

Pend Oreille Lake Nearshore Nutrient TMDL Implementation Plan

A Nutrient Management Plan *for* Pend Oreille Lake Bonner County, Idaho

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Prepared in cooperation with:

Idaho Department of Environmental Quality
Tri-State Water Quality Council
Idaho Soil Conservation Commission
Idaho Department of Lands
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This document is a result of a collaborative effort between federal, state, county, public and private entities who worked together to develop a comprehensive management plan for protection of the nearshore areas of Pend Oreille Lake. The Pend Oreille Lake planning team includes:

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1.0 EXECUTIVE SUMMARY

The Clark Fork-Pend Oreille Basin lies in western Montana, northern Idaho, and northeastern Washington. The Clark Fork River begins near Butte and drains an extensive area of western Montana before entering Idaho's Pend Oreille Lake. The lake is the source of the Pend Oreille River in northeastern Washington, which ultimately drains to the Columbia River.

In 1994, the State of Idaho designated Pend Oreille Lake as "threatened" due to the increasing amount of nutrients (nitrogen and phosphorus) and resulting algae growth in the lake. Because of this designation, the Idaho Department of Environmental Quality (IDEQ) prepared a problem assessment on the lake in 1999. The assessment concluded that the lake's nearshore waters would likely degrade over the long-term and that a plan should be developed to assure protection of the lake's water quality. The assessment recommended development of a Total Maximum Daily Load (TMDL) to control phosphorus (the nutrient of concern) in order to protect and maintain water quality standards in the nearshore waters of the lake.

During 2001-2002, a technical team of agencies and stakeholders developed the nearshore TMDL. The focus of the TMDL is on the lake's nearshore zone—the band of water along the shoreline where light can penetrate to the bottom and that averages around 50 feet in depth. The dominant factor affecting water quality in this shallow nearshore zone is loading from human activities in the areas immediately surrounding and draining into the lake. The TMDL sets a threshold for total phosphorus (9 ug/l average throughout the nearshore waters and 12 ug/l as an instantaneous "action level") and identifies the total allowable load (4,588 pounds of total phosphorus per season, June through September) that the lake can assimilate while continuing to meet water quality standards. The TMDL was approved by the U.S. Environmental Protection Agency (EPA) in October 2002, and then work began on development of an implementation plan to prescribe specific management actions to reduce nutrient loading from the lake's nearshore drainage area.

A TMDL provides the scientific foundation for protection of a waterbody by setting thresholds, or targets, for the pollutant(s) of concern. An implementation plan puts a TMDL into practice by identifying and implementing specific pollution control measures designed to achieve the targets outlined in the TMDL. As required by IDEQ, an implementation plan also describes when pollution control actions will take place, designates responsible parties, estimates costs and potential funding opportunities, and sets up a plan for monitoring, evaluation, maintenance of effort over time, and public involvement.

Recognizing that an implementation planning effort is more likely to be successful when a collaborative community approach is taken, IDEQ enlisted the assistance of the Tri-State Water Quality Council (TSWQC), a diverse stakeholder group, to help develop the Pend Oreille Lake nearshore TMDL implementation plan. Working with the IDEQ, the TSWQC organized and facilitated the efforts of the Pend Oreille Lake Planning Team. Members of the planning team included representatives from IDEQ, TSWQC, Idaho Soil Conservation Commission, Natural Resources Conservation Service, Idaho Transportation Department, Idaho Department of Lands, Bonner County Planning Department, Kootenai-Ponderay Sewer District, U. S. Army Corps of Engineers and interested citizens.

From fall 2002 through spring 2004, the planning team researched nutrient pollution problems, compiled existing pollution control programs, and developed management actions and potential opportunities for improving the water quality of Pend Oreille Lake and its watershed. The team met with agencies responsible for, or participating in, key existing water pollution control programs, including IDEQ, Bonner County Planning Department, Bonner County Public Works Department, Idaho Transportation Department, Idaho Department of Lands, U. S. Forest Service, Panhandle Health District, City of Sandpoint, Bonner Soil & Water Conservation District, Selkirk Cooperative Weed Management Area and U. S. Coast Guard Auxiliary. The team also held a public workshop in October 2003 to gather ideas from the public about actions that could be taken to protect the lake's nearshore water quality from nutrient pollution. From this variety of sources, the team then assembled management actions that could serve to protect lake water quality by enhancing or expanding upon existing programs, with a focus on activities that take place in the immediate nearshore drainage area. The resulting list of actions is the focal point of the implementation plan.

A total of 82 recommended actions fall into two program areas: **education** projects and **on-the-ground implementation** projects. The planning team considers education to be one of the most effective methods for meeting the goals of the TMDL. Through education, informed watershed residents and lake users will be more conscious of how their activities affect the lake, and thus may be more willing to modify those activities to meet water quality goals that they understand. However, on-the-ground pollution control measures are also essential for achieving the goals of the TMDL, because these actions can directly prevent or reduce the amount of phosphorus loading into the lake.

Categories for the on-the-ground actions include: development/shoreline property, stormwater, transportation/roads, forestry, agriculture, Eurasian milfoil and recreation, along with program coordination and water quality monitoring and data management. The recommended actions include a spectrum of activities that ranges from protecting and maintaining natural vegetation along shorelines, developing land disturbance and grading permit requirements, investigating increased setbacks for new waterfront lots, identifying and implementing beneficial roadway projects in water quality problem areas, encouraging landowner participation in federal and state forestry and agriculture cost share programs, and pursuing creative opportunities for revenues to fund the control of Eurasian milfoil. For each recommended action, the plan identifies lead agencies, estimated costs, anticipated implementation dates, and possible funding sources.

Dates for the recommended actions are set for the first five years of the implementation plan. Monitoring of the lake will be undertaken annually to determine the effectiveness of these initial actions. Based on monitoring and evaluation results at the end of the first five-year period—and subsequent five-year periods thereafter—management actions to reduce nutrient loading from local sources will be revised or developed as needed to meet the nutrient targets in the TMDL. The implementation plan is designed with an adaptive management strategy in mind. IDEQ recognizes that the implementation plan must allow for change over time as new scientific information becomes available, the lake's watershed population increases, new laws and ordinances are enacted, new projects are identified, and existing projects are implemented.

The plan outlines a water quality monitoring program to be undertaken to evaluate if the TMDL targets are being met and to assess overall project effectiveness. Monitoring data will also be used to strengthen the overall understanding of nearshore water quality in Pend Oreille Lake.

The monitoring program includes recommended actions to be taken by resource managers in the event of exceedances of the 12 ug/l action target. This includes either an instantaneous exceedance (exceedance of the target at any one time at a location) or a short-term exceedance (exceedance of the target for two consecutive years in the same location.)

In accordance with Idaho Code, the implementation plan confirms commitment from the lead agencies to devote the necessary resources to meet the targets of the TMDL. IDEQ will meet annually with the designated lead agencies and other resource managers and stakeholder groups to review the monitoring results and to determine the progress of individual projects and the implementation plan as a whole. These annual meetings will also ensure that projects are being monitored and that all agencies are held accountable for their respective projects. Additionally, each year IDEQ will hold a public meeting to provide updates and seek local community input on the implementation plan. IDEQ will prepare an annual implementation plan progress report for distribution at each annual public meeting.

2.0 INTRODUCTION

The Pend Oreille Lake nearshore Total Maximum Daily Load (TMDL) was submitted by the Idaho Department of Environmental Quality (IDEQ) and approved by the U.S. Environmental Protection Agency (EPA) in 2002. IDEQ has set a target date of 18 months after EPA approval of a TMDL to develop and approve a TMDL implementation plan. IDEQ is keenly aware that collaborative efforts on many fronts are required in order to meet the 18-month implementation plan completion date, to meet water quality targets established in the nearshore TMDL, and to attain full beneficial uses at the earliest possible date. For this reason, the IDEQ applied for an EPA grant to fund the Tri-State Water Quality Council (TSWQC), a diverse stakeholder group, to help develop and implement the Pend Oreille Lake nearshore TMDL and associated implementation plan.

Working with the IDEQ, the TSWQC facilitated the efforts of the Pend Oreille Lake planning team. From fall 2002 through spring 2004, the group researched pollution problems and existing water quality protection programs and developed management actions and potential opportunities for improving the water quality of Pend Oreille Lake and its watershed. The result of the 18-month collaborative effort is this implementation plan.

2.1 OVERVIEW OF THE PEND OREILLE LAKE WATERSHED

The Pend Oreille Lake watershed is part of the larger Clark Fork – Pend Oreille Basin which encompasses about 25,000 square miles in western Montana, northern Idaho, and northeastern Washington (Figure 1. Clark Fork – Pend Oreille watershed boundary). Located almost entirely in Bonner County, Pend Oreille Lake is the largest and deepest natural lake in Idaho. The surface area of the lake is approximately 143 square miles (95,000 acres) with about 175 miles of shoreline (Figure 2). The Clark Fork River is the principal tributary to the lake, contributing about 92 percent of the annual inflow (Frenzel, 1991a, as cited in DEQ 2002). Other tributaries to the lake include the Pack River, Lightning Creek, and Sand Creek with numerous smaller streams entering the lake at various locations. Surface water outflow from the lake consists only of the Pend Oreille River, and groundwater contributions from the lake to the Spokane Valley-Rathdrum Prairie Aquifer have been estimated between 3.8 and 7 percent of the total aquifer recharge (IDEQ, 2002).

The lake is most often divided into two hydrologic basins comprising the deep and relatively poorly-flushed southern basin and the relatively well-flushed, shallow northern basin. The deep southern basin contains approximately 95 percent of the overall lake volume. The pelagic zone (deep – open waters) accounts for approximately 89 percent of the lake's volume while the littoral zone (shallow nearshore areas and the focus of this TMDL implementation plan) accounts for approximately 11 percent (EPA 1993, as cited in IDEQ 2002).

The lake's watershed supports a natural resource based economy with an array of land use types. Recreation constitutes an important business for the entire lake community and the Pend Oreille Lake region continues to increase in popularity as a recreational destination. With 14 species of fish, the lake has a well-deserved reputation as a fishermen's paradise (a total estimated 465,000 hours per year is spent by anglers fishing the lake) and opportunities for a variety of water-related recreational activities abound. With a population rate in Bonner County currently at 38 percent, development in the lake's watershed—and use of the lake—is increasing significantly.

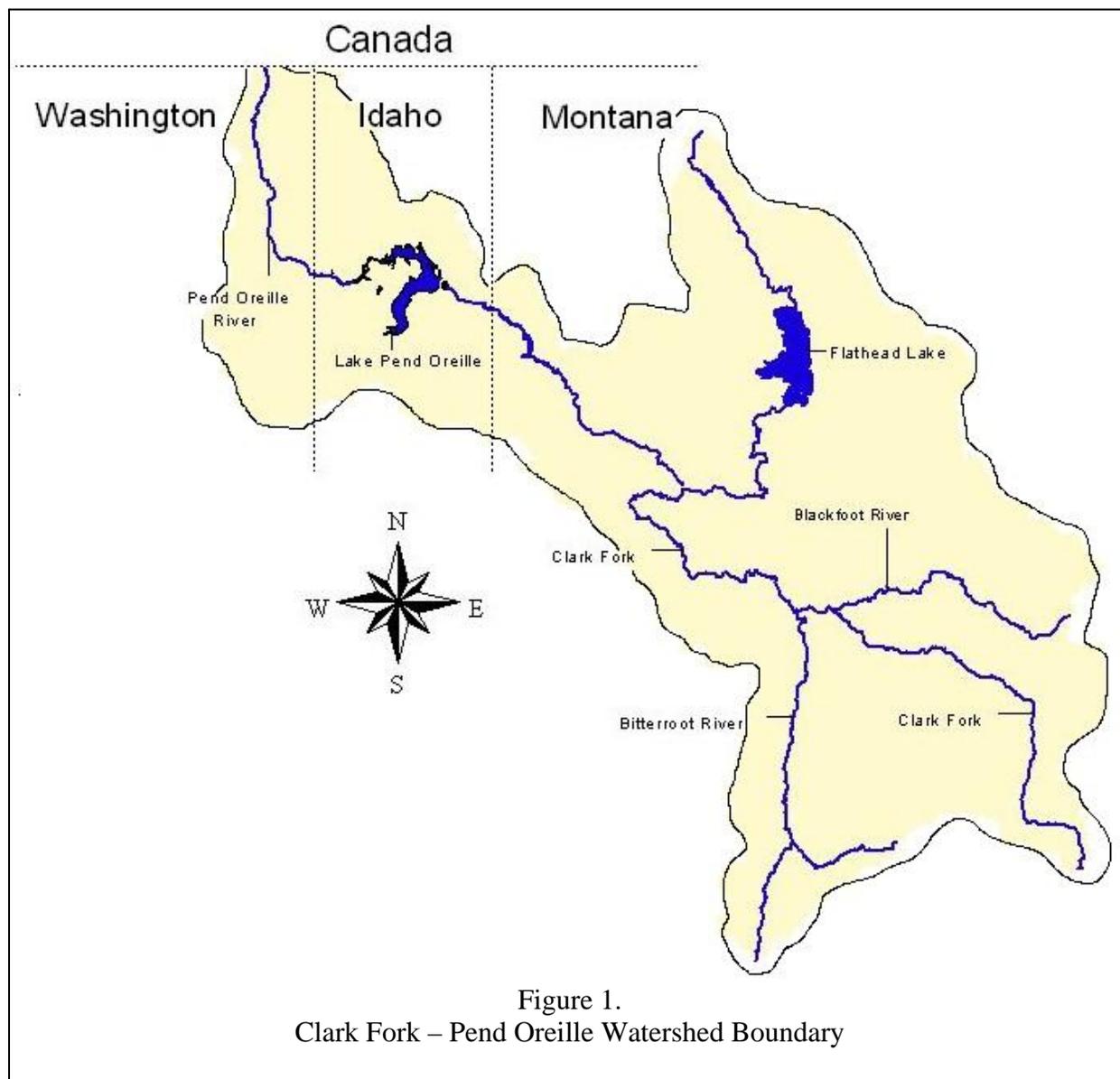
As a result, the nearshore areas around the lake, and the lake's water quality, are experiencing environmental pressures from increased human activities and residential development.

Pend Oreille Lake has been designated as a Special Resource Water under Idaho's Water Quality Standards. This designation stipulates that no new point source discharges are allowed, nor may existing sources increase discharges of pollutants to the lake, a tributary, or an upstream segment if these discharges would compromise water quality necessary to designated uses of the water body. Pend Oreille Lake is home to bull trout, a species listed under the federal Endangered Species Act, and has designated uses listed in Idaho Code including: cold-water biota, salmonid spawning, recreation, water supply, wildlife habitat, and aesthetics.

Approximately 90 percent of the flow and 80 percent of the loading of total phosphorus into Pend Oreille Lake comes from Montana's Clark Fork River. Studies have shown that the Clark Fork is the predominate influence on the water quality of lake's deep open waters, while the nearshore, shallow areas of the lake are predominately influenced by sources located within one mile of the lake's shoreline. (TSWQC 2001). To address nutrient loading to the lake's open waters from the Clark Fork, a nutrient loading target for phosphorus¹ has been set at the Montana/Idaho border. This target was officially adopted by the two states and TSWQC in 2002 and provides the basis for a coordinated interstate management approach by apportioning responsibilities between the two states for future water quality planning and implementation activities to protect the lake's open waters. It was agreed in order to complement the protection afforded by the border agreement that a TMDL program would be implemented in Idaho to reduce impacts from local nutrient sources affecting the lake's shallow nearshore areas.

The Pend Oreille Lake Nearshore TMDL focuses on waters in the lake less than 16 meters (~50 feet) in depth. The nearshore load allocation in the TMDL focuses on areas draining directly to the lake without first flowing into a major tributary. To address pollutant loads from other portions of the drainage, there are a number of other TMDLs currently existing or in development. The Pend Oreille basin in Idaho is composed of four different 4th field hydrologic cataloging units, or HUCs. They are the Lower Clark Fork River HUC, Pend Oreille Lake HUC, Priest River HUC and the Pend Oreille River HUC. Some TMDLs have been completed and approved in the Pend Oreille Lake and Priest River HUCs. In the Pend Oreille Lake sub-basin, in addition to the lake nearshore TMDL, there are sediment TMDLs for Gold Creek, Cocolalla Creek, Hoodoo Creek and the Pack River and its tributaries. Cocolalla Lake also has TMDLs for nutrients and dissolved oxygen. Additional TMDLs will be necessary for remaining and newly listed waters in the Priest River and Pend Oreille Lake HUCs. Sub-basin assessments and TMDLs are currently being developed for the Lower Clark Fork River and Pend Oreille River.

¹ The Montana/Idaho border nutrient loading target is 259,500 kg/yr total phosphorus from Montana (Clark Fork River) and 69,151 kg/yr total phosphorus from the Pend Oreille Lake watershed in Idaho. A ratio of 15:1 total nitrogen to total phosphorus was also set as a desirable lower limit to avoid the occurrence of algal blooms in the lake.



2.2 OVERVIEW OF THE NEARSHORE TMDL

Pend Oreille Lake was first placed on the State of Idaho's 1994 Section 303(d) list in response to public comments concerning water quality. The lake was retained on Idaho's 1996 and 1998 Section 303(d) lists. Comment letters received by EPA and IDEQ during the 1998 listing cycle specifically indicated concern over water quality and nuisance algae in the nearshore areas of the lake. A problem assessment prepared by IDEQ in 1998 determined that the open waters of the lake did not exceed water quality standards and a formal TMDL was not warranted. However, the problem assessment also concluded that the lake's shallow nearshore waters and bays would likely degrade over the long-term and that a plan should be developed to assure protection of the lake's nearshore water quality. IDEQ's assessment recommended that a nutrient nearshore TMDL be developed for the nearshore areas of the lake to prevent increased nuisance algae growth and that an associated implementation plan be designed through which water quality

concerns could be addressed. The nearshore TMDL for Pend Oreille Lake was prepared by Tetra Tech Inc. in collaboration with the TSWQC, IDEQ, and EPA and was approved by EPA in 2002. The Executive Summary of the Pend Oreille Lake TMDL is included as Appendix C.

The nearshore TMDL addresses **nutrient pollution**. Nutrients occur naturally in the ecosystem, however a variety of human activities cause excessive nutrients (primarily phosphorus and nitrogen) to enter the lake. Acting as fertilizers, excessive nutrients promote the growth of too much algae (“slime” on shoreline rocks) and other aquatic weeds in the nearshore areas. If left unmanaged, excessive algae and weeds can impair the lake’s aesthetic qualities, recreational uses and domestic water supplies. Excessive algae can also deplete the amount of oxygen in the water, which can negatively affect fish and other aquatic organisms. Past monitoring has shown that the abundance of algae in the lake has been primarily dependent on the amount of the nutrient, phosphorus; therefore the TMDL focuses specifically on this nutrient.

The Pend Oreille Lake nearshore TMDL establishes a lake wide average water quality target of 9 micrograms per liter total phosphorus² with an action threshold of 12 micrograms per liter during the critical summer months of June through September when algae growth occurs. These targets provide guidelines to evaluate water quality and the attainment of water quality standards in the nearshore waters and will be used to implement the components of a water quality monitoring plan.

The primary target of **9 micrograms per liter represents an average concentration throughout the nearshore waters**, while the action threshold of **12 micrograms per liter represents an instantaneous concentration at any one location** collected during routine monitoring.

The TMDL also establishes a total load allocation for the nearshore areas of the lake of 4,588 lbs. of total phosphorus over the critical season of June through September. The load allocation is given solely to nonpoint sources because no point sources discharge to the lake’s nearshore waters. The load allocation of 4,588 lbs/summer is applicable to all sources in the nearshore drainage area of the lake (see Figure 2).

What is a TMDL?

A TMDL is a tool for maintaining water quality standards for a waterbody. A TMDL consists of (1) an evaluation of water quality data about a waterbody followed by (2) development of a numeric target, or endpoint, for the pollutant of concern that can be measured to show whether water quality standards are being met in that waterbody, and (3) a determination of the total allowable load that the waterbody can assimilate (known as “the loading capacity”) and still meet water quality standards. In the case of Pend Oreille Lake, the numeric target, or measurable endpoint, is 9 micrograms per liter total phosphorus as an average throughout the nearshore waters and 12 micrograms per liter at any one location; and the loading capacity to be distributed among local sources in the lake’s watershed is 4,588 lbs. of phosphorus during each year’s critical summer period.

² A microgram is equal to 0.000001 grams; the 9 micrograms per liter total phosphorus target therefore represents 0.000009 grams of total phosphorus in a liter (about two pints) of lake water.

The focus of the TMDL is on the lake's **nearshore zone**—the band of water along the shoreline where light can penetrate to the bottom and that averages around 50 feet in depth. These nearshore waters of the lake are mostly influenced by sources immediately surrounding the lake or discharging directly to the nearshore waters (IDEQ 2002). A band of land surrounding the lake drains directly to the lake rather than through tributary flows; this band—which includes concentrated developed land—represents the nearshore drainage area that affects the water quality conditions of the shallow waters of Pend Oreille Lake (See Figure 2). Due to the topographic variations in this band, the distance of the boundary of the nearshore drainage area around the lake is not uniform. However, when the nearshore areas around the lake are considered collectively, the drainage area corresponds to approximately a one-mile band of land immediately surrounding the lake. Therefore, nonpoint activities taking place in this approximate one-mile band are the focus of the TMDL and the implementation plan³.

Point and Nonpoint Sources of Pollution

Point source pollution occurs when pollutants are discharged from an identifiable or confined point, including pipes, ditches, channels, sewers, tunnels and containers of various types. An example of a point source is a wastewater treatment plant that treats a community's wastewater and discharges the treated water into a stream, river or lake. Point sources, such as a wastewater treatment plant or a concentrated animal feeding operation, must have a discharge permit. On Pend Oreille Lake, there are no wastewater treatment facilities discharging directly into the lake, so the nearshore TMDL is focused specifically on nonpoint sources.

Nonpoint source pollution occurs when pollutants flow over a wide land area, not from one specific location. Nonpoint pollution generally occurs when water runs over land, picks up pollutants, and then deposits those pollutants into surface waters. This polluted runoff comes from sources that cannot be defined as discrete points, such as areas of timber harvesting, surface mining, agriculture, livestock grazing and residential development. Nonpoint pollution is often thought of as "people pollution" because it is caused collectively by the activities of many people over a broad diffuse area. An array of activities can cause nonpoint pollution including the application of fertilizers, pesticides and lawn chemicals; land clearing and erosion; septic systems; and runoff from streets, dirt roads and construction sites.

³ An exception to this approximate one-mile band is the area north of the lake identified in the Agricultural Implementation Plan (Appendix G) as the "extended north shore." This area encompasses about 10,500 acres of land between Sand Creek and Pack River that drain into the lake rather than into the two tributaries and therefore are prioritized for implementation of agricultural conservation programs to protect lake nearshore water quality.

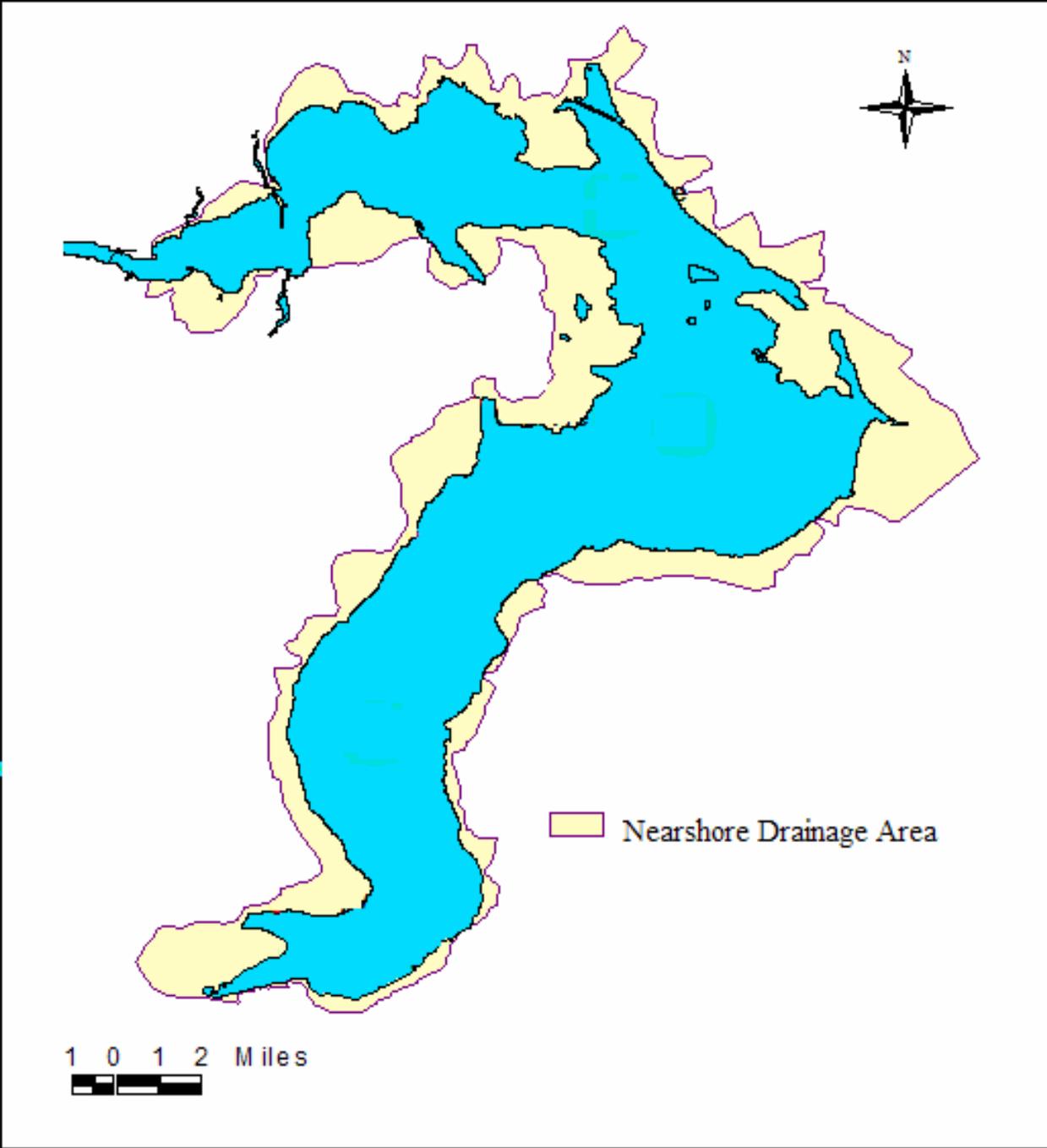


Figure 2.
Pend Oreille Lake

2.3 PURPOSE AND OBJECTIVES OF THE TMDL IMPLEMENTATION PLAN

The purpose of the nearshore TMDL implementation plan is to prescribe specific pollution controls and management actions that will protect the nearshore water quality of Pend Oreille Lake by reducing the amount of nutrients going into the lake from local sources.

Every state is required under the federal Clean Water Act to ensure that surface waters are meeting state water quality standards and to develop a remedy for waters that do not meet standards in the form of a TMDL. Once the TMDL has been established, it must be followed by an implementation plan to make certain that actions are taken in an attempt improve water quality and protect the listed body of water from further degradation. The State of Idaho's nonpoint source management plan (IDEQ, 2000) states:

“The primary purpose of any implementation plan under the TMDL process is to identify and describe the specific pollutions controls or management measures to be undertaken; the mechanisms by which the selected pollution control and management measures will be put into action; and, the authorities, regulations, permits, contracts, commitments, or other evidence sufficient to ensure that implementation will take place. The plan also describes when implementation will take place, identifies when various tasks or action items will begin and end, when mid-term and final objectives will be met, and established dates for meeting water quality targets.”

The IDEQ, along with designated lead agencies responsible for TMDL implementation and other entities participating in this implementation plan, will make every effort to address past, present and future pollution problems in an attempt to link them to watershed characteristics and management practices designed to improve the nearshore water quality of Pend Oreille Lake.

3.0 IDENTIFICATION OF RESPONSIBLE PARTICIPANTS

In order for this implementation plan to succeed, there must be participation from citizens, business, industry, government, tribes and organizations within the watershed. Idaho Code §39-3601 specifies certain entities as the designated agencies for various land use activities. These include the Idaho Department of Lands (IDL) for timber harvest and mining activities, the Idaho Soil Conservation Commission (SCC) for grazing and agricultural activities through local conservation districts, the Idaho Transportation Department (ITD) for public road construction, the Department of Agriculture for aquaculture, and the IDEQ for all other activities. Designated agencies are expected to take the lead in identifying and selecting proven management practices that can be used to reduce nonpoint source pollution, and facilitate implementation for their respective activities.

The lead agencies under this TMDL implementation plan are IDEQ, ITD, IDL, and SCC with involvement from the Natural Resource Conservation Services (NRCS), and the Bonner Soil and Water Conservation District (BSWCD). Federal agencies working in cooperation with IDL on forestry issues include the U.S. Forest Service, and Bureau of Land Management. The Bonner County road department will work in cooperation with ITD to address water quality impacts from county roads within the watershed. The IDEQ recognizes that involvement from the Idaho Department of Fish and Game (IDFG) as well as the Bonner County Planning Department may

have significant impacts on designated beneficial uses in the near shore areas and will make a genuine effort to include them in all aspects of TMDL implementation and planning.

3.1 IDAHO DEPARTMENT OF LANDS

The IDL is the designated agency in Idaho for administering the Idaho Forest Practices Act on state, private and federal forestlands. Rules developed under the Act provide Best Management Practices (BMPs) for forestry activities.

The purpose of the Forest Practices portion of the nearshore implementation plan is to reduce excessive pollutant delivery to Pend Oreille Lake. IDL develops site specific riparian prescriptions for forest practices occurring within 75 feet of fish bearing lakes. Pre-operational inspections are usually conducted to determine if the standard Lake BMPs are adequate

3.2 IDAHO TRANSPORTATION DEPARTMENT

The ITD is designated as a lead agency responsible TMDL implementation actions related to public roadways. ITD coordinates these efforts with local roadway jurisdictions such as highway districts, counties and municipalities. ITD's TMDL implementation plan for the Pend Oreille Lake nearshore area involves the following: 1) maintain updated roadway construction BMPs, guidelines and manuals for roadway construction; 2) provide technical assistance to local roadway jurisdictions for project development and construction activities; 3) administer roadway funding programs affecting water quality in Pend Oreille Lake; 4) implement current roadway projects and associated water quality mitigation requirements within the implementation area; and 5) identify, fund and implement roadway projects with water quality benefits and/or to correct known water quality problems within the TMDL implementation area.

3.3 IDAHO SOIL CONSERVATION COMMISSION

The SCC is the designated management agency in Idaho for managing agricultural nonpoint source pollution. Although the SCC does not have regulatory or licensing authority over water quality or pollution control, the mission of the SCC is to provide support to Idaho's Soil and Water Conservation Districts for wise use and improvement of natural resources (RPU 2003). The SCC works with BSWCD, the Idaho Association of Soil Conservation Districts (IASCD), and the NRCS in a conservation partnership to reach common goals and successfully deliver conservation programs in Bonner County.

The purpose of the agricultural portion of the nearshore implementation plan (Appendix G) is to assess agricultural activities occurring in the watershed, identify critical areas contributing to nutrients to the nearshore area, and present treatment alternatives for these areas. The north shore of the lake is the primary focus of this implementation plan as most of the agricultural activities occurring around Pend Oreille Lake are located in this area.

Agricultural areas that contribute excessive pollutants to waterways are defined as "critical areas." These areas are prioritized for treatment based on their location relative to Pend Oreille Lake or waterways in the nearshore area and the potential for pollutant transport and delivery to water. The following critical areas have been identified for this implementation plan:

- Agricultural areas on the shoreline of Pend Oreille Lake

- Agricultural operations with unstable and eroding streambanks on site
- Livestock feeding operations with direct access to riparian areas and waterways
- Over-utilized pasture and hayland adjacent to waterways

Although the Pend Oreille Lake Nearshore TMDL delineates an allocation area covering a 1-mile radius around the lake, the Agricultural Implementation Plan encompasses agricultural operations occurring between the Pack River and Sand Creek watersheds. Agricultural pollution reductions will be attained through the application of Resource Management Systems (RMS) and BMPs developed and implemented on site with individual agricultural operators. In addition, efforts will be made to educate land users in the nearshore area on the effects of agricultural activities on water quality.

3.4 LEAD AGENCY COORDINATION (IDEQ)

The IDEQ will provide forums for the exchange of scientific information between lead agencies and other interested parties throughout the implementation of this plan. The designated lead agencies are responsible under Idaho Code §39-3601 for complying with the provisions and agreements set forth within this implementation plan. While the IDEQ is responsible for overseeing the development of this plan and monitoring progress over time, the success of this plan is directly dependant upon the commitment and involvement of lead agencies and stakeholders within the watershed and their ability to implement the necessary changes outlined in this plan to restore beneficial uses.

4.0 EXISTING PROJECTS

In an effort to understand water quality efforts taking place within the Pend Oreille Lake watershed, a letter was prepared by the planning team and mailed by the IDEQ to key agencies and entities asking for water quality related information on programs or projects that have been completed or undertaken in the last five years. Table 1 provides a synopsis of the response letters received from the mailing. Copies of the letters can be obtained from the IDEQ.

Table 1. Summary of Response Letters

Agency/Org.	Project Description	Date	Existing (E) Planned (P) Completed (C)
NRCS	Bayview Road Rockslide Stabilization	2001	C
NRCS/ JUB Engineering	City of Kootenai storm water management plan	1998- 2002	C
NRCS	Ponder Point bank stabilization	1998	C
NRCS	Conservation Reserve Program Approx. 700 acres	1998- 2003	E
NRCS	Carter Creek stabilization	2004	P
NRCS	160 acres of tree planting and pre-commercial thinning	2003- 2004	E
Kalispel Tribe	Wildlife habitat land management		E
US Army	Lake winter elevation kokanee	2001-	E

Corps of Engineers	spawning study	2007	
Kootenai County	Site Disturbance Ordinance		E
Kootenai Ponderay Sewer District	Land application project	2001	E
Bottle Bay Water & Sewer District	Qualified for re-licensing land for sewage application	2002	P
Naval Surface Warfare Center	Integrated Natural Resource management plan	2002	C
Naval Surface Warfare Center	Comprehensive Environmental Response Plan	2003	C

5.0 PROPOSED MANAGEMENT ACTIONS

Education, on-the-ground actions, preventative maintenance and program coordination will all play a role in reducing nutrient loading to protect the nearshore waters of Pend Oreille Lake. The planning team considers education to be one of the most effective methods for meeting the goals of the lake nearshore TMDL. Through education, informed watershed residents and lake users will be more conscious of how their activities affect the lake they depend on and value, and thus may be more willing to modify those activities to meet water quality goals that they understand.

On-the-ground application of effective best management practices (BMPs) is also crucial to achieving the nutrient load reductions and targets of the TMDL and ultimately attainment of beneficial uses. BMPs are a practice or combination of practices determined to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals. BMPs can be different from restoration projects although many components of restoration projects do incorporate BMPs. All lead agencies and agencies under their purview have a list of standard BMPs that are used by that agency. Any business, industry, or citizen conducting a project within this watershed should utilize the most appropriate BMPs as needed to ensure compliance with the TMDL. A list of BMPs, along with contact information for responsible agencies, is provided in Appendix D.

Public comment usually results in the identification of watershed specific projects and is greatly encouraged. IDEQ will meet with the designated lead agencies and other stakeholders to determine the progress of individual projects and the implementation plan as a whole. This will ensure that all projects are being monitored and that all agencies are held accountable for the projects they have listed.

5.1 LIST OF PROPOSED PROJECTS

The following tables provide an initial list of proposed management actions by category developed by the planning team in cooperation with the designated lead agencies under Idaho Code §39-3601 responsible for implementation. The tables also include ideas for management actions generated at a public workshop held by the planning team in October 2003 in Sandpoint, Idaho. Table 2 lists actions for education projects; Table 3 lists actions for coordination and on-the-ground implementation projects.

Objective of the Proposed Management Actions

The objective of the proposed management actions listed in this implementation plan is to reduce nearshore water quality problems in Pend Oreille Lake by reducing nutrient loading from local sources. This implementation plan does not address the open waters of the lake; however, some of the proposed management actions will likely have benefits to the open waters of the lake as well.

Table 2. Education Projects

Agency / Organization ⁴	Project Description	Anticipated Start-up Date	Estimated Cost	Potential Funding Sources ⁵
LPOIC, IDEQ	Prepare/distribute map of lake that includes pump-out stations, info on milfoil, grey water and litter, boater safety, etc. (similar to Priest Lake map.)	2005	\$4,000	USBoat Foundation, Avista Corp. (funds received)
TSWQC	Develop long-term marketing strategy and campaign for educating and engaging general public, as well as targeted groups (such as lakefront property owners, contractors, realtors, etc.) Need on-going campaign that reaches all sectors of the lake community and influences value systems about the lake (similar to Rathdrum Aquifer campaign.) Utilize University of Idaho marketing graduate student.	2005/06	\$10,000	Public/private grants
TSWQC	Coordinate with county waterways committee on education programs and funding programs.	2005	\$1,500	TSWQC
TSWQC, LPOIC	Research requirements of the federal Clean Vessel Act and the disposal of grey water; make information available to the boating public as part of map project.	2004	\$500	TSWQC
PHD, TSWQC	Distribute Panhandle Health District brochures on septic tank and drain field maintenance and use targeted to lakeshore property owners. Include information on septics in other educational materials.	2005	\$3,000	PHD, Public/private grants
BSWCD, NRCS, SCC, IASCD	Develop/distribute a brochure (and include in other educational materials) about fertilizer use and ways to reduce impacts on waterways; tie in with fertilizer impacts to milfoil growth at docks. (i.e., restrict fertilizer use along shoreline.)	2005	\$5,000	BSWCD, BCWC, Public/private grants
Bonner County, municipalities, EPA, IDEQ	Expand education programs to improve compliance with stormwater and construction ordinances.	2005	\$10,000	EPA
Bonner County, municipalities, PHD	Develop/implement education programs and workshops for contractors, engineers, design professionals and excavators on construction site (and off-site) BMPs.	2005	\$5,000	Bonner County, TSWQC, BSWCD, grants

⁴ First entity shown is lead agency for project; other agencies/groups to assist.

⁵ Funding sources are listed as potential sources of funds for projects; other sources, in addition to the listed grant(s) are available. The lead agency will seek public/private funds as needed.

IDEQ, BSWCD, NRCS, SCC, IASCD, Bonner County, PHD, IDL, municipalities	Develop educational materials about land disturbance activities that agencies can hand out with permits (including permits for buildings, docks, and septic systems).	2005	\$5,000	Public/private grants
Bonner County, BSWCD, NRCS, SCC, IASCD	Develop/implement education programs on shoreline buffers and potential impacts from lawn fertilizers, pesticides/herbicides, chemicals used to control milfoil, oil, antifreeze, shoreline burning, removal of native vegetation. Work with county commissioners on shoreline protection (burning, buffers, fertilizer use, etc.).	2005	\$5,000	Public/private grants
IDEQ, TSWQC, IDFG	Educate shoreline property owners on effects of high concentrations of waterfowl and wildlife on drinking water and water quality.	2006	\$1,000	IDEQ, Public/private grants
TSWQC, COE, Bonner County	Develop a flyer about shoreline burning that describes the permit required to burn a fire below the high water mark and explains the potential impacts to water quality from shoreline burning; develop ways to distribute the flyer, such as attached to other shoreline activity permits.	2005	\$3,000	TSWQC, Public/private grants
IDEQ, TSWQC, BCWC, IDPR, IDFG, USFS	Develop and distribute educational materials about potential impacts from recreational activities.	2008	\$6,000	Public/private grants
TSWQC	Develop educational materials and a distribution program to reach jet skiers and water skiers, informing them about the 200-foot no-wake zone and potential impacts from wakes in the shallow nearshore areas.	2007	\$4,000	TSWQC, Public/private grants
Extension Office, SCWMA, Bonner County	Hold neighborhood meetings to educate about milfoil and the need for buffers and native vegetation to reduce phosphorus loading; provide information on what plants will grow well here and where to purchase.	2006	\$2,000	Public/private grants
BSWCD, NRCS, SCC, IASCD, Extension Office	Educate agricultural landowners about the benefits of practices related to water quality, pasture/forest & nutrient management and available cost share programs.	2004	\$7,350	SCC, IASCD, NRCS, BSWCD
BCWD	Coordinate with SCWMA on funding for weed management programs and education (noxious weeds and aquatic milfoil.)	On-going	Varies by project	RAC, Public/private grants
BCWD, BCWC, SCWMA, TSWQC	Prepare educational materials for shoreline property owners and work with landowners on options for milfoil control (comparison of various in-lake techniques through publications and potential pilot projects.)	2005	\$10,000	Public/private grants
IDPR, USFS, IDL	Distribute existing educational materials about potential impacts from motorized recreation in certain sensitive areas (off trail and off route impacts.)	2006	\$2,000	IDPR

TSWQC, LPOIC	Utilize community events (such as sail boat races, log races, county fair, treasure hunts) to raise funds for projects or marina improvements and to educate boaters.	2005	\$4,000	Community events
IDEQ	Marinas are major point of contact for boater education; develop education materials and signage about impacts from boat washing and cleaning hulls, greywater and other disposal.	2005 (map project)	\$4,000	Funding received
TSWQC	Develop educational materials about lake protection specifically targeted to short-term visitors to the lake (i.e, what they can do to help protect the lake while they are visiting here) and develop ways to reach visitors with this information.	2006	\$5,000	TSWQC, Public/private grants

Table 3. Coordination and Implementation Projects

Agency / Organization ⁶	Project Description	Anticipated Start-up Date	Estimated Cost	Potential Funding Sources ⁷
COORDINATION				
IDEQ	Convene a committee that will review projects and evaluate progress each year and respond as needed to possible TMDL exceedances.	2005	\$7,500	IDEQ
IDEQ	Institute annual site visits with lead agencies to review TMDL projects.	2005	\$3,000	IDEQ
IDEQ	Work with federal and state agencies, county and cities to maintain or improve enforcement of existing regulations.	2005	\$3,750	IDEQ
IDEQ	Seek funding for project implementation, monitoring and education projects.	2005	\$3,750	IDEQ
IDEQ	Coordinate with agencies regarding consistency of existing setback standards.	2005	\$1,500	IDEQ
IDEQ	Pursue possibilities for counties to become management entity for waste water as well as solid waste.	2005	\$1,500	IDEQ
IDEQ	Explore options for creating a vision for quality of life issues (economics, experience and services) in the lake's watershed communities.	2005	\$1,500	IDEQ
TSWQC	Pursue grants to establish mini-grant fund for pollution prevention/reduction projects	2005	\$3,000	TSWQC
IDEQ	Encourage coordination between IDEQ and USFS with assessments in lake sub-watersheds.	2005	\$1,500	IDEQ
TSWQC	Convene a "council of local governments", a group that would meet regularly (quarterly or semi-annually) to discuss and coordinate various local government efforts related to implementation of the lake plan.	2005	\$500	TSWQC
MONITORING/DATA MANAGEMENT				
IDEQ, TSWQC	Research, secure funding for, and implement lake monitoring program (shown on Table 5 in Section 6). This would include project-related monitoring and overall TMDL compliance monitoring with data submitted to one centralized database. Coordinate with other	2005	\$5,000-40,000	IDEQ, TSWQC

⁶ First entity shown is lead agency for project; other agencies/groups to assist.

⁷ Funding sources are listed as potential sources of funds for projects; other sources, in addition to the listed grant(s) are available. The lead agency will seek public/private funds as needed.

	groups/agencies already monitoring (such as IDFG.)			
IDEQ, TSWQC	Institute citizen volunteer monitoring program as part of overall monitoring program.	2006	\$3,000-5,000	IDEQ
IDEQ, TSWQC	Utilize results of monitoring program to identify and prioritize specific geographic areas around lake to target for further investigation of septic systems, or stormwater impacts.	2007/2008	\$3,000	IDEQ
IDEQ, TSWQC	Utilize results of monitoring program to identify geographic areas around lake to target for implementation and to prioritize types of projects for these areas.	2008	\$1,500	IDEQ, TSWQC
IDEQ	Require that on-the-ground TMDL implementation projects include a monitoring component to evaluate results.	2005	\$1,500	IDEQ
IDEQ	Complete existing coverages of Geographic Information System (GIS) for lake's watershed; include monitoring information as one layer.	2006	\$10,000	IDEQ
IDEQ	Utilize source water assessments to provide data on watersheds for GIS.	2005	\$1,500	IDEQ
IDEQ	Work with Panhandle Health District to identify areas in lake nearshore that may have septic problems.	2006	\$1,500	IDEQ
TSWQC	Prepare/distribute announcements for a graduate study project to investigate nutrients/nutrient loading from decayed plants in areas that have been treated to kill milfoil.	2008	\$500	TSWQC
TSWQC, IDEQ	Investigate the feasibility of conducting an assessment of the influence of groundwater on lake nearshore water quality and the potential for undertaking this work as part of a graduate study project.	2008	\$1,000	TSWQC
DEVELOPMENT/ShORELINE PROPERTY				
Bonner County	Research setback standards for protection of water quality; increase county setback requirements on waterfront lots—base criteria on soils, shoreline stability, and vegetation types.	2005	\$1,500	Bonner County
Bonner County	Investigate new regulations regarding buffers.	2004/05	\$1,500	Bonner County
Bonner County	Investigate ways to increase enforcement of existing buffer requirements, possibly through compliance or land use inspectors. (Cost shown does not include pay for any new positions.)	2006	\$800	Bonner County
Bonner County, IDL, COE	Investigate incentive program (tax break) for property owners who leave native vegetation along shoreline or re-plant native vegetation.	2005	\$1,500	Bonner County
Bonner County	Investigate buffer protection as part of building location permits.	2005	\$800	Bonner County
Bonner County, IDEQ	Promote low impact methods of bank stabilization to reduce erosion.	2006	\$5,000	Bonner County, Public/private grants

Bonner County, PHD, IDEQ, sewer districts	Identify subdivisions located near existing sewer systems (completed 2004); investigate methods and financing for hooking these subdivisions to sewer.	2008	\$6,000	Public/private grants
Bonner County, PHD	Reduce impacts from septics; increase lot size in areas where septics are identified as a problem, or exceed set threshold.	2005	\$3,000	Bonner County
Bonner County, PHD	Set up a fund to address failing septic systems. (High priority areas identified through monitoring.)	2008	\$6,000	Public/private grants
Bonner County	Pursue possible ordinance on shoreline burning.	2008	\$1,500	Bonner County
Bonner County	Increase enforcement of stormwater ordinance.	2006/07	\$30,000	Bonner County
Bonner County	Pursue possible setback or protection zones for wetland areas.	2007	\$2,000	Bonner County
Bonner County	Pursue possible land disturbance and/or grading permit requirements.	2005	\$1,500	Bonner County
TSWQC, Cities of Hope and East Hope	Coordinate efforts with the cities of Hope and East Hope to incorporate lake protection measures into local planning efforts, especially regarding the increased potential for subdivision of land and development, in the Ellisport Bay area.	2005	\$2,000	TSWQC
Municipalities, sewer districts	Ensure that local industrial discharge ordinances are compatible with federal requirements.	2007	\$5,000	Municipalities, sewer districts
CFPOC	Pursue opportunities to protect sensitive or critical areas through conservation easements or fee title acquisition.	On-going	Varies by project	CFPOC, Forest Legacy, WRP, FRPP, public grants, mitigation funds, private landowner

STORMWATER				
City of Sandpoint	Implement new federal stormwater regulations. (New guidelines not yet available.)	Unknown	\$75,000	EPA Stormwater Program grants
City of Sandpoint, other municipalities	Institute and maintain stormwater drain stenciling programs in Sandpoint and other lake communities. (Funding amount shown for Sandpoint.)	2005	\$500	City of Sandpoint
IDEQ	Work with City of Sandpoint and other municipalities on stormwater management.	2005	\$1,500	IDEQ
IDEQ, TSWQC	Monitor municipal stormwater discharges in areas of potential impact identified through monitoring program.	2006	\$4,500	IDEQ
Bonner County Municipalities TSWQC	Implement a program to increase awareness of, and compliance with, federal stormwater regulations for 1-acre construction sites.	2007	\$5,000	Bonner County, municipalities

Bonner County	Develop a program to address impacts from unfiltered storm drains that empty into the lake.	2006	\$1,500	Bonner County
TRANSPORTATION/ROADS				
ITD	Update roadway construction BMPS and manuals and provide technical assistance.	Ongoing	N/A	TEA-21
ITD	Administer roadway programs affecting water quality in lake watershed: State Highways, National Highway System; Bridges; Congestion Mitigation Air Quality; Idaho Forest Highway; Local Roads; Enhancement Program.	Ongoing	N/A	TEA-21
ITD	Implement current programmed projects affecting water quality in lake watershed: Garwood to Sandpoint; Sand Creek Byway; Dover Bridge; US-2 Dover to Sandpoint; Sandpoint to Kootenai Cutoff Road.	Ongoing	N/A	TEA-21
ITD	Identify project-specific pollutant reduction strategies, BMPs and contract provisions for programmed projects in TMDL watersheds.	Per program date	Project dependent	TEA-21
ITD, Bonner County, Kootenai County, municipalities, local highway agencies	Identify roadway projects with water quality benefits and/or water quality problem areas. Participate in transportation planning team meetings (Bonner County Area Transportation Team and Kootenai County Area Transportation Team). Participate in local agency grant workshops. Conduct project planning meetings as needed.	Annual review	\$10,000	TEA-21
Bonner County, ITD, municipalities, local highway districts	Work on development and implementation of regulations/guidelines for reducing impacts from roads (federal, state, county, cities and private) for construction, maintenance and operations near lakes, other waterways and wetlands.	2005/06	\$15,000	Bonner County
FORESTRY/AGRICULTURE				
IDL	Identify and map Class 1 and Class 2 streams and incorporate into lake GIS.	Completed, 2004; update as needed	N/A	IDL
IDL	Determine site specific BMPs for areas where tributaries enter the lake.	On-going	\$100 per site visit	IDL
IDL	Increase IDL enforcement of FPA practices.	On-going	\$100 per site visit	IDL
IDL, Bonner County, IDEQ	Develop guidelines/BMPs for non-commercial tree removal.	2005	\$500	IDL
IDL, Bonner County	Implement agency/county coordination to improve enforcement of FPA practices on residential use timber harvest and road building in near shore areas.	2005	\$1,000	IDL, Bonner County

SCC, BSWCD, NRCS, IASCD, IDL, Extension Office	Encourage landowner participation in EQIP and other federal/state forestry and agriculture cost share programs.	2004	\$2,000	SCC, NRCS, IASCD, BSWCD (Bonner County)
SCC, BSWCD, NRCS, IASCD	Encourage the development of conservation plans and implementation of BMPs to reduce impacts to surface water from agricultural activities.	2004	\$2,000	SCC, NRCS, IASCD, BSWCD (Bonner County)
SCC, BSWCD, NRCS, IASCD	Prepare a livestock inventory for lake nearshore area and lake northshore area.	2004-05	\$8,400	IASCD, SCC
SCC, BSWCD, NRCS, IASCD	Work with landowners to implement management practices to reduce impacts to watercourses from livestock.	2004	Unknown (project specific)	EQIP, WQPA, CRP, WHIP, WRP, HIP, private landowner
EURASIAN MILFOIL				
Bonner County, TSWQC	Continue updates to five-year strategic plan for containment of milfoil and adapt annual milfoil control programs as needed. (Milfoil management also ties in with shoreline and riparian area management and reduction of phosphorus loading.)	2004	\$2,000	Bonner County
TSWQC	Explore alternatives to chemical treatment of milfoil and work with Bonner County on implementation of non-chemical options for controlling milfoil.	2005	\$2,000	TSWQC
Bonner County, TSWQC, IDL, COE, IDFG, SCWMA	Work with agencies to coordinate and integrate milfoil control measures (e.g., fabric to smother milfoil also kills beneficial aquatic plants.)	2004	\$2,000	Bonner County
TSWQC	Investigate Idaho nonpoint source grants for milfoil control (tie in with phosphorus control and lake TMDL, and the need to reduce phosphorus in order to reduce milfoil.)	2005	\$1,500	TSWQC
TSWQC, Bonner County	Investigate opportunities for revenues (such as from boats registered for primary usage on Pend Oreille Lake or dock moorage) to establish fund for milfoil control.	2005	\$1,000	TSWQC
TSWQC	Investigate program for setting aside funds through DMV licensing to raise funds and awareness for controlling the spread of milfoil.	2005	\$ 500	TSWQC
TSWQC	Investigate how lake level fluctuations may impact the level of milfoil growth (as well as the growth of other aquatic plants) in the lake's nearshore area.	2007	\$1,000	TSWQC

TSWQC	Pursue an agreement with Bonner County Public Works Dept. to be notified when chemical applications are taking place and to receive copies of the county's post-treatment monitoring data to review.	2005	\$500	TSWQC
RECREATION				
BCWC	Install boat port-a-pot dumping stations at key locations (Currently only have one, in Sandpoint). Increase pump-out facilities around lake; investigate extending the timeframe that pump-out stations are open, especially at Bayview and Hope.	2006	\$10,000 (each station)	BCWC (cost share)
IDEQ (above ground tanks), EPA (underground tanks), Bonner County Emergency Management	Implement a nearshore fuel tank program consisting of an inventory of existing tanks and education of marina owners and other private entities. Education components would include prior planning, permits and emergency spill response.	2006	\$20,000	IDEQ, EPA, private owner
IDEQ	Install emergency spill response kits at every marina.	2005	\$300 (each kit)	Private owner
BCWC, TSWQC, LPOIC	Investigate/install pressure wash stations in contained areas to reduce spread of milfoil (and potential for zebra mussels.)	2006	Varies by site	BCWC, Public/private grants
IDL	Research regulations for dock construction; prepare educational brochure on comparison (use/maintenance) of dock building materials and regulations for building docks.	2005	\$2,000	IDL
USFS, IDPR, COE	Encourage camping in designated areas with facilities; develop education materials and/or regulations about low impact camping along nearshore.	2005	\$300	USFS
USFS, IDPR, COE	Promote and protect natural vegetation at public recreation areas.	On-going (USFS)	N/A	USFS
BCWC	Develop and implement programs to reduce erosion at public boat ramps.	2006	\$2,000	BCWC, Bonner County
USFS	Convert six existing plastic toilets to vault toilets at the following nearshore recreation sites: Green Monarchs (2); Evans Landing (1); Maiden Rock (1); Clark Fork River delta (1); Whiskey Rock (1).	2005	\$90,000	USFS Capital Improvement Projects funding

ABBREVIATIONS, LEAD AGENCIES AND ORGANIZATIONS

BCWC	Bonner County Waterways Committee	IDPR	Idaho Department of Parks and Recreation
BCWD	Bonner County Weed Department	ITD	Idaho Transportation Department
BSWCD	Bonner Soil & Water Conservation District	LPOIC	Pend Oreille Lake Idaho Club
CFPOC	Clark Fork-Pend Oreille Conservancy	NRCS	U.S. Dept of Agriculture Natural Resources Conservation Service
COE	U. S. Army Corps of Engineers	PHD	Panhandle Health District
EPA	U. S. Environmental Protection Agency	SCC	Idaho Soil Conservation Commission
IASCD	Idaho Association of Soil Conservation Districts	SCWMA	Selkirk Cooperative Weed Management Area
IDEQ	Idaho Department of Environmental Quality	TSWQC	Tri-State Water Quality Council
IDFG	Idaho Department of Fish & Game	USFS	U. S. Forest Service
IDL	Idaho Department of Lands		

POTENTIAL FUNDING SOURCES *All funding sources are listed as possible sources of funds for projects; no commitment for funding has been received from any of the identified sources.*

Bonner County

Bonner County Waterways Committee
Idaho 319, Nonpoint Source Program grants (Clean Water Act § 319)
CVA, Clean Vessel Act grant program (U.S. Fish & Wildlife Service)
CRP, Conservation Reserve Program
EPA, U. S. Environmental Protection Agency
EQIP, Environmental Quality Incentives Program
FLEP, Forest Land Enhancement Program
Forest Legacy Program, Idaho Dept. of Lands
Forest Stewardship Program, Idaho Dept. of Lands
FRPP, Farm and Ranch Lands Protection Program
GRP, Grassland Reserve Program
HIP, Habitat Improvement Program
IDEQ, Idaho Department of Environmental Quality
IDL, Idaho Department of Lands
IDPR, Idaho Department of Parks and Recreation grants

Mitigation funds (including Avista Corp., Bonneville Power Administration, and Idaho Transportation Dept.)
Municipalities
Oil Pollution Act, 1990 (U. S. Environmental Protection Agency)
Private foundation grants
Private landowner
PSGP, Private Stewardship Grants Program
RAC, Panhandle Resource Advisory Committee
RCRDP, Resource Conservation and Rangeland Development Program
TEA-21, Transportation Equity Act for the 21st Century
TSWQC, Tri-State Water Quality Council
USFS, U. S. Forest Service
WHIP, Wildlife Habitat Incentives Program
WQPA, Water Quality Cost Share Program for Agriculture
WRP, Wetlands Reserve Program

5.2 TIMELINE FOR IMPLEMENTATION

Start-up dates for initial projects and management actions for the first five years of the implementation plan (2004-2009) are shown in Tables 2 and 3. Monitoring of the lake, as described in Section 6, will be undertaken annually to determine the effectiveness of these initial actions. IDEQ will meet annually with the designated lead agencies and other stakeholder groups to review monitoring results and to determine the progress of individual projects and the implementation plan as a whole. These annual meetings will also ensure that projects are being monitored and that all agencies are held accountable for the projects they have listed. Each year, IDEQ will also hold a public meeting to provide updates and seek local community input on the implementation plan. As described in Section 9.1, IDEQ will prepare an annual implementation plan progress report for distribution at each annual public meeting.

Based on monitoring and evaluation results at the end of the first five-year period—and subsequent five-year periods thereafter—management actions to reduce nutrient loading from local sources will be revised or developed, as deemed necessary and appropriate to meet the nutrient targets in the TMDL. (See Revisions to the TMDL and Implementation Plan, Section 6.5 and Maintenance of Effort over Time, Section 8.)

6.0 MONITORING AND EVALUATION

The TMDL established numeric water quality criteria for the nearshore areas of the lake based on limited available data. EPA has encouraged the development of TMDLs using available data with the expectation that a commitment to additional monitoring will be included as part of the implementation plan. This approach enables stakeholders to move forward with resource protection based on existing data while additional monitoring data are collected to provide a basis for reviewing the success of the TMDL.

Based on recommendations of the TMDL, previous water quality studies of Pend Oreille Lake, and input from the planning team, the initial water quality monitoring plan should include:

1. Annual seasonal monitoring (June through September) at nearshore sites previously established through other studies or otherwise selected by the planning team (based on surrounding land use activities etc.) including total phosphorus, total nitrogen, chlorophyll *a*, temperature, and periphyton (attached algae).
2. Annual surveys of the extent or number of nearshore sites experiencing nuisance algae growth and or violations of established water quality targets by any means possible (water quality data, aerial photography, home owner reports/complaints, aquatic weed surveys etc.).
3. Establish a citizen volunteer monitoring program, if there is sufficient interest, to assist in water quality monitoring.

6.1 WATER QUALITY MONITORING PLAN

This monitoring plan is designed primarily for the nearshore waters of Pend Oreille Lake to specifically address nutrients and algae. However, monitoring of the deep open waters and additional monitoring suggestions are also included in an effort to support existing water quality programs within the watershed.

6.1.1 MONITORING GOALS AND OBJECTIVES

In accordance with the TMDL, the chief objectives of this monitoring plan are to 1) obtain the necessary information to ensure that the water quality target loading and concentration targets, and the action threshold values for total phosphorus are being attained, 2) investigate possible relationships between total phosphorus, algal growth, and visible aesthetic impairment, 3) obtain a continuous record of water quality data to assess whether or not the established target levels and threshold values are protective of beneficial uses, 4) provide a scientific basis for modifications to the TMDL or implementation plan if necessary, 5) confirm assumptions made in the TMDL about nearshore loading sources, and 6) evaluate project effectiveness and loading reductions resulting from nearshore nutrient control efforts.

In order to meet the monitoring goals and objectives set forth in the TMDL, two monitoring components are included in this plan which include 1) a “basic” monitoring plan intended to meet the minimum requirements for compliance monitoring in the nearshore areas, and 2) a series of “add-ons” to the basic program that will provide additional data for analyses and support of existing monitoring programs in the watershed, specifically the TSWQC’s Clark Fork – Pend Oreille water quality monitoring program, and the border nutrient agreement between the States of Idaho and Montana.

The TMDL established a target level of 9 micro grams per liter (9ug/L) total phosphorus in the nearshore areas of the lake with an action threshold of 12 micrograms per liter (12 ug/L) total phosphorus during critical conditions, which are the summer months of June through September. A total phosphorus load target for the entire nearshore of Pend Oreille Lake was set at 4,588 lb/season (season = June through September) based on the total phosphorus water quality target and an approximate one mile radius around the lake shore. Additional water quality targets have been established for Pend Oreille Lake through other programs and an overview of the existing targets for Pend Oreille Lake is provided in Table 4.

Table 4. Water Quality Targets for Pend Oreille Lake

	Total Phosphorus Water column	Total Phosphorus Load	Trophic status
TMDL target	9 ug/L nearshore	4,588 lb/season* or 2,081 kg/season*	

TMDL action threshold	12 ug/L nearshore		
Border nutrient agreement	7.3 ug/L open waters	69,151 kg/year Idaho Sources 259,500 kg/year Montana Sources	Maintain pelagic water quality Measured by Carlson index**

*Season = June through September

** Carlson index = Total phosphorus, Secchi depth, chlorophyll-a

6.1.2 MONITORING PLAN COMPONENTS

The basic monitoring plan and add-ons are outlined in Table 5. The basic monitoring plan is designed to monitor only those sites used to establish the total phosphorus targets in the TMDL. Add-on #1 allows for quantification of atmospheric deposition of total phosphorus to Pend Oreille Lake. This would be a one time calculation based on available data, however, data could also be collected and/or compiled from existing sources on a yearly basis and calculations could be estimated based on the available data. Add-on #2 allows for the addition of three sampling sites over and above the basic program. Add-on #3 allows for the addition of four sampling sites over and above add-on #2, including a representative site at the mouth of the Pack River. Add-on #4 allows for the addition of yearly surveys / GPS mapping of nearshore nuisance algae growth to be conducted in August. The yearly surveys would be used to assess and prioritize which additional sampling sites should be added to the basic monitoring plan in support of the objective to identify visible aesthetic impairment. Add-on #5 allows for one replicate nutrient sample and one soluble reactive phosphorus (SRP) sample to be collected at each of the six locations in the basic monitoring plan. This is suggested to increase the confidence level of nutrient sample values given the inherent variability in surface water quality and field conditions over a large area and to monitor SRP levels. If it is found that replicate nutrient sampling is needed at all monitoring sites, including SRP, this can be added depending on the level of funding available. Add-on #6 allows for the addition of three open water sampling sites to help better understand the relationship between nearshore water quality and that of the deep open waters and to support other water quality programs already established in the watershed. Add-on #7 allows for infrared analysis to target problem nearshore areas and identify high priority sites, including areas with high population densities, significant algae growth and failing septic systems. Such analysis is expensive and could only be carried out if sufficient funding became available. Add-on #8 allows for the addition of metals sampling at the three open water sites to provide baseline information on the current levels of copper, lead, zinc, cadmium and arsenic in Pend Oreille Lake's open waters.

Table 5. Monitoring Plan Components: Basic Monitoring Plan and Add-ons

Monitoring Sites	TP	TN	Chl-a*	Secchi depth	Temp. Cond. DO	# of samples	Frequency (June-Sep.)	Periphyton**	
Basic Monitoring Program									
Oden	X	X	X	X	X	1	Monthly	X - September	
Sunnyside	X	X	X	X	X	1	Monthly	X - September	
Garfield	X	X	X	X	X	1	Monthly	X - September	
Talache	X	X	X	X	X	1	Monthly	X - September	
Bayview	X	X	X	X	X	1	Monthly	X - September	
Lakeview	X	X	X	X	X	1	Monthly	X - September	
Add-on #1									
Quantify atmospheric deposition via data collection and/or compilation							One-time		
Add-on #2									
Trestle	X	X	X	X	X	1	Monthly	X – September	
Ellisport	X	X	X	X	X	1	Monthly	X – September	
Camp	X	X	X	X	X	1	Monthly	X – September	
Add-on #3									
Granite	X	X	X	X	X	1	Monthly	X – September	
Bottle	X	X	X	X	X	1	Monthly	X – September	
Kootenai	X	X	X	X	X	1	Monthly	X – September	
Pack River	X	X	X	X	X	1	Monthly	X – September	
Add-on #4									
Survey & GPS mapping of nearshore area nuisance algae growth							Yearly-Aug		
Add-on #5									
Monitoring Sites	T P	S R P	T N	Chl-a*	Secchi depth	Temp. Cond. DO	# of samples	Frequency (June-Sep.)	Periphyton**
Oden	X	1	X	X	X	X	2	Monthly	X – September
Sunnyside	X	1	X	X	X	X	2	Monthly	X – September
Garfield	X	1	X	X	X	X	2	Monthly	X – September
Talache	X	1	X	X	X	X	2	Monthly	X – September
Bayview	X	1	X	X	X	X	2	Monthly	X – September
Lakeview	X	1	X	X	X	X	2	Monthly	X – September
Add-on #6									
Open water Hope	X		X	X	X	X	1	Monthly	
Open water Granite	X		X	X	X	X	1	Monthly	
Open water Bayview	X		X	X	X	X	1	Monthly	

Add-on #7		
Employ infrared analysis to identify failing septic systems and problem areas in the nearshore related to septic.		
Add-on #8		
Site	Frequency	Metals
Open water Hope	1 time per year, or every other year, during June-Sept	Copper, lead, zinc, cadmium, arsenic
Open water Granite	1 time per year, or every other year, during June-Sept	Copper, lead, zinc, cadmium, arsenic
Open water Bayview	1 time per year, or every other year, during June-Sept	Copper, lead, zinc, cadmium, arsenic

6.1.3 MONITORING PARAMETERS

Water samples will be analyzed for total phosphorus, total nitrogen, chlorophyll-a, and additional parameters as outlined in the basic monitoring plan and subsequent add-ons. Recent data collected in Pend Oreille Lake in 2001 and 2002 by the Idaho Department of Fish and Game indicate that soluble reactive phosphorus is always below detection limits. For this reason, and the fact that it is not a target for the TMDL, only one sample at each location during a season is included in this plan (add-on # 5). Algae monitoring will include chlorophyll-a and ash free dry weight analyses, and field parameters will include secchi depth readings, temperature, conductivity, and dissolved oxygen. Quality assurance and monitoring plan details will be presented in a separate document.

6.2 IMPLEMENTATION MONITORING

Each lead agency is responsible for developing water quality monitoring plans and or reviewing the effectiveness of project related BMPs within this watershed. A representative from IDEQ and each lead agency will meet annually to evaluate all water quality monitoring results and other action items listed in section 5.1 using an adaptive management process. This process will allow for flexibility in accepted monitoring plans, BMPs, and or changes to the implementation plan as the need arises. These same representatives will discuss the efficiency and effectiveness of existing data collection and storage methods and provide suggestions for possible improvements as well as incorporating any needed changes or revisions to the TMDL if necessary.

6.3 DATA MANAGEMENT

It is the suggestion of the planning team that a Pend Oreille Lake Watershed database be created and made available to all stakeholders within the watershed via World Wide Web access. The database would initially include water quality data gathered as part of this implementation plan, but may be expanded to incorporate other types of data generated within the watershed if funding is available.

6.4 EXCEEDANCE OF TMDL TARGETS

The Pend Oreille Lake TMDL provides a suggested plan of action to be followed in the event of an instantaneous exceedance or short-term exceedance. **The TMDL defines an instantaneous exceedance as any one-time exceedance of the TMDL action threshold (12 micrograms per liter total phosphorus) and a short-term exceedance as two consecutive years of exceeding the TMDL action threshold in the same location.**

6.4.1 INSTANTANEOUS EXCEEDANCE (a one-time exceedance of 12 ug/l total phosphorus at any location, June through September)

If nearshore water quality data indicate an instantaneous exceedance of the TMDL action threshold, the following actions will be carried out by the IDEQ and designated lead agencies:

1. Review of the data to ensure confidence.
2. Review of factors such as, but not limited to, annual runoff/water yield, average air temperature and number of sunlight days.
3. Identification of possible causes.
4. Determination of error factor.
5. Written summary of findings and recommendations.

6.4.2 SHORT-TERM EXCEEDANCE (two consecutive years of exceeding 12 ug/l total phosphorus at the same location.)

If nearshore water quality data indicate a short-term exceedance of the TMDL action threshold, the following actions will be carried out by the IDEQ and designated lead agencies:

1. Review of data to ensure scientific evidence of a change in trend.
2. Review of causes and sources.
3. Review and revise TMDL implementation plan and management strategy.
4. Written report of findings and recommendations.

6.5 REVISIONS TO THE TMDL AND IMPLEMENTATION PLAN

TMDL implementation plans are designed with an adaptive management strategy in mind. IDEQ recognizes that the implementation plan must allow for change over time as new scientific information becomes available, the population increases, new laws and ordinances are enacted, new projects are identified, and existing projects are implemented. IDEQ will hold annual meetings with lead agencies and stakeholders groups, as previously discussed in Section 6.2, in order to monitor the progress of TMDL implementation and determine if any changes in either the implementation plan or the TMDL are needed.

7.0 ANTICIPATED COSTS AND POTENTIAL FUNDING SOURCES

Estimated costs for implementing projects to carry out the Pend Oreille Lake TMDL plan are shown in Tables 2 and 3. As illustrated on the tables, funding for these projects will likely come from a variety of sources. Attempts to obtain funding should first come from within the designated agencies and or agencies under their purview. The IDEQ will assist lead agencies, whenever possible, in obtaining funding for implementation projects. In the case where funding sources require public participation, the IDEQ will be available to assist any parties that wish to seek funding for water quality projects within the Pend Oreille Lake watershed.

Potential funding sources for TMDL implementation projects are listed in the State of Idaho Nonpoint Source Management Plan (see Appendix H). The list includes both technical and financial assistance programs; some of the suggested sources may not apply to the Pend Oreille Lake TMDL. However, the list serves to illustrate that there are a variety of funding sources available for watershed planning and implementation, nonpoint source pollution management, fish and wildlife habitat enhancement, stream restoration and education projects.

In addition to public sources of financial and technical assistance (federal and state government programs), private sources of funding are also available. Private sources of funding include private foundations, which most often fund nonprofit organizations with tax-exempt status. Forming partnerships that include government entities, nonprofit organizations, private businesses and landowners can often be the most effective approach to maximizing funding opportunities and gaining financial support for projects.

8.0 MAINTENANCE OF EFFORT OVER TIME

In most cases, the problems leading to water quality degradation have accumulated over many years and will likely require significant time to remedy. In order to ensure the success of any implementation plan, there must be maintenance of effort over time by all stakeholders in the watershed. Idaho Code §39-3601 requires an ongoing commitment from the lead agencies to devote the necessary resources to help restore beneficial uses. Maintenance of effort over time can not solely be focused on physical restoration work; it must also attempt to look at education, land use planning issues along the shoreline and surrounding areas of the lake, revisions to federal, state, and county agency standard operating procedures, and developing conservation easements and/or other methods through which long-term benefits can be obtained. It is the hope of IDEQ that annual public meetings and project progress reports will help to hold all lead agencies and stakeholders accountable to their respective commitments.

8.1 RESPONSIBLE PARTIES COMMITMENT

The roles and responsibilities of management agencies in implementing TMDLs and other nonpoint source water quality provisions of the Clean Water Act are outlined in a Memorandum of Understanding (MOU) appended to Idaho's Nonpoint Source

Management Plan. (DEQ, 1999) The MOU, titled *Implementing the Nonpoint Source Water Quality Program in the State of Idaho*, was signed by the EPA, IDEQ, IDL, Idaho Department of Water Resources (IDWR), SCC, University of Idaho Cooperative Extension Service, NRCS, USFS, and U. S. Department of Interior Bureau of Land Management.

A separate MOU between IDEQ and the state's seven Public Health Districts clarifies authorities, roles and responsibilities for sewage disposal and solid waste management. Another MOU between IDEQ, EPA, and the Idaho Department of Agriculture (IDA) recognizes IDA's role in managing dairy waste systems. IDEQ is currently engaged in an on-going dialog with ITD to address nonpoint source issues associated with the transportation system.

The SCC is undertaking an update of the *Agricultural Pollution Abatement Plan* and a supporting MOU to assure consistency with TMDL implementation across the state. Discussions are also underway with the Bureau of Land Management and USFS to update the silviculture portion of the nonpoint source management plan MOU.

9.0 PUBLIC INVOLVEMENT

The Pend Oreille Lake watershed is made up of diverse stakeholders with varying interests regarding water quality and its affect on beneficial uses. In order to facilitate community input, the planning team held a public workshop in October 2003 in Sandpoint, Idaho. The purpose of the workshop was to solicit ideas from the public for management actions to include in this implementation plan. Participants included members of the public and local organizations along with representatives from various agencies and elected officials. Results from that workshop are listed in Appendix I and have been incorporated into the management actions set forth in Section 5.

A 30-day public comment period on the completed draft plan began on June 29, 2004 when the planning team held a public meeting in Sandpoint. The meeting agenda included an overview of the lake nearshore TMDL and the main provisions in the implementation plan, along with brief presentations by the designated lead agencies involved in the plan. Those in attendance (approximately 50 people) were given copies of the draft plan, along with forms for sending in comments. During summer 2004, TSWQC staff also gave presentations to local governments and community organizations to solicit feedback on the plan. In September 2004, the planning team reviewed all comments and incorporated many of them into the plan. A summary of community comments, and the planning team's responses, is provided in Appendix J.

9.1 PUBLIC INVOLVEMENT STRATEGY

The IDEQ will attempt to hold annual public meetings to provide the public with an opportunity to stay involved over time. The IDEQ will also prepare an annual implementation plan progress report for distribution at each annual meeting.

The planning team recommends a common sense public involvement strategy consisting of standard advertising methods (radio, papers, magazines, etc.) and occasional public meetings to make the choice available to stakeholders as to whether or not they wish to be involved, and to what extent. A primary focus of the strategy will be to allow opportunities for stakeholders to become involved and also to generate ways for the public to remain involved and sustain interest in implementation of this plan over time.

Appendix A -- List of Acronyms

<u>Acronym</u>	<u>Full Phrase</u>
BMP	Best Management Practice
BSWCD	Bonner Soil & Water Conservation District
CFPOC	Clark Fork-Pend Oreille Conservancy
Chl <i>a</i>	Chlorophyll <i>a</i>
COE	U. S. Army Corps of Engineers
DMV	Idaho Department of Motor Vehicles
EPA	U. S. Environmental Protection Agency
FPA	Idaho Forest Practices Act
GIS	Geographic Information System
IASCD	Idaho Association of Soil Conservation Districts
IDA	Idaho Department of Agriculture
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDPR	Idaho Department of Parks and Recreation
ITD	Idaho Transportation Department
LPOIC	Pend Oreille Lake Idaho Club
MOS	Margin of Safety
MSL	Mean Sea Level
NRCS	U. S. Dept. of Agriculture, Natural Resources Conservation Service
PHD	Panhandle Health District
SCC	Idaho Soil Conservation Commission
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSI	Trophic Status Index
TSWQC	Tri-State Water Quality Council
USFS	U. S. Forest Service

Appendix B -- Glossary of Terms

This glossary includes a collection of the terms used in this document and an explanation of each term. To the extent that definitions and explanations provided in this document differ from those in state and federal regulations or other scientific documents, they are intended for use in understanding this document only.

- **Algae** – Small aquatic plants lacking stems, roots or leaves which occur as single cells, colonies, or filaments.
- **Algal Bloom** – Rapid, even explosive, growth of algae on the surface of lakes, streams or ponds; stimulated by nutrient enrichment.
- **Aquifer** – A geologic unit that can store and transmit water.
- **Aquatic Macrophytes** – Large water plants that are either free-floating or rooted.
- **Beneficial Use** – Any of the various uses which may be made of the water, including domestic water supplies, industrial and agricultural water supplies, recreation in and on the water, wildlife habitat, and aesthetics.
- **Best Management Practices** – Accepted methods for controlling nonpoint source pollution; may include one or more conservation practices.
- **Chlorophyll *a*** – The dominant green photosynthetic pigment in plants; a measure of aquatic plants production.
- **Cultural eutrophication** – An accelerated rate of lake aging induced by human sources of nutrients, sediment and organic matter.
- **Dissolved Oxygen** – Molecular oxygen freely available in water and necessary for the respiration of aquatic life and the oxidation of organic materials.
- **Erosion** – The wearing away of the landscape by water, wind, ice, or gravity to smaller particles, usually sediment.
- **Eutrophic** – Literally, “nutrient rich”. Generally refers to a fertile, productive body of water. Contrasts with oligotrophic.
- **Hydraulic Retention Time** – The time required for all the water in the lake to pass through the outflow.
- **Intermittent Streams** – A stream that only flows for part of the year, as after a rainstorm
- **Littoral Zone** – The zone extending from the shoreline to a depth where the light is

barely sufficient for rooted aquatic plants to grow.

- **Load** – The amount of substance, usually nutrients or sediment, discharged past a particular point; expressed in weight per unit time.
- **Load Allocation** – The proportion of a receiving water's total maximum daily load that is allocated to existing or future nonpoint sources.
- **Mesotrophic** – A term applied to freshwater lakes where nutrients are available but not abundant (moderately nourished).
- **Meso-oligotrophic** – A term applied to freshwater lakes where nutrient levels are between oligotrophic and mesotrophic.
- **Morphometry** – The shape of a lake basin.
- **Nitrogen** – An essential nutrient for aquatic organisms, comprising 80% of the earth's atmosphere.
- **Nonpoint Source** – Pollution discharged over a wide land area, not from one specific location.
- **Nutrient Loading** – The addition of nutrients, usually nitrogen or phosphorus, to a water body.
- **Nutrients** – Elements or compounds essential to life, including but not limited to oxygen, carbon, nitrogen and phosphorus.
- **Oligotrophic** – A term applied to freshwater lakes where nutrients are in short supply (little nourished).
- **Pelagic Zone** – The area of a lake beyond the influence of the bottom (i.e., open lake waters).
- **Phosphorus** – An essential nutrient for aquatic organisms, derived from weathered rock and human sources.
- **Point Source Pollution** – Pollutants discharged from any identifiable point, including pipes, ditches, channels, sewers, tunnels, and containers of various types.
- **Section 303(d) list** – A list of all waterbodies not meeting state water quality standards in accordance with the Clean Water Act of 1972; an update of this list is required to be developed every two years.
- **Steady – State** – Assumes no change with time.

- **Stormwater runoff** – Surface water runoff, usually associated with urban development, which carries both natural and human-caused pollutants.
- **Total Maximum Daily Load** – A pollutant budget most simply expressed in terms of loads through quantities or mass of pollutants added to a waterbody. According to EPA regulations and guidance, this budget takes into account loads from point and nonpoint sources, and human-caused as well as natural background loads.
- **Thermal Stratification** – The distribution of heat within a lake forming separate strata based on water temperature.
- **Total Phosphorus** – Includes: orthophosphates, condensed phosphates, and organic phosphates.
- **Wasteload Allocation** – The proportion of a receiving water's total maximum daily load that is allocated to one of its existing or future point sources of pollution.
- **Water Quality Standard** – Legally mandated and enforceable maximum contaminant levels of chemical, physical, and biological parameters for water. These parameters are established for water used by municipalities, industries, agricultures and recreation.
- **Water Quality** – A term used to describe the chemical, physical, and biological characteristics of water with respect to its suitability for a beneficial use.
- **Watershed** – An area of land that drains surface water runoff into a stream, lake or other body of water and is generally defined in terms of acres, or square miles.

Appendix C -- Executive Summary, Pend Oreille Lake TMDL

Total Maximum Daily Load (TMDL) for Nutrients for the Nearshore Waters of Pend Oreille Lake, Idaho

TMDL AT A GLANCE:

<i>Waterbody:</i>	Nearshore waters of Pend Oreille Lake, Idaho
<i>Hydrologic Unit Code:</i>	17010214
<i>Criterion of Concern:</i>	Narrative nutrient criterion
<i>Water Quality Target:</i>	Total phosphorus concentration of 9 micrograms per liter (with an action threshold of 12 micrograms per liter)
<i>Designated Uses Affected:</i>	Water supply, recreation, salmonid spawning, cold-water biota, wildlife habitat, and aesthetics
<i>Pollutant of Concern:</i>	Concentration of total phosphorus
<i>Source(s):</i>	Runoff from urban/residential development, septic systems
<i>Loading Capacity:</i>	4,588 lb/season
<i>Wasteload Allocation:</i>	0
<i>Load Allocation:</i>	4,588 lb/season
<i>Margin of Safety:</i>	Implicit MOS included through conservative assumptions
<i>Seasonal Variation:</i>	TMDL applies during summer conditions (June through September)

Executive Summary

The Clark Fork-Pend Oreille Basin lies in western Montana, northern Idaho, and northeastern Washington. The Clark Fork River begins near Butte and drains an extensive area of western Montana before entering Pend Oreille Lake, in Idaho, at the lake's northeast corner. The lake is the source of the Pend Oreille River in northeastern Washington, which ultimately drains to the Columbia River.

Responding to citizens' concerns and complaints about increasing growths of algae and other aquatic plants in the Clark Fork-Pend Oreille watershed, in 1987 the U.S. Congress mandated the Environmental Protection Agency (EPA) to conduct a comprehensive water quality study of the basin and to report its findings and recommendations. The result was the *Clark Fork-Pend Oreille Basin Water Quality Study: A Summary of Findings and a Management Plan* (USEPA, 1993). The Tri-State Water Quality Council¹ (TSWQC) is implementing the plan, which focuses on controlling nutrients and eutrophication throughout the basin. Formed in October 1993, the TSWQC consists of representatives

¹ Formerly the Tri-State Implementation Council

from communities across the three-state watershed and includes citizen groups, local governments, industry, tribes and agencies. Members of the TSWQC are working together collaboratively to carry out the water quality protection measures identified in the Clark Fork-Pend Oreille watershed management plan (USEPA, 1993). The TSWQC developed the *Montana and Idaho Border Nutrient Load Agreement Technical Guidance* (TSWQC, 2001) in response to the plan's objective to protect Pend Oreille Lake's open water quality. The Total Maximum Daily Load (TMDL) presented in this report addresses the plan's objective to mitigate increasing eutrophication along the shoreline of Pend Oreille Lake.

Pend Oreille Lake was placed on Idaho's 1994 Section 303(d) list as a "threatened" water body and retained on the 1996 and 1998 lists. Because of this listing, the Idaho Department of Environmental Quality (IDEQ) prepared a problem assessment on the lake (IDEQ, 1999). IDEQ's problem assessment recommended development of a Total Maximum Daily Load (TMDL) for the nearshore waters of the lake, recognizing that a long-term concern about degrading lake water quality remains. This TMDL addresses the objective of the Clark Fork-Pend Oreille Basin plan (USEPA, 1993) to mitigate increasing eutrophication along the shoreline of Pend Oreille Lake and was designed to work within the broader framework of the current lake-wide management plan with a focus on nearshore conditions.

The goal of a TMDL is to maintain water quality standards in the waterbody of concern. Because the applicable water quality standards for Pend Oreille Lake are narrative, it was necessary to identify a numeric target for development of the TMDL. The numeric target represents a measurable endpoint that is equivalent to attainment of the narrative water quality standard. Past studies indicate that algae growth in the lake is phosphorus-limited. Therefore, the TMDL target is expressed as a total phosphorus concentration. Data collected at several nearshore locations were evaluated to identify appropriate phosphorus target levels. An examination of the occurrence of total phosphorus concentrations indicated that there are two inflection points, 9 micrograms per liter and 12 micrograms per liter, where an increase in the frequency of occurrence of the concentrations requires a significant increase in the total phosphorus level. The primary target of 9 micrograms per liter represents an average concentration throughout the nearshore waters, while the secondary target of 12 micrograms per liter represents an instantaneous concentration used to evaluate isolated conditions represented by grab samples collected during routine monitoring.

A TMDL identifies the total allowable load that a waterbody can assimilate (the loading capacity) and still meet water quality standards. Several representative nearshore areas ("cells") and the loading and water quality conditions of those cells were examined to identify the loading capacity of the entire nearshore area of Pend Oreille Lake under critical summer conditions. These cells are assumed to represent typical conditions occurring in the larger nearshore area. The individual loading conditions and loading capacities for these cells were calculated using steady-state mass balance equations that considered phosphorus loading from nearshore sources as well as loss across the boundary to the open waters of the lake and loss to natural decay and growth. Using

equation inputs developed with observed water quality and physical data, loading capacities for each cell were calculated based on the water quality target of 9 micrograms per liter total phosphorus. The individual loading capacities for each cell were then extrapolated to the entire nearshore area to identify an overall loading limit for the nearshore drainage area.

A TMDL is equal to the loading capacity for a waterbody, and that loading capacity is distributed among load allocations to nonpoint and background sources and wasteload allocations to point sources. The overall loading capacity for the nearshore waters of Pend Oreille Lake is 4,588 pounds of total phosphorus per season (June through September). Because no point sources discharge to the nearshore waters, the wasteload allocation is zero. Therefore, the load allocation to nonpoint and background sources is equal to the loading capacity of 4,588 pounds of total phosphorus per season. An implicit margin of safety was included in the TMDL through the use of conservative assumptions. An implementation plan will be developed for the TMDL and will likely include many of the management actions identified by EPA (USEPA, 1993).

Appendix D -- BMP Resource List

BMP Category	Responsible Agency	BMP Rules and Guidelines	Additional Information
Agriculture	IDEQ	Agriculture Pollution Abatement Plan	Idaho Dept of Agriculture, Agricultural Water Quality Program, www.agri.state.id
		Rules Governing Dairy Wastes (IDEQ)	Idaho One Plan, www.oneplan.org
	SCC	Idaho Waste Management Guidelines for Confined Feeding Operations	NRCS Comprehensive Nutrient Management Planning -- Technical Guidance www.nrcs.usda.gov/technical/nutrient.html
	ISDA		NRCS National Handbook of Conservation Practices, www.ftw.nrcs.gov/nhcp_2.html
			EPA Office of Water, Management Practices to Control Nonpoint Source Pollution from Agriculture, www.epa.gov/owow/nps/agmm/
Forest Practices	IDL	Idaho Forest Practices Rules (IDL)	EPA Office of Water, National Management Practices to Control Polluted Runoff from Forestry, www.epa.gov/owow/nps/forestrygmt .
			EPA, Management Practices for Forestry www.epa.gov/owow/nps/MMGI/Chapter3/Index.html
	IDL Forester Forums www.deq.state.id.us/lands/Bureau/ForestAssist.state_forester_forum.htm		
	USFS, Regions 1 and 4, Soil and Water Conservation Practices Handbook. Forest Service Handbook 2509.22		
Road Construction	ITD	Best Management Practices for Road Activities (ITD)	ITD, Erosion and Sediment Control. January 2002
		Catalog of Storm Water BMPs for Highway Construction and Maintenance EPA, nonpoint source pollution control information	www.epa.gov/owow/nps/roadshwys.html
	Bonner County	Bonner County Roads Standards Manual	Bonner County Public Works Department
Urban Runoff	IDEQ	Estimating & Mitigating Phosphorus from Residential and Commercial Areas in Northern Idaho	EPA, Fact sheets and outreach materials http://cfpub.epa.gov/npdes/pubs.cfm?program/urban.html
	IDWR		Environmental Planning Tools and Techniques (IDEQ)

	Bonner County	Catalog of Storm Water BMPs for Idaho Cities and Counties (IDEQ) Stormwater Center	www/stormwatercenter.net
		Bonner County Stormwater Ordinance	Bonner County Planning Department www.co.bonner.id.us
Mining	IDL IDEQ	Best Management Practices for Mining in Idaho (IDL)	Best Management Practices for Reclaiming Surface Mines in Oregon and Washington www.wa.gov/dnr/htdocs/ger/pdf/bmp.pdf .
		Rules Governing Placer and Dredge Mining in Idaho (IDL)	
		Rules and Regulations for Ore Processing by Cyanidation (IDEQ)	
		Rules Governing Exploration and Surface Mining Operations in Idaho (IDL)	
Hydrologic Modification	IDWR	Rules and Minimum Standards for Stream Channel Alterations (IDWR)	NRCS, Stream Corridor Restoration: Principles, Process and Practices www.usda.gov/stream_restoration/newgra.html .
			EPA, National Management Practices to Protect and Restore Wetlands and Riparian Areas for the Abatement of Nonpoint Sources of Pollution www.epa.gov/owow/nos/wetpractices/
On-site Disposal Systems (Septic Systems)	IDEQ Panhandle Health District	Rules for Individual Subsurface Sewage Disposal Systems (IDEQ)	National Flows Clearinghouse, complete and current information on management options for septic systems www.nesc.wvu.edu/nsfc/nsfc_index.htm
		Sewage Disposal Regulations	IDEQ, A Homeowner's Guide to Septic Systems, www.deq.state.id.us/deq/water/gw/septicsystem_brochure.htm
			Univ. of Idaho, Care and Maintenance of Your Home Septic System, http://info.ag.uidaho.edu/Resources/PDFs/CIS1027.pdf .
			Inspecting, Designing & Maintaining Residential Septic System www.inspect-ny.com/septbook.htm
			EPA, Design Manual for Onsite Wastewater Treatment and Disposal Systems, 1980, currently under revision.
Wastewater Treatment	IDEQ	Guidelines for Land Application of Municipal and Industrial Waste Water (IDEQ)	

		Land Application Permit Regulations (IDEQ)	
Well Drilling/ Abandonment	IDWR	Administrative Rules of Well Construction and Abandonment (IDWR)	
Aquaculture	ISDA IDEQ	The Idaho Waste Management Guidelines for Aquaculture	
Marinas and Recreational Boating	EPA		EPA, National Management Practices to Control Nonpoint Source Pollution from Marinas and Recreational Boating www.epa.gov/owow/nps/mmsp/index.html
Other	IDL	Dock Standards and Float Home Requirements; Navigational Encroachments	The Regulation of Beds, Waters, and Airspace Over Navigable Lakes in the State of Idaho. www2.state.id.us/adm/adminrules/rules/idapa20/0304.pdf
	COE	Wetlands Delineation Manual	www.usace.army.mil/public.html#Regulatory

Appendix C CONTACT INFORMATION FOR RESPONSIBLE AGENCIES

AGENCY	PHONE	WEBSITE
Bonner County Public Works Road & Bridge Dept.	208-255-5681	www.co.bonner.id.us
Bonner County Planning Dept.	208-265-1458	www.co.bonner.id.us
Bonner Soil & Water Conservation District	208-263-5310	www.iascd.state.id.us or www.id.nrcs.usda.gov
Idaho Dept. of Agriculture	See BSWCD	www.agri.state.id.us
Idaho Dept. of Environmental Quality	208-769-1422	www.deq.state.id.us
Idaho Dept. of Lands	208-263-5104 208-769-1525	www2.state.id.us/lands
Idaho Dept. of Parks & Recreation	208-769-1511	www.idahoparks.org
Idaho Dept. of Water Resources	208-769-1450	www.idwr.state.id.us
Idaho Transportation Dept.	208-772-1200	www.itd.idaho.gov
Natural Resources Conservation Service (U.S. Dept of Agriculture)	See BSWCD	www.usda.gov or www.id.nrcs.usda.gov
Panhandle Health District	208-263-5159	www2.state.id.us/phd1/
Soil Conservation Commission	See BSWCD	www.scc.state.id.us
U S. Environmental Protection Agency	1-800-424-4EPA	www.epa.gov
U S Army Corps of Engineers	208-765-7237	www.usace.army.mil

Appendix E -- IDAHO DEPARTMENT OF LANDS

PEND OREILLE LAKE NEARSHORE TMDL FOREST PRACTICES IMPLEMENTATION PLAN

Introduction

This Forest Practices Implementation Plan outlines an approach to meeting the requirements for pollution reduction set forth in the Pend Oreille Lake Nearshore Total Maximum Daily Load (TMDL). This plan defines “nearshore” as a one mile distance inland from the Pend Oreille Lake shoreline.

Pollutants of Concern from Forest Land and Forest Practices

Phosphorus and sediment export from forested watersheds and associated forest practices have been identified as pollutants of concern for the Pend Oreille Lake Nearshore TMDL. Pollutant loads vary depending upon climate; species, density and age of trees; soil type and topography. Areas below 4,000 feet elevation are also susceptible to erosion occurring during rain on snow flood events. Though forested lands generally produce less phosphorus and sediment per acre than more intensive land uses, their total contribution can become significant due the large portion of the watershed that they cover. Small changes in sediment and phosphorus export when expanded over a large area can result in large changes in the total contaminant load entering a water body.

Increases in phosphorus and sediment export from forested lands can occur from timber harvest, construction and use of roads and skid trails, slash burning, site preparation for reforestation as well as natural events such as wildfire and mass slope failure. Certain non silvicultural activities such as camping and recreational travel can also increase contaminant loads. The first year following a timber harvest, phosphorous loading increases approximately 0.125 - 0.30 to 2.37 pounds per acre per year (Falter, Dec. 1987; Bellatty, 1987; USGS, 1994); sediment export increases from about 0.30 to 1.4 tons per acre per year (Bellatty, 1987). Both can return to background levels in approximately 2-6 years.

Developing a native surface road can increase sediment export even more dramatically. If surface water is allowed to flow down roads and trails, its speed accelerates resulting in increased erosion. Even when the road surface is cross drained, water can be channelized by the ruts created by vehicles using the road during soft and muddy conditions. Road cuts may also intercept shallow ground water, compounding the problem. The quantity of sediment which reaches a stream channel varies based on a number of factors including the slope steepness, slope shape, drainage density, the vegetative community and soil particle size. A new road exports approximately 105 tons per acre of exposed soil for the first year. If the road is cross drained, this decreases to a long term export of 8-29 tons per acre per year (USDA Forest Service, 1981, Megahan and Kidd, 1972). It is likely that sediment export from improperly drained roads is even higher.

In addition to sediment from roads and the land itself, sediment can also enter stream channels directly from erosion of the stream bank. Timber harvest, soil compaction, removal of topsoil surface litter and road construction all increase peak runoff and water yield, resulting in increased erosion. Removal of conifers from the riparian area of streams also makes stream channels less stable and more susceptible to erosion during spring run-off. Another problem caused by excessive runoff and the removal of conifers from riparian areas is increased bedload movement. In a natural state, large organic debris (LOD) such as logs fall into and across streams, reducing the velocity of the water, slowing runoff and forming pools for fish. When conifers along a stream are removed, this organic debris is no longer available and there is nothing to slow water velocities. Stream channels then become unstable and the rocks which form the stream bed begin moving downstream, filling the pools necessary for fish survival.

Best Management Practices for Forest Practices

Because of the potential water quality impacts from timber harvest and forest road construction, mandatory Best Management Practices (BMPs) have been developed and incorporated as Rules under the Idaho Forest Practices Act (FPA). These Rules are designed to protect water and air quality; provide habitat for wildlife and aquatic life and to maintain productive forests. FPA Rules are generally “descriptive” rather than “prescriptive” giving the Department of Lands latitude to require additional measures when they are warranted.

Forest Practices Act Rules apply to all forest lands in Idaho, including state, federal and private. The Idaho Department of Lands administers the Rules on state and private lands while federal agencies regulate lands within their jurisdiction.

Forest Practices Act Rules undergo consistent scrutiny, called effectiveness monitoring, to determine if they adequately protect water and air quality, fish and wildlife habitat and forest productivity. The Idaho Department of Environmental Quality (IDEQ) has responsibility for effectiveness monitoring. One way this is accomplished is through quadrennial Forest Practices Audits. Beginning first in 1984, these interagency, interdisciplinary audits review forest operations on federal, state and private lands to determine the implementation rate and effectiveness of forestry BMP’s. Audit results are presented to the Idaho Forest Practices Act Advisory Committee who recommends Rule changes to the State Board of Land Commissioners.

Public Involvement In TMDL Implementation Plans

In accordance with Idaho’s Nonpoint Source Management Plan, the Department of Lands is the designated lead agency to address forestry activities in TMDL Implementation Plans. As the lead agency, IDL is responsible to solicit input from affected landowners and technical specialists to develop site-specific practices that will fully restore the beneficial uses identified in the TMDL.

In accordance with FPA Cumulative Watershed Effects Rules, the department will form a forest practices working group consisting of industrial and non-industrial forest landowners, state and federal land managers. This group will evaluate and analyze data generated in the TMDL and the resulting TMDL Implementation Plan. They will recommend site-specific BMP's and implementation guidelines. The Department of Lands will facilitate this group and report progress and recommendations to the appropriate Watershed Advisory Group (WAG), Basin Area Group (BAG) or Technical Advisory Committee (TAC).

Forestry Implementation Plan Funding

Under the Idaho Forest Practices Act, the party responsible for conducting the forest practice must meet applicable Rules and BMPs. The cost of complying with the FPA is born by the operator, landowner or third party depending upon any contractual agreements that may exist.

The Department of Lands has responsibility to administer and enforce the Forest Practices Act. At present, private forest landowners are annually assessed \$0.15 per acre for all forestlands and \$0.12 per thousand board feet harvested to help fund IDL administration of the FPA. Additional funding comes from state general fund and federal grants. The department also has authority to expend funds out of a rehabilitation account, but this is limited to only those costs associated with the repair of unsatisfactory conditions identified in the Notice of Violation process.

Some site-specific practices that may arise out of the work group process may be considered voluntary and thus the landowner or operator may not be required to bear the full implementation cost. To fully implement these practices, additional funding sources must be secured. Options for increased funding include additional grants, tax credits, and federally funded cost-share practices for landowners or additional landowner assessments.

Current Site Specific Best Management Practices For Lakes

In accordance with the Idaho Forest Practices Act, Rule 030.07a. requires the approval of a site-specific riparian management prescription prior to conducting a forest practice activity adjacent to a lake.

The Pend Oreille Lake Supervisory Area, Idaho Department of Lands has adopted a list of site-specific Lake Best Management Practices. Prior to issuing a Notification of Forest Practice, department personnel visit the landowner and/or operator to review the proposed activity and determine which of these generic Lake Best Management Practices apply on a site-specific basis. Additional site-specific Lake BMPs can be prescribed if necessary.

LAKE BEST MANAGEMENT PRACTICES
PEND OREILLE LAKE SUPERVISORY AREA
IDAHO DEPARTMENT OF LANDS

1. Any proposed harvest that occurs within 300 feet of a lake will be identified on the Notification of Forest Practice. This area will be known as the Lake Management Zone.
2. Treat all lakes that are larger than one acre, have fish, or provide domestic water use as though they are Class I Streams. This includes no operation of ground-based equipment within 75 feet of the lake's ordinary high water mark along with leaving the proper number of trees and amount of shade within 50 feet of the ordinary high water mark. (See FPA Rule 030.07.e)
3. Slash piling or burning will not be allowed within 75 feet of the ordinary high water mark on Class I streams and lakes and 30 feet of the high water mark on Class II streams or lakes. Large continuous underburns that would alter shading and filtering effects should be avoided within 300 feet of lakes.
4. A pre-operational inspection may be required if there are plans to construct or reconstruct roads located on highly erosive or unstable soils.
5. All sediment traps or filters must be placed at least 30 feet from the lake's ordinary high water mark unless an alternative is approved by the department. This will help ensure that trapped sediment does not wash into a lake during flood events.
6. No tractor skidding will be allowed on slopes over 45% within 300 feet of a lake management zone without a variance.
7. Fertilizers shall not be used within the lake or stream protection zone (75 feet of the ordinary high water mark on Class I streams and lakes and 30 feet of the ordinary high water mark of Class II streams and lakes.
8. All maintenance of equipment should be conducted outside of the 300 feet lake management zone unless special measures are taken to prevent petroleum product or chemical spills.
9. Petroleum or chemical products will not be stored within 300 feet of a lake without taking proper spill prevention and containment measures. Any plan to store petroleum products or chemicals within 300 feet of a lake will require pre-approval from the department.
10. All other applicable FPA Rules apply.

Forest Management Versus Lakeshore Development

Prior to implementing a forest practice, the landowner, operator and/or contractor must obtain a dual-purpose document – Certificate of Compliance / Notification of Forest Practice – from the Idaho Department of Lands. The Pend Oreille Lake Fire District in Sandpoint issues between 800-1,000 compliances/notifications each year. Only about 20-30 of these forest practices are within 300 feet of a lake and thus requiring the need for Lake BMPs.

Because of high real estate values adjacent to lakes, and especially so for Pend Oreille Lake, very little land immediately adjacent to lakes is managed for long-term forest management objectives. Forest practices in these high-value areas tend to be incidental to some form of property development typically involving access and residential development. Most often, a minor amount of commercial timber is harvested as part of a site development package that includes road or driveway construction and preparation of a building site.

In these cases the forest practices advisor must assess which Lake Best Management BMPs under the Forest Practices Act to apply. Local planning and zoning ordinances may very well require a different standard. Therefore, coordination between local, state and federal regulating agencies becomes very important to ensure the protection of beneficial uses.

References

- Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code
- Rules Pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code
- Forestry BMPs for Idaho, Forest Stewardship Guidelines for Water Quality; Idaho Department of Lands; 2000

Appendix F -- Idaho Transportation Department

DRAFT TMDL IMPLEMENTATION PLAN IDAHO TRANSPORTATION DEPARTMENT-DISTRICT ONE STATE HIGHWAYS AND LOCAL PUBLIC ROADS WITHIN 1-MILE OF PEND OREILLE LAKE REVISED: 09/11/03

OVERVIEW

The mission of the Idaho Transportation Department (ITD) is to provide a high quality, cost effective transportation system that is safe, reliable, and responsive to the economic and efficient movement of people and products. ITD's principle operations are dominated by the need to maintain and improve the state highway system. ITD also provides local transportation agencies with planning, grant and contract administration services for federally funded activities associated with local roads.

Inherent to ITD's mission and operations is the protection of the natural and human environment and compliance with all applicable federal, state and local rules and regulations. In North Idaho, environmental protection can be particularly challenging for ITD due to the mountainous topography, relative wet weather patterns, and the proliferation of lakes, streams and wetlands in our region.

The effects of state and local roadway infrastructure on environmental quality is primarily dictated by past roadway corridor development. For the most part, highway corridors are well established and will continue to influence environmental baseline conditions, particularly with respect to stream morphology, hydrology and water quality. Maintenance activities and transportation improvement projects on existing routes can exacerbate environmental impacts from short-term construction related sediment discharges, stormwater discharges or new permanent alterations of water resources. ITD's response to environmental protection will continue to be reasonable and comprehensive effort to control erosion and manage sediment within construction limits, minimization of permanent impacts and to provide compensatory mitigation where necessary. In some cases, water quality improvement and protection may be accomplished through the development of future projects that meet transportation needs while improving water resources, such as paving projects, stream channel/floodway improvement projects along roadway corridors, realignment and road obliteration projects, and construction of stormwater treatment facilities to name a few.

COSTS AND FUNDING

The cost of ITD's TMDL Implementation Plan will be borne from existing transportation funding programs and resulting project design requirements. Project costs in terms of erosion and sediment control practices and/or water quality improvement projects will be commensurate with the need to abate or correct particular water quality concerns in this TMDL implementation area. Priority projects to improve water quality, as identified by ITD and local transportation agencies or resource agencies may qualify for enhancement

funds provided by TEA-21 or other federal funding sources. ITD and local transportation agencies will seek such funding on an ongoing basis.

ITD TMDL MANAGEMENT MEASURES, PARTICIPATION AND TIMELINE

MANAGEMENT MEASURES	ITD	Local Agencies	FHWA	IDEQ	FREQ
1. ITD-D1 SEDIMENT CONTROL BMPs, PROCEDURES, AND REVIEWS					
a. revise ITD-BMP Catalog and provide training to ITD and local transportation agency staff	X	X			Ongoing
b. emphasize the following: use of BFM's (think erosion first); protection of buffer zones; effective use of perimeter controls; spec erosion protection for runoff channels; rock armor erodable areas in and near concentrated flows; frequent use of check dams and sediment traps; use fast establishing cover crops; use retaining walls to avoid wetlands and streams where feasible; etc.	X	X			every project
c. ITD preliminary design reviews	X	X			every project
d. ITD final design reviews	X	X		At request	every project
e. environmental clearances (EISs, EAs, Cat Ex.)	X	X	X		every project
f. plans, specification and estimates (PSE) Reviews	X	X		At request	every project
g. pre-construction conferences	X	X		At request	every project
h. environmental inspections	X	X	X	At request	every project
i. 404 compliance	X	X			every project
j. NPDES compliance	X	X			every project
k. TMDL compliance review	X	X		X	Annually
2. SMARTER CONSTRUCTION CONTRACTS					
a. stricter winter shutdown specifications and scheduling on large earthwork jobs	X	X			As needed
b. limit ground disturbance on multiseason projects.	X	X			every project
3. ITD/LOCAL AGENCY WATER QUALITY IMPROVEMENT PROJECTS					
a. develop list of known water quality problem areas	X	X			09/04
b. list of future projects in TMDL watersheds: Sand Creek Byway; Sand Creek Bikepath; CMAQ projects	X	X			ongoing
c. planning and implementation of water quality enhancement projects; process enhancement grants	X	X			ongoing

MAINTENANCE OF EFFORT OVER TIME

ITD is bound to implement effective sediment and erosion control practices by requirements set forth in ITD policies and standards (ITD-Admin. Policies A-04-07 and A-04-05 (Environmental Monitoring), ITD-DOH Memo No. E2 (Erosion and Sedimentation Control), and ITD's Design Manual. In addition, point and nonpoint

source discharges from many state and local projects are subject to existing environmental requirements such as Clean Water Act Sections 402 (EPA-NPDES) and 404 (Army Corps of Engineers-Dredge and Fill), Idaho nonpoint source regulations, and local stormwater and floodplain ordinances. The National Environmental Policy Act (NEPA) requirements also apply to all ITD and local agency projects that seek federal aid funding, as administered by the Federal Highway Administration (FHWA). This TMDL Implementation plan places a new emphasis on coordination and partnering between ITD and local agencies that will focus on water quality improvement needs on public transportation systems within the TMDL implementation area.

MONITORING AND EVALUATION

ITD's TMDL monitoring and evaluation effort will continue to be driven in large part by existing ITD administrative policies and procedures for erosion and sediment control on projects (i.e., Admin. Policy A-04-07, Environmental Monitoring). Resource and regulatory agencies and the public will continue to review project plans and construction activities upon request.

PUBLIC INVOLVEMENT

As a public agency, all of ITD's operations involve the public. Most, if not all, of ITD's moderate to large scale projects include public involvement plans and well-advertised public meetings and/or hearings. In addition, ITD's State Transportation Improvement Plan is shaped by public transportation needs, including project involving water quality improvement actions. ITD continues to welcome and seek public comment and review of its programs, projects and erosion control practices. The ITD District 1 office is located at 600 West Prairie Avenue and is always open weekdays between 7:AM and 4:PM. Engineering and Environmental staff can be reached by telephone at (208) 772-1200.

Appendix G -- Idaho Soil Conservation Commission Plan

Pend Oreille Lake Nearshore TMDL Agricultural Implementation Plan

I. Introduction

Section 303(d) of the Clean Water Act (CWA) requires states to develop a total maximum daily load (TMDL) management plan for water bodies that are water quality limited. A TMDL is an assessment of the amount of a specified pollutant a water body can carry without violating state water quality standards. This amount is called the *loading capacity* of the water body. The difference between the loading capacity and the actual load of a pollutant in a water body is the amount that pollutant needs to be reduced in order to meet water quality standards. The TMDL analysis allocates the load capacity among known sources of pollution in a given watershed.

After an approved TMDL management plan is completed for a water body, the Idaho Department of Environmental Quality (IDEQ) facilitates the development of a TMDL implementation plan. This is a separate document that lays out methods for achieving load reductions spelled out in the TMDL management plan as well as estimated costs and timelines. Designated management agencies are responsible for implementation on lands falling under their jurisdiction.

Development of the TMDL for the nearshore waters of Pend Oreille Lake was initiated by IDEQ in response to public concern. The intent of the management plan was to protect the future quality of nearshore waters as surrounding communities continue to grow. The *TMDL for Nutrients for the Nearshore Waters of Pend Oreille Lake, Idaho* was approved by the U.S. Environmental Protection Agency in 2002 (Tetra Tech 2002). The implementation phase was initiated upon completion of the TMDL analysis.

The Idaho Soil Conservation Commission (ISCC) is the designated management agency in Idaho for managing agricultural nonpoint source pollution and is therefore the lead in TMDL implementation activities on agricultural land. Although the ISCC does not have regulatory or licensing authority over water quality or pollution control, the mission of the ISCC is to provide support to Idaho's Soil and Water Conservation Districts for wise use and improvement of natural resources (RPU 2003). The ISCC offers technical assistance to landowners and operators and administers the Water Quality Program for Agriculture (WQPA) and the Resource Conservation and Rangeland Development Program (RCRDP) in cooperation with Soil and Water Conservation Districts.

The ISCC works with the Bonner Soil and Water Conservation District (Bonner SWCD), the Idaho Association of Soil Conservation Districts (IASCD), and the Natural Resource Conservation Service (NRCS) in a conservation partnership to reach common goals and successfully deliver conservation programs in Bonner County.

A. Conservation Partnership

Local soil and water conservation districts, the ISCC, and NRCS have partnered up, recognizing common conservation goals. Each agency has its own responsibilities and recognizes the need to coordinate efforts to successfully implement conservation programs. This working relationship is referred to as the *conservation partnership*. In Bonner County, the Bonner SWCD/NRCS Field Office consists of the Bonner SWCD, NRCS, and IASCD/ISCC staff.

- **Bonner Soil and Water Conservation District** – Conservation districts are units of local government led by an elected board of supervisors. Utilizing input from other agencies and the public, conservation districts set the priorities that focus conservation efforts locally. They promote clean water and productive soil by assisting agricultural landowners and operators with effective management of natural resources.

- Idaho Association of Soil Conservation Districts – IASCD is a nonprofit association of Idaho's 51 soil and water conservation districts cooperating in the management of Idaho's natural resources. The IASCD was organized to provide a unified voice for conservation at the state level. Its members work closely with the ISCC on problems of policy and resource concerns. IASCD participates in the conservation partnership in this capacity and provides staff support to conservation districts throughout the state under ISCC supervision.
- USDA – Natural Resource Conservation Service – NRCS is a non-regulatory federal agency that works with private landowners on a request basis. NRCS assists the ISCC, conservation districts, landowners and operators, and others in conserving natural resources. Guided by local district priorities, NRCS delivers technical and financial assistance to landowners and operators through voluntary programs to achieve conservation goals. NRCS offers leadership and technical assistance to the ISCC, conservation district staff, and other agencies, as requested. NRCS administers a number of programs that provide cost share to eligible participants to facilitate the implementation of Best Management Practices (BMPs).

The effects of agricultural practices on water quality vary depending on the management practices and location of particular operations. The conservation partnership assists landowners in implementing Best Management Practices (BMPs) that minimize negative impacts to water quality. The partnership is committed to targeting watersheds listed as water quality limited, and program delivery efforts prioritize projects occurring in degraded watersheds. The Bonner SWCD's Five Year Plan lists water quality as one of its top priorities, including TMDL Implementation.

The following table summarizes all activities included in this implementation plan and associated costs. Implementation of BMPs is dependent on voluntary participation. Costs and amounts of these activities to be implemented are tentative estimates. Refer to Section V for further explanation.

Table 1. Summary of Implementation Activities and Costs (Includes Nearshore Allocation Area and North Shore Extended Area)

Activity	Amount	Estimated Cost
Best Management Practices (Tier 1)		
Fence (exclusion)	3,375 feet	\$8,438
Livestock Water Facility	3 each	\$7,500
Streambank/Shoreline Protection	3,375 feet	\$168,750
Livestock Feeding Operation Inventory	1 each	\$8,400
Subtotal =		\$193,088
Information/Education		
Fertilizer Brochure Development	1 each	\$5,000
Expand Newsletter Distribution	1,000 copies	\$1,600/year
Total		\$199,688
Best Management Practices Scheduled for a Later Date (Tier 2)		
Fence (exclusion)	41,050 feet	\$102,625
Channel Vegetation	205 acres	\$205,000
Livestock Water Facility	13 each	\$32,500
Heavy Use Area Protection	13 each	\$35,100
Stream Stabilization	12,265 feet	\$919,875
Total		\$1,295,100

B. Purpose

The purpose of the agricultural portion of this implementation plan is to assess agricultural activities occurring in the watershed, identify critical areas contributing to nuisance algae growth in the nearshore area, and present treatment alternatives for these areas. The goal is to

complement other efforts in restoring and protecting beneficial uses in the nearshore waters of Pend Oreille Lake by reducing the amount of agricultural nonpoint source pollution entering nearshore waters. In order to reach this goal, the following objectives have been established:

1. Minimize direct impacts to riparian areas and waterways in the nearshore area.
2. Reduce the occurrence of nutrient over-application to agricultural land in the nearshore area.
3. Minimize sediment delivery from agricultural land in the nearshore area.

Agricultural pollution reductions will be attained through the application of Resource Management Systems (RMS) and BMPs developed and implemented onsite with individual landowners and agricultural operators. In addition, efforts will be made to educate land users in the nearshore area on the effects of land use on water quality. This will encourage participation in implementation efforts, ensure long-term maintenance of BMPs, and increase awareness of water quality issues. Installed BMPs will be monitored for effectiveness and evaluated in terms of pollutant reduction.

II. Background

Pend Oreille Lake lies almost entirely in Bonner County, with a small portion in Kootenai County, in north Idaho (Figure 1). Pend Oreille Lake receives much of its water volume from the Clark Fork River in Montana. The Pack River and several smaller tributaries in Idaho also drain into the lake. The outlet arm of the lake forms the Pend Oreille River, which flows west into Washington, eventually draining into the Columbia River in Canada.

A. Land Ownership and Use

Land ownership in the nearshore allocation area includes federal, state, and private land. Land ownership is as follows (approximate acreage):

- Federal land – 22,720 acres
- State land – 3,485 acres
- Private land – 35,090 acres

The TMDL analysis for nearshore waters estimated less than 6% of the land area in the nearshore drainages falls into the categories of “Grassland/Herbaceous” or “Pasture/Hay.” The majority of the agricultural land in the nearshore area occurs as hayland and livestock operations. There are currently no continuous or long-term annual cropping systems. There are beef, horse, and a few small goat and sheep operations associated with forage production (NRCS data). The majority of the agricultural activities occurring around Pend Oreille Lake are located in the north shore area. Agricultural areas around the rest of the lake also occur on similar soil types and slope.

B. Agricultural Land Accomplishments

The conservation partnership has been active in soil and water conservation activities and public education efforts since the formation of the Bonner SWCD in 1946. The partnership has developed individual conservation plans for local agricultural producers and has pursued funding sources to assist in implementing BMPs. The partnership has additionally restored wetland and riparian areas, stabilized streambanks, coordinated with other agencies and individuals in educational activities for youth, and made educational materials available to the public.

Funding sources utilized by the conservation partnership in Bonner County have included Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), Wetland Reserve Program (WRP), Clean Water Act Section 319 Program, and Continuous CRP. Accomplishments in the nearshore area specifically are summarized in Table 2 below.

Table 2. NRCS Field Office Accomplishments in the Nearshore Areas of Pend Oreille Lake

Project	Dates	Status
City of Kootenai storm water management plan assistance	1998-2002	Completed
Ponder Point bank stabilization	1998	Completed
Conservation Reserve Program Approximately 700 acres	1998-2003	Completed
Bayview Road Rockslide Stabilization	2001	Completed
20 acres of tree planting and pre-commercial thinning	2003	Completed

III. Problem

Land use in the areas surrounding Pend Oreille Lake has increased nutrient inputs into the system, contributing to nuisance algae growth in nearshore waters. Agricultural activities contribute nutrients to waterbodies through runoff and erosion. Livestock grazing and hay production in riparian areas reduces riparian vegetation and increased streambank erosion. As soil enters the lake and tributaries from erosion, it carries nutrients with it. Runoff and erosion from pasture and hayland and direct nutrient input from livestock also contribute to nutrients entering the lake.

The *TMDL for Nutrients for the Nearshore Waters of Pend Oreille Lake, Idaho* identified concentrated phosphorus as a pollutant of concern. The analysis calculated a loading capacity of 4,588 pounds of phosphorus each season (June-September). This loading capacity has been allocated to all existing nonpoint sources of nutrients in the nearshore area (Tetra Tech 2002).

A. Threatened and Endangered Species

Section 7 of the Endangered Species Act of 1973 (ESA) requires federal agencies to determine how to use their authorities to further the purpose of the ESA to aid in recovering listed species and address existing and potential conservation issues. Section 7 (a)(2) further states that agencies shall consult with the U.S. Fish and Wildlife Service or NOAA Fisheries to ensure that any action they authorize, fund, or carry out "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of (designated critical habitat)." As a federal agency, the NRCS is required to follow this mandate for all projects implemented with federal funding. NRCS policy, as outlined in their General Manual, also includes provisions to consider State species of concern in their conservation activities (190-GM, Amend. 8, December 2003).

Impacts to T&E species and species of concern in the nearshore area will be taken into account in TMDL project implementation. If a proposed action is determined to be within close proximity to habitat used by a Threatened or Endangered (T&E) species or the known location of a T&E species, consultation will be initiated with the appropriate agency. Consultation involves describing the proposed project, assessing potential impacts, describing mitigation efforts for the project, and determining the effect of the project on the species of concern. The consultation process results in development of reasonable alternatives, and helps to minimize impacts of conservation practices to critical habitat.

The Idaho Department of Fish and Game Conservation Data Center, 2002 Threatened and Endangered Species GIS database is available as a tool in conservation planning. The database contains documented locations for terrestrial species. This can help identify known locations of T&E species and identify critical habitat types that may harbor T&E species. Conservation planners can reference habitat requirements to help landusers determine the potential benefits of

their project implementation. These discussions remain confidential between the landuser and planners.

Species listed as Threatened or Endangered under the ESA for Bonner and Kootenai Counties are summarized in Table 3, and Species of Concern for the State of Idaho are summarized in Table 4.

Table 3. Federally-listed Threatened and Endangered Species Occurring in Bonner and Kootenai Counties, Idaho (NRCS Field Office Technical Guide)

Species	Status*
Mammals	
Canada lynx (<i>Lynx canadensis</i>)	LT
Grizzly bear (<i>Ursus arctos horribilis</i>)	LT
Gray wolf (<i>Canis lupus</i>)	LE
Woodland caribou (<i>Rangifer tarandus caribou</i>)	LE
Birds	
Bald eagle (<i>Haliaeetus leucocephalus</i>)	LT
Fish	
Bull trout (<i>Salvelinus confluentus</i>)	LT
Plants	
Ute Ladies'-tresses (<i>Spiranthes diluvialis</i>)	LT

*LT – Listed as Threatened, LE – Listed as Endangered

Table 4. State of Idaho Species of Concern Occurring in the Nearshore Drainage

Mammals*	Plants*
Long-eared Myotis (<i>Myotis evotis</i>)	Black Snake-root (<i>Sanicula marilandica</i>)
North American Wolverine (<i>Gulo gulo luscus</i>)	Blueflag (<i>Iris versicolor</i>)
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	Bristle-stalked Sedge (<i>Carex leptalea</i>)
Western Small-footed Myotis (<i>Myotis ciliolabrum</i>)	Bristly Sedge (<i>Carex comosa</i>)
Yuma Myotis (<i>Myotis yumanensis</i>)	Bulb-bearing Waterhemlock (<i>Cicuta bulbifera</i>)
	Crested shield-fern (<i>Dryopteris cristata</i>)
Birds*	
Barred Owl (<i>Strix varia</i>)	Fringecup (<i>Tellima grandiflora</i>)
Boreal Owl (<i>Aegolius funereus</i>)	Giant Helleborine (<i>Epipactis gigantea</i>)
Common Goldeneye (<i>Bucephala clangula</i>)	Large Canadian St. John's-wort (<i>Hypericum majus</i>)
Common Loon (<i>Gavia immer</i>)	Least Bladdery Milkvetch (<i>Astragalus microcystis</i>)
Harlequin Duck (<i>Histrionicus histrionicus</i>)	Least Moonwort (<i>Botrychium simplex</i>)
Hooded Merganser (<i>Lophodytes cucullatus</i>)	Mingan Moonwort (<i>Botrychium minganense</i>)
Northern Goshawk (<i>Accipiter gentiles</i>)	Mountain Moonwort (<i>Botrychium montanum</i>)
Northern Pygmy –owl (<i>Glaucidium gnoma</i>)	Purple Meadowrue (<i>Thalictrum dasycarpum</i>)
Peregrine Falcon (<i>Falco peregrinus anatum</i>)	Stalked Moonwort (<i>Botrychium pedunculosum</i>)
Western Grebe (<i>Aechmophorus occidentalis</i>)	Swamp Willow-weed (<i>Epilobium palustre</i>)
	Triangular-lobed Moonwort (<i>Botrychium ascendens</i>)
	Water Clubrush (<i>Scirpus subterminalis</i>)
Reptiles*	
Northern Alligator Lizard (<i>Elgaria coerulea</i>)	Fish**
	Westslope Cutthroat Trout (<i>Oncorhynchus clarki lewisii</i>)
Amphibians*	
Northern Leopard Frog (<i>Rana pipiens</i>)	

* - IDFG, CDC database (as described in above text), **IDFG website (http://www2.state.id.us/fishgame/info/nongame/special_concern.htm)

B. Agriculture in the Nearshore Area

Agricultural activities occurring around Pend Oreille Lake are located on flatter terrain. The soils in these areas are silt loam and somewhat poorly to poorly drained. They have a perched or apparent water table between ½ to 2 feet below the ground surface from February until May or June (soil survey). While these soil types do not pose a large threat to groundwater, they can pose a threat to surface water. The impermeable layers that form the perched water tables increase the amount of precipitation that enters water bodies as runoff instead of groundwater. In cases where manure or other nutrients are applied to a field in winter or spring, or where manure is left where deposited in large amounts in the fall, spring runoff can carry much of the material into water bodies.

A land use inventory completed in the nearshore area in spring 2004 identified livestock operations, pasture, hayland and grazed forest as agricultural land uses. In addition to those in the allocation area, agricultural operations occurring between the Pack River and Sand Creek watersheds account for much of the agriculture in the nearshore watershed (Figure 2). Many of the sloughs and unnamed tributaries draining into the lake in this vicinity are bordered in part by pasture, hayland, or livestock feeding operations. Since these waterways will not be addressed by individual TMDL management plans, they are addressed here. The Pack River TMDL Implementation Plan is in progress, and Sand Creek is expected to be addressed through another TMDL as it is included in the impaired water body list in the IDEQ *Draft 2002-2003 Integrated Report*.

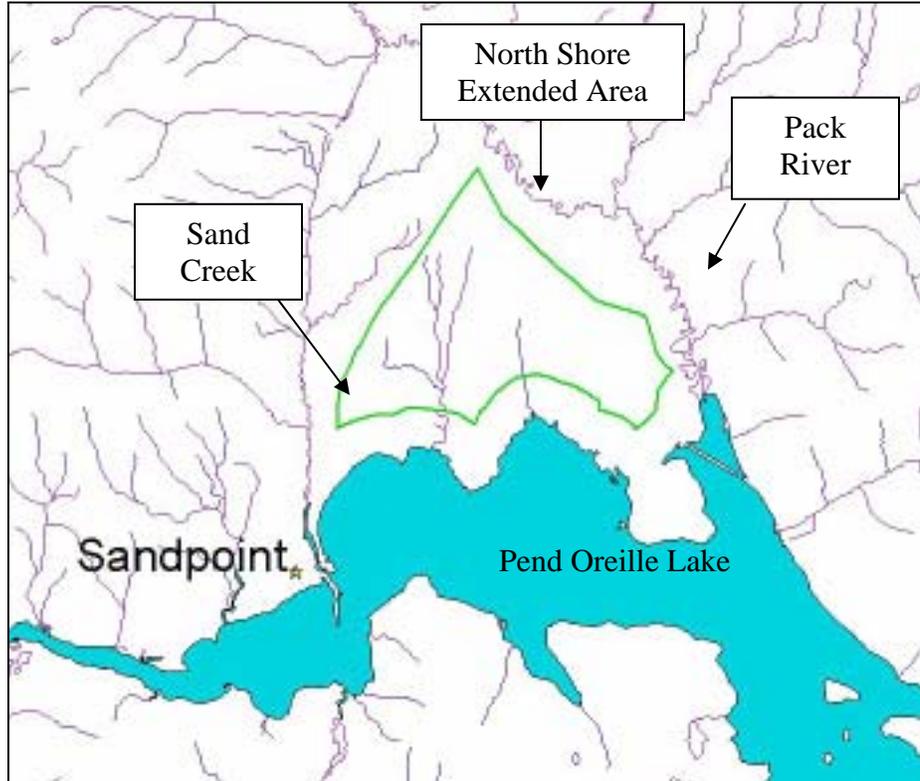


Figure 2. North Shore Extended Area

The land area draining into waterways between the Pack River and Sand Creek encompasses approximately 10,500 acres. Approximately 1/3 of this is in agricultural use. Agricultural land use is summarized for both the nearshore allocation area and the extended north shore area in Table 5 below.

Table 5. Agricultural Land Uses in The Nearshore Allocation Area and Extended North Shore Area

Land Use	Acres	
	Nearshore Allocation Area	North Shore Extended Area
Hayland	950	2840
Pasture	300	230
Livestock Feeding Operations	92*	30**
Total Agricultural Acres	1342	3100

*10 individual operations estimated include permitted dairy

**25-30 individual operations estimated – does not

Grazed forests are not delineated in this plan due to difficulty in assessing this land use. The United States Forest Service (USFS) and the Idaho Department of Lands (IDL) develop management plans for forested lands in their jurisdiction. IDL is the designated management agency for private forestland. In the event that these agencies desire support in developing grazing plans in these areas, the conservation partnership is available to provide assistance. Grazing in privately-owned forested areas where jurisdiction is unclear or overlapping will be addressed cooperatively between the conservation partnership and IDL.

Livestock

Livestock operations in the nearshore area consist of small seasonal feeding operations and livestock grazing. One CAFO exists outside the nearshore allocation area but within the scope of this implementation plan. It has a nutrient management plan in place.

Preliminary observations from field visits performed in spring 2004 identified 40 potential livestock feeding areas, including horse, cattle, and sheep operations. Some of these were confined near creeks and drainages entering the nearshore

waters of Pend Oreille Lake. Adequate information is not currently available to define these operations as AFOs or Winter Feeding Areas. A livestock feeding operation inventory will be completed in 2004-2005 in order to characterize feeding operations, assess the effects of these operations on water quality in nearshore waters, and develop management alternatives.

Cattle grazing in the nearshore area is primarily seasonal, beginning in the spring and ending in the fall. Cow/calf and feeder cattle predominate. Land use in the nearshore area is changing rapidly as pasture and hayland areas are being subdivided and developed. New homebuilders are acquiring larger lots on which they can keep a small number of animals, usually horses. This transition is expected to continue.

Although subdivisions with horses are not considered traditional agricultural operations, the conservation partnership will work to educate these landowners and will provide assistance as appropriate. The conservation partnership will strive to work with adjacent land users that have livestock, as a number of small operations can often contribute as much, if not more, nonpoint source pollution than a single agricultural operation (RPU 2003).

IV. Implementation Priority

Land use inventory revealed a higher concentration of agricultural activities in the area north of the lake around Kootenai and Oden Bays. Although the Pend Oreille Lake Nearshore TMDL delineates an allocation area covering a 1-mile radius around the lake, the agricultural implementation plan encompasses slightly more area than this, as described above.

Critical Areas

Agricultural areas that contribute excess pollutants to waterways are defined as "critical areas." These areas are prioritized for treatment based on their location relative to Pend Oreille Lake or waterways in the nearshore area and the potential for pollutant transport and delivery to water. Primary operations of concern are livestock operations with either unrestricted access to riparian areas and/or contributing direct runoff from feedlots, overgrazed pastures, and pasture and hayland that encroaches upon riparian areas.

Definitions

- According to the Environmental Protection Agency, an **Animal Feeding Operation (AFO)** is a facility that does not sustain vegetation or plant residue in the normal growing season (i.e. pasture) over any part of the facility and maintains animals for at least 45 days total within a 12-month period.
- An AFO that is determined by the Environmental Protection Agency (EPA) to be a significant pollutant contributor (to ground or surface water) is designated as a **Concentrated Animal Feeding Operation (CAFO)**. These facilities must apply for National Pollutant Discharge Elimination System (NPDES) Permit coverage. In Idaho, NPDES permits are administered by EPA.
- **Winter Feeding Area** is the term used by NRCS to refer to operations where livestock are confined and fed in a defined area but some vegetation is maintained on the site. Either the concentrations of animals and/or the duration of confinement is not great enough to kill vegetation or annually-seeded cover is grown on the site.

Implementation Tiers

The northern portion of the lake is high priority for this implementation plan. As mentioned previously, the majority of agricultural activity occurs in this area. In addition, the northern portion of Pend Oreille Lake is more shallow in comparison to the deep southern areas. These shallow nearshore areas were the focus of the TMDL management plan. This does not preclude land users in the entire nearshore area from receiving assistance. Rather, it just puts priority on areas in most need of help in the event that resources are limited.

As a general rule throughout the entire implementation area, critical areas will be assigned priority based on the following criteria:

- Tier 1 – Agricultural areas along the shoreline of the lake.
- Tier 2 – Agricultural operations adjacent to, or including, streambank and riparian areas.
- Tier 3 – Upland operations that indirectly influence the lake or waterways draining into the lake.

Tier 1 designates highest priority for treatment of TMDL pollutants. From the nearshore allocation area and the extended north shore area, approximately 20 acres of hayland and 3 acres of pasture are currently located on the shoreline of Pend Oreille Lake. Tier 2 indicates the next highest priority. Approximately 1675 acres of hayland and 235 acres of pasture are encroaching upon, or are adjacent to, waterways draining into the lake. Six livestock feeding areas with direct access to waterways have been observed. Tier 3 acreage is not delineated in this plan. Land use influence on water bodies will be determined on a case-by-case basis during field visits and addressed accordingly.

V. Treatment and Costs

Agricultural portions of the nearshore allocation area have been divided into Treatment Units (TUs). The TUs describe critical areas with similar land use areas, soils, productivity, resource concerns, and treatment needs. The TUs are used to evaluate impacts to water quality and lead to the formulation of alternatives for solving identified problems.

The most important portion of the watershed to address nutrients and sediment will be TU #1 – Riparian Areas, Buffer Zones, and Waterways. These include Pend Oreille Lake shoreline, sloughs, and other tributaries. Additional TUs will address BMPs for RMS-level conservation planning. These additional TUs may not be necessary for full TMDL implementation but will provide support to implementation efforts.

Agricultural BMPs are voluntary in nature and, therefore, rely on operator participation. A goal of 75% implementation has been set for the BMPs needed to address the resource concerns of TU #1. Other treatment units include Livestock Feeding Operations and Pasture/Hayland. Implementation in the form of education, outreach, inventory, planning, and BMP installation is ongoing. Resources will continue to be directed at the nearshore area with added emphasis.

Treatment Unit #1 Description - Riparian Areas, Buffer Zones, and Waterways

The riparian resources of the nearshore area vary from pasture and hayland vegetation to mixed woody and herbaceous riparian zones extending down from adjacent agricultural, suburban, and forested areas. There are approximately 300 acres within this treatment unit. This area consists of all watercourses in the nearshore and north shore areas with adjacent agricultural land as well as 20 acres of agricultural land on the Pend Oreille Lake shoreline. This area includes land adjacent to perennial and intermittent water courses with a 200-foot wide buffer along all tributaries (100 feet from the center of the channel extending out from both sides).

Resource Problems

Some of the riparian zones are unstable from lack of woody vegetation and perennial grasses. Bare, exposed soil and unstable banks resulting from the lack of vegetation can contribute

nutrients to waterways through erosion and sediment delivery to water. The lack of vegetation also inhibits a stream's ability to filter excess nutrients flowing into the water body from surface runoff. In addition to contributing to nuisance algal growth through nutrient enrichment, poorly functioning riparian zones can result in degraded habitat and increased water temperatures.

Causes of Resource Problems

Riparian area degradation has occurred as a result of channelization for drainage purposes, livestock overgrazing, and direct vegetative removal for facilitation of farming and ranching operations. Many areas used for hay and pasture in the nearshore area are located on flat areas with perched water tables present into early summer. In order to utilize these moist areas, some waterways have been cleared of vegetation and dredged to allow better water drainage. Table 6 below estimates BMPs and cost for the nearshore and north shore areas for TU #1.

Table 6. Best Management Practices for Treatment Unit #1

Best Management Practice	Amount	Estimated Cost
Pend Oreille Lake shoreline (Tier 1 – priority implementation)		
Fence (exclusion)	3,375 feet	\$8,438
Livestock Water Facility	3 each	\$7,500
Streambank/Shoreline Protection	3,375 feet	\$168,750
Total		\$184,688
Nearshore and North Shore Extended Area Waterways (Tier 2 – implementation at a later date)		
Fence (exclusion)	4,1050 feet	\$102,625
Channel Vegetation	205 acres	\$205,000
Livestock Water Facility	13 each	\$32,500
Heavy Use Area Protection	13 each	\$35,100
Stream Stabilization	12,265 feet	\$919,875
Total		\$1,295,100

Estimates for TU#1 include treating 75% of agricultural shoreline area observed with livestock exclusion fence and shoreline protection as well as one water facility for each field observed to provide an alternate water source for livestock. For other waterways, it was assumed for the purpose of estimating cost that hay fields are grazed some time during the growing season. For this reason, waterways with adjacent hay, pasture, or feeding areas were included in estimates for exclusion fencing. Riparian areas adjacent to agricultural activities were included in channel vegetation estimates.

All riparian areas with adjacent livestock and pasture as well as one third of all hay fields were used to estimate needed water facilities. This number was used assuming that some hay fields have existing water facilities and some fields may not be grazed at all. One heavy use area protection was figured for each water facility with the assumption that these areas would likely also need some protection. Streambank stabilization is estimated where there is adjacent pasture or livestock feeding areas. Hay fields were not included in this estimate, as they are not grazed for extended periods. Again, all cost estimates were figured using 75% participation.

Treatment Unit #2 Description – Livestock Feeding Operations

Definitions of CAFOs, AFOs, and Winter Feeding Areas are provided on page 7. A variety of livestock operations exist in the nearshore and north shore areas. Any operation that involves

providing livestock with supplemental feed in addition to grazed vegetation is considered a feeding operation.

Resource Problems

Impacts on soil and water quality can vary widely among livestock feeding operations. Possible problems include soil compaction, surface runoff of nutrients and bacteria, nutrient and bacteria loading to groundwater, and increased erosion and sediment delivery to waterways.

Causes of Resource Problems

Lack of vegetative buffers or structures to divert polluted runoff from entering nearshore waters can result in excess nutrients and bacteria entering waterways. Excess nutrients contribute to nuisance algal growth, and bacteria can impact recreational use of nearshore waters. In addition, soil compaction from concentration of animals can decrease the ability of precipitation to infiltrate into the soil. This increases surface runoff and direct pollutant delivery. With increased runoff and trampling of vegetation comes an increase in soil erosion as well. Sediment delivery to waterways further increases nutrient loads and degrades potential habitat.

No cost figures have been attached to treatment of livestock feeding operations, as it is not yet known how many true feeding operations exist and what condition the existing ones are in. Initial estimates of feeding operations were based simply on observation of animals outside normal grazing periods. However, no estimates on animal numbers, lot sizes, or vegetative condition have been made. Without this information, treatment estimates are futile. Initial implementation efforts will consist of a livestock feeding operation inventory to obtain needed information. This inventory will be performed by ISCC/IASCD staff in 2004 -2005. Cost for the inventory is summarized in Table 6 below.

Table 7. Inventory for Treatment Unit #2

Activity	Amount	Estimated Cost
Landowner Contact/Permission	40 hours	\$1,200
Field Visits	160 hours	\$4,800
Compilation of Results	40 hours	\$1,200
Formulation of Alternatives	40 hours	\$1,200
Total		\$8,400

Formulation of alternatives will provide a list of BMPs needed in order to address resource concerns. Some BMPs that will likely be proposed may include waste management systems and nutrient management plans. Agricultural waste management usually involves on-site animal waste storage or filtering whereas nutrient management includes the proper management and planned application of inorganic (commercial) and/or organic (usually animal waste) fertilizers. Both types of systems are planned specific to each site to preclude discharge of pollutants to surface or groundwater and to recycle waste through soil and plants to the fullest extent practicable.

Practices involved in these systems are listed below. These practices are further outlined in the standards described in the NRCS Field Office Technical Guide (FOTG), Section 4. Numbers after practices are the practice standard number from the FOTG. The electronic FOTG can be accessed online at <http://www.nrcs.usda.gov/technical/efotg/> as well.

Waste Management

Waste management systems may include one or more of a series of related practices that can be used to improve the management (storage, handling and land application) of inorganic fertilizers and liquid or solid animal waste including runoff from concentrated waste areas. These practices include the following:

- Waste storage facility (313)
- Waste treatment lagoon (359)
- Waste treatment strip (635)
- Dike (356)
- Diversion (362)
- Fence (382)
- Filter strip (393)
- Riparian forest buffer (391)
- Roof runoff structure (558)
- Streambank and shoreline protection (580)
- Subsurface drains (606)

Treatment Unit #3 Description – Hayland/Pasture

There are approximately 4,300 acres of pasture and hayland in the nearshore allocation area and north shore extended area combined. The majority of the hay and pasture soils are silt loam and somewhat poorly to poorly drained with slight erosion hazard. These areas have a perched or apparent water table between ½ to 2 feet below the ground surface from February until May or June (SCS 1982). Cropping systems consist of grass-legume pastures and hay rotated with small grain as hay or silage every 4-6 years.

Resource Problems

While soil types do not pose a large threat to groundwater, they can pose a threat to surface water. The impermeable layers that form the perched water tables increase the amount of precipitation that enters water bodies as runoff instead of groundwater. Surface runoff can carry pollutants directly to water bodies.

Causes of Resource Problems

In cases where manure or other nutrients are applied to a field in winter or spring, or where manure is left where deposited in large amounts in the fall, spring runoff can carry much of the material into water bodies. Manure contains bacteria and nutrients both. In cases where overgrazing occurs, soil compaction can further increase runoff versus infiltration. In addition, overgrazing can leave inadequate vegetative cover on the land surface, reducing the ability of the land to hold soil in place. These issues are especially significant where pastures are adjacent to riparian areas. Riparian area treatment was summarized in Treatment Unit #1 above. The BMPs for Treatment Unit # 3 are in addition to riparian treatment where pastures are adjacent to surface water.

The Best Management Practices applicable to Treatment Unit #3 are as follows:

- Critical area planting (342)
- Fence (382)
- Nutrient Management (590)
- Pasture and Hay Planting (512)
- Pest Management (595)
- Pipeline (516)
- Pond (378)
- Prescribed Grazing (528a)
- Spring Development (574)
- Watering Facility (614)

VI. Funding

Financial and technical assistance for installation of BMPs is necessary to ensure the success of implementation. Many potential funding sources exist. The Bonner Conservation Partnership will pursue one or more of the following funding sources for implementation of this plan:

Water Quality Program for Agriculture (WQPA)
Continuous Conservation Reserve Program (CCRP)
Environmental Quality Incentive Program (EQIP)
Clean Water Act Section 319 Program
Resource Conservation and Rangeland Development Program (RCRDP)
State Revolving Loan Fund (SRF)

VII. Outreach

Efforts to educate land users and the general public about the effects of management practices on water quality will be emphasized in the nearshore area. Because the nearshore areas of Pend Oreille Lake have impaired beneficial uses, the conservation partnership will put added emphasis on explaining technical and financial assistance available to landowners in the watershed through the BSWCD newsletter, one-to-one assistance with landowners, and in conjunction with other agencies. In addition, the Bonner SWCD will work with NRCS, ISCC, and IASCD to develop and distribute a brochure (and include in other educational materials) about fertilizer use and ways to reduce impacts on waterways. The brochure will tie in with fertilizer impacts to milfoil growth at docks (i.e. restrict fertilizer use along shoreline). This brochure is planned for development in 2005, and the cost for development and printing is estimated to be \$5,000.

The BSWCD distributes a quarterly newsletter to local landowners and operators containing information on conservation and programs available for conservation efforts. The BSWCD newsletter will incorporate articles on water quality, and the distribution list will be expanded to include more landowners and residents in the nearshore area. The initial estimated cost to expand newsletter distribution, including printing and postage costs, is approximately \$1600 per year.

Applications for technical and financial assistance will be solicited with emphasis in the nearshore area of impact, through cooperation of all conservation partners. As assistance is requested from these areas, high priority will be given to these and other applicants in areas critical to TMDL implementation. Assistance requests resulting in field visits allow direct contact with land managers and observation of the land. One-on-one time will be utilized to dispense information on water quality, best management practices, and available resources. Treatments applicable to the needs of the nearshore area will be the focus of discussions with landowners in the vicinity.

VIII. Evaluation and Monitoring

Structural practices implemented through the conservation partnership in areas critical to nearshore water quality are subject to the provisions of Clean Water Act Sections 401 and 404 and the Idaho's Stream Channel Protection Act of 1971. These provisions are in place to protect water quality during activities that disturb beds and banks of water bodies. In addition, all activities implemented through the ISCC, BSWCD, NRCS, and IASCD follow NRCS standards and specifications to ensure protection of water quality. Operation and maintenance plans are provided to landowners and operators after installation of BMPs, and annual status reviews are performed to ensure proper maintenance.

The IASCD/ISCC will complete in-field BMP effectiveness evaluations throughout the implementation phase. The ISCC BMP evaluation format and process will be implemented in conjunction with annual status reviews. These reviews will be significant to ensure sound decision-making and adaptation of implementation priorities and focus. The ISCC will be responsible for overseeing tracking and reporting implementation progress for all cost-share programs with assistance from IASCD.

Monitoring of the nearshore waters of Pend Oreille Lake is coordinated by the Tri-State Water Quality Council. Refer to the overall Implementation Plan for more information.

IX. References

Soil Conservation Service (SCS) November 1982. Soil Survey of the Bonner County Area, Idaho. In cooperation with the University of Idaho, College of Agriculture, and the Idaho Soil Conservation Commission.

Resource Planning Unlimited (RPU) March 2003. Idaho Agricultural Pollution Abatement Plan. Sponsored by Idaho Soil Conservation Commission and Idaho Department of Environmental Quality. Boise, Idaho.

Tetra Tech Inc. April 2002. Total Maximum Daily Load (TMDL) for Nutrients for the Nearshore Waters of Pend Oreille Lake, Idaho. Written in cooperation with the Tri State Water Quality Council. Idaho Department of Environmental Quality. Boise, Idaho.

Tri-State Water Quality Council. June 2004. Draft Pend Oreille Lake Nearshore TMDL Implementation Plan 2004. Prepared in cooperation with Idaho Department of Environmental Quality, Idaho Soil Conservation Commission, Idaho Department of Lands, Idaho Transportation Department, Bonner Soil and Water Conservation District, Bonner County. Tri-State Water Quality Council. Sandpoint, Idaho.

Appendix H -- Nonpoint Technical and Financial Assistance Sources

The following information is excerpted from the State of Idaho Nonpoint Source Management Plan (1999, Revised) and has been updated by the planning team to provide an overview of the variety of technical and financial assistance programs available to agencies, landowners and nonprofit organizations to implement watershed protection measures. It is important to note that technical and financial assistance programs change from year to year, as does the level of available funding. For the most current program information, agencies referenced here should be contacted directly. If in doubt about a problem or who to contact for assistance, contact the Bonner Soil and Water Conservation District. There may also be other federal, state or private sources of technical or financial assistance not listed below.

Linking Nonpoint Source Pollution Actions

The following is a brief summary of some of the ongoing programs currently used to abate nonpoint source pollution and is not meant to minimize or undermine the importance of those state, federal, local or tribal programs which have not been included in this chapter. Many of these programs have been integrated (such as joint PL566 and SAWQP projects, See Introduction and Chapter 2) to ensure adequate implementation coverage, and ensure all land owners are able to participate and implement BMPs at some level. Additionally, programs such as the Idaho Storm Water Program, Wellhead Protection Program, and the Source Water Assessment Program exclusively focus on *preventing* significant threats to water quality. An example of integration of a prevention program might be the *Idaho Farm/Home*A*Syst* (IASCD, 1995). It has been used in many ongoing programs to ensure homeowner awareness for protection of their water supply from impacts due to the storage and mixing of pesticides or fertilizers at the wellhead, confinement of livestock, or failures from septic systems. Additionally the Clean Lakes Program Phase I and Phase II projects have been widely used in the State for raising the awareness of NPS impacts to waterbodies through monitoring and assessments. Follow up implementation activities has been an important tool to the State used to prevent or mediate those impacts.

Interagency integration of these available tools represents the key to ensuring all interest groups will participate and that all resource concerns are addressed. Each of these listed programs provide important tools which will provide unlimited opportunities for interagency coordination and cooperation for the many TMDL/WRAS implementation plans needed to completely meet water quality standards in Idaho.

- *§104(b)(3)...Tribal and State Wetland Protection Grant, EPA*

This program provides financial assistance to state, tribal, and local government agencies to develop new wetland protection programs or refine and improve existing programs. All projects must clearly demonstrate a direct link to improving an applicant's ability to protect, restore or manage its wetland resources.

- *303 (d)...Water Quality Planning and Management, IDEQ/EPA*

Water quality standards and implementation plans including review and revision of standards, water quality limited segments, total maximum daily loads, the continuing planning process, and thermal limits. §303 (d) requires states to prepare a prioritized list of water quality limited segments not meeting state water quality standards.

- *§314 Clean Lakes Grants, EPA/IDEQ*

This program has provided financial assistance for: a) Phase 1, for the study and identification of lake water quality problems, and development of restoration plans to address those problems, and b) Phase II, funding for implementation and restoration activities. There is a potential for this to again be a valuable tool available through increased funding under §319 for lake work and associated activities such as; monitoring,

volunteer monitoring, fishery and habitat projects, exotics, etc.

- *§319 (h)...Nonpoint Source Grants, EPA/IDEQ*

This program provides financial assistance for the implementation of best management practices to abate nonpoint source pollution. The IDEQ manages the NPS program. All projects must demonstrate the applicant's ability to abate NPS pollution through the implementation of BMPs.

- *Aquatic Ecosystem Restoration, CoE*

Section 206 of the Water Resources Development Act of 1996, provides financial assistance for aquatic and associated riparian and wetland ecosystem restoration and protection projects that will improve the quality of the environment. There is no requirement for an aquatic ecosystem project to be linked to a Corp of Engineers project. The program does require that a non-federal interest provide 35% of construction costs, including all lands, easements, right-of-ways and necessary relocations. The program also requires that 100% of the operation, maintenance, replacement, and rehabilitation be borne by the non-federal interest. The program limits the amount of federal assistance to \$5 million for any single project.

- *Challenge Cost-share Program, BLM*

This program provides 50% cost-share monies on fish, wildlife, and riparian enhancement projects to non-federal entities.

- *Conservation Operations Program (CO-01), NRCS*

The CO-01 program provides technical assistance to individuals and groups of landowners for the purpose of establishing a link between water quality and the implementation of conservation practices. The NRCS technical assistance provides farmers and ranchers with information and detailed plans necessary to conserve their natural resources and improve water quality.

- *Conservation Research and Education, NRCS*

The Conservation Research and Education program was created through the 1996 Farm Bill and is administered by the National Natural Resources Conservation Foundation. The purpose of the program is to fund research and educational activities related to conservation on private lands through public-private partnerships.

- *Conservation Reserve Program (CRP), Farm Services Agency (FSA)*

The CRP program provides a financial incentive to landowners for the protection of highly erodible and environmentally sensitive lands with grass, trees, and other long-term cover. This program is designed to remove those lands from agricultural tillage and return them to a more stable cover. This program holds promise for nonpoint source control since its aim is highly erodible lands. Contact your USDA Service Center or the Bonner Soil and Water Conservation District Office for more information.

- *Cooperative Studies Program, USGS*

The Cooperative Studies Program provides for up to 50% cost-share on water quality and water quantities studies.

- *Ducks Unlimited Marsh Projects, Ducks Unlimited*

Ducks Unlimited is committed to wetland habitat development through their funding and implementation efforts. The Ducks Unlimited Marsh Project has been active in Idaho and cost shares on the development and/or enhancement of wildlife habitat or wetlands.

- *Environmental Quality Incentives Program (EQIP), NRCS*

EQIP is a program based on the 1996 Farm Bill legislation and combines the functions of the Agricultural Conservation Program, Water Quality Incentives Programs, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program. EQIP offers technical assistance, and cost share monies to landowners for the establishment of a two to ten year conservation agreement activities such as manure management, pest management, and erosion control. This program gives special consideration to contracts in those areas where agricultural improvements will help meet water quality objectives.

- *Environmental Restoration, CoE*

Section 1135 of the Water Resources Development Act of 1986 provides for modifying the structure, operation, or connected influences or impacts from a Corp of Engineer project to restore fish and wildlife habitat. The project must result in the implementation or change from existing conditions, and the project benefits must be associated primarily with restoring historic fish and wildlife resources. Though recreation cannot be the primary reason for the modification, an increase in recreation may be one measure of value in the improvement to fish and wildlife resources. The program requires a non-federal sponsor which can include public agencies, private interest groups, and large national nonprofit organizations such as Ducks Unlimited or the Nature Conservancy. Operation and maintenance associated with the project modifications are the responsibility of the non-federal sponsor. Planning studies, detailed design, and construction are cost shared at a 75% federal and 25% non-federal rate. No more than \$5 million in federal funds may be spent at a single location.

- *Farm Services Agency Direct Loan Program, FSA*

This program provides loans to farmers and ranchers who are unable to obtain financing from commercial credit sources. Loans from this program can be used to purchase or improve pollution abatement structures.

- *Flood Plain Management Services, CoE*

Section 206 of the Flood Control Act of 1960 authorizes the Corp of Engineers to provide information, technical assistance and guidance upon request to states and local communities to reduce flood damages by informing people who live and work in the flood plain of its hazards, and what actions they can take to reduce property damage and prevent the loss of life.

- *Flood Risk Reduction, FEMA*

The Flood Risk Reduction program authorizes FEMA to develop voluntary contracts that provide a lump sum payment to producers who farm land with a high flood potential. In return for the lump sum payments, the producer agrees to comply with applicable wetlands and high erodible land requirements.

- *Forest Land Enhancement Program (FLEP), IDL*

SIP provides technical and financial assistance to encourage non-industrial private landowners to keep their lands and natural resources productive and healthy. Qualifying land includes rural lands with existing tree cover or land suitable for growing trees. Eligible landowners must have an approved Forest Stewardship Plan and own less than 1,000 acres. Cost share practices include development of a Forest Stewardship Plan, tree planting, forest improvement, water quality protection, and fish and wildlife habitat improvement.

- *Forest Service Challenge Cost-share Program, USFS*

This program focuses on fish and wildlife habitat improvements with funds being cost-shared to any non-federal entity.

- *Forest Service Soil and Water Improvement Program, USFS*

This program includes funds to complete improvement projects designed primarily to reduce erosion and sedimentation, and meet targets identified in National Forest System Land Management Plans.

- *Ground Water Program, IDEQ*

The ground water program provides the statewide leadership role for ground water protection through the implementation of the Ground Water Quality Rule, regional and local monitoring, wellhead protection program, and through technical and educational assistance to local, city, county, and state governments. In 1989, the Idaho Legislature enacted the Ground Water Quality Protection Act creating a Ground Water Quality Council that developed the state Ground Water Quality Plan. The plan includes six key policy areas and a section on development of a ground water quality monitoring program for the State. The six key ground water policies of the State of Idaho are:

- _ Maintain and protect the existing high quality of the State ground water;
- _ Prevent contamination of ground water from all regulated and nonregulated sources of contamination to the maximum extent practical;

- _ Provide educational programs on ground water protection, prevention of ground water contamination, and ground water restoration;
- _ Provide information and encourage public participation in applicable activities related to ground water quality protection;
- _ Implement and maintain an ongoing statewide ground water quality monitoring network; and
- _ Conduct remediation when feasible and appropriate where contamination resulting from human activities produces a significant potential for the impairment of an existing or protected beneficial use of ground water.

The IDEQ developed the Ground Water Quality Rule in 1996 using a negotiated rule making procedure. This rule establishes minimum requirements for the protection of ground water through ground water quality standards and an aquifer categorization system. The rule contains numerical and narrative standards which apply to all ground water in the state, with the numerical standards being based on the maximum contaminant levels established under the federal Safe Drinking Water Act. The plan, act, and rule provide the underlying guidance for protection of the State's ground water from nonpoint source contamination.

- *Hydrologic Unit Areas (HUAs), NRCS*

The NRCS is responsible for the HUA water quality projects. The purpose of these projects is to accelerate technical and cost-share assistance to farmers and ranchers in addressing agricultural nonpoint source pollution.

- *Idaho Water Resources Board Financial Programs, IDWR*

The Idaho Water Resources Board Financial Program assists local governments, water and homeowner associations, non-profit water companies, and canal and irrigation companies with funding for water system infrastructure projects. The various types of projects that can be funded include: public drinking water systems, irrigation systems, drainage or flood control, ground water recharge, and water project engineering, planning and design. Funds are made available through loans, grants, bonds, and a revolving development account.

- *National Conservation Buffer Initiative, NRCS*

The National Conservation Buffer Initiative program provides cost-share funds in an effort to use grasses and trees as conservation buffers to protect and enhance riparian resources on farms. This program will be an integral part of TMDL/WRAS implementation planning to ensure land management practices are moved away from streams and riparian areas.

- *Partners for Wildlife (Partners), USFWS*

The Partners for Wildlife program is implemented by the U.S. Fish and Wildlife Service and designed to restore and enhance fish and wildlife habitat on private lands through public/private partnerships. Emphasis is on restoration of riparian areas, wetlands, and native plant communities.

- *Pheasants Forever*

Pheasants Forever can provide up to 100 percent cost-share for pheasant and other upland game projects which establish, maintain, or enhance wildlife habitat.

- *Planning Assistance, CoE*

Section 22 of the Water Resources Development Act of 1974 authorizes the Corp of Engineers to assist local governments and agencies, including Indian Tribes, in preparing comprehensive plans for the development, utilization and conservation of water and related resources. Total costs for projects cannot exceed \$1 million in a single year and are cost-shared at a 50% federal and 50% non-federal rate.

- *Range Improvement Fund - 8100, BLM*

This program focuses on improving rangeland management conditions, including the implementation of best management practices. A portion of the money to operate the program comes from the grazing fees paid by permittees.

- *Resource Conservation and Development (RC&D), NRCS*

Through locally sponsored areas, the RC&D program assists communities with economic opportunities through the wise use and development of natural resources by providing technical and financial assistance. Program assistance is available to address problems including water management for conservation, utilization and quality, and water quality through the control of nonpoint source pollution.

- *Resource Conservation and Rangeland Development Program (RCRDP), SCC*

The RCRDP program provides grants for the improvement of rangeland and riparian areas, and loans for the development and implementation of conservation improvements. Contact the Bonner Soil and Water Conservation District office.

- *Small Watersheds (PL-566), NRCS*

The Small Watersheds program authorizes the NRCS to cooperate in planning and implementing efforts to improve soil and water conservation. The program provides for technical and financial assistance for water quality improvement projects, upstream flood control projects, and water conservation projects.

- *Source Water Assessment Program (SWAP), IDEQ*

The Safe Drinking Water Act Amendments of 1996 require states to develop and implement the Source Water Assessments Program (IDEQ, 1999c). A source water assessment includes delineation of source water areas, inventories of potential contamination sources, determinations of public health risks to contamination, and informing the public results. The primary goal of Idaho's SWAP is to develop information which enables PWS owners, consumers, and others to initiate and/or promote preventative actions to protect drinking water sources.

The actual source water assessment is not an end product. Instead, it is a first step in providing a sound technical basis for the local public water supply system to consider protection measures appropriate for their particular situation. Information derived from the many source water assessments is intended to be used by other individual environmental programs, both regulatory and non-regulatory, for development and implementation purposes. For example, use of contaminant source inventories to assist in Class V injection well prioritizations. Another example may be for use of the Clean Lakes funding and process to identify and prevent/mediate NPS impacts to surface water supply sources.

The IDEQ is committed to providing leadership to help communities develop and implement protection activities. However, the ultimate goal of protection can be achieved only through local initiatives. The direction and strategies are driven at the local level based on the results of each assessment. IDEQ's vision is to provide technical assistance to those communities and public water supply systems (PWS) with high susceptibility, and to maximize the use of assessment results by assisting PWS and communities in implementing protection strategies at the local level. Assessment results are helpful in determining strategies and degrees of application for protecting and preventing impacts to source waters. Source water protection involves a variety of measures taken to ensure the continuing quality of drinking water whether it is supplied by ground water or surface water. It is up to the water system and the public to decide what form of protective measures are appropriate. Some methods may be as simple as ensuring well integrity or managing activities in a manner that is protective of water quality. IDEQ will promote protection through technical assistance, training, and education through its wellhead protection and drinking water programs.

- *State Agricultural Water Quality Program (SAWQP), (1980-1999); Water Quality Cost-Share Program for Agriculture, SCC/ISDA*

SAWQP was the primary state planning and implementation program from 1980 through 1999. The state replaced SAWQP in 1999 with a new agricultural water quality incentive program, under the direction of the SCC as the designated agency for agriculture and grazing, which focuses more directly on implementation of agricultural TMDL plans. Where appropriate, state and federal incentive programs are integrated through the scoping process in the planning phase to maximize nonpoint source water quality protection for agricultural activities. Contact the Bonner Soil and Water Conservation District office.

- *State Revolving Fund (SRF), IDEQ*

The IDEQ Grant and Loan Program administers the State Revolving Fund. The purpose of the program is to provide a perpetually revolving source of low interest loans to municipalities for design and construction of sewage collection and treatment facilities to correct public health hazards or abate pollution. State

Revolving Loan funds are also used to support the Source Water Assessment Program. The Grant and Loan Program uses a priority rating form to rank all projects primarily on the basis of public health, compliance, and affordability. Additional points are awarded to projects that have completed a source water assessment and are maintaining a protection area around their source. At this time, IDEQ is reviewing the SRF program for its ability to provide for an expanded role in addressing NPS pollution.

- *Storm Water Program, IDEQ*

The Storm Water Program is primarily responsible for providing TMDL support, technical assistance and education to community and WAGs to protect both surface and ground water quality from the effects of urban nonpoint source pollution. The Storm Water Program serves a vital role in providing a multiple interface between both surface and ground water protection, as well as the “edge effect” caused by urbanization. The program goal is to encourage watershed-oriented solutions for managing runoff from existing and new site developments. The program provides technical assistance in characterizing community nonpoint source pollutant loads (existing and forecasted), prioritizing local monitoring for select sub-basins, and identifying appropriate load reduction strategies. The program currently works with cities located on §303(d) listed water bodies (urban watersheds) throughout the state. The scope of work includes a watershed approach for managing storm water runoff, and identification of sub-basins with the greatest potential risk of impacting water quality. The process encourages local, consensus-driven solutions through comprehensive planning and zoning techniques, retrofits, and demonstration projects. All of these activities are supported by program guidance.

- *Swampbuster, NRCS*

The Swampbuster program is designed to discourage the conversion of wetlands for agricultural crop production. Under this provision, anyone planting crops on wetlands converted after December 23, 1985, is ineligible for most USDA farm program benefits.

- *Wellhead Protection Program, IDEQ*

Wellhead Protection is a community-based approach to protecting ground water used as drinking water. Idaho has an EPA approved wellhead protection program. The Wellhead Protection Program is voluntary and stresses common sense methods for preventing ground water contamination.

- *Wetlands Reserve Program (WRP), NRCS*

WRP was established to help landowners work toward the goal of “no net loss” of wetlands. This program provides landowners the opportunity to establish 30-year or permanent conservation easements, and cost-share agreements for landowners willing to provide wetlands restoration.

- *Wildlife Habitat Incentive Program (WHIP), NRCS*

WHIP was established to help landowners improve habitat on private lands by providing cost-share monies for upland wildlife, wetland wildlife, endangered species, fisheries, and other wildlife. Additionally, cost share agreements developed under WHIP require a minimum 10 year contract. Many of programs listed above have been specifically designed to provide the means necessary to implement best management practices, which when correctly maintained abate known nonpoint source water quality impairments. Additionally, programs such as the Idaho Storm Water Program, Wellhead Protection Program, and Source Water Assessment Program focus on preventing significant threats to water quality. Designated agencies and their partners using a mix of regulatory, voluntary, and incentive-based programs, target a given watershed, and in conjunction with the BAG/WAG process as outlined in Idaho’s Water Quality Law, provides for the abatement and prevention of nonpoint source pollution in a complementary holistic fashion.

Appendix I -- Public Workshop Comments and Responses

Pend Oreille Lake Nearshore TMDL Implementation Plan Public Workshop Notes, Break-out Session Topics October 28, 2003

Ranking	Topic	Response
AGRICULTURE, GRAZING, FOREST LANDS		
1	Nutrient management (inorganic and organic); proper fertilizer application	On project list
2	Slash burning runoff	On project list
3	Forest buffers	On project list
4	Fencing watercourses from livestock	On project list
SHORELINE PROPERTY OWNERS		
*	Vegetative buffers	On project list
	Bank stabilization	Added to project list
*	Setback requirements (houses, lawns)	On project list
*	Education programs	On project list
	Target implementation	Added to project list
*	Enforcement of regulations	Added to project list and narrative
	Stormwater catchments	Added to project list
	Reintroduce beavers	Comment noted
	Septic tank program	On project list
*	Establish financial incentives	Added to project list
	Annual testing of water, especially in threatened areas	Added to project list
DEVELOPMENT (LAND USE, CONSTRUCTION, ROADS, SEWERS)		
	PROBLEMS	
1	Erosion from construction	On project list
2	Stormwater runoff from impervious areas	On project list
3	Sedimentation from roads	On project list
4	Septic tank density (number per acre)	Added to list
	a. where they discharge	
	b. groundwater, evaluation of density/development when septic used	
	c. substandard systems (grandfathered)	
	d. near-shore subsurface systems	
	e. lack of funds to improve septic/drainfield situation by extending sewer systems	
5	Lack of understanding, education (homeowners, contractors, developers)	On project list
6	Ag use impacts to surface water	Added to project list
7	Residential development; "People Pollution"	On project list
	a. lawn fertilizers	
	b. oil, antifreeze, etc. discharges	
	c. ignorance or ignoring stormwater controls	
	d. removal of natural vegetation	
	SOLUTIONS	
1	Monitor city stormwater system discharges	Added to project list

2	Contractor education	On project list
3	Grading/site disturbance ordinance (to be enacted by cities/county)	On project list
4	Seek implementation money, monitoring money	On project list
5	Seek remedies for grandfathered septics	
	a. monitor/correct failing systems	Added to project list
6	Increase lot size when septic systems used if impact exceeds set threshold	Added to project list
RECREATION		
	Recreation is important business for entire community	Added to narrative
1	Education: I & E, public education (why it is worth it to change activities and behavior)	On project list
2	Increase pump-out stations (no fee); currently only have 6 around lake.	Added to project list
	ATV's increasing sediment load	On project list
	Camping in designated areas with facilities	Added to project list
	Need education and regulations about low impact camping	Added to project list
	Address shoreline campfires	Added to project list
3	Marinas are major point of contact for education: boat washing impacts; education about cleaning boats, hulls, greywater and other disposal	Added to project list
	Protection of vegetation disturbance	Added to project list
	Promotion of natural vegetation at private recreation areas (public areas too?)	Added to project list
	Keep pump-out stations open year-round (or at least later in season)	Added to project list
	Research how much recreation and boating are impacting shoreline erosion	Comment noted
	Potential for no-boating areas? Identify critical areas and limit boating.	Comment noted

Appendix J -- Final Public Comments on Implementation Plan and Responses

The following table summarizes comments received during the public comment period (June 29 through July 28, 2004) and through presentations given to local governments and community organizations during summer 2004. The planning team’s responses to the comments are provided below. Copies of the complete responses (comment forms and letters) are available from the Tri-State Water Quality Council.

COMMENT	RESPONSE
The plan needs to include implementation of federal stormwater regulations for 1-acre construction sites.	Federal stormwater regulations already exist for construction sites 1 acre or greater in size; implementing a program to increase awareness about these regulations will be added to the implementation projects in Table 3.
Local government officials in the lake’s watershed should explore setting up a “council of local governments” that would include Bonner County and the municipalities. This group would meet (quarterly or semi-annually) to discuss ways to coordinate on implementation of the lake plan, plus other topics of community interest and concern.	The planning team agrees that a “council of local governments” would greatly assist in implementation efforts and will add this to the projects in Table 3.
There is a need to reach visitors to our area, i.e, those people who are only here for a short period of time but use the lake while they are here and may not come in contact with educational materials about the lake. We need materials specific to these people (what they can do to help protect the lake while they’re here) and develop ways to reach them with this information.	Development and distribution of materials specific to educating visitors to our area about lake protection will be added to the implementation projects in Table 3.
The Bonner County Planning and Zoning Board requests that the Tri-State Water Quality Council provide data regarding impacts from septics. The Board would like to know the level at which septics can become a problem and where problem areas around the lake are located.	The management plan includes a monitoring program (Section 6) that primarily focuses on nutrients and algae; a component will be added to employ infrared analysis—as funding becomes available—to identify problem areas related to septics.
Erosion control at boat ramps is a problem and should be addressed in the plan.	Improvements to public boats ramps to reduce erosion will be added to the implementation projects in Table 3.
Increased monitoring in the area of the Hope Peninsula (not serviced by the Ellisport Bay Sewer District) should take place to determine the level of impacts from septic systems.	As noted above, a task will be added to the monitoring program to undertake infrared analysis (pending available funding) to identify problem areas and failing septics. Because of concerns regarding the water quality in Ellisport Bay, the peninsula would be a high priority site for such analysis.
The City of Hope wants to work with the Tri-State Water Quality Council to incorporate lake protection measures into local planning efforts, especially regarding the increased potential for subdivision of land and development in the area of Hope and East Hope.	Coordination with the Cities of Hope and East Hope will be added to the implementation projects in Table 3.

<p>There is a need to improve enforcement of buffer requirements.</p>	<p>Working with Bonner County on ways to increase enforcement of buffer requirements (possibly through compliance or land use inspectors) will be added to the implementation projects in Table 3.</p>
<p>More monitoring is needed in the Pack River drainage, since it is the second largest tributary to the lake; assessments should cover the entire drainage, plus the golf course and into the delta area.</p>	<p>The Pack River drainage is being monitored by the Pack River Watershed Council, and Hidden Lakes Golf Course conducts monitoring above and below the golf course. Monitoring of the Pack River drainage will also be part of IDEQ's Pack River TMDL. Monitoring at a representative site at the mouth of the Pack River could be added to the Tri-State Water Quality Council's monitoring program, and will be added to the monitoring program section of the plan.</p>
<p>We are concerned about open storm drains in Bonner County that pour unknown and potentially harmful contaminants into the lake. There are storm drains in Bonner County (not located within city limits) that drain directly into the lake. With all the growth we have, there must be accountability standards set, met and enforced for all parties to insure higher quality water in our lake.</p>	<p>The management plan includes a stormwater control component, but a task will be added to Table 3 regarding specifically working with Bonner County to address impacts from unfiltered storm drains that drain into the lake.</p>
<p>The plan should include wording about exploring options for non-chemical treatments for controlling Eurasian milfoil.</p>	<p>The Tri-State Water Quality Council favors an approach to milfoil control that utilizes non-chemical treatments. Researching options for non-chemical control of milfoil, and coordinating with Bonner County on non-chemical control options, will be added to the implementation projects in Table 3.</p>
<p>An immediate threat to the lake is the chemical treatment being used to control milfoil in the near shore waters. Chemical treatment poses potential major and permanent damage to the lake's ecosystem, including cell damage to aquatic life and systemic impacts to roots, foliage and fruits of nearby wetland and riparian plants.</p>	<p>As noted above, the Council will be exploring the feasibility of non-chemical treatments and will work with Bonner County on implementation of these non-chemical options. This work will be added to implementation projects in Table 3.</p>
<p>Milfoil is one of your concerns but no TMDL has been established for Renovate or its breakdown products.</p>	<p>TMDLs are only developed for the pollutants that the state has listed for each waterbody. The TMDL for the lake is based on <u>nutrient</u> pollution, (specifically phosphorus) because that is the pollutant of concern as indicated by past and present data.</p>
<p>No follow up studies are being planned with regards to the harmful impacts from chemical use to control milfoil.</p>	<p>Bonner County conducts post-treatment monitoring at chemical application sites. A task will be added to Table 3 for the Council to pursue an agreement with the county to be notified when chemical applications are taking place and to receive copies of post-treatment</p>

	monitoring results to review.
Another problem with using chemicals to kill aquatic plants is that the decayed remains are a source of nutrients for increased plant growth the following season. A TMDL analysis for total phosphate and nitrogen in milfoil treated areas may give interesting results.	Because of the variables involved and intensity of time necessary to conduct such analysis, this study could not be conducted under the Council's standard monitoring program. A task will be added to Table 3 to prepare an announcement to graduate students for a research project to investigate nutrients in these localized areas.
The appearance of abundant aquatic plant growth (such as Eurasian milfoil) is natural and we may just have to live with it or learn how to use it as a product (for example, as compost.)	Researching if and how other areas have learned to use milfoil as a product will be added to the implementation projects in Table 3.
I oppose the poisoning of our waters at Pend Oreille Lake. As a user of the water (drinking, irrigation and just playing in it) I am appalled that this commission would even think of using such a dangerous chemical as Triclopyr; I have written the governor asking for an immediate halt to this program and am encouraging my neighbors to oppose any further manipulation of this natural resource.	The chemical treatment of milfoil is a program being implemented by Bonner County Public Works and permitted by the Idaho Dept. of Environmental Quality. The Council has no jurisdiction or authority to apply chemicals to the lake. The planning team recognizes the dangers of chemical application and as noted above, we have added specific wording to the management plan to explore alternatives to chemical treatment and work with Bonner County on implementation of these options.
Lake level fluctuations could have an impact on the level of aquatic plant growth in the lake's nearshore areas. I recommend an investigation into how lake levels may affect the growth of Eurasian milfoil in the lake.	A project will be added to Table 3 to investigate how lake level fluctuations may impact the level of milfoil growth in the lake's nearshore areas.
The burning of yard waste and other wood products along the beach is a concern. Burning below the high water line and letting the upcoming water wash away the ash has been a tradition of many homeowners around the lake. A flyer outlining the problems of burning and lake eutrophication should be one of the first and immediate education programs of the Council.	We agree; most people do not realize it is illegal to burn a fire below the high water mark. Specific wording about developing and distributing a flyer about shoreline burning will be added to the projects in Table 3 for implementation in 2005.
We now have lots of green slime in our bay because we have over 200 geese that people in our bay continue to feed. Every time it rains, large amounts of geese feces wash into the bay. Deer are also in large herds along our bay because people are feeding them.	Table 3 in the plan includes a project to educate shoreline property owners on the effects of high concentrations of waterfowl on water quality. We will also add "other wildlife" to this information.
The lakeshore and shallow waters near the shore are where ground water and the waters of the lake meet. I would like to see a groundwater component added to the monitoring program that addresses: the relationship between the lake and groundwater; groundwater flux into the lake; the nutrient load being contributed by groundwater; and the fate of nutrients discharged into shallow ground water by septics. Monitoring could also identify if there is a groundwater flow that	The first priority for monitoring will be to establish and solidify the nearshore and open water sampling programs. An initial first step toward assessing groundwater influence could be to investigate what data is already available. Because of the time and funding that would be involved in groundwater monitoring, another option could be to investigate the feasibility of conducting this work as part of a graduate

<p>bypasses the lake, and if so, whether or not it is removing nutrients from the watershed.</p>	<p>project. These suggestions will be added to Table 3.</p>
<p>Our agency has numerous brochures, websites, etc. that promote “Leave No Trace” and other low-impact camping programs. We do encourage people to camp in developed campgrounds. New toilets are planned at specific public campsites for 2005 if funding is available.</p>	<p>Comments noted. The new vault toilets are included in Table 3, and increased distribution of “Leave No Trace” information could be coordinated with this agency as part of the plan’s education efforts.</p>
<p>Please consider implementation of a monitoring plan that would monitor for increases in metals loading into the lake from upstream mining should the Rock Creek mine become operational. While the company would be required to monitor for certain metals in the Clark Fork River in Montana, they will only be required to monitor upstream of their discharge; also the frequency of their monitoring may be insufficient. Since all sources of inputs have not been quantified, metals loading is likely to be much greater than predicted. Since metals resulting from the discharge may or may not be detectable in the water column, monitoring of bedload sediment should also be considered.</p>	<p>The Council already monitors at Cabinet Gorge to assess the affects of Clark Fork River metals (and nutrients) on the lake. However, there is a need to determine background levels of metals in the lake’s open waters; to this end, metals sampling at 3 open lake locations will be added to the monitoring program (Table 5). The Council will pursue funding to add this component to the current sampling program. Should the mine become operational, the Council will work with IDEQ and Bonner County to develop options and methods for sampling potential impacts to the lake; consideration would be given to monitoring at the Rock Creek mine discharge outfall (and downstream) and sampling bedload sediment.</p>
<p>I am concerned about the old, leaky, grandfathered septic systems (on the unsewered area of Ellisport Bay). With the increase in human population I feel that sewer systems should be mandatory.</p>	<p>The monitoring program will help to identify priority areas where septics are a problem. Specific to your area, the cities of Hope and East Hope are working with the Ellisport Bay Sewer District to develop a long range plan for expanding sewer service to the unsewered areas of Ellisport Bay.</p>
<p>Jet skies and skiers use this end of the bay as a race track; the result is erosion of the lake banks. The marine deputies do a great job if they are informed when there is a problem. More education about the rules should be handed out at marinas and rental centers.</p>	<p>A project will be added to the implementation activities in Table 3 (under the Recreation heading) to develop educational materials related to impacts from jet skies and water skiers, which will include information about the 200-foot no-wake zone from shore.</p>
<p>This implementation plan is a start--all agencies are to be congratulated for that. However, implementing this plan will be a challenge. What happens if people decide not to participate in voluntary conservation? Perhaps with more public relations and public input, change will start to happen.</p>	<p>You are exactly right--this is a voluntary plan, so the key to its success will be educating people in the lake’s communities about how their activities affect the lake that they depend on and value. It is our hope that <u>informed</u> watershed residents, lake users and lake communities will be more willing to modify their activities to protect the nearshore waters of Pend Oreille Lake, and that is why so many of the proposed projects in the plan focus on education.</p>

Appendix K -- Reference List

- Crettol, Rich. U. S. Coast Guard Auxiliary. Presentation to planning team. April 25, 2003.
- Elsa, Tim. Bonner County Public Works Department. Presentations to planning team. March 7, 2003 and March 21, 2003.
- Hartz, Mike. Idaho Transportation Department. Presentation to planning team. March 21, 2003.
- Idaho Department of Environmental Quality. (IDEQ). Total Maximum Daily Load (TMDL) for Nutrients for the Nearshore Waters of Pend Oreille Lake, Idaho. Boise, Idaho. April 2002.
- Idaho Division of Environmental Quality. Idaho Nonpoint Source Management Plan. Boise, Idaho. December 1999.
- Love, Bill. Idaho Department of Lands. Presentation to planning team. March 21, 2003.
- Lustig, Ken. Panhandle Health District. Presentation to planning team. February 28, 2003.
- Marley, Clare. Bonner County Planning Department. Presentation planning team. February 7, 2003.
- Resource Planning Unlimited (RPU). Idaho Agricultural Pollution Abatement Plan. Sponsored by Idaho Soil Conservation Commission and Idaho Department of Environmental Quality. Boise, Idaho. March 2003.
- Savage, Chris. U. S. Forest Service. Presentation to planning team. March 21, 2003.
- Sawyer, Suzanne. Bonner Soil & Water Conservation District and Selkirk Cooperative Weed Management Area. Presentation to planning team. March 7, 2003.
- Tinkey, Roger. Idaho Department of Environmental Quality. Presentation to planning team. February 28, 2003.
- Tri-State Water Quality Council. (TSWQC). Montana and Idaho Border Nutrient Load Agreement Technical Guidance. Sandpoint, Idaho. 2001.
- U. S. Environmental Protection Agency. (EPA). Clark Fork-Pend Oreille Basin Water Quality Study: A Summary of Findings and a Management Plan. EPA 910/R-93-006. Seattle, Washington. 1993.
- Van Dyk, Kody. City of Sandpoint, Public Works Department. Presentation to planning team. February 7, 2003.