buyers. In fact, facilities that generate credits through permitting actions would be entered in the database even if they did not already have buyers, and these preapproved ("certified") credits should be highly valued in the marketplace. It should be noted that the information described above does not include any monetary information about the trade—either the cost of the credits or the cost savings. This information was not included because the PTPAC and the Department believe that it is not needed to ensure that the trades are environmentally protective, and because it may be considered proprietary by some trading parties. However, the Department acknowledges that this type of information could be very useful when evaluating the overall effectiveness of the program, and may request that trading parties voluntarily provide cost information.

¹⁶ If the seller is a restoration project, then the permittee would not have a WLA. For these facilities, the amount of credit generated would be based on the amount of load reduction the project will produce.

Appendix K: Additional Workload Associated with the Trading Program and Potential Additional Roles for the Department

Additional Workload Associated with the Trading Program

The additional workload associated with implementation of the trading program within the wastewater program includes the following:

(a) Permitting-related Tasks

Individual wastewater permits for credit buyers will need to be reopened and revised to reflect the trading arrangements. If the seller is a permitted point source, the buyer's permit will include a revised loading limit, which would not add significantly to the permitting workload. However, the seller's permit will also need to be reopened and revised, which adds to the permit writer's workload. If the seller is an unregulated nonpoint source, the permit writer will need to review the information about the credit-generating activity, determine if the information provides reasonable assurance that credits will be generated, and then develop a permit condition describing the activity. The permit writer will also have to review contracts between the buyer and seller to ensure that there is reasonable assurance that sufficient credits will be available to the buyer.

Evaluating the credit-generating activity will be a significant, new workload. For nonpoint source-based credits, permit writers will need to learn how to evaluate nonpoint source control activities because most are not familiar with either urban stormwater or agricultural BMPs, or other potential restoration activities. The permits will include Administrative Orders, which add complexity to the initial permit **AND** require permitting staff to follow up as new information becomes available.

(b) Compliance and Enforcement

Standard compliance and enforcement procedures (review of DMRs and inspections) will be sufficient for trades where the credit seller is a permitted facility. However, if the source of the credits is a nonpoint source, compliance and enforcement staff will need to inspect nonpoint source management activities to ensure that they were constructed and maintained as required in the buyer's permit. As was the case for permit writers, compliance staff will have to expand their areas of expertise to include urban stormwater and agricultural BMPs.

(c) Rule Development for General Permits

As described previously, the Department plans to develop GPs for selected credit-generating operations once similar types of operations are identified as candidates for a GP. While subsequent permitting will be streamlined for both the applicant and the Department once the GPs are adopted by rule, developing the GP itself is a significant undertaking, requiring technical expertise, extensive coordination with the industry, and the completion of required rulemaking procedures.

(d) Creation and Maintenance of a Trade-Tracking Database

While individual trades will be incorporated in wastewater permits, there is still the potential for a credit-generating operation to make arrangements with multiple buyers to sell the same credits. To prevent this from happening, the Department will need to develop and populate a Trade-Tracking Database that tracks all credit generators, how much credit they have generated, and how much has been sold (see **Appendix H**).

Potential Additional Roles for the Department

The Department and PTPAC also considered additional activities that might help to develop the trading program. For example, some interested parties suggested that the Department take more of an active role to promote and facilitate trading by providing technical assistance to potential trading parties, providing information about available credits to potential buyers, and even brokering trades. While there are examples where a state's regulatory agency (Connecticut) also serves as a broker and banker by establishing the costs of credits and processing the money for permittees (accepting money for permittees buying credits and paying out funds for permittees generating credits), the Department concluded that this role is not necessary in Florida's program and inhibits market forces from finding the lowest-cost credits. Instead, the Department plans to indirectly facilitate trading by the following:

- *Developing this report and subsequent trading rules, which will provide direction to trading parties,*
- *Providing information about trading during the BMAP development process and developing trading chapters in BMAPs, which will provide additional basin-specific direction on trading, including LFs and methods to translate the expression of MS4 WLAs from "percent reduction" to pounds,*
- *Providing public access to the Trade-Tracking Database, which will allow buyers to locate potential credit sources,*
- *Developing GPs when candidate operations are identified, and*
- *Developing annual reports summarizing trading activities, which will help buyers locate potential sources and highlight growth areas in the program.*

Appendix L: List of Acronyms Used

AO	Administrative Order
ATAC	Allocation Technical Advisory Committee
AWT	Advanced wastewater treatment
BAT	Best available technology economically achievable
BMAP	Basin Management Action Plan
BMP	Best management practice
BOD	Biochemical oxygen demand
BPJ	Best professional judgment
CWA	Clean Water Act
DACS	Florida Department of Agriculture and Consumer Services
DMR	Discharge monitoring report
DO	Dissolved oxygen
DOT	Florida Department of Transportation
EF	Equivalency Factor
EPA	U.S. Environmental Protection Agency
ERP	Environmental Resource Permit
FAW	Florida Administrative Weekly
F.A.C.	Florida Administrative Code
F.S.	Florida Statutes
FWRA	Florida Watershed Restoration Act
GP	General permit
IM	Interim measure
LA	Load allocation
LF	Location Factor
LSJR	Lower St. Johns River
MEP	Maximum extent practicable
MOA	Memorandum of Agreement
MOS	Margin of safety
MS4	Municipal separate storm sewer system
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSTDS	On-site treatment and disposal system
PBTs	Persistent bioaccumulative toxics
PLRG	Pollutant Load Reduction Goal
PTPAC	Pollutant Trading Policy Advisory Committee
RF	Retirement Factor
RSTA	Regional stormwater treatment area
SIC	Standard industrial classification
SJRWMD	St. Johns River Water Management District
SWIM	Surface Water Improvement and Management Program
TAC	Technical advisory committee
TBEL	Technology-based effluent limitation
TMDL	Total maximum daily load
TN	Total nitrogen
TP	Total phosphorus
TSS	Total suspended solids
UF	Uncertainty Factor
USGS	U.S. Geological Survey
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WMD	Water management district
WWTF	Wastewater treatment facility
WWTP	Wastewater treatment plant