Lower Boise River
Effluent Trading Demonstration Project:

Summary of Participant Recommendations For a Trading Framework

Prepared for the
Idaho Division of Environmental Quality

by
Ross & Associates Environmental Consulting, Ltd.

September 2000

Table of Contents

Executive Summary

The purpose of this document is to summarize the efforts of the Lower Boise River Effluent Trading Pilot Project participants, and the recommendations that have emerged around the creation of the Lower Boise trading program framework.

Effluent trading is a business-like way of helping to solve water quality problems by focusing on cost effective, local solutions to problems caused by pollutant discharges to surface waters. Typically, a party facing relatively high pollutant reduction costs compensates another party to achieve an equivalent, though less costly, pollutant reduction. Effluent trading is voluntary. Parties trade only if both are better off as a result of the trade. Because most trading systems are designed to fit within existing regulatory frameworks, effluent trading typically will not create any new regulatory obligations.

In 1997, Idaho, Oregon, and Washington, in cooperation with the Environmental Protection Agency (EPA) Region 10, began to examine how trading can help improve water quality, and lower the overall cost of meeting pollutant reduction objectives established by Total Maximum Daily Load (TMDL) processes. The Lower Boise River was selected as the first demonstration project. The goal of this project was to create a proposed trading system that is environmentally and legally sound; works within existing regulatory programs; allows trades to occur in a dynamic, market-based manner; and that is grounded in environmentally protective requirements.

The pollutant chosen for trading for the Lower Boise River watershed demonstration project is total phosphorus, with a market area extending from Lucky Peak Dam to the mouth of the Boise River, a distance of approximately 64 miles. If the Snake River-Hells Canyon or Boise River TMDLs establish load allocations for a different form of phosphorus, appropriate adjustments will need to be made to the trading framework. Trading is intended to support the implementation of TMDLs, and a trading framework must incorporate the environmental objectives defined by each TMDL.

The demonstration project was launched in January 1998 and proceeded in two Phases. Phase I focused on characterizing the potential supply of and demand for tradable pollutant reductions, and developing a conceptual framework for future active trading. At the conclusion of Phase I, participants decided to pursue development of a trading system, based on perceived financial and environmental benefits. Phase II of the project began in August of 1998. The goal of Phase II was to develop procedures and mechanisms for the trading framework, as well as two model trades. Participants in the Lower Boise River Effluent Trading Demonstration Project included wide representation from federal, state and local agencies with water quality responsibilities, agriculture, municipalities, industry and the environmental community.

The effluent trading market in the Lower Boise River watershed will emerge gradually over the next several years, along with TMDL allocation decisions. In the short term, trading will be driven by the state of Idaho's 'no net increase' (NNI) policy for the Lower Boise River. In the longer term, trading may be driven by the Lower Boise River and Snake River-Hells Canyon nutrient TMDLs, which may require significant phosphorus reductions from municipalities that discharge into these waterways. These TMDLs are due by the end of 2001. When the TMDLs are approved, the National Pollution Discharge Elimination System (NPDES) permits in the watershed may be modified by EPA, the permitting authority for the state of Idaho, to include a phosphorus limit and provisions for effluent trading.

The proposed trading framework provides authorization to trade, subject to guidelines and requirements contained in the TMDL, permits, and the *Water-Quality Based Trading Requirements*, a state document which is currently under development and is intended to guide trading in Idaho (hereafter referred to as the state trading document). Trades would be developed and executed through:

- private contracts between trading parties;
- reporting requirements that register trades and transfer credits between seller and buyer in a trade database; and
- monitoring, reporting, and tracking requirements that establish nonpoint source reductions as marketable credits.

The trading framework contains provisions to help ensure that nonpoint sources are responsive to load allocations (LA) that emerge when the TMDLs are issued. For point sources, the wasteload allocations (WLA) to be established in the TMDL with the inclusion of provisions to allow for trading, and the effluent limits to be incorporated into NPDES permits, are adjusted by trades that comply with all requirements outlined in the TMDL, permits, and state trading document. Limits on each point source's ability to trade will prevent adverse local water quality impacts that could result from trading. Reporting requirements and a readily accessible trade tracking database help ensure appropriate parties are accountable for trade results (discussed in more detail in Section 2.2.9). Trading ratios are applied to each trade to ensure that trades result in reductions that can accommodate the differences between source pollutant loadings.

Both point and nonpoint sources can create marketable credits. Nonpoint sources can create either measured or calculated credits. Nonpoint sources must follow specific design, maintenance, and monitoring requirements, apply uncertainty discounts to calculated credits, and provide a water quality contribution to ensure a net environmental benefit from each trade. Finally, the proposed approach envisions a private, nonprofit association that will oversee trading and maintain the trade database. All of these elements are discussed in more detail in the following sections.

Major work elements that remain in this effort, including steps to address local impacts and development of the BMP list, along with a timeline for completion, are listed in Section 4.

Section 1: Introduction

1.1 Purpose and Background

The purpose of this document is to summarize the efforts of the Lower Boise River Effluent Trading Pilot Project participants, and the recommendations that have emerged for an effluent trading program framework.

1.1.1 What is Effluent Trading?

Effluent trading is a business-like way of helping to solve water quality problems by focusing on cost effective, local solutions to problems caused by pollutant discharges to surface waters. Trading allows trading parties to decide how to best reduce pollutant loadings within the limits of the trading requirements. The appeal of effluent trading emerges when pollutant sources face substantially different pollutant reduction costs. Typically, a party facing relatively high pollutant reduction costs compensates another party to achieve an equivalent, though less costly, pollutant reduction.

Effluent trading is voluntary. Parties trade only if both are better off as a result of the trade. Because most trading systems are designed to fit within existing regulatory frameworks, effluent trading typically will not create any new regulatory obligations.

1.1.2 Lower Boise Demonstration Project in Brief

In 1997, Idaho, Oregon, and Washington, in cooperation with the Environmental Protection Agency (EPA)

cost of meeting pollutant reduction objectives established by the Total Maximum Daily Load (TMDL) processes. Based on several criteria and support from interested parties, the Lower Boise River was selected as the first demonstration project.

The Lower Boise River watershed encompasses about 1290 square miles in southwest Idaho (Figure 1). The watershed is home to about a third of Idaho's population and is growing rapidly (Figure 2). A TMDL for sediment and bacteria for the Boise River from Lucky Peak Dam to the mouth (a distance of 64 miles) was approved in 2000 and a TMDL for phosphorus is due December 31, 2001.[1] Those involved in TMDL development, who have been working together on water quality issues since 1992, expressed an interest in looking at effluent trading as a possible tool for more cost effective TMDL implementation.

The goal of this project was to create a proposed trading system that is environmentally and legally sound; works within existing regulatory programs; allows trades to occur in a dynamic, market-based manner; and that is grounded in environmentally protective requirements. The demonstration project proceeded in two phases.

[1] TMDLs for the 303(d) listed tributaries are also due December 31, 2001.

Phase I

Phase I focused on characterizing the potential supply of and demand for tradable reductions of phosphorus loadings, and developing a conceptual model for an administrative framework for future dynamic trading. Municipal and agricultural work groups were formed to evaluate the economics of trading for each sector and to identify key issues of concern for the trading framework. Major conclusions from Phase I included the following.

- Trading could offer municipalities flexible, cost-effective options for managing increased flows and loads associated with growth.

- Trading could provide nonpoint sources with financial resources to help them achieve reductions needed to meet TMDL goals.

- Costs for nutrient reductions range widely among sources, providing the financial basis (or conditions) to produce economic benefits. Incremental costs for phosphorus reductions at wastewater treatment plants range from $5 to more than $200/lb, whereas agricultural management practices hold the potential to reduce phosphorus loads from $5 to $50/lb.

- Project participants favor an approach in which regulatory agencies set the critical parameters for trading (e.g., tradable pollutants, and pollutant reductions required to meet water quality standards), while the day-to-day trade administration is handled by a nonprofit association, rather than by a government agency.

At the conclusion of Phase I, participants decided to pursue development of a trading system, based on perceived financial and environmental benefits.

Phase II

Phase II of the project began in August of 1998. The goal of Phase II was to develop procedures and mechanisms for the trading framework, as well as two model trades. Project participants were divided into three main teams: (1) the Framework Team, charged with developing the mechanisms, rules, and procedures for dynamic trading in the Lower Boise River watershed; (2) the Point Source-Point Source Model Trade Team, responsible for developing a model trade between two point sources; and (3) the Point Source-Nonpoint Source Model Trade Team, tasked with developing a model trade between a point source and a nonpoint source. Smaller workgroups were also formed to work through specific parts of the trading system. These included the Agriculture Workgroup, the Ratios Workgroup, the Trading Framework Workgroup, the Indirect Dischargers Workgroup, and the Association Workgroup.

1.1.3 Lower Boise Participants

Participants in the Lower Boise River Effluent Trading Demonstration Project included: the Idaho Water Users Association; the Idaho Farm Bureau; Pioneer Irrigation District; the Payette River Water Master; the Canyon Soil Conservation District (SCD); the Idaho Soil Conservation Commission (SCC); the Natural Resource Conservation Service (NRCS); Idaho Rivers United; the Ada County Highway District; the Association of Idaho Cities; the Cities of Boise, Meridian, Nampa, and Middleton; the U.S. Bureau of Reclamation (USBR); the Southwest Idaho Resource Conservation & Development Council (SWIRCD);

Micron; Simplot; American Wetlands; Idaho Power Company; Idaho Division of Environmental Quality (DEQ); US EPA; and the Boise State University Environmental Finance Center.

Figure 1: **Map of Idaho Showing Lower Boise River Watershed**

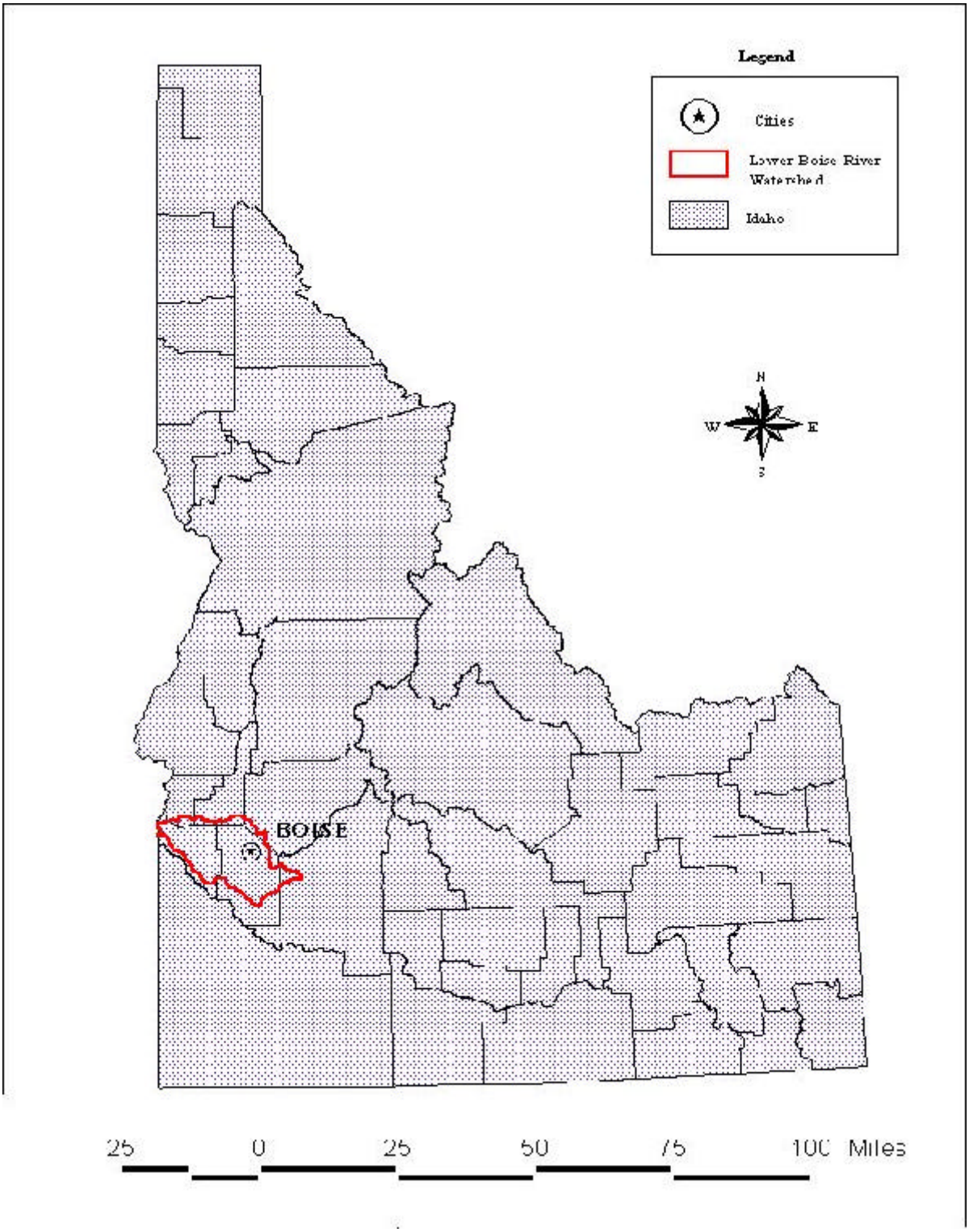
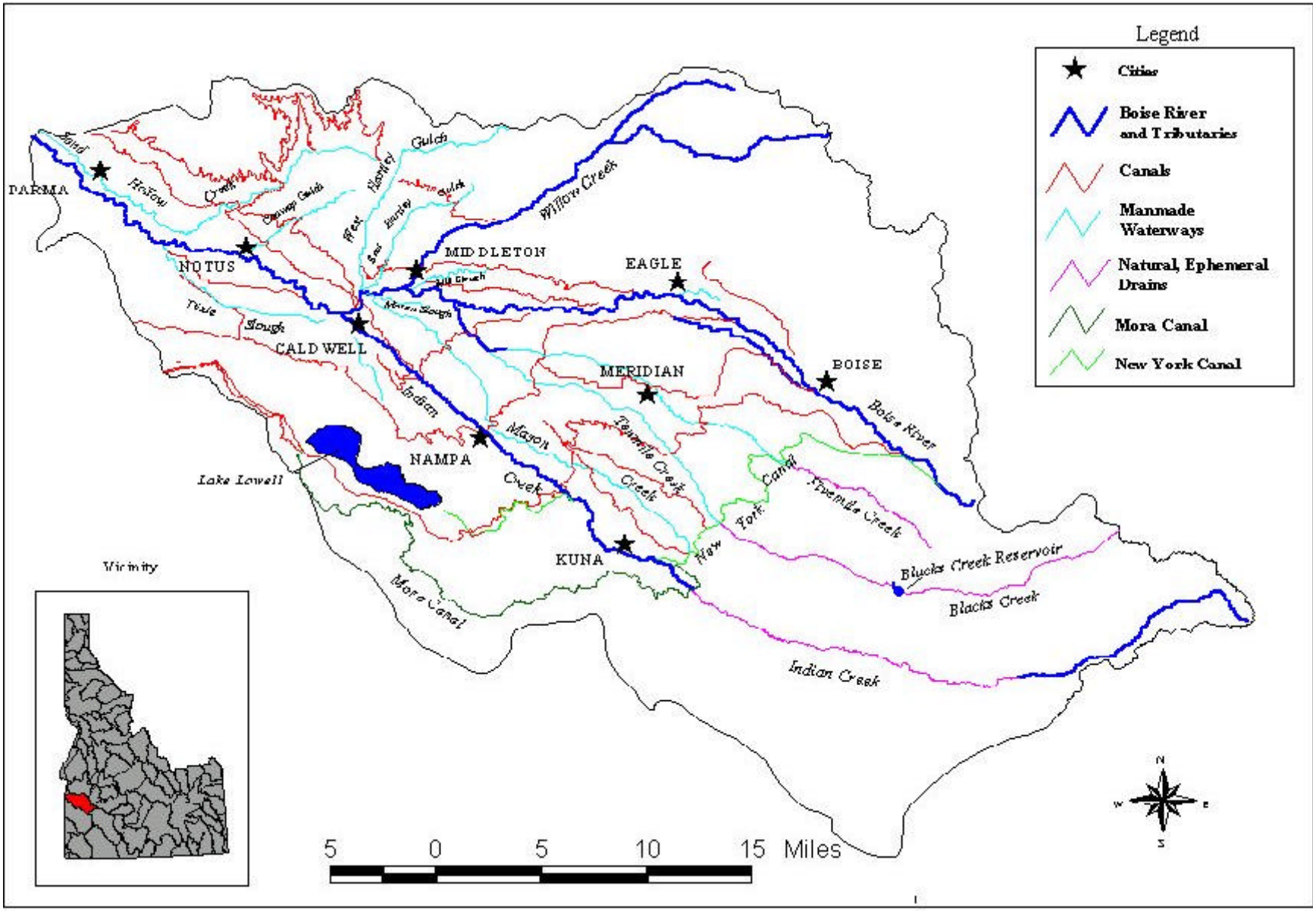


Figure 2: Map of Lower Boise River Watershed



Neutral facilitation, process support, and various forms of analysis were provided by Ross & Associates Environmental Consulting, Ltd. during both Phases of the project. Process support from neutral parties was important for recruiting participation and managing the program development process to allow EPA and DEQ to be involved as project participants.

1.1.4 Pollutant and Market Area

The pollutant chosen for trading in the Lower Boise River watershed demonstration project is total phosphorus. The market area is from Lucky Peak Dam to the mouth of the Boise River, a distance of 64 miles. Preliminary modeling showed that phosphorus control is likely to be an effective way to improve water quality conditions and to protect beneficial uses in the Boise and Snake Rivers, and the Brownlee Reservoir (the first of three reservoirs in the Hells Canyon reach of the Snake River). If the Snake River-Hells Canyon or Boise River TMDLs establish load allocations for a different form of phosphorus, appropriate adjustments will need to be made to the trading framework. Trading is one tool for implementation of TMDLs, and a trading framework must incorporate the environmental objectives defined by each TMDL.

1.2 The Need to Trade in Idaho

Analytical efforts during Phase I determined that the effluent trading market in the Lower Boise River watershed will emerge gradually over the next several years, along with TMDL allocation decisions. Existing National Pollution Discharge Elimination System (NPDES) permits in the Lower Boise River watershed contain monitoring requirements, but do not include effluent limits, for phosphorus. In the short term, trading will be driven by Idaho's 'no net increase' (NNI) requirement for the Lower Boise River. State rules, at IDAPA[2] 16.01.02.054, call for 'no net increase' in discharges of 303(d) listed water bodies until a TMDL is established. The rules specifically allow effluent trading as a tool for meeting the NNI requirement. The NNI requirement effectively establishes a source-specific cap on phosphorus discharges to the Boise River.

In the longer term, trading may be driven by additional reduction requirements associated with the Lower Boise River and Snake River-Hells Canyon TMDLs, all expected by the end of 2001. TMDLs for several impaired Boise River tributaries are also due in 2001. All of these waterbodies are listed for nutrients. When the TMDLs are approved, the NPDES permits in the watershed may be modified to include a phosphorus limit and effluent trading provisions. Limits are not yet contained in the NPDES permits.[3]

The NNI and TMDL requirements that will emerge from the Lower Boise TMDL and Snake River/Hells Canyon TMDL may allocate significant phosphorus reductions from municipalities, industries, and nonpoint sources that discharge into these waterways. Effluent trading in the region could allow permitted facilities to coordinate treatment capacity development, purchase the necessary level of phosphorus reductions, and incorporate nonpoint source reductions into their overall reduction strategies. It is expected that nonpoint sources in the watershed will be subject to a load allocation for phosphorus, and the trading system is designed

[2] Idaho Administrative Procedures Act

[3] Idaho is not a delegated state for NPDES permits, so these permits are issued by EPA Region 10.

to ensure such sources are responsive to this allocation by means of a "water quality contribution" that is required of each trade involving a nonpoint source reduction. Importantly, the capability of nonpoint source reductions for trading may help ensure early nonpoint source participation in addressing pollutant problems in the watershed.

1.3 Demonstration Project Objectives and Principles

From the outset, participants agreed on the overall project objectives. These objectives were used to guide development of the trading framework. In addition to implementing the TMDL's environmental objective at less cost, the project's objectives were to develop a trading framework that:

- is legally defensible and enforceable;
- protects water quality;
- maximizes market flexibility and minimizes transaction costs;
- ensures trading activities are apparent to the public;
- does not create or exacerbate other environmental problems; and
- supports robust participation.

Project participants also came up with a series of design principles that articulate features the trading system should focus on to make trading desirable and robust, and to help achieve more cost-effective implementation of the TMDLs. These principles are included below.

- avoid trade-by-trade changes to the TMDL;
- avoid trade-by-trade changes to the NPDES permits;
- minimize trade-by-trade agency review;
- negotiate trades through private contracts;
- create environmentally equivalent reductions, or better;
- work within existing programs and processes; and
- provide clear and predictable permit compliance and enforcement.

To support the first three design principles, participants envisioned a program that would provide clear guidelines and requirements for trading to preclude the need for trade-by-trade review of most trades. Public notice, review, and comment, and agency approval of trading guidelines and requirements, are key to this approach.

Section 2: Overview of Trading in the Lower Boise River Watershed

2.1 Background

2.1.1 Trading Framework

The proposed framework describes the mechanisms, rules, and procedures for establishing effluent trading in the Lower Boise River watershed. It recommends including the authorization to trade in the TMDL and NPDES permits, subject to guidelines and requirements contained in the TMDL, permits, and the *Water-*

Quality Based Trading Requirements document. The *Water-Quality Based Trading Requirements* is a state document currently under development and is intended to guide trading in Idaho (hereafter referred to as the state trading document).

As proposed, trades will be developed and executed through:

- private contracts between trading parties;
- reporting requirements that register trades and transfer credits between seller and buyer in a trade database; and
- monitoring, reporting, and tracking requirements that establish nonpoint source reductions as marketable credits.

Both point and nonpoint sources may be able to create marketable credits. Nonpoint sources will need to follow specific design, maintenance, and monitoring requirements, apply discounts to credits generated if needed, and provide a water quality contribution to ensure a net environmental benefit. Finally, the proposed approach envisions a private, nonprofit association that will oversee trading and maintain the trade database. **Figure 3** shows the major elements of the trading framework. All of these elements are discussed in more detail in the following sections.

2.1.2 The TMDL, Permits, and Dynamic Trading

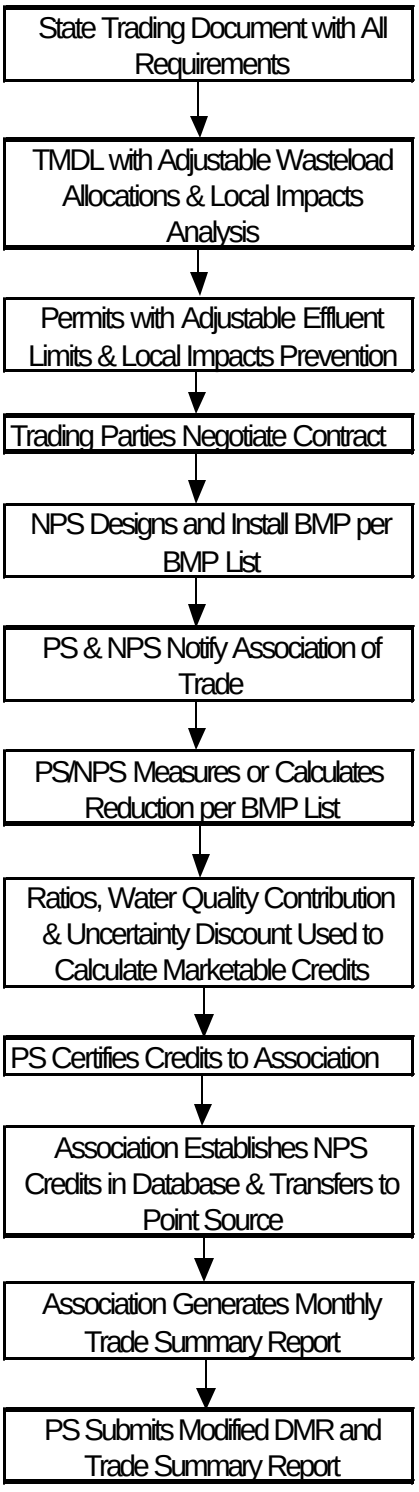
To understand the mechanisms, rules, and procedures for the proposed trading framework, it is helpful to begin with a description of how the TMDL, permits, and trade database would support trading. The TMDLs will contain base WLAs and load allocations (LA) for phosphorus, and will also contain provisions allowing the WLA to be adjusted by the creation and transfer of credits that comply with all requirements outlines in the TMDL, the permits, and the state trading document. As proposed, the authorization to create and transfer credits and the base WLAs in the TMDL (with the provision allowing for trading) will be used to develop effluent limits that will be incorporated into NPDES permits for point sources as base effluent limits for phosphorus, and the permits will contain provisions allowing the effluent limits to adjust when credits are created and transferred. The permits may also need to include provisions to limit the number of trades in certain parts of the watershed to prevent adverse impacts to local waterbodies.

The framework proposes that a trade database be readily available to the public and the regulatory agencies, to provide an accounting of all trades and credits. It will also provide information about adjusted effluent limits. This approach enables the pre-qualification of trades and permit modifications, thereby allowing permit holders maximum flexibility for frequent trading, and providing EPA and the public with key information about effluent limits and trades.

2.1.3 Private Contracts

Trading parties will agree on the specific terms of a trade by entering into a private contract. The contracts will identify the trading parties, phosphorus reduction measures that will be undertaken, trade amount, effective date, trade duration (how long the trade is valid), responsibilities of each party, price and payment provisions, and remedies for failure to deliver credits. Participants determined that private contracts are an important part of the proposed trading system because they allow nonpoint sources to enter into trades as a private business transaction (subject to trading rules). This was identified in Phase I as a key feature needed to encourage robust nonpoint source participation.

Figure 3 Summary of Trading Framework



2.1.4 The Association

As proposed, a private, nonprofit association, comprised of interested participants and all trading parties, will be responsible for trade tracking and the day to day management of trading. The association will help connect buyers and sellers, develop and maintain the trade tracking database, prepare a monthly watershed-wide summary of trades, and provide support to the trading system, as requested and agreed to by its members. As envisioned, the association will provide an important link among trading parties, the environmental agencies who would oversee the trading system, and the public. By maintaining the trade tracking database, the association will ensure that timely information about trades is available to the public and the environmental agencies.

A draft Business Plan, draft Articles of Incorporation, and draft By-Laws included in **Appendix A** provide more detail about the proposed Association, which will be named the Idaho Clean Water Cooperative when it is chartered.

2.2 Major Elements of the Proposed Trading Framework

The following describes the two different types of trading and associated requirements for trading that are proposed in the framework.

2.2.1 Types of Trades

***Point Source - Point Source Trading*:** For each point source, the TMDL will specify the base phosphorus WLA, and the source's NPDES permit will contain requirements that allow trading from an initial effluent limit that is derived from the base WLA.

An NPDES permit holder may voluntarily reduce its phosphorus discharge below its effluent limit by a particular amount for a particular calendar month. This will create a "credit" that may be transferred to another party. The credit will be transferred by submitting a *Trade Notification Form*,[4] signed by both the buyer and the seller, to the Association. The transfer of credit will reduce the seller's effluent limit by the amount of the credit "in local pounds."[5] Credits will be characterized by an amount of phosphorus per unit of time, fully consistent with Clean Water Act regulatory requirements that meets the needs of the TMDL WLA and LA.

A point source will be able to increase its effluent limit by receiving the transfer of a credit generated by a point source located within the same watershed (but subject to trading restrictions to prevent localized impacts, which are discussed later). Credits can only be used in the same month in which the underlying reduction occurred.

---

[4] Example *Trade Notification Form* is included in Appendix C.

[5] Local pounds reflect the value of the reductions at that point in the watershed, as explained in Section 2.2.3.

Each point source discharger is responsible for meeting its individual effluent limit, adjusted by trades, and EPA retains full enforcement authority in the event either party's adjusted effluent limit is exceeded. Point sources will use Discharge Monitoring Reports (DMRs) to report pollutant discharges that are affected by trades. DMRs will allow the permit holder to report actual discharge and trades for reporting purposes only.

Individual point sources may also have provisions in their permits that limit their ability to increase their discharge to prevent adverse local water quality impacts. Local impacts are discussed in more detail below.

***Point Source-Nonpoint Source Trading*:** A nonpoint source will be able to voluntarily reduce the amount of phosphorus it discharges. If a Best Management Practice (BMP) selected from the program's BMP list (discussed in Section 2) is installed and the phosphorus reduction is measured and documented according to the BMP's requirements, a "credit" can be created that may be transferred to another party. A nonpoint source credit will be established by submitting a signed *Reduction Credit Certificate* to the Association. This will establish the transferable credit in the nonpoint source's account. A nonpoint source credit will be characterized by an amount and a time period. The time period associated with a nonpoint source credit is the time period of the reduction. The amount of the credit is determined by the process described in the following sections that describe location ratios, delivery and site-location ratios, measured and calculated BMPs, and the water quality contribution.

A point source will increase its effluent limit for any month by receiving the transfer of a credit generated in the same month by a nonpoint source located within the same watershed. Nonpoint source credits will be transferred by submitting a *Trade Notification Form*, signed by both parties to the trade, to the Association. When nonpoint source reductions are used to adjust point source effluent limits, the point source will retain full responsibility for meeting its adjusted limit.

Nonpoint source credits will be transferable only after the project is installed, installation has been inspected by the point source or its designee, and the reductions have been verified through monitoring and established by submitting the *Reduction Credit Certificate*. The point source signs the *Reduction Credit Certificate*, certifying that the BMP has been properly installed, maintained, and measured. If EPA or DEQ later determines the credit's underlying reduction is invalid, then the credit is nullified and the point source's effluent limit is adjusted accordingly. EPA will retain full authority to enforce the point source's adjusted effluent limit. Mechanisms used to verify reductions include monitoring, trade information tracking (including use of a trade database), and record keeping and reporting (all discussed later in this section). The application of these verification mechanisms may be subject to audit (see Section 2.2.11).

2.2.2 Preventing Local Water Quality Impacts

The TMDLs for each water body will set base WLAs for point sources, which will be used to develop base effluent limits that will be incorporated in each NPDES permit. Since effluent trading allows wastewater treatment plants to discharge above their base effluent limits, adverse local water quality impacts could occur. NPDES permits must contain provisions that limit trading to ensure that discharge from permitted facilities will not cause or contribute to the exceedance of water quality standards.

There is a lower potential for localized impacts when the reducer is upstream of the increaser. However, the effects of an upstream reduction are less certain when there are diversions below the upstream source and above the downstream source. A mechanism is therefore needed to avoid trades that may cause exceedances of water quality standards.

If the increaser (buyer) is upstream of a decreaser (seller), there would be an expected net increase in phosphorus loadings in the stretch of the river between the two sources. The localized impacts strategy will have to ensure that the ambient water located between the increaser and the decreaser will not be adversely impacted by the increase in load.

If two sources are not both on the main stem or on the same tributary, then this may be problematic because there could be a net increase in phosphorus loading in the stretch immediately downstream of the increaser, before the tributary joins the main stem (or the two tributaries meet). While these concerns are valid, the TMDL analysis will examine the likelihood of these conditions occurring based on the Boise River's historical range of flow conditions. This will also be factored into its assessment of the best mechanism to prevent local water quality impacts.[6]

A participant work group evaluated options for preventing adverse local impacts as a result of trading. Determining an appropriate approach for preventing local impacts is complicated by the fact that the nutrient TMDLs for the Boise River, Fivemile Creek, and Indian Creek are not complete.[7] The work group evaluated two general strategies for addressing local impacts.

- Establish instream monitoring to track watershed response to trading (algae growth, dissolved oxygen levels, pH, etc). Limit trading as monitoring data indicates the need to do so to protect water quality.

- Conduct an analysis, ideally using modeling, to evaluate the relationship between instream phosphorus loads, impairment of beneficial uses, and the potential for exceedances of water quality standards.

The work group concluded that the TMDLs for the Lower Boise River and Hells Canyon/Snake River must be completed before a detailed approach using either or both of these strategies can be further evaluated. A more detailed approach to addressing localized impacts will be developed in conjunction with the TMDL. One approach under consideration is the use of point source caps on trading.

The proposed general approach for addressing local impacts calls for the Lower Boise TMDL to evaluate the potential for local impacts which may result in restrictions on an individual point source's ability to trade. The TMDL is expected to:

- interpret the narrative criterion for nutrients for the Boise River and its listed tributaries, translating the narrative criterion into appropriate numeric targets that can be linked to beneficial use restoration where impairment exists;

- identify reaches of those waterbodies subject to potential adverse local water quality impacts as a result of effluent trading;

- determine which sources or combination of sources could impact sensitive reaches;

---

[6] See Appendix D for DEQ's discussion of the potential TMDL role in addressing local impact concerns.

[7] Wastewater treatment plants discharge to each of these water bodies.

- evaluate the potential for local adverse impacts to water quality and propose a mechanism to ensure that a trade does not cause or contribute to an exceedance of water quality standards, including an analysis of water quality conditions to support the mechanism; and

- if necessary, propose any monitoring needed, in addition to that required for TMDL implementation, to verify that the limits on trading are supporting the maintenance of desired water quality.

2.2.3 Achieving Equivalent Reductions

Effluent trading ratios have been proposed to ensure that trades between sources distributed throughout a watershed result in environmentally equivalent outcomes at the point of environmental concern. River location ratios have been calculated for point source dischargers and for tributaries and drains at the confluence to the Boise River, to ensure equivalent outcomes at the mouth of the Boise River, in Parma, Idaho.

River Location Ratios: Pollutant sources in most watersheds are scattered along the river, and the entire pollutant load discharged by a source may not reach the mouth of the river. This is particularly true in the Lower Boise River watershed, where large irrigation diversions and return flows play a major role in determining phosphorus fate and transport. To account for this, river location ratios are proposed for each source. These were developed using a mass balance model that accounts for inputs, withdrawals, and groundwater. For a given source, the location ratio is equal to the amount by which the phosphorus loading at Parma would increase (or decrease) if one pound more (or less) were discharged at that location. Location ratios will be contained in the state trading document and each permit, and will be reviewed every five years. Adjustments will be made, if necessary, in coordination with the five-year NPDES permit cycle. See **Appendix B** for proposed river location ratios, a description of how they were calculated, and procedures for adjusting ratios in the future.

Drainage Delivery Ratios and Site Location Factors: When a reduction is accomplished somewhere in a sub-watershed above the point of discharge to the Boise River, drainage delivery ratios and site location factors will reduce the amount of marketable credits. This will be necessary because a 10 pound reduction at a location up in a drain or tributary from the mouth of the river may not result in a 10 pound reduction at the point of discharge to the Boise River due to the complex fate and transport mechanisms that affect phosphorus. These ratios were developed by the project's Agriculture Workgroup and adopted by the Framework Team (after determining that other models were inappropriate for this watershed) and represent their best professional judgment. Ratios will be located in the Idaho Trading Document, and potentially, in individual NPDES permits (the necessity of including them in the permits has not yet been decided). Irrespective of location, ratios will be subject to public review and comment.

Drainage delivery ratios account for transmission losses (e.g., uptake by vegetation, infiltration to groundwater, etc.) in a drain or tributary. The drainage delivery ratio for any project is calculated as follows:[8]

$$\frac{[100 - (\text{distance in miles to the mouth of the drain from the project's point of discharge})]}{100}$$

[8] Only those projects that result in reductions that show up at the mouth of the drain should receive credit. This is what the ratio calculation also supports.

Site location factors address the potential for diversion and reuse of water below the point of discharge to the drain or tributary. Proposed site location factors for the Lower Boise River watershed are:

	Site Location Factor
Land runoff flows into a canal, likely to be reused by downstream irrigators	0.6
Land runoff flows into a canal, likely to soon be spilled to a drain or stream	0.7
Land runoff flows to a downstream user and likely to be reused	0.8
Land runoff flows through downstream farms but not likely to be reused	0.9
Land runoff flows directly to a drain or stream through a culvert or ditch	1.0

These drainage delivery ratios and site location factors reflect the portion of the reduction that will be realized at the confluence of the drain or tributary with the river. The factors will have the effect of prioritizing projects in the marketplace by making the most valuable credits the ones most likely to benefit the river. This is because projects closest to the mouth of a drain or tributary will have the highest ratios and therefore result in the greatest number of credits for sale.

***Reviewing & Revising*:** River location ratios will be changed if altered flow conditions cause more than a 30% change in the calculated ratio for any particular source, and then only if changes in flow conditions represent a permanent change or trend, rather than normal year to year variability. River location ratios will be reviewed every five years. Analysis of possible extreme conditions revealed that river location ratios are highly unlikely to change in five year's time. Revised river location ratios will be effective immediately for new contracts, and existing contracts will have a three year period to implement revised ratios. The procedures for revising river location ratios is described in more detail in **Appendix B**.

Delivery ratios and site location factors will be reviewed every five years and adjustments made, if necessary, in coordination with the five-year NPDES permit cycle. Changes will be made if new information exists that improves the accuracy of the factors.

***Applying Ratios to Trades*:** The amount of transferrable credit that arises from a point or nonpoint source reduction will be expressed in terms of "Parma Pounds." A Parma Pound is the amount of phosphorus reduction expected in the Boise River at Parma as a result of the reduction at the point or nonpoint source. Parma Pounds will be determined by multiplying the amount of the reduction by the source's river location ratio, delivery ratio and site location factor (if applicable). This creates a common unit for measuring increases and decreases at different locations and will ensure that their effects on water quality offset each other. Trades are converted back into local pounds when they are reported in the Discharge Monitoring Report (DMR) (The DMR is discussed further n Section 2.2.9, Trade Information/Tracking).

When a point source purchases credits, ratios will also be applied to determine the amount by which the point source's effluent limit is increased. The number of purchased credits, in Parma Pounds, will be divided by the purchasing point source's river location ratio to convert to local pounds. The effluent limit will always be expressed in local pounds.

The process of determining equivalent loads in a trade involves these steps:

- Buyer's Need (in local pounds) * Buyer's River Location Ratio = Parma Pounds to purchase
- Seller's Reduction * Seller's Location Ratio * Delivery Ratio * Site Location Factor = Credits in Parma Pounds

C Buyer's Effluent Limit Adjustment = Parma Pounds Purchased / Buyer's River Location Ratio

Example:

Boise's Lander Street Plant:

- S phosphorus discharge will exceed effluent limit by 10 lbs;
- S river location ratio is 0.56.
- S Boise needs to buy: 10 lbs * 0.56 = 5.6 Parma Pounds

Mason Creek:

- S nonpoint source discharges to Mason Creek immediately upstream of the mouth of Mason, so both the delivery ratio and site location factor = 1.0.[9]
- S nonpoint source reduces phosphorus load by 40 lbs
- S river location ratio is 0.75.
- S Mason Creek source can offer: 40 lbs * 0.75 * 1.0 * 1.0 = 30 Parma Pounds

Trade:

- S Boise buys 5.6 Parma Pounds;
- S Boise adjusts its effluent limit by 5.6 Parma Pounds / 0.56 = 10 local pounds
- S Mason Creek now has 24.4 Parma Pounds still available for sale.

Re-Sale:

Boise's actual discharge of 6 pounds is less than expected, so it purchased more credits than necessary.

Boise re-calculates pounds needed at Parma, and sells the unneeded credits.

- S Boise needs: 6 local lbs * 0.56 = 3 Parma Pounds
- S 6 Parma lbs purchased - 3 Parma lbs needed = 3 Parma Pounds that can be resold.

2.2.4 Agricultural Best Management Practices (BMPs) in Point -Nonpoint Trades

Selected nonpoint source BMPs can be used to generate transferable credits subject to requirements outlined in a BMP List that will be developed for trading in the Lower Boise River watershed. The BMP List will describe which BMPs can be used for trading, as well as each BMP's procedures for determining the amount of credits and its monitoring requirements. In addition, trades involving nonpoint source credits will be required to set aside credits to benefit water quality (known herein as a water quality contribution) to ensure conformance with applicable TMDL phosphorus reduction targets and schedules when they are developed. All nonpoint source reductions will be determined in relation to the baseline conditions used to establish the TMDL. This means that assumptions regarding the determination of marketable credits must be consistent with the TMDL. The BMP List will specify acceptable methods for estimating baseline pretreatment load.

[9] Site Location Factor = 1, taken from page 15: " land runoff flows directly to a drain or stream through a culvert or ditch"; delivery ratio = 1 because there is no distance from the point of discharge to the mouth of the drain.

***BMP List*:** Trades using nonpoint source credits are subject to requirements set forth in the BMP List for trading. Generally, nonpoint source practices will be able to produce two kinds of credits: *measured credits*, and *calculated credits*.

- **Measured Nonpoint Source Credits**

  Any nonpoint source practice on the approved BMP List whose pollutant reduction results can be measured directly may be installed to generate measured credits. The BMP List will specify minimum design, construction and maintenance requirements (generally NRCS standards and specifications) and minimum monitoring requirements for measured credits. If these specifications are followed, then the measured reduction, adjusted by applicable trading ratios and the water quality contribution (described in a later section), can be used by a point source for permit compliance. Trading parties will be responsible for installation inspections to ensure that the BMP is installed according to plans and specifications, maintenance monitoring to ensure the BMP is maintained and repaired to continue its full functioning, and effectiveness monitoring to measure actual phosphorus reductions. Trading parties are also responsible for documenting the results of these monitoring activities to demonstrate that the nonpoint source is achieving the stated reduction, using monitoring methods specified in the BMP List.

  In addition, the trading parties will periodically inspect the installation and performance of the monitors to ensure their proper operation, as well as the ongoing implementation and overall effectiveness of the installed BMP and to make adjustments as necessary to maintain its proper functioning in order to achieve its full phosphorus reduction potential.

- **Calculated Nonpoint Source Credits**

  Calculated nonpoint source credits are those for which the amount of marketable credits will be determined by a calculation because direct monitoring of reductions is technically infeasible or too costly. Calculated credits will only be created from practices on the BMP List. The BMP List will include an equation for estimating pretreatment load,[10] design and construction criteria, monitoring requirements, operation and maintenance requirements, the credit duration, and the *uncertainty discount.* Generally, NRCS standards and specifications for nonpoint source practices will be the minimum requirements for design, construction, operation, and maintenance.

  The *uncertainty discount* is a multiplier that will reduce the number of transferable credits generated by a calculated nonpoint source reduction, to account for variability in the effectiveness of the practice. Site conditions and seasonal variations in flow and load are examples of factors that produce variability in the effectiveness of a practice. The design, construction, operation, and maintenance requirements for each practice will help reduce uncertainty and prolong the BMP's effectiveness.

  Required monitoring for calculated credits begins with installation inspections and their complete documentation to ensure that the BMP is installed according to plans and specifications and to

[10] The use of "pretreatment" in this context should be distinguished from its use in the NPDES program. For purposes of nonpoint source practices, pretreatment refers to the nonpoint source phosphorus loading in the TMDL baseline year.

establish the start date for a nonpoint source credit. This includes maintenance inspections to ensure the BMP is operated and maintained according to requirements. The trading parties are expected to make any necessary adjustments to achieve the installed BMP's expected performance, and to document those adjustments as part of the BMP's record.

The components of the initial BMP list are being prepared by project participants, under the technical direction of the BMP Technical Committee, with a target completion date of March 2001. The BMP Technical Committee is a standing work group, facilitated by the SCC, with representatives from EPA, DEQ, NRCS, ARS, SCC, other members with technical expertise on specific BMPs, farmers likely to use the BMPs, and other interest groups. The BMP List will be included in the state trading document and may also be included in the NPDES permits so that public participation in the development and modification of the BMP List will be provided. **Figure 4** is a listing of initial BMPs proposed for consideration. This list will be refined as the BMP list is constructed.

2.2.5 Adding BMPs to the BMP List

After preparation of the first BMP List, practices can be added to the List by following the steps outlined below. Practices could be added to the BMP List in the state trading document at any time. However, if the BMP List is included in the NPDES permits, new BMPs will not become eligible for trading unless they are added to the permits when reissued. If a BMP with exceptional potential is proposed, it may be possible to modify permits to include the new practice before the permits are reissued. If the BMP List is only referenced in the permit, the permit may still need to be reissued or modified. The TMDL may face a similar issue if the BMP List is included or directly referenced in it.

STEP 1: Prepare and Submit Proposed BMP Package

As currently envisioned, new practices, as well as practices already on the APAP list,[11] can be nominated by anyone for inclusion in the BMP List, but each proposed BMP package must contain a description of the BMP and how it works; where the BMP should be applied (appropriate site conditions); potential side effects and ancillary benefits; monitoring requirements; design, installation, operation, and maintenance requirements; a method for calculating credits (for calculated credits only), including BMP efficiency and an uncertainty discount; and substantiating information. The proposed BMP package will be submitted to the Association.

STEP 2: **Initial Screening of BMP Proposal**

The Association will perform an initial screening of the package for completeness and forward complete packages to the BMP Technical Committee.

STEP 3: Review Process and Criteria for BMP Consideration

The BMP Technical Committee will review the package within 90 days, or report how much more time is needed (and why) to the party submitting the BMP for review. If the proposed BMP is already included in

[11] The Idaho Agriculture Pollution Abatement Plan is Idaho's response to Section 208 of the federal Clean Water Act (PL 92-500), detailing how agricultural nonpoint source pollution is to be managed. This includes a list of nonpoint source Best Management Practices that can be used in Idaho to achieve water quality benefits.

the APAP, then the committee will only review the effluent trading portion of the BMP package and related supporting documentation for its consideration on the effluent trading BMP List. If the BMP is not included in APAP, then the committee can decide to postpone their review until it is incorporated in the APAP, or proceed to add it to the effluent trading BMP List if it is acceptable. If the proposed BMP involves new technology or methods for which data and experience are insufficient to support a credit calculation, then the BMP will initially only be approved as a measured BMP, if the monitoring is scientifically credible and not cost prohibitive.

STEP 4: DEQ Concurrence, Public Notice and Comment

If the BMP Technical Committee recommends the BMP, it is forwarded to DEQ for concurrence. A public notice and comment process for any new BMP will be followed according to the requirements specified in the state trading document. The public notice and comment is limited to the new BMP, and not to the program or the list of BMPs that have already been approved.

STEP 5: Final Decision, Addition to BMP List

DEQ will revise the BMP based on public comments, in consultation with the BMP Technical Committee, and issue its final decision. If it is approved, the BMP will then be added to the list of BMPs that have been approved.

Revisions to BMPs that have already been approved will follow the same process as for adding a new BMP. BMP revisions may be triggered by the monitoring results or any other monitoring of the BMP's overall effectiveness and impact on other environmental parameters, as well as research of the BMP's performance on other sites.[12]

2.2.6 Monitoring for Measured Trades

The participants used a measured wetland as a model for how measured trades might be approached. They determined that, at a minimum, the inflow to a nonpoint source BMP, outflow from the BMP, and phosphorus monitoring of the BMP are necessary for establishing marketable credits for a measured nonpoint source reduction.

A scientifically credible method to measure the amount of phosphorus removed by a BMP needs to be developed for each individual BMP. As part of the monitoring program, sampling frequency will need to be developed, which may be determined from a statistical analysis of the BMP's actual performance. Where there are sufficient data to characterize concentration conditions for a BMP, the coefficient of variation (CV) would be calculated from the data. In the absence of concentration and flow data, the CV from similar BMPs will be used. However, the participants agreed that monitoring methods for all BMPs, including measured wetlands, are still in the beginning stages of development and will need to be completed by the BMP Technical Committee.

[12] Note: It has not yet been determined who will be responsible for ensuring the BMP's design, maintenance, and monitoring requirements are modified.

Figure 4

DRAFT Best Management Practices with Total Phosphorus Control Capability (Example)

Practice Name	Unit	Practice Code	Standard Issuer	Standard Date	Notes
Buffer Strips	ft	307	Idaho	Feb-90	
Constructed Wetland	ac	656	Idaho	Feb-99	
Filter Strip	ac	393	National	Apr-82	Vegetative filter strip
Grassed Waterway	ac	412	Idaho	Jul-99	
Irrigation System, Sprinkler	no & ac	442	Idaho	Jul-99	
Irrigation System, Surface & Subsurface	no & ac	443	Idaho	Jul-99	Used for Surge systems
Irrigation System, Trickle	no & ac	441	National	Apr-82	
Irrigation System, Tailwater Recovery	no & ac	447	National	Oct-78	Also known as pump-back system
Irrigation Water Conveyance, Pipeline, Low Pressure Plastic	ft	430EE	National	May-88	Intended for replacing erosive ditches
Irrigation Water Conveyance, Rigid Gated Pipeline	ft	430HH	National	Oct-85	Used for Surge systems
Irrigation Water Management	ac	449	National	Oct-77	
Mulching	ac	484	National	Oct-77	Straw mulching
Nutrient Management	ac	590	Idaho	Jun-99	
Pastureland & Hayland Planting	ac	512	Idaho	Feb-99	
Residue Management, No-till & Strip Till	ac	329A	Idaho	Feb-99	Conservation tillage
Residue Management, Mulch Till	ac	329B	Idaho	Feb-99	Conservation tillage
Residue Management, Ridge Till	ac	329C	Idaho	Feb-99	Conservation tillage
Sediment Basin	no	350	Idaho	Feb-99	Sediment pond
Underground Outlet	ft	620	National	Oct-90	Carter System, Pipe & Riser System
Waste Management System	no	312	National	Apr-79	For dairies, feedlots, processing
Waste Storage Facility	no	313	Idaho	Apr-97	For dairies, feedlots, processing
Waste Treatment Lagoon	no	359	National	Jun-84	For dairies, feedlots, processing

The participants recommend that the inflow, outflow and phosphorus be measured more frequently during the first two years of project operation, or longer if necessary, to establish baseline information and the CV for that system. This information would then be used to adjust the frequency of monitoring, as necessary, to ensure appropriate statistical rigor.

Additionally, an approach for measuring the potential for phosphorus losses to ground water may need to be considered if phosphorus is likely to infiltrate to ground water within the life span of the trade. A proposed monitoring approach is described in more detail in materials describing the point source-nonpoint source model trade in **Appendix D**.

2.2.7 Nonpoint Source Water Quality Contribution

The parties assume that the Snake River-Hells Canyon TMDL nonpoint source load allocation will be less than the nonpoint sources are discharging at the time the TMDL is issued. Therefore, when a nonpoint source voluntarily reduces its phosphorus load, only part of the reduction can be available for sale if TMDL water quality objectives are to be met, since the sold portion could be offset by a point source increase. The Snake River - Hells Canyon TMDL, and the nonpoint source practices identified in the Implementation Plan for the TMDL, are expected to determine the nonpoint source measures that need to be accomplished for the Lower Boise River. The trading system's approach for ensuring TMDL conformance assumes that:

- both point and nonpoint sources will receive a phosphorus allocation based on the Snake River - Hells Canyon TMDL; and
- the Snake River - Hells Canyon TMDL Implementation Plan will rely on voluntary mechanisms to achieve nonpoint source load allocation targets.[13]

The approach is designed to create incentives for nonpoint source reductions to take place well in advance of when load allocation responses would otherwise be expected, produce equivalent or better TMDL implementation, and ensure the trading system requirements reflect the current regulatory landscape, while maintaining the ability to incorporate regulatory obligations if they emerge in the future. The following elements characterize the approach.

Element #1: No Double Counting. A trading rule will specify that nonpoint source phosphorus reductions made in response to water quality regulatory obligations for phosphorus will not be creditable for trading purposes.

Element #2: Each Point - Nonpoint Trade Will Make A Water Quality Contribution. A trading rule will require Request for Proposals (or equivalent trade solicitation instruments) and private contracts executing trades to include minimum voluntary water quality contribution provisions reflecting established guidelines (see Element #3 for guidelines).

---

[13] Note: DEQ is still determining the sequence of events that will result in allocations for the Snake River-Hells Canyon and Lower Boise River TMDLs, both of which are due at the end of 2001. If the Snake River-Hells Canyon TMDL allocates a load at the mouth of the Boise River, the load may be reallocated in more detail in the Lower Boise River phosphorus TMDL. This proposal assumes that the Snake River-Hells Canyon TMDL will call for larger phosphorus reductions than the Boise River TMDL; however the outcome is not certain. Once the allocations and TMDL reduction goals are better understood, it may be necessary to specify water quality contribution levels commensurate with the Lower Boise River phosphorus TMDL or Implementation Plan.

Element #3: Guidelines for Minimum Water Quality Contributions Will Be Established in Two Ways. The Lower Boise River Effluent Trading Project Framework Team has recommended water quality contribution levels for trades verified and registered prior to completion of the Implementation Plan. This proposal would be formalized as a trading rule in the state trading document.

The Snake River - Hells Canyon TMDL Public Advisory Team (PAT) will recommend to DEQ water quality contribution levels that will apply for all parties verifying and registering trades after Implementation Plan completion. The PAT will recommend contribution levels commensurate with any nonpoint source load allocation's size, scope, and implementation schedule.

Element #4: Minimum Water Quality Contributions Will "Scale Up" in Response to Snake River - Hells Canyon TMDL LA Objectives. There would be three trading phases with respect to what an appropriate water quality contribution should be.

- Phase I begins with the first trade and continues through December 31, 2001, the deadline for the Lower Boise River TMDL. For any trade verified and registered during this period, the water quality contribution would be:
  1) applied to the reduction goals established by the Snake River - Hells Canyon TMDL; and
  2) 10% of the nonpoint source credit amount for up to five years, and 20% for any time remaining until the point source with whom the nonpoint source is trading is required to comply with its phosphorus limit.

The TMDL or Implementation Plan would set the water quality contribution that applies after the point source compliance date, in an amount that ensures that the trade conforms with the TMDL and Implementation Plan targets. The initial Phase I water quality contribution would be set through a trading rule incorporated by DEQ in the state trading document.

- Phase II runs from January 1, 2002 through completion of the Implementation Plan (expected in mid 2003). For any trade verified and registered during this period the water quality contribution would be:
  1) applied to the reduction goals established by the Snake River - Hells Canyon TMDL; and
  2) 20% of the nonpoint source credit amount until the point source compliance date. The TMDL or Implementation Plan would set the water quality contribution that applies after the compliance date of the permittee involved in the trade, in an amount that ensures that the trade conforms with the TMDL and Implementation Plan targets, and that the point source's permit satisfies applicable legal requirements. The Phase II water quality contribution would be incorporated by DEQ into the state trading document.

- Phase III, begins at Implementation Plan completion and runs indefinitely. All trades executed during Phase III would have a water quality contribution that ensures each trade fully conforms with the TMDL and Implementation Plan-driven nonpoint source targets and actions, as well as all NPDES applicable permitting requirements of the point source.

The date at which the water quality contribution for a particular trade would be required to conform with TMDL targets and goals will align with the date when the NPDES permittee is required to comply with its effluent limit. For example, if the TMDL is completed December 31, 2001 and permits are re-issued June 30, 2003 with a five-year compliance schedule, the compliance date would be June 30, 2008. Successful application of this approach to watershed-wide trading assumes permits will be issued on a watershed basis.

Element #5: Each Nonpoint Source Trading Participant Will Be in Full Conformance with Implementation Plan Targets and Actions. Each nonpoint source phosphorus trading participant will be in full compliance with any water quality-based regulatory requirements for phosphorus that may be promulgated and in full conformance with phosphorus-related TMDL and Implementation Plan targets and actions by the date required in the Implementation Plan. Phosphorus-related actions required for compliance and/or conformance will not create creditable phosphorus reductions after the prescribed dates. Compliance and/or conformance become a prerequisite for trading, and only reductions that go beyond the associated requirements will produce creditable reductions.

The Snake River - Hells Canyon TMDL or Implementation Plan will clearly specify how a nonpoint source trading party demonstrates conformance with TMDL and Implementation Plan phosphorus reduction targets by specifying the future water quality contribution that will be required of each point source-nonpoint source trade.

2.2.8 How a Nonpoint Source Project is Prepared

As proposed, any agricultural phosphorus reduction project that intends to generate marketable credits will be required to prepare a farm or project plan. A qualified professional[14] preparing a plan will select and properly design appropriate BMPs to improve water quality at a specific location. Proper planning will help ensure projects result in real water quality improvements. The process for developing a plan will depend on whether the project is a farm-scale project or a watershed-scale project. **Table 2** summarizes the requirements for developing plans for effluent trading projects.

Farm-Scale Projects: All farm-scale agricultural BMP projects involving cost-share funds will be required to develop a farm plan using the conservation planning process. Under this process, technicians from the NRCS or the SCC, in cooperation with the farmer, assess farm conditions and problems, identify appropriate BMPs, develop a farm plan including detailed BMP design, and identify possible funding sources to help implement the plan.

Farmers developing projects for effluent trading who are not seeking cost-share funds will be strongly encouraged to use the conservation planning process, but also may choose to develop a private plan using a

[14] A qualified professional could be any of the following: an NRCS certified planner or an NRCS employee, a certified crop advisor, or a professional engineer. Some BMPs, such as a constructed wetland, will require consultation with other experts as well. Some BMPs on the list may specify the type of expert that will need to be consulted in the project's design, installation, and maintenance requirements.

qualified professional. If a farmer elects to develop a private plan, the plan must meet the following requirements:

1) be designed with the goal of improving water quality;
2) meet all applicable laws and regulations (wetlands, stream channel alteration, etc); and
3) cause no significant adverse impacts to water quality or other resources (i.e., cannot violate water quality standards).

Whether the plan addresses resource issues other than water quality is up to the farmer. A qualified professional will need to develop detailed plans and specifications for the BMPs and must inspect the BMP to ensure that it was properly installed.

Watershed-Scale Projects: Under the new Idaho agriculture cost-share program, watershed-scale projects may be eligible for cost-share funds. All watershed-scale projects involving cost-share funds are required to develop a project plan using the conservation planning process.

Parties developing watershed-scale projects for effluent trading, who are not seeking cost-share funds, will be encouraged to use the conservation planning process, but also may choose to develop a private plan using a qualified professional. If a party elects to develop a private plan, the plan must meet the same requirements as a private plan for a farm-scale project. In addition, a qualified professional, as described above, will be required to prepare detailed plans and specifications and inspect the installation. Watershed-scale project plans are likely to need a professional engineer and/or consultation with other professionals for some types of BMPs (e.g., constructed wetlands).

Table 1. Summary of required planning for effluent trading projects.

Type of Project	Projects with Cost Share	Projects without Cost Share
Watershed Scale Calculated Credits	Project Plan Required	Not expected at this time
Watershed Scale Measured Credits	Project Plan Required	Plan Required, Conservation Plan Preferred, Private Plan OK
Farm Scale Calculated Credits	Conservation Plan Required	Plan Required, Conservation Plan Preferred, Private Plan OK
Farm Scale Measured Credits	Conservation Plan Required	Plan Required, Conservation Plan Preferred, Private Plan OK

2.2.9 Trade Information/Tracking

A proposed trade tracking system has been designed to ensure accountability of reductions sold and purchased, and to provide the public with a means of readily tracking trades that have occurred. Key elements of the trade tracking system are record keeping and reporting, and a trade tracking database. Trading parties will be required to gather documentation and retain specific information pertaining to trades, and report selected information to the Association. The Association maintains the trade tracking database

as well as individual trade and account information, and produces a summary of the month's recorded trades for all trading parties. Point sources will submit the trade summary to EPA with their monthly DMRs. A conceptual plan for trade record keeping and tracking is included as **Appendix C**.

Trade Database: The trade database will be established and maintained by the Association. Major functions of the Association are:

- accepts and reviews trades to ensure completeness and consistency with trading program requirements, and does not accept trades that do not meet program requirements;
- track all trades in a central repository;
- reconcile all trades in the market area to ensure credits are not used more than once;
- make key trading information and adjusted effluent limits readily available to regulatory agencies and the public; and
- produce reports required for permit compliance.

***Record Keeping/Reporting*:** Trading parties will be required to generate and maintain records to substantiate the validity of underlying reductions of the credits, and to document trades. In particular, point sources using credits from nonpoint source reductions will be required to maintain monitoring records to verify the validity of nonpoint source credits used to adjust a base effluent limit. These records must be made available to EPA and DEQ upon request.

A *Trade Notification Form* will be required for each trade. This document will officially register the trade, transfer credits from the seller to the buyer, and adjust the effluent limit(s), subject to credit verification for nonpoint source credits. The *Trade Notification Form* will be signed and submitted by both parties. For trades involving nonpoint source credits, a *Reduction Credit Certificate* must also be submitted by the point source to document the nonpoint source reduction and 'create' the credit, applying the BMP site's river location ratio, drainage delivery ratio, site location factor, and the water quality contribution factor to calculate the amount of creditable reduction in "Parma Pounds." The established credits can then be transferred to and used by the point source. In signing the *Reduction Credit Certificate*, the point source will certify that the monitoring information is true, accurate and complete, that the BMP has been installed, maintained, and monitored as required in the BMP List, and that the credit is calculated as set forth in the BMP List.

If the point source purchases a credit established by a nonpoint source but initially sold to another party who signed the *Reduction Credit Certificate*, the point source using the credit must verify for themselves that the credit, and the underlying reduction it represents, are valid. In signing the *Trade Notification Form*, the point source is certifying that they have done so. Sample forms with certification language are included in **Appendix C**.

Point sources involved in a trade will use DMRs to report pollutant discharges that are affected by trades. The DMR will require the permit holder to report actual discharge and trades. It will show the pre-printed base limit, and require the reporting of actual discharge and the trades the point source has entered into that are applicable for the month. DMRs are to be submitted to EPA within 45 days after the end of each compliance period. This gives a point source time to complete sample analysis for any nonpoint source monitoring conducted near the end of the month and find replacement credits if its actual discharge exceeds the sum of its base effluent limit plus the net total of any purchase and/or sale of credits it has entered into for that month. A permit violation will occur when the amount of the point source's actual discharge exceeds the amount of its base limit plus the net total of its purchase and/or sale of credits. By including actual

discharge for reporting purposes, information about actual measured discharge will continue to be available to the agencies and the public. An example of the DMR is included in **Appendix C**.

A point source purchasing credits will be responsible for submitting the *Trade Notification Form* (signed by each party) to the Association. For trades involving nonpoint sources, the point source will also submit the signed *Reduction Credit Certificate* to the Association. The Association will prepare and send the *Trade Summary Report* on a monthly basis to the point source, and the point source will submit the *Trade Summary Report* to EPA along with the DMR. An example of the trade summary report is included in **Appendix C** in the trade tracking conceptual plan.

If there is no Association to facilitate trading, DEQ will maintain the trade tracking database. Trading parties will be responsible for submitting official trading forms to DEQ, and DEQ will produce the *Trade Summary Report* for point sources to submit to EPA along with their DMRs.

2.2.10 Market Participation

As proposed, credits may be created by a point source that voluntarily reduces its effluent limit and by a nonpoint source that creates credits consistent with the conditions specified in the TMDL, NPDES permits, and the state trading document. Credits may be purchased by anyone. Credits may be used only by NPDES permitted facilities to adjust effluent limits as described herein.

Indirect dischargers (facilities that discharge to wastewater treatment plants) have expressed interest in having the opportunity to participate directly in a market. Under the framework proposed herein, any indirect discharger may enter into a private agreement with the wastewater treatment plant to share any economic benefits the facilities may gain from the trading system. Proposing the conditions and procedures under which indirect dischargers could directly participate in a market was determined to be outside the scope of the demonstration project at this time. However, it may be possible to develop a workable strategy in the future.

2.2.11 Audits of Trades

Under the proposed framework, trades will be audited through the regular verification and inspection procedures for NPDES permits. Currently, EPA and DEQ share responsibility for permit inspections in Idaho. They will review information related to trades as part of regular permit inspections. All NPDES permit records-retention and compliance requirements will apply to records related to trades and the nonpoint source site's BMP performance, and the BMP's phosphorus reduction. EPA and DEQ will review DMR reports and listed trades, compare them to the monthly *Trade Summary Report*, and investigate any anomalies. Inspections of point source records could include review of documents related to the BMP performance and the BMP's phosphorus reduction.

Credits purchased by an NPDES permit holder generated by a nonpoint source BMP will be subject to on-site reviews by the SCC, at the request of EPA or DEQ.[15] Language is included in the *Trade Notification Form*

[15] It has also been suggested that the USGS could potentially play a role in providing monitoring in

(continued...)

(See **Appendix C**) that grants permission for site access to the point source involved in the trade, the Soil Conservation Commission who may be called upon to conduct a review, as well as Idaho DEQ and EPA. This language clarifies that on-site review is to be conducted solely for the purpose of verifying the reduction mechanisms, and ensuring NPDES permit-holder compliance with the trading program's requirements.

Additionally, the SCC, DEQ, and EPA are drafting a Memorandum of Understanding (MOU) to clarify fully the procedures, roles, and responsibilities with respect to on-site reviews. It is anticipated that provisions of the MOU will include EPA follow up with any NPDES permit holder enforcement action deemed necessary based on the information provided by the SCC. The NPDES permit holder would be provided with a copy of the SCC report.

2.2.12 Model Trades

Participants in the Lower Boise River demonstration project developed two model trades to help better understand the issues and more clearly develop trading mechanisms and procedures. A hypothetical trade between the Cities of Boise and Middleton served as the model point source-point source trade. In this trade, the City of Middleton purchased credits from the City of Boise. A hypothetical trade between the City of Boise and Pioneer Irrigation District served as the model point source-nonpoint source trade. This trade assumed that Pioneer Irrigation District developed a sediment pond-wetland treatment system near the mouth of Mason Creek to treat part of Mason Creek's flow. Measured reductions from the treatment system were 'sold' to the City of Boise.

The model trades were used to evaluate practical issues associated with trades and develop key trading tools. Materials developed for both model trades are included in Appendix D. Both model trades include key assumptions and a description of the trade, a step by step description of the trade process, model contracts, and an outline of potential permit elements covering the trading portion of the permit. In the Boise-Pioneer Irrigation District model trade, participants also have prepared a preliminary draft conceptual design of the treatment system, evaluated the economics of the trade, and developed a preliminary draft of the monitoring requirements for a measured wetland treatment system.

2.2.13 Model NPDES Permits

The draft permit language is presented as an outline of sections that an NPDES permit would need to include to support trading, with draft language for many sections. The draft outline has three sections to cover all types of trading, with the unique requirements of each for the following types of trading highlighted with the text in italics. The language in the outline addresses the major elements of effluent trading only. It is not meant to address all conditions that may be incorporated into the final permit to allow effluent trading. More detailed language will be developed as the effluent trading project is finalized.

< *Point Source-Point Source downstream trades*, in which a point source discharger is buying phosphorus credits from another point source discharger located on the same river, and downstream of its facility;

---

[15] (...continued)
support of site inspections.

< *Point Source-Point Source upstream trades*, in which a point source discharger is buying phosphorus credits from another point source discharger located on the same river, and upstream of its facility; and

< *Point Source-Nonpoint Source trades*.

The draft outline and model permit language also includes a notes section that applies to all three types of trades. This section identifies potential concerns and areas where additional development is needed, which are also highlighted in the section "Remaining Work Areas For the Implementation Phase."

Section 3: Trade Processes

This section provides two examples of the process for negotiating and executing a trade. Example 1 and **Figure 5** show the steps for developing and executing a point source-point source trade. Example 2 and **Figure 6** show the steps for developing and executing a point source-nonpoint source trade.

3.1 Point Source-Point Source Trade (Example 1)

Generally, two point sources engaged in trading will follow the steps described below and shown in **Figure 5**. Specific trade tracking requirements are italicized.

1) Trading parties are identified.

2) Trading parties negotiate and sign trade contract, including:
   - **S** amount of credits to be transferred in Parma Pounds, effective date, and trade duration (how long the trade is valid)
   - **S** price and payment arrangements

3) *Buyer and seller sign and submit official Trade Notification Form*
   - **S** identifies amount, effective date, and trade duration
   - **S** transfers authority to discharge from seller to buyer

4) *Trade information entered into trade database*
   - **S** trade participants
   - **S** effective date and duration of trade
   - **S** amount of trade in Parma Pounds
   - **S** credits are transferred from seller to buyer for duration of trade
   - **S** a trade confirmation report is sent to the trading parties

Ongoing Requirements:

1) *Monthly DMRs (or other specified frequency)*
   - **S** actual discharges in local pounds

- trades (as debits or credits) in Parma Pounds
- ratios (used to convert Parma Pounds to local pounds)
- adjusted discharge (actual discharge plus/minus trades in local pounds)

2) *Monthly Trade Summary Report (or other specified frequency)*
   - prepared by the Association and shows all trades affecting permittees in the market area, in Parma Pounds

3.2 Point Source-Nonpoint Source Trade (Example #2)

Generally, a point and nonpoint source engaged in trading will follow the steps described below and shown in **Figure 6.** Specific trade tracking requirements are italicized.

1) Trading parties are identified.

2) Water quality contribution calculated for nonpoint source participant.

3) Trading parties negotiate and sign trade contract, including:
   - amount of credits to be transferred in Parma Pounds (based on calculation in BMP List, or estimate of measured credits), effective date, and trade duration
   - specific nonpoint source practice that will achieve the reduction
   - required monitoring
   - price and payment arrangements
   - remedy for failure to deliver credits

4) Seller installs phosphorus reduction measure (if not already in place)

5) *Nonpoint source practice installation inspected/buyer signs and submits first Reduction Credit Certificate.*
   - specifies number of credits created in Parma Pounds and credit duration
   - certifies practice installed according to requirements
   - certifies monitoring conducted according to requirements
   - certification based on information provided by seller, buyer's representative or third party mutually agreed upon

6) *Buyer and seller parties sign and submit official Trade Notification Form*
   - identifies amount in Parma Pounds, effective date, trade duration, measured or calculated trade
   - authorizes buyer to discharge, subject to credit verification
   - authorizes access the BMP by the NPDES permit holder, Soil Conservation Commission, DEQ, and EPA, solely for the purpose of regulatory compliance of the NDPES permit holder.

7) *Trade information entered into Trade Database*
   - trade participants
   - effective date and duration of trade
   - effective date and duration of first credit transfer

Figure 5
Point-Nonpoint Trade

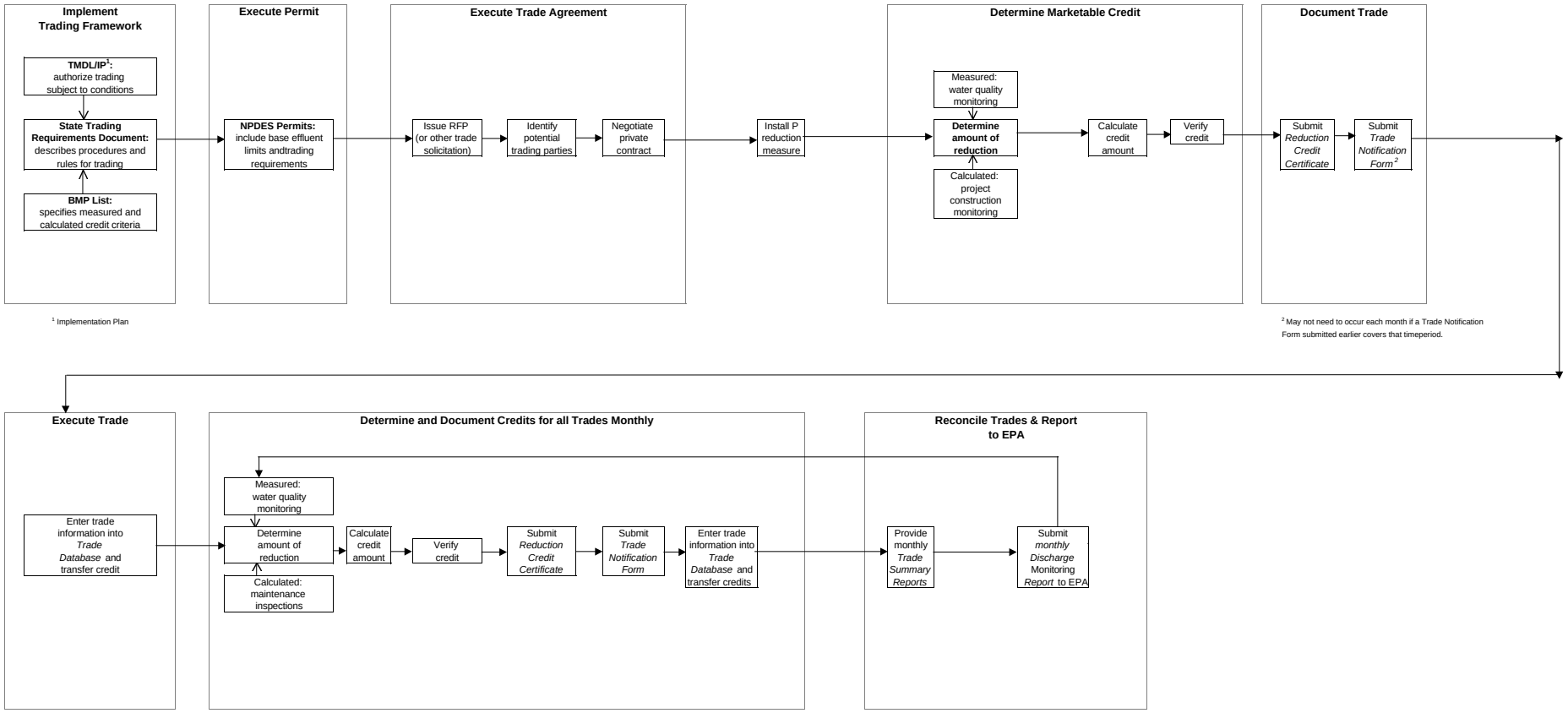
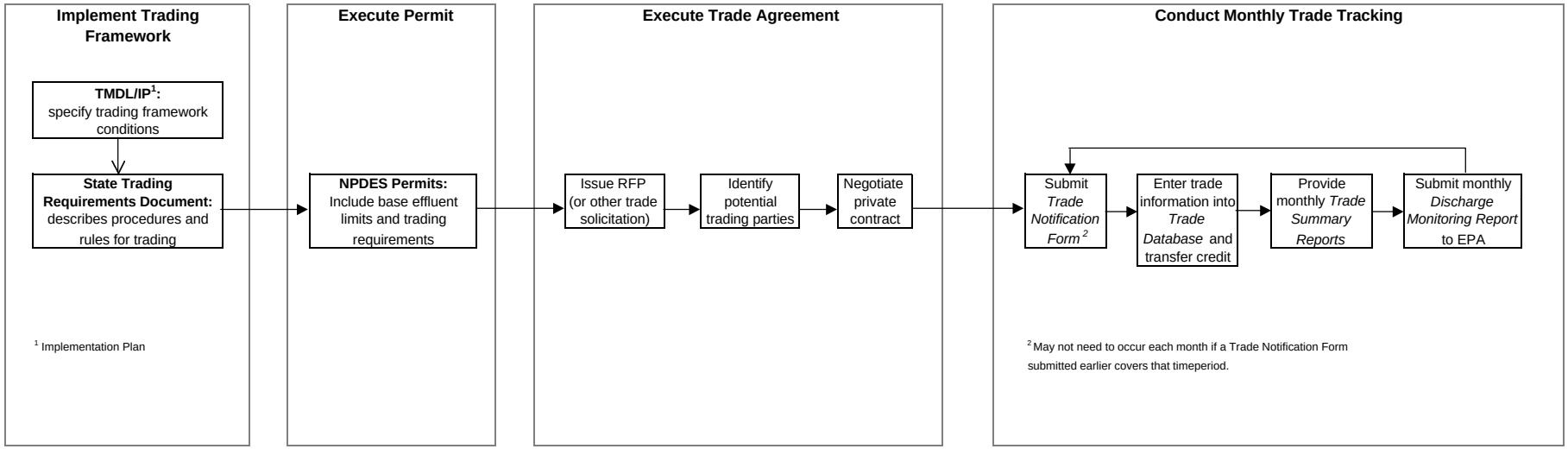


Figure 6
Point-Point Trade



- amount reduced in Parma Pounds
- a trade confirmation report is sent to the trading parties

Ongoing Requirements

1) *BMP-specific monitoring and record keeping*

2) *Monthly DMRs (or other specified frequency)*
   - actual discharges in local pounds
   - trades (as debits or credits) in Parma Pounds
   - ratios (used to convert Parma Pounds to local pounds)
   - adjusted discharge (actual discharge plus/minus trades in local pounds)

3) *Monthly Trade Summary Report (or other specified frequency)*
   - prepared by the Association and shows all trades affecting permittees in the market area, in Parma Pounds and submitted with the monthly DMR.

4) *Monthly Reduction Credit Certificate (or other specified frequency)*
   - specifies number of credits created in Parma Pounds and credit duration
   - certifies practice maintained according to requirements
   - certifies monitoring conducted according to requirements
   - reports the actual reduction amount, based on measured results achieved or calculated
   - credits are entered in seller's account and transferred upon receipt of each *Reduction Credit Certificate*.

Section 4: Next Steps

The Framework Team held its final meeting on April 21, 2000. This meeting marked the transition from the design phase of the project to the implementation phase. To support this transition, the Framework Team agreed to an action plan for future work, which is included in **Appendix E**. The purpose of the plan is to outline roles and responsibilities, major tasks, and a time line for the next phase of the project. The plan is complemented by an interagency agreement that identifies the responsibilities several agencies have accepted for supporting the project in the future (**Appendix F**). Work must be completed in the following areas to move the project into full implementation: assumption of the lead agency responsibility for overseeing project completion, completion of the TMDLs, completion of the BMP List and related work to support agriculture participation in trading, launching the association, developing the trade tracking database, and inter-agency agreements on assistance in NPDES audits of trades involving nonpoint source reductions.

Many of the elements of the proposed trading framework have been designed, with the principal exception of those that will be addressed in the TMDLs. The Lower Boise River TMDL will include an evaluation of the potential for adverse local water quality impacts and an approach for preventing local impacts. The TMDL or Implementation Plan will also outline what specific actions a person or entity generating nonpoint

source credits must take to establish a water quality contribution that demonstrates conformance with the goals and targets established for nonpoint sources of phosphorus.

Major tasks that will be completed to support implementation of the trading system are outlined below. The action plan in **Appendix E** includes a more detailed outline of tasks and target dates.

- DEQ will complete the TMDLs for the Lower Boise River, listed tributaries and the Snake River-Hells Canyon, incorporating key elements necessary to support trading in the appropriate documents.
  Target Date: December 31, 2001

- DEQ will draft, and conduct a public review and comment process for, the trading requirements document (regulatory vehicle for this document still under consideration). EPA will review and approve the initial document and any subsequent revisions. The document will describe the trading framework, specify the conditions and procedures for trading, and include ratios and the BMP list.
  Target Date: First draft by December 31, 2000; June 2001, 2nd draft with BMP list; Final draft, December 31, 2002

- The SCC will coordinate preparation and review of key elements of the BMP List, and will provide technical support to persons and organizations interested in marketing agriculture nonpoint source reductions as described in the interagency agreement. Review of the BMP List will be provided by the BMP Technical Committee.
  Target Date: Draft BMP List by March 2001

- SWIRCD and the Association Work Group will establish and seek funding to support the Association.

  Target Date: Establish Association September 2000; Obtain initial funding for the Association December 2000

- The Association will complete development of an initial trade tracking database.
  Target Date: June 2001

- EPA, DEQ, and the SCC will develop a formal agreement to outline responsibilities and procedures for SCC review of BMPs to support NPDES permit inspections.
  Target Date: July 2000

4.1 Agency Roles and Responsibilities

On April 21, 2000 the EPA, DEQ, SCC, NRCS, Ada SWCD, Canyon SCD, SWIRCD and the USBR signed an interagency agreement outlining their various responsibilities for continuing to support the demonstration project. The general responsibilities of the agencies are the following:

EPA will provide program oversight through the drafting and issuance of NPDES permits, review and approval of the state trading requirements document, review of the BMP List, and periodic audits of NPDES permitted facilities. In addition, EPA will develop a Memorandum of Understanding with the DEQ to establish roles and responsibilities for the audit of NPDES permitted facilities, and with the SCC for their role in the on-site review of the BMPs that generate credits used by those facilities.

DEQ will provide ongoing program support by developing the Lower Boise River, Lower Boise River tributaries, and Snake River-Hells Canyon TMDLs; preparing and maintaining the state effluent trading requirements document; providing technical support for ratios and review of the BMP List; and participating in program audits and reviews. In addition, DEQ will develop a Memorandum of Understanding with EPA to establish roles and responsibilities for the audit of NPDES permitted facilities, and with the SCC for their role in the on-site review of the BMPs that generate credits used by those facilities.

The ***SCC*** will provide ongoing program support by providing technical expertise for development and maintenance of the BMP List, and providing technical support to agricultural nonpoint source participants for BMP design, installation, and maintenance. In addition, SCC will develop a Memorandum of Understanding with EPA and DEQ to define the SCC's role in the on-site review of the BMPs that generate credits used by NPDES-permitted facilities, as part of the NPDES audit program administered EPA and DEQ.

Ada SWCD will provide ongoing program support by reviewing all conservation plans developed for the purpose of establishing phosphorus credits for the trading program and, where necessary and funding is available, provide technical support to agricultural nonpoint source participants for BMP design, installation, and maintenance. The Ada SWCD will also provide guidance in the development and maintenance of the BMP List as a member of the BMP Technical Committee.

Canyon SCD will provide ongoing program support by reviewing all conservation plans developed for the purpose of establishing phosphorus credits for the trading program and, where necessary and funding is available, provide technical support to agricultural nonpoint source participants for BMP design, installation, and maintenance. The Canyon SCD will also provide guidance in development and maintenance of the BMP List as a member of the BMP Technical Committee.

The ***NRCS*** will provide ongoing program support by providing technical expertise for development and maintenance of the BMP List, and providing technical support to agricultural nonpoint source participants for BMP design, installation, and maintenance.

The ***USBR***, as the operator of Arrowrock and Anderson Ranch dams, and Lucky Peak dam in coordination with the Corps of Engineers to provide flood control, and water for hydropower generation, irrigation, recreation, and fish and wildlife in the Federal Boise Project, and as the builder of the New York Canal, Lake Lowell, and many drains from the Boise Project, is committed to ensuring that water resources affected by the operation of USBR facilities meets water quality standards. Consequently, USBR will provide technical assistance, such as water resources related planning, evaluation, and modeling; engineering design; monitoring; and water quality analysis as well as participating in construction (Congressional authorization required) on a cooperative, cost-sharing basis with others.

The ***SWIDRCD*** will support development of the Association, named the Idaho Clean Water Cooperative, that will be established to develop and administer the project's trade tracking system, and provide fund-raising and administrative support until the Idaho Clean Water Cooperative is incorporated and functioning.

Although the Association ***(Idaho Clean Water Cooperative)*** is neither an agency, nor a signatory to the agreement, the Association's role is outlined in the agreement. The Idaho Clean Water Cooperative will develop and administer the project's trade tracking system and support the effluent trading market as desired by its members. The Idaho Clean Water Cooperative is expected to be incorporated by the end of 2000.

4.2 Remaining Work Areas for the Implementation Phase

The design phase of the project identified selected key work areas that will require additional development during implementation. The work generally falls into two areas, completion of the TMDL and testing and refining the trading framework through implementation of early projects.

The TMDLs for the Snake River-Hells Canyon and Lower Boise River are expected to address two outstanding issues: methods to prevent adverse local water quality impacts and the specific actions a nonpoint source trading party must take to establish a water quality contribution that conforms with TMDL goals and targets. Prior to allowing any trading within the context of a permit, an analysis of the watershed needs to be completed that will ensure that specific trades do not degrade water quality within the area of the trade, taking into account the effects of shifting phosphorus loading to different points in the watershed and the interaction between phosphorus and other environmental factors. A mechanism would need to be developed to avoid any trades that may cause exceedances of water quality standards. Analysis done in connection with the Lower Boise River TMDL is expected to provide a basis to adequately address these issues, and provisions could be incorporated in the permit accordingly.

The TMDL will determine how much of a nonpoint source's reduction is necessary to meet the TMDL load reduction target (water quality contribution) for participating sources, and how much is in excess of that and therefore eligible to generate a transferrable credit. The mechanism for implementing the water quality contribution will need to be simple and clear enough for the public to understand.

EPA has also identified some concerns that will need to be considered as the framework is implemented to support real trades. They include the following:

- Variable effluent limits will only be viable if the procedural and substantive requirements contained in the TMDL, permit, and other documents, are adequate to ensure the protection of water quality standards in the Brownlee Reservoir and in the Lower Boise River and its tributaries. At the same time, the requirements would need to be simple enough to be well understood by the public when those documents are issued.

- Nonpoint source reductions must be reliably quantified as a prerequisite to a point source increasing its discharge. The BMP List must include monitoring methods for nonpoint source phosphorus reductions that are comparable in their accuracy as much as possible to methods currently required of NPDES sources, as well as any additional monitoring needed due to the nature of the BMP or its site (e.g., groundwater monitoring). The frequency of sampling will need to achieve equivalent statistical certainty, and appropriate quality assurance and quality control procedures need to be specified for the sampling methods.

- The BMP List will need to specify a practical and scientifically credible means to determine the amount of reduction from a given BMP for a calculated credit, and to compare it to the reduction called for by the TMDL.

- Procedures need to be identified for ensuring BMP design, maintenance, and monitoring requirements are modified as more information is learned about BMP performance.

- EPA, DEQ and the SCC will need to develop an agreement that outlines criteria and procedures for verifying nonpoint source reductions reflective of the site access language contained in the *Trade Notification Form* that grants the Soil Conservation Commission, EPA, and DEQ site access solely for purposes of determining NPDES permit holder compliance.

- A centralized trade tracking system must be developed to determine the validity of a trade, since the point source will be required to provide a *Discharge Monitoring Report* with a monthly summary of all trades. The trade tracking system must ensure that there is no duplicative ownership of credits.

- Although the permit language specifies a deadline for filing a DMR for a given month, it does not specify the deadline by which a trade must be completed in order for it to be included in a given month's DMR. That deadline still must be determined.

- Implementation procedures need to ensure adequate public process for elements of the program that are embodied in documents outside of the permit, and address Paperwork Reduction Act questions associated with the new reporting forms.

List of Acronyms

APAP	Idaho Agriculture Pollution Abatement Plan
BMP	Best Management Practice
CV	Coefficient of Variation
DEQ	Idaho Department of Environmental Quality
DMR	Discharge Monitoring Report
EPA	Environmental Protection Agency
IDAPA	Idaho Administrative Procedures Act
LA	Load Allocation
NNI	No Net Increase
NPDES	National Pollution Discharge Elimination System
NPS	Nonpoint Source
NRCS	Natural Resource Conservation Service
PAT	Public Advisory Team
PCS	Permit Compliance System
PS	Point Source
SCC	Soil Conservation Commission
SCD	Soil Conservation District
SWIRCD	Southwest Idaho Resource Conservation & Development Council
TMDL	Total Maximum Daily Load
USBR	US Bureau of Reclamation
WLA	Wasteload Allocation

Glossary of Terms[16]

Designated Uses: Those water uses identified in state water quality standards that must be achieved and maintained as required under the Clean Water Act. Uses can include cold water fisheries, public water supply, irrigation, and others.

Discharge Monitoring Report (DMR): The EPA uniform national form, including any subsequent additions, revisions, or modifications, for the reporting of self-monitoring results by permittees. DMRs must be used by approved states as well as by EPA.

Discharge: Flow of surface water in a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. Can also apply to discharge of liquid effluent from a facility or to chemical emissions into the air through designated venting mechanisms.

Effluent: Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.

Effluent Limitation: Restriction established by a state or EPA on quantities, rates, and concentrations in wastewater discharges.

Indirect Discharge: A nondomestic discharge introducing pollutants to a publicly owned treatment works.

Load Allocation (LA): The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading which can range from reasonable accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading.

National Pollutant Discharge Elimination System (NPDES): The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

Nonpoint Source: Diffuse pollution sources (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by stormwater. Common nonpoint sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets.

Point Source: Any discernible confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged.

[16] As defined in *EPA's Draft Framework for Watershed-Based Trading*, published May 1996, EPA 800-R-96-001.

Pretreatment: The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater to a less harmful state prior to or in lieu of discharging or otherwise introducing such pollutants into a publicly owned treatment works. (Note: The Lower Boise River Effluent Trading project also used "pretreatment" in an alternative context, as identified in footnote 10).

Publicly Owned Treatment Works (POTW): Any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature that is owned by a state or municipality.

Surface Water: All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors directly influenced by surface water.

Total Maximum Daily Load (TMDL): The sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measure that relates to a state's water quality standard. If best management practices (BMPs) or other nonpoint source pollution control actions make more stringent load allocations practicable, WLAs can be made less stringent. Thus, the TMDL process provides for nonpoint source control trade-offs. (40 CFR 130.2(1)).

Wasteload Allocation (WLA): The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation (40 CFR 130.2(h)).

Water Quality Criteria: Levels of water quality expected to render a body of water suitable for its designated use. Composed of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or states for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.

Water Quality Standard: A law or regulation that consists of the beneficial designated use or uses of a waterbody or a segment of a waterbody and the water quality criteria that is necessary to protect the use or uses of that particular waterbody. Water quality standards also contain an anti-degradation policy.

Water Quality-Based Effluent Limitations: Effluent limitations applied to dischargers when mere technology-based limitations would cause violations of water quality standards.

Watershed: A drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation.

List of Appendices