COEUR D'ALENE LAKE MANAGEMENT PLAN

Coeur d'Alene Tribe

Clean Lakes Coordinating Council

Idaho Division of Environmental Quality

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1996

COEUR D'ALENE LAKE

MANAGEMENT PLAN

Kootenai, Benewah and Shoshone Counties, Idaho

Approval, Recommendation, Policy Statements and Comments

The Clean Lakes Coordinating Council approves and recommends the Coeur d'Alene Lake Management Plan to the county commissions and the Coeur d'Alene Tribal Council. The council provides these additional policy statements and comments:

- That the Clean Lakes Coordinating Council is empowered to coordinate the implementation of the plan;
- That the council does not promote or support land use that degrades water quality, but encourages those land uses that protect this valuable resource;
- That recognizing that the timber and surface mining industries are the only land users which have mandatory best management practices (BMPs), we recommend that reasonable and mandatory BMPs be developed for other land users;
- That recognizing that each waterbody has somewhat different chemical characteristics, the council recommends that site specific water quality criteria be developed for the lake as funding permits.

Susan MacLeod, Chairperson Date 3-19-96 ~~Robert Bob~~ Hammes Date 3-19-96

Dr. Orland P. Scott Date 3/19/96 Robert Hall Date 3/19/96

Bill Seaton Date 3/19/96

COUNTY COMMISSIONS APPROVAL

ACCEPTED BY THE BENEWAH COUNTY BOARD OF COMMISSIONERS:

Jack Buell Date

George Mills Jr. Date

N.L. (Bud) McCall Date

ACCEPTED BY THE KOOTENAI COUNTY BOARD OF COMMISSIONERS:

Dick Compton Date 9/19/96

Dick Panabaker Date 9/19/96

Bob Macdonald Date 9/19/96

ATTEST
DANIEL J. ENGLISH, CLERK
BY: Deputy Clerk

ACCEPTED BY THE SHOSHONE COUNTY BOARD OF COMMISSIONERS:

Sherry Krulitz 4/22/96
Sherry Krulitz Date

Jack King 4-22-96
Jack King Date

R. Gary Waters 4/22/96
R. Gary Waters Date

COEUR D'ALENE TRIBE APPROVAL
of the
COEUR D'ALENE LAKE MANAGEMENT PLAN

ACCEPTED BY THE COEUR D'ALENE TRIBE:

Ernest L. Stensgar 7/8/96
Ernest L. Stensgar, Chairman Date

Resolution Number CDA 215-A (96)

APPROVAL OF LAKE MANAGEMENT PLAN CDA Resolution 215(96)-A

WHEREAS, the Coeur d'Alene Tribal Council has been empowered to act for and on behalf of the Coeur d'Alene Tribe, pursuant to the Revised Constitution and By-Laws, adopted by the Coeur d'Alene Tribe by referendum, November 10, 1984, and approved by the Secretary of the Interior, Bureau of Indian Affairs, December 21, 1984; and

WHEREAS, the Coeur d'Alene Tribe assisted in the development of the Coeur d'Alene Lake Management Plan; and

WHEREAS, the management plan for Lake Coeur d'Alene is in its final format and has been reviewed by the Tribal staff and now requires acceptance by the Coeur d'Alene Tribal Council; and

WHEREAS, the Coeur d'Alene Tribal Natural Resource Department recommends approval by the Trial Council.

NOW THEREFORE BE IT RESOLVED, the Coeur d'Alene Tribal Council accepts the recommendation of the Natural Resource Department and approves the management plan prepared for Lake Coeur d'Alene; and,

FURTHER BE IT RESOLVED, that the Coeur d'Alene Tribal Council authorizes the Chairman to sign the Lake Management Plan for Coeur d'Alene Lake.

CERTIFICATION

The foregoing resolution was adopted at a meeting of the Coeur d'Alene Tribal Council held at the Tribal Headquarters, near Plummer, Idaho on June 27, 1996, with the required quorum present, by a vote of 6 FOR and 0 AGAINST.

Ernest L. Stensgar, Chairman
Coeur d'Alene Tribal Council

Norma Peone, Secretary
Coeur d'Alene Tribal Council

ACKNOWLEDGEMENTS

The Coeur d'Alene Lake Management Plan was developed through the combined efforts of citizens and governmental agencies coordinated under the umbrella of the Coeur d'Alene Basin Restoration Project. The core planning team included representatives of the commissions of Benewah, Kootenai and Shoshone Counties, the Clean Lakes Coordinating Council, Coeur d'Alene Tribe, Idaho Division of Environmental Quality and U. S. Geological Survey.

Scoping and informational meetings as well as a monthly newsletter were organized by the public involvement coordinators of the Coeur d'Alene Basin Restoration Project and Idaho Division of Environmental Quality. Several members of the Citizen's Advisory Committee of the Coeur d'Alene Basin Restoration Project gave informational talks on the lake and the planning effort to numerous business groups and civic organizations. The technical advisory groups which developed the plan's action items were facilitated by staff of the Clean Lakes Coordinating Council, Coeur d'Alene Basin Restoration Project, Coeur d'Alene Tribe, Idaho Division of Environmental Quality and Panhandle Health District.

Agency and citizen participants in the technical advisory groups numbered over eighty. These agencies and individuals are listed in Appendix A of the plan.

FORWARD

Participation of the Coeur d'Alene Tribe in the development and implementation of this lake plan is part of the Tribe's involvement as one of the three sovereign powers in the Coeur d'Alene Basin Restoration Project. As documented in the Memorandum of Understanding (MOA) between the U.S. EPA, State of Idaho and Coeur d'Alene Tribe, October 29, 1992, all three parties recognize that each reserves all rights, powers and remedies by statute, treaty and otherwise. As derived from various legal and treaty remedies, the Coeur d'Alene Tribe retains its long standing claim in law over the bed and banks of Coeur d'Alene Lake.

Neither the Coeur d'Alene Lake Plan nor any action pursuant to the plan shall be construed as an admission by the Tribe as to the respective rights or legal authority of the Tribe with respect to Coeur d'Alene Lake's waters, bed or banks. This lake plan is intended to facilitate joint action and inter-governmental coordination among the parties, and neither creates any rights nor gives rise to any right of judicial review.

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GLOSSARY

aerobic: Describes life or processes that require the presence of molecular oxygen.

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.

anaerobic: Describes processes that occur in the absence of molecular oxygen.

anoxic: A condition of no oxygen in the water. Often occurs near the bottom of fertile lakes in the summer and under ice in the winter.

bathymetric map: A map showing the bottom contours and depths of a lake.

beneficial use: Any of the various uses which may be made of water, including, but not limited to, domestic water supplies, industrial and agricultural water supplies, recreation in and on the water, wildlife habitat, and aesthetics.

benthic: The bottom of lakes, stream or ponds.

best management practices: Accepted methods for controlling nonpoint source pollution; may include one or more conservation practices.

bioassay: A procedure used to test the effects on growth and survival of organisms exposed to a range of substances with nutritional or toxic effects.

biochemical oxygen demand (BOD): The rate of oxygen consumption by organisms during the decomposition of organic matter.

biomass: The weight of biological matter such as phytoplankton, macrophytes, or fish.

biota: All plant and animal species occurring in a specified area.

chlorophyll: The primary photosynthetic pigment in plants; often used as a measure of aquatic plant production.

coliform bacteria: A group of bacteria found in the colons of animals and humans, but also in natural soil and water where organic content is high. The presence of coliform bacteria in water is an indicator of possible pollution by fecal material.

decomposition: The transformation of organic material to inorganic material through biological and non-biological processes.

discharge: Outflow of water; related terms are runoff, streamflow, and yield.

dissolved oxygen: Molecular oxygen freely available in water and necessary for the respiration of aquatic life and the oxidation of organic materials.

dissolved oxygen depletion: The process in a lake whereby respiration and decomposition demands on oxygen are greater than the supply of dissolved oxygen generated from atmospheric reaeration and photosynthetic production.

drainage basin: The land area contributing runoff to a stream or other body of water; generally defined in terms of surface area. ie., square miles.

ecology: Scientific study of relationships between organisms and their environment.

ecosystem: A system of interrelated organisms and their physical-chemical environment.

epilimnion: Uppermost, warmest, well-mixed layer of a lake formed by summer thermal stratification. Extends from lake surface to thermocline depth.

environment: Collectively, the surrounding conditions, influences, and living and inert matter that affect a particular organism or biological community.

erosion: The wearing away of the landscape into smaller particles (sediment) by water, wind, ice, or gravity.

euphotic zone: The upper water column in a lake that receives enough sunlight so the photosynthetic carbon production by phytoplankton exceeds their respiratory needs.

eutrophic: Nutrient rich and generally referring to a fertile, productive body of water.

eutrophication: The natural process by which lakes and ponds become enriched with nutrients, resulting in increased growth of algae and reduced water clarity. If the process is accelerated by human activities it is termed cultural eutrophication.

floodplain: Land adjacent to lakes or rivers that is covered as water levels rise and overflow the normal water channels.

hardness: A property of water referring to the amount of dissolved minerals such as

calcium and magnesium. Increasing hardness tends to counteract the toxicity of some heavy metals.

hypolimnion: Lower, cooler layer of a lake. Extends from thermocline to lake bottom.

inorganic nitrogen: The sum of nitrite, nitrate, and ammonia nitrogen. The nitrogen most readily available as a nutrient for algae.

lake management: The practice of keeping lake quality in a state such that attainable uses can be achieved.

lake restoration: The act of bringing a lake back to its attainable uses.

limnetic zone: The open, deeper areas of a lake, exclusive of the shallow, shoreline areas.

limnology: Scientific study of fresh water, especially the history, geology, biology, physics, and chemistry of lakes.

littoral zone: The shallow areas of a lake adjacent to its shoreline and extending to the greatest depth occupied by rooted aquatic plants.

loading: The amount of a substance, usually nutrients or sediment, discharged past a point; expressed as weight per unit time.

macrophytes: Rooted and floating aquatic plants, commonly referred to as water weeds.

metalimnion: Layer of rapid temperature change in a thermally stratified lake. Located between the epilimnion and hypolimnion and contains the thermocline.

mesotrophic: Moderate nutrients and generally referring to a moderately fertile body of water.

model: A mathematical procedure, commonly executed on a computer, that mimics the functioning of a real system such as a lake and its contributing drainage basin.

morphometry: Relating to a lake's physical characteristics such as surface area, volume, maximum depth, and shoreline length.

nitrogen: An essential nutrient for aquatic organisms; comprises about 80 percent of the earth's atmosphere.

nonpoint source pollution: Pollution discharged from a wide land area, not from a specific point.

nutrient budget: Quantitative assessment of nutrients (usually nitrogen and phosphorus) moving into, being retained, and moving out of an ecosystem such as a lake.

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 carbon, nitrogen, phosphorus, and trace elements.

oligotrophic: Nutrient poor and generally referring to an infertile, unproductive body of water.

orthophosphorus: The phosphorus ion most readily available as a nutrient for algae.

organic matter: Materials produced by plants and animals and containing linked carbon atoms and elements such as hydrogen, nitrogen, sulfur and phosphorus.

phosphorus: An essential nutrient for aquatic organisms, usually derived from weathered rock.

phytoplankton: Microscopic aquatic plants freely suspended in the water column.

point source pollution: Pollutants discharged from an identifiable point such as pipes, ditches, channels, sewers, tunnels and containers of various types.

pollution: Any alteration in the character or quality of the environment which renders it unfit or less suited for beneficial uses.

secchi disc transparency: The depth at which an 8-inch diameter black and white disc suspended in the water column is no longer visible from the water surface; a measure of water transparency.

sediment: Fragmented organic and inorganic material, removed by erosion and transported by water, wind, ice and gravity.

stormwater runoff: Surface water runoff, usually associated with urban development, which carries both natural and human-caused pollutants.

stratification: Layering of water caused by differences in water density. Thermal stratification is typical of most lakes during the summer; chemical stratification is less common.

thermocline: A horizontal plane across a lake at the depth of the most rapid vertical

change in temperature. By common definition, thermocline is formed when temperature decline is equal to or greater than 1 degree Celsius per meter of depth change.

trace elements: Elements which are required in minute amounts as nutrients; in excess they are often toxic. Often refers to heavy metals.

trophic state: Referring to the nutritional status of a water body and categorized as oligotrophic, mesotrophic and eutrophic.

wastewater: Treated or untreated sewage, industrial waste or agricultural waste.

water column: Water in the lake between the interface with the atmosphere at the surface and the interface with the sediment layer at the bottom.

water quality standard/criteria: Legally mandated and enforceable maximum contaminant levels of chemical, physical and biological parameters for water.

water quality: A term used to describe the chemical, physical and biological characteristics of water with respect to its suitability for a beneficial use.

wetlands: Lands where water saturation of the soil for at least part of the year is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the surrounding environment.

zooplankton: Small animals, often microscopic, that float freely in lake water and graze on detritus, bacteria and algae and are, in turn, consumed by fish.

DEFINITION OF ACRONYMS

Numerous acronyms are used throughout the document. They are defined as follows:

* ACOE, U.S. Army Corps of Engineers
* ACP, Agricultural Conservation Program
* ASCS Agricultural and Stablization Service
* BC, Benewah County
* BLM, U.S. Bureau of Land Management
* CAC, Citizen's Advisory Committee for CBIG,
* CBIG, Coeur d'Alene Basin Interagency Group
* CBRP, Coeur d'Alene Basin Restoration Project
* CES, Cooperative Extension Service, University of Idaho
* CLCC, Clean Lakes Coordinating Council
* CT, Coeur d'Alene Tribe
* DEQ, Idaho Division of Environmental Quality
* EPA, U.S. Environmental Protection Agency
* FG, Idaho Department of Fish and Game
* FPA, Idaho Forest Practices Act
* FPAAC, Forest Practices Act Advisory Committee
* ICL, Idaho Conversation League
* IDHW, Idaho Department of Health and Welfare
* IDL, Idaho Department of Lands
* DWR, Idaho Department of Water Resources
* IFC, Idaho Forestry Council
* ILA, Idaho Loggers Association
* IPR, Idaho Department of Parks and Recreation
* ITD, Idaho Department of Transportation
* IWR, Idaho Department of Water Resources
* KC, Kootenai County
* NIBCA, North Idaho Building Contractors Association
* NRCS, Natural Resource Conservation Service
* NRDA, Natural Resources Damage Assessment
* PAC, Panhandle Area Council
* PHD, Panhandle Health District
* AWQP, State Agricultural Water Quality Program
* SC, Shoshone County
* SCD, Soil Conservation Districts
* UI, University of Idaho
* USCG, U.S. Coast Guard
* USDA, U.S. Department of Agriculture
* USFS, U.S. Forest Service
* USFWS, U.S. Fish and Wildlife Service
* USGS, U.S. Geological Survey
* WPCA, Water Polution Control Account
* WWC, Waterways Commission
* WWP, Washington Water Power.

COEUR D'ALENE LAKE MANAGEMENT PLAN

EXECUTIVE SUMMARY

INTRODUCTION

The lake management study was initiated in 1991 in response to long-term concerns over water quality degradation. These concerns centered around increases in nutrients, which resulted in increased plant growth, decreased water clarity and heavy-metal contamination of lakebed sediments. The study was funded and conducted cooperatively by the U.S. Geological Survey, Idaho Division of Environmental Quality, and Coeur d'Alene Tribe. It had three objectives:

1) Determine the lake's ability to receive and process nutrients (phosphorus and nitrogen) in order to devise means to prevent declines in water quality;

2) Determine the potential for the release of heavy metals from lakebed sediments into the overlying lake water; and

3) Develop a lake management plan that will identify actions needed to meet water quality goals.

The agencies cooperating to develop the Lake Coeur d'Alene Management Plan sought to develop a comprehensive plan addressing water quality and non-water quality issues. A comprehensive treatment of water quality issues was developed, but recreational, access, aesthetic and use issues were not fully addressed. The body of this document is Part 1 of the plan addressing water quality. Part 2 of the plan requires further development although some action items addressing non-water quality problems were developed by the technical advisory groups who developed part 1 of the plan.

WATER QUALITY MANAGEMENT ZONES AND GOALS

Viewed as a whole, Coeur d'Alene Lake exhibits relatively high water quality. Yet both the study data and public and agency perceptions reveal specific geographical areas of concern and specific water quality problems. It is not appropriate to apply a single management strategy to the entire lake and watershed. Therefore, the lake has been divided into four water quality management zones. Each zone focuses on specific issues, goals, and management approaches pertinent to that zone. The four zones are:

1) **Nearshore** (water depths less than 20 feet)

2) **Shallow, southern lake** (south of the mouth of the Coeur d'Alene River and including the shallow lakes such as Benewah, Chatcolet, Hidden, and Round)

3) **Lower rivers** (lower reaches of the St. Joe and Coeur d'Alene Rivers that are affected by backwater from the lake)

4) **Deep, open water** (north of the mouth of the Coeur d'Alene River)

Water quality issues within the **nearshore management zone** include, but are not limited to: excessive growth of microscopic

aquatic plants attached to underwater materials (periphyton), excessive growth of large aquatic plants (macrophytes), bacterial contamination, protection of drinking water drawn from the lake, toxicity of heavy metals, and lake level fluctuations. Zinc levels in the water currently exceed levels identified by federal criteria as harmful to freshwater aquatic life.

Water quality issues within the shallow, **southern lake management zones** include, but are not limited to: depletion of dissolved oxygen, presence of high concentrations of heavy metals in the lakebed sediments, toxicity of heavy metals to aquatic life in the lakebed and lake water, sedimentation, reduced water clarity, and excessive growth of aquatic plants. The heavy metal concerns are restricted to the area north of Conkling Point. Zinc concentration exceeds criteria protective of aquatic life. Freshwater insects, fish, and animals that live in other areas of the lake are curtailed in much of the southern lake during the summer because of dissolved oxygen depletion.

Water quality issues within the **lower rivers management zone** include, but are not limited to: bank erosion, nutrient loading from nonpoint pollution sources, excessive growth of aquatic plants, and bacterial contamination. In the Coeur d'Alene River, heavy metal contamination of the riverbank sediments and water is very high; levels of zinc, cadmium, copper, and lead exceed levels identified as harmful for aquatic life by federal criteria. In addition, lead levels in the Coeur d'Alene River water exceed federal drinking water standards for humans; however, these criteria are applicable at the tap, not in the water body.

Water quality issues within the **deep, open water management zone** include, but are not limited to: depletion of dissolved oxygen in the summer, presence of high concentrations of heavy metals in the lakebed, and toxicity of heavy metals to aquatic life in the lakebed and lake water. Levels of zinc in the lake water exceed freshwater life criteria. Concentrations of cadmium, lead, and zinc in hypolimnetic water, exceed federal acute and/or chronic criteria for aquatic life.

In each of the four management zones, the public has chosen **the goal of "slow improvement in water quality."** Goals of "no action" or "maintain current water quality" were not legally acceptable because of state and federal water quality criteria and standards have been exceeded. The goal of "rapid improvement in water quality" was rejected because of implementation costs.

The environmental factors controlling phytoplankton algae production in lakes are numerous; nutrients, particularly phosphorus, have repeatedly been found to be major factors. Trace elements have infrequently been reported as significantly affecting phytoplankton production, either as a nutritional deficiency or as a toxicant. In the case of Coeur d'Alene Lake, the phytoplankton bioassays indicated that the biologically available, dissolved concentrations of zinc in the northern two-thirds of the lake exert a strong suppression on phytoplankton growth. Similar results were reported by two studies conducted on the lake in the early 1970's. These results raise an important issue for water quality management in Coeur d'Alene Lake: If zinc concentrations were reduced to comply with federal water quality criteria, would the

lake's phytoplankton production markedly increase? If the answer to the question is affirmative, then nutrient loadings would need to be reduced, perhaps significantly, in order to counteract the lifting of zinc's suppressive effect on phytoplankton production.

TRENDS IN LAKE WATER QUALITY

Despite the issues and concerns listed, Coeur d'Alene Lake's water quality has improved during the last 15-20 years. This positive trend is attributable to the enactment of environmental laws by federal, state, and local governments, and a growing societal awareness of environmental issues. Settling ponds for mining and smelting wastes were installed in the late 1960's and effective sewage treatment began in the Silver Valley in the mid-1970's and into the 1980's. State and local standards for subsurface sewage disposal were also made more stringent. State laws now require the use of best management practices (BMPs) for reducing water quality effects of timber harvest activities. Encouraged by economics, as well as by state and federal programs, agricultural practices that reduce erosion and sedimentation have also come into more widespread use. All of these factors, along with a growing environmental awareness and the transition to an economy less dependent on natural resources extraction, have contributed to the recent improving trend in water quality in Coeur d'Alene Lake.

Coeur d'Alene Lake has become visibly "cleaner" in recent years, but the potential exists for serious and widespread water quality degradation given present trends in population growth and lake use, coupled with the extent of past pollution. Significant depletion of dissolved oxygen still occurs in deep, bottom waters during the late summer. The shallow, southern lake area and several bays are becoming shallower because of sediment eroded from agricultural and timber lands as well as from nearshore areas being developed for residential and recreational uses. Southern lake waters are becoming infested with aquatic plants. Excessive growth of attached algae can be seen on shoreline rocks, docks, and boats in some nearshore areas. Sewage treatment facilities in the basin still contribute a significant portion of the lake's potentially controllable nutrient load. The bed and banks of the lower reaches of the Coeur d'Alene and St. Joe Rivers continue to be eroded and transport heavy loads of sediment and nutrients into the lake. Much of the bottom of the lake is blanketed with sediment containing high levels of heavy metals as well as substantial amounts of nutrients. Contaminated wastes from past mining in the Coeur d'Alene River drainage continue to flow into the lake in sizeable amounts. Perhaps the greatest threat to Coeur d'Alene Lake is the potential for reversal of the recent improvements in water quality. Such a reversal could be brought on by the rapid increases in lake use, population growth, and land development now occurring throughout the basin. Unless preventative measures are initiated soon, the recent improvements in lake water quality could be eroded or lost.

RECOMMENDED MANAGEMENT ACTIONS

The public was involved in the lake management planning process via its participation on the following five technical advisory groups (TAGs): forest practices, agriculture, development (with a recreation

subgroup), southern lake, and rivers. Each TAG considered water quality issues and management goals and then developed management actions to achieve those goals. About 80 people participated. They represented local, state and federal agencies, industry, environmental organizations, and community and business associations. The management actions developed by the TAGs were then applied to the appropriate water quality management zones.

Management goals for the **nearshore zone** is to be achieved with management actions developed by the TAGs for forest practices, agriculture, and development. The majority of these management actions involve application of BMPs to control erosion from small watersheds that feed the lake. Reductions will also be sought for nutrient inputs from nearshore domestic septic systems and municipal wastewater treatment plants.

Within the shallow, **southern lake zone**, management goals can be achieved by reducing the nutrient loads within the lakebed sediments, contributed by watersheds plus erosion of riverbanks and lakeshores. Mechanical harvesting can be employed to periodically remove nutrients contained in the abundant aquatic macrophytes which grow in this zone. Nutrient loads from contributing watersheds can be reduced by application of BMPs on agricultural and forested lands. Additional reductions can be gained by upgrading several municipal wastewater treatment plants that contribute nutrient loads to this zone. To reduce erosion of riverbanks and the lakeshores, the southern lake TAG suggests establishment of "no wake" zones and management of boat traffic within this zone.

The management goals for **the lower rivers zone** will be achieved by reducing accelerated riverbank erosion by **25 percent** in the St. Joe River and by **50 percent** in the Coeur d'Alene River over the next decade. After acquiring better knowledge on the location and severity of erosion, bank stabilization projects can be undertaken, probably with assistance from the Army Corps of Engineers. Educational materials will be developed to inform boat operators of ways they can reduce their negative impacts on riverbanks. Landowners will be informed of riverbank stabilization methods they can employ which have been approved by the Corps of Engineers.

The deep, **open water zone** integrates the water quality effects of natural and human influences throughout the basin. Management goals for this zone will be achieved partially by management actions undertaken within the other three zones; however, the majority of the lake's nutrient loading comes from the Coeur d'Alene and St. Joe River basins. Within these two basins, important management actions to be implemented include erosion control from forested lands and reductions in nutrient loadings from municipal wastewater treatment plants. Formation of a lake basin commission is suggested as a means to coordinate the diverse, incremental efforts that will be required to achieve the long-term goals of the lake management plan.

Numeric Values for current, desired, and criteria/standards-based water quality conditions in the deep, **nearshore management zone.**

	Desired Condition[11]	Current Condition[1]	Standard or Recommended Level[10]
Dissolved Oxygen (mg/L)[2]	8.6	8.6	6.0[3]
Total P (μg/L)(ppb)[2]	5-10	5.0[8]	25.0
Zinc (μg/L)(ppb)[2]	32.7	56	32.7
Clarity (Secchi depth meters)	7.6	7.6[4]	none
Coliform bacteria	500/100 ml	-	500/100 ml[5]
	200/100 ml	-	200/100 ml[6]
	50/100 ml	-	50/100 ml[7]

1. Average condition of 19 bays unless otherwise noted.
2. Seven-day average.
3. Standard applies to all waters except the lowest 7 meters of the water column at depths greater than 35 meters.
4. Average of 19 bays 7.6 meters; worst case Fuller's 5.2 meters.
5. At any time.
6. In no more than 10% of the samples taken over a 30 day period.
7. Geometric mean of samples taken over a 30 day period.
8. Average total phosphorus for 19 bays over two years; worst case, Kidd Island Bay, 16 μg/L.
9. Average of 19 bays; worst case Kidd Island Bay, 150/100ml.
10. Standard based Idaho Water Quality Standards and wastewater treatment requirements, EPA "Gold Book" criteria (as interpreted by National Toxic Rule) or phosphorus levels recommended to prohibit nucience aquatic weed growth.
11. Based on interpretation of Idaho Antidegradation policy and special resource waters designation of Lake Coeur d'Alene.
12. Trace (heavy) metals criteria are based on the hardness (mg/L $CaCO_3$) of the waterbody for which it is applied. The criteria is calculated as a function of the exponential of the logarithm of the hardness value. The National Toxic Rule and proposed Idaho water quality standards for metals operate in a hardness range of 25 to 400 mg/L $CaCO_3$ (Federal Register 57: 246, 1/22/92, 60917). The zinc goal developed for drafts of the Coeur d'Alene Lake Management Plan was calculated to be 18.4 μg/L based on the incorrect use of the lake hardness which averages 19 mg/L. Based on the National Toxics Rule, under which Idaho is currently listed, and proposed Idaho water quality standards, the criteria should be calculated at a hardness of 25 mg/L $CaCO_3$. The correct zinc criteria is 32.7 μg/L.

Numeric Values for current, desired, and criteria/standards-based water quality conditions in the shallow, **southern-lake management zone.**

	Desired Condition[6]	Current Condition[1]	Standard or Recommended Levels
Dissolved Oxygen (mg/L)[2]	8.4	8.4	6.0
Total P (μg/L)[2]	12.0	18.3[4]	25.0[5]
Zinc (μg/L)(ppb)[2,3]	32.7	39.0	32.7
Clarity (Secchi depth meters)	4.0	3.0	none

1. Average of Chatcolet and Blue Point Stations unless otherwise noted.
2. Seven-day average.
3. Applies to area of southern lake north of Conkling Point.
4. Average total phosphorous = 18.3 μg/L; worst case Chatcolet Lake 26.9 μg/L.
5. Standard based on Idaho water quality standards and wastewater treatment requirements, EPA "Gold Book" criteria (as interpreted by National Toxic Rule) or phosphorus levels recommended to prohibit nucience aquatic weed growth.
6. Based on interpretation of Idaho Antidegradation policy and special resource water designations of Lake Coeur d'Alene.

Numeric Values for current, desired, and criteria/standards-based water quality conditions in the deep, **open-water management zone.**

	Desired Condition[9]	Current Condition[1]	Standard or Recommended Level[8]
Dissolved Oxygen (mg/L)[2]	7.0	7.0	6.0[3]
Total P (μg/L)(ppb)[2]	9.0	9.0	25.0
Zinc (μg/L)(ppb)[2]	32.7	143	32.7
Clarity (Secchi[2] depth meters)	6.0	6.0[4]	none
Coliform bacteria	500/100 ml	-	500/100 ml[5]
	200/100 ml	-	200/100 ml[6]
	50/100 ml	-	50/100 ml[7]

1. Average of values of Tubbs Hill, Wolf Lodge, Driftwood and University Point Stations.
2. Seven-day average.
3. Standard applies to all waters except the lowest 7 meters of the water column at depths greater than 35 meters.
4. Worst case during winter runoff at University Point, Station 1.0 meters.
5. At any time.
6. In no more than 10% of the samples taken over a 30 day period.
7. Geometric mean of samples taken over a 30 day period.
8. Standard based on Idaho water quality standards and wastewater treatment requirements EPA "Gold Book" criteria (as interpreted by National Toxic Rule) or phosphorus levels recommended to prohibit nucience aquatic weed growth.
9. Based on interpretation of Idaho Antidegradation policy and special resource water designation of Lake Coeur d'Alene.

COEUR D'ALENE LAKE ASSESSMENT

INTRODUCTION

Coeur d'Alene Lake, Idaho's second largest, is located in northern Idaho within the 6,680 square miles (17,300 square kilometer) Spokane River drainage basin (fig. 1). The lake has become a prime recreational site for northern Idaho and eastern Washington because of its beautiful setting and proximity to the cities of Spokane (1990 population of about 362,000) and Coeur d'Alene (1990 population of about 25,000). Extensive residential and commercial development in its drainage basin and shoreline, plus intensive recreational use of Coeur d'Alene Lake have created considerable concern over the potential for nutrient enrichment and subsequent eutrophication of the lake.

A nutrient loading study done in 1975 classified Coeur d'Alene Lake as mesotrophic, or moderately productive, and recommended that additional studies of the sources and magnitudes of nutrient loadings be performed prior to development of a lake management plan (U.S. Environmental Protection Agency, 1977). Coeur d'Alene Lake has also been the recipient of trace-element-enriched mining and smelting wastes that were produced over 100 years by mining and ore-processing activities in the Coeur d'Alene River drainage basin. Studies in the early 1970's (Funk and others, 1973, 1975) found high concentrations of trace elements in the lakebed sediments in the northern two-thirds of the lake.

Eutrophication and the deposition of trace elements in Coeur d'Alene Lake may appear to be unrelated water quality problems. However, large quantities of trace elements and nutrients can be released from lakebed sediments into the overlying water if eutrophication increases the lake's hypolimnetic dissolved oxygen deficits. Oxygen deficits were measured in Coeur d'Alene Lake in 1979 (Rieman, 1980) and 1987 (Woods, 1989). The trace elements in the lakebed of Coeur d'Alene Lake probably cannot be removed in an economically or environmentally-sound manner; therefore, the principal means of keeping the metals in the lakebed is to manage the lake's nutrient income to curtail development of anaerobic conditions.

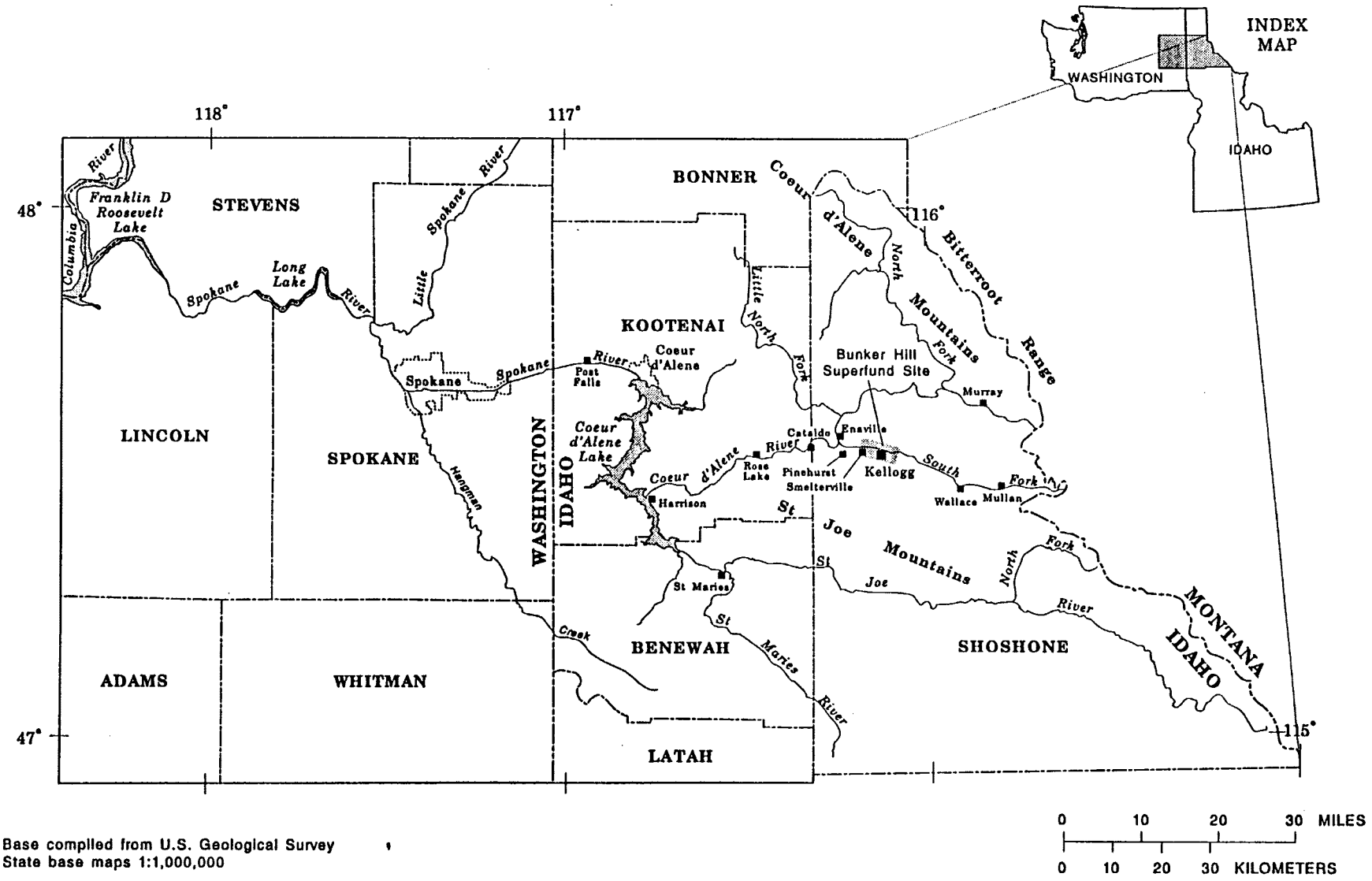
Idaho's recently enacted Nutrient Management Act requires that a nutrient management plan be developed for Coeur d'Alene Lake. The Act requires the plan to:

1) identify nutrient sources;

(2) identify the dynamics of nutrient removal, use, and dispersal; and

(3) identify preventative or remedial actions where feasible and necessary to protect surface water.

The Idaho Department of Health and Welfare, Division of Environmental Quality was given responsibility for development of the nutrient management plan. They requested assistance from the U.S. Geological Survey for development of the data base necessary to produce the management plan. The Coeur d'Alene Tribe also requested assistance from the U.S. Geological Survey to advise them on the status of eutrophication in the southern end of the lake. Therefore, a cooperatively-funded study of the lake was conducted during 1991-93 by the U.S. Geological Survey, Division of Environmental Quality, and the Coeur d'Alene



Base compiled from U.S. Geological Survey
State base maps 1:1,000,000

Figure 1. Location of Coeur d'Alene Lake, northern Idaho.

Tribe. The major results of the study are summarized later in this report.

Development of the lake management plan began upon completion of the lake study. A lake management plan workgroup was formed in early 1993. It has used the results of the lake study to guide the plan's overall development.

The workgroup is composed of representatives from Idaho Division of Environmental Quality, Coeur d'Alene Tribe, U.S. Geological Survey, Clean Lakes Coordinating Council (CLCC), Coeur d'Alene Basin Restoration Project, and commissioners from Benewah, Kootenai, and Shoshone Counties. Public input to the plan was received through a series of public meetings and reviews by citizen-staffed technical advisory groups. The results of those endeavors have resulted in this document, the Coeur d'Alene Lake Management Plan.

The goal of the management agencies was to develop a Lake Coeur d'Alene Management Plan which addressed water quality as well as non-water quality issues. Part 1 of the plan would address water quality issues, while Part 2 would focus on issues of recreation, access, aesthetics and general use. The plan presented is a water quality plan for the lake. The action items addressing non-water quality issues, developed primarily by the recreation technical advisory groups, have been retained in appendix C. These action items will form a starting point for development of a comprehensive plan addressing the numerous recreation, access, aesthetics and use issues.

DESCRIPTION OF LAKE AND ITS WATERSHED

PHYSICAL ATTRIBUTES

The 3,980 square miles (10,310 square kilometer) study area is located within Benewah, Kootenai, and Shoshone Counties in northern Idaho and Spokane County in eastern Washington (fig. 1). . The Bitterroot Range composes the majority of the study area. The Range is characterized by high, massive mountains mantled with coniferous forests and deep, intermountain valleys. Elevations range from approximately 2,000 feet (610 meters) above sea level at the Idaho-Washington state line to 6,844 feet (2,086 meters) at the Idaho-Montana border. Coeur d'Alene Lake has a surface elevation of 2,128 feet (648.7 meters) at full pool. The lake's two principal tributaries are the Coeur d'Alene and St. Joe Rivers which drain the Coeur d'Alene and St. Joe Mountains, subsets of the Bitterroot Range. The lake is drained by the Spokane River, a tributary to the Columbia River.

The Coeur d'Alene and St. Joe Mountains are primarily metasedimentary rocks of the Proterozoic Belt Supergroup which have been locally intruded by granitic rocks of Cretaceous age. The lower elevations to the west of the Coeur d'Alene and St. Joe Mountains are underlaid by glaciofluvial deposits and remnants of multiple basaltic lava flows. An important feature in the northwest part of the study area is the Rathdrum Prairie Aquifer, a 409 square mile (1,060 square kilometer) valley-fill aquifer created during the Pleistocene by repeated outburst floods from glacial Lake Missoula.

A generalized description of the major soil types in the study area was derived from U.S. Department of Agriculture (1984). The majority of the mountainous area east of Coeur d'Alene Lake contains soils on mountainsides, formed in volcanic ash and loess over metasedimentary rocks. The mountainous area west of the lake and north of Windy and Rockford Bays contains soil on mountainsides formed in volcanic ash and loess over granite, gneiss, and schist.

Much of the hilly margin of the lake contains two major soil types. The first are soils on undulating to steep hills, formed in deep loess with some volcanic ash influence. The second type are soils on mountainous slopes and canyon walls associated with hills and plateaus; they are formed mainly in basalt with a thin loess cover.

The Rathdrum Prairie Aquifer has soils on glaciated mountainsides, glacial moraines, and associated terraces, formed in volcanic ash overlaying glacial drift and in sandy glacial lake-laid sediments. The lower river valleys of the St. Joe and Coeur d'Alene Rivers contain soils on floodplains and low terraces, formed in silty alluvium.

The study area receives some of the largest amounts of precipitation in Idaho. About 70 percent of the annual precipitation occurs as snow during October to April. The areal distribution of precipitation is influenced by the basin's topography. For example, the climatological station at Coeur d'Alene (elevation; 2,159 feet, 658 meters) has a mean annual precipitation of 25.4 inches (644 millimeters), whereas the station at Wallace (elevation; 2,940 feet, 896 meters) receives 38.3 inches (971 millimeters). Ambient temperature varies throughout the study area depending on elevation; at Coeur d'Alene, the mean annual temperature is 9.1 degrees Celsius. Although winter temperatures at Coeur d'Alene Lake are often below freezing, in recent decades the lake normally does not freeze except in its shallow southern end.

Coeur d'Alene Lake lies in a naturally-dammed river valley. The lake's outflow is controlled by Post Falls Dam which provides hydroelectric power, flood control, and irrigation supply. At its outlet, the lake receives surface water inflow from 3,741 square miles (9,690 square kilometers). At its normal full pool elevation of 2,128 feet (648.7 meters) above sea level, the lake covers 49.8 square miles (129 square kilometers) and contains 0.67 cubic miles (2.8 cubic kilometers) (table 1). At full pool, the lake's mean depth is 72.2 feet (22 meters) and its maximum depth is 209 feet (63.7 meters). When the lake level is reduced to an elevation of 2,120 feet (646.2 meters), the limit of usable capacity, the surface area is reduced to 47.1 square miles (122 square kilometers) and the volume to 0.62 cubic miles (2.6 cubic kilometers). A bathymetric map of Coeur d'Alene Lake has recently been published by the Geological Survey (Woods and Berenbrock, 1994); a page-size version of that map is illustrated in figure 2. The southern end of the lake contains four shallow lakes, Benewah, Chatcolet, Hidden, and Round, which were flooded in 1906 by impoundment of the Spokane River and Coeur d'Alene Lake by Post Falls Dam.

The Coeur d'Alene River (drainage area; 1,472 square miles, 3,812 square kilometers) discharges into the lake near Harrison. The river has three major reaches, the North Fork, the South Fork, and the reach downstream of the two Forks. Land-use activities within the

Table 1. Morphometric data for Coeur d'Alene Lake at full-pool elevation of 648.6 meters

[km^2, square kilometers; km^3, cubic kilometers; m, meters]

Surface area, in km^2	129
Volume, in km^3	2.84
Shoreline length, in m	243
Maximum depth, in m	63.7
Mean depth, in m	22.0

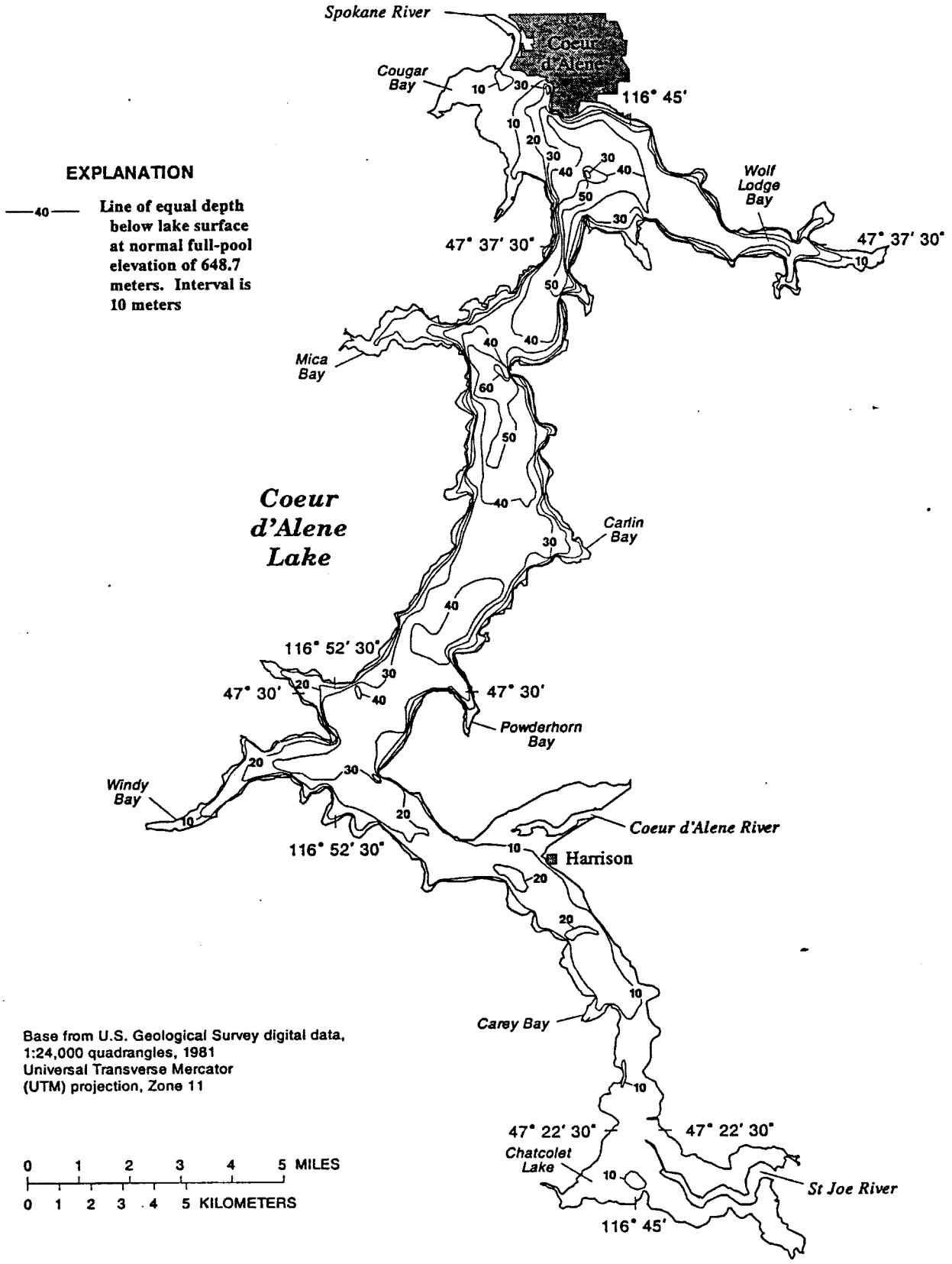


Figure 2. Bathymetric map of Coeur d'Alene Lake.

Coeur d'Alene River basin include recreation, logging, agriculture, mining and ore processing. The majority of the mining and ore processing activities are located in the South Fork Basin which contains the Bunker Hill Superfund Site.

The St. Joe River (drainage area; 1,745 square miles, (4,520 square kilometers) discharges into the southern end of the lake. The St. Joe River is joined by the St. Maries River at the city of St. Maries. Recreation and logging are the dominant land uses; very little mining activity has occurred in the St. Joe River basin.

BIOLOGICAL ATTRIBUTES

Historically, the native fish species abundant in Coeur d'Alene Lake and its tributaries included west slope cutthroat trout, bull trout, mountain whitefish, northern squawfish, peamouth, suckers, and sculpins (Coeur d'Alene Tribe, written commun., 1994). In 1937, kokanee salmon were introduced, beginning the lake's transformation to a sport fishery dominated by introduced species. Other introduced species include: chinook salmon, rainbow trout, brook trout, northern pike, yellow perch, tench, black bullhead, pumpkin seed, largemouth bass, smallmouth bass, and black crappie (Coeur d'Alene Tribe, written commun., 1994).

The extensive forests of the watershed support deer, elk, moose, black bear, coyote, bobcat, cougar, porcupine, squirrel, marten, badger, wolverine, beaver, mice and other small rodents, several species of songbirds, forest grouse, owls, hawks and other raptors, as well as many species of amphibians, reptiles, insects and other invertebrates.

The mainly coniferous forests are composed of firs, pines, hemlocks, cedar, and larch. Deciduous trees such as cottonwood, alder and willow are found along lakeshores and streambanks, or interspersed among the conifers as are isolated stands of aspen and birch. Many species of grasses, mosses, fungi, and deciduous shrubs blanket the forest floor or grow in open areas.

The region's numerous wetlands and nearshore areas also support an abundance of plant, animal, and bird life. Waterfowl such as Canada geese and several species of ducks are abundant year round, and large numbers, including less common species such as swans and snow geese pass through the area seasonally during migration. Many species of songbirds, water birds, and raptors are also common. These areas also support otter, beaver, muskrat, weasels and other furbearers.

LAND USE AND LAND COVER

The land use and land cover within the study area were classified using remote sensing technology. The classification was performed by the Idaho Department of Water Resources. under contract to the U.S. Geological Survey; their report (Idaho Department of Water Resources, 1993) describes the methods and results and, therefore, will only be summarized here.

Two Landsat TM scenes were classified; they represented recent summer scenes with less than 10-percent cloud cover. Scene 42/27 is a full scene acquired on July 21, 1989. Scene 43/27 is a subscene acquired on July 27, 1989. The scenes were geocoded to a UTM projection and were then blended together to produce a single scene. The total RMS error of the final scene was 16.5 meters. An unsupervised classification approach was selected because of the complexity of the study

area. Image processing and image interpretation procedures were used to produce the following list of 15 land use and land cover classes:

* dense urban or built-up land
* sparse urban or built-up land
* irrigated agriculture and pasture
* dryland agriculture and pasture
* rangeland
* deciduous forest
* coniferous forest
* sparse forest
* recent clearcuts
* recovering clearcuts
* water
* wetlands
* barren land
* mined land
* clouds and cloud shadows

An accuracy assessment was conducted to determine individual class accuracies as well as overall accuracy. The overall accuracy for the classification was 96 percent.

The study area was subdivided into 40 subbasins (fig. 3 and table 2) to provide detailed information on land use and land cover. The subbasins contiguous to Coeur d'Alene Lake comprised 27 of the subbasins. The Coeur d'Alene River's drainage basin was divided into seven subbasins whereas the St. Joe River's was subdivided into five units. The remaining subbasin represented the area between the lake's outlet and the U.S. Geological Survey's gaging station near the Idaho-Washington state line. The detailed breakdown (of land use and land cover for the 40 subbasins) is listed in Idaho Department of Water Resources (1993).

The land use and land cover within the 3,980 square miles (10,310 square kilometer) study area (table 3) is dominated by coniferous forest (51.6 percent) and sparse forest (23 percent). The two agriculture classes represent 5.4 percent of the area whereas recent and recovering clearcuts represent 6 percent. Wetlands represent only 0.23 percent of the land use and land cover. The Idaho Department of Parks and Recreation (1993) has recently published a priority listing of wetland areas. The list gives priority consideration to wetlands that 1) provide a high degree of public benefits, 2) are representative of rare or declining wetland types within an ecoregion, and 3) are subject to an identified threat of loss or degradation. Within the border of Coeur d'Alene Lake, there are the following eleven priority wetland areas:

* Wolf Lodge Bay/Beauty Bay
* St. Joe River levees and delta
* Benewah Lake
* Cougar Bay
* Blue Creek Bay
* Mica Bay
* Kid Island Bay
* Loffs Bay
* Rockford Bay
* Windy Bay
* Highway 95 bridge over Coeur d'Alene Lake

SOCIOECONOMIC CONDITIONS

Until recently, the Coeur d'Alene region's economy depended on its abundant natural resources; however, beginning in the 1980's, the mining and timber industries were in economic decline. Tourism became a component of the region's economy in the 1950's as the region's scenic beauty, high

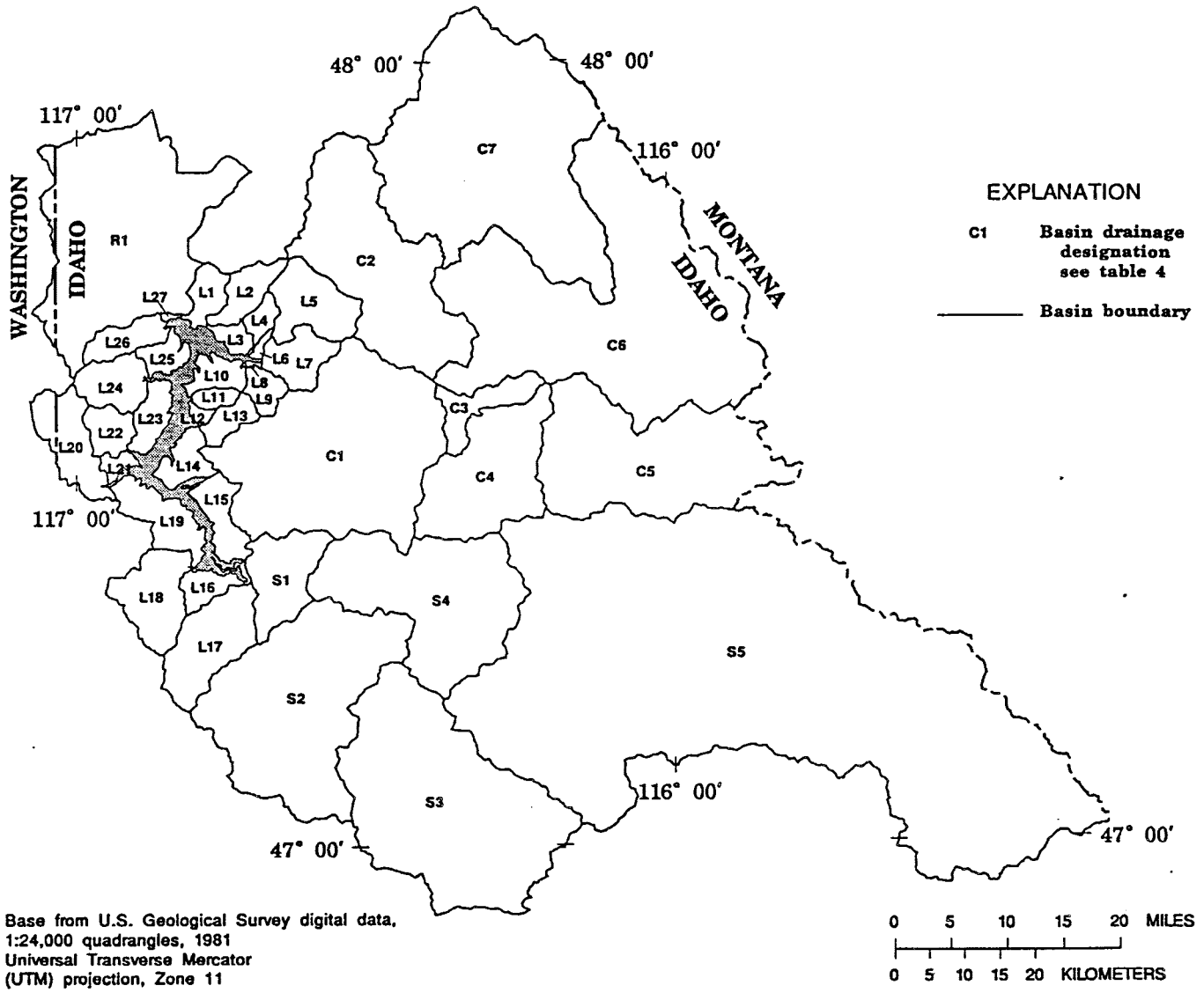


Figure 3. Locations of 40 subbasins within study area.

Table 2. Subbasins and associated drainage areas in the study area

[km², square kilometer; L, Lake; C, Coeur d'Alene River; S, St. Joe River; R, Spokane River; USGS, U.S. Geological Survey]

Subbasin No. (fig. 3)	Subbasin name	Drainage area (km²)	Subbasin No. (fig. 3)	Subbasin name	Drainage area (km²)
L1	City of Coeur d'Alene	37.1	L27	Cougar Bay, nearshore, northwest	2
L2	Fernan Creek	49.5	C1	Coeur d'Alene River, Harrison to Cataldo gaging station	652
L3	Bennett Bay, nearshore	18.9	C2	Coeur d'Alene River, Little North Fork	445
L4	Blue Creek	20.5	C3	Coeur d'Alene River, Enaville gaging station	67.1
L5	Wolf Lodge Creek	104	C4	Coeur d'Alene River, South Fork, Pinehurst to Elizabeth Park gaging station	270
L6	Wolf Lodge Bay, nearshore, northeast	5.4	C5	Coeur d'Alene River, South Fork, Elizabeth Park gaging station	482
L7	Cedar Creek	62.5	C6	Coeur d'Alene River, South Fork, Pinehurst to North Fork, Enaville to Prichard gaging station	1,020
L8	Wolf Lodge Bay, nearshore, southeast	1.7	C7	Coeur d'Alene River, North Fork, upstream from Prichard gaging station	876
L9	Beauty Creek	28.9	S1	St. Joe River, lake to St. Maries gaging station	117
L10	Squaw Bay to Echo Bay, nearshore	34.2	S2	St. Maries River, St. Maries to Santa gaging station	565
L11	Turner Creek	16.5	S3	St. Maries River, upstream from Santa gaging station	713
L12	Carlin Bay, nearshore	7.2	S4	St. Joe River, St. Maries to Calder gaging station	438
L13	Carlin Creek	31.7	S5	St. Joe River, upstream from Calder gaging station	2,687
L14	Powderhorn Bay, nearshore	44.3	R1	Spokane River, lake outlet to USGS gaging station near State line	624
L15	Harrison to St. Maries, nearshore	54.9			
L16	Chatcolet Lake, nearshore, south	34.3			
L17	BenewahEnaville Creek	138			
L18	Plummer Creek	114			
L19	Windy Bay to Chatcolet Lake, nearshore	79.9			
L20	Lake Creek	99.5			
L21	Windy Bay, nearshore, north	14.1			
L22	Fighting Creek	41.6			
L23	Rockford Bay to Mica Bay, nearshore	41.9			
L24	Mica Creek	67.7			
L25	Mica Bay to Cougar Bay, nearshore	29.6			
L26	Cougar Creek	48.5			

Table 3. Land use and land cover in the study area

[km², square kilometers]

Land use and land cover classification	Area (km²)	*Percent* of total
Coniferous forest	5,260	51.6
Sparse forest	2,350	23.0
Rangeland	688	6.8
Clouds	402	3.9
Recovering clearcut forest	385	3.8
Dryland agriculture and pasture	357	3.5
Recent clearcut forest	227	2.2
Irrigated agriculture and pasture	196	1.9
Water	166	1.6
Dense urban or built-up land	48.9	.48
Cloud shadows	34.6	.34
Sparse urban or built-up land	29.1	.29
Wetland	23.9	.23
Barren land	15.2	.15
Deciduous forest	7	.07
Mined land	4.1	.05
TOTAL (rounded)	10,200	100

quality water resources and abundant outdoor recreation opportunities drew increasing numbers of visitors (Kootenai County Planning Commission, 1993). As the natural resource industrial base declined, tourism, recreation, and associated service and sales businesses became the region's new growth industries. Tourism could be the region's largest industry by the year 2000 (Panhandle Area Council, 1993).

The population dynamics of North Idaho and its five counties (Benewah, Bonner, Boundary, Kootenai, and Shoshone) have been evaluated for the period 1970 to 1990 (Panhandle Area Council, 1993). During that period, North Idaho's population grew 54 percent (82,300 to 126,600) with the largest increase during the 1970's. Bonner and Kootenai Counties experienced the most growth, whereas Shoshone County lost population, particularly during the 1980's. Projections call for as much as 10 percent growth during the 1990's (Panhandle Area Council, 1993).

About 76 percent of the population of the Coeur d'Alene watershed resides in Kootenai County, primarily in the cities of Coeur d'Alene, Post Falls, Hayden, and their immediate vicinities. Kootenai County also contains large portions of the forested and agricultural lands in the watershed. The county also contains a significant portion of the watershed's wetland, especially at the heads of lake bays, along the Coeur d'Alene River, and around the ten shallow lakes adjacent to the river's lower reach.

The county's population has increased by 136 percent over the last thirty years, to 69,795, as reported in the 1990 census. The largest increase occurred during the 1970's (table 4). Some current forecasts predict Kootenai County to grow as much as 20 percent during the 1990's (Kootenai County Planning Commission, 1993; Panhandle Area Council, 1993). Considering tourists in hotels/motels and part-time residents of second homes, the peak population of Kootenai County may exceed 100,000 in the summer (Kootenai County Planning Commission, 1993). Much of the direct recreational use of Coeur d'Alene Lake and associated tourist-related business occurs in Kootenai County.

The city of Coeur d'Alene (1990 population of about 25,000) is becoming a major year-round tourist destination. In 1993, total hotel-motel and lodging sales in Kootenai County amounted to over $27 million, based on stated travel and convention room tax receipts. This figure represents at least a fourfold increase over the last decade (Idaho Department of Commerce, 1992; Idaho Department of Employment, 1993). The county also contains most of the lakeshore homesites which are increasingly becoming year round residences. The total 1991 market value of all property in Kootenai County was estimated to be over $2.3 billion (Idaho Department of Commerce, 1992), with property on (or immediately nearby) Coeur d'Alene Lake accounting for over half that figure (Kootenai County Assessor, written commun., 1993).

Shoshone County is the largest of the three counties making up the Coeur d'Alene Lake basin. It contains much of the rural, mountainous, and forested lands, including the headwater areas of the Coeur d'Alene and St. Joe Rivers. It also contains the Coeur d'Alene Mining District (the Silver Valley). The county's population (about 15.2 percent of the basin's total) has declined by about 29.3 percent since 1970 (table 4). Significant timber harvest and some remaining mining

Table 4. Population of Benewah, Kootenai, and Shoshone Counties, 1890–1990

Population assessment year	Benewah County	Kootenai County	Shoshone County
1890	([1])	4,108	5,382
1900	([1])	10,216	11,950
1910	([1])	22,247	13,936
1920	6,977	17,878	14,250
1930	6,371	19,469	19,060
1940	7,332	22,283	21,230
1950	6,173	24,947	22,806
1960	6,036	29,556	20,876
1970	6,230	35,332	19,718
1980	8,292	59,770	19,226
1990	7,937	69,795	13,931

[1]Benewah County was combined with Kootenai County until 1915.

activities occur in Shoshone County.

Although Shoshone County's economy has not fully recovered from the decline of the mining industry, diversification efforts are underway (Panhandle Area Council, 1993). The city of Kellogg is developing a major mountain resort to attract skiers and sightseers. Hotel-motel and lodging sales in Shoshone County amounted to $1.8 million in 1991, or about three times that of 1983 (Idaho Department of Commerce, 1992). This trend is expected to continue as plans to develop tourism based on the Silver Valley's mining history are pursued (Hudson, Jelaco, Welch, Comer, 1993). Environmental cleanup and mine restoration technology and services may also emerge as an industry in the future.

Benewah County is the smallest in both area and population of the three counties comprising the Coeur d'Alene Lake basin (table 4). It was part of Kootenai County until 1915. While its population increased 27.8 percent from 1970 to 1990, the county actually declined 4.3 percent during the 1980's, possibly related to recent declines in the timber industry (Panhandle Area Council, 1993). Benewah County contains much of the productive agricultural land in the basin.

Forested areas in the lower St. Joe and St. Maries River drainages support extensive timber harvest. Major forest products processing mills are located in the county. St. Maries is as the county seat and a major transhipment point for logs. Many are towed down the St. Joe River and across the lake to mills in Coeur d'Alene. Benewah County has one of the largest sources of placer-mined industrial and gem grade garnets in the nation. The county is also becoming a major producer of wild rice from wetlands and flooded fields along the lower St. Joe and St. Maries Rivers. Heyburn State Park, one of the largest and most heavily used in the state is in the county. However, the recreation/tourism business potential of the county remains largely undeveloped (Harris and others, 1989).

The Coeur d'Alene Tribal aboriginal homeland covered almost five million acres in what is now northern Idaho, eastern Washington and western Montana. The heart of this homeland is the Coeur d'Alene Basin, including both river and Coeur d'Alene Lake. The Tribe's presence here dates to time immemorial. Until the coming of European culture and eventual reduction of Coeur d'Alene lands to the current reservation, the Tribe enjoyed a vast wealth of natural resources. Almost everything Tribal members needed--wildlife, fish, water potatoes, huckleberries, camas root and other food sources--was easily at hand. These natural resources were and are essential to maintaining tribal culture and customs. History shows that tribal members camped along the banks of the lake and traveled along its tributaries and ridges via canoe, horseback and by foot. Archeological digs reveal encampments from the northern shore of Lake Pend Oreille to the Spokane Valley, then south and across the existing state line to the upper St. Joe River valley. These encampments represented scores of families and bands, all part of the Coeur d'Alene Tribe.

The existing 1,400 square mile Coeur d'Alene Indian Reservation was established in 1891, encompassing parts of Benewah and Kootenai Counties. It includes only a small portion of the original 4,000,000 acres that was the traditional homeland of the Coeur d'Alene Indians. Under the Indian Reorganization Act of 1934, the Tribal Council was formally

recognized as the ruling body of the Coeur d'Alene Tribe; a governing Constitution was approved and adopted by the Tribe in 1947.

The Tribe has evolved into an economic force in northern Idaho with expanding Tribal commercial, health and environmental programs which are self-determined and self-governed. Of the approximately 6,000 residents within the reservation boundaries, only 750 are Coeur d'Alene Tribal members (about 550 other tribal members live outside of the reservation).

The major communities within the reservation boundary include a part of the Benewah County seat of St. Maries plus Plummer, Worley, Tensed and DeSmet. Tribal headquarters are located near Plummer. The tribe operates farming, logging, construction, retail businesses, a school system and a health care facility (Coeur d'Alene Tribe, written communication, 1994). The tribe recently constructed and is operating a bingo hall near Worley, and is exploring other tourism, recreation and service enterprises.

Of the 345,000 acres that comprise the reservation, about 58,000 acres are in Indian ownership. About 197,000 acres of the reservation drain into Coeur d'Alene Lake. Approximately one-third of Coeur d'Alene Lake lies within the Coeur d'Alene Indian Reservation, but the Coeur d'Alene Tribe does not own or control any lakeshore frontage. West and southwest of the lake, the reservation is dominated by agricultural uses on very fertile but highly erosive Palouse soils. In contrast, the reservation's east side is largely timber producing land. The natural world and all that are in it are paramount to Coeur d'Alene Tribal culture and heritage. The stewardship of the basin's environmental remain a critical issue of tribal government.

LAKE USES

Coeur d'Alene Lake is heavily used for recreational boating and fishing. Although Kootenai County contains only 6.9 percent of Idaho's boatable water, 18.5 percent of the state's boats are registered in the county. This number increased by almost 62 percent in the last five years, from 12,800 in 1988 to 20,800 in 1992 (U.S. Bureau of Land Management, 1993). A large number of Coeur d'Alene Lake boaters are from outside the state. Of the 10,000 out-of-state boat registrations in Idaho, a little over half of the owners declare Benewah and Kootenai Counties as their primary area of use; out-of-state boaters account for about one-fourth of the 20,000 boats registered in Kootenai County (Idaho Department of Parks, written commun., 1993).

Coeur d'Alene Lake is probably the region's major attraction as a recreation and tourist area. A large lakeshore resort in Coeur d'Alene continues to expand, especially after the addition of a golf course on the site of a former sawmill on the city's eastern edge. Many public and private recreation areas, ranging from simple boat launch ramps to campgrounds, picnic areas, and interpretive trails, are also located on the lake (table 5). A recent recreation management plan describes in greater detail the characteristics and services offered at each site (U.S. Bureau of Land Management, 1993). The cities of Coeur d'Alene, Harrison, Post Falls, and St. Maries operate popular parks offering picnic and/or camping facilities and water access for boating and/or swimming.

Within a 50 mile (80 kilometer) radius of the city of Coeur d'Alene are numerous lakes that

Table 5. Public and private recreation facilities at Coeur d'Alene Lake

[D, docks; T, toilets; DW, drinking water; BR, boat ramp; C, camping; RS, rental boat slips; data from Bureau of Land Management, 1993]

Facility name	Services available
Public	
North Idaho College beach	D, T, DW
Third Street beach	BR, D, T, DW
Boothes Park	BR, D, T
I–90 boat launch	BR, D
Higgins Point	D
Wolf Lodge Bay	BR, D, T
Squaw Bay	BR, D, T
Turner Point	D, T
Turner Bay	D, T
Carlin Bay	BR, D
Bell Bay	D, T, DW, C
Harlow Point	D
Mowry State Park	D, T, C
Windy Bay	D, T, C
Sun Up Bay	BR, D, T
Rockford Bay	BR, D, T
Loffs Bay	BR, D, T
Mica Bay boat park	D, T, C
Mica Bay	BR, D, T
Goulds Landing	BR, D, T
Rocky Point Marina	D, T, DW, BR, RS
Chatcolet, day use	D, T, BR
Plummer Point	D, T, DW
Howleys Landing	D, T, DW, C
Private	
Boardwalk Marina	D, RS
Yacht Club Sales	BR, T, DW, RS
Northwest Resort	BR, T, DW, RS
Silver Beach Resort	D, RS
Delevans Marine	RS
Wolf Lodge campground	T, DW, C
Coeur d'Alene Lake Resort	D, T, DW, C
Beauty Bay Resort	D, RS
Squaw Bay Resort	BR, D, T, DW, C, RS
Panhandle Yacht Club	RS
Arrow Point RV Park	T
Arrow Point Resort	D, T, DW
Carlin Bay Resort	D, T, DW, C
Conklin Park Marina	D, T, DW, BR, RS

Table 6. Lakes within an 80-kilometer radius of the city of Coeur d'Alene

[km^2, square kilometer; —, no data available]

Lake name	Surface area (km^2)	Lake name	Surface area (km^2)
Idaho lakes		**Idaho lakes—Continued**	
Anderson[1]	1.2	Pend Oreille	330
Black[1]	1.4	Porter	.1
Blue[1]	.8	Rose[1]	1.4
Bull Run[1]	.3	Round	.2
Cave[1]	2.4	Spirit	5.2
Chilco	—	Swan[1]	1.5
Fernan	1.4	Thompson[1]	.8
Granite	.1	Twin	7.8
Hauser	2.4	**Washington lakes**	
Hayden	17		
Kelso	.2	Liberty	2.8
Killarney[1]	1.9	Long Lake	21
Medicine[1]	.7	Newman	4.9

[1]Lateral lakes adjacent to Coeur d'Alene River.

offer recreation opportunities similar to those available at Coeur d'Alene Lake (table 6). By far, the largest is Lake Pend Oreille, the southern end of which is within the 50 mile (80 kilometer) radius. The majority of these lakes are accessible by car; only a few of the lateral lakes adjacent to the Coeur d'Alene River are restricted to boat access only.

In 1991 the Idaho Department of Fish and Game conservatively estimated the gross economic value of the Coeur d'Alene Lake fishery at $6 million. The kokanee fishery contributed almost half, while chinook salmon and spiny rays (which included the "trophy" pike fishery) contributed approximately $225,000 and $330,000, respectively (Coeur d'Alene Tribe, written commun., 1994).

Coeur d'Alene Lake is a source of water for agricultural, domestic, and industrial use. At least six public water supply systems use the lake water, including, until recently, the city of Coeur d'Alene. The Idaho Department of Water Resources records 220 water rights filed to withdraw water from Coeur d'Alene Lake (Idaho Department of Water Resources, written commun., 1993). Although environmental and public health agencies advise against using surface water for domestic purposes without extensive treatment, many of these permitted withdrawals serve as a drinking water source. There are many more unpermitted withdrawals, some of which are also probably used for domestic purposes (Ken Lustig, Panhandle Health District, oral commun., 1993).

SUMMARY OF 1991-93 LAKE STUDY

OBJECTIVES

The objective of the lake study was to determine the lake's assimilative capacity for nutrients to assess the potential for development of an anoxic hypolimnion and the consequent release of nutrients and trace elements from the lakebed sediments. Seven major tasks were undertaken to achieve the two objectives:

(1) assess physical, chemical, and biological characteristics in the limnetic and littoral zones of the lake;

(2) quantify loadings of water, nutrients and selected trace elements into and out of the lake;

(3) develop a nutrient load/lake response model of the lake;

(4) using the model, simulate responses of the dissolved oxygen deficit to alterations in nutrient loadings;

(5) perform geochemical analyses of lakebed sediments to determine concentration, partitioning, and environmental availability of selected trace elements;

(6) characterize land cover/land use throughout the study area using remote sensing and GIS techniques; and

(7) assemble the data base needed for development of a lake management plan.

The results of the study are discussed in reports by Idaho Department of Water

Resources (1993), Berenbrock and Woods (1994), Horowitz and others (1993, 1994), Kuwabara and others (1994), Woods (1994), and Woods and Beckwith (in press); a summarization follows.

LIMNOLOGY

- Numerous measurements were taken in the lake's open-water (fig. 4) and nearshore areas (fig. 5) to assess the lake's physical, chemical, and biological characteristics.

- Water-column transparency was measured as an index of the lake's biological production. The lake's southern area was less transparent than the central and northern areas (fig. 6), indicating that the southern area was more productive.

- The nutrients nitrogen and phosphorus are important determinants of aquatic plant growth. The amounts of both nutrients were larger in the lake's southern area (tables 7 and 8), indicating a larger pool of nutrients was available for biological production.

- Phosphorus was the nutrient most likely to control the rate of aquatic plant growth because it was in shortest supply relative to the nutritional requirements of the plants (table 9).

- Chlorophyll is an important index of biological production in lakes because it is the pigment aquatic plants use for photosynthesis. The amount of chlorophyll was largest in the southern area of the lake (table 10), indicating a larger potential for biological production.

- Measurements of water-column transparency, nitrogen, phosphorus, and chlorophyll are used worldwide by lake scientists to assess and compare the biological production of lakes (table 11). For Coeur d'Alene Lake, these measurements were typical of oligotrophic, or low productivity lakes (table 12).

- The amount of oxygen dissolved in the deeper areas of a lake can become depleted if the lake is overly productive of aquatic plants. During the majority of the study, Coeur d'Alene Lake had abundant dissolved oxygen. However, the southern area of the lake was severely depleted of dissolved oxygen during the late summer. The northern half of the lake also experienced depletion of dissolved oxygen during the late summer when the lower depths contained about 50 percent of the normal expected amount of dissolved oxygen.

- The large aquatic plants (macrophytes) were mapped to aid in identification of nearshore areas with abundant inputs of nutrients. The southern area of the lake had the most extensive beds of macrophytes, although Cougar Bay, in the northern area, was also heavily populated with macrophytes. The majority of bays with sedimentary deltas at their heads also contained abundant growths of macrophytes.

- Algae during the summer. The microscopic aquatic plants (phytoplankton) throughout most of the lake were essentially devoid of blue-green algae, which are often associated with highly productive lakes. However, the phytoplankton in the lake's southern area contained at least 10 percent blue-green algae.

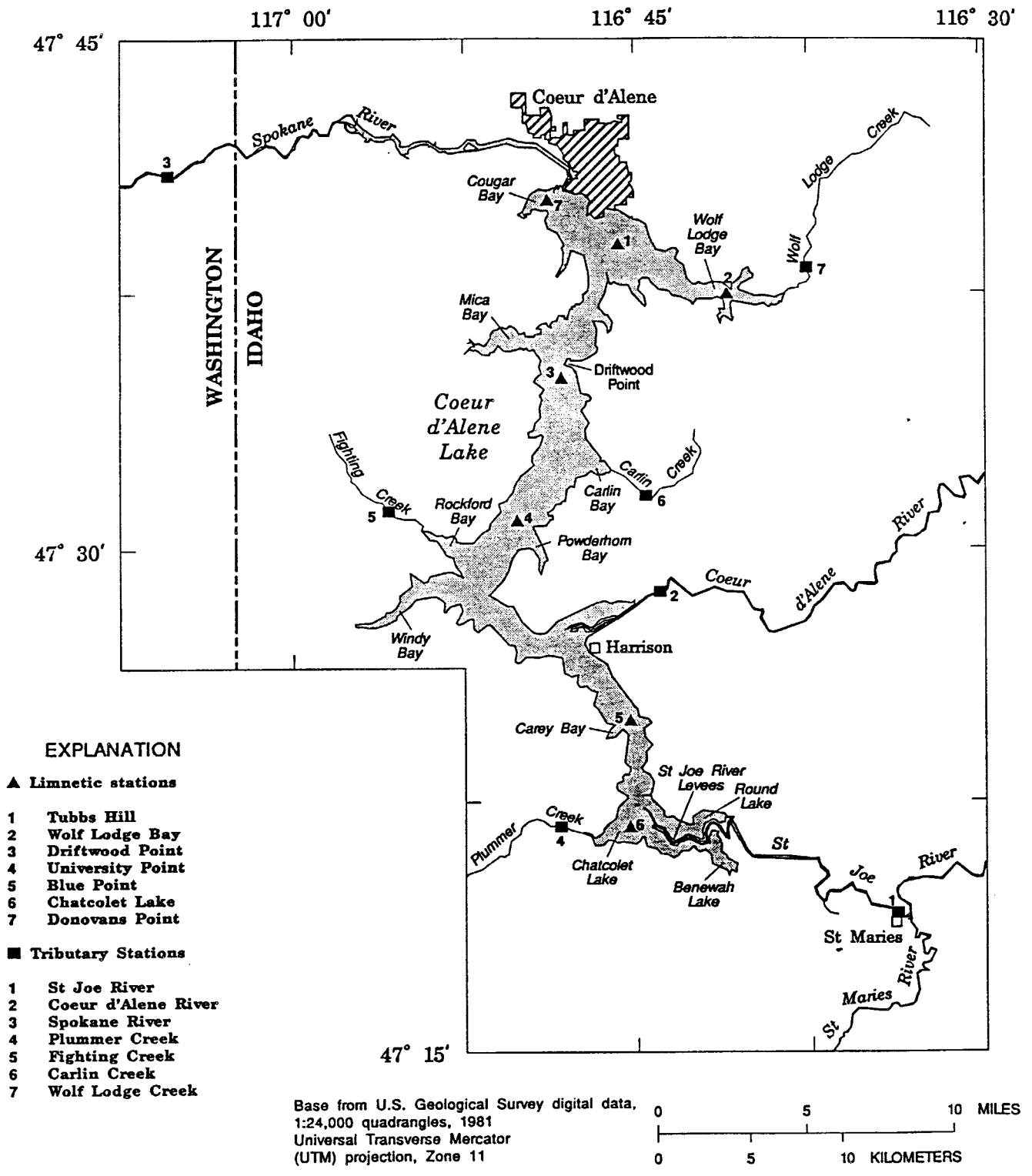


Figure 4. Locations of limnetic and tributary sampling stations.

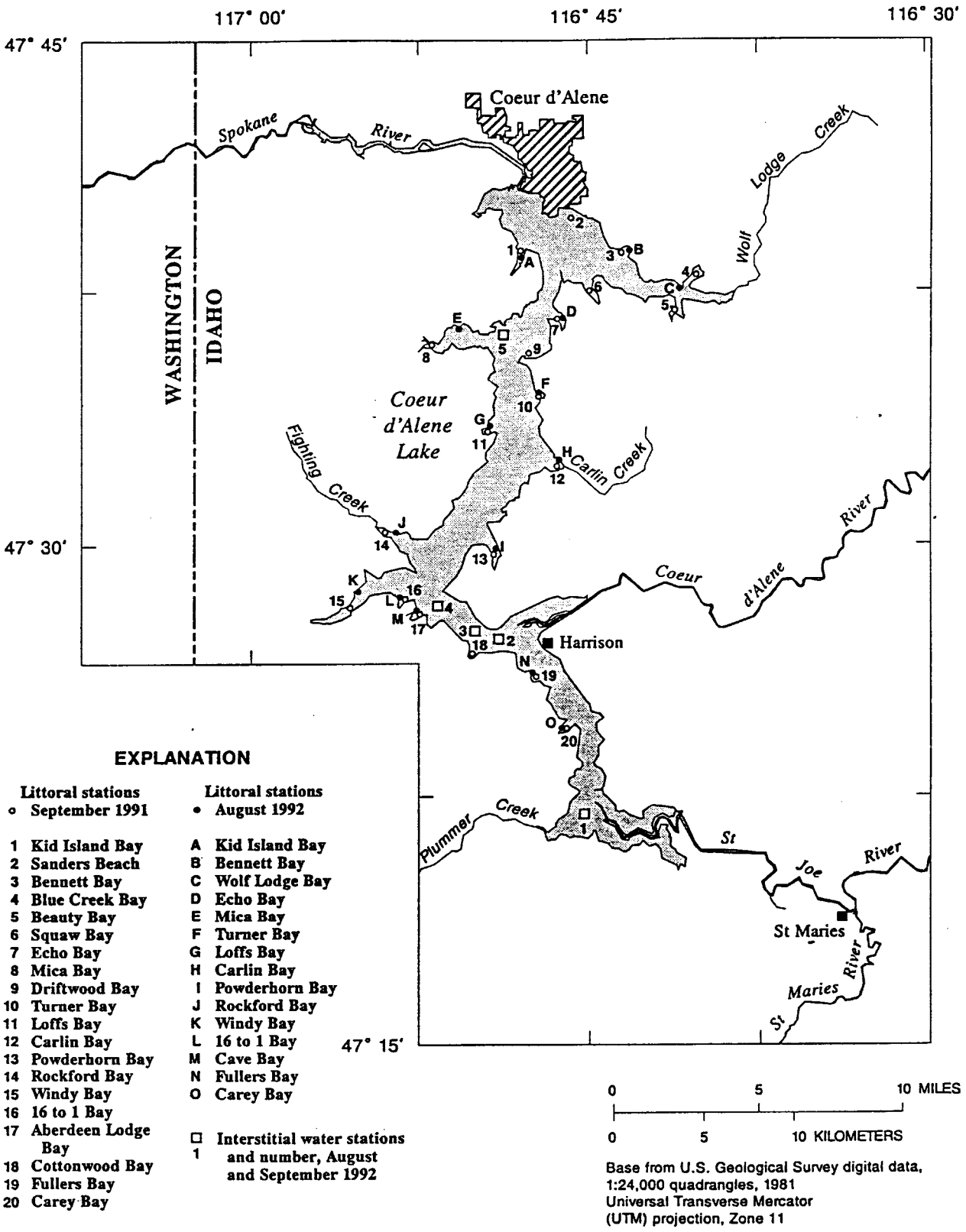


Figure 5. Locations of littoral sampling stations, September 1991 and August 1992, and interstitial water sampling stations, August and September 1992.

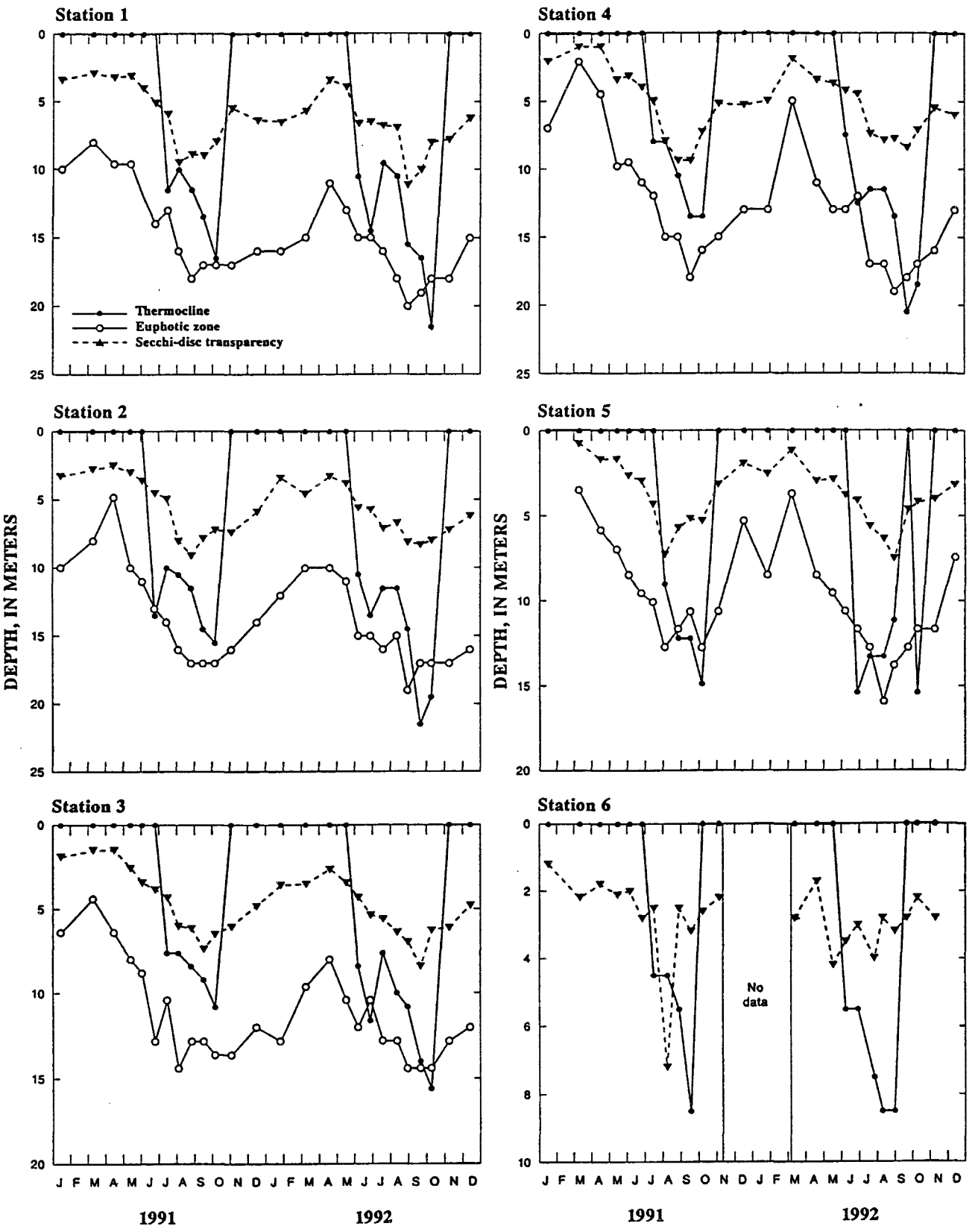


Figure 6. Depths of thermocline, euphotic zone, and secchi-disc transparency at stations 1–6 during 1991–92.

Table 7. Means and ranges of concentrations of total phosphorus and dissolved orthophosphorus in samples from the euphotic zone and near-bottom water at six limnetic stations and lakewide, Coeur d'Alene Lake, 1991–92

[µg/L, micrograms per liter; n, number of samples;<, less than]

Limnetic station	Total phoshporus (µg/L)						Dissolved orthophosphorus(µg/L)					
	Euphotic zone			Near bottom			Euphotic zone			Near bottom		
(fig. 4)	Mean[1]	Range	n	Mean[1]	Range	n	Mean[1]	Range	n	Mean[1]	Range	n
					1991							
1	5.2	1–16	13	4.9	<1– 12	13	1	<1– 1	13	2	<1– 5	12
2	4.4	2–10	13	4.9	<1– 8	12	1.2	<1– 3	13	1.6	<1– 4	12
3	4.6	1– 6	13	4.8	2– 6	13	1	<1– 2	12	1.3	<1– 3	13
4	5.6	<1– 9	13	6.2	3– 10	13	1.2	<1– 2	13	1.5	<1– 3	13
5	8.8	4–17	12	10.1	<1– 21	12	2.3	<1– 7	11	2.3	<1– 7	12
6	14.2	7–41	12	42.1	12–192	8	2.7	<1–11	12	13.6	<1–100	9
Lakewide	6.5	1–41	76	8.1	<1–192	71	1.4	<1–11	74	2.4	<1–100	71
					1992							
1	2.4	<1– 6	13	2.5	<1– 4	13	1	<1– 1	13	1.1	<1– 2	12
2	3.8	<1–10	12	4.8	<1– 25	13	1.1	<1– 2	12	1.6	<1– 8	13
3	2.9	<1–13	13	2.8	<1– 8	13	1.4	<1– 6	13	1.1	<1– 2	13
4	4.2	<1– 8	13	3.7	<1– 8	13	1	<1– 1	12	1.4	<1– 4	13
5	5.0	<1–13	12	5.8	<1– 15	12	1.4	<1– 5	12	1.9	<1– 7	12
6	5.2	<1– 8	9	10.0	7– 17	8	1	<1– 3	9	2.1	<1– 4	8
Lakewide	3.7	<1–13	72	3.8	<1– 25	72	1.2	<1– 6	71	1.3	<1– 8	71

[1]Mean computed by assigning detection limit value to less-than values.

Table 8. Means and ranges of concentrations of total nitrogen and dissolved inorganic nitrogen n samples from the euphotic zone and near-bottom water at six limnetic stations and lakewide, Coeur d'Alene Lake, 1991–92

[µg/L, micrograms per liter; n, number of samples; <, less than; LW, lakewide]

Limnetic station	Total nitrogen (µg/L)						Dissolved inorganic nitrogen (µg/L)					
	Euphotic zone			Near bottom			Euphotic zone			Near bottom		
(fig. 4)	Mean[1]	Range	n	Mean[1]	Range	n	Mean[1]	Range	n	Mean[1]	Range	n
					1991							
1	289	<205–427	13	349	244–631	11	38.3	<7–161	13	102	43–141	13
2	267	<205–409	13	309	229–481	13	32.8	<7–101	13	87.2	35–229	13
3	292	<205–616	13	375	249–902	13	42.2	9–117	13	94.4	30–137	13
4	309	<205–805	13	337	241–887	13	43.3	<7–104	13	102	43–131	13
5	329	<205–808	12	279	<205–459	12	36.6	11–117	12	54.8	14–137	12
6	365	<205–821	12	402	<205–833	8	45.8	8–234	12	84.6	<7–332	9
LW	307	<205–821	76	290	<205–902	70	41.9	<7–234	76	70.8	<7–332	73
					1992							
1	211	<205–221	13	265	222–340	13	19.7	<7–58	13	74.6	28–144	13
2	212	<205–239	12	240	<205–281	13	20.4	<7–47	12	48.7	<6–86	13
3	216	<205–257	13	274	224–316	13	23.2	<7–66	13	84.9	27–123	13
4	220	<205–270	13	273	<205–333	13	27.9	9–76	13	81.7	19–141	13
5	219	<205–287	12	238	<205–334	12	28.0	<7–98	12	50.2	16–153	12
6	206	<205–216	9	258	<205–607	8	15.0	<7–31	9	21.8	<7–48	8
LW	216	<205–287	72	256	<205–607	72	23.8	<7–98	72	56.7	<6–153	72

[1]Mean computed by assigning detection limit value to less-than values.

Table 9. Means and ranges of ratios of dissolved inorganic nitrogen to dissolved orthophosphorus in samples from the euphotic zone at six limnetic stations and lakewide, Coeur d'Alene Lake, 1991–92

[means and ranges in micrograms per liter; LW, area-weighted lakewide value]

Limnetic station (fig. 4)	Ratio		No. of samples
	Mean	Range	
	1991		
1	38.3	7–161	13
2	30	7–101	13
3	35	9– 81	12
4	38.3	7–104	13
5	20.3	7– 54	11
6	17.1	8– 39	12
LW	34.4	7–161	74
	1992		
1	19.7	7– 58	13
2	19.8	7– 47	12
3	22.8	1– 66	13
4	28.5	9– 76	12
5	20.4	7– 45	12
6	12.8	6– 31	9
LW	22.7	1– 76	71

Table 10. Means and ranges of chlorophyll-*a* concentrations in samples from the euphotic zones at six limnetic stations and lakewide, Coeur d'Alene Lake, 1991–92

[µg/L, micrograms per liter; <, less than; LW, lakewide]

Limnetic station (fig. 4)	Chlorophyll-*a* (µg/L)		No. of samples
	Mean[1]	Range	
	1991		
1	0.5	0.1–1	13
2	.5	.2–1.1	13
3	.4	.3–1	13
4	.5	<.1–1	13
5	.6	.3–1.4	12
6	.8	.1–2	11
LW	.5	<.1–2	75
	1992		
1	.6	<.1–1.3	12
2	.8	.4–1.4	11
3	.7	.2–1.2	13
4	.7	.2–1.5	13
5	.9	.2–1.7	13
6	1.1	.1–2.6	11
LW	.8	<.1–2.6	73

[1]Mean computed by assigning detection limit to less-than values.

Table 11. Trophic-state classification based on open-boundary values for four limnological variables

[Modified from Ryding and Rast (1989); µg/L, micrograms per liter; m, meter]

Limnological variable[1]		Oligotrophic	Mesotrophic	Eutrophic
Total phosphorus (µg/L)	$\bar{\chi}$	8.0	26.7	84.4
	$\bar{\chi} \pm 1$ SD	4.8–13.3	14.5–49.0	48.0–189.0
	$\bar{\chi} \pm 2$ SD	2.9–22.1	7.9–90.8	16.8–424.0
Total nitrogen (µg/L)	$\bar{\chi}$	661	753	1,875
	$\bar{\chi} \pm 1$ SD	371–1,180	485–1,170	861–4,081
	$\bar{\chi} \pm 2$ SD	208–2,103	313–1,816	395–8,913
Chlorophyll-*a* (µg/L)	$\bar{\chi}$	1.7	4.7	14.3
	$\bar{\chi} \pm 1$ SD	0.8–3.4	3.0–7.4	6.7–31.0
	$\bar{\chi} \pm 2$ SD	0.4–7.1	1.9–11.6	3.1–66.0
Secchi-disc transparency (m)	$\bar{\chi}$	9.9	4.2	2.4
	$\bar{\chi} \pm 1$ SD	5.9–16.5	2.4–7.4	1.5–4.0
	$\bar{\chi} \pm 2$ SD	3.6–27.5	1.4–13.0	0.9–6.7

[1] Annual geometric mean values and standard deviations.

Table 12. Trophic state of Coeur d'Alene Lake at six limnetic stations and lakewide during 1991 and 1992 based on annual mean values of four limnological variables

[µg/L, micrograms per liter; m, meters; TS, trophic state; O, oligotrophic; M, mesotrophic; E, eutrophic; LW, lakewide]

Limnetic station (fig. 4)	Total phosphorus (µg/L)		Total nitrogen (µg/L)		Chlorophyll-*a* (µg/L)		Secchi-disc transparency (m)	
	[1] $\bar{\chi}$	TS	[1] $\bar{\chi}$	TS	[1] $\bar{\chi}$	TS	[2] $\bar{\chi}$	TS
				1991				
1	4.2	O	275	O	0.39	O	5.3	M
2	3.9	O	259	O	.45	O	4.9	M
3	4.3	O	276	O	.39	O	4.7	M
4	5.0	O	282	O	.38	O	4.0	M
5	8.3	O	290	O	.52	O	3.1	M
6	12.4	O	316	O	.55	O	2.4	M/E
LW	5.6	O	282	O	.43	O	4.0	M
				1992				
1	2.0	O	211	O	.54	O	6.6	M
2	2.8	O	212	O	.71	O	5.6	M
3	2.1	O	215	O	.62	O	6.2	M
4	3.6	O	219	O	.62	O	5.2	M
5	3.7	O	218	O	.81	O	4.6	M
6	4.6	O	206	O	.79	O	2.9	M/E
LW	2.9	O	214	O	.67	O	5.1	M
				1991–92				
LW	4.1	O	247	O	.54	O	4.5	M

[1] Annual geometric mean concentration within euphotic zone.
[2] Annual geometric mean value.

- The microscopic aquatic plants attached to underwater materials (periphyton) were studied in nine bays to determine if the level of nearshore and watershed development was related to growth rates of periphyton. A strong and positive relation (coefficient of determination = 88.4) was statistically derived between growth rate of periphyton and the amount of phosphorus in the nearshore water and the percentage of agricultural land in the contributing watershed.

- The amount of the trace elements arsenic, cadmium, copper, mercury, and lead in the lake water was very low, whereas, the amount of zinc in the lake water was elevated throughout the northern two-thirds of the lake (table 13). Based on U.S. Environmental Protection Agency criteria, the zinc levels were potentially harmful to freshwater aquatic life (table 14), but not to humans.

- Algal bioassay tests for zinc toxicity indicated that the biologically-available, dissolved zinc concentrations in the northern two-thirds of the lake suppressed the growth of phytoplankton isolated from Coeur d'Alene Lake.

LAKEBED SEDIMENTS

- The phosphorus content of the lakebed sediments was slightly enriched whereas nitrogen was moderately enriched.

- The lakebed sediments in about 85 percent of the lake were markedly enriched in antimony, arsenic, cadmium, lead, mercury, and zinc (table 15). The area of the lake south of Conkling Point was not enriched in trace elements.

- The source of the trace-element enrichment was attributed to the mining, ore-processing, and smelting operations that have occurred since the 1880's in the Coeur d'Alene River watershed. The vast majority of the trace elements were associated with materials operationally defined as iron oxides, not sulfides as previously believed, and thus were quite likely to exist in a dissolved, not particulate, form if the lakebed contained little or no oxygen.

HYDROLOGIC, NUTRIENT, AND TRACE-ELEMENT BUDGETS

- Streamflow into the lake during 1991 was 130 percent of the long-term average, whereas, in 1992, streamflow was only 60 percent of average.

- The lake received over 90 percent of its water inflow from the St. Joe and Coeur d'Alene Rivers, with the St. Joe having the largest inflow (tables 16 and 17).

- During 1991 and 1992, the lake received over one-half of its phosphorus from the St. Joe and Coeur d'Alene Rivers, with the St. Joe as the largest contributor (tables 18 and 19).

- Phosphorus inputs in 1991 were about 2.5 times larger than those in 1992 because of the much larger streamflows of 1991.

- The lake received more phosphorus than it output to the Spokane River, thus, it acted as a trap for phosphorus.

- During 1991 and 1992, the lake received about three-fourths of its nitrogen from the St. Joe and Coeur d'Alene Rivers, with the St. Joe as the largest contributor (tables 18 and 19).

Table 13. Lakewide concentrations of six trace elements in samples from the euphotic zone and lower hypolimnion, Coeur d'Alene Lake, 1991–92

[µg/L, micrograms per liter; <, less than]

Trace element	Concentration (µg/L)		*Percent of samples below detection limit*	No. of samples
	Range	Median		
Arsenic, total	<1–1	<1	94.5	145
Cadmium, total recoverable	<1–2	<1	97.3	146
Copper, total recoverable	<1–15	1.6	40.0	136
Lead, total recoverable	<1–41	3.3	26.7	146
Mercury, total recoverable	<0.1–1.8	<1	79.3	145
Zinc, total recoverable	<10–390	98.6	11.0	146

Table 14. Concentrations of selected trace elements considered acutely or chronically toxic to freshwater biota based on hardness-dependent criteria

[µg/L, micrograms per liter; CMC, criterion maximum concentration; CCC, criterion continuous concentration; e, base of natural logarithms; ln, natural logarithm; H, hardness, in milligrams per liter as $CaCO_3$; —, data not available; mg/L, milligrams per liter]

Trace element	Criteria	Toxicity equation[1,2]	Concentration (µg/L)	
			Total recoverable	Dissolved
Arsenic	CMC	None	360	342
	CCC	None	190	180
Cadmium	CMC	$e^{[1.128(\ln H)-3.878]}$	.71	.60
	CCC	$e^{[0.7852(\ln H)-3.49]}$	.35	.30
Copper	CMC	$e^{[0.9422(\ln H)-1.464]}$	4.3	3.7
	CCC	$e^{[0.8545(\ln H)-1.465]}$	.16	.14
Lead	CMC	$e^{[1.273(\ln H)-1.46]}$	11.9	6.0
	CCC	$e^{[1.273(\ln H)-4.705]}$	.5	.12
Mercury	CMC	None	2.4	2.0
	CCC	None	.012	—
Zinc	CMC	$e^{[0.8473(\ln H)+0.8604]}$	32.4	27.5
	CCC	$e^{[0.8473(\ln H)+0.7614]}$	29.4	25.0

[1] From U.S. Environmental Protection Agency (1986).

[2] Hardness is median value for Coeur d'Alene Lake, 1991–92, 22 mg/L as $CaCO_3$.

Table 15. Statistical summary of selected trace elements in surficial and subsurface lakebed sediments in enriched and unenriched areas, Coeur d'Alene Lake

[mg/kg, milligrams per kilogram; S, surficial sample; C, subsurface sample; <, less than; data from Horowitz and others (1993, 1995)]

Trace element	Sample type	Concentration for enriched area (mg/kg)				Median concentration for unenriched area[1] (mg/kg)
		Minimum	Maximum	Mean	Median	
Arsenic	S	2.4	660	151	120	4.7
	C	3.5	845	103	30	12
Cadmium	S	<.5	157	62	56	2.8
	C	<.1	137	25	26	.3
Copper	S	9	215	72	70	25
	C	20	650	91	60	30
Lead	S	14	7,700	1,900	1,800	24
	C	12	27,500	3,200	1,250	33
Mercury	S	.02	4.9	1.8	1.6	.05
	C	<.01	9.9	1.9	0.95	.06
Zinc	S	63	9,100	3,600	3,500	110
	C	59	14,000	2,400	2,100	118

[1] Unenriched area median concentration for sample type S based on 17 samples from southern area of Coeur d'Alene Lake and lower reach of St. Joe River. Unenriched area median concentration for sample type C based on 189 sample aliquots from cores beneath enriched area.

Table 16. Hydrologic budget and errors associated with each budget component, Coeur d'Alene Lake, 1991

[Volumes and errors are in cubic hectometers]

Budget component	Inflow or outflow		Error
	Volume	Percent of total	
	Inflow		
St. Joe River	3,350	52.4	502
Coeur d'Alene River	2,610	40.8	391
Plummer Creek	22	.3	1.6
Fighting Creek	10.5	.2	.8
Carlin Creek	8.5	.2	.6
Wolf Lodge Creek	57	.9	4.3
Ungaged surface-water inflow	260	4.1	68
Wastewater	6.2	.1	1.5
Precipitation	64.6	1.0	9.7
	Outflow		
Evaporation	93.3	1.5	24.6
Ground-water outflow to Rathdrum Prairie	205	3.1	51.2
Lake storage change	33.6	.06	2.5
Spokane River	6,270	94.8	470
	Summary		
Total inflow	6,390		
Total outflow	6,610		
Residual (outflow - inflow)	220		
Overall error	796		

Table 17. Hydrologic budget and errors associated with each budget component, Coeur d'Alene Lake, 1992

[Volumes and errors are in cubic hectometers]

Budget component	Inflow or outflow		Error
	Volume	Percent of total	
Inflow			
St. Joe River	1,660	52.0	300
Coeur d'Alene River	1,280	40.1	200
Plummer Creek	11.4	.4	.9
Fighting Creek	5.5	.2	.4
Carlin Creek	4.5	.1	.3
Wolf Lodge Creek	21.9	.7	1.6
Ungaged surface-water inflow	125	3.9	34
Wastewater	5.5	.2	1.4
Precipitation	75	2.4	11
Outflow			
Evaporation	98.3	2.8	24.6
Ground-water outflow to Rathdrum Prairie	205	5.8	51.2
Lake storage change	54.3	1.6	4.1
Spokane River	3,140	89.8	236
Summary			
Total inflow	3,190		
Total outflow	3,500		
Residual (outflow - inflow)	310		
Overall error	436		

Table 18. Nutrient budgets and errors for total phosphorus and total nitrogen, Coeur d'Alene Lake, 1991

[Loads and errors are in kilograms]

Budget component	Total phosphorus			Total nitrogen		
	Load	Percent of total	Error	Load	Percent of total	Error
Inflow						
St. Joe River	72,100	54.3	11,000	1,040,000	45.9	155,000
Coeur d'Alene River	22,000	16.6	3,120	801,000	35.3	121,000
Plummer Creek	2,060	1.6	180	38,000	1.7	3,460
Fighting Creek	610	.5	60	12,500	.6	1,190
Carlin Creek	205	.1	20	2,820	.1	330
Wolf Lodge Creek	590	.4	40	18,600	.8	1,320
Ungaged surface-water inflow	8,750	6.6	2,040	153,000	6.7	40,100
Wastewater	19,900	15.0	6,400	127,000	5.6	42,400
Precipitation	6,460	4.9	1,000	75,000	3.3	11,500
Outflow						
Ground-water outflow to Rathdrum Prairie	5,940	11.1	1,530	122,000	5.8	30,600
Lake storage change	410	.8	30	8,140	.4	720
Spokane River	47,600	88.1	3,760	2,020,000	93.8	150,000
Summary						
Total phosphorus				**Total nitrogen**		
Total inflow = 133,000				Total inflow = 2,270,000		
Total outflow = 54,000				Total outflow = 2,150,000		
Residual (outflow-inflow) = -79,000				Residual (outflow-inflow) = -120,000		
Overall error = 13,900				Overall error = 256,000		

Table 19. Nutrient budgets and errors for total phosphorus and total nitrogen, Coeur d'Alene Lake, 1992

[Loads and errors are in kilograms]

Budget component	Total phosphorus			Total nitrogen		
	Load	Percent of total	Error	Load	Percent of total	Error
Inflow						
St. Joe River	18,300	33.3	3,300	418,000	41.0	75,000
Coeur d'Alene River	9,980	18.1	1,600	314,000	30.8	49,000
Plummer Creek	1,130	2.1	100	21,900	2.1	1,920
Fighting Creek	410	.8	70	8,210	.8	1,490
Carlin Creek	106	.2	20	1,480	.2	330
Wolf Lodge Creek	217	.4	20	6,860	.7	620
Ungaged surface-water inflow	4,990	9.1	1,360	89,200	8.7	24,100
Wastewater	13,400	24.4	2,400	85,100	8.3	14,200
Precipitation	6,460	11.6	1,100	75,000	7.4	11,000
Outflow						
Ground-water outflow to Rathdrum Prairie	7,590	19.4	2,040	153,000	16.4	38,200
Lake storage change	200	.6	40	11,700	1.2	880
Spokane River	31,300	80.0	2,360	770,000	82.4	57,800
Summary						
Total phosphorus				**Total nitrogen**		
Total inflow = 55,000				Total inflow = 1,020,000		
Total outflow = 39,000				Total outflow = 935,000		
Residual (outflow-inflow) = -16,000				Residual (outflow-inflow) = -85,000		
Overall error = 5,660				Overall error = 117,000		

- Nitrogen inputs in 1991 were about twice as large as those for 1992.

- The lake did not act as a trap for nitrogen because inflow was about equal to outflow.

- The contribution of nutrients to the lake from private and municipal wastewater-treatment systems was dominated by the wastewater treatment plant at Page, which contributed 66 percent of the total phosphorus and 72 percent of the total nitrogen from such sources (table 20).

- The Coeur d'Alene River was the primary contributor of arsenic, cadmium, lead and zinc to the lake, with the 1991 input of zinc being the largest at 847,000 kilograms (930 tons).

- The lake acted as a trap for arsenic, cadmium, lead, and zinc.

NUTRIENT LOAD/LAKE RESPONSE MODEL

- The model divided the lake into six segments (fig. 7) in order to test the response of the individual lake segments to nutrient management scenarios.

- The nutrient load portion of the model accounted for the input or output of water and nutrients from 59 sources such as surface water inflow and outflow, precipitation and evaporation, private and municipal wastewater treatment systems, urban runoff, and groundwater.

- The lake response portion of the model accounted for the amount and movement of water and nutrients throughout the lake in order to assess how the lake responds physically, chemically, and biologically to changes in water and nutrient loadings.

- A wide variety of simulations was possible owing to the complexity of Coeur d'Alene Lake and its drainage basin, as well as the diversity of possible water quality management options. Simulations addressed two major questions: (1) would large increases in nutrient loadings cause the lake's hypolimnion to become anoxic, and (2) would the lake's water quality be substantially improved by large reductions in nutrient loadings.

- Simulations have indicated the northern two-thirds of the lake has a large capacity to receive additional inputs of nutrients before the hypolimnion becomes severely depleted of dissolved oxygen.

- The simulated removal of all wastewater generated nutrient loadings improved lake water quality more than the simulated nutrient reductions resulting from implementation of best management practices for forestry and agriculture within the Coeur d'Alene and St. Joe River basins.

TRENDS IN LAKE WATER QUALITY

- The National Eutrophication Survey, conducted on Coeur d'Alene Lake during 1975, found the lake to be mesotrophic, or moderately enriched, based on information on nutrients, chlorophyll, dissolved oxygen depletion, and the incidence of blue-green algae (U.S. Environmental Protection Agency, 1977).

- The nutrient budgets developed by the National Eutrophication Survey were compared to the 1991 nutrient budgets (table 21); loadings of nitrogen and phosphorus in

Table 20. Annual loads of total phosphorus and total nitrogen to Coeur d'Alene Lake from nearshore and municipal wastewater-treatment systems, 1991 and 1992

[kg, kilograms; TP, total phosphorus; TN, total nitrogen; WWTP, wastewater-treatment plants]

Load source (fig. 1)	Annual load for 1991 and 1992 (kg)		Percent contribution to annual load for 1991 and 1992 (kg)	
	TP	TN	TP	TN
Nearshore[1]	390	4,900	4.7	8.7
Municipal WWTP				
Clarkia	20	315	.3	.6
Santa/Fernwood	60	320	.7	.6
St. Maries	1,400	3,720	17.1	6.6
Plummer	290	1,560	3.5	2.8
Mullan	310	2,550	3.8	4.6
Smelterville	225	1,550	2.7	2.8
Page	5,400	40,500	65.7	72.5
Harrison	120	450	1.5	.8
Total	8,220	55,900	100.0	100.0

[1]Sum of private, community, and commercial wastewater-treatment systems within 150 meters of lake shoreline.

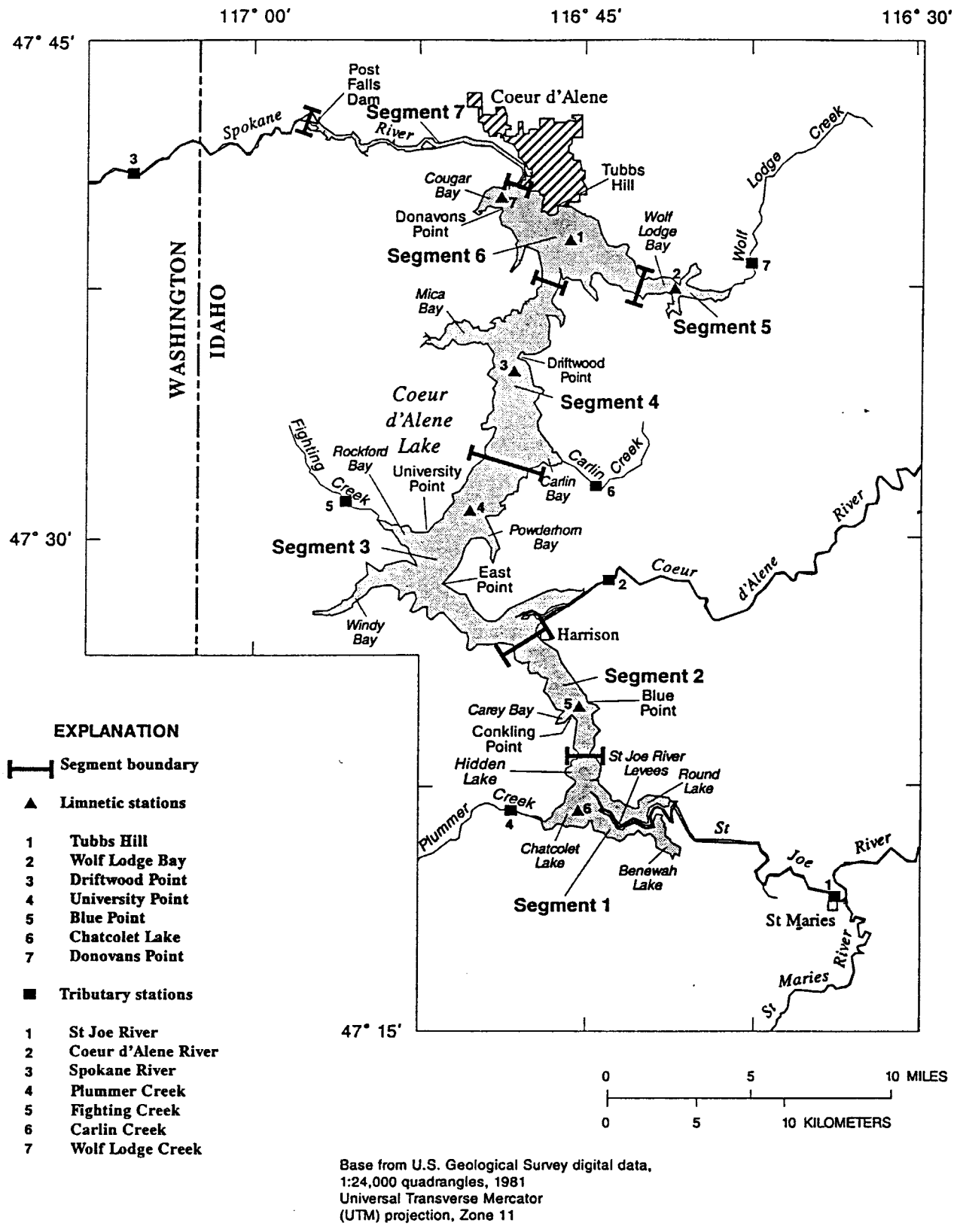


Figure 7. Segmentation of Coeur d'Alene Lake for nutrient load/lake response model.

1975 were twice what they were in 1991 (when loadings are based on equivalent streamflows for both years). - In 1975, the Coeur d'Alene River was the principal contributor of phosphorus; in 1991, it was the St. Joe River.

- In 1975, the Coeur d'Alene and St. Joe Rivers contributed nearly equal amounts of nitrogen; in 1991, the St. Joe River was the principal contributor.

- These substantial reductions in nutrient loadings have allowed Coeur d'Alene Lake to improve from mesotrophic to oligotrophic over the course of about 15 years.

- Reductions in nutrient loads are attributable to the cumulative effects of numerous actions. Two of the more visible actions were the closure of the phosphorous plant at the Bunker Hill complex and the diversion of untreated domestic wastewater to municipal wastewater treatment plants.

- Less quantifiable reductions in nutrient loads have accrued because of recent implementation of best management practices for timber harvest and agricultural activities.

- The recent improvement in water quality applies primarily to the deep, open lake area north of the mouth of the Coeur d'Alene River; the shallow, southern area of the lake has not shared equally in this improvement.

Table 21. Loads of total phosphorus and total nitrogen to Coeur d'Alene Lake, 1975 and 1991

[kg, kilograms; TP, total phosphorus; TN, total nitrogen]

Load source	1975 loadings[1] (kg)		1991 loads[2] (kg)	
	TP	TN	TP	TN
Coeur d'Alene River	98,100	1,490,000	11,000	572,000
St. Joe River	56,300	1,480,000	54,000	794,000
Other[3]	25,600	430,000	25,000	234,000
Total load to lake	180,000	3,400,000	90,000	1,600,000

[1]From U.S. Environmental Protection Agency (1977); loadings based on long-term annual mean discharge.

[2]Measured 1991 loads reduced by 30 percent to estimate loadings at long-term annual mean discharge.

[3]Includes minor tributaries, nearshore septic tanks, direct precipitation to lake surface, and wastewater-treatment plants.

LAKE MANAGEMENT PLAN

INTRODUCTION

The lake management plan has been developed in three major stages. At first, a lake management plan workgroup used the results of the 1991-93 lake study to identify water quality issues and suggest potential goals and methods for management of the lake's water quality. Then, intensive program of public involvement and education was undertaken to encourage the public to select their preferred goals and management actions. The preferred goals and management actions were then written. An environmental evaluation was prepared to discuss the positive and negative effects of the preferred management actions. A monitoring plan was designed to assess the effectiveness of the management actions for attaining the management goals.

LAKE MANAGEMENT PLAN WORK GROUP

The Lake Coeur d'Alene Management Plan development was steered by a committee of representatives of Division of Environmental Quality (DEQ), Coeur d'Alene Tribe, Clean Lakes Coordinating Council (CLCC), US Geological Survey (USGS) and Commissioners of Kootenai, Benewah and Shoshone Counties. The lake management plan workgroup prepared a document entitled, "Draft Coeur d'Alene Lake Management Plan" and released it for public comment in April, 1994 (Coeur d'Alene Basin Restoration Project, 1994).

A major goal of that document was to illustrate the connection between the technical results of the 1991-93 lake study and the management approach developed by the lake management plan workgroup. Another goal was to identify and discuss other water quality oriented studies or activities within the basin so they could be integrated into the lake management planning process. The draft did not make specific recommendations as to water quality management goals and methods pending the public's opportunity to comment on the draft. A summarization of the April, 1994 draft's major points follows.

TRENDS IN LAKE WATER QUALITY

Coeur d'Alene Lake's water quality has improved during the last 15-20 years. This positive trend is attributable to the enactment of environmental laws by federal, state and local governments, and a growing societal awareness of environmental issues. As result, settling ponds for mining and smelting wastes were installed in the late 1960's and effective sewage treatment began in the Silver Valley in the mid-1970's and into the 1980's. State and local standards for subsurface sewage disposal were also made more stringent. State laws now require the use of best management practices (BMPs) for reducing water quality effects of timber harvest activities. Encouraged by economics, as well as by state and federal programs, agricultural practices that reduce erosion and sedimentation have also come into more widespread use. All of these factors, along with a growing environmental awareness and the transition to an economy less dependent on natural resources extraction, have contributed to the recent improving trend in water quality in Coeur d'Alene Lake.

Although Coeur d'Alene Lake has become visibly "cleaner" in recent years, the potential still exists for serious and widespread water quality degradation given present trends in population growth and lake use coupled with the extent of past pollution. Significant depletion of dissolved oxygen still occurs in deep, bottom waters during the late summer. The shallow, southern lake area and several bays are becoming shallower because of sediment eroded from agricultural and timber lands as well as from nearshore areas being developed for residential and recreational uses. These same waters are becoming infested with aquatic plants.

Excessive growth of attached algae can be seen on shoreline rocks, docks, and boats in some nearshore areas. Sewage treatment facilities in the basin still contribute a sizable portion of the lake's potentially controllable nutrient load. The bed and banks of the lower reaches of the Coeur d'Alene and St. Joe Rivers continue to be eroded and transport heavy loads of sediment and nutrients into the lake. Much of the bottom of the lake is blanketed with sediment containing high levels of heavy metals as well as substantial amounts of nutrients. Contaminated wastes from past mining in the Coeur d'Alene River drainage continue to flow into the lake in significant amounts.

Perhaps the greatest threat to Coeur d'Alene Lake is the potential for reversal of the recent improvements in water quality. Such a reversal could be brought on by the rapid increases in lake use, population growth, and land development now occurring throughout the basin. Unless preventative measures are initiated soon, the recent improvements in lake water quality could be eroded or lost.

WATER QUALITY MANAGEMENT ZONES

Viewed as a whole, Coeur d'Alene Lake exhibits relatively high water quality. Yet both the lake study data and public and agency perceptions reveal specific geographic areas of concern and specific water quality issues. It is not appropriate to apply a single water quality management strategy to the whole lake or watershed. Therefore, the lake has been divided into four water quality management zones. Each zone focuses on specific water quality management issues, goals, and management approaches pertinent to that zone. The four water quality management zones include:

1) the nearshore zone (water depths less than 20 feet);

2) the shallow, southern zone which is south of the mouth of the Coeur d'Alene River, and includes the shallow lakes (Benewah, Chatcolet, Hidden, and Round);

3) the lower reaches of the Coeur d'Alene and St. Joe Rivers that are affected by backwater from Coeur d'Alene Lake; and

4) the deep, open water zone which is north of the mouth of the Coeur d'Alene River.

The Spokane River arm of the Coeur d'Alene Lake is not included as a zone because its management is being addressed by a phosphorus load allocation study being conducted by Idaho Division of Environmental Quality. The 1991-1993 lake study included data collection on the Spokane

River arm, but only to quantify its contribution to hydrologic and nutrient budgets being discharged through Post Falls Dam.

There are specific tributary watersheds that were identified as needing special attention. The identification came from public and agency comments as well as from analyses of nutrient loading data generated by the lake study. These areas include, but are not limited to, the following:

- lower St. Joe River
- St. Maries River
- upper St. Joe River
- nearshore area, Harrison to St.Maries
- Benewah Creek
- Plummer Creek
- Lake Creek
- nearshore area, Windy Bay to Chatcolet Lake
- nearshore area, Windy Bay
- Fighting Creek
- Cougar Creek
- nearshore area, Mica Bay to Cougar Bay
- lower Coeur d'Alene River

WATER QUALITY MANAGEMENT GOALS

Each of the four water quality management zones has the following potential water quality management goals from which to select:

1) improve water quality slowly (low cost management alternatives); and

2) improve water quality rapidly (high cost management alternatives).

Selection of a water quality management goal for each water quality management zone must consider the applicable Idaho and federal water quality criteria and standards. The Idaho Water Quality Standards and Wastewater Treatment Requirements designate the appropriate beneficial uses of Idaho's waters and list specific water quality criteria to be used to determine if a beneficial use is fully supported by the water quality conditions of the subject water body. Federal Standards and criteria are used directly only by reference in the Idaho Standards.

All four management zones experience conditions which exceeded of water quality standards for at least one contaminant; therefore, a goal to maintain the current water quality condition is not a legally viable goal. A "No Action " goal (that is, not taking additional water quality management actions other than are currently being taken) was not considered because, given the current level of activities within the Coeur d'Alene Lake basin, lake water quality is likely to deteriorate unless mitigative actions are implemented.

The public chose the slow improvement option as the goal for the plan.

PUBLIC INVOLVEMENT AND EDUCATION

The lake management plan workgroup recognized the need to involve the public in the decision making process because, without public input and support, implementation of the chosen management goals and methods would be difficult. A public involvement and education plan was written in December, 1993 with the following three goals:

(1) generate support and input for the plan and subsequent implementation from all

stakeholders;

(2) educate the public about existing lake conditions; what the public can do to help, and what agencies are doing to help; and

(3) meet the requirements for public involvement and education under the Idaho Nutrient Management Act, Idaho Clean Lakes Act, and the federal Clean Lakes program.

To achieve the three goals, the lake management plan workgroup employed the following five strategies:

(1) public meetings,

(2) community presentations,

(3) monthly updates/fact sheets,

(4) media relations, and

(5) technical advisory groups.

PUBLIC MEETINGS

Two sets of public meetings were conducted prior to the development of the initial draft of the lake management plan. A third set of public meetings were conducted in late 1994 to present a complete draft of the lake management plan. A public hearing was conducted in 1995 to consider adoption of the final version of the lake management plan in 1996.

The first round of public meetings was in July 1993 at four locations within the basin: Coeur d'Alene (two meetings), St. Maries, Kellogg, and Plummer. Following a short summarization of results from the 1991-93 lake study, participants were asked about their concerns and management priorities for Coeur d'Alene Lake. At each meeting, the participants broke into groups to list and prioritize their concerns. A summary of the concerns expressed at this round of meetings (Appendix B) has helped to guide the lake management plan workgroup.

The July 1993 meetings raised two issues not previously addressed by the lake management plan workgroup. More involvement by local government was requested. In response, county commissioners from Benewah, Kootenai, and Shoshone Counties became members of the lake management plan workgroup in order to help set the agenda for the lake management plan. The lower reaches of the Coeur d'Alene and St. Joe Rivers were added as a water quality management zone.

The second round of public meetings was in April 1994, in Coeur d'Alene, Kellogg, St. Maries, Worley, and Spokane. During these meetings, a more detailed summary of the lake study was presented, as well as explanations of the four water quality management zones and the overall planning process. The public was asked to help the lake management plan workgroup set goals for the long term management for each of the four zones. Questionnaires with a list of management choices were distributed prior to a question and answer session. Of the attendees, 76 turned in completed questionnaires. The summary of the completed questionnaires (Appendix D) has been used in development of the lake management plan.

The questionnaires from the April 1994 meetings indicated the public wanted a "go slow" approach to lake management. The public did not want expensive "in-lake" methods applied to existing problems. With

the advent of environmental laws, the lake has slowly improved over the past 20 years; the public wanted to see that trend continue in most areas. However, many comments were raised about pollution problems in specific areas, such as the southern lake and the erosion of river banks.

A series of five public meetings considered the draft Coeur d'Alene Lake Management Plan during November 1994. The meetings were in Coeur d'Alene, Kellogg, St. Maries, Plummer and Post Falls at the beginning of a planned 45 day comment period. Comments on the plan were solicited with comment forms. Letters of comment were encouraged. At the request of the Coeur d'Alene Basin Restoration Project's citizen's advisory committee and the general public, the comment period was extended an additional 30 days. Thirty-three written comments concerning the plan were received. Letters of response were sent to each individual who provided written comment. The comments and the response letters are exhibited in appendix E.

COMMUNITY PRESENTATIONS

To generate public awareness and support for the lake management plan, 30-minute presentations were made to 20 community, business, professional, and other groups during their regularly scheduled meetings. A short summary of the lake study findings and the lake management planning process was presented. Similar presentations were made to the following advisory groups associated with the Coeur d'Alene Basin Restoration Project (CBRP): Coeur d'Alene Basin Interagency Group (CBIG), Citizen's Advisory Committee for CBRP, and Management Advisory Committee for CBRP.

An information booth was used to distribute fact sheets, questionnaires, and to show a 10-minute video presentation at the Spokane Boat Show and the Coeur d'Alene Silver Lake Mall's "Community Days" in February 1994. The booth was staffed throughout both events to provide information and answer questions about Coeur d'Alene Lake and its developing lake management plan.

MONTHLY UPDATES/FACT SHEETS

Written information was also produced as part of the educational effort. They mailed a two-page Monthly Update to about 400 addresses beginning in March 1994 to regularly inform them of the progress on the lake management plan. Fact Sheets were also written to summarize the lake study results and the lake management planning process. These have been distributed during the public meetings and community presentations and have been used to satisfy requests. A summary of the lake management planning process was included in a newsletter published by a real estate company for mailing to waterfront homeowners in the Inland Northwest.

MEDIA RELATIONS

Press conferences in December 1993 and April 1994 briefed the media about the lake study results and promote the lake management plan. Articles appeared in the local and regional newspapers and news reports were aired on three local television stations.

Paid advertisements in local and regional newspapers announced the dates and location of the public meetings in July 1993, April 1994 and November 1994. The meetings also were announced via the "Community Calendar" services provided by local

newspapers and radio and television stations.

TECHNICAL ADVISORY GROUPS

The principal method to involve the public in the lake management planning process was the formation of five technical advisory groups (TAGs). The five TAGs were formed to discuss the water quality issues, goals, and management actions associated with the following topics: forest practices, agriculture, development (with a recreation subgroup), southern lake, and rivers. More than 80 people participated in the TAGs; they represented local, state and federal agencies, industry, environmental organizations, plus community and business associations. Each group had a facilitator who was a member of the lake management plan workgroup.

An orientation meeting in April 1994 provided an overview of the lake study results and educated the TAG members about their role in the lake management planning process. At that meeting, the TAGs were advised of the management goals for each of the four management zones (selected during the April 1994 public meetings). Each TAG then met separately over the next several months. Each studied their water quality issues and developed management action suggestions. Each TAG reviewed and commented upon the management actions proposed by the other TAGs. All TAG meetings were open to the public. The lake management recommendations of the TAGs were incorporated into this final draft lake management plan, provided they fell within established legal constraints.

REGULATORY FRAMEWORK FOR MANAGEMENT OF POINT AND NONPOINT SOURCES

Many of the management actions recommended in Tables 22 to 30 seek to limit inputs of nutrients and sediments from point and nonpoint sources. Some of the management actions are already included within the current regulatory framework designed to manage these sources.

Point sources of nutrients are wastewater treatment facilities and confined animal feeding operations. These sources are managed under the federal Clean Water Act (CWA) through the National Pollutant Discharge Elimination System (NPDES) program as major and minor sources, respectively. Major sources are permitted with restrictions protective of the water, while minor sources must develop and implement a pollution abatement plan protecting water. The NPDES program is administered in Idaho by EPA with the state providing assurance that discharges allowed will meet state water quality standards.

Nonpoint source management occurs under an array of federal, state and local programs. Planning to address nonpoint sources of pollutants began with the inclusion of section 208 in the 1978 re-authorization of the CWA. Statewide nonpoint source management plans and funds for demonstrating projects were provided by section 319 of the 1987 re-authorization. Decision on the approaches to nonpoint source management in Idaho have been primarily made at the state level by the executive and legislative branches. Recent federal farm legislation has increased use of nonpoint source control practices in

agriculture.

Agriculture activities which abate water quality impacts are managed under the state Agricultural Water Quality Program (SAWQP). SAWQP is a voluntary program in which state funds are used to cost share with farmers for installation of improvements which will reduce erosion and limit sedimentation and nutrient release. Farmers pay 25-100 percent of the cost of a practice either out of pocket or as "in-kind" labor. Although SAWQP is voluntary, federal farm legislation (Food Security Act of 1990) requires farmers to develop a farm conservation plan which addresses the most erodible acres and requires minimum crop wastes to be left to protect the soil. These measures are required in order to qualify the farmer for crop support payments. The same body of legislation provides for the Conservation Reserve Program (CRP) which pays a subsidy for the removal of highly erodible acres from crop production.

Forest harvests are regulated for water quality impacts on all forest lands within the state by the Idaho Forest Practices Act. Rules and regulations promulgated by the state Land Board are designed to limit erosion from forest soils and the accompanying yield of nutrients. Compliance with these best management practices (BMPs) is referenced in the state water quality standards as compliance with the CWA. In order to harvest timber and sell logs these practices must be met as a matter of law. The Department of Lands (IDL) maintains a staff of 3.5 forest practice advisors in the Coeur d'Alene Lake Basin to inspect forest harvest projects and enforce the rules. Installation of the structural BMPs designed to protect water quality is a harvest expense.

Surface mining operations are governed by the Surface Mining Act. A set of rules and regulations have been promulgated by the Land Board to implement the act. The rules are the BMPs for abatement of water quality impacts from surface mining activities. Inspections of surface mining operations are conducted by IDL and rules are enforced. Currently, IDL has one inspector assigned to the Coeur d'Alene Lake Basin.

Regulation of nonpoint source impacts of development other than centralized sewage treatment are largely delegated to the counties, cities and health districts by the Subdivision Act and the Public Health District Act of 1970. The Panhandle Health District reviews and approves plans for installation of on-site wastewater treatment systems. Some counties and cities review and approve ordinances to regulate planning and zoning, building permits, set back requirements and stormwater. The construction and maintenance of county, city and many private roads could be regulated in the same way. Highway districts work with the Idaho Department of Transportation (IDT) to manage highway construction activities. A set of voluntary road construction and maintenance BMPs have been developed by IDT and DEQ to address the nonpoint source impacts of these activities. Projects which potentially cause nonpoint source pollution absorb the cost of nonpoint source controls with fees and/or increased construction costs.

MANAGEMENT ACTIONS PER TECHNICAL ADVISORY GROUPS

FOREST PRACTICES

The Forest Practices TAG included a mix of federal, state, tribal, private forestry and hydrology experts plus a local environmental group representative. A wide ranging list of issues was initially generated, followed by detailed discussion of each. Of 22 issues reviewed by this group, 11 were retained as specific recommendations for the lake plan. The remaining 11 items were dropped from further consideration and no specific actions or recommendations were developed. (More details on the entire list of 11 issues are available from the lake planning team, upon request).

This TAG group recognized that there have been improvements in Coeur d'Alene Lake's water quality over the past 15 years, coinciding with implementation of forestry best management practices (BMPs) and the continuing trend toward strengthened BMP regulations under the Idaho Forest Practices Act (FPA). It is the consensus of the Forest Practices TAG that Idaho's existing FPA, antidegradation feedback loop, and effectiveness monitoring processes provide the best current mechanisms for meeting the objective of "slow-improvement" in Coeur d'Alene Lake water quality. In addition, there are other forest practices issues such as education, enforcement, and cooperative planning that should be addressed to strengthen effectiveness of existing programs.

Specific BMPs and other lake management suggestions that received general consensus from participating forest practices TAG members are listed in Table 22.

AGRICULTURE

The agriculture TAG began with a discussion of mission and roles as well as operating guidelines. The first meetings were presentations from the various agriculture agencies on the existing programs. Topics discussed were Idaho Agricultural Pollution Abatement Plan; the various technical, financial, and educational assistance programs; past and present Coeur d'Alene Basin agricultural water quality projects; as well as lists of Best Management Practices (BMPs) being used in the Coeur d'Alene Basin to protect and improve water quality. The group was presented the most recent findings of the lake water quality monitoring results.

With that background, the group was asked to formulate specific management alternatives to restore and maintain water quality in the Coeur d'Alene Basin. Early in the discussion the group agreed to use existing technical, financial, and educational programs to treat agricultural lands in the watershed as a whole, and did not prioritize specific sub-watersheds for treatment.

The group was given lists of management alternatives from the Hayden, Pend Oreille, and Twin Lakes Lake Management Plans. From those lists the group discussed various alternatives and iterations of alternatives to arrive at a final draft list. Management actions recommended for agriculture are listed in Table 23.

Several participants suggested changing the use of agricultural BMPs to improve and protect water quality from a voluntary to a mandatory program. Those suggestions are omitted because the Idaho Agriculture Abatement Plan signed by the Governor and

Table 22. Management actions recommended by forest practices technical advisory group.

Management Actions	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Adopt minimum 30' Stream Protection Zone (SPZ) for all CDA basin streams not capable of supporting significant fisheries (Class II).	2	IDL	Minimal	IDL
Action 2: Implement pre-operation inspection for all proposed timber harvest and related road construction.	1	IDL	$75,000/yr	IDL
Action 3: Streamline stream alteration permit process; make application procedure less time-consuming and more user-friendly to foster compliance.	2	IWR	Minimal	IWR
Action 4: Develop more prescriptive stream-crossing and stream alteration BMPs that provide a high level of water quality protection from road sediments. Promote more administration and/or enforcement of the Stream Alteration Act within the basin for crossing, alteration proposals.	2	IWR IDL	Minimal	IWR,IDL
Action 5: Add one additional full time FPA administrator in the basin to IDL staff, to inspect forest practices and enforce the FPA rules and regulations.	1	IDL	60,000/yr	Legislature
Action 6: Include intensive, continuous Information and Education program in lake plan that is aimed at forestland owners, loggers, road contractors, having demonstration sites for state-of-the-art forest management.	3	IDL, U of I C.E.S	20,000	IDL, Forest Industry
Action 7: Adopt Idaho FPA proposed "Cumulative Watershed Effects" process and implement it. Train public and operators in its use.	1	IDL, legislature	$8,000-$15,000 Watershed	
Action 8: Minimize road construction impacts in basin by cooperating on joint access development to forest stands.	3	All landowners	Minimal	
Action 9: Secure necessary funding to meet present and future maintenance needs on forest roads.	1	IDL Counties, USFS, BLM Industrial Forestland Owners		USFS,BLM, IDL, Legislature, Forest Industry
Action 10: Encourage landowners to manage forestlands to minimize potential water quality impacts of high-intensity wildfire while maintaining other resources.	3	All landowners		

Action 11: Idaho FPA Advisory Committee should review current state of FPA compliance and enforcement; develop recommendations for additional compliance incentives.	2	IDL, FPAAC,Id Land Board	Minimal	

Table 23. Management actions recommended by agriculture technical advisory group.

Pollution Management Actions **Goal: Reduce non point source pollution from agriculture lands by increasing the voluntary implementation of BMPs* on cropland, hayland, pasture and confined animal feeding areas in order to reduce the amount of sediment, nutrients, pesticides and bacteria reaching Coeur d'Alene Lake and its tributaries.**	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Continue to aggressively encourage voluntary implementation of BMPs through existing SCD, SCS and ASCS programs.	1	SCD	$20K	County State
Action 2: Focus attention on those tributaries which produce high levels of nutrients, sediment, pesticides and bacteria from agricultural sources.	1	SCD	N.A.	N.A.
Action 3: Encourage Soil Conservation Districts to apply for state Agricultural Water Quality Program planning and implementation grants on priority Stream Segments within the Coeur d'Alene Lake Basin. Coordinate with CdA Tribe on reservation lands.	1	SCD	$100k/Plan $1M/imp	WPCA; Farmer match
Action 4: Conduct a River Basin Study of the St. Joe River sponsored by the Benewah Soil Conservation District and carried out by the USDA agencies.	1	SCD	$225K	USDA
Action 5: Make structural sediment and erosion control practices high priority for all current and future agriculture programs and projects which supply financial and/or technical assistance to agricultural producers. These practices should be tied to vegetation improvements, i.e., grassed waterways and riparian planting.	1	SCD	N.A.	N.A.
Action 6: Continue existing cropland management practices through aggressive implementation of federal Farm Bill requirements and other programs.	1	SCD	N.A.	N.A.
Action 7: Implement an aggressive information and education program within the basin to increase agricultural producer's and the general public's knowledge of the technical and financial assistance available for BMP installation and the benefits to the lake, the land and the producer when BMPs are installed and maintained. Included in the Information and Education program should be the demonstration of new technology and management practices. Encourage On Farm Testing.	1	CES SCD CBRP	$35K	CES SAWQP CBRP
Action 8: Provide assistance to hobby farms which are impacting water quality; provide them with livestock management BMPs.	1	CES CBRP		SCD
Action 9: Provide technical and financial assistance to confined animal feeding operations to implement livestock BMPs.	2	SCD		SCD

Action 10: Restore natural vegetation buffers along creeks and drainageways to minimize runoff from adjacent lands through education and/or seek tax incentives for placing in reserve.	1	SCD SCS County		County
Action 11: Implement water quality monitoring to determine effectiveness of agricultural BMP installation and maintenance on SAWQP streams.	1	DEQ	$30K	WPCA
Action 12: Request that ASCS approve Benewah County for participation in Integrated Crop Management program.	1	ASCS		ASCS ACP
Action 13: Encourage zoning ordinances that preserve land for agricultural use.	2	County		County
Action 14: Identify and provide technical assistance for streambank stabilization for streams in agricultural areas.	2	Private SCD Tribe		ACP

Notes:

Action 4. River Basin Studies quantify the production of sediment and nutrients from land uses within the study area in order to identify potential remediation actions to reduce production of sediment and nutrients from erosional processes.

* As defined by the SCS Field Office Technical Guide and the Idaho Agricultural Pollution Abatement Plan.

approved by EPA recognizes the most effective approach to control pollution from agricultural lands is one of strong technical and financial assistance supported with an effective information and education program. Farmers receiving financial assistance are bound by contractual agreement with the funding agency to implement mandatory BMPs. The group recognized that changes from a voluntary program to a strictly mandatory will require changes in state law.

DEVELOPMENT: STORMWATER, ROADS, WASTEWATER AND MISCELLANEOUS TOPICS

Effective management of stormwater from developed and developing areas was a high priority for the TAG which drafted this section of the Lake Management Plan. Though there is no monitoring data for runoff from residential/commercial areas in the Coeur d'Alene Basin, data from other regions suggest that phosphorus export from developed areas is typically one to two orders of magnitude (10-100 times) greater than undeveloped areas, with even higher export rates for areas under construction.

Education and regulation are the key components of this section of the plan. Education is needed because many do not understand the effects of uncontrolled stormwater and erosion/sedimentation on water quality. Increased regulation, including performance standards, and "no net increase" requirements, is needed to create a level playing field for builders and developers, and to ensure that stormwater from new development does not increase the phosphorus load to the lake. Because residential and commercial development cause such a great increase in phosphorus export, and because of the difficult nature of stormwater management, the goal selected for this section of the plan is to maintain current levels of phosphorus export; it was felt that stormwater loads could not be reduced without severely limiting development in the Basin. Management actions recommended for stormwater are listed in Table 24.

Roads and driveways were identified as a significant source of sediment and phosphorus which can and should be reduced. Unlike stormwater runoff from developed properties, there seem to be many options for reducing the impact of roads on lake water quality. Recommendations include various alternatives for improving construction of new roads, for controlling erosion and runoff, for obliterating or upgrading substandard roads, and for increasing awareness of road related water quality problems. As with the stormwater section of the plan, it is recommended that new roads be managed in a manner which will prevent the increases in phosphorus export to the lake. In addition, it is recommended that sediment and phosphorus export from existing roads be substantially reduced. Management actions recommended for roads are listed in Table 25.

Wastewater from sewage and septic systems was identified as another phosphorus source which can and should be reduced. For existing systems, the focus of this section of the plan is on reducing phosphorus loads in the most cost effective manner possible. For new systems, the focus is on installing systems with the least effect on water quality. To expedite the upgrade of substandard systems, it is recommended that developers be given the option of mitigating increased phosphorus loads which they cannot manage on site, by contributing funds to be used for systems

Table 24. Management actions recommended by development technical advisory group for stormwater.

Stormwater Management Actions **Goal: Maintain current phosphorus export in most cost effective manner.**	Priority	Lead	Estimated Cost	Funding Sources
Existing Stormwater Runoff Action 1: Provide information and technical assistance to businesses, recreationists, cities, agencies, property owners and the general public. a) Develop "Master Gardener's" type program . b) Develop a homeowners kit with info about landscaping and other methods of reducing and treating stormwater. c) Provide staff to conduct stormwater audits for businesses and property owners. d) Promote, in conjunction with the University of Idaho Cooperative Extension, the use of "lake friendly" products such as lawn fertilizer which does not contain phosphorus, and grass species which require less fertilizer. e) Inform the public on the effects of their actions, such as burning on the lakeshore and in road side ditches, boat washing, etc.	1	KC, SC, BC, DEQ	variable	fees, EPA §319, storm water utility, State of Idaho, Counties
Stormwater Runoff From New Development Action 2: Provide contractors, utility companies and the public with information on stormwater management. a) Encourage companies such as Washington Water Power to incorporate erosion control into the siting, installation, and maintenance of utilities. b) Provide information on the effects of burning construction debris on the lake shore and weeds in ditches along the road side. c) Require permit applicants to pass a test on stormwater management concepts.	1	KC, SC, BC, DEQ	variable	EPA §319 program, storm water utility, State of Idaho, Counties

Action 3: Expand existing stormwater treatment and erosion control requirements in the portions of Kootenai County which are in the Cd'A Lake Basin, to better prevent phosphorus and sediment loading from grading and development activities.			See notes	EPA §319 and §104.B3, storm water utility, fees, State of Idaho, Counties
a) Establish a stormwater ordinance requiring that development projects include a combination of stormwater treatment and pollution trading which will result in no net increase in phosphorus loading to Lake Coeur d'Alene. Expand Kootenai Counties BMP handbook to include other treatment options, in addition to swales.	1-2	KC, Cities in KC, DEQ,CT		
b) Identify phosphorus sources which might be reduced to offset increased phosphorus export from new development.	1	DEQ,PHD, USFS,KC,high-way districts		
c) Establish an ordinance requiring that erosion from development related grading projects be controlled.	1	KC,Cities in KC,CT		
d) Improve enforcement of existing erosion control requirements, including maintenance requirements. Hire staff to enforce stormwater/erosion/grading ordinances.	1	KC		
e) Establish performance standards which will minimize the quantity of sediment leaving property boundaries. (For example, prohibit increases in sediment export, or if sediment export is allowed, limit it to identified numeric standards; require stabilization within 7-14 days of soil disturbance).	2	KC,Cities in KC,DEQ, PHD,CT		
f) Adopt a Health District regulation requiring erosion control during the installation of subsurface sewage disposal systems.	3	PHD		
g) Explore funding options for stormwater and erosion control programs, including a stormwater utility.	1	KC,DEQ, PHD		
Action 4: Implement stormwater and erosion control programs throughout the remainder of the Cd'A Basin which are at least as stringent as that in place in Kootenai County in 1994.	1	SC,BC,CT, Cities in 3 Counties	variable	EPA§319,fees, utility, State of Idaho, counties
Action 5: Identify areas with a high erosion risk on plat maps of new subdivisions to inform prospective buyers/builders of the true cost involved in site development.	1-2	KC,SC,BC		developers

Action 6: Review the need to increase minimum lot sizes, increase surface water setbacks, and preserve native vegetation buffers. If necessary, develop ordinances designed to minimize sediment and phosphorous export, maintain stable lakeshores and streambanks, and ensure there will be no net increase in phosphorous exported from new development. Any new ordinances should be based on the performance standard of "no net increase" in phosphorous. New standards should apply to new, existing and platted lots along the lakeshore and its tributaries. Any variances granted should be contingent upon the project achieving no net increase in sediment and phosphorous export from development sites.	2-3	KC,BC,SC, CT, Cities in CdA Basin, DEQ		
Action 7: Prohibit burning of construction debris on lakeshores and adjacent to streams and drainageways.		KC, SC, BC, local Fire Districts		

Notes:

Action 1a. - The University of Idaho Cooperative Extension System has a Water Watch manual which may be adapted for this purpose. The UI has conducted Master Water Watch programs in the past and is willing to do so again if funding is available and other agencies participate in planning and recruiting participants.

Action 2a. - Erosion control techniques for installation of utilities might include reseeding of disturbed areas, locating utilities away from streams and drainages, and timing projects to avoid rainy seasons.

Action 3a. - This would essentially be a pollution trading system, designed to offset new phosphorus loads by reducing existing loads. Mitigation actions might include: providing funds for upgrading the Page sewage treatment plant (to increase its phosphorus removal capabilities); replacing substandard septic systems; removing unneeded dirt roads; or surfacing poorly constructed dirt roads which are eroding into Lake Cd'A or its tributaries.

Existing BMP handbooks emphasize the use of grassed infiltration areas or "swales" for treating stormwater. While swales are an excellent stormwater treatment method on the Rathdrum Aquifer, they are often unsuitable in lake watersheds with steeper slopes, less permeable soils, and high water tables. Other stormwater treatment methods should be emphasized in these areas.

The cost of implementing these actions will vary depending on the number and site characteristics of new developments, and on the desired effectiveness of the program; costs probably range from $50,000 - $120,000 per year.

Action 3g. - If a stormwater utility were formed it would be important to clearly define how the monies would be used (e.g. inspection and maintenance of stormwater systems).

Action 5 - The purpose of this action would be to ensure that prospective buyers are aware that building on erosion prone sites may be difficult or impossible, and very costly.

Action 6 - The Basin Development TAG agreed that the need for increased setbacks and native vegetation buffers should be examined. They agreed that setbacks and buffers should be adequate to minimize sediment and phosphorus entering the lake, and to maintain a stable lakeshore and streambanks. Any new requirements should be based on water quality performance standards (such as a certain level of treatment, or a certain allowable quantity of phosphorus discharge), allowing setbacks to vary based on slope, soil type, vegetative cover etc. Also it was suggested that any buffer requirements be

waived in cases where there is no vegetation (e.g. a rock slope or bluff). Any variances granted should be contingent upon the project achieving no net increase in phosphorous and sediment export from development sites. The TAG could not agree on a width to recommend for buffer strips, if they are needed; suggested minimums ranged from 25 feet to 75 feet plus 4 feet for each % of slope.

Table 25. Management actions recommended by development technical advisory group for roads.

Road Management Actions **Goal: Substantially reduce sediment and phosphorus export from use and maintenance of existing roads; manage new roads so there is no net increase in phosphorus export.**	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Identify owners of problem roads and driveways (USFS, state, County, Highway District, City and private) and encourage them to either obliterate or upgrade the roads in affordable increments. Use road improvements in pollution trading to offset increased phosphorus loads from new development. Encourage the use of the most cost effective, simple, expedient alternatives.	2	KC, USFS, IDL,BC,SC, highway dists., DEQ	Obliteration: ≈$105-$635/lb. P Reconstruction: ≈$2,800-$4,900/lb. P plus periodic maintenance and oversight of maintenance	EPA §319, fees, SW utility, developers, State, counties
Action 2: Develop regulations establishing minimum construction standards for private, residential roads and driveways, and require that existing roads being converted to residential use be upgraded to meet these standards, recognizing practical site limitations (e.g. permit variances for existing roads if it will decrease or not significantly increase sediment export to the lake or its tributaries). Provide land owners who are harvesting timber, with information on residential road construction standards through the Idaho Dept. of Lands.	1	KC,BC,SC, CT,IDL,ITD, DEQ, highway dists.		fees, developers, counties
Action 3: Incorporate water quality protection strategies into existing road standards, policies, procedures and decisions. Evaluate and, if necessary, revise or eliminate excessive requirements which impair water quality (e.g. wide roads and right of ways, maximum 6% grade requiring longer roads with more cuts and fills).	1	ITD,KC, BC,SC, Cities in Basin, CT, highway dists, DEQ		May be possible with existing staff
Action 4: Prevent sediment from entering road ditches from adjacent properties by adopting and enforcing erosion control and grading ordinances for development activities.	2	KC,BC,SC, Cities in Basin,CT,ITD highway dists.		See storm-water section
Action 5: Support adoption of ordinances, funding mechanisms, and programs which reduce road impacts to water quality.	2	General Public	N/A	N/A
Action 6: Request that the state, cities, counties and highway districts identify and prioritize road related water quality improvement needs, that they develop long range plans for correcting existing problems, and that they complete at least one high priority project each year.	1	highway dists, SC,BC,ITD, Cities in Basin		EPA §319, State of Idaho, counties

Action 7: Provide state, county, city and highway district personnel, businesses, and the public with technical assistance, including a) assistance in identifying situations and site specific problems affecting water quality, and b)information on maintenance and construction BMPs which can be used to reduce road impacts to water quality. Request that ITD personnel act as mentors to county and highway district staff, and that they assist with training of county road crews by inviting them to training seminars, and by providing them with printed material and video tapes of ITD seminars.	1	ITD,DEQ,KC, highway dists.		EPA §319, State of Idaho, counties
Action 8: Use LIDs (local improvement districts) to fund road improvements in populated areas.	2	KC,SC,BC, cities in Basin		private
Action 9: Encourage road jurisdictions to conserve financial resources by consolidating and/or sharing equipment, staff and functions (e.g. share wash pads, hire a grant writer for road improvement grants, consider having highway districts take over some functions of city road departments, if mutually agreed upon).	3	USFS,ITD, highway dists. BC,SC, Cities in Basin,PAC, IDL		May be possible with existing staff
Action 10: Secure grants and other funding sources for road related water quality improvement projects. Develop local, innovative funding of road programs which improve water quality, and which do not rely on property taxes.	1	PAC, highway dists., SC,KC, BC,ITD,CT, Cities in Basin		EPA §319, vehicle license fees
Action 11: Increase the general public's awareness of BMPs which should be used to control erosion and manage stormwater runoff, so they will recognize problems when they see them. Emphasize maintenance of private roads and driveways.	1	CLCC, ITD, KC,SC,BC, DEQ	variable	EPA §319, State of Idaho, counties
Action 12: Provide ITD and other road jurisdictions with vigorous, direct, constructive input about problem sites (e.g. bare slopes, erosion problems). Request that road jurisdictions use vegetative buffers between disturbed areas and streams/ drainages leading to streams.	1	General Public	N/A	N/A
Action 13: Strongly encourage ITD to complete the revegetation of the Mica grade and I-90 east of Cd'A (above Wolf Lodge Bay).	1	ITD		State of Idaho
Action 14: Request that volunteers responsible for litter collection on state highways also identify problem areas for ITD. Encourage, train and assist these groups to plant trees and other vegetation on cuts and fills.	3	ITD		State of Idaho
Action 15: Encourage the public to review proposed construction projects.	2	ITD,General Public	N/A	N/A

Action 16: Evaluate the level of treatment and stormwater retention needed for roads and highways in the Basin; expand regulations and policies as needed to prevent contaminants from reaching the water.	1	DEQ,CT and all road jurisdictions in the Basin		EPA §319, State of Idaho
Action 17: Request that road jurisdictions (ITD, highway districts, counties) control erosion during maintenance activities.	1	all road jurisdictions in the Basin		State of Idaho, counties

Notes:

Action 3 - The new Kootenai County road standards are in conflict with the stormwater ordinance and the related provision in the subdivision ordinance. It may be beneficial to water quality to permit private and small subdivision roads to serve the residential needs of a rural neighborhood without requiring large cutbacks and switchbacks which remove an excessive amount of vegetation. Variances should allow narrower roads with greater slope and more vegetative cover if it will reduce the quantity of contaminants flowing into the water, without compromising safety.

Action 6 - Road jurisdictions will need technical assistance to identify erosion and stormwater problems, and to develop mitigation plans.

Action 9 - The highway districts in Kootenai County already share some equipment and assist the cities on a case by case basis. Any consolidation of district services would have to be mutually acceptable to all involved agencies.

Action 10 - The Lake Cd'A Property Owners Association may wish to participate in raising grant match monies for specific projects which will enhance lake water quality.

Action 12 - These buffers could be temporary, used only during construction, which might eliminate the need to purchase easements.

Action 17 - Erosion control actions which might be appropriate during maintenance activities include seeding ditches following cleaning and using loose straw and silt fence on soils disturbed during replacement of culverts.

upgrades. Management actions recommended for wastewater are listed in Table 26.

A listing of recommendations that address topics such as implementation, funding, water quality standards, and miscellaneous management actions are in Table 27.

DEVELOPMENT-RECREATION SUBGROUP

Education and enforcement were identified as the highest priorities of the recreation subgroup. Several of the recommendations stemmed from the need to have better education programs, materials, maps and public outreach. Lack of adequate enforcement of existing ordinances and "rules of the road" were identified as key areas, as well.

For the most part, all the recommendations showed a greater need for either education and/or enforcement. For example, the majority of the public is not aware of erosion problems caused by excessive boat speeds in no wake zones or the effect on water quality from gray and black water disposal. From an enforcement standpoint, the Marine Sheriff's Department does not have the resources to enforce boater regulations when speed and no wake zones are ignored.

The subgroup unanimously agreed public education materials should address erosion caused by excessive boat speed, proper disposal of gray and black water and pump-out station locations. Maps are needed to identify speed zones, no wake zones as well as pump-out locations. Also there is a significant need to explain and encourage erosion control measure and decreased phosphorous and nutrient loading. Furthermore, the group stressed the importance of buffer zones for existing homes and the need to develop buffer zones for new homes.

In addition, the subgroup members strongly supported additional funding for the Marine Sheriff's Department in order to adequately enforce rules, regulations and ordinances (particularly Kootenai County's Ordinance No. 140A, addressing boat wakes), "rules of the road," boat speeds, and proper disposal practices. The subgroup recognized a significant need to increase the number of pump-out stations and promote waterborne outhouses on the lake. The management actions recommended by the subgroup are listed in Table 28.

SOUTHERN LAKE

The southern lake TAG primarily focused on slow reductions of nutrient loads via management of the aquatic macrophytes that occupy a significant portion of the shallow areas of the southern lake management zones. The TAG considered the following six alternatives for macrophyte management:

1) Lake bottom dredging-this alternative was dismissed because it is publicly unpopular, is very expensive, and has substantial impacts on the surrounding environment;

2) Herbicides-this alternative was dismissed because of toxicity concerns, impacts on biota, cost, and the fact that the U.S. Environmental Protection Agency is not funding lake restoration projects that include the use of herbicides;

3) Macrophyte mowing-this alternative was dismissed because it leaves the mowed vegetation in place and, thereby, adds nutrients

Table 26. Management actions recommended by development technical advisory group for wastewater.

Wastewater Management Actions Goal: Eliminate and/or reduce discharge of nutrients in wastewater. Prevent impacts to beneficial uses as defined in the Idaho Water Quality Standards (beneficial uses include swimming, domestic drinking water etc.).	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Request that DEQ, EPA, and a citizen committee use the Total Maximum Daily Load process to evaluate impacts, conduct a financial evaluation of alternatives, and if needed, select methods of reducing phosphorous loads from wastewater treatment plants, beginning with the South Fork Sewer District's Page facility. Consider Basin wide funding alternatives.	1	DEQ,EPA CT	See Notes	Federal grants, State of Idaho, fees
Action 2: a) Identify old, substandard sewage disposal systems located along the tributaries and lakeshore in the Cd'A Basin. Develop a data base which can be used to locate and prioritize systems needing attention; b) Prioritize systems for upgrade and/or replacement based on their probable nutrient contribution to the lake.	(a) 1 (b) 2	PHD, DEQ, CT		EPA§ 319, State of Idaho, counties
Action 3: Encourage replacement of substandard sewage disposal systems by: a) Allowing nutrient loads for new development to be offset with upgrades of off site systems through a pollution trading system. b) Developing cost share and other incentives.	2	KC, DEQ	≈$4,400-$6,100 per pound P removed	private, developers, State of Idaho, EPA §319
Action 4: Improve maintenance of private sewage systems throughout the Cd'A Basin. Develop an operation, permitting or monitoring system and periodically inspect systems to ensure they are being maintained and are functioning properly. Vary inspection frequency according to need or use. Periodically mail maintenance reminders to homeowners with private systems.	1	PHD		fees, private, counties
Action 5: Use septic maintenance companies to help educate and communicate with homeowners about substandard sewage systems.	3	PHD		may be possible with existing staff
Action 6: Evaluate and if appropriate, modify private, Health District and state inspections of new sewage systems to ensure that systems are properly installed, and that inspection programs are as efficient as possible.	2	PHD, DEQ		may be possible with existing staff
Action 7: During plan reviews of both new and replacement sewage systems, consider clustering of the systems if it will have less impact on water quality than small, individual systems.	1 ongoing	DEQ, KC		may be possible with existing staff

Action 8: Study the effect of nitrogen on water quality, particularly in near shore areas. Where nitrogen is effecting water quality, identify and/or develop and install sewage systems which are more effective at removing nitrogen from effluent.	2	USGS, DEQ		EPA grants, State of Idaho
Action 9: Develop a method of pollution trading and/or credits so that increased phosphorus loads from new development can be offset by upgrading sewage treatment plants (i.e. new developments could have the option of mitigating their impact by contributing to a fund for needed upgrades).	2	DEQ,EPA		EPA grants, State of Idaho
Action 10: Ban phosphorus from commercial and residential laundry detergent and other cleaning products (e.g. dish washing detergent) throughout the Cd'A Basin.	1	KC,BC, SC, All Cities	minimal	existing staff

Notes:

Action 1 - It was determined that evaluation and selection of specific phosphorus reducing actions for the South Fork Sewer District's Page facility and other Waste Water Treatment Plants were beyond the scope of the planning committee. They recommend that a special committee be developed with representatives of DEQ, the sewer districts and interested citizens. It was also recommended that an economist, be consulted during the evaluation process.

As part of this wastewater review process, the effect of groundwater and stormwater infiltration on sewage lines should be explored. It appears that flows to both the Page and Plummer sewage treatment plants are higher then they need to be due to infiltration.

Providing alum treatment at the Page Plant will cost approximately $17-$34 per pound phosphorus removed to construct treatment facilities, plus approximately $17 per year per pound phosphorus to purchase alum. The cost of personnel, a billing system (if an additional one is needed), and periodic maintenance costs are not known.

Action 2 - The tax assessors may be able to help locate new systems, as this is something they look for when establishing property values.

Action 4 - This might be accomplished by contracting with septic system pumpers for operational inspections. The pumpers could be trained and certified by the Health District, and could provide the Health District with an evaluation report on each system they inspect.

Action 6 - As part of this evaluation consider transferring review and inspection authority for all engineered systems to DEQ.

Table 27. Management actions recommended by development technical advisory group for miscellaneous topics.

Implementation/ Funding/ Water Quality Stds./ Miscellaneous Management Actions	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Require local, state and federal agencies to coordinate data gathering efforts.	1	DEQ		existing staff
Action 2: Establish a citizens committee to assist in developing and implementing a public information and education program for the Cd'A Basin, and in lobbying for plan implementation.	1	CBRP,CAC		State of Idaho
Action 3: Encourage the development of and promote "lake friendly" products (e.g. boat cleaner, pesticides/ herbicides, phosphorus free lawn fertilizer).	1	CLCC		State of Idaho
Action 4: Incorporate water quality protection strategies into county Comp Plans, and Zoning, Grading and Subdivision Ordinances.				
Action 5: Consider expanding the Cumulative Effects program to address all watershed activities; manage cumulative effects Basin wide.	2	IDL, CBRP		
Action 6: Establish funding for plan implementation, with an emphasis on fees for service, user fees, and Federal funding. Avoid the use of state and County monies (which are based on property and income taxes). **Implement this plan in the most cost effective manner, using alternatives which remove the most phosphorus per dollar expended.**				
Action 7: Fund a coordinator(s) to oversee implementation of this plan.		DEQ,EPA, CDA Tribe, CLCC,KC, BC,SC		
Action 8: Form a private foundation to seek implementation funding.				
Action 9: Contract with a stormwater hydrologist for technical support for jurisdictions developing and enforcing stormwater management ordinances for the Basin.		KC, BC, DEQ		

Action 10: Revise state Water Quality Standards for the Cd'A Basin, to make them less ambiguous, more enforceable, and more effective at preventing sediment, phosphorus and other contaminants from entering Lake Cd'A and its tributaries. a) Develop erosion control, stormwater management, road maintenance and vegetative buffer (if needed) requirements and BMP's for the Cd'A Basin and reference them in the Water Quality Standards. b) Develop broader, more proactive standards which will prevent the loss of beneficial uses and ensure that those uses are maintained for future generations. Use common terms and explanations to clarify the intent of ambiguous or technical sections of the Standards. c) Expand sediment criteria for domestic water supplies, to include Lake Cd'A and any tributaries with 15 or more homes using the water for domestic purposes (i.e. drinking water). d) Evaluate and if necessary make improvements to the enforcement provisions of the Standards.	1	DEQ,CT		State of Idaho

Notes:

Action 1 - The purpose of this action is to minimize duplication and assure that publicly funded monitoring projects produce compatible data which can be used by all agencies, for different projects. For example, if two agencies are conducting monitoring in the same location, they may be able reduce transportation and salary expenses by having one individual collect samples for both agencies.

Action 4 - Present Kootenai County with a copy of this plan as soon as possible so that they may incorporate it into their new zoning ordinance. Also present Shoshone County, Benewah County, the CDA Tribe and others with a copy so they may start incorporating this plan into their regulations and ordinances.

Action 6 and 7 - Implementation oversight should be provided by a Board consisting, at a minimum, of representatives of DEQ, EPA, the Coeur d'Alene Tribe, and Kootenai, Benewah and Shoshone Counties. A mechanism should also be developed to keep citizens involved in plan implementation.

Action 10 -

a. Include all stakeholders in the development of these requirements and BMP s.

b. For example, develop sediment standards which apply to all tributaries, and which are designed to minimize the quantity of sediment reaching the lake (and thus prevent unacceptable changes to lake water quality and beneficial uses). Sediment criteria for fish and drinking water systems should be retained, but should be supplemented by a broader, basin wide standard.

Table 28a. Management actions recommended by recreation subgroup of the development technical advisory group.

Public Education **Goal: Provide for enjoyable, recreational experiences on the lake while promoting water quality protection and safety.**	**Priority**	**Lead**	**Estimated Cost**	**Funding Sources**
Action 1: Promote and support implementation of Ordinance No. 140-A, which regulates boat wakes.	1	KC		
Action 2: Develop education materials regarding setback and containment of campfires on beaches, etc.	1	CLCC		

Table 28b. Gray and Black Water Disposal Options	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Develop pamphlet describing proper disposal at pump-out stations. Encourage operator instruction.	1	CLCC		
Action 2: Develop a current comprehensive map of all the pump-out station locations.	1	CLCC, PHD		
Action 3: Encourage increased number of pump-out stations at marina locations. (It was suggested that marinas may wish to charge a pump-out fee or a discount with gasoline purchase, for example.)	1	BC,KC, PHD		
Action 4: Promote installation of sealed disposal systems for grey water.	1	PHD		
Action 5: Promote the use and funding for waterborne outhouses on the lake.	2	IDPR		
Action 6: Require holding tanks for gray water disposal for new manufactured boats.		KC, BC, USCG		

Table 28c. Industrial Uses on the Lake	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Examine impact of industrial uses on the lake. Such as log transport, evaluate impacts of log transport and storage. Examine the logging operations (storage on the lake), as these effect nutrient levels.	2	IDL,DEQ		
Action 2: Develop support for public land managers of recreation sites contaminated with metals (IDFG, IDPR, USFS, BLM) to develop barriers between the public and metals and to provide sources of potable water.	1	IDFG,BLM USFS, IDPR		

to the lakebed sediments;

4) Manual, biological, and bottom barriers-these alternatives were dismissed because the large area to be treated was beyond their scope of application;

5) Rotovation-this alternative was closely considered but was eventually dismissed because it dramatically disturbs the lakebed sediments, releases nutrients into the water column, and its production of suspended sediment adversely affects spawning and migration of fish.

6) Mechanical harvesting-this alternative was chosen because it removes harvested plants and their associated nutrients from the lake, has a lesser impact on fish and other organisms, and should promote the leaching of nutrients from the sediment to establish some nutrient equilibrium in the future. The southern lake action items appear in table 29.

RIVERS

After familiarizing itself with the key issues pertaining to the rivers, river TAG participants identified bank erosion, permitting, and weed growth as the problems to be addressed. The group recognized that bank stabilization is necessary to curtail erosion and accompanying nutrient yield from both rivers. An inventory is necessary to develop priorities (action item 1). The technically simple approach of limiting boat size and speed was discussed. The group felt political support for the approach could not be developed. An educational program covering damage by boat wakes was requested (action item 2). Bank stabilization will require considerable funding. Action item 3 was designed to raise funds from users. Bank stabilization over the considerable mileage of the two rivers will be required. Development of a standard inexpensive method, to accomplish this is required (action item 4). The St. Joe River has less drastic erosion problems located primarily on undeveloped banks. Action item 5 recognized revetments use as a promising approach, the effectiveness of which should be demonstrated. Action item 6 directs bank stabilization as funds are available, recognizing that priorities must be set in completion of the work. The active participation in stabilization efforts of state and federal land managers who control a large part of the river frontage is sought in action item 7. In its numerous discussions of bank erosion of the Coeur d'Alene River, the work group was unable to assess the value of bank stabilization in reducing metals loading to the river and the lake. Although bank erosion is one mechanism, others have been identified and their relative contributions to the metals load is not understood. As a result, action item 8 requests a study of the amount of metals loading from the various loading mechanisms with consideration of the effect of different management approaches.

Problems with obtaining permits has prevented voluntarily bank stabilization work. A standard mechanism for permitting small stabilization projects exists. A pamphlet should be produced to educate the public about the permits available and suggests acceptable standardized methods. Although weed growth along the river is a local problem, the group found no economic means to address it. The management actions recommended by the rivers TAG are listed in Table 30.

Table 29. Management actions recommended by southern lake technical advisory group.

Southern Lake Management Actions **Goal: Reduce nutrient loading to the Southern Lake in the Most effective and cost efficient manner.**	Priority	Lead	Estimated Cost	Funding Sources
Reduction of Nutrient Load in Lake Bed Sediments Action 1: Slowly reduce nutrient load by systematically harvesting macrophytes. Investigate and implement mechanical harvest for co-generation, fertilization, compost or methanol production.	1	Tribe, DEQ, I&FG, IP&R, I.D.L., CLCC	'	Tribe, Federal Program, Develop Corp, Panhandle area Council Dept. of Commerce, Parks & Rec. User fee of $3/boat
Reduce sediment/nutrients loading from river/lake bank erosion. Action 2: Control bank & bottoms sedimentation by expanding and enforcing no-wake zones, controlling log boom scower and managing the size and speed of boats.		Counties IP.&R., Corp. of Eng., I.D.L.		Coast Guard Grant, County Fees

The Southern Lake Technical Advisory Group recommends to the Lake Planning Workgroup that the only action item that should be considered is the development of an "Integrated Aquatic Plant Management Plan." The emphasis of the "Plan" should focus on removal of aquatic plants from the Southern Lake by means of Mechanical Harvesting. During the scoping process many alternatives were considered and dismissed for various reasons but primarily because of environmental impacts. Methods of aquatic plant management that were considered including moving, biological control, bottom barriers, rotovating, dredging, herbicides, and mechanical harvesting. Because of the size and complexity of the Southern Lake, a combination of some of the above mentioned methods most likely will need to be addressed in the "Plan".

BENEFITS OF MANAGEMENT ACTIONS FOR NEARSHORE ZONE

OVERVIEW OF WATER QUALITY ISSUES AND MANAGEMENT GOALS

Within the nearshore zone, water quality issues include, but are not limited to:

- control of excessive periphyton growth,
- control of excessive growth of aquatic macrophytes,
- reduction of bacterial contamination, protection of drinking water withdrawn from the lake,
- stabilization of heavy metals, and lake level fluctuations.

The designated beneficial uses include domestic water supply, agricultural water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contract recreation. The water quality conditions measured during the 1991-93 lake study indicate these beneficial uses are not fully supported, because of aquatic biota criteria are exceeded for zinc. Impact to aquatic biota has been demonstrated only in the case of phytoplankton growth inhibition. Drinking water standards which are enforced at the tap are being met in the raw water.

In the past few years, there has been a major increase in the conversion to residential use of lands adjacent to the lake. The nearshore population has also increased rapidly, not only as new residences are built, but as existing residences are converted from seasonal to year round usage. This recent development of the nearshore area may be detrimental to the recent trend of improved lake water quality because the conversion of an acre of forest land to urban use can increase phosphorus runoff by a factor of 5 to 20 times (U.S. Environmental Protection Agency, 1990).

Another impact on lake water quality is from leachates from nearshore septic tank systems. Older systems most likely contribute more nutrients to lakes than new system and may continue to leach nutrients for many years after abandonment. The actual effects of these systems on nearshore water quality can only be assessed after additional study because the scope of the 1991-93 lake study precluded an in-depth evaluation. Upgrade costs may be substantial. Thus, the benefits to nearshore water quality will need to be accurately assessed to determine the relation of costs to benefits. A comprehensive assessment of nearshore sewage disposal requirements and plans is probably warranted (similar to that being conducted on the Spokane River). The question of whether or not new growth should bear the cost of upgrading old septic tank systems, based on the concept of pollution trading, needs to be addressed.

The majority of public comments during the April 1994 public meetings favored a goal of "slow improvement" for the nearshore zone instead of the alternative goal of "rapid improvement." The goals of "no action" and "maintain current conditions" were not legally viable because of violations of water quality criteria and standards.

If no actions were taken, then water quality likely would deteriorate further, especially in nearshore areas receiving increased sediment and nutrient runoff from intensive

Table 30. Management actions recommended by rivers technical advisory group.

Bank Erosion/Stabilization Actions **Goal: Reduce accelerated stream bank erosion on the lower St. Joe by 25% and Coeur d'Alene River by 50% over the next decade.**	**Priority**	**Lead Agency(s)**	**Estimated Cost**	**Funding Source**
Action 1: Inventory rapidly and moderately eroding banks in the slackwater reaches of the Coeur d'Alene (CdA) and St, Joe banks.	1	DEQ USGS	minimal	Current monitoring resources
Action 2: Develop an informational pamphlet for distribution to boat registrants education them on the damage caused by boat wakes to river banks.	1	CBRP	$2,500	CBRP Public Education Budget
Action 3: Develop and support legislation enabling counties to assess user fees dedicated to lake protection activities including bank stabilization.	1	CBRP, CAC,local legislators	minimal	CBRP mechanism counties
Action 4: Develop a standardized and cost efficient bank stabilization method for eroding Coeur d'Alene River banks.	1	ACOE,IDWR,IDL,DEQ, IDFG, USF&WS	minimal	Agency budgets
Action 5: Develop a log or tree revetment demonstration project for undeveloped banks of the St. Joe River. Log or tree revetments are logs or trees placed and anchored under an undercut bank to absorb the wave energy and resist further bank undercutting.	1	CBRP Cooperating agencies	$8,000	CBRP, DEQ, EPA
Action 6: Armor and vegetate rapidly eroding banks as budget allows according to priorities of Rivers TAG (list). Priorities will be established after the bank erosion inventory is completed.	1	ACOE, IDL, IDWR, IDFG, & DEQ	$1,000,000±	Federal Grants State WPCA Users Fees counties
Action 7: Develop support for public land managers (IDFG, IDL, USFS, BLM) to implement bank stabilization on the public lands. Armor banks at all existing recreation sites and any new sites developed.	1	CBRP, CAC	minimal	CBRP mechanism

Action 8: Identify sources of trace (heavy) metal loads in the CdA River between Cataldo and Harrison with special attention to: a) Need for tailings removal from banks or channel b) Advantage of stabilizing water levels in the river or its wetlands. c) Assess if bank stabilization will be effective in curtailing metals loading. d) Monitoring of the bank erosion rate.	2	USGS, NRDA, Trustees, DEQ, CBRP, WWP	$75,000	Federal grants State WPCA

Bank Stabilization Permit Actions **Goal: Educate private landowners and governmental managers engaged in bank stabilization on the St. Joe and Coeur d'Alene Rivers on the nationwide permit available, stabilization guidelines and suggested approaches.**	Priority	Lead Agency(s)	Estimated Cost	Funding Source
Action 1: Develop a pamphlet explaining the Army Corp of Engineers bank stabilization permit, stabilization design features and recommendations on methods to develop beach and wildlife areas.	1	ACOE, IDWR, IDL, DEQ, IDFG, USF & WS	$2,500	CBRP mechanism

development. In order to maintain current conditions, measures would need to be implemented to reduce sediment and nutrient runoff from existing and new development.

If the goal of "rapid improvement" had been chosen, then an aggressive program of BMPs and ordinances would be necessary, especially in nearshore areas already exhibiting serious water quality problems such as Kid Island Bay. In such cases, it would be advisable to form watershed "forums" to address the specific water quality issues and how best to deal with them.

WATER QUALITY MANAGEMENT GOAL: IMPROVE SLOWLY

The goal of "slow improvement" in the nearshore zone is to be achieved with management actions developed by the TAGs for forest practices (table 22), agriculture (table 23), and development (tables 24-27). The development TAG presented its management actions under four categories: stormwater (table 24), roads (table 25), wastewater (table 26), and miscellaneous topics (table 27).

The water quality impacts on the nearshore zone largely emanated from the addition of sediment and associated nutrients eroded from small watersheds that border the lake. Therefore, the majority of management actions for the nearshore zone are aimed at erosion control within those small watersheds; addressed primarily with management actions for stormwater (table 24), roads (table 25), and agriculture (table 23). Water quality in the nearshore zone is also affected by nutrient loadings delivered to the lake by the Coeur d'Alene and St. Joe Rivers. Management actions for erosion control within these two large watersheds are listed under forest practices (table 22) and agriculture (table 23).

Nutrients contained in wastewater also affect water quality in the nearshore zone. Management actions for wastewater (table 26) deal with discharges from nearshore domestic sources as well as municipal wastewater treatment plants on the Coeur d'Alene and St. Joe Rivers. Reductions in nutrient loadings from nearshore domestic sources could be achieved through a combination of actions: upgrading or replacement of older septic tank systems, improved maintenance and inspections, public education, and a ban on phosphate detergents. For municipal systems, the total maximum daily load (TMDL) process would be used to evaluate the efficacy of nutrient load reductions, with an early emphasis on the treatment plant at Page. Upgrades of domestic and/or municipal systems might be funded in part via pollution trading and/or credits whereby new sources of nutrient loadings may mitigate their impact by funding equivalent reductions from existing loading sources.

The 1991-93 lake study identified the nearshore areas of the following bays as having abundant growths of aquatic macrophytes: Carey, Carlin, Cougar, Kid Island, Loffs, Mica, Powderhorn, Rockford, 16 to 1, Windy, and Wolf Lodge Bay (eastern end). The plant biomass could be harvested periodically with mechanical harvesting equipment, in cases where macrophytes interfere with aesthetics and boat traffic. This management action and its environmental considerations are discussed in more detail in a later section on the shallow, southern lake zone.

The foregoing discussion of management

actions dealt with nutrients and biological production; however, the nearshore zone also suffers from zinc concentrations that exceed federal water quality criteria. The reduction of zinc concentrations in this zone will be largely dependent on activities conducted within the Coeur d'Alene River Basin. With this management plan are management actions geared to reduce erosion of zinc-bearing sediments in the lower reaches of the Coeur d'Alene River. The ongoing cleanup of the Bunker Hill Superfund Site should result in reduced loadings of zinc to the lake. The Coeur d'Alene Basin Restoration Project has planned numerous mining-related remediation projects within the South Fork Coeur d'Alene River. These should also reduce zinc loadings to the lake.

The management actions for the nearshore zone are intended to attain, within the next decade, the desired water quality conditions for concentrations of dissolved oxygen, total phosphorus, and zinc, clarity, and coliform bacteria counts listed in Table 31. Table 31 compares the desired conditions to those measured during the 1991-93 lake study and any applicable legal-based standards. For dissolved oxygen concentration and clarity, the current conditions have already attained the desired condition. Current concentrations of total phosphorus and zinc exceed the desired condition.

BENEFITS OF MANAGEMENT ACTIONS FOR SHALLOW, SOUTHERN LAKE ZONE

OVERVIEW OF WATER QUALITY ISSUES AND MANAGEMENT GOALS

Within the shallow, southern lake zone, water quality issues include, but are not limited to:

- reversing the depletion of dissolved oxygen,
- stabilization of highly enriched heavy metals in the lakebed,
- potential toxicity of heavy metals to aquatic biota in the lakebed and lake water,
- control of sedimentation,
- improvement of water clarity, and
- control excessive growth of aquatic plants.

The heavy metal concerns are restricted to the area north of Conkling Point.

The designated beneficial uses include domestic water supply, agricultural water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contact recreation. The water quality conditions measured in the shallow, southern lake zone during the 1991-93 lake study indicate the beneficial use for cold water biota is not supported during the warm months because dissolved oxygen is well below 6 milligrams per liter during the summer. The federal water quality criteria

Table 31 Numeric Values for current, desired, and criteria/standards-based water-quality conditions in the deep, **nearshore management zone.**

	Desired Condition[11]	Current Condition[1]	Standard or Recommended Level[10]
Dissolved Oxygen (mg/L)[2]	8.6	8.6	6.0[3]
Total P (ug/L)(ppb)[2]	5-10	5.0[8]	25.0
Zinc(ug/L)(ppb)[2]	32.7	56	32.7
Clarity (Secchi depth meters)	7.6	7.6[4]	none
Coliform bacteria	500/100 ml 200/100 ml 50/100 ml	- - -	500/100 ml[5] 200/100 ml[6] 50/100 ml[7]

1. Average condition of 19 bays unless otherwise noted.
2. Seven day average.
3. Standard applies to all waters except the lowest 7 meters of the water column at depths greater than 35 meters.
4. Average of 19 bays 7.6 meters; worst case Fuller's 5.2 meters.
5. At any time.
6. In no more than 10% of the samples taken over a 30 day period.
7. Geometric mean of samples taken over a 30 day period.
8. Average total phosphorus for 19 bays over two years; worst case, Kidd Island Bay, 16 ug/L.
9. Average of 19 bays; worst case Kidd Island Bay, 150/100ml.
10. Standard based Idaho Water Quality Standards and waste water treatment requirements, EPA "Gold Book" criteria (as interpreted by National Toxic Rule) or phosphorus levels recommended to prohibit nucience aquatic weed growth.
11. Based on interpretation of Idaho Antidegradation policy and special resource waters designation of lake Coeur d'Alene.

are not met because of potential toxicity of zinc to aquatic biota.

This lake zone receives inflow from the St. Joe River and several small watersheds with significant agricultural development, such as Plummer and Benewah Creeks. The influence of the St. Joe River is muted within Chatcolet, Benewah, and Round Lakes because levees channel its flow nearly to Conkling Point. The major water quality problem in the Plummer Creek drainage is nutrient and sediment loading from non-irrigated agricultural and silvicultural activities conducted on highly erodible lands. Plummer Creek also receives runoff from urban and industrial areas, a confined hog operation, and other livestock grazing. The wastewater treatment plant for the city of Plummer is also in the drainage. Past and present land management activities in the drainage have produced significant adverse effects on receiving lake waters (Benewah Soil and Water Conservation District, 1990). Benewah Creek has similar water quality problems, but to a lesser extent than Plummer Creek.

This zone of the lake is different from the other three because in-lake processes are important determinants of biological production. When Post Falls Dam raised the lake level in 1906, the extensive wetlands in this zone became lakes. Their lakebeds were formerly fertile wetland and marshy soils. The lakebeds have been further enriched by the annual die-off of aquatic plants that inhabit a large percentage of this zone's area. Nutrients are released from the lakebed sediments. When dissolved oxygen is depleted, sometimes completely, it creates reducing conditions within the lakebed, which greatly increase the rate of release. This process is termed "internal fertilization" and usually requires in-lake remediation techniques to circumvent it. The aquatic plants also add nutrients to the lake via "nutrient pumping" when, during their growing season, they obtain nutrients from the lakebed and subsequently release nutrients into the lake water through their tissues. The shallowness of these lakes can also allow resuspension of lakebed sediments by wind-induced or boat-induced turbulence.

The aquatic plants play an important role in the water quality problems in this zone. However, their presence is not totally negative. Wild rice has become so abundant in Benewah Lake that it is commercially harvested. Excessive plant growth is also occurring in Round Lake where commercial wild rice harvest has also been proposed. Although shallow open-water areas are being overgrown by aquatic plants, additional waterfowl and fishery habitat is being gained. The aquatic plant beds are important nursery areas for young-of-the-year fish. Remediation techniques affecting these plants should consider the potentially negative effects on fishery production.

The majority of public comments during the April 1994 public meetings favored a goal of "slow improvement" for the shallow, southern lake zone instead of the alternative goal of "rapid improvement." The goals of "no action" and "maintain current conditions" were not legally viable because of violations of water quality criteria and standards.

If no actions were taken to improve water quality, then water quality problems would worsen, particularly in the areas with excessive aquatic plants. Sedimentation

would worsen via two processes: trapping of inflowing sediment by aquatic plants and buildup of dead plants on the lakebed. Dissolved oxygen depletion would worsen as the organic and nutrient content of the lakebed sediments was increased by sedimentation from the watershed and annual die-off of aquatic plants. Given enough time, the shallow lake areas will revert to wetlands.

In order to maintain current conditions, sediment and nutrient loads from the watershed would need to be reduced to counter the stimulatory effects of increasing aquatic plant growth. Plant growth rates would be unlikely to respond to reduced external nutrient loads because they derive much of their nutrient input from the lakebed sediments. Therefore, limited harvesting of aquatic plants could be employed to reduce the accrual of organic matter to the lakebed.

If the goal of "rapid improvement" had been selected, then the watershed actions suggested for the "slow improvement" goal would need to be implemented. The in-lake treatment would involve dredging the lakebed sediments instead of macrophyte harvesting. Dredging depth would need to be sufficient to remove the root zone of the aquatic plants. After dredging, periodic applications of alum could be applied to scavenge nutrients from the water column.

WATER QUALITY MANAGEMENT GOAL: IMPROVE SLOWLY

The goal of "slow improvement" in the shallow, southern lake zone is to be achieved, in part, by reducing nutrient loads from the lakebed sediments and erosion of riverbanks and lake shorelines, as recommended by the southern lake technical advisory group (table 29). Management actions will be applied to contributing watersheds to reduce nutrient loadings from point and nonpoint sources.

The reductions in nutrient loads from lakebed sediments will be accomplished by systematic mechanical harvesting of aquatic macrophytes. The harvested biomass might be utilized for cogeneration and production of fertilizer, compost, and methanol. The design of the harvesting program will require additional data on the spatial distribution, species composition, and nutrient content of the macrophytes within the four southern lakes. Consultation with manufacturers of macrophyte harvesting equipment is strongly encouraged. An introduction to the methodology is contained in Cooke, and others (1993). Because of potentially adverse effects of macrophyte harvest on fish production and waterfowl habitat, consultation will be necessary with the Idaho Departments of Fish and Game and Parks and Recreation, and the U.S. Fish and Wildlife Service.

The reductions in nutrient loads from contributing watersheds are to be accomplished through a variety of measures (table 29) including application of BMPs to agricultural and forested lands and stormwater management. The forest practices and agriculture TAGs list numerous BMPs (tables 22 and 23) that could be implemented for the southern lake management zone. Additional guidance is also available from the Agricultural Pollution Abatement Plans for the Plummer Creek (Benewah Soil and Water Conservation District, 1990) and Lake Creek (Kootenai-Shoshone Soil Conservation District, 1991) watersheds, recently completed as part of the

state Agricultural Water Pollution Control Program. Stormwater management recommendations were addressed in detail within the development TAG (table 24). Additional reductions in nutrient loads could also be realized by upgrading wastewater treatment plants at municipal and industrial point-source dischargers and by treating the discharges from field drainage systems bordering the lower St. Joe River.

The Coeur d'Alene Tribe's reservation occupies a substantial portion of the small drainage basins that drain to the southern lake zone. The Tribe is nearing completion on two assessment reports which address point and nonpoint source pollution on tribal lands (written commun., Chris Hardy, Coeur d'Alene tribal hydrologist). The first report assesses nonpoint source pollution on the reservation and prescribes a management plan for its reduction. The second presents an evaluation of point source pollution from NPDES-permitted dischargers on the reservation.

The reduction of nutrient loads from the erosion of riverbank and lake shorelines is based largely on regulatory control of boat-induced erosion. The southern lake TAG recommended expansion and enforcement of "no wake" zones coupled with management of the number, size, and speed of boats using the southern lake area. They also recommended the installation of protective log booms. The rivers TAG listed a number of bank protection measures and permitting policies (table 30) that are applicable to the southern lake zone.

The water quality management action items recommended for the southern lake zone are designed to slowly reduce the nutrient content and biological productivity of this zone. During the initial phase of implementation, it is likely that the dissolved oxygen deficit will continue to create violations of water quality standards. It may be advisable to artificially aerate the hypolimnion of Chatcolet Lake to maintain late summer dissolved oxygen concentrations above 6 milligrams per liter. This management technique has been extensively applied; an introduction to the methodology is contained in Cooke, and others (1993).

In order to satisfy federal water quality criteria, zinc concentrations in this zone need to be reduced, specifically, in the area north of Conkling Point. The management actions recommended for zinc reductions were previously discussed in the section on the nearshore zone.

The management actions for the shallow, southern lake zone are intended to attain, within the next decade, the desired water quality conditions for concentrations of dissolved oxygen, total phosphorus, and zinc, and clarity listed in Table 32. Table 32 compares the desired conditions to those measured during the 1991-93 lake study and any applicable legal-based standards. Current conditions for the four variables do not meet the desired conditions.

Table 32 Numeric Values for current, desired, and criteria/standards-based water-quality conditions in the shallow, **southern-lake management zone.**

	Desired Condition[6]	Current Condition[1]	Standard or Recommended Levels
Dissolved Oxygen (mg/L)[2]	8.4	8.4	6.0
Total P (ug/L)[2]	12.0	18.3[4]	25.0[5]
Zinc(ug/L)(ppb)[2,3]	32.7	39.0	32.7
Clarity (Secchi depth meters)	4.0	3.0	none

1. Average of Chatcolet and Blue Point Stations unless otherwise noted.
2. Seven day average.
3. Applies to area of southern lake north of Conkling Point.
4. Average total phosphorous = 18.3 ug/L; worst case Chatcolet Lake 26.9 ug/L.
5. Standard based on Idaho water quality standards and wastewater treatment requirements, EPA "Gold Book" criteria (as interpreted by National Toxic Rule) or phosphorus levels recommended to prohibit nucience aquatic weed growth.
6. Based on interpretation of Idaho Antidegradation policy and special resource water designations of lake Coeur d'Alene.

BENEFITS OF MANAGEMENT ACTIONS FOR LOWER RIVER ZONE

OVERVIEW OF WATER QUALITY ISSUES AND MANAGEMENT GOALS

Within the lower rivers zone, water quality issues common to the lower reaches of the two rivers include:

- reduction of bank erosion,
- control of nutrient enrichment from point and nonpoint sources,
- control of excessive growth of aquatic plants, and
- reduction of bacterial contamination.

For the Coeur d'Alene River, heavy metal contamination of the riverbank sediments and water is an additional concern. The designated beneficial uses for the lower reaches include agricultural water supply, cold water biota, primary contact recreation, and secondary contact recreation. The water quality conditions measured in the lower rivers zone during the 1991-93 lake study indicate these beneficial uses are not fully supported for the Coeur d'Alene River because of metal criteria exceedences, they are fully supported for the St. Joe River. Water quality criteria for cadmium, copper, lead, and zinc are not being met in the lower reach of the Coeur d'Alene River. The drinking water standard which applies at the tap for lead also is not met in that reach.

River bank erosion has accelerated on the mainstem Coeur d'Alene River over the last two decades (Natural Resource Conservation Service, 1994a,b). Ironically, this effect may be related in part to installation in the late 1960's of settling basins for mining and smelting wastes. By reducing the sediment load of the river, its overall sediment transport capacity was increased. The river satisfied this additional transport capacity by eroding its banks which contain previously deposited mine wastes. The effect of boat wakes also contributes significantly to river bank erosion. In 1991, as many as 1,000 boats per weekend passed an observation point downstream of the Cataldo Mission (Natural Resource Conservation Service, 1994a,b). Lake level fluctuations also play a role in bank erosion. If the lake level is reduced too rapidly, then hydrostatic pressure in the riverbanks, which were recently underwater, may be sufficiently high to slough part of the bank into the river. The alternate wetting and dewatering may also affect geochemical process within the banks and promote leaching of dissolved heavy metals into the river.

River bank erosion also is a major concern on the lower St. Joe River. The natural levee banks separating the river from Chatcolet, Round and Hidden Lakes appear to have eroded significantly and at an increasing rate in the last half century; the separation between Chatcolet and Round lakes is now nearly nonexistent when Coeur d'Alene Lake is at full pool. The detrimental effects on the levees caused by lake level fluctuations were noted as early as 1921 (Davenport, 1921). Lake level fluctuations for hydropower production and flood control have probably contributed significantly to this process by: 1) raising the water table in the channel banks so that large stabilizing vegetation (such as the once-abundant cottonwoods) could no longer survive; and 2) raising the level of Chatcolet Lake, resulting

in higher wave energy and more sustained wave action which eroded the original channel levees (personal communication, 1994, Steve Foster, Corps of Engineers).

The majority of public comments during the April 1994 public meetings favored a goal of "slow improvement" for the lower rivers zone instead of the alternative goal of "rapid improvement." The goals of "no action" and "maintain current conditions" were not legally viable because of violations of water quality criteria and standards.

If no actions were taken, then natural processes would eventually erode the contaminated river bank materials into the lake. The period of time required for such natural cleansing is unknown, but might be estimated with a sediment transport model and additional information on the amount of contaminated sediments stored in the riverbanks. Such information is being collected by the U.S. Geological Survey as part of the Coeur d'Alene Basin Natural Resource Damage Assessment.

In order to maintain current conditions some form of institutional controls may be needed. One option is to place limits on the number, size, and speed of boats allowed to use the lower reaches of the two rivers. This option would be politically volatile, but may be one of the least expensive to implement. Problem areas might be identified through field studies so that riverbank stabilization projects could be implemented. Such projects might focus on plantings of vegetation and installation of log shields to protect the banks from wave erosion.

If the goal of "rapid improvement" had been chosen, the management options would have included streambank stabilization techniques ranging from biotechnology through riprapping. Application of these potentially costly options would require additional hydrologic and engineering studies, probably in cooperation with the Corps of Engineers. Another option would involve altering the timing and rates of lake level drawdown, but would require extensive negotiations with Washington Water Power and other parties responsible for flood control within the Columbia River Basin. Specific to the Coeur d'Alene River is the option to remove the metals contaminated riverbank sediments and replace them with clean material. This option would be very costly, but would eliminate a major source of metals contaminated sediment to the lake.

WATER QUALITY MANAGEMENT GOAL: IMPROVE SLOWLY

In order to meet the goal of "slow improvement" in the lower rivers zone, the rivers TAG recommended that over the next decade accelerated streambank erosion in the St. Joe be reduced by 25 percent, whereas it should be reduced by 50 percent in the Coeur d'Alene River. Attainment of these goals is to be achieved via a combination of approaches (table 30). An initial requirement is for better knowledge of the location and severity of streambank erosion in the two rivers. Based on that, stabilization projects could be designed and tested as to their efficacy and cost. Institutional support for and funding of the projects would need to be established, possibly through user fees. Public education would be used to inform boat operators of ways they could reduce their negative impacts on streambanks. An informational pamphlet would be developed to educate private landowners of streambanks

and governmental managers in proper methods of streambank stabilization.

The recently completed Natural Resource Conservation Service study of the Coeur d'Alene River Basin assessed the extent of stream bank erosion in the lower river and suggested a variety of remediation methods (Natural Resource Conservation Service, 1994a,b).

These suggestions, developed in conjunction with the U.S. Army Corps of Engineers, are summarized as follow:

- Limit power boat use on the river, this could include limits on motor horsepower, boat size, or boat speed. Provide additional boat ramps and access. Ban power boats from the river.

- Lake level management would help reduce variations and slow transitions, thereby allowing porewater pressures in streambanks to dissipate slowly to prevent spalling of streambanks.

- Watershed treatment and/or temporary storage for reduction of impacts from upstream runoff.

- Management alternatives such as vegetation plantings and livestock management on lands adjacent to the river.

- Bypass "hot spots" of metal contamination with channelization.

- Deepen channels in aggrading (depositional) areas, especially on the North Fork, to provide a non-contaminated sediment source to cover the contaminated sediments of the main river.

- Uncontaminated soil could be used as fill material between the top of the banks and the existing bank slopes; a protective vegetative cover could then be established.

- Contaminated sediment could be removed and banks resloped and stabilized. This would depend on the amount of material involved, EPA hazardous waste regulations, and identification of suitable disposal sites.

- Construct rock bank protection from the summer water level down a minimum of five feet or below the normal winter low water level.

- Start riprap projects on highest priority areas, beginning with outside bends and trailing banks, straight sections next, and inside bends last. Priorities should also be based on the severity of contamination.

- "Do nothing" approach and try to determine how long for natural stabilization and how much volume will be removed during this process.

The knowledge gained from the Natural Resource Conservation Service's river basin study has been of great value in identifying problems and potential solutions for that river. A similar assessment of the St Joe River, including the St. Maries River, would also be of great value because the St. Joe

River is now the largest loading source of nutrients for Coeur d'Alene Lake.

BENEFITS OF MANAGEMENT ACTIONS FOR DEEP, OPEN WATER ZONE

OVERVIEW OF WATER QUALITY ISSUES AND MANAGEMENT GOALS

With the deep, open water zone, water quality issues include, but are not limited to:

- recovering depletion of dissolved oxygen,
- stabilizing highly-enriched heavy metals in the lakebed, and
- potential toxicity of heavy metals to aquatic biota in the lakebed and lake water.

The designated beneficial uses are domestic water supply, agricultural water supply, cold water biota, salmonid spawning, primary contact recreation, and secondary contact recreation. The water quality conditions measured in the deep, open-water zone during the 1991-93 lake study indicate these beneficial uses are not fully supported because of potential toxicity of zinc. The federal water quality criteria for cadmium, lead, and zinc are not being met because the concentrations near the lake bottom are exceeding acute and/or chronic criteria for aquatic biota. Impact to aquatic biota has been demonstrated only in the case of phytoplankton growth inhibition.

The majority of public comments during the April 1994 public meetings favored a goal of "slow improvement" for the deep, open water zone instead of the alternative goal of "rapid improvement." The goals of "no action" and "maintain current conditions" were not legally viable because of exceedences of water quality criteria.

If no actions were taken to improve water quality, then the recent improving trend might be reversed by gradual increases in nutrient loadings from existing and new point and nonpoint sources. In order to maintain current conditions, nutrient loads to the lake would need to be held at current levels. Such an action would require "pollution trading" to balance increases and decreases in nutrient loadings.

If the goal of "rapid improvement" had been chosen, then an aggressive program of nutrient reductions would have been needed to reduce the lake's biological productivity and, hence, its hypolimnetic dissolved oxygen deficit. Such a program would have required extensive implementation of BMPs throughout the basin, substantial reductions in nutrient loadings from municipal wastewater treatment plants and nearshore septic tank systems, and adoption of ordinances to closely manage the effects of new development on nutrient loadings to the lake. The management actions available for "rapid improvement" of heavy metal contamination of the lakebed would be quite limited and very costly. The obvious solution would be to remove the contaminated lakebed sediments by dredging. However, several factors argue strongly against this action. The cost could be on the order of tens, even hundreds, of millions of dollars. A suitable disposal site (most likely for legally designated hazardous substances) would have to be located. The dredging operations would probably cloud the lake and

the Spokane River downstream for a substantial period because the lakebed sediments are very fine grained. Additionally, the lakebed porewaters contain very high concentrations of dissolved metals that would be released into the lake and the Spokane River. Dredging would not be feasible until the source of contaminated sediments, the Coeur d'Alene River, had been remediated. Instead of dredging, the lakebed might be capped with clean sediment, with an estimated cost of tens of millions of dollars. However, the underlying contaminated sediments may continue to leach dissolved heavy metals into the clean capping sediments and ultimately contaminate them. As with dredging, remediation of the source of contaminated sediments would have to be done prior to capping, also at undoubtedly tremendous cost. It is remotely possible that future technological developments may make dredging and/or capping feasible, especially if metal recovery could partially defray the costs.

WATER QUALITY MANAGEMENT GOAL: IMPROVE SLOWLY

The deep, open water zone integrates the water quality effects of natural and human influences from throughout the basin; therefore, the goal of "slow improvement" in the deep, open water zone is to be achieved partially with management actions prescribed for the nearshore, southern lake, and lower river zones. The majority of the lake's nutrient loading is delivered by the Coeur d'Alene and St. Joe Rivers. Therefore, management actions implemented in those two basins are important for achieving the management goal.

Control of erosion and associated nutrients within the Coeur d'Alene and St. Joe basins is a major management action for this zone. Erosion control was addressed by the TAGs for forest practices (table 22), agriculture (table 23), and development (tables 24-27). Based on a recently-completed study of erosion in the Coeur d'Alene River basin (Natural Resource Conservation Service, 1994b), forest lands accounted for about two-thirds of the sediment load delivered by the Coeur d'Alene River to the lake; sediment input from agriculture was minimal. A similar situation likely applies to the St. Joe River Basin. The primary focus of erosion control in the Coeur d'Alene and St. Joe basins should therefore be on forest practices. The largest landholder in the basin, the U.S. Forest Service, had revised its land management philosophy to one more focused on managing watersheds and ecosystems as a whole. The Idaho Department of Lands, the agency responsible for enforcement of Idaho's Forest Practices Act, has developed a cumulative effects, or watershed management, approach for inclusion in the Forest Practices Act requirements. These two recent shifts in policy have the potential to substantially reduce erosion and thereby improve the quality of runoff from forest lands.

In contrast to timber harvest, the use of BMPs for agricultural activities is voluntary. Federal agricultural policies and programs and Idaho's state Agricultural Water Quality Program have reduced water quality degradation, particularly in specific project areas such as Lake Creek (Kootenai-Shoshone Soil Conservation District, 1991) and Plummer Creek (Benewah Soil and Water Conservation District, 1990). An expansion of such projects, coupled with

increased voluntary implementation of BMPs, would reduce sediment and nutrient loadings generated from agricultural lands.

Reductions of phosphorus loadings from municipal wastewater treatment plants in the Coeur d'Alene and St. Joe basins can also reduce nutrient loadings to the deep, open water zone. The construction of the South Fork Coeur d'Alene River Sewer District's wastewater treatment plant at Page was an important contribution toward improved water quality in the lake. However, this plant still contributes as much as one-quarter of the phosphorus load delivered by the Coeur d'Alene River to the lake. The costs of upgrading the Page plant and other municipal plants would be substantial. Those costs might be shared basinwide if the benefits accrue to the lake as a whole. One inexpensive means of reducing the phosphorus content of effluent from municipal plants is to curtail the use of phosphate-bearing detergents. Phosphate detergent bans have been enacted in neighboring counties and states and may have already reduced the availability of such detergents in the Coeur d'Alene Lake area. However, commercial and institutional detergents are exempt from such bans; further reductions in wastewater phosphorus loads could be achieved by encouraging the use of phosphate-free products in these sectors.

The foregoing management actions are designed to reduce nutrient concentrations and, hence, biological production in the deep, open water zone. These actions should reduce the lake's hypolimnetic dissolved oxygen deficit and, offer the most reasonable course of action for preventing the release of trace elements and nutrients out of the lakebed sediments into the overlying water column. This zone also suffers from water column concentrations of zinc that exceed federal water quality criteria. The reduction of zinc concentrations will be largely dependent on reducing zinc loadings from the Coeur d'Alene River basin. Management actions recommended by the rivers technical advisory group are geared to reduce erosion of zinc-bearing sediments in the lower reaches of the Coeur d'Alene River. Zinc loadings to the lake are also likely to be reduced by remediation activities underway or planned by the Bunker Hill Superfund Site cleanup and by the Coeur d'Alene Basin Restoration Project.

The management actions for the deep, open water zone are intended to attain, within the next decade, the desired water quality conditions for concentrations of dissolved oxygen, total phosphorus, and zinc, clarity, and coliform bacteria counts listed in Table 33. Table 33 compares the desired conditions to those measured during the 1991-93 lake study and any applicable legal-based standards. Zinc concentrations currently exceed the desired condition by a factor of 7.8. The current condition for dissolved oxygen and phosphorus concentrations as well as clarity have already attained the desired conditions; however, Idaho water quality standards for dissolved oxygen do not apply to the lower hypolimnion of lakes with depths greater than 35 meters.

Future improvements in water quality in the deep, open water zone might be more readily achieved if water quality management was coordinated by a lake basin commission. Because water quality improvements would likely occur cumulatively in small

Table 33 Numeric Values for current, desired, and criteria/standards-based water-quality conditions in the deep, **open-water management zone.**

	Desired Condition[9]	Current Condition[1]	Standard or Recommended Level[8]
Dissolved Oxygen (mg/L)[2]	7.0	7.0	6.0[3]
Total P (ug/L)(ppb)[2]	9.0	9.0	25.0
Zinc(ug/L)(ppb)[2]	32.7	143	32.7
Clarity (Secchi[2] depth meters)	6.0	6.0[4]	none
Coliform bacteria	500/100 ml	-	500/100 ml[5]
	200/100 ml	-	200/100 ml[6]
	50/100 ml	-	50/100 ml[7]

1. Average of values of Tubbs Hill, Wolf Lodge, Driftwood and University Point Stations.
2. Seven day average.
3. Standard applies to all waters except the lowest 7 meters of the water column at depths greater than 35 meters.
4. Worst case during winter runoff at University Point, Station 1.0 meters.
5. At any time.
6. In no more than 10% of the samples taken over a 30 day period.
7. Geometric mean of samples taken over a 30 day period.
8. Standard based on Idaho water quality standards and waste water treatment requirements EPA "Gold Book" criteria (as interpreted by National Toxic Rule) or phosphorus levels recommended to prohibit nucience aquatic weed growth.
9. Based on interpretation of Idaho Antidegradation policy and special resource water designation of lake Coeur d'Alene.

increments, the lake basin commission would provide coordinated management at the lake basin level. One important function that could be implemented and coordinated by a lake basin commission is an intensive public information and education program, which is a management action recommended by the TAGs for agriculture and development. Another important function would be to facilitate communication among the numerous entities that will be involved in planning and implementing management actions throughout the lake's drainage basin. For example, the Coeur d'Alene Tribe has recently developed specific management plans for control of point and nonpoint source pollution on their reservation. Such plans, and others, need to be integrated into an overall, basin wide approach to management of Coeur d'Alene Lake. The early stages necessary for the formation of a lake basin commission for the Coeur d'Alene basin have already occurred. Since the late 1980's, representatives of governmental agencies and public and private interest groups with responsibilities or interests in the basin have met regularly as the Coeur d'Alene Basin Interagency Group (CBIG). CBIG has served as a useful forum for informal discussion and coordination of basin wide issues and activities. CBIG could form the nucleus of a more formal approach to water quality management for the basin. The Coeur d'Alene Basin Restoration Project (CBRP) was recently formed by Idaho Division of Environmental Quality and the U.S. Environmental Protection Agency. Management of CBRP is shared by the two founding agencies and the Coeur d'Alene Tribe. At present, much of CBRP's focus is on restoration of areas in the South Fork Coeur d'Alene River damaged by mining activities. The activities of CBIG have recently been integrated with CBRP. Thus, the lake management plan for Coeur d'Alene Lake has become an important component of CBRP.

ENVIRONMENTAL EVALUATION

One potential source of funding to help implement this lake management plan is the U.S. Environmental Protection Agency's Clean Lakes Program. In order to qualify for this funding, a project must evaluate the potential for environmental impacts that may be caused by the project's management actions. Responses to the required questions for the environmental evaluation are listed as follows:

1. Will the proposed project displace any people? No.

2a. Will the proposed project deface existing residences or residential areas? No.

2b. What mitigative actions such as landscaping, screening, or buffer zones have been considered? Not applicable.

2c. Are they included? Not applicable.

3a. Will the proposed project be likely to lead to a change in established land use patterns, such as increased development pressure near the lake? Yes, the growth rate of nearshore development is likely to decrease.

3b. To what extent and how will this change be controlled through land use planning, zoning, or through other methods?

The majority of the decrease in growth rate will be implemented under Kootenai County's comprehensive plan.

4. Will the proposed project adversely affect a significant amount of prime agricultural land or agricultural operations on such land? Yes, voluntary implementation of BMPs will modify agricultural operations to some extent.

5. Will the proposed project result in a significant adverse effect on parkland, other public land, or lands of recognized scenic value? No.

6a. Has the State Historical Society or State Historical Preservation Officer been contacted? Not applicable.

6b. Has he responded, and if so, what was the nature of that response? Not applicable.

6c. Will the proposed project result in a significant adverse effect on lands or structures of historic, architectural, archaeological, or cultural value? No.

7. Will the proposed project lead to a significant long-range increase in energy demands? No.

8a. Will the proposed project result in significant and long-range adverse changes in ambient air quality or noise levels? No.

8b. Short term? No.

9a. If the proposed project involves the use of in-lake chemical treatment, what long and short term adverse effects can be expected from that treatment? Not applicable. 9.b. How will the project recipient mitigate these effects? Not applicable.

10. a. Does the proposal contain all the information the EPA requires in order to determine whether the project complies with Executive Order 11988 on floodplains? Yes.

10.b. Is the proposed project located in a floodplain? Yes, the lower rivers management zone includes the floodplains of the Coeur d'Alene and St. Joe Rivers.

10.c. If so, will the project involve construction of structures in the

floodplain? Yes, if riprap is installed on riverbanks.

10d. What steps will be taken to reduce the possible effects of flood damage to the project?
Riprap will be designed in consultation with the U.S. Army Corps of Engineers to minimize the potential for flood damage.

11a. If the project involves physically modifying the lake shore or its bed or its watershed, by dredging, for example, what steps will be taken to minimize any immediate and long term adverse effects of such activities? Not applicable.

11b. When dredging is employed, where will the dredged material be deposited, what can be expected, and what measures will the recipient employ to minimize any significant adverse impacts from its deposition? Not applicable.

12a. Does the project proposal contain all information that EPA requires in order to determine whether the project complies with Executive Order 11990 on wetlands? Yes.

12b. Will the proposed project have a significant adverse effect on fish and wildlife, or on wetlands, or any other wildlife habitat, especially those of endangered species? Yes, the harvesting of aquatic macrophytes in the southern lake zone and/or selected bays would remove fishery habitat and food sources for waterfowl. Endangered species habitat would not be significantly affected.

12c. How significant is this impact in relation to the local or regional critical habitat needs? Not significant.

12d. Have actions to mitigate habitat destruction been incorporated into the project? Yes, aquatic macrophyte harvesting would be designed in consultation with Idaho Department of Fish and Game and U.S. Fish and Wildlife Service.

12e. Has the recipient properly consulted with appropriate state and federal fish, game, and wildlife agencies and with the U.S. Fish and Wildlife Service? Planned, refer to 12d.

12f. What were their replies? Not applicable.

13. Describe any feasible alternatives to the proposed project in terms of environmental impacts, commitment of resources, public interest, and costs and why they were not proposed. Such information was discussed for each lake management zone under the sections entitled "Overview of water quality issues and management goals."

14. Describe other measures not discussed previously that are necessary to mitigate adverse environmental impacts resulting from the implementation of the proposed project. None.

MONITORING PLAN

The publicly-mandated goal of the Coeur d'Alene Lake Management Plan is to "improve water quality slowly" in each of the four water quality management zones. Numeric criteria were developed for several important water quality variables to help assess progress toward that goal as the plan's management actions are implemented. The numeric criteria are for concentrations of dissolved oxygen, total phosphorus, and zinc, clarity (secchi-disc transparency), and coliform bacteria counts; they are listed in Tables 31 to 33.

A monitoring plan has been designed that can be used to evaluate the effectiveness of management actions in attaining the management plan's goal. The monitoring plan is comprised of several elements:

1) periodic sampling of Coeur d'Alene Lake for index water quality variables;

2) addition of nutrient sampling at selected municipal wastewater treatment plants;

3) continuation of several existing monitoring programs; and

4) compilation of ancillary data for tracking trends that have the potential to affect water quality in the lake.

The sampling program for index variables in the lake is patterned after the 1991-93 lake study and focuses on variables with numeric criteria such as concentrations of dissolved oxygen, total phosphorus, and zinc, and clarity. The data collected by this phase of the monitoring plan represents the lake's response to loadings of nutrients and trace elements from its drainage basin. Reduction of dissolved oxygen deficits is a primary goal of the management plan. In the deep, open water zone, dissolved oxygen profiles should be measured monthly, beginning in mid summer and continuing until late autumn, in order to assess the yearly cycle of dissolved oxygen depletion within the hypolimnion at limnetic stations 1, 3, and 4 (figure 4).

Water temperature profiles and barometric pressure should be measured concurrently in order to compute percentage saturation of the dissolved oxygen concentrations. In the southern lake zone, the deficit develops earlier in the summer, therefore, profiles of dissolved oxygen and temperature should be measured monthly between early summer and early autumn. Additional samples should be taken during the dissolved oxygen profiling in order to assess trophic state trends. A composite sample of the euphotic zone should be analyzed for concentrations of total phosphorus, chlorophyll-a, and dissolved cadmium, lead and zinc, at a minimum.

Secchi disc transparency should be measured as an index of clarity and can then be multiplied by a factor of 2.5 to estimate euphotic zone depth. The nearshore zone should also be monitored by sampling at selected stations that represent a range of nutrient enrichment. Each nearshore station would be sampled in August for concentrations of total phosphorus and dissolved zinc; dissolved inorganic nitrogen analyses would be optional.

Several municipal wastewater treatment plants, permitted under the National Pollutant Discharge Elimination System (NPDES), were identified within the management plan as potential candidates for reductions of

nutrient loadings delivered to Coeur d'Alene Lake. Their current NPDES permits do not include monitoring of the phosphorus and nitrogen concentrations of their effluents. Such monitoring needs to be incorporated into their permits in order to track the trends in their loadings to the lake. If management actions are implemented at these plants to reduce nutrient loads, then the monitoring data can be used to assess the effectiveness of those actions.

Several monitoring programs already are operational at Coeur d'Alene Lake; they need to be continued and coordinated with new monitoring programs developed by this lake management plan. The Coeur d'Alene Tribe has recently implemented monitoring as part of its fisheries program. Their monitoring stations include Benewah, Chatcolet, Hidden, and Round Lakes and several nearshore stations within reservation boundaries.

The City of Coeur d'Alene's Wastewater Division has periodically measured dissolved oxygen and nutrients in a depression near the lake's outlet. Water quality at this station appears to be adversely affected by the long-term storage of logs in Cougar Bay. Continued monitoring is advisable and should be augmented with analyses of dissolved trace elements when dissolved oxygen concentrations are reduced to nearly anoxic levels, as has been recently measured. The Panhandle Health District is responsible for monitoring coliform bacteria in lake areas used by the public for primary and secondary contact recreation. This ongoing program could be expanded to include monitoring of additional nearshore areas with evidence of nutrient enrichment.

A primary purpose of monitoring is to assess trends and the effectiveness of management actions. In order to gain a better perspective on trends, the monitoring data should be evaluated in conjunction with information on other factors that can affect the variables being monitored. Often, this information is routinely available from ongoing, long-term programs. For example, additional scientific data includes precipitation, heat budgets, streamflow quantity and lake residence time, and unusual climatic or hydrologic events. Data on trends in demographics and economic development should be tracked to assess resource demands that may affect lake water quality. Specific examples of such data include building permits, septic system permits, and production figures for agriculture and timber harvest. The effectiveness of management actions will be assessed with monitoring data, but it is also important to monitor the implementation of management actions. A centralized data base can be established that contains information such as type of management action, its location, dates of implementation, and amount (acres of macrophytes harvested, length of streambank riprapped, length of riparian habitat fenced, etc.).

SUMMARY

Based on the results of the 1991-93 lake study, one can conclude that, at present, Coeur d'Alene Lake is an oligotrophic water body whose lakebed sediments contain highly enriched concentrations of trace elements. Historic data indicated the lake had received substantial loadings of nutrients and oxygen-demanding substances since the late 1800's. Beginning in the early 1970's, these loadings began to be reduced as municipal wastewater treatment plants became operational and forest practices and agriculture activities began to implement best management practices. As a result, the lake's trophic state shifted from mesotrophic to oligotrophic as the lake's biological productivity declined. That decline, coupled with the lake's large assimilative capacity for nutrients (determined by the nutrient load/lake response model), has reduced the potential for development of an anoxic hypolimnion and the consequent release of trace elements and nutrients back into the overlying water column.

The primary goal of this lake management plan is to implement management actions that will preserve the improvements in water quality that have been gained by Coeur d'Alene Lake since the 1970's. These fairly recent improvements in water quality could be eroded by the present pattern of rapid increases in population growth, lake usage, and land development now occurring throughout the basin. The management plan also seeks improvements in water quality where needed to achieve compliance with federal and state water quality criteria.

The water quality management actions recommended for the four water quality management zones are weighted heavily toward reducing nutrient loadings produced by point and nonpoint sources within the basin. The purpose of these reductions is to achieve a sequence of three responses within Coeur d'Alene Lake: reduced in-lake nutrient concentrations: reduced biological production by phytoplankton, periphyton, and macrophytes; and a reduced hypolimnetic dissolved oxygen deficit.

Coupled with this strategy to manage the lake's trophic state and thereby prevent releases of trace elements and nutrients out of the lakebed sediments is the desire to reduce water column concentrations of zinc so they will not exceed federal water quality criteria for the protection of freshwater aquatic life. Reduced zinc concentrations are to be achieved largely through reductions in zinc loadings produced within the Coeur d'Alene River Basin.

The environmental factors controlling phytoplankton production in lakes are numerous; nutrients, particularity phosphorus, have repeatedly been found to be major factors. Trace elements have infrequently been reported as significantly affecting phytoplankton production, either as a nutritional deficiency or as a toxicant. In the case of Coeur d'Alene Lake, the phytoplankton bioassays indicated that the biologically-available, dissolved concentrations of zinc in the northern two-thirds the lake exerted a strong suppression on phytoplankton growth. Similar results were also reported by two studies conducted on the lake in the early 1970's. These results raise an important issue for water quality management in Coeur d'Alene Lake: If zinc concentrations are reduced enough to comply with federal water quality criteria, will the

lake's phytoplankton production markedly increase? If the answer to the question is affirmative, then nutrient loadings will need to be reduced, perhaps significantly, in order to counteract the lifting of zinc's suppressive effect on phytoplankton production.

DEFINITION OF ACRONYMS

Numerous acronyms are used throughout the document. They are defined as follows:

* ACOE, U.S. Army Corps of Engineers
* ACP, Agricultural Conservation Program
* ASCS Agricultural and Stabilization Service
* BC, Benewah County
* BLM, U.S. Bureau of Land Management
* CAC, Citizen's Advisory Committee for CBIG,
* CBIG, Coeur d'Alene Basin Interagency Group
* CBRP, Coeur d'Alene Basin Restoration Project
* CES, Cooperative Extension Service, University of Idaho
* CLCC, Clean Lakes Coordinating Council
* CT, Coeur d'Alene Tribe
* DEQ, Idaho Division of Environmental Quality
* EPA, U.S. Environmental Protection Agency
* FG, Idaho Department of Fish and Game
* FPA, Idaho Forest Practices Act
* FPAAC, Forest Practices Act Advisory Committee
* ICL, Idaho Conversation League
* IDHW, Idaho Department of Health and Welfare
* IDL, Idaho Department of Lands
* DWR, Idaho Department of Water Resources
* IFC, Idaho Forestry Council
* ILA, Idaho Loggers Association
* IPR, Idaho Department of Parks and Recreation
* ITD, Idaho Department of Transportation
* IWR, Idaho Department of Water Resources
* KC, Kootenai County
* NIBCA, North Idaho Building Contractors Association
* NRCS, Natural Resource Conservation Service
* NRDA, Natural Resources Damage Assessment
* PAC, Panhandle Area Council
* PHD, Panhandle Health District
* AWQP, State Agricultural Water Quality Program
* SC, Shoshone County
* SCD, Soil Conservation Districts
* UI, University of Idaho
* USCG, U.S. Coast Guard
* USDA, U.S. Department of Agriculture
* USFS, U.S. Forest Service
* USFWS, U.S. Fish and Wildlife Service
* USGS, U.S. Geological Survey
* WPCA, Water Pollution Control Account
* WWC, Waterways Commission
* WWP, Washington Water Power.

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APPENDIX A

List of Technical Advisory Group Members

DEVELOPMENT T.A.G.

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Shoshone County

Dale Beeks
The Network

Pierre Bordenave
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Roy Cook
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John Crouter
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Paul Klatt
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Phillip Cernera
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Jeff Thomas
Kootenai County Sheriff

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Coeur d'Alene Tribal Member

Gene Hedlund

Dr. Bill Latshaw
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George Mills, Jr.
Benewah County Commission

Bill Morris
Idaho Farm Bureau

Lisa Prochnow
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Heyburn State Park

Neil Smith
St. Joe Valley Assn.

Les Soul
Army Corps of Engineers

Mike Stevenson and Terry Kincaid
Bureau of Land Mgmt.

Melinda Wetzel-Smith

APPENDIX B

Listing of priority and general concerns expressed by the public during public meetings of July 1993

Letter sent to public participants at Lake Planning meetings.

October 12, 1993

Subject: Public input on Lake Coeur d'Alene Management Plan

During July a series of public meetings were sponsored by the Idaho Division of Environmental Quality and the Coeur d'Alene Tribe. these meetings were designed to identify the issues and concerns most important to the general public in order, if possible, to incorporate them into the Lake Coeur d'Alene Management Plan.

The agency indicated that a summary of the discussions would be distributed to those meeting participants who provided names and addresses. Enclosed is a summary of the issues and concerns expressed by the participants at each meetings.

The Lake Management Plan workgroup will study these issues and concerns as a part of its work. Wherever possible the group will attempt to incorporate those which are relevant into the plan alternatives. Some, which are beyond the scope of a Lake Management Plan, will be forwarded to the appropriate government official or legislator for response.

Draft alternatives for the lake plan are projected to be developed by January 1994. At that time another round of public meetings will be scheduled in order to obtain public input and comment on the draft alternatives.

If you have questions concerning the issues summary of the lake planning process, please address them to me at (208) 769-1448.

Sincerely,

Geoffrey W. Harvey
Idaho Department of Environmental Quality

Enclosure

Coeur d'Alene (day) GROUP A

Priority Concerns

1) Involve public with policy making on lake and surrounding land.

2) Public supported ombudsman for lake issues.

3) Fish and Wildlife habitat improvement to include public ownership of shoreline and improvement for these purposes.

4) Educate public about proper use of the lake and waters.

5) Lack of enforcement of existing rules and regs.

General Concerns

* More monitoring of ag and timber activities.
* Maintain human and wildlife co-habitation and use of the lake area.
* Drainage control and increased rate of runoff from more intense uses.
* Speed, noise, shoreline erosion from boating activities.
* Reduce input of heavy metals into lake by 80%.
* Reduce density of shoreline development and increase setbacks.
* Educate public about proper use of the lake waters.
* Overuse of lake for recreation use (big boats, jet skis, noise).
* Control overuse and abuse of lake development.
* Fish & wildlife habitat improvement to include public ownership of shoreline and improvement for these purposes.
* Lack of enforcement of existing rules and regs.
* Reduce nutrient input from sewage systems, ag and boats.
* Involve public with policy making on lake and surrounding land.
* Promote and support common sense use of resources, wildlife, recreation and economic opportunities.
* Large wakes.
* Public supported ombudsman for lake issues.
* Stop use of lake for transport and storage of logs.
* Heavy taxation causing accelerated of large parcels.
* Tax level.
* Protect Rathdrum aquifer from degradation.

Coeur d'Alene (day) GROUP B

Priority Concerns

1) Stormwater from residential and recreation roads.

2) Erosion (shoreline).

3) Implementation of lake management plan.

4) Development of effective regulatory tools.

5) Agricultural impacts.

General Concerns

* Erosion (shoreline).
* Implementation of Lake Management Plan.
* Stormwater from residential and recreation roads.
* Expanding superfund to entire basin.
* Septic wastewater/boat gray water.
* Development of effective regulatory tools.
* Agriculture impacts.
* Timber harvests.
* Reduce upstream sediment loading.
* Control development density of shoreline.
* Control of marine noxious weeds.
* Emphasis on wetland protection.
* Steep slope development (safety and aesthetics).
* Erosion on old roads and trails.
* Regional sewage treatment facility.
* Airborne pollution.

Coeur d'Alene (day) GROUP C

Priority Concerns

1) Local economy, custom and culture and people, i.e. natural resource economy.

2) Family recreation, public use, access.

3) Base action on proof. What is real and needed?

4) Balance ecosystem management.

5) Local and state control.

General Concerns

* Local economy, custom and culture and people (i.e. natural resource economy).
* Family recreation, public use and access.
* Fund and enforce implementation.
* Industry participation.
* Local and state control.
* Coordination and reconciliation at all levels, agreement.
* Base action on proof. What is real and needed?
* Balanced ecosystem management.
* Health.
* Realistic use of lake.
* Fighting Creek landfill.

Coeur d'Alene (day) GROUP D

Priority Concerns

1) Identify demonstratable health risks.

2) Concern over nutrient loading and eutrophication (ag, logging activities, development, stormwater, etc.)

3) Noise from boats and jet skis.

4) Unchecked residential and other development.

5) Safe for recreation use (fishable/swimmable) and others (special resource water).

General Concerns

* Are there feasible means to remediate contaminants within the watershed?
* Do we need a complete aquifer study to complete knowledge base?
* Number and size of boats (aesthetic fulfillment and enjoyment).
* Erosion of banks and shores by boats.
* Protection of downstream water quality.
* Noise -- boats and jet skis.
* Lack of enforceable regs on recreation and development.
* Safe for recreational use (fishable/swimmable) as in special use designation (special resource water).
* Identify demonstratable health risks
* Industrial use by logging -- transportation, storage, handling.
* Pave county roads next to lake (dust).
* Shortage of outdoor facilities (recreational support).
* Concern over nutrient loading and eutrophication (sediment plus others).
* Total cost of remediation with and without litigation.
* Recreational use (fishing/boating) versus commercial use.
* Unchecked residential development (subdivisions).
* Information on how to live in this area, i.e. heavy metal problems, lake use, fish, gardens, development. Impact of heavy metals on wildlife.
* Population growth exceeding capacity of natural systems and infrastructure.
* Protection of domestic water -- ground and surface.

Coeur d'Alene (day) GROUP E

Priority Concerns

1) Elimination of nutrient inputs for prevention of weed growth.

2) Better enforcement of forest practices rules to prevent erosion and nutrient inputs.

3) Prevent sedimentation from ag, grazing activities, nutrients, bacteria.

4) Forestry.

5) Fisheries impacts from above.

General Concerns

* Development pressures.
* Elimination of nutrient inputs for prevention of weed growth.
* Better enforcement of forest practices rules to prevent erosion and nutrient inputs.
* Prevent sedimentation from agriculture, grazing activities, nutrients, bacteria.
* Forestry.
* Fisheries impacts from above.
* Union Pacific Railroad right of way.
* Pollutants of concern: nutrients (forestry, ag, livestock and residential).
* Pollutants of concern: sediments (forestry, ag, livestock, residential and mining).
* Quality of life due to increased population and recreation, ie. noise, trash, sanitation, visual. Lack of enforcement, resources, education.
* Protect traditional ceremonial uses i.e. fishing, drinking, aesthetics.
* Environmental sustainability with economic development. Coordination of authorities.

Coeur d'Alene (day) GROUP F

Priority Concerns

1) People -- local economy, custom and culture, i.e. natural resource economy.

2) Family recreation, public use access.

3) Implementation, fund and enforce.

4) Industry participation.

5) Three issues tied for fifth:

   a) Coordination and reconciliation at all levels -- agreement.
   b) Local and state control.
   c) Public access to lake model -- nutrient loading info.

General Concerns

* Industry participation.
* Balanced ecosystem management.
* BMP's -- give sawyers responsibility for culvert and drainage structures installed during their work i.e. prevent soil erosion.
* Public access to lake model -- nutrient loading info.
* Local and state control.
* Phosphate loading from boats and homes.
* Realistic recreational use of lake.
* Fighting Creek runoff.
* Health.
* Fiscally conservative.
* People -- local economy, custom and culture i.e. natural resource economy.
* Coordination and reconciliation at all levels/agreement.
* Family recreation, public use access.
* Heavy metals loading.
* Implementation, fund and enforce.
* Community needs natural resources.

Coeur d'Alene (day) GROUP G

Priority Concerns - Stage 1

1) Superfund cleanup and river above superfund.

2) Loss of floodplains, wetlands.

3) Pressures on lake -- heavy boating, traffic on river, bank erosion caused by boats.

4) Stormwater and drainage impacts.

5) Preserving expanding fisheries.

Priority Concerns - Stage 2

1) Development, construction, setbacks on slopes, lakeshore.

2) Nutrient loading from agriculture, mining and logging.

3) Public education, awareness, involvement.

4) Heavy metal pollution.

5) Land use planning, enforcement, regulation (leadership).

General Concerns - Stage 1

* Adequate funding for implementation.
* Heavy metals pollution (existing and additional).
* Development on banks, slopes, shoreline, road building, setbacks.
* Public awareness, education of public to importance, public involvement.
* Preserving, expanding fisheries.
* Stormwater and drainage impacts.
* Consumer pressure on lake -- heavy boating, traffic on river, bank erosion caused by boats.
* Land use planning, implementation, enforcement.
* Interest group conflict resolution.
* Preservation of visual qualities.
* Agricultural/silvaculture input contribution (logging, mining, ag).
* Agency management coordination (goal orientation).
* Public access.
* Loss of flood plains, wetlands.
* Meeting management, maximize education and input.

* Nutrient loading.
* Superfund cleanup and river above superfund.
* Tribal, state, county relations.
* Sewage pollution.
* Remediation of lower Coeur d'Alene River.
* Lake bottom disturbance, fills.
* Lakewater -- drinking source.
* Election of sympathetic local and state officials.

General Concerns - Stage 2

* Agriculture, mining, logging nutrients.
* Public awareness, education involvement.
* Development and construction on banks and slopes, i.e. setbacks.
* Heavy metals pollution.
* Adequate funding for implementation.
* Land use planning, enforcement, regulations (leadership).
* Fisheries -- preservation and use.
* Stormwater, septic tank drainage impact.
* People pressure and impact -- boating traffic, use, litter.
* Loss of wetlands, flood plains.

Coeur d'Alene (day) GROUP H

(This group divided their list into goals & priorities.)

Priority Concerns

GOALS:

1) For Lake -- stabilize metals in place and manage nutrients to preserve beneficial uses.

2) For Basin -- maintain or restore all beneficial uses and address health concerns.

PRIORITIES:

1) Funding and implementation.

2) Erosion, including agriculture, forest practices and regulation.

3) Stormwater, including roads and development.

4) Sanitary waste, including nutrients.

5) Preserve natural areas.

General Concerns

GOALS:

1) For Lake -- stabilize metals in place and manage nutrients to preserve beneficial uses.

2) For Basin -- maintain or restore all beneficial uses and address health concerns.

PRIORITIES:

1) Funding and implementation.

2) Erosion, including agriculture, forest practices and regulation.

3) Stormwater, including roads and development.

4) Sanitary waste, including nutrients.

5) Preserve natural areas.

Coeur d'Alene (evening) GROUP E

Priority Concerns

1) Three items tied for first:

   a) Improve fish and wildlife habitat by public purchase and improvement.
   b) Involve public in policymaking on lake surrounding land use issues.
   c) Public supported ombudsman for lake issues.

2) Educate public about proper use of the lake waters (courtesy, right-of-way, etc.)

3) Two items tied for third:

   a) Maintain human and wildlife co-habitation and use of the lake and surrounding area.

   b) Lack of enforcement of existing rules and regulations.

General Concerns

* Develop method of reducing taxes, example: by conservation easements.
* Rules and regulations are too vague and hard to enforce.
* Improve fish and wildlife habitat by public purchase and improvement.
* Involve public and policymaking on lake and surrounding land use issues.
* Does fishing derby have effect on salmon population?
* Change logging practices to minimize sediment into river and lake.
* Public supported ombudsman for lake issues.
* Rules and laws regarding riparian rights, the highway level, public access to beach areas.
* Educate public about proper use of the lake waters (courtesy, right-of-way, etc.)
* Recognize importance of the shallow bays.
* Use the lake as a laboratory to acquaint children with lake ecology.
* Monitoring of boat activity and impacts.
* Maintain human and wildlife co-habitation and use of the lake and surrounding areas.
* Lake of enforcement of existing rules and regulations.

St. Maries GROUP A

Priority Concerns

1) Want to maintain current uses of natural resources and present way of life in Benewah County.

2) More local government control in the project.

3) Wise multiple use management of all resources versus preservation/no use management.

4) Want economic stability for the area.

5) Preserve the culture, history and traditions of local community.

General Concerns

* Wise multiple use management of all resources versus preservation/no use management.
* Does good science tell us there really is a problem with the lake?
* Want to maintain current uses of natural resources and present way of life in Benewah County.
* Preserve the culture, history and traditions of local communities.
* Concern that nutrient threshold may be so low as to limit our current manner of resource uses.
* Want to see local government (county commissions) be responsible for final decisions.
* More local government control in the project.
* Am concerned about clean water.
* The existing rules, regs, ordinances need to be tied into the process.
* Would like to see public property exempt from management concerning this project.
* Would like more disclosure on legislators (names) who promoted the Nutrient Management Act.
* Want to have names and access to final legislative and others who will decide and promoted the lake management plan.
* Want economic stability for the area.
* More proof the scientific data is accurate -- two years of data seems inadequate.
* Use common sense in drafting the lake management plan.
* Need to control the current loading of metals going into the lake.

St. Maries GROUP B

Priority Concerns

1) Local economic survival and stability.

2) Preservation of private property rights in the watershed. (landowners)

3) Multiple use of land.

4) Development on lake with protection of natural resources.

5) Management based on sound science.

General Concerns

* Local economic survival and stability.
* Multiple use of lands.
* Preservation of property rights in the water shed. (land owners)
* Preservation of culture and heritage.
* Limit community development.
* Development on lake with protection of natural resources.
* Greater local government representation.
* Maintain and improve lake fisheries.
* Management of tributaries of the Cd'A River, curtail loading.
* Management that is economically feasible.
* Landowner response toward pollution.
* Riverbank/waterways stability. (landowner's right to maintain/mitigate, i.e. riprap)

St. Maries GROUP C

Priority Concerns

1) Economic stability.

2) Concern over properly identifying pollution sources.

3) Promote and support "common sense" economic diversity use of the lake.

4) How will final plan affect tradition uses "customs and culture" in the Cd'A Basin?

5) Three issues tied for fifth:

   a) Government only by elected representatives of the people or their agents.
   b) Maintain lake resources for human and wildlife co-habitation and development.
   c) Data base should be over longer period of time (more than two years) (funding necessary).

General Concerns

* Economic stability.
* Maintain lake resources for human and wildlife co-habitation and development.
* Less government control.
* Government only by elected representatives of the people or their agents.
* A stable PH level in water and soil adjacent to St. Joe and St. Maries Rivers.
* How will final plan affect traditional uses "customs and culture" in the Cd'A Basin?
* Concern that there is a place for future commercial development.
* Promote and support "common sense" economic and recreational diversity use of the lake.
* Why aren't there restrictions on farmers for soil erosion, chemical use and pesticides?
* Plan alternatives should stress ways to mitigate impacts rather than eliminate activities.
* Taxpayers money will not be spent unless appropriated by elected representatives.
* Economic stability through stable water quality.
* Data base should be over longer period of time (more than two years) (funding necessary).
* Promote wise or multiple use.
* Review and update zoning and taxation laws related to development.
* Is data base accurate for conclusion on nutrient input?
* Economic activities which contribute the most should have more input.
* More monitoring of streams unaffected by human activity.
* Concern over properly identifying pollution sources.
* Develop a communication system for communities surrounding the lake to have the most input.
* Coordinate with local elected officials on implementation.
* Recreation uses.
* Alternatives should not be selected for ease of implementation.
* Could the industries be regulated further without seriously reducing their productivity?

Plummer GROUP A

Priority Concerns

1) No more clearcuts in lake drainages; no more clearcut burns -- maintain natural waterholding capacity of our forests.

2) Preserve our way of life by working with the logging, farming and commercial interests.

   a) Federal, state and bureaus following the same laws, regs, standards as required on private lands.

3) Keep on monitoring the lake for 8-10 years before acting -- get more proof of conditions.

4) Repeal the Nutrient Management Act.

5) Study options of removing metals from lake sediments by creative methods.

General Concerns

* No more clearcuts in lake drainages; no more clearcut burns -- maintain natural waterholding capacity of our forests.
* Control of nutrient loading -- both agricultural nonpoint and point source (sewage).
* Federal, state and bureaus following the same laws, regs, standards as required on private lands.
* Keep on monitoring the lake for 8 to 10 years before acting -- have more proof of conditions.
* Find fertilizers that don't impact water quality as much.
* Maintain the swimmable, fishable standards (legally) in the lake.
* Preserve our way of life by working with the farming, logging and commercial interests.
* Repeal the Nutrient Management Act.
* There have been large improvements in farming and logging practices: question whether there is a problem now.
* Study options of removing metals from lake sediments by creative methods.
* Maintain control development along 500 feet of lake shore.
* Work towards controlling the seaweed and plants in the lake -- they are taking over in some places.
* Maintain buffer zones along streams to prevent impacts by homes, logging, farming, grazing and roads.
* Disallow boat traffic in St. Joe above 5 miles per hour -- is supposed to by the "shadowy" St. Joe, not a race track.
* Consider the downstream impacts in river and aquifer below the lake in Idaho and Washington.
* Disallow the "let burn" policy on national forests -- too much sediment and nutrients.

Plummer GROUP B

Priority Concerns

1) Maintain status quo or improve level of metals, nutrients, sediments.

2) Ongoing public education.

3) Preserve the economic stability of the Coeur d'Alene basin.

4) NEPA requires consideration of "custom and culture" by government.

5) Two issues tied for fifth place:

   a) Human health and fisheries issues related to heavy metals.
   b) Preserve private property rights.

General Concerns

* Human health and fisheries issues related to heavy metals.
* Maintain status quo or improve level of metals nutrient sediments.
* Preserve the economic stability of the Coeur d'Alene basin.
* Preserve private property rights.
* Increase in high paying recreational jobs.
* Maintain or increase agricultural lands.
* Preserve basin for human habitat.
* Ongoing public education.
* NEPA requires consideration of "custom and culture" by government.
* Mental and physical health through natural resources job preservation.
* Consider smaller drainages in the plan for management.
* Protect quality of life.
* Maintain metals at the bottom of the lake.
* Involve elected local governments in formulating and implementing the plan. (local control)
* Address lakeshore development.
* Balance economic stability and recreation.
* Tax monies spent only through direct appropriation by our elected representatives.
* Increase productivity of fisheries and wildlife habitat.
* Add Benewah County to the Management Committee.
* Increase opportunity for the free market.
* Control growth, development and access to critical areas.
* Maintain or increase logging emphasis on salvage.

Kellogg GROUP A

Priority Concerns

1) Economic stability with existing custom and culture (natural resources industries).

2) Private property rights within the basin.

3) People should not be liable for what was legal at the time.

4) Study possible removal of heavy metals at bottom of lake with creative technologies.

5) No boat sewage dumping in the lake.

General Concerns

* Raising and lowering of water level by Washington Water Power.
* Consideration of economics when looking at regulating of nutrients into the lake.
* High volume usage on rivers causing bank erosion.
* Curtail clearcutting.
* People should not be liable for what was legal at the time.
* Nutrient loading.
* Study possible removal of heavy metals at bottom of lake, with creative technologies.
* Protection of county tax base.
* Public awareness and education.
* More public access sites to the lake.
* Heavy bedload in the North Fork Cd'A River.
* High paying recreational jobs vs low-wage recreational jobs/gambling.
* No boat sewage dumping into the lake.
* Private property rights within the basin.
* Declassification of the St. Joe River Road as alternate I-90.
* Economic stability with existing custom & culture. (Natural resource industries).
* Construction on and near lakeshore including road building and runoff--less.

Kellogg GROUP B

Priority Concerns

1) Control of repeated inundations by Washington Water Power raising and lowering lake levels.

2) Control sewage treatment plant discharge.

3) Monitoring sedimentation from clearcuts and control runoff also roads.

4) Listen to the indians.

5) Adequate septic systems for chain lakes.

General Concerns

* Sample wells on south fork, airport area, canyon, and others for metal content.
* More enforced regulations on large development projects.
* Adequate septic systems for chain lakes.
* Cap on development
* Control sewage treatment plan discharge.
* Control of repeated inundations by Washington Water Power raising and lowering lake level.
* Curtail marinas and large boats dumping sewage, oil and gas (also RV dump sites).
* Control sediments and nutrients in runoff.
* Monitor sedimentation from clearcuts and control runoff also roads.
* Increase individual awareness.
* Listen to the indians.
* Check livestock that run too close to the lake shore.
* Commercial fertilizer use for nutrient buildup.
* Control sedimentation from logging, boats, lake level fluctuation.
* Sewer the gulches.
* Tributaries running through mine tailings.

APPENDIX C

Action items addressing non-water quality recreation concerns

The recreation subcommittee of the Development Technical Advisory Group developed several action items unrelated to water quality concern. These action items are the starting point for developing necessary management actions not directly related to water quality management.

APPENDIX C

Boat Use	Priority	Lead	Estimated cost	Funding Sources
Action 1: Develop protection measures (speed and proximity guidelines) for wetland birds, nesting and shoreline areas from turbidity resulting from jetskis and other boat operation around these areas.	2	County Comm.		
Action 2: Encourage good sportsmanship and reduced speeds.	2	County Comm.		

Attachment: Additional Areas of Concern - Activities on the Lake

Noise Levels	Priority	Lead	Estimated Cost	Funding Sources
Action 1: Require testing of motors for noise levels (with license application) and enforcement of acceptable noise levels (especially for jetskis). Jetskis are especially a noise problem to shoreline and lake property owners.	1	IDPR KC BC		

APPENDIX C

Safety and Enforcement Issues	Priority	Lead	Estimated Cost	Funding Source
Action 1: Standardize sign design, size and color of all signs in the 3 counties. Improve diver and swimmer identification for boaters and float-plane drivers.	1	WW Comm.		
Action 2: Increase safety inspections of boats by Sheriffs patrol.	2	WW Comm. KC,BC		
Action 3: Encourage greater enforcement capabilities through increased funding of the Countys Sheriff's Department.	1	KC,BC		
Action 4: Promote boater operator testing and licensing programs.	2	KC,BC WW Comm.		

APPENDIX C

Fisheries: Goal is to maintain or improve the sport fishery of Lake Coeur d'Alene and its tributaries.	**Priority**	**Lead**	**Estimated Cost**	**Funding Sources**
Action 1: Encourage restoration and maintenance native vegetation buffers along the lakeshore and lake tributaries.	1	IDL SCDs USFS BLM		
Action 2: Develop and implement a plan to maintain and, if necessary, improve the stability of stream channels on private, state and federal land. a) Require that some conifers be retained in the stream protection zone of Class II streams (to provide large organic debris (LOD) and maintain the stability of the stream) b) Increase stability the number of large conifers retained in the stream protection zone of Class I streams (to increase LOD). c) Add criteria for residual pool volume and riffle stability index to the state Water Quality Standards.	1	IDL USFS BLM DEQ		
Action 3: Ensure that culverts placed in fish-bearing streams are accessible to fish; retrofit existing drainage structures which are inaccessible to fish; ensure culverts are sized for peak storm events and will accommodate expected debris as well as the discharge.	1	IDFG IDWR IDL USFS BLM		

Abbreviations:

BC	Benewah County
CLCC	Clean Lakes Coordinating Council
CT	Coeur d'Alene Tribe
DEQ	Division of Environmental Quality
EHD	East Side Highway District
CES	U of I Cooperative Extension
F&G	Idaho Dept. of Fish and Game
ICL	Idaho Conservation League
IDL	Idaho Dept. of Lands
ITD	Idaho Transportation Dept.
KC	Kootenai County
KEA	Kootenai Environmental Alliance
NICBA	North Idaho Building Contractors Assn.
PAC	Panhandle Area Council
PGHD	Plummer-Gateway Highway District
PHD	Panhandle Health District
SC	Shoshone County
SCS	Natural Resource Conservation Service
SFCSD	South Fork of Cd'A Sewer Dist.
USFS	U.S. Forest Service
WHD	Worley Highway District

APPENDIX D

Summary of written responses to a questionnaire and public comments expressed during public meetings of April 1994

May 13, 1994

COEUR D'ALENE LAKE MANAGEMENT PLAN

Summary of April, 1994 Public Meeting Comments

A questionnaire with five questions was handed out at each of the public meetings. A total of 76 questionnaires were turned in. A summary of the written comments is summarized below.

QUESTION 1: How do you use and/or enjoy Coeur d'Alene Lake?

The following activities were listed. The number of times the activity was mentioned is in parentheses ().

Boating (35)
Swimming (27)
Aesthetics (24)
Fishing (24)
Cabin/Home (13)
Camping (9)
Non-motorized boating, sailing, canoeing (7)
Recreation (7)
Wildlife/bird watching (5)
Drinking water (4)
Work (3)
Waterski (3)
Scuba diving (2)
Ice skate (2)
Hiking (2)
Hunting (2)
Log transport/storage (2)
Photography (1)
No use (1)

QUESTION 2: Goals for the Lake Management Zones

The tally from the "straw vote" to determine management goals for the lake is:

Nearshore Zone:	44 - slow improvement 29 - rapid improvement
Southern Lake:	46 - slow improvement 28 - rapid improvement
Rivers:	49 - slow improvement 24 - rapid improvement
Open Lake:	55 - slow improvement 9 - rapid improvement 11 - slow zinc improvement; maintain water quality for nutrients

QUESTION 3, 4, and 5: **These questions asked respondents to list their ideas for pollution prevention strategies, remediation/clean up strategies and any other issues of concern.** The written answers were combined for this summary. The responses fell into the following categories: agriculture, boating and recreation, development/land use planning, enforcement, fisheries and wildlife, funding, general pollution sources, general lake management planning, general pollution solutions/comments, lake level fluctuations, landfill, lower rivers, mining effects/heavy metals, public education, road building, stormwater, timber, wastewater, and other. The results are listed below:

AGRICULTURE

-Control sediment from agricultural areas; use BMPs - 9 comments
-Stop livestock grazing in streams and riparian areas - 5 comments
-Institute mandatory agriculture BMPs - 3 comments
-Improve farm practices - 2 comments
-Maintain grass seed production - 1 comment
-Maintain crop rotation program - 1 comment

BOATING AND RECREATION

-Eliminate wastewater dumping from boats, add dump stations - 13 comments
-Limit boat size - 9 comments
-Manage boat speed, wakes in rivers and open lake - 9 comments
-Expand public access/boat ramps - 7 comments
-Control powerboat use, wakes - 5 comments
-Bank erosion from boats - 3 comments
-Limit number of boats - 3 comments
-Don't expand public access - 2 comments
-Manage recreational shoreline use - 2 comments
-Eliminate/ban jet skis - 2 comments
-Public health hazards in recreation areas - 2 comments
-Boat safety - 1 comment
-Limit location of boats - 1 comment
-Restriction on activities in/around lake - 1 comment
-Boat noise - 1 comment

DEVELOPMENT/LAND USE PLANNING

-Control waterfront and basinwide development; better management of - 18 comments
-Manage fertilizer use - 5 comments
-Slow development - 3 comments
-Manage erosion from nearshore development - 1 comment
-Remove old boathouses on lake - 1 comment
-Limit number of marinas on lake - 1 comment

ENFORCEMENT

-Enforce current laws - 5 comments
-Enforce solid waste laws - 1 comment
-Enforce boating regulations 1 comment

FISHERIES AND WILDLIFE: ISSUES/HABITAT

-Manage wetlands for waterfowl - 7 comments
-Fisheries - 6 comments
-Wildlife habitat - 4 comments
-Curb bass fishing - 1 comment

FUNDING

-Seek funding sources - 2 comment
-Use some of local tax money to fund cleanup, diverted from other programs - 2 comments
-Don't increase fees/taxes to fund correction measures - 1 comment

GENERAL POLLUTION SOURCES

-Stop pollution at sources, source control - 14 comments
-Control erosion/sediment from all sources - 5 comments
-Control nutrient discharge - 1 comment
-Prioritize and control pollution at sources - 1 comment

GENERAL LAKE MANAGEMENT PLANNING

-Leave lake alone; do nothing - 3 comments
-Use cooperative and coordinated effort to find solutions - 2 comments
-Speed up studies, plan - 2 comments
-Give greater attention to nutrients vs. heavy metals - 2 comments
-Don't fix it unless it's broken - 2 comments
-No more studies - 1 comment
-Use common sense - 1 comment
-Don't know what needs to be done to manage pollution - 1 comment
-Involve public in process - 1 comment

GENERAL POLLUTION SOLUTIONS/COMMENTS

-Control weed encroachment - 9 comments
-Use non-phosphorous soaps - 2 comments
-Eliminate tire burning - 2 comments
-Dredge certain nearshore areas for boating access - 2 comments

-Protect wetlands as buffers/sinks for pollution - 1 comment
-Use biological control of phosphorous with plants - 1 comment
-Use oxygen infusions - 1 comment
-Don't dredge lake bottom - 1 comment

LAKE LEVEL FLUCTUATION

-Control water level fluctuation - 8 comments

LANDFILL

-Use better siting techniques for landfills; - 5 comments
-Manage landfill better - 1 comment
-Recycling - 1 comment

LOWER RIVERS

-Rip rap river banks - 10 comments
-No wake on St. Joe and Coeur d'Alene Rivers - 3 comments
-Ban powerboats on CDA River - 2 comments
-Limit boat size on rivers - 2 comments
-Manage boat speed, number of boats on CDA River - 2 comments
-Use natural methods to stabilize banks - 2 comments
-Restrict speed on St. Joe River - 1 comment
-Ban powerboats on St. Joe River - 1 comment
-Stabilize CDA River streambanks - 1 comment
-Army Corps of Engineers is preventing bank stabilization efforts - 1 comment
-Bank stabilization - 1 comment

MINING/HEAVY METALS

-Cleanup mining waste - 8 comments
-Heavy metal effects on biota - 1 comment

PUBLIC EDUCATION

-Educate public - 17 comments

ROAD BUILDING

-Control road building - 1 comment

STORMWATER MANAGEMENT

-Better management of stormwater - 6 comments

TIMBER

-Better management of timber harvests - 7 comments
-Stop clearcutting - 2 comments

WASTEWATER: TREATMENT PLANTS/SEPTIC SYSTEMS/COMMUNITY SYSTEMS

-Upgrade the wastewater treatment plant in Page, other treatment plants in watershed, - 14 comments
-Upgrade individual (septics) and community drainfields - 13 comments
-Sewer nearshore areas - 2 comments
-Eliminate discharges from wastewater treatment plants - 1 comment
-Cut off all discharges of raw sewage - 1 comment
-Use alternative sewage disposal systems - 1 comment
-Limit construction of central sewers around the lake 1 comment

OTHER/MISC: CULTURAL SITES, COMMUNITY STABILITY

-Private property rights - 1 comment
-Consider the economy of the community - 1 comment
-Individual responsibility - 1 comment
-Cost estimates in report are inaccurate (ie rip rap) - 1 comment
-Protect cultural sites - 1 comment
-Stop promoting North Idaho - 1 comment

QUESTION AND ANSWER SESSION: The following is a summary of the questions/concerns voiced during the public meetings. Questions fell into the following categories: pollution/data on nutrients and heavy metals, potential management options, the planning process, funding, implementation, enforcement, the questionnaire, Bunker Hill Superfund site, lateral lakes, Fighting Creek landfill, and other.

POLLUTION/DATA

Nutrients:

-What affect does the lake level fluctuation have? (3 questions)
-What causes oxygen increases/decreases in the lake? (2 questions)
-Is there a peer review of USGS data? (2 questions)
-Part of southern lake is man-made, why repair it? (2 questions)
-Is run-off the biggest nutrient loading problem?
-How do the water samples compare to samples taken from mountain streams?

-Was a comparison study done before the river at Cataldo was dredged?
-Is oxygen level as low as USGS says it is?
-Readings in southern lake may not be accurate because in high-water flood stage everything is flushed out.
-How long does phosphorous stay in the system in measurable quantities?
-What accounts for the 80% of naturally occurring phosphorous?
-How can you solve problems if samples have been taken above the St. Joe River?
-Why wasn't pH tested for?
-Are oxygen deficits caused more by sewage treatment than by heavy metals?
-How do ag practices contribute nutrients? Fertilizers?
-Won't the Cherokee Hills project increase pollution problems?
-The Conservation Reserve Program or grass seed weren't mentioned in terms of the farm land. They have a large effect on the sediment entering the lake.
-The study on the Flathead Lake in Montana concluded that less than 5% of the nutrients entering the lake are caused by man.
-What effect does the rice growing industry in Chatcolet Lake have on the lake?
-What kind of shape is the Spokane River in from the mouth of the river to the dam?
-What is the immediate effect of logging within a half mile or so of the lake?
-Concern voiced over the high level of ash in burn areas.
-What portion of the water coming into the lake comes from the St. Joe River?
-What's the history of sewering around the lake?

<u>Metals:</u>

-Are there heavy metals in fish? (2 questions)
-If zinc contained in upper watershed, will zinc be eventually flushed out of the system?
-Do number of boats affect the release of heavy metals?
-What is the extent of heavy metal contamination in fish and wildlife below the Post Falls dam?
-What is the source of the zinc in Lake CDA? Is coming out of the CDA River or from another source?
-What level of zinc are we talking about? How many ppm? How does this compare with amounts in our drinking water?
-You've stated that the lake's condition has improved in the last 50 years because the tailings dumping was ended in the 1960s. Where are the tailings being deposited now?
-In the worst place, how thick is the layer of metals-contaminated sediment?
-From a heavy metals standpoint, how does the north end of the lake compare to the south end?
-Are any of these contaminants (metals) showing up in well water?
-Will the heavy metals that are trapped in the lake soak into the ground water?
-When the lake turns its water over twice a year, does this stir up the metals sediments?
-Will the lowering of the levels of zinc going into the lake increase eutrophication of the lake?
-Is it true that one way to trap the metals-contaminated sediments is to wait for clay deposits to come in and pack it down?
-The years of mining left heavy metals trapped in certain areas along the CDA River. Are those areas identified and are there plans for the clean-up of those areas? Will a 100-year flood help remove these sediments?

MANAGEMENT OPTIONS

-Are willow plantings an option for river bank stabilization?
-Are there hazardous materials involved in dredging?
-If zinc is a problem, shouldn't all boating be stopped on the CDA River?
-Are you considering no wake zones for nearshore areas?
-The draft says the cost of riprapping is $100-$1,000 per square foot, but Medimont project was only $20 per square foot. A misleading statement like this could scare people away from this option.
-Certain parts of the lake are more sensitive than others; will those areas have different criteria?
-What is the likelihood of correcting the problems in Lake CDA, for example the Page wastewater treatment plant?
-Will development around the lake be limited?
-Is the management plan mainly focused on taking some of that metals-contaminated sediment out? -- It can't just stay there.
-Regarding nutrient loading, will you be able to work with the Dept of Lands to develop BMPs?
-Is there a concern over holding tank contents and detergents entering the lake? Would it be beneficial for the county to put up more signs regarding dumping of these contaminants?

PLANNING PROCESS

-Why don't we try to find out what's causing the problem instead of just trying to cure the problem by repairing it?
-Is WWP involved?
-Isn't the goal of this effort to have no one group take responsibility? -- Should we all work together?
-Is local government involved?
-Are private owners on the river approached any differently where the goals are concerned?
-Any thought given to forming a Legal TAG?
-Which TAG responsible for each area
-Will TAGs ideas be recommendations?
-TAGs told that they are bound by law to improve water quality. Maintain not an option. Could maintain be an option?
-Are there both short and longterm goals? Both should be set.
-Lake plan is an excellent idea
-TAGs need info, but don't know where to get it
-Clarify moving target of Rivers TAG/how far upstream?
-Have any studies been done on the fish and wildlife in the lake, and will those studies be included/considered when adopting the final plan?
-Are you going to look at other areas like Kalispell and Tahoe to compare the effects of development on the lake?
-How far have we really come in the last 15 years in developing a lake management plan? Some of the same groups on your TAGs are groups that caused impediments in adopting the plan 15 years ago. Are these people going to cooperate and get something done, or will they come to these meetings to minimize the effects on their own interests? (Commends work that's been done so far to get this plan underway.)

-If all the groups/people on the TAGs get together with the goal to improve the lake and each does something toward this goals, then the water quality in the lake will improve. (cooperation needed)
-When this plan is final, will it be reviewed annually or otherwise? Is this review process built into the regulatory structure of the plan?

FUNDING
-Who will pay the bill for implementation? (2 questions)
-Will private property owners have to foot the bill?
-Is would be nice if some current prop. tax money was used for maintenance or improvement of the lake.

IMPLEMENTATION
-How will the plan be implemented once completed? (2 questions)
-Why spend money fixing something that doesn't necessarily need fixing?
-Are you talking only about management or will there be remediation (e.g. dredging) as well?
-Will the final plan be voluntary or mandatory? How will it be enforced? Will the plan itself become law? Will it ultimately promote new regulations?

QUESTIONNAIRE
-Can you prioritize the management areas/pollution problems (nutrients/zinc/heavy metals) in terms of severity to make it easier to fill out form? (3 questions)
-Define slowly/rapidly (2 questions)
-What are the benefits of rapid improvement vs slow? (2 questions)
-The question of "slowly" or "quickly" is academic. If we choose quickly, where will the money come from?
-What is the impact on people living on the lake once the choice of slow or rapid is chosen?

SUPERFUND
-How does this effort relate to the Bunker Hill Superfund project?
-Are there plans for cleaning the Superfund site first? Wont that loosen sediments/metals?
-What is the effect of the Bunker Hill site on the CDA River?

LATERAL LAKES
-Are lateral lakes included in lower river zone?
-Is there info available to lateral lakeshore residents?
-Will there be public hearings on lateral lake study?
-Have shoreline studies been done yet?
-What area is encompassed in the lateral lake project?
-How will the CDA Lake Management Plan affect recreational use in the lateral lakes?
(need rivers to access lakes)
-Are there heavy metals in lateral lakes?
-How do lateral lakes fit into this plan?

LANDFILL

-Some property taxes went into the landfill at Fighting Creek--which further polluted the lake.
-How many more landfills like the one at Fighting Creek will be going in? When will they be cut off?
-The landfill attracts seagulls. Don't they also contribute pollution to the lake?

OTHER

-Will there be a study on human health risks if metals are released into water column?
-Will this project help the public understand that this is another chapter in a long history of basin problems?
-When will the USGS scientific report be released?

APPENDIX E

Public Comments and Responses

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Upper Columbia & Salmon-Clearwater Ecosystems
Coeur d'Alene and Salmon Districts
1808 N. Third Street
Coeur d'Alene, Idaho 83814-3407

RECEIVED
DEC 2 2 1994
IDHW-DEQ
Coeur d'Alene Field Office

In Reply Refer To:

1703 (063)
CBRP

DEC 19 1994

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Dear Geoff:

We have reviewed the November, 1994, draft Coeur d'Alene Lake Management Plan and offer the following comments:

Overall, the plan is informative and well written, particularly those sections describing the lake, its watershed and the 1991-93 lake study.

Our only other substantive comment is that the draft outlines many specific actions proposed by the various TAG groups, but does not contain a description of an overall implementation plan.

We recommend that an implementation plan be developed, outlining key actions to be taken and identifying the parties responsible for enforcing these actions. For example, on page 87, a lake basin commission is proposed for improving water quality in the deep, open water zone. This type of proposal-- identifying a specific entity with specific authorities and tasks-- could be incorporated into an implementation plan.

The remainder of our comments are primarily editorial:

1. pg.44 Recommend that items dropped from consideration be put placed in an appendix, rather than referring the reader to the lake planning team.

2. pg.47, pgh.4. Explain why the participants were suggesting changing agricultural BMPs from voluntary to mandatory, i.e. relative percent of nutrient contribution to lake, etc.

3. pg.53, Table 24. Regarding the waiving of buffer requirements "in situations where it will not benefit water quality", the example of a rock slope is not clear. Also, the group should realize that safety concerns, such as slope stability or flooding, may also be valid reasons for maintaining a buffer or minimum lot size.

4. pg.54, pgh. 2 Change the word "roads" in the last sentence, to "wastewater".

5. pg.54 In the last full paragraph, Kootenai County Ordinance No. 140A is referenced; please explain what it is. The ordinance is also referenced in Table 28, Action 3, on page 63.

6. pg.60, Table 27, Action 9. Consider using agency expertise as an option to contracting out for stormwater technical support.

7. pg.65, Action 2 Consider using the term "boater etiquette" in place of "sportsmanship". Under Action 4, also in the boat use table on page 65, the wording is unclear.

8. pg.74 Regulatory Framework might be more appropriate in the introductory section to Management Actions.

Thank you for the opportunity to comment. If you need any clarification on the above comments, please contact Mike Stevenson at 769-5024 or David Fortier at 769-5022.

Sincerely,

John B. O'Brien III

John B. O'Brien III
Area Manager

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 30, 1995

David Fortier
Bureau of Land Management
1808 N 3rd Street
Coeur d'Alene ID 83814

Dear David:

Thank you for the letter of comment developed by Jack O'Brien for the Bureau of Land Management on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. Implementation of the plan will require a multi-governmental and multi-agency approach. An approach is suggested by the current plan but no set implementation scheme has been developed. Developing this approach will be a major task of the Coeur d'Alene Basin Restoration Project in the coming year.

Many action items were discussed and either dropped or not followed up on by the five technical advisory groups (TAGs). It would be difficult and probably not thorough, to attempt to reconstitute these from the notes of each TAG. Fortunately TAG notes and materials where kept throughout the process and are kept on file at the DEQ office.

Agriculture and forest practices action items both had stronger language which was the outcome of a negotiation to assure equity between development and these two interests. The concern of the Development TAG participants was that they were recommending additional regulation of their activities and wanted in return for agriculture and forest practices to do their share. Unfortunately, the language caused a strong negative reaction among the public engaged in timber harvest. The language was moderated in the current draft.

Several minor corrections which were noted in the letter have been made. The correction replacing "roads" with "wastewater" in the text was made. An explanation of Kootenai County Ordinance 140A is provided. The regulatory framework section was placed before the action items in the text.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey

10th AMENDMENT
P.O. Box 496 St,Maries Idaho 83861

Idaho Division of Environmental Quality
Geoff Harvey
2110 Ironwood Parkway
Coeur d'Alene ID. 83814

12/18/94

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DEC 20 1994
IDHW-DEQ
Coeur d'Alene Field C

Concerning: Coeur d'Alene Lake Management Plan

To Geoff Harvey

We of the 10th Amendment Coalition feel there are legal issues concerning the Coeur d'Alene Lake Management Plan that should be addressed before proceeding.

We request that you produce:

1. The DOCUMENTATION
   showing that the State of Idaho or the Federal Government owns the lands inquestion.
2. The DOCUMENTATION
   showing the state or federal agencies have constitutional jurisdiction to create and/or ask for a "Coeur d'Alene Lake Management Plan".
3. The DOCUMENTATION
   proving the federal or state employees have legal constitutionally delegated authority to be involved in the creation and administration of a "Coeur d' Alene Lake Management Plan".

The 10th Amendment coalition of Benewah County is requesting you prove lawful jurisdiction as is required by law. (United States Code Title 5 Statutes of the Federal Government, Government Organization and Employees. Section 556(d)):

"Except as otherwise provided by statute, the proponent of a rule or order has the burden of proof". And futher section 702: states "A person suffering legal wrong because of agency action, or adversely affected or aggrieved by action within the meaning of a relevant statute, is entitled to judicial review thereof".

Having been so requested, If you, Geoff Harvey do not provide the above referenced documentatiom, you, Geoff Harvey are not violaing a rule or a regulation but a CARVED IN STONE LAW, and as such may find yourself personally liable for civil and/or criminal penalties.

These are a few of the concerns that appear after a preliminarly review of your management plan. Be advised we are currently researching additional relevant issues of jurisdiction and legality as contained in, but not limited to the following documents of law:

P.O. Box 496 St,Maries Idaho 83861

The reenacted ordinance of 1787 (in its exact words), section 1 of the enabling Act, Article 2 of the Articles of Confederation, Land Patents Act (passed by Congress April 24 1820), Homestead Act of 1862 (in its entirety), Constitution of the United States (where applicable), Constitution of the State of Idaho (where applicable), Idaho Admission Bill (July 4 1889), United States Code Title 5 (where applicable). continued on page 2

10th Amendment Coalition of Benewah County

Chairman, Ken Rouw

10th Amendment commitee Monty Osier

CC: The Honorable Phil Batt, Idaho Coverner Elect.
The Honorable Allen Lance, Idaho Attorney General
The Benewah County Board of Commissioners
The Bonner County Board of Commissioners
The Boundary County Board of Commissioners
The Kootemai County Board of Commissioners
The Shosehone County Board of Commissioners
The Latah County Board of Commissioners
The Coeur d'Alene Indian Tribal Government
Mr. Andy Jolliff Small Loggers Council
Mr. Dean Jonhson Idaho Dept. of Lands

Webster's Dictionary--Coalition n. a union or combination of person, parties, counties, or states into one body; a league--ist n.
Webster's Dictionary--League n. an old nautical measure equal to three geographical miles.
Webster's Dictionary--League n. a compact made between nations or individuals for mutual aid and the promoting of common interests.
Webster's Dictionary--Leaguer--a military camp.

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

March 30, 1995

Ken Rouw, Chairman
10th Amendment Coalition of Benewah County
P.O. Box 496
St Maries ID 83861

Dear Mr Rouw:

In your letter of December 12, 1994, three issues on the constitutional basis for development and implementation of the Coeur d'Alene Lake Management Plan were raised. The specific issues raised included:

1) ownership by the state or the United Sates of the "lands in question" (lands affected by the plan),

2) the constitutional basis for preparation and implementation of the Coeur d'Alene Lake Management Plan, and

3) whether state and federal employees have "legal constitutionally delegated authority" to be involved in the creation and administration of the Coeur d' Alene Lake Management Plan.

In response to issue 1, the state government does not have to own land to regulate it. Under the "police power" reserved to the states by the 10th amendment to the United States Constitution, private property may be regulated if regulation concerns the "health, safety and welfare", of the people (Van Orden v. Dept. of Health and Welfare, 102 Idaho 663, 667, 637 p. 2d 1159 (1981). The Nutrient Management Act which requires the development and implementation of the Coeur d'Alene Lake Management Plan is an exercise of the Idaho Legislature's police power (Idaho Code section 39-105(3)(o).

In response to issue 2, the constitutional basis for the plan is the police power discussed above.

In response to issue 3, the constitutional basis for the creation and implementation of the plan is also the police power discussed above. The Idaho Legislature which is vested with the police power, has via the Nutrient Management Act, authorized the Department of Health and Welfare and its employees to develop and implement the Coeur d'Alene Lake Management Plan (Idaho Code section 39-105 (3)(o). The extent of the federal involvement in the plan has been solely to provide advice and assistance at the request of the state.

These responses to the important issues raised in your letter, provide the legal basis under which the lake plan was developed. If you have additional questions concerning these responses or the plan, please direct these to me.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

Last week I was one of fou
of the Small Loggers Council
board of directors that attend
a meeting regarding Coeur d'Al
lake basin restoration project.
After reviewing this plan an
discussing all its aspects
We found it to be illegal
inconclusive and incomplete,
there has not been any
Environmental impact stater
major factors involving river
and lake bank erosion nor
any regard to customs or
cultures or economy [redacted] maintenan
recreation control and [redacted]
should be crucial on water
ways.

An effective plan should be
introduced and implemented b
native residents.
I am a fourth generation
native Idahoan I feel a str
sovereignty along with respons

To the land and water

We the Small Loggers Coun
have fought vigilantly to
stop and change obsolete
Environmentally dangerous
and Economically wasteful
logging practices and polic

A moratorium of at least
6 to 12 months should be
placed on all further action
regarding Coeur d'Alene
lake basin.

Jeff Jerrington

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 30, 1995

Jeff Herrington
Route 1 Box 258
St Maries ID 83861

Dear Mr. Herrington:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The issues raised concerning legality and the need for an Environmental Impact Statement have been addressed in another letter to the 10th Amendment Coalition. Since the letter responds to these issues directly, it is attached for your inspection.

The lake plan does respond to bank erosion, which was a major focus of the Rivers technical advisory committee (TAG) and recreational concerns, which a special work group of the Development TAG addressed. Custom and culture while touched on by descriptive parts of the plan required to meet EPA guidance are largely beyond the scope of the plan.

The plan was developed with the participation of over eighty citizens of Idaho. The state cannot select or deny participation in any planning process based on the place of birth.

The Coeur d'Alene Basin Restoration Project is a cooperative governmental effort in which the state, federal and Coeur d'Alene Tribal governments cooperate to meet their environmental goals and legal requirements in the basin. The state uses the project structure to meet legal directives it is required to carry out. If not conducted in the voluntary basin project format, the state agencies are still obligated under the law to meet the directives created by the legislature and by federal law.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

Enclosure

RECEIVED
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Coeur d'Alene Field Office

Heyburn State Park
Rt. 1, Box 139
Plummer, ID 83851
(208)686-1308

IDAHO DEPARTMENT OF PARKS&RECREATION

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YVONNE S. FERRELL
Director

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Deputy Director

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November 17, 1994

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Dear Geoff:

In review of the draft Coeur d'Alene Lake Management Plan, I have a couple of additions for table five(5), page fifteen(15).

Under the private listing add;

Conklin Park Marina	D, T, DW, BR, RS

With the maps showing all of the basin waters, such as Chatcolet, Hidden and Benewah Lakes, I think we should add the public facilities at the park.

Rocky Point Marina	D, T, DW, BR, RS
Chatcolet Day-use	D, T, BR
Plummer Point	D, T, DW
Hawley's Landing	D, T, DW, C

Thank you.

Sincerely,

Mitch Silvers,
Assistant Park Manager

P.O. BOX 83720
BOISE, IDAHO 83720-0065
(208) 334-4199
FAX (208) 334-3741
TDD 1-800-377-3529
Street Address
5657 Warm Springs Avenue

Equal Opportunity Employer

COMMENTS

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

- Everyone or group needs to contribute time and resources to the recommendation. Don't single out any one group or activity.

- I think the plan has done a good job in providing public comment periods. Not everyone is going to like or agree with the total plan, but if everyone works together and contributes to the solutions instead of the negatives I think it is workable plan.

- A lot of people gave up their time this summer to work on the TAG groups and although not every issue that was raised in the initial public comment meetings came from the TAG's with a specific recommendation, what was felt to be the most pressing or feasible was put forth.

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 24, 1995

Mitch Silvers
Idaho Park and Recreation
Heyburn State Park
Rte 1 Box 139
Plummer ID 83851

Dear Mitch:

Thank you for the letter of comment developed by Heyburn State Park on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The additional recreation facilities you suggested have been added to table 5. In regards to your comment on designation of lead agencies, the number of lead agencies has been reduced, but lead agencies on specific action items have been retained. This approach places some responsibility and public expectation on the agency designated as responsible for an action item. This expectation should assist the agency in developing the budget additions to implement the action item.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

IDAHO CONSERVATION LEAGUE

January 20, 1995

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene ID 83814

Re: Comments - Coeur d'Alene Lake Management Plan

Dear Mr. Harvey:

In reviewing the November 7, 1994 Draft Coeur d'Alene Lake Management Plan, it is obvious that many hours were spent determining exactly what problems there are, understanding them, mulling over possible solutions in committee and public meetings, and preparing and distributing the document itself. All who participated are to be commended for their contributions to what must have been a time-consuming and sometimes tedious task.

ICL is generally supportive of the Plan as drafted. We have, however, a few concerns which are outlined below.

1. In 1983 a lake management plan was drafted by the Kootenai County Planning & Engineering Department; it sat on a shelf, collected dust and was never implemented. It is not in the best interest of the public should the 1994 plan fall prey to the same fate. The 1994 plan should contain an additional recommendation for implementation, compliance and enforcement of the entire Plan.

2. Zinc levels are above the Federal water quality standard. Contributing to the excessive levels are heavy metals which continue to enter the lake via the Coeur d'Alene River at an average rate of approximately 1 ton per day. Federal law requires that levels be reduced to comply with federal regulations. Yet on p. ii of the Draft, it states:

> If zinc concentrations were reduced to comply with Federal water quality criteria, would the lake's phytoplankton production markedly increase? If the answer to the question is

P.O. Box 844, Boise, Idaho 83701 • 413 W. Idaho, Suite 203 • (208) 345-6933 • Fax (208) 344-0344

[illegible] Ketchum, ID 83340 • (208) 726-7485 • Fax (208) 726-1531

> affirmative, then nutrient loadings would need to be reduced, perhaps significantly, in order to counteract the lifting of zinc's suppressive effect on phytoplankton production. [Emphasis added.]

The objectionable language is "If." By law, zinc concentrations must be reduced. As a result, if phytoplankton production increases, nutrient loadings should be significantly reduced. The Plan should be written to include dropping the zinc and reducing nutrient loading. To allow zinc to remain above water quality criteria is unacceptable.

3. The BMPs and implementation recommendations contained in the Fisheries goals included on p. 67 of the Plan should be incorporated into the BMPs and implementation recommendations throughout the Plan.

Even though in 1986 it received a $4 million Lake Coeur d'Alene clean-up settlement from the mining companies, prior to 1990, the State of Idaho was less than diligent in its efforts to clean-up the Lake. Only upon the filing of a lawsuit by the Coeur d'Alene Tribe did the State initiate any activity. Considering the past history of the State, we recommend that the Coeur d'Alene Tribe be involved in co-management of the Lake.

Again, we appreciate the efforts of all of those who have worked on the Draft Plan.

Sincerely,

Linda J. Payne
CdA Project Coordinator
(Water Quality - CdA Basin)
664-9184

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 24, 1995

Idaho Conservation League
Attn: Linda J Payne
103 S. 4th Street
Suite 259
Coeur d'Alene ID 83814

Dear Linda:

Thank you for the letter of comment developed by the Idaho Conservation League on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. Implementation of the plan will be a high priority of DEQ, EPA and the Coeur d'Alene Basin Restoration Project (CBRP). Both DEQ and EPA are moving to implement some of the education action items and to address the Page wastewater treatment facility. The plan will however, need a multi-governmental approach to be fully implemented. Recommendations to coordinate the efforts of the several agencies and governments involved is made in the plan. Coordination of the efforts of DEQ and the tribe is currently addressed in two memoranda of agreement.

Although the goal of our efforts was to develop a comprehensive plan, personnel turnover at the CLCC precluded full realization of the goal. As a result the CBRP citizen's advisory committee and the tribe requested that only water quality issues be addressed by the current plan. The current plan only addresses water quality issues, however a second part of the plan addressing the many non-water quality recreation and land use issues is envisioned. Those non-water quality action items developed for this effort have been preserved in an appendix to the plan.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

WESTERN WATERSHED ANALYSTS
313 D Street, Suite 203
Lewiston, Idaho 83501
(208) 743-1826 • FAX (208) 746-7468

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26 1994
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Coeur d'Alene Field Office

September 22, 1994

Coeur d'Alene Basin Restoration Project
2110 Ironwood Parkway
Coeur d'Alene, Idaho 83814

RE: COMMENTS, Technical Advisory Group Reports

These comments are being made on behalf of the Potlatch Corporation, and are being made in response to the request for comments dated Sept. 21, 1994.

I. Ref. pg 14, "Miscellaneous", # 11.

Item number 11 refers to revision of state water quality standards. These suggestions are generally supported, with exception of "Ensure that the standards are compatible with those being developed by the Coeur d'Alene Tribe".

Standards that the Tribe may be developing have never been shared or in any way made public. We have no way of knowing what the Tribe may suggest, and therefore have know way of knowing that they will be appropriate. That being the case, it is not appropriate to suggest that revisions of State Water Quality Standards be revised in a manner "compatible" with the Tribe's yet-to-be revealed suggestions. Agreeing to do so at this point in time is akin to signing at the bottom of a blank contract of unknown content: No one should do so.

II. Ref. pg. 26, South Lake TAG, 2.C.2

This item concerns implementation and enforcement of forestry BMP's. We believe that the forestry BMP's as embodied in the Idaho Forest Practices Act should be vigorously enforced. We are curious about the item labeled simply as " Water yield reduction" under the umbrella of "reduce dramatically sedimentation/phosphorous & other nutrients". It is not at all clear how water yield reduction relates to the goal. Are the authors suggesting that reduction of water yield reduces total nutrient load, and more importantly, reduces concentration of nutrients in the lake? If so, this is an inappropriate suggestion: Addition of water from forested watersheds, where nutrient concentrations are demonstrably lower than from any other source area in the Coeur d'Alene basin, may well reduce the concentration of available nutrients in downstream receiving waters, including the lake.

It may be that the authors intended to speak to transport of suspended and bedload sediments. If that is the case, it would be more constructive to suggest that processes controlling the transport of sediment and attached nutrients be managed to reduce nutrient loading: However, that is a far different problem than mere reduction of water yield.

III. Ref. pg. 29, Recreation TAG, at "Industrial Uses on the Lake"

This item concerns "Examine the logging operations (storage on the lake)", and seems particularly vague. What is the question of concern?

Thank you for the opportunity to comment,

Sincerely,

Dale J. McGreer
Principal Hydrologist

c. Larry Wright, Potlatch St. Maries
Norm Linton, Potlatch St. Maries
Larry Streeby, Potlatch, Lewiston

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648. (208) 769-1422 Philip E. Batt, Governor

September 5, 1995

Dale J. McGreer
Western Watershed Analysts
313 D Street, Suite 203
Lewiston ID 83501

Dear Dale:

Thank you for the letter of comment developed by you for the Potlatch Corporation on the Coeur d'Alene Lake Management Plan action items. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The action items concerning standards has been changed to delete any reference to standards developed by the Coeur d'Alene Tribe. If such standards are developed by the tribe, it will be in a public process to meet EPA guidance. Implementation of any accepted standards would be governed by two existing memoranda of agreement between the Coeur d'Alene Tribe and Idaho.

The South Lake action items currently address only macrophyte control to remove nutrients and reduction of boat wakes and log boom scour. No reference to water yield or forest practices remain in this section of the plan.

The issue of log storage impact through the input of nitrogen and phosphorous to the lake has been raised; notably by the City of Coeur d'Alene's Wastewater Department. The action item you have questioned addresses this perceived concern by requesting that the nitrogen and phosphorous input from logs in storage be quantified. Since this issue is centered near the lake outlet and primarily would have an affect on the waters of the Spokane River, it is being addressed in the Spokane River nutrient discharge allocation process. Mike Hartz, of the DEQ Northern Idaho Regional Office is in charge of this effort.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

Kootenai Environmental Alliance

P.O. Box 1598 Coeur d'Alene, ID 83816-1598

January 20, 1995

Idaho Division of Environmental Quality
ATTN: Geoff Harvey
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Dear Geoff:

Kootenai Environmental Alliance is generally pleased with the proposed Coeur d'Alene Lake Management Plan. The only major reservation we have regards implementation. Without a strong program designed to obtain the necessary ordinances and regulations needed to implement the Plan's recommendation it is just another document to add to the shelves full of past studies that are gathering dust. Please include a program for winning implementation in the final plan.

We do have a minor suggestion. One very important source for winning support is to work with the school children and have them take the word home to parents. Also, a panel of speakers to present the plan to influential groups in the community (Rotary, Kiwanis, Chamber of Commerce, etc.) would be useful. If these speakers are concerned private citizens (members of the CAC come to mind), they could have more impact than persons such as yourself who come from sponsoring agencies. Don't misunderstand me, you folks have done a good job of presenting the plan, what we are referring to is the greater degree of acceptance the public MAY accord to other members of the public. We need to shift from a strictly informational to a sales mode.

Again, we are pleased with the draft, keep up the good work.

Sincerely,

George Brabb

George Brabb,
President

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 24, 1995

Kootenai Environmental Alliance
Attn: George Brabb
P.O. Box 1515
Coeur d'Alene ID 83814

Dear George:

Thank you for the letter of comment developed by the Kootenai Environmental Alliance on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. Implementation of the plan will be a high priority of DEQ, EPA and the Coeur d'Alene Basin Restoration Project (CBRP). Both DEQ and EPA are moving to implement some of the education action items and to address the Page wastewater treatment facility. The plan will however need a multi-governmental approach to be fully implemented. Although recommendations to coordinate the efforts of the several agencies and governments involved is made in the plan, no concrete mechanism to achieve this currently exists.

Several public education items have been chosen for implementation by the CBRP community relations coordinator. School education and a speakers bureau are however not among these. The effort is more targeted toward specific lake users or property owners groups.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)

2. What do you like in the draft plan? Please be as specific as possible.

3. What do you dislike in the draft plan? Again, be as specific as possible.

4. Please list any concrete suggestions you have for improving the plan.

5. List any other comments you have about the draft plan.

Cave Bay has more & more sediment every year from the Lampert farm. The boat dock area is now very shallow, and there is much weed growth in the swimming and dock areas.

Gerald Baird (pres. of Cave Bay Comm. Serv.
N. 1700 Arbor Crest Dr.
Post Falls, Id. 83854

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 30, 1995

Gerald Baird
Cave Bay Community Services
N 1700 Arbor Crest Drive
Post Falls ID 83854

Dear Mr. Baird:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

The issue which you communicated, the sedimentation from farming practices and the impact on Cave Bay, has been relayed to the Kootenai-Shoshone Soil Conservation District. The district has an agricultural pollution abatement program in the northeast Worley area. If the condition has persisted and/or you have not received a reply from the district, I suggest that you raise the concern directly with them.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)

It looks like a very sound and ambitious plan.

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Coeur d'Alene Field Office

2. What do you like in the draft plan? Please be as specific as possible.

3. What do you dislike in the draft plan? Again, be as specific as possible.

I dislike the idea that the taxpayer is going to pay millions of dollars for something that does not need to be done. The lake is getting healthier each year. It are neither polluters or users of the lake and have little interest in it. Make the users and polluters pay for the cleanup.

4. Please list any concrete suggestions you have for improving the plan.

Don't just educate boat owners about damage done by their wakes. Put a speed limit on river traffic. They might see some wonderful scenery if they slowed down. If all of your Management Actions were strictly enforced, no lake cleanup would be necessary.

5. List any other comments you have about the draft plan.

This would be a good project for Volunteers ~~to~~ who are interested in cleaning up the lake to get involved!

Dorothy Davis

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 30, 1995

Dorothy Davis

Dear Ms. Davis:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The lake management has user fees as a part of some action items. The concept the citizens who developed the plan recognized that users needed to pay their fair share.

The data from the two year lake study indicates that cleanup of the lake is not as necessary as is vigilance to maintain the high water quality and efforts upstream to reduce metals loads. In the case of metals in the bottom sediments our best approach is to manage the lake to keep it well oxygenated. This will keep the metals tied up in the bottom sediments where their impact is least. The key to this approach is nutrient management and given the high quality of the northern pool of the lake, we need to do the common sense things now to maintain the current water quality situation.

The plan does contain action items which could be implemented by volunteer individuals or groups.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

Dec 20,1994

Coeur d'Alene Lake Management Plan Comments:
John Ferris- CAC member

1. P45 Management action Forest Practices

   a) Action 1 - grandfather in existing roads that are not causing a problem with soil erosion. Many of these roads are the only ROW to small forest properties and were constructed according to current BMP's. Also log decking and slash disposal along these established roads needs to be allowed. Estimated cost without this is expected to be $100,000/yr.

   b) Action 2 - Delete pre-operation inspections. Excessive regulation of business-cost $50,000/yr to businesses.

2. P51 & 54 Stormwater management & road management

   Action 3C - Delete grading ordinances-unneeded-adopt and enforce BMP's.

3. P70-72 Rivers: Set no wake zones on the Coeur d' Alene, St. Joe and St. Maries rivers - slackwater reaches. See general concerns most hearings.

4. General Comments - include section on private (1) Private property rights, customs and cultures in the basin; both Indian and non-Indian. These were a priority comment by people in the public hearings.

   (2)Include NEPA guidelines. (3) Allow each resource group to create their own BMP's so that they have a part in the solution to these problems, rather than overbearing laws and regulations. This way they may come up with more ideas that fit the on the ground situation.

J Ferris

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 30, 1995

John Ferris
HCO1 Box 109B
St Maries 83861

Dear John:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. Custom and culture is addressed to some degree in the lake plan, however the descriptions are not specific to any one group. Several customs and lifestyles exist in the lake basin. It would be impossible to cover them all adequately and would be beyond the scope of the plan.

Property rights issues are beyond the scope of the plan. The plan does not create any regulatory authorities. These may only be created by legislative processes at the county, state or federal levels by elected officials. Creation and implementation of any ordinance suggested by the plan would require legislative action or it will not happen. Any legislation must meet constitutional safeguards.

The plan follows the format and guidelines of the EPA Lakes Program (314). The plan is a state document and has no federal actions. For these reasons NEPA is not relevant.

The action items in agriculture, forest practices and development were created by technical advisory groups dominated by the key user groups in these areas.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

IDAHO DEPARTMENT OF LANDS

ST. JOE AREA OFFICE
1806 MAIN AVENUE
ST. MARIES, IDAHO 83861
(208) 245-4551
FAX 245-4867

STANLEY F. HAMILTON
DIRECTOR

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JERRY L. EVANS
Supt. of Public
Instruction

December 20, 1994

Idaho Department of Health & Welfare
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

ATTN: Geoff Harvey

RE: Draft Coeur d'Alene Lake Management Plan

Dear Geoff:

Various comments from both myself and the St. Maries community follow:

1. There appears to be considerable interest in extending the comment period. It is suggested to change it from 45 days to 180 days.

2. The plan should promote mandatory BMPs with systematic feedback loop review (similar to the forestry process) for agriculture and development. It is felt the voluntary BMP process for agriculture is less effective than a mandatory one would be.

The wording in the plan for development does not go over well at all here: "Because residential and commercial development cause such a great increase in phosphorus export, and because of the difficult nature of stormwater management, the goal for this section of the plan is to simply maintain current levels of phosphorus export; it was felt that stormwater loads could not realistically be reduced without severely limiting development in the Basin."

From the forestry standpoint, this is a cop-out. Millions of acres of forest have been withdrawn entirely from commercial forest development, numerous restrictions are now in place for the remaining commercial forest land, and timber supplies are being drastically reduced. The economic consequences of these severe limitations on the forestry community have been and will be staggering. We are enduring this in the interest of environmental protection and improvement. Why should the development community not make similar sacrifices for similar reasons?

3. There is considerable concern here about streambank erosion along the St. Joe and Coeur d'Alene Rivers by recreational powerboats. Here again, if people are truly sincere about environmental protection and improvement, they need to demonstrate their commitment by taking serious steps to control their activities.

At the CBIG meeting on December 14, 1994, a new report entitled "Coeur d'Alene River Cooperative River Basin Study" was released. At first glance, it appears to be another effort to make forestry the scapegoat, thereby allowing agriculture, recreation, et al to escape unchanged. It will take awhile to digest this report, as I want to review it with some soils, geology, and hydrology people. Probably by late January a response will be made to you.

Keep me posted. Thanks.

Sincerely,

Dean Johnson

Dean W. Johnson,
Area Supervisor

DWJ/pm

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 28, 1995

Dean Johnson
Idaho Department of Lands
1806 Main Avenue
St Maries, ID 83861

Dear Dean:

Thank you for the letter of comment developed for the Idaho Department of Lands on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. Institution of any set of water quality best management practices (BMPs) as mandatory, requires an action of the Idaho Board of Health & Welfare and scrutiny by the legislature. It is unlikely that either agricultural or development BMPs would pass the board or withstand legislative scrutiny. The lake plan can not make BMPs mandatory.

The Coeur d'Alene River Basin Study was not developed as part of the Coeur d'Alene Lake planning effort. Some findings of the study were used by some technical advisory groups. Land use analysis of the Coeur d'Alene River Basin indicates that both agriculture and urban development are small minority land uses in the river basin, while forest practices are by far the largest land use. Viewed in this light it is not surprising that many impacts are attributed to forest practices. The lake plan however, singles out the Page Wastewater Treatment facility as the largest most addressable source of phosphorous and in more than one action item requests phosphorous load reduction from the plant.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

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Coeur d'Alene Field Office

Potlatch

Potlatch Corporation
Wood Products, Western Division

P.O. Box 1016
Lewiston, Idaho 83501-1016
Telephone (208) 799-0123

December 5, 1994

Mr. Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur D' Alene, ID 83814

Dear Mr. Harvey:

This letter is in response to the **Draft Coeur D' Alene Lake Management Plan** dated November 7, 1994. As you know Potlatch Corporation has been an active participant in the development of the Draft through the efforts of Dale McGreer. Due to Dale's change from an employee to a private consultant, I am now writing you on behalf of Potlatch Corporation.

At Potlatch we are committed to solving resource problems through cooperative, team efforts. We applaud the approach taken to develop the draft plan, and greatly appreciate the effort put forth by yourself and the Department of Environmental Quality.

Unfortunately, we cannot agree with everything put forth in the plan. This is distressing to us for two reasons. First and foremost, many of the points we find objectionable have appeared in spite of the guidelines layed out early in the process (see attached copy of Coeur D' Alene Lake Management Plan, Technical Advisory Groups, Mission and Role). Second, many of these same points are not technically supportable; this is probably a direct result of the violation of the guidelines.

Specifically, I would like to call your attention to the following points:

1. Page 61, Action 10: Revise State Water Quality Standards...Ensure the standards are compatible with those being developed with the Coeur D' Alene Tribe, and...

We have a number of problems with this action. First, the revision of state water quality standards to be compatible with those being developed by the Coeur D' Alene tribe, which are entirely unknown, is irresponsible. This action is unsupported and is simply unacceptable. It is inconsistent with item #2 on the Mission and Role statement (MRS). Furthermore, this action was generated by the Development TAG. The authors have clearly gone outside their mandate, this is inconsistent with point #4 in the MRS. We strongly suggest that page 61, Action 10 be deleted from the document.

2. Page 45, Action 3: Streamline stream alteration permit process...
Action 4: Develop well-engineered stream-crossing and stream alteration...

These are entirely new actions which have been added since the September 21 draft. Both Dale McGreer and Brian Sugden, members of the Forest Practices TAG, assure me that these additions are

not a consensus product of the group. These additions are totally inconsistent with point #1 in the MRS. The September 21 draft contains an action #3 which should be returned. The November 7 draft actions 3 and 4 should be deleted.

3. Page 67, Fisheries: Goal is to maintain or improve...

This table is new. It seems to be a replacement for #3 on page 13, Miscellaneous, in the September 21 draft. The action has been upgraded from a request that goals be developed to a full set of goals describing in-stream standards for residual pool volume and riffle stability index.

First of all, this action is well beyond the fundamental charter of the overall lake plan. This plan was commissioned to deal with lake eutrophication. The fish enhancement goals have nothing to do with this charter, therefore it is inconsistent with point #3 in the MRS. Second, the Development TAG has once again gone beyond its specific issue and is inconsistent with point #4 in the MRS. Finally, the in-stream indices proposed are not appropriate as statewide standards due to their extreme variation between and within streams. Based on these arguments we strongly suggest that page 67 be deleted in the November 7 draft and that point #3 on page 13 in the September 21 draft be returned.

We thank you for the opportunity to comment on the draft plan. We are looking forward to seeing the above changes in the document so that we can again support the cooperative process and product. Please feel free to contact me with any questions.

Sincerely,

Terry Cundy

Terrance W. Cundy
Resource Hydrologist

cc: Kevin Boling, Potlatch
Larry Koenig, DEQ
Joe Hinson, IFIA
Dale McGreer, Western Watershed Analysts
Jim Colla, IDL
Brian Sugden, Plum Creek

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 24, 1995

Terrance W. Cundy
Potlatch Corporation
P.O. Box 1016
Lewiston ID 83501-1016

Dear Mr. Cundy:

Thank you for the letter of comment developed for Potlatch on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The fisheries goal has been deleted from the body of the plan along with other non-water quality action items. The Coeur d'Alene Basin Restoration Project's citizen's advisory committee and the Coeur d'Alene Tribe, suggested that this plan be limited to water quality issues. Those non-water quality action items have been preserved in an appendix for use in development of a plan to address recreational and land use issues.

The previous forest practices action item 3 was divided between action items 3 and 4. The forest practices TAG meeting at the wind up meeting on September 21, 1994, made this change to the previous action items.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

P. O. Box 2945
Coeur d'Alene, Idaho 83816

December 19, 1994

Idaho Division of Environmental Quality
ATTN: Geoff Harvey
2110 Ironwood Parkway
Coeur d'Alene, Idaho 83814

RE: Comments on the Draft Coeur D'Alene Lake Management Plan

Ladies or Gentlemen:

I have reviewed the Draft Coeur d'Alene Lake Management Plan (DCLMP), and have concerns because many of the conclusions and recommendations set forth conflict with a dredging project which is being planned for Kidd Island Bay.

As a resident who will be directly affected by this activity, I oppose this dredging project because there are fundamental conceptual problems which will create significant impacts. These issues will be problems regardless of how the project is executed.

I have a B.S. degree in mining engineering (University of Idaho) and a M. S. degree in civil engineering (Massachusetts Institute of Technology). I have worked in the mining industry since 1980. As a project manager, I have been responsible for permitting, engineering design, and completion of feasibility studies for new project development. Based on my experience with permitting and project feasibility analysis, the enclosed report addresses issues that I feel must be considered as part of the NEPA scoping process for the dredging of Kidd Island Bay . Proper and complete analysis of the significant issues must be addressed with an Environmental Impact Statement.

If the DCLMP is to be taken seriously as the guideline for implementing the preventive measures set forth, the permit application for dredging of Kidd Island Bay, which is being prepared for submittal in early 1995, must not be approved.

A similar version of the attached report has recently been submitted to the U.S. Army Corp of Engineers and the Idaho Department of Lands.

Thank you for considering these issues.

Sincerely,

Don Gray

Enclosure

cc: Brian Cochrane, DEQ

KIDD ISLAND BAY DREDGING PROJECT

1.0 INTRODUCTION

December 18, 1994

Kidd Island Bay Reclamation Project, Inc. was formed in 1984 to promote dredging of the bay. Financing of the project will be accomplished by local improvement district (LID) assessments to be imposed on the residents of Kidd Island Bay. LID 90-1 was created as part of Kootenai County ordinance Nos. 155 and 155-B which were passed in 1990 and 1993, respectively.

In 1992, a permit application for dredging was submitted and withdrawn due to serious deficiencies which were identified during the inter-agency review. Many of these significant issues are related to the general concept of dredging and not the specific details of executing the plan. These significant impacts are still a concern, and provide enough justification to deny approval of the revised permit application.

The original project scope has been expanded to include aspects of watershed management in an attempt to obtain approval for a dredging permit. The proponents are trying to align this project with the draft Coeur d'Alene Lake Management Plan (DCLMP) of November 7, 1994 as a strategy to show that the additional "enhancements" will outweigh the substantial impacts that dredging will have on the surrounding environment. Despite the modifications being proposed, the main objective of this project is to dredge Kidd Island Bay.

The purpose of this report is to assess the problems associated with this project and to show that the dredging will not help attain the primary goal of the DCLMP which is

> **".... to implement management actions, which will preserve improvements that have been gained by Coeur d'Alene Lake since the 1970's ...."**

2.0 APPLICANT

2.1 Responsible Party

The responsible party includes property owners of approximately 150 parcels of land in the immediate vicinity of Kidd Island Bay. Financing will be obtained by assessing property owners a distributed share of the cost. The assessment can be paid in full upon completion of the physical work, or paid as installments which support payments of bonds or warrants issued by the county treasurer. Installment payments are secured by a lien against the individual properties (pursuant to Section 50-1718, Idaho Code).

2.2 Financial Capability

Cost estimates presented by J-U-B Engineers at an August 18, 1994 public meeting vary between $2.25 million and $3.64 million, a 62% variance over the minimum estimate for the project. This large variance reflects the uncertainties associated with the project, and the lack of a definitive scope of work and planning.

Some members of the citizens advisory board have indicated that because the cost estimates are so high, the project will not be financially feasible without outside funding support (personal communications; Jim Barry, November, 1994). Concern about the cost estimates raises questions as to the financial capability of the applicant to provide funding: overruns during construction could result in failure of the project.

Potential compliance/mitigation costs above the original estimates are likely due to the subjective nature of this project. Activities normally financed with a LID include projects such as sewer or water supply systems in which the objective specifications can be identified from the components (scope of work is definitive), and construction costs can be easily estimated from detailed engineering plans. However, many of the wildlife and watershed enhancements, and compliance/mitigation measures will not be as readily identified with objective parameters for which success criteria can be easily established. Therefore, the potential for cost overruns and lack of financial backing to fund unanticipated expenditures is likely to occur.

If the project begins to have financial problems during construction, the permitting agencies will need to decide whether to stop the project, require the applicant to reduce the scope of work, or force the applicant to finish the project as proposed. Stopping the project would certainly result in a loss of property values against which financing will be secured. Properties would be difficult to sell, and the value of the properties used to secure financing would plummet. If unforeseen mitigation/compliance work were required during the project, the applicant may not have the financial resources to fund the work.

Similar situations have occurred. In a Colorado Springs, Colorado housing development, financing of the sewer and water systems was obtained from bonds secured by liens against the individual properties. When the assessments against certain properties were not paid, the municipality proceeded to auction those properties to pay the debt. Due to the financial problems of the development, property values dropped to where the selling prices were not sufficient to pay off the debt; the value of the remaining properties plummeted.

The long-term monitoring program might detect problems that need to be mitigated after construction is completed. However, once the LID financing is assessed to the properties at the end of construction, no mechanism exists to hold the applicant financially accountable.

No major financial backing other than the debt secured by the value of the properties within the LID is available to fund this project. Unlike a financially sound corporation or government agency, the limited financial capability of the applicant raises serious questions about successful completion and long-term mitigation issues. The legality of using a LID to fund this project is currently being investigated.

3.0 HISTORY OF KIDD ISLAND BAY

3.1 Construction of Post Falls Dam

Kidd Island Bay was artificially created with the construction of the dam on the Spokane River

at Post Falls. At that point, much of the present bay area was meadow and wetland which created good wildlife habitat.

3.2 Dredging of Kidd Island Bay

In the 1950's, Kidd Island Bay was dredged to create the current shallow, backwater configuration. This manipulation of the bay simply expanded the open water area available, and interfered with the natural progression of the bay from shallow water to wetland and ultimately upland area.

Due to this history of manipulation of the bay, "reclamation" by dredging as proposed by the applicant is difficult to justify because the bay should be much farther in the natural progression process than it is today. In fact, geologic processes (erosion and deposition) have been occurring for a much longer period of time in the bay and watershed than human activity has impacted the bay, and this natural progression will continue to occur regardless of the measures implemented.

4.0 WILDLIFE

The present conditions in Kidd Island Bay create excellent habitat for wildlife. The abundance of macrophytes provides good feeding areas for ducks and geese, especially in the fall when the lake level is lowered.

Dredging of the bay will encourage more boating activity and increase the noise level in the bay. These conditions will adversely impact the ecosystem for the wildlife which inhabits the area. The habitat of the waterfowl and woodland animals which are attracted to the area surrounding the bay will be impacted.

5.0 SOCIOECOMIC

5.1 Project Financing

Several owners in the Kidd Island Bay development have already sold properties due to the likelihood of increased LID assessments due to dredging. Others have indicated the additional assessment to finance the dredging will force them to sell. Some of these people are on fixed incomes and cannot afford this increased cost of living.

If property values are appraised higher for tax purposes, property taxes will rise creating an additional burden on local residents. Property owners will be forced to assume the financial burden of the increased cost of living in addition to assuming the real risks and liabilities of a public project which will primarily benefit the boaters using the lake. The additional cost of living will force the people with limited financial resources to move, and create a situation where only people with considerable financial resources can afford to live in Kidd Island Bay. Many residents of the area will be affected.

Because no compelling reason exists to justify the dredging (no immediate health or safety

concerns), the significant impact of the cost to local residents must be addressed.

5.2 Human Environment

The cabin architecture in combination with the quiet backwater country reflect a lifestyle that makes Kidd Island Bay an attractive place to live. Increased boat activity from dredging will result in additional noise, shoreline damage (in the bay and at the mouth), and promote more muddiness during periods of heavy use. Being long and narrow, this shallow bay is especially vulnerable due to close proximity to resort boat traffic. Cumulative impacts from additional boat traffic will adversely impact this quiet backwater area.

5.3 Property Value Protection

One reason used to justify the dredging is property value protection. However, the developing wetland make this bay an attractive area to many people. Statements about the property values increasing due to dredging are merely subjective opinion and demonstrate that the applicant is participating in speculation on land values around the bay. In order to maintain this shallow bay for boating, dredging will be required as a periodic activity which will result in undesirable ongoing costs to keep the bay open for boating. Therefore, any real property value increases due to dredging now will be tenuous at best.

5.4 Boat Access

Boat access into the bay is a privilege and not a right. Bay bottom dredging from shoreline to shoreline exceeds any requirements for reasonable access. Alternatives such as a common docking area toward the mouth of the bay should be considered. A boardwalk access could be built near the shoreline in the shallow water for boat owners to access the dock area. As the bay progresses from shallow water to upland area, the dock and boardwalk could be advanced to accommodate the needs of boat owners and yet allow the natural progression of the bay to continue.

6.0 WATER QUALITY

Water quality issues have been presented by the applicant as a justification for approval of this project. Dredging, the centerpiece of this project, is not required to improve water quality, and the conditions created by dredging could create a situation in which the bay is more susceptible to damage over time.

6.1 Waste Water Treatment

As identified in the DCLMP, one major impact to water quality is the leachate from near shore septic systems. The Kidd Island Bay sewage collection and treatment system, which was completed within the past five years, has significantly reduced the introduction of nutrients into the bay. Some residents have reported a reduction in the abundance of flowering aquatic plant growth which suggests a positive trend. Leaching of residual nutrients from abandoned drain fields may not be complete, but the recharge sources have been eliminated.

6.2 Aquatic Plant Growth

Management of aquatic plant growth has been identified as a concern. However, in the Bennett, Falter and Reese report (University of Idaho), a minimum depth of 10 ft is recommended to attain adequate light diffusion to reduce growth of certain aquatic plants. The current conceptual plans do not achieve this depth, and therefore, an alternative long-term program such as mechanical harvesting would be needed. Dredging is not a viable solution.

Although aquatic plant growth may be a nuisance to boaters, these conditions create excellent habitat for waterfowl and maturing fish. The Soil Conservation Service study (Kidd Island Bay Reclamation Measure #16-6001-055-140; November, 1984) states that aquatic vegetation provides a filter or trap for the nutrients that would be placed in the lake through this bay.

6.3 Sedimentation and Nutrient Loading

6.3.1 Dredging Operations

Conceptual plans specify a combination of wet and dry dredging. With either method, sediment and nutrients will be mobilized, and regardless of the mitigation planned, sediment and nutrients will migrate from the bay into the main part of the lake. These conditions will undermine the primary objective of the DCLMP which is to maintain water quality improvements.

6.3.2 Long-Term Degradation

Dredging of the bay will increase boating activities in the bay. The number of boats entering the bay will increase as Kidd Island Bay is perceived as being deeper (from only 1 ft to 4 ft as specified in the conceptual plans) and more attractive for boating. The speed of the boats will also increase. This increased boat activity will result in more damage not only in the bay, but in the areas leading up to and around the mouth of the bay.

Wave action from the boats will be concentrated in this long, narrow, and shallow bay as waves reflect from shoreline to shoreline and off the bottom surface. The turbidity (muddiness) will be a problem because the bay will continue to be shallow. As a result, sediment and nutrients will be transported as suspended loads out of the bay to impact water quality in the main body of the lake.

Observations of water clarity during the summer indicate that on the weekends, the suspended load dramatically increases. However, during the week when boating activity decreases, the water tends to become better. Dredging will only worsen this situation as the cumulative impacts of increased boat traffic affect the bay.

7.0 ISSUES FROM THE DRAFT COEUR D'ALENE LAKE MANAGEMENT PLAN

The draft Coeur d'Alene Lake Management Plan has been distributed for public comment. This plan has been developed as part of an in-depth process which included public involvement and the results of the 1991-1993 Lake Study. The following is included in the executive summary of the plan:

> **"Perhaps the greatest threat to Coeur d'Alene Lake is the potential for reversal of the recent improvements in water quality. .... Unless preventative measures are initiated soon, the recent improvements in lake water quality could be eroded or lost."**

With such importance placed on initiating measures to protect the water quality of the lake, dredging of Kidd Island Bay must be evaluated with respect to the DCLMP. Authorization for preparing the DCLMP is provided in the Clean Lakes Act (Idaho) and the Nutrient Management Act (Idaho), and a major federal activity such as dredging will create impacts that could prevent compliance with these statutes. This section summarizes issues related to dredging that contradict some of the conclusions and recommendations presented in the DCLMP.

7.1 Comments on Dredging

> **"lake dredging - this alternative was dismissed because it is publicly unpopular, is very expensive, and has substantial impacts on the surrounding environment;"** (p. 68)
>
> This conclusion for the South Lake region, related to macrophyte control, demonstrates the negative impacts and undesirability of dredging.

7.2 Aquatic Plan Growth

> **"mechanical harvesting - this alternative was chosen because it removes harvested plants and their associated nutrients from the lake"** (p. 68)
>
> Aquatic plant control will be an on-going effort. Mechanical harvesting is the preferred method over dredging which provides only temporary control of aquatic plants. The benefits of aquatic plants are discussed in Sections 4.0 and 6.2.

7.3 Boat Traffic

> **".... erosion problems caused by excessive boat speeds ...."** (p. 54)
>
> Increased boat traffic will result in long-term damage to this fragile bay as discussed in Section 6.3.2.

7.4 Near-Shore Nutrient Levels

"Another impact on lake water quality is from leachates from nearshore septic tank systems" (p. 75)

The major benefits of the sewage collection and treatment system in Kidd Island Bay are now being realized as discussed in Section 6.1.

7.5 Priority Wetland Area

"Within the border of Coeur d'Alene Lake, there are the following eleven priority wetland areas: ..... Kidd Island Bay ...." (p. 8)

Kidd Island Bay has been designated as a priority wetland area. Dredging of the bay will disrupt existing wetland, and interfere with the development of new wetland and the natural progression of the bay as discussed in Section 3.2.

7.6 Primary Goal

"implement management actions that will preserve the improvements in water quality that have been gained by Coeur d'Alene Lake since the 1970's." (p. 92)

The plan continually identifies excessive nutrients (from waste water and agriculture) and boating activities as major threats to preserving the positive water quality trends. The dredging portion of the Kidd Island Bay Reclamation project will definitely create conditions which undermine the most important objective of the DCLMP.

8.0 AGENCY CONCERNS WITH THE 1992 DREDGING PERMIT APPLICATION

The applicant submitted and withdrew an application for dredging in 1992. Some the agency concerns about this permit application had to do with the lack of detail, methods of dredging, and significant impacts to the environment. Although the plan is being reworked to add enhancements which are designed to refocus the attention away from dredging, many of these significant issues cannot be mitigated due to the inherent destruction that the dredging process will have on the ecosystem in this fragile bay.

A list of some agency concerns expressed as part of the inter-agency review conducted in 1992 are as follows:

- Project cost estimates and lack of financial resources to meet obligations for overruns
- Unforeseen circumstances during project could lead to additional compliance/mitigation (no responsible party such as a financially sound corporation or government agency)
- Alternatives to full bay dredging to reduce environmental impacts
- Contribution of additional nutrients could affect water quality and aquatic ecosystem in the main part of the lake
- Maintenance activities to retain post-project conditions
- A long-term monitoring plan (5 years) should be required
- Environmental Impact Statement (EIS) needs to be prepared
- Sediment sources not adequately identified
- Bay history: originally a marsh and the bay was expanded due to previous dredging
- Dredging will only temporarily halt the natural wetland succession process
- Minimum depth of 10 ft required to reduce growth of nuisance aquatic plants (7 ft proposed)

Several agencies stated that an EIS needed to be prepared due to the requirement to evaluate alternative actions and assess the real environmental issues. National Environmental Policy Act (NEPA) procedures as described in 40 CFR 1501 to 1508 provide the guidelines to insure that pubic officials and citizens have the environmental information available before decisions are made and before actions are taken. An EIS is written not to justify a decision that has been made, but to allow complete and thorough assessment of the impacts so that the proper decision can be made.

Because the dredging portion of this project will result in too many direct and indirect impacts related to the ecosystem in Kidd Island Bay, and has the potential to undermine the primary goal of the DCLMP, the agencies should require an EIS if this project is to be considered at all viable. However, limited

scoping shows that the significant issues related to the dredging part of this project are sufficient justification to deny approval of the permit.

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 28, 1995

Don Gray
P.O. Box 2945
Coeur d'Alene ID 83816

Dear Mr. Gray

Thank you for the letter of comment developed by you on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issue raised in your letter on the draft plan, the following comments can be offered. The Kidd Island Bay dredging plan is not an action item of the Coeur d'Alene Lake Management Plan. The dredging plan is a wholly separate issue on which the plan is silent.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

Weyerhaeuser

2110 Ironwood Parkway, Suite 220
Coeur d'Alene, Idaho 83814
Tel (208) 664 3311
Fax (208) 667 5832

November 21, 1994

Idaho Division of Environmental Quality
ATTN: Geoff Harvey
2110 Ironwood Parkway
Coeur d'Alene ID 83814

RECEIVED
NOV 2 1 1994
IDHW-DEQ
Coeur d'Alene Field Office

RE: CDA Lake Management Plan - Draft of November 7, 1994

Dear Geoff,

Most public comments on Draft Plans are negative in nature but there are some very positive comments to be directed at the CDA Lake Management Plan Draft of November 7, 1994 and the research, testing, and analysis performed to develop the Plan.

Three major milestones of misinformation were overcome with the Plan. There was a strong effort to portray the Lake as continuing to degrade, that chemicals would soon make the Lake unfit for man or beast, and that there was no life on the bottom of the lake. There are certainly some problems within the basin that need to be addressed and because of the careful analysis and reporting of conditions by the Draft, the necessary resources can be directed in a cost effective manner to solve the actual problems.

The public now knows that the condition and quality of the lake is improving and has been improving for the past two decades, that there is no excessive nutrient loading for most areas of the lake, that there is only an extreamly remote risk that the hazardous materials in the sediments on the lake bottom will enter the water column, and that there is life on the bottom of the lake.

The following comments are directed at areas of the draft that are unclear, leave questions to be answered, or are suggestions for consideration. The page number and a few words of text will be copied from the Draft to help identify the location where the comment that follows is directed.

Page v, Table 31.
For Dissolved Oxygen and Clarity, the value for the Desired Condition is less than the Current Condition and appears to be a reversal of the goal of continuing improvement. This gives the appearance that the Desired Condition is worse than what exists today and does not fit with the goal of slow continuos improvement. Perhaps a change in the column names is all that is required.

Page 1, Coeur d'Alene Lake.....17,300 square kilometer.....
This suggestion is aimed at the complete report. The metric system is widely used in the scientific community but is still foreign to much of the public. Please consider adding the English conversion to the metric values where appropriate, i.e., 17,300 square kilometers (xx,xxx square miles).

Page 1, Eutrophication.....(Woods, 1989).
It appears that some text was dropped in this area.

Page 1, ...cannot be economically removed.....
There is also no way that the massive amount of trace elements can be environmentally removed either.

Page 2, Figure 1.
The boundary of the 17,300 square kilometer area and the 10,310 square kilometer area referred to in the text are not clearly defined by the map or a legend.

Page 12, The population.....1993).
This paragraph is not clear. Should the dates for the period evaluated be 1970 to 1990?

Page 12, Environmental cleanup....as a viable industry in the future.
Hopefully environmental cleanup is a short term condition. It is an activity that is supported heavily if not fully by the tax paying public.

Page 23, The southern area....was unenriched in trace elements.
Please consider a map showing the area unenriched in trace elements as well as the areas where nutrient loadings are high. It is important that the public understand the location of each condition.

Page 23, The vast majority.....iron oxides, not sulfides.....
This is some of the analysis within the draft that made such a significant contribution to overcome the misinformation about the lake. Well done.

Page 31, The contribution of nutrients.....at Page.....
The simulated removal of all wastewater generated nutrient loadings...
These two "bullets" both identify the dominate source of nutrients as well as provide some scope as to the benefits to be gained from other actions. In short, the biggest benefit can be obtained by the least funds in one location with available and proven technology.

Page 38, In 1975, the CDA River was the principal contributor of phosphorus; in 1991, it was the St. Joe River.
As written, the reader gets the feeling that the principal contributor simply switched. When in fact, conditions improved on both rivers. The CDA River improved more

than the St. Joe. Please consider adding wording that signifies the level of reduction for each river.

Page 39, Lake Management Plan
The bright blue paper is hard to read, difficult to highlight, and hard to make notes on.

Page 44, This tag group recognized that there have been improvements..... strengthen effectiveness of existing programs.
This paragraph recognizes areas where improvements have been made in recent years and helps to avoid adding duplicate and unnecessary regulation with little or no benefit. This TAG did a very credible job.

Page 45, Table 22

Action 2: Implement preoperational inspection.....
This Action appears to include all lands. In such a case, the IDL would do an inspection on USFS lands. This simply is not necessary. Both the federal agencies and the industrial private landowners know the law, have trained staff, and do not need additional inspection. The small landowner and smaller logging operations seem to have the least experience with meeting current standards and advisory inspections could be warranted.

Action 3: Streamline stream alteration process.....
This permit process has very little merit or benefit when applied to forestry actions. It should be incorporated into the Cumulative Watershed Effects Analysis planned by the IDL (see Action 7).

Action 4: Develop ....stream crossing and stream alteration BMPs.....
Also include in Action 7.

Actions 8: .....cooperating on joint access development to forest....
This action appears to have lots of merit but will not work with federal land owners. There has been an existing program between the Forest Service, the IDL, and the qualified cost share cooperators for decades. However the FS now claims that it must do a EIS prior to any new joint construction or even permit the use of an existing road. Cost for an EA or EIS are staggering compared to the value of the road. The FS has no staff, funds, or schedule for such activities. Costs for such an EIS typically run about $500,000 per occurrence.

This points out a serious concern with the Draft in terms of estimated costs - whereas the cost for this action is described as "Minimal" it in fact could be very substantial. Most of the listed actions have no cost included. It is unrealistic to ask the public for its response when no cost for the actions are provided. It is important that accurate estimates of cost be included prior to the next public comment period.

Page 50, Table 24, Stormwater runoff from new development
Eight agencies are listed in the lead position - how many are there left to follow?

Page 61, Action 10, Ensure that the standards are compatible with those being developed by the CDA Tribe.....
This comment seems to indicate that the CDA Tribe could develop any standard that they choose and that the Plan would have to be compatible. Strong consideration should be given to the mutual development of standards by all parties concerned.

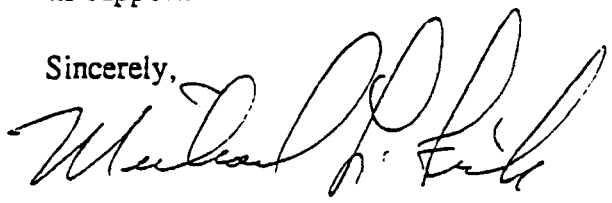
Page 62, Action 10, ...minimize the quantity of sediment....
Much of the sediment that enters the lake is natural and there is little value in trying to minimize that element of the sediment entering the lake.

Page 65, Noise Levels.....
What is the connection between improving water quality and noise levels? This item and others seem to be outside the authority of the planners. All items should be checked against the authority given the planners. Safety and Fisheries are equally valuable as controlling noise levels but are perhaps outside the authority of this planning body.

Please include my comments into the public record.

Again, much credit is due to those who helped determine the actual conditions within the watershed. This plan should have high credibility with the public and should gain its support.

Sincerely,



Michael L. Fish, P.E.
Forest Resource and Supply Manager

xc:CRON
CBIG file
cf: CBIG02

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 24, 1995

Mike Fish
Weyerhaeuser Corporation
2101 Lakewood Drive, Suite 220
Coeur d'Alene ID 83814

Dear Mike:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The goals tables have been re-worked to better communicate the desired conditions more clearly. The tables have been footnoted more extensively to explain the water quality standards and policies under which the general goal of slow improvement was interpreted. English units are now used in the text, while the corresponding metric units are placed adjacent to them in parenthesis. The plan recognizes the cost in-efficiency, if not the near impossibility of dredging the metals contaminated sediments from the bottom of the lake. It is clearly stated that the best option is to manage the lake to keep it low in nutrients. We have attempted to refine the cost estimates where we have had input, but such estimates have not been possible in all cases.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

RECEIVED
NOV 28 1994
IDHW-DEQ
Coeur d'Alene Field Office

Jud Melton
2041 E. Riverview Dr.
Post Falls, Id. 83854

November 23, 1994.

IDAHO DIVISION OF ENVIRONMENTAL QUALITY
ATTN: GEOFF HARVEY
2110 IRONWOOD PARKWAY
COEUR d' ALENE, ID. 83814

Dear Sir:

I have reviewed the 11-7-94 draft of the Coeur d' Alene Management Plan. Enclosed is the comment sheet that was handed out and I have also added some additional comments and observations that are not in any particular order of preference at the end of this note.

I know that there were a lot of government and other entities involved but I'll bet there were some that could provide help more information. How about the Panhandle Lakes Resource Conservation and Development area?

Unless there is some very dedicated person or group that is willing to take the long term leadership role the plan will never be fulfilled. In the long run I think a full time person will be needed to keep the plan on track. Perhaps a coalition of groups and government could come up with the funds to do something like that.

Thank you for allowing me to comment.

Sincerely,

Jud Melton

Jud Melton

LAKE COEUR D' ALENE MGT PLAN NOTES

A LONG TERM LEADERSHIP GROUP WITH A TECHNICAL ADVISORY COMMITTEE SHOULD BE ESTABLISHED. THERE WILL ALWAYS BE A COGENT NEED FOR A GROUP TO BE ON TOP OF THE EVER CHANGING ENVIRONMENT AND WATER QUALITY OF THE LAKE AND WATERSHED.

THE "LAKE" MGT PLAN IS A GOOD START BUT IT BOTHERS ME THAT THE WATERSHED AND RIVER BASIN STUDY AND MANAGEMENT PLANS ARE NOT DONE IN CONCERT WITH ONE ANOTHER. ONE IS NOT OF MUCH BENEFIT WITHOUT THE OTHER.

THERE SHOULD BE SOME INVOLVEMENT WITH THE PEOPLE AND GOVERNMENTS IN SPOKANE TOO. WATER QUALITY AFFECTS THE SPOKANE VALLEY AQUIFER TOO.

THERE NEEDS TO BE A LOCAL CITIZENS GROUP AND LOCAL, STATE AND FEDERAL GOVERNMENTS ALL WORKING TOGETHER ON THE MANAGEMENT PLANS AND IMPLEMENTATION OF THE PLAN.

THE "GO SLOW" APPROACH APPEARS TO ME OF BEING A WAY OF SAYING, "WE ARE GOING TO DO ONLY WHAT WE HAVE TO TO MAINTAIN OUR LAKE WATER QUALITY." ANY WATER QUALITY IMPROVEMENT IS GOING TO BE 'SLOW' AT BEST. MOTHER NATURE JUST DOESN'T RESPOND AS FAST AS WE HUMANS WOULD LIKE HER TO.

SOME TYPE OF GROWTH MANAGEMENT PLANS WILL NEED TO BE INCLUDED WITH THE OVER ALL PLANS IF IT IS EVER GOING TO KEEP THE LAKE WATER CLEAN.

THE 30 FOOT STREAM PROTECTION ZONE IS A GOOD IDEA, HOWEVER ALL STREAMS ARE NOT THE SAME SIZE NOR ENVIRONMENTAL MAKE UP. I WOULD SUGGEST THAT A SIZE BE ESTABLISHED FOR EACH STREAM OR PART OF A STREAM OR CREEK AS IS NEEDED FOR THAT PARTICULAR STREAM. (After all, the speed limit is not the same on all streets as it is on the freeway.)

Action 10 (pg 46) is a nice goal but I think the what, when, where, why, and how should be added to it. What is the land owner's incentive to do these things?

HAS THERE BEEN ANY THOUGHT OF DEVELOPING "CONSTRUCTED WETLANDS" TO HELP WITH THE IMPROVEMENT OF WATER QUALITY AND EROSION CONROL....IT ALSO HELPS WITH PHOSPHORUS REMOVAL.

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)
GENERALLY IS IS OK, AND IN THE RIGHT DIRECTION

2. What do you like in the draft plan? Please be as specific as possible.
I LIKE IT BECAUSE IT IS A PLAN. WITHOUT A PLAN NOTHING WILL EVER BE DONE!

3. What do you dislike in the draft plan? Again, be as specific as possible.
The goal to improve water quality "Improve Slowly"

THERE IS NO SUCH THING AS "Rapid water quality improvement" ON A LAKE AND DRAINAGE BASIN AS LARGE AS THIS ONE. - EVEN IF you had all the $ IN THE WORLD. my idea of a Goal would be, "to improve it as Rapidly as economically possible."

4. Please list any concrete suggestions you have for improving the plan.
1. W. Q. MONITORING NEEDS to CONTINUE.
2. THE PLAN & goals NEED to BE IMPLEMENTED, - NOT SIT ON A SHELF, - MAKE Goals for future updating of the PLAN.
3. COMBINE THE PLAN with the Cd'A BASIN (WATERSHED) PLAN.
4. SET up SOME "CONSTRUCTED WETLANDS" AND MONITOR the IMPROVEMENT in W.Q.
5. Identify THOSE goals that will give the greatest water quality benefits for the least cost AND PRIORITIZE them!

5. List any other comments you have about the draft plan.
SEE ATTACHED LETTER / NOTES.

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 24, 1995

Jud Melton
2041 E Riverview Drive
Post Falls ID 83854

Dear Mr Melton:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The need for a dedicated group to implement the management plan has been recognized by several commentors. A program which requires all levels of government to implement their various action items will require a coordinating group to assure that the various governments respond. Although the current plan envisions such a group, it currently does not exist nor is a legal mechanism fully mandated. Both DEQ and EPA are currently implementing some action items of the plan under their authorities. In the coming months additional other agencies and governments should be encouraged to implement the plan.

The necessity of a watershed plan which you suggest is outlined in the Coeur d'Alene Basin Restoration Project (CBRP) framework. The CBRP strategy is to use the lake plan as the core of a broader watershed management plan, which will include management plans for upstream issues either unrelated or tangentially related to lake management. The initial edition of this plan should be completed by 1996 or 1997.

Although growth management might attack the source of many of our environmental difficulties, effective management of growth in northern Idaho is not in the current powers of any government. Comprehensive growth management is currently beyond the legal mandate of any and all levels of government.

Water quality monitoring will continue on the lake with key stations monitored at key periods of the year. A monitoring plan detailing the effort will soon be available from DEQ.

The lake plan has identified some of the more cost-effective action items. These will have higher priority for implementation.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

IDAHO FISH & GAME
PANHANDLE REGION
2750 Kathleen Avenue
Coeur d'Alene, Idaho 83814

Phone (208) 769-1414 • Fax (208) 769-1418

Cecil D. Andrus / Governor
Jerry M. Conley / Director

December 13, 1994

RECEIVED
DEC 15 1994
IDHW-DEQ
Coeur d'Alene Field Office

Mr. Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Dear Geoff:

REFERENCE: COEUR d'ALENE LAKE MANAGEMENT PLAN REVIEW

We have reviewed the November 7 draft of the Coeur d'Alene Lake Management Plan. Below are some suggestions and corrections which we believe will improve the plan and/or help to achieve the goal of improving water quality in each of the four zones:

Page 4, paragraph 4 - Yellow perch are not native to Coeur d'Alene Lake, or any other waters west of the Continental Divide. Peamouth, speckled dace, longnose dace, and reside shiners are native. Peamouth are incorrectly identified as being introduced.

Page 7, paragraph 2 - Snow geese and tundra swans are common to the area during migrations. Trumpeter swans are rare.

Page 7, paragraph 3 - Westslope cutthroat trout are still present in much of their historic range within the Coeur d'Alene basin, but numbers of healthy populations are greatly reduced.

Page 8 - A list of eleven priority wetland areas within the border of Coeur d'Alene Lake is provided. We believe the Coeur d'Alene River delta and associated wetlands at Harrison should be added to the list. We believe the Harrison area wetlands meet the criteria for listing as prioritized wetlands.

Page 44, paragraph 4 - It should be clarified that BMP's promulgated by the Forest Practices Act do not improve water quality. Rather, they prevent (ideally) or reduce (typically) water quality impacts associated with timber harvest. Of particular concern with existing or proposed improvements to standard BMP's is the lack of adequate protection of riparian areas to allow adequate recruitment of stream stabilizing large organic debris.

Page 45, Management Action 3 - The stream alteration permit process is already greatly streamlined. A minimal amount of information is required on a two page, fill-in-the-blank, joint application form for IDWR and the Corps of Engineers. Turn-around time for reviewing agencies, such as IDFG, is typically short. Compliance would be better fostered with tighter enforcement rather than by making it easier to get a permit. IDWR already has a series of standard, acceptable practices. We recommend this proposed management action be dropped from further consideration, particularly in light of proposed management action 4, which we support.

Page 45, Management Action 7 - Table 22 suggests there will be a minimal cost associated if the CWE process is adopted and implemented. The current draft CWE process is a complex, knowledge and labor demanding process, which, if implemented aggressively, will be costly. Also, the CWE process is most useful for identifying existing problems, and is not designed to anticipate or prevent problems before they occur. By itself, the CWE process is not likely to result in water quality improvements. Like BMP's, it may help to reduce impacts of timber harvest.

Page 45, Management Action 8 - We agree with the concept of minimizing road construction impacts from timber harvest, as roads are probably the single biggest long and short term impacts to water quality and watershed integrity. However, if development of joint access agreements implies major road construction in roadless areas, we believe negative impacts to water quality and beneficial uses will occur. This action should be clarified or dropped.

Page 45, Management Action 9 - We support this management action, and recommend it be upgraded to priority 1. Currently, un-maintained roads are probably the single greatest contributors of sediment, bedload, and nutrients from forested areas.

Page 46, Management Action 10 - Action 10 assumes wildfire is a major cause of water quality impacts. We are unaware of any studies which demonstrate long term water quality problems resulting from wildfire in forested areas of the northern Rockies. To the contrary, studies in Yellowstone National Park and elsewhere indicate impacts are short term. The best remaining stream habitat in the Coeur d'Alene Lake basin is in un-roaded, un-logged areas of the upper St. Joe system, where intense wildfire passed through in 1910. Currently, this is the only part of the entire basin which supports bull trout spawning and rearing. Management Action 10 seems to assume timber harvest with BMP's is better for watershed health and water quality than fire, when evidence indicates otherwise.

Overall, we believe the draft plan identifies some critical concerns for management of the Coeur d'Alene Basin. A number of the proposed solutions appear to be logical and well founded. Others, including some very important aspects of the plan, appear to be based on preserving current practices at the expense of assisting recovery. Examples are limited attention to the causes of riverbank erosion, and over-reliance on forest practice BMP's to cure watershed ills. Good forest management, including timber harvest, can allow recovery of water quality and beneficial uses in the basin, but in a number of cases we believe existing BMP's will have to be significantly exceeded if beneficial uses are allowed to recover.

We appreciate the opportunity to review and comments on this document.

Sincerely,

David W. Ortmann
Regional Supervisor

DWO:CEC:kh

C: Natural Resource Policy Bureau

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 28, 1995

David Ortmann
Idaho Department of Fish & Game
2750 Kathleen Blvd.
Coeur d'Alene ID 83814

Dear Mr Ortmann:

Thank you for the letter of comment developed for the Idaho Department of Fish & Game on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The corrections suggested on yellow perch, swans and west slope cutthroat trout have been made. The Coeur d'Alene River Delta was omitted by the Idaho Department of Park & Recreation as a priority wetlands. The plan only reflects the department's priority list.

The language in the plan does not state that forest practices best management practices (BMPs) improve water quality. The text states the belief of the technical advisory group (TAG) participants, the improvement in the water quality of Coeur d'Alene Lake has occurred in a period of greater emphasis on forest practices rules. It also states the TAG participant's belief, that continued emphasis on forest practices BMPs, is the most reasonable route to a slow improvement of the water quality of the lake.

The plan does rely on existing water quality programs and governmental infrastructure. The scientific data developed by the USGS for the planning process, indicates the lake water quality has improved dramatically between 1975 and 1991-1992. Water quality parameters indicate that the northern pool (northern two-thirds) of the lake has shifted during that time period from mesotrophic to oligotrophic. The data indicate a halving of the phosphorous load entering the lake. These data suggest that the existing programs in sewage treatment and nonpoint source control have yielded results. With a goal of slow improvement, it is prudent to continue and fine tune these programs.

The thoughts above do not suggest that there are not water quality and habitat issues and problems in the watershed. Clearly metals loading and sedimentation alter habitat for fish in the watershed. The Coeur d'Alene Basin Restoration Project framework envisions a broader watershed management plan at the core of which will be the lake plan. This plan should address metals loading, sedimentation, thermal problems and habitat alteration in the watershed.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

Plum Creek Timber Company, L.P.
P.O. Box 160
Columbia Falls, MT 59912
406/892-2141

November 10, 1994

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Re: Comments on 11/7/1994 Draft Coeur d'Alene Lake Management Plan

Dear Mr. Harvey,

Thank you for sending me a copy of the Draft Coeur d'Alene Lake Management Plan dated November 7, 1994. As a participant in the Forestry Technical Advisory Group, I am aware that a tremendous amount of work by DEQ, the Coeur d'Alene Tribe, and the public went into preparing the background information and recommendations contained in the management plan.

Though the plan had a tremendous amount of public involvement, I am extremely disappointed to see many new recommendations which were included in this most recent draft. Many of these changes were not recommendations of the TAG groups which were responsible for developing them. In addition, many recommendations have nothing to do with the goals outlined in the plan. My specific comments on the draft plan are as follows:

1. Page 44-45: "Of the 22 issues reviewed by the group (Forest Practices TAG), 11 were retained as specific recommendations for the lake plan.

> Comment: It is true that 11 actions were recommended by the Forest Practices TAG and the 9/21 draft management plan correctly outlines the 11 recommended actions. However, the November 7th draft has 12 recommendations. Action #4 (page 45) is the new addition, and calls for strengthened BMP's for sediment control around stream crossings. Though erosion control around stream crossings is very important, the TAG felt that the existing regulatory framework (Idaho Forest Practices Act Rules) adequately provided for this. Action #4 is not a recommendation of the Forest Practices TAG and should be removed from the Plan.

2. Page 45. Action 7.

Comment: The cost of implementing the Idaho Cumulative Effects Process will not by "minimal" to landowners. Plum Creek anticipates that the analysis will cost between $8,000-$15,000 per watershed. In addition, costs incurred from findings of the analysis could be far more substantial. This action in no way represents a minimal burden to landowners or the State.

3. Page 60. Action 5.

Comment: IDL does not have the authority to expand the cumulative effects process to other land uses in the Basin. Though the idea sounds appealing, to do so would require legislative approval.

4. Page 61. Action 10.

Comment: Though this recommendation was in the 9/21 draft, I am compelled to comment on it now. Though some of the recommendations in Action 10 are supported, the suggestion that they should be compatible with the Tribes is unacceptable. The Tribe does not involve the public when developing water quality standards. To suggest that State standards should be compatible with "as-yet-unknown" Tribal standards is not prudent.

5. Page 67. Fisheries enhancement goals.

Comment: This section is without a doubt the most unbelievable. This entire section of the report should be removed. It is beyond the scope of the lake management plan since it does not help achieve <u>any</u> of the water quality related goals outlined in the plan.

6. Page i.

Comment: The procedure by which lake water quality goals (desired conditions) were determined should be described. For example, where did the goals for DO, Total P, Zinc, Clarity come from? Are they even achievable?

7. Page iii and Page 40. "Trends in lake WQ"

Comment: The improvement in lake CDA over the last 15 years is incredible. Why is it not mentioned in the "Lake Trends" section until the 20th line? This section paints an unreasonably grim picture of the condition of Lake Coeur d'Alene and should be re-written to emphasize the improvements made in lake water quality.

8. Page 39. Lake Management Plan Work Group

Comment: The individuals participating in the Lake Management Work Group should be identified in the report, similar to the list of TAG members.

As a participant on the Forestry TAG, I spent too many evenings working on this plan to see it changed at the last moment. I hope the final draft better reflects the true product that the public worked on.

Sincerely,

Brian D. Sugden

Brian D. Sugden
Forest Hydrologist
Plum Creek Timber Company, L.P.

cc: Jim Colla, IDL
Ed Javorka, CDA Tribe
Walt Poole, DEQ
Larry Koenig, DEQ
Jack Skille, DEQ

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 24, 1995

Brian Sugden
Plum Creek Corporation
P.O. Box 160
Columbia Falls MT 59912

Dear Mr. Sugden:

Thank you for the letter of comment developed for Plum Creek on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The water quality goals tables were further clarified. These tables are interpretation of the state water quality standards and policies, as well as EPA guidance of the slow improvement goal chosen by the public. The tables have been footnoted to explain the goals set and the standards and policies being interpreted.

The improvement of the lake has been highlighted in the executive summary by reversing the order of the paragraphs discussing water quality improvement and potential threats to the water quality. The work group and TAG participants are identified in the plan.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W Harvey

Geoffrey W. Harvey
Senior Surface Water Analyst

Hecla
MINING COMPANY

December 21, 1994

Mr. Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Re: Review and Comment on "Coeur d'Alene Lake Management Plan", draft of November 7, 1994

Dear Geoff:

We have reviewed the above-referenced document and provide our comments below. We appreciate the opportunity to review and comment on the document.

General Comment #1 - This document fails to paint the entire picture as to the importance of controlling nutrient loading of the lake. This document, as well as those that have lead up to it, focus on the potential metals release to the hypolimnion under anoxic conditions as the primary reason why nutrients must be managed. That focus is more a red herring, intended to further the Tribe's NRD litigation position, than it is fair, unbiased science. All that has been postulated is that under anoxic conditions the metals would be released into the hypolimnion. While no one has bothered to discuss the real impact of that event in terms of water quality or effects on aquatic biota, the whole concept has nevertheless been elevated to the major driving force behind the need for a lake management plan. Worse yet, the available data suggests that anoxic conditions are not likely to develop anyway. What is missing is a true picture of what it means for a lake to become mesotrophic or eutrophic.

The public, governments and agency personnel need to be made aware of the implication of a change in the trophic state of the lake. Although it is mentioned to some degree in this document it needs to be made clear what a change in the trophic state of the lake means to its aquatic biota regardless of any postulated metals remobilization issue. People need to understand for instance, that the fish populations and diversity would change dramatically thus impacting a significant beneficial use of the lake. These types of facts are only marginally dealt with in this document and are, in fact, the true issues at hand. Without such information, those in a position to enact the lake management plan in some fashion will not be able to fully assess the purpose of the plan nor address what the plan is intended to achieve.

General Comment #2 - There appears to be an attempt in this document to make a case that the Page sewage treatment plant is the major contributor of nutrients to the lake. If this is in fact true, the way the data are presented do not support that assertion. The

6500 Mineral Drive • Coeur d'Alene, Idaho 83814-8788 • 208/769-4100 • FAX 208/769-4107

data on nutrient loads should be clearly stated in terms of what percent of the total nutrient load to the lake comes from Page, other wastewater treatment plants, septic tanks, agricultural sources, forestry sources, etc. The data, as presented, are very confusing.

General Comment #3 - We are not aware of any "legal standard" for total phosphorous. Where does the author pull his legal standard from? Our copy of EPA's Gold Book states: "No national criteria is presented for phosphate phosphorous for the control of eutrophication" (page 359). Indeed, this same document states: "Most relatively uncontaminated lake districts are known to have surface waters that contain 10 to 30 ppb total phosphorous as phosphorous". This is where Lake CDA is now. A U.S. DOI report "Trace Metals in the Waters of the United States" lists, in its Table V, 16 basins in the U.S. with phosphorous levels ranging from 31 to 353 ppb. Based on this information, how can the author state that the lake has a phosphorous problem that demands correction? In other words, as far as the phosphorous content is concerned, why can't the "no action" alternative be chosen? If we are correct in our analysis, we suggest the authors of the plan present their case in a more convincing manner. If we are incorrect we would like to understand the issue more clearly.

Specific Comments

1. Page i, first paragraph - In the first sentence, please insert the word "potential" before the word water. We assume at the time the study was initiated it had not been concluded that water quality had degraded and in fact water quality data available at the time suggested water quality was improving.

2. Page i, last paragraph - Please insert the word "Localized" in front of the word "water" in the first sentence of the paragraph.

3. Page ii, first paragraph - Please insert the word "suspected" in front of the word "toxicity" in the third line of the paragraph. In the fifth sentence of the paragraph please insert the phrase "according to Federal criteria" after the word "that" but before the word "are".

4. Page ii, second paragraph - The last sentence of this paragraph is misleading. Federal drinking water standards are applied at the tap, after treatment. This should be clarified in the sentence.

5. Page ii, third paragraph - In the third sentence of this paragraph please insert the word "potential" before the word "toxicity". It hasn't been shown that the metals are toxic to aquatic life. In the fourth sentence please insert the phrase

"that may be" in front of the word "harmful". Again, it has not been shown that zinc levels are causing any problem whatsoever.

6. **Page ii, fourth paragraph -** It should be pointed out that Federal criteria and standards can be replaced with site-specific standards that represent site-specific conditions.

7. **Page iii, first paragraph -** What does the author mean by the phrase "extremely high" and "significant amounts"? In contrast what would the terms low or moderate imply?

8. **Page iii, second paragraph -** The word "agencies" in the third paragraph should be changed to "elected state and federal legislative bodies" because agencies do not enact laws, elected bodies do.

9. **Page iv -** Shouldn't a goal of reducing nutrient loads from septic systems be included in all four zones? Also, in the second paragraph, we suggest the word "will" be changed to "may" as it refers to the use of mechanical harvesting.

10. **Page v, Table 31 -** How was the zinc value derived? Is it based on dissolved metal as it should be? Were the most recent EPA conversion factors for CMC and CCC utilized? What WER was utilized and how was this WER derived? These issues must be adequately addressed for this zinc value to be valid. The same questions apply to Tables 32 and 33 as well.

11. **Page 1, first paragraph -** Lake Coeur d'Alene has not received "massive amounts" of tailings. To our knowledge, no one has calculated the amount of tailings in the bottom of the lake so this statement cannot be supported with facts. Also, what is meant by the word "massive"? The distinction should be made between tailings and smelting/refining wastes.

The sentence beginning with "Eutrophication and the deposition..." doesn't make sense, something is missing. Also, to our knowledge, no quantitative study has been performed that proves "large quantities" of trace element and nutrients can be released from the lake bed. This statement is misleading and should be deleted.

What is meant by the word "massive" in the last sentence? Compared to what? The phrase "or in an environmentally-sound manner" should be added after the word "economically" in the last sentence.

12. Page 4, fourth paragraph - The Coeur d'Alene Tribe is not an authority on fish species in the lake and should not be the reference used in this paragraph. If that is the only reference available, it brings the information presented into question.

13. Page 7, second paragraph - Tundra swans are not "rare" or "rarer". They are "less commonly found" than mallards and are less frequent users of the basin.

14. Page 7, third paragraph - Only those species that have been listed as threatened or endangered should be listed in this paragraph. The way the paragraph is worded implies that all the species listed are threatened or endangered which is incorrect.

15. Page 8, third paragraph - Please delete the phrase "... but they are a significant resource". That is a conclusion drawn in a section of the plan stating facts.

16. Page 12, third paragraph - We suggest the phrase "short term" be used instead of "viable" in the last sentence of the paragraph.

17. Page 14, second paragraph - The Tribe is not a major economic force in the region. What percentage of their commercial, health and environmental programs are self-starting and what percentage is paid for by taxpayers? The implication here is that those programs are 100% funded by the Tribe's income from their operations. Why is this information even necessary to a lake management plan?

18. Page 14, last paragraph - Please add the phrase "lies adjacent to the outer boundary of the" not "within the CDA Tribe reservation".

19. Page 21, Table 7 - Our sources tell us that a detection limit of 10 ppb is the best that can be done reliably so how is it that 1 ppb is used in this table?

20. Page 22, Table 8 - Our sources tell us that a detection limit of 50 to 100 ppb is easily achieved so how is it that 205 ppb is used in this table?

21. Page 23, last sentence - Please add the phrase "operationally-defined" before the words "iron oxide". It is a very important, scientific qualifier that has, at some point, been inappropriately dropped.

22. Page 24, Table 9 - Are the values shown ppb?

23. Page 26, Table 11 - How were the values "modified" from Ryding and others?

24. **Page 29, Table 14 -** The dissolved values shown are not based on EPA's latest translators. A WER should also be calculated.

25. **Page 31, first bullet section -** If the lake receives 90% of its water from the St. Joe and CDA River, but those rivers only contributed a little more than 50% of the phosphorous and 75% of the nitrogen, the other 10% inflow into the lake must be highly concentrated. What are those sources? Are they mentioned here?

26. **Page 32, Table 16 -** Was the contribution of the Page Pond treatment plant counted both in the total for the CDA River and wastewater sources? How was the error column calculated? (Same comment for the other tables as well.)

27. **Page 34, Table 18-** Does the wastewater category include municipal and septic tank components?

28. **Page 36, Table 20 -** It would be informative to see the load expressed as kg per person served in order to make better comparisons. Transient and tourist numbers should also be included in the person count.

29. **Page 38, sixth bullet -** Tailings ponds were in use in the late 1960's at least five years before the 1975 survey was completed. If the lake was mesotrophic in 1975, five years after tailings ponds, how can the improvement from 1975 until 1991 be attributed to tailings pond use? The Bunker Hill phosphorous plant ceased operations in 1981, yet it is not mentioned. In fact, EPA calculated in 1982 (after Bunker Hill closure) the phosphorous load in the South Fork above the Page sewage treatment plant, contributed by the Bunker Hill site, to be 216 pounds per day or 6.6 times the load attributable to the Page plant in Table 20. (In Table 20 it isn't clear if the total phosphorous load is for 1 or 2 years. Please clarify.) Finally, no mention is made of natural background levels of phosphorous originating in Belt Series rocks.

30. **Page 40, first full paragraph -** It should be recognized and noted in the paragraph that not all metals that "flow" into the lake stem from past mining. A certain (unknown) amount is attributable to natural background effects.

31. **Page 40, second full paragraph -** Please see comment #8.

32. **Page 41, last paragraph -** Please see comment #4.

33. **Page 47, next to last paragraph -** We disagree with the need for a "no net increase" requirement. It would in effect stop development if such development

were shown to increase loading. This would be an unreasonable takings of private property rights. A possible alternative might be: no net negative impact on beneficial uses.

34. **Page 58, Table 26 -** We object to Action 1. First, the Tribe has absolutely no authority nor business being involved in any TMDL process for the South Fork CDA River. Second, there has been no data presented that shows an exceedance of any agricultural phosphorous or nitrogen standard for the South Fork. Therefore, a TMDL would be developed for informational purposes only, in accordance with the CWA, and that would be a waste of money.

35. **Page 61 -** We agree that realistic State water quality standards should be developed, but not for the reasons listed here. The current legal standards are not ambiguous and are enforceable, but because they are not site-specific they are overly protective. They should be changed to reflect real-world conditions.

Any standards developed by the Tribe are not applicable to the lake or CDA River as the Tribe does not own nor manage any of the lake or river. Coordination with the Tribe would be a waste of money and time. The Tribe has no authority nor business helping to revise State water quality standards.

The case has not been made to support the need for "erosion control, stormwater management, road maintenance and vegetative buffer (if needed) requirements". The lake is in excellent health and less draconian measures can be used to manage nutrients.

It is preposterous to think you can develop standards that "protect for future use". How do you set a standard to maintain something you haven't reached yet? Further, there is no legal authority for such a position.

What is meant by "developing and/or expanding sediment criteria to streams which do not support cold water biota"? What is meant by "expand sediment criteria for domestic water supplies"?

36. **Page 65, both Action 1 items -** Neither action item is appropriate to this document. What does jetski disturbance to nests and noise levels for boats and jetskis have to do with nutrients?

37. **Page 66 -** This page has nothing to do with water quality and should be deleted.

38. **Page 69 -** We object to the Tribe's "lead" in harvesting macrophytes. The Tribe has no special authority or special rights over the lake and should not be given any. The citizens of the State have no recourse against the Tribe if they are in the "lead" and the citizens do not like what is being done. Something must be missing from the list of action items. Is it true that "the only action item" developed for the South Lake zone is weed management? How about reducing the tremendous amount of nutrient and sediment loading coming from the adjacent land, land within the reservation boundaries?

39. **Page 74, second full paragraph -** NPDES stands for National Pollutant Discharge Elimination System.

40. **Page 75, second full paragraph -** It should be noted that regardless of what the Federal criteria say, all other evidence supports the conclusion that the aquatic biota of the lake are healthy and diverse.

41. **Page 76, first paragraph -** See comment #6.

42. **Page 77, first full paragraph -** Natural sources of zinc should be recognized. We continue to raise this issue but it is continually ignored. Given what we saw in Ninemile Creek this summer, natural levels of zinc may be very substantial.

43. **Page 77, second full paragraph -** According to Table 31, total phosphorous does meet the "legal standard" which is not consistent with the last sentence of the paragraph. Why is a one-time, worst-case value listed for phosphorous when the average is one-third the worse case?

44. **Page 77, third full paragraph -** Please insert the word "potential" before the word "toxicity" in the second sentence because it has not been shown that the metals are toxic to biota in the lakebed or water.

    The last sentence of the paragraph is not true. Yes, the Federal criteria for zinc apparently are exceeded but that does not equal "zinc toxicity to aquatic biota".

45. **Page 78, Table 31 -** Why is the "dissolved oxygen desired condition" higher than the "legal standard"? "Desired conditions" are not legally enforceable.

46. **Page 79, first full paragraph -** The statement "Nutrients are being released..." should be changed to read that nutrients are continually being released from the lakebed regardless of the oxygen content of the hypolimnion. It is a natural on-going process of lakes as organic matter is reduced by bacteria.

47. **Page 79, third full paragraph -** Are both criteria and standards exceeded in this zone?

48. **Page 80, first full paragraph -** Why aren't the actions mentioned in the last sentence reflected in Table 29?

49. **Page 80, third full paragraph -** Table 29 does not reflect the actions outlined in the first sentence of this paragraph.

50. **Page 80, fourth full paragraph -** The Tribe's activities should be reflected in Table 29. How does the author know that the claims made in the last sentence are true if the author has not seen the documents, the plan has not been developed from them and the results have not been shared with the scientific community?

51. **Page 81, second full paragraph -** We need to develop site-specific standards that address real world conditions.

52. **Page 81, fourth full paragraph -** See comment #4 and the second half of comment #44.

53. **Page 82, Table 32 -** Why are worst-case values put in the chart instead of average values?

54. **Page 83, first partial paragraph -** What reference supports the last statement of the paragraph?

55. **Page 84, first full paragraph -** How were the 50% and 25% figures derived? What will they lead too?

56. **Page 84, eighth bullet -** "EPA hazardous waste regulations" are not applicable to "contaminated sediment", assuming the sediment has been "contaminated" with tailings.

57. **Page 85, first paragraph -** See the first half of comment #44. How "near the lake bottom" are the criteria not being met? Do the Federal criteria have to be met in every cubic foot of water. Also, please see the second half of comment #44.

58. **Page 85, second paragraph -** What standards are not being met?

59. **Page 85, last paragraph -** This entire paragraph misses the point. The goal of the lake management plan, as we understand it, is, among other things, to lower the zinc content in lake water not lakebed sediments. This document has stated that most of the zinc in the lake water originates from river or erosion processes. No one has determined how much zinc originates from lakebed sediments. Why does the discussion of "rapid improvement" of lake water quality degrade into a discussion about dredging the lake? The author has missed the point.

What proof does the author have is asserting that "lakebed porewaters contain very high concentrations of dissolved metals that would be released into the lake and Spokane River" if the lake were dredged? We are not aware of any studies that have shown that dissolved metals would be released into the lake and Spokane River?

A disposal site for "legally designated hazardous substances" (whatever those are) would not have to be designated. Ore mining and beneficiation wastes are Bevill exempt. The third from the last sentence of this paragraph is true only if you don't bury them deep enough. At some certain burial depth, the hypothesized remobilization, a product of organic material reduction, would not occur. We don't know what that depth is but it would probably be less than one meter.

60. **Page 87, second full paragraph -** If the intent of this process is ultimately to have State and local governments pass laws to enact this plan, then those laws will not stand the test in court if they are trying to achieve "desired" water quality conditions versus those conditions required by law.

61. **Page 87, last paragraph -** CBIG is little more than a coffee club and would not be an appropriate basis for anything. CBIG now has even more bias and less scientific independence since it became part of the CBRP and under the direction of the Tribe.

62. **Page 88, Table 33 -** Why is the "desired dissolved oxygen" number lower than the "legal standard"?

63. **Page 91, first paragraph -** Measurements should be taken on a monthly basis, year around or at a minimum on a quarterly basis. To date, seasonal variations have been inappropriately ignored.

64. **Page 92, first full paragraph -** See general comment #1 above.

65. **Page 92, second full paragraph -** See comments #4 and #6.

If you would like to discuss our comments further please feel free to call me at (208) 769-4172.

Sincerely,

M. R. Fein

Matthew R. Fein
Project Manager, CDA Basin Projects

cc: Larry Drew
Dave Holland
Holly Houston

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 29, 1995

Mathew Fein
Hecla Mining Company
6500 Mineral Drive
Coeur d'Alene ID 83814

Dear Matt:

Thank you for the letter of comment developed for the Hecla Mining Company on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered:

General Comment 1: The study objective paragraph was re-written to focus on nutrient issues. The metals issue is however addressed. Since Kuwabara's (Kuwabara et. al, 1994) data indicates that zinc inhibits phytoplankton and upstream remedial activities are expected to lessen the zinc concentrations over time, metals must be addressed. The "slow improvement" goal is based on the fact that the public and the law require a correction of the zinc exceedences. The antidegradation policy indicates the lake must remain oligotrophic as zinc concentrations decrease.

General Comment 2: The phosphorous loading data were taken from the USGS technical report (Woods and Beckwith, in press) where these data are discussed in greater detail. Of the wastewater treatment facilities contributing nutrients to the lake, Page is the dominant loader. This point has been further clarified in the text.

General Comment 3: The concentrations of phosphorous cited in comment 3, span the range from oligotrophic to mesotrophic conditions and can be considered "relatively unenriched". The central point is the lake is less productive (biomass production) now, than two decades ago. Prevention of increased phosphorous loads is advisable in order to preserve the improved condition, especially in light of the expected zinc concentration decline and resultant decrease in phytoplankton growth inhibition. The "no action" alternative would be non-protective in light of the rapid population growth in the lake's basin.

You are correct that there is no legal standard for total phosphorous. However, the nuisance plant growth narrative criteria and the antidegradation policy of the state water quality standards are interpreted to set the total phosphorous goal in the goals tables.

Comment 1: We disagree with the comment. Water quality problems are not "potential" based on the then available data (oxygen profile data), which were indicative of eutrophication.

Comment 2: It was agreed and the change to the text made.

Comment 3: The text was revised throughout. Toxicity related statements were altered to reflect only an exceedence of metals criteria, to de-emphasize toxicity implications which are far less clear based on available data.

Comment 4: Language was inserted to clarify drinking water standards are applicable at the tap not in the waterbody supplying the water.

Comment 5: See response to comment 3.

Comment 6: Site specific criteria could be developed but this approach has not been taken for the lake at this date. It is most prudent to await results of the South Fork Coeur d'Alene River effort. At this time we must default to federal and state criteria to assess the data.

Comment 7: The term "extremely" was dropped, although the elevation of trace metals over background probably could be described as "extremely high" and still be accurate. "Significant" is replaced with "sizeable".

Comment 8: "Agencies" was changed to "governments".

Comment 9: Recommended actions are described generally in this section. Specific action items concerning septic tank management are found among the development action items.

Comment 10: The zinc concentration goal is based on correction for hardness and dissolved metals. The conversion used was 85% of the total metals as dissolved. A WER was not conducted. A WER would require live testing with Coeur d'Alene Lake water and "lab" water in a controlled system. Such an approach is beyond the scope of the lake plan.

Comment 11: The term "massive amounts" was deleted. A typographical error made the sentence concerning eutrophication nonsensical. This problem has been corrected. The technical report (Woods and Beckwith, in press) addresses the metals release issue in more detail and cites literature to support the statement. "Economically" was added to the last sentence and "mining and smelting waste" substituted for "tailings".

Comment 12: The Tribe's fisheries biologist was tasked by the planning work group with development of an overview of Idaho Department of Fish & Game literature on the lake's fish resources.

Comment 13: "Less common" language replaced the "rare or rarer" language.

Comment 14: The paragraph in question was deleted.

Comment 15: The phrase in question was deleted.

Comment 16: The descriptive term "viable" was retained. No statement is made or meant on the longevity of a mine waste reclamation industry.

Comment 17: The Coeur d'Alene Tribe section is their own vision of themselves, as I believe, the preceding descriptions of the counties are in part their vision of themselves. We decline to alter these.

Comment 18: The southern third of Coeur d'Alene Lake is within the reservation boundary. The boundary crosses into the lake a mile south of Harrison. Near the middle the boundary turns north across the tip of the Coeur d'Alene River delta and then west just taking in the very tip of Harlow Point. The boundary crosses to the west shore of the lake and follows the west shore to the north.

Comment 19: Your sources are not current. A detection limit of 1 ppb is quite reproducible in the USGS (Arvada CO) Laboratory.

Comment 20: The USGS laboratory (Arvada CO) believes the digestion process for total nitrogen is imprecise and therefore elected to use a conservative reporting level of 200 ppb. The extra 5 ppb is the minimum reporting level for nitrate plus nitrite.

Comment 21: Language referring to iron oxides was added to clarify that this is an operational definition.

Comment 22: These ratios are of data in ppb and thus are unitless.

Comment 23: The values are not themselves modified. However, Ryding and Rast included other variables that we elected not to use in this study.

Comment 24: The dissolved values were computed using the 1993 draft interim guidance for aquatic life criteria for metals and do not reflect current (1993) translators between total recoverable and dissolved.

A water effects ratio (WER) was not calculated for several reasons:

1) EPA interim guidance states that an acceptable approach is to measure total recoverable concentrations and compare them to national, laboratory derived criteria.
2) A WER is expensive to implement and was not a requirement of the study.
3) Where WER studies have been implemented the ratio for zinc is quite small, thus the adjustment from total recoverable is minimal. Other metals such as copper, lead and cadmium have larger ratios.

Comment 25: The largest component was ungauged surface water inflows, closely followed by precipitation. The detailed information is in the USGS technical report (Woods and Beckwith, in press).

Comment 26: Page was not counted as part of the Coeur d'Alene River because our gauge/monitoring station was downstream at Harrison. The calculation of errors for the hydrologic and nutrient budget are discussed in the USGS technical report on pages 144 and 158 (Woods and Beckwith, in press).

Comment 27: Yes, as well as the community systems such as those used in some bay communities.

Comment 28: We disagree; the tourist numbers were indirectly accounted for in the computations for commercial systems and vacation visits to lake shore homes.

Comment 29: Lakes require a number of years to reach a new equilibrium nutrient status after a major reduction/increase in nutrient loads; hence, the lag in improved water quality after installation of settling ponds for tailings. CH_2M-Hill showed the phosphorous plant effluent being diverted to the CIA in 1970; so that is when we chose to remove it from our load calculations. Table 20's title clearly states "annual" loadings. The background P value for the basin was discussed in the USGS technical report -- 500 mg/kg and was based on discussions and data from USGS - Geologic Division personnel.

Comment 30: In our opinion the vast majority of the metals contamination likely resulted from mining activity.

Comment 31: See reply to comment 8.

Comment 32: Language was changed to remove federal drinking water standards.

Comment 33: The text is providing the rationale the development work group used. "No net increase" was used as the group's goal in designing action items; it was used in a lake wide, not project specific connotation specifically to encourage nutrient load trading.

Comment 34: The Tribe is dropped as a participant in any TMDL process until such time as they gain "treatment as state" for NPDES and/or standards. The TMDL process is not specific to the South Fork Coeur d'Alene River, but is applicable to any water body 303(d) listed or to lakes managed in EPA's 314 program. The 314 program guidance requires a TMDL be completed for a lake prior to application for phase 2 (implementation) funding.

Comment 35: Reference to the Tribe in this action item was dropped in response to several comments. If the Tribe develops EPA approved standards, the state and the tribe will coordinate their respective standards under existing memoranda of agreement. The action item is a suggestion to DEQ which its standards coordinator will assess. Any new rule making which may come from this suggestion will follow Administrative Procedures Act rules. Site specific criteria may well be pursued for the lake pending the outcome of the South Fork Coeur d'Alene River effort.

Comment 36: These action items have been removed from the plan as stated in the introduction and conserved in an appendix for any group addressing the non-water quality issues.

Comment 37: See comment 36.

Comment 38: The Tribe has a lead role in this action item because it affects a part of the lake within the reservation boundary (See reply to comment 18). Numerous other public agencies will be involved as well. Cooperation between DEQ and the Tribe is governed by the existing memoranda of agreement.

Comment 39: The error was corrected.

Comment 40: The language has been changed to accurately interpret the data and indicate the extent of our knowledge on the impacts of metals on the biota.

Comment 41: See reply to comment 6.

Comment 42: Identification of natural zinc levels is not feasible unless pre-mining or sufficient upstream data is available. Sufficient levels of this data is not available to draw conclusions to our knowledge. A program to quantify natural contributions would be required.

Comment 43: The table was changed to reflect averages of 19 bays. Total phosphorous was deleted from the sentence in question.

Comment 44: See reply to comment 3.

Comment 45: Antidegradation policy indicates this average value should be maintained.

Comment 46: The sentence was modified to indicate release rates of nutrients is increased under anoxic conditions.

Comment 47: Yes, oxygen criteria are exceeded.

Comment 48: These actions relate to recommendations of other TAGs, but can be included in the discussion of this management zone as they pertain.

Comment 49: Actions in Table 29 are explained in paragraph 4 of the page.

Comment 50: The sentence was deleted.

Comment 51: Site specific criteria are needed as are more reasonable beneficial uses. Most of the southern lake (south of Conkling Point) should be designated warm water biota with only cool season designation for cold water biota. The state standards currently do not reflect this site specific reality.

Comment 52: The language was changed to reflect exceedences of criteria and that drinking water criteria apply at the tap as stated in comment 3.

Comment 53: The table was revised to reflect average conditions.

Comment 54: The recommendations are based on discussions with USGS and Army Corp of Engineers geologist and geochemists.

Comment 55: The goals were devised by the Rivers TAG participants, after a rough inventory of the eroding banks developed by the USGS Geologic Division and DEQ personnel. Achievement of the goals should lead to greater stream bank stability, less erosion of banks and a corresponding decrease in the transport of nutrients and metals to the lake.

Comment 56: Metals levels measured in the banks of the Coeur d'Alene River indicate trace metals contamination is present and widespread.

Comment 57: The text was revised to reflect exceedence of cadmium and lead criteria in the lower hypolimnion. Application of criteria is a judgement; a judgement not made here, only the condition is reported.

Comment 58: "standards" deleted from the sentence.

Comment 59: The rationale for discussing dredging/sediment covering was to satisfy the requirement to discuss alternative management methods. We view the trace elements in the bed sediments to be a potential source of metals loads in addition to those contributed by the drainage basin. If the zinc content of the water column is lowered, will a diffusional gradient develop from the more concentrated zinc in the pore water. There is data on zinc in the pore water. You requested the data from Dr. nancy Simon, the USGS researcher who performed the study on Coeur d'Alene Lake.

The issue of zinc releases to the lake and the Spokane River is based on the very fine grained nature of the lake bed disturbed by dredging. There is a high potential for long term suspension and advective transport out of the lake.

Comment 60: The desired condition as revised reflects state water quality standards and policy in all cases except the clarity goals. The clarity goals reflect a no degradation standard.

Comment 61: CBIG is suggested as a candidate body to start with, but in its present form it would be incapable of effective lake water quality management.

Comment 62: It is higher than the legal standard and maintained as required by interpretation of antidegradation policy.

Comment 63: Seasonal variations were addressed during the 1992-1993 lake study when samples were collected year around. The focus of monitoring given tight budgets is directed at the seasons in which the lake experiences its departures from criteria. A detailed monitoring plan will be available at the next CBIG meeting.

Comment 64: See reply to general comment 1

Comment 65: See reply to comments 4 and 6.

References:

Kuwabara, J.S., Woods, P.F., Beckwith, M.A., Backsen, R.L., and Ashenmacher, D.M., 1994, The effects of elevated zinc concentrations on phytoplankton growth in Lake Coeur d'Alene, Idaho: Paper presented at Fall 1994 American Geophysical Union meeting, San Francisco, CA.

Woods, P.F. and Beckwith, M.A., in press, Nutrient and trace-element enrichment of Coeur d'Alene Lake, Idaho: U.S. Geological Survey Open-File Report 95-xx, xp.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey

Geoffrey W. Harvey
Senior Surface Water Analyst

#2

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When this nation of
Independent, equal In all resp
states was founded by pil
That crawled ashore and be
immediately To use the abunde
natural resources They found, t
invisioned a land where all are
equal in all respects. Many of
Those early migrants used The
resources To build homes, secu
Their old age, raise and educate
Their children, and establish
fortunes. The founding fathers
large developed, mass populate
areas that if left unchecked
would wield absolute pow

over their poorer rural neighbors. Therefore the founding fathers drew up a constitution that would allow all equality.

As each state joined the Union it also had to have a constitution, a that was agreeable to the original document. The Constitution of the state of Idaho was drawn up and passed. It stipulates that the Territory bounded as described shall become the equal in all respects state of Idaho. It also points out that the material resources of the state are to be developed to their fullest potential

for The preservation of the health and wellbeing of The state of Idaho, and its citizens. I believe that This plan is unconstitutional as well as a violation of The "National Environmental Protection Act". No provision has been made in this plan for the protection of the customs, culture and economic stability of This basin. In fact The plan calls for the gradual elimination of these very customs and culture for the benefit of new commer, recreation and boater facilities. Ours is not a recreation based economy

The plan states that "increased development, recreation and boating traffic pose a serious threat to the gradual improvement the basin waterways have made." Then the plan ignores this fact and goes about regulating and rigourisly enforcing rules and regulations that are detrementa! to our farming, logging, mining, and property rights. The very essence of our customs and culture. The corner of our very economic survival. We are ~~free~~ independent people not paid servants and baggage toters. We are not going to stand by

and see our way of life destroyed so that B-Wayne Hagadone can continue to gobble up our lakeshore and allow more and more boats on our waterways. This plan would be more appropriately named "Coeur d'Alene Lake Water Quality Maintainance Management Proposal with an eye to increased recreational use at the eventual exclusion of all else.

Last time I had an encounter with this project and its personell I was told that the studies showed there was no life on the lake

bottom. Toxic mine wastes were violating all laws of physics and rising from the mud to kill all they touched. Since then the U of I has had a study that found abundant life in all areas of the lake. So that naturally makes me wonder how much of your current charts, graphs, and statistics I can believe. Maybe we are being lied to again for some hidden purpose that has as of yet NOT come to light.

I believe that a management plan that would educate local people as to how phosphates loads can

be reduced, Improvements To existi
sewage Treatment facilities and or
that sets limits on how much
recreational and boat traffic the
lake can effectively handle, a pla
That views Those as the prim
issues father Than the natural
resources production Industries
would be more acceptable. Granta
Industry needs to be monitored by
education and an open minded
approach To mining, logging, and
farming Techniques To allow for
more inovative and environmental
accepted practices, would by a
Far more acceptable solution The

this plan that places recreation above all else. After all it is true that one can draw more flies with honey than one can with vinegar.

We the native Idahoans or intelligent enough to look at the lake, study its problems and with help from the tribe and the needed outside agencies come up with a plan to keep our water quality improving. We love this area and its environs. Granted we have been asleep, now we are awake. This is a very informative pamphlet on our lake, it's

history, present conditions and hypothetical future predictions. It will be very useful to the citizens of the basin as we prepare our own C.D.A. Lake Mangmt Plan.

In closing I would like to say once more that if the increased recreational load is the cause of the problems as you say on page one of your document, then recreation should be monitored and limited, not our way of life. Why not find out how much pressure the lake can handle and stop it short of

Here all The lake; nor The basin are large enough To accomodate everyone. If we continue To improve our methods of production and safe limits are placed on The recreational use of our waterways Then The proposed future will n materialize and our lake will be safe.

I also notice That you took heed of The Small Leggers Council and others appeal of placing our county commissioners on The committees of This project. The on Thing wrong is that you salted Them away on some minescule

oblivious committee That sets the agenda, folks I would like once more To point out to you that if our county commissioners are not placed on the steering committee, This project holds no water. This is our birthright, our county commissioners are our elected officials to watch our ~~heritage~~ ~~heritage~~ and manage it for us and our children. You are bureaucratic appointees; outsiders who have shown very little concern for our welfare or our way of life. I ask you to go away once more and when you return please

have a plan that is more viable and acceptable or don't come back! No matter how you do it some will be displeased. I think it is better to displease the recreatio people than it is the people who live, work, and make their homes here.

Thank you!

P.S.

As a result of these meetings we at the S.L.C. believe that we can come up with a better plan than this one we need your help. Contact me at 245-3971 and lets beat these people at their own game. It's time to test our 1st Amendment Rights.

SMALL LOGGERS CONCIL OF IDAHO
Andy Jolliff Chir. 2011 Main St,Maries Idaho 8386

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12/Coeur d'Alene Field Office

Idaho Division of Environmental Quality
Geoff Harvey
2110 Ironwood Parkway
Coeur d'Alene ID. 83814

Concerning: Coeur d'Alene Lake Management Plan

To Geoff Harvey and

To whom it may concern, On Dec. 13th, at 7:00 pm at the w.w.p. auditorium in St,Maries the Small Loggers Council (S.L.C.) sponsered a clean lakes plan meeting. Our purpose was to draw up a plan that is more friendly to natural resouces production work, and place limits on the recreational, and developmental projects rather than put all of us out of work.

The meeting was attended by all those signing the inclosed list. There are serveral problems with the lake basin plan that has been proposed by the official staff. We would take this opportunity to ask that you consider these problem areas and make the necessary changes. One of the primary concerns is that although native "small potatoes" Idahoans have been invited to participate and offer input, this input is being ignored and a plan drawn up that fits the fancy of some entity other than native Idahoans. We feel our ideas have been largely ignored, or mutated to the point they no longer mean what we say.

One of the most obvious abuse is the fact that there were no provisions placed in this plan to deal with the customs and culture of this basin. Our way of life has been ignored and overlooked, as boater traffic is incouraged. We believe that the lake quality has to be maintained but not at the expense of our very livelyhood. We feel that until, as N.E.P.A. dictates, a social economic impact statement is filed, this plan should be halted.

At our meeting it was also brought up that the period designated as a public input period, November 7-1994--Dec. 21-1994, commenced two days before the first meeting or before the plan was made available. On a project of such magnitude and concern this is not even close to enough time, we feel that the window of opportunity for public input should be extended for atleast 6 months inorder for us to truley solicit public input and draw up a plan that the magority of us will agree with rather than oppose.

It was also voiced that many people (property owners) were totally unaware of this project. Why wasn't it publicized more when it is so important?, was asked more than once. There seems to be a feeling of mistrust among residents of the area. Untill these feelings can be dealt with this plan will not work. The S.L.C. asked to be on the foresty (TAG) but was ignored. Many voiced the sentiment that this plan is unconstitutional and is being forced down our thoats. Our ideas are being ignored as the bureaucrats push forward their ideas and attitudes. There was also the feeling that this plan is being rushed and shoved ahead to completion before people become aware. This can not happen in our free land. Either we voluntairley cooperate or we

aggressively oppose.

The last area of great concern was private property rights. This plan calls for takings by regulation to deny use, which has been declared illegal by the Supreme Court.

The "streams of concern", endangered species, and other classifications illegally take private property without due process or just compensation and that is unacceptable in Idaho. If people are not willing to cooperate voluntairley with this plan then something is wrong.

Therefore we of the "Small Loggers Council" take this opportunity to ask you that you grant the residents of this basin an extended window of opportunity for public input so that a more acceptable plan can be drawn up and our lake protected as well as our customs, culture, and the economic foundation of our basin. We ask for a period of six months moritorium on this project to insure that as many people in this basin participate as possible.

Thank You
Respectfully,

Andy Jolliff
Chir. S.L.C. 2011 Main
St,Maries Idaho, 83861

CC: The Honorable Phil Batt, Idaho Coverner Elect.
The Honorable Allen Lance, Idaho Attorney General
The Benewah County Board of Commissioners
The Bonner County Board of Commissioners
The Boundary County Board of Commissioners
The Kootenai County Board of Commissioners
The Shosehone County Board of Commissioners
The Latah County Board of Commissioners
The Coeur d'Alene Indian Tribal Government
Mr. Andy Jolliff Small Loggers Council
Mr. Dean Jonhson Idaho Dept. of Lands

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Coeur d'Alene Field Office

To whom it concerns,

In the past couple of month a delegation of the Small Loggers Council (S.L.C.) has attended several meetings of this C.D.A. Lake Mangmt Panel. In the St. Maries area much dissent was voiced against this plan. It was and is generally felt that the plan is a death rattle for logging, mining, farming, and personal property rights, our very way of life. We believe in fact the This struggle is over property rights, not lake quality. We feel that the regulating of property to prevent use, without directly taking it, by use of road closings, declaring threatened and endangered species, designating streams of concern, wetlands, wild and scenic rivers and buffer zones is a violation of our very personal property rights, and an attempt to hold our property against our will.

Because of these rules and this plan, The over regulation of our basin, there will be a direct impact on the economic viability of the rural communities the rural property values. Many of these people don't wish to become involved in the recreation Trades. In This country we are free To do anything we want

has a history of timber and farmin
as does Coeur d alene, the silver Valle
is a metals and timber based econom

In the entire lake drainage the private ownership of land is a goal and dream of the people, plus the basis for most of its economy.

Therefore we of the S.L.C. requis To see the Environmental Impact statement prepared for this plan, and in particular, those provisions that have been made to protect our custom culture, private property rights, and th economy of our various areas.

Due to your participation with Federal agencies you are required to have made such an evaluation and we need this document in the process of drawing up our own Basin Plan. Please rush us the above requested document as soon as possib

Thank you!

Andy Jolliff
Chair. S.L.C.
2011 Main

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 28, 1995

Andy Joliff
Small Loggers Council of Idaho
2011 Main Street
St. Maries ID 83861

Dear Mr. Joliff:

Thank you for the letters of comment developed for the Small Loggers Council of Idaho on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the many issues raised in your letters on the draft plan, the following comments can be offered. The issues raised concerning constitutionality, property rights and the need for National Environmental Policy Act review were addressed in a letter to you dated March 30, 1995.

The Coeur d'Alene Lake Management Plan was developed with an extensive public process. Three rounds of public meetings with each consisting of five separate meeting have been held to date. The CLCC will hold yet another review process on the plan. The plan was developed by technical advisory groups (TAGs) with participation of approximately eighty members of the public. The public comment period was 75 days.

The plan at the request of the Coeur d'Alene Basin Restoration Project's citizen's advisory committee addresses only water quality issues. Other issues including maintenance of life styles are beyond the scope of the plan.

The Small Loggers Council was not formally invited to participate on the forest practices TAG. This was an oversight of the planning work group. All TAGs were open to participation by the public and their existence and meeting schedules were published in a monthly newsletter which was part of the lake planning process.

The plan does not mention property rights, nor does any action item remotely suggest such an action. Since the plan does not create any authorities, it is incapable of property taking. Implementation of the plan's action items will rely on existing local, state and federal authorities. Any new authorities will require a legislative process.

The plan does not favor any resource or lake user group. The plan contains action items calling for improvement of sewage treatment and limits on recreational boat traffic as well as continued implementation of forest practices, development and agricultural best management practices.

Printed on Recycled Paper

The plan is based on two years of limnological data, developed by the USGS, and additional information developed by several other agencies including DEQ. The study results has been peer reviewed and accepted for publication.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

CITY OF COEUR D'ALENE
WASTEWATER DIVISION

CITY HALL - 710 MULLAN AVENUE
COEUR D'ALENE, IDAHO 83814
208/769-2281
FAX 208/769-2338

November 15, 1994

RECEIVED
NOV 16 1994
IDHW-DEQ
Coeur d'Alene Field Office

Idaho Division of Environmental Quality
Attn: Geoff Harvey
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Gentlemen:

We have received the *Coeur d'Alene Lake Management Plan (Draft of Nov. 7, 1994)* and have reviewed same. We would like to offer the following comments for your consideration:

Executive Summary (p.i).

Table 31 (p. v).
There is a typo error on Note 8. The text refers to phosphate while the superscript is placed by coliform bacteria datum.

Tables 31 through 33 (p. v-vii).
We have considerable concerns with the stated "Desired Condition" of the various water quality values. Certainly some are supported by the stated goals and existing conditions; others are not. However, we will address each area of concern within the comments to the main body of the plan.

Introduction (p. 1).

1st. Paragraph, Next to last Sentence (p. 1).
The last part of the sentence reads, "eutrophication increases the lake's hypolimnetic dissolved oxygen deficits were measured in ...." There is obviously missing text here.

Description of Lake and Its Watershed (p. 3).

Physical Attributes, 5th. Paragraph (p. 4).
The second sentence states, in part, "The lake's surface elevation is controlled by Post Falls Dam which ...." I'm sure WWP will not agree. They spent years in court and satisfactorily proved that the dam only controls flow and not the surface elevation. In fact, during winter months, the outlet waters are only 5 to 6 feet deep; there is a natural dam at the outlet. Even during summer months, there is a measurable hydraulic gradient between the outlet and the dam.

Summary of 1991-93 Lake Study (p. 17).

Objectives, Last Sentence (p. 17).
Literature cited includes one dated 1995. Is this possible?

Limnology, 4th. Point (p.17).
It is noted that phosphorus is, "...the nutrient most likely to control the rate of aquatic plant growth ...." Table 9 lists the nitrogen-to-phosphorus ratios. It can be noted that for the Lake Station 6, the mean ratio for 1991 was 17.1 and for 1992 it was 12.8. The accepted ratio for determining whether or not a water body is phosphorus or nitrogen limited is 16:1. Above that value, phosphorus limited; below, nitrogen limited. Is it consistent with good limnology to treat Station 6 as phosphorus limited?

Lake Management Plan (p.39).

Development- Stormwater, Roads, Wastewater, Misc. Topics- Table 26 & 27 (p. 58-61).
We applaud the recommended actions presented in both tables. However, we would recommend that all stakeholders be involved early in the TMDL process and have the opportunity to discuss appropriate water quality standards. The acceptance of inappropriate standards can ultimately cost residents extreme amounts while doing little practical good. The same can be said of the stormwater process.

Benefits of Management Actions for Nearshore Zone, Table 31 (p. 78).
Several concerns prompt questions about the data presented in this table.

* How and who determined the "Desired Condition" parameters and criteria? What discussions and what rationale lead to these?
* The legal standard for cold water biota for dissolved oxygen is 6 mg/l. Why is the desired condition higher at 7 mg/l? During summer months, will nearshore water temperatures allow for a 7 mg/l dissolved oxygen condition? Most recognized standards for DO show 6 mg/ to be the annual minimum for the oligo-mesotrophic state.
* The desired condition for phosphorus is 8 µg/l. According to a publication used by Organization for Economic Cooperation and Development[1], 8 µg/l is the mean concentration for the oligotrophic state for fresh-water lakes. Is this consistent (or even possible) for nearshore prevailing summer conditions? What are the future impacts to the citizens in terms of both development and cost? What will be gained with regards to the lake's condition? Wouldn't it be more appropriate to consider this zone as mesotrophic and set the standard accordingly; say, at 26.7 µg/l?[1] Or would it be more appropriate to consider this a transition zone of, say,

oligo-mesotrophic and set the standard at 15 µg/l?
* Why, under the current conditions, were "worst case" data presented? Isn't it more consistent with good limnology to use mean values? Doesn't this skew the goals considerably?
* Why is the desired secchi disk goal of 4 meters the mean of the mesotrophic state and the phosphorus is the mean of the oligotrophic state?
* The plan recognizes the inability to remove heavy-metal enriched sediments. The stated goal is to manage nutrients in such a way as to prevent their re-solubilization/migration. If the existing condition for zinc is 56 µg/l and the legal limit is 18.4 µg/l and there is nothing that can be practically done to lessen the zinc quantities, why doesn't it make sense to either change the desired condition or the legal limit?
* As was noted above, there is a problem with the note on the existing coliform data.
* Why is not chlorophyll *a* being proposed as a water quality standard parameter?

Benefits of Management Actions for Shallow, Southern Lake Zone, Table 32 (p. 82).
Many of the same questions expressed above would likewise apply here. Some additional points are as follows:
* The study noted that the zone was in fact a warm water biota-type of area. Why are cold water biota conditions being proposed, particularly for DO?
* Again, the phosphorus desired condition is listed as an oligo-mesotrophic state with a level of 12 µg/l concentration. Evidence presented suggests that historically this area was probably an eutrophic wetland and that it now could, at best, be described as a mesotrophic or meso-eutrophic water body. This would suggest that phosphorus levels could be expected to be in the 26.7 µg/l to 48 µg/l range.[1] By setting the goal at an oligotrophic range, what will happen to fishery production? How about waterfowl, habitat and other specie production?
* What about other water quality standard parameters? Should Chlorophyll *a* be used? How about coliform bacteria?

Benefits of Management Actions for Deep, Open Water Zone, Table 33 (p. 88).
As with the above tables, many of our questions would pertain to this table.
* What is the goal; oligotrophic or oligo-mesotrophic?

What is the rationale?
* What about other parameters such as chlorophyll a?

Monitoring Plan (p. 90).

1st. Paragraph, Last Sentence (p. 90).
It is stated that Tables 31 through 33 contain coliform monitoring recommendations. Table 32 does not.

General Comments to Nutrient Management.

While we concur with the findings of the study that excessive phytoplankton and periphyton production will contribute to anoxic conditions in the hypolimnion, this is not the only potential source of oxygen depleters. Biochemical oxygen demanding (BOD) substances can also contribute to these unwanted conditions. Any organic matter or reducing compounds entering the lake will contribute to these conditions. Neither the 1991-93 study nor the management plan addresses the potential effects or management of the potentially significant organic loading to the lake and its tributaries as well as its outlet, the Spokane River. The nutrient loading associated with this loading (and use) is not examined.

Historically, the navigable reaches of both the St. Joe and Cd'A rivers as well as the lake have been used for log transport. After more than a hundred years of operations, significant, unquantified log debris has been deposited in the water courses. The following notes some of the knowns and unknowns of the effects of this material as well as some comparative analyses.

Known:

* Station # 6 was "up lake" of the log storage area; and didn't represent a large, deep hole under the storage area.

* During low winter lake elevations, the river is too shallow to float log "bundles" down to the mills. (These bundles tend to minimize individual logs from abrading against each other and minimizes the amount of bark that is deposited in the water.) Bundles are broken and large groups of individual logs are "herded" by boats down to the mills.

* Video tape near our outfall and anecdotal reports from diver a indicates that much of the bottom under the storage area and the extreme upper reach of the river is covered with wood debris. Suspended sediments under the storage area extends up into the water column several feet and makes diving visibility nearly zero.[2]

* During both 1993 and 1994, anoxic conditions occurred in the deep waters under the storage area. (This information was furnished to the U.S.G.S.)[3].

* Grab samples of bark found along the river bank (species unknown) when tested indicated that the phosphorus content was as much as 426 mg/kg or 426,000 µg/kg.[4].

* A bottom organic sediment sample tested showed as much as 654 mg/kg or 654,000 µg/kg of phosphorus.[4].

* The phosphorus concentration in the outlet waters is significantly higher than that found in the main lake body as well as the reported levels in Station #6. The following tabulates recent results:

1. From the results of the lake study, the 1991 mean concentration within the euphotic zone at Station #6 was 14.2 µg/l; the 1992 mean was 5.2 µg/l.

2. The Lake Spokane (Long Lake) TMDL model uses an outlet water background mean concentration of 8.68 ± 2.4 µg/l.

3. The following were observed results of outlet water phosphorus concentrations for the following years:[4].

1990- 11.4 ± 3.42 µg/l
1991- 8.67 ± 1.92 µg/l
1992- 13.5 ± 2.31 µg/l
Mean- 11.2 ± 1.98 µg/l

4. The study's area-weighted lakewide means are reported as follows:

1991- 6.5 µg/l
1992- 3.7 µg/l

5. Sampling Site #1 means are reported as follows:

1991- 5.2 µg/l
1992- 2.4 µg/l

* Based on results calculated by Soltero, et al.[4]. (1993), it can be noted that the following phosphorus loads exited the river (overall daily means):

1991- 79.46 (± 17.61) kg/day = 174.8 (± 38.7) #/day.
1992- 44.56 (± 7.61) kg/day = 98.0 (± 16.7) #/day.

* Mean daily flows out of the lake and into the river were:[4]

1991- 2418.5 mgd
1992- 869.9 mgd

* Bark deposits can have adverse effects on benthic organisms.[5]

Unknown:

* Phosphorus release rates from the decay of wood debris and bark is unknown.

* The BOD results have not been quantified.

* The nutrient budget (loading) from wood debris is unknown, but appears to be significant.[4]

Analyses:

Based on the above data and simplistic assumptions, the variability of the lakewide mean phosphorus concentrations and the higher outlet concentrations, the following comparisons are made:

Area-Weighted Lakewide Means. (Daily loads)

1991
[(2418.5 mgd)(8.34 #/gal.)(6.5 µg/l)]/1000 = 131.1 #/day.

1992
[(869.9 mgd)(8.34 #/gal.)(3.7 µg/l)]/1000 = 26.8 #/day.

Outlet Loads (Daily loads from above.)

1991 174.8 #/day

1992 98.0 #/day

This suggests that a significant phosphorus load is present at the outlet. Looking at the differences, we would have the following:

1991
174.8 #/day - 131.1 #/day = 43.7 #/day = 7,250 kg/year.

1992
98.0 #/day - 26.8 #/day = 71.2 #/day = 11,813 kg/year.

The comparison is very dramatic if Station 1 results are used.

It can be noted that the city's advanced wastewater treatment plant discharged the following (Based on growing-season daily means.):

1991	23.1 #/day = 3839.8 kg/year.
1992	20.2 #/day = 3343.4 kg/year.

In view of the above data, we would like to offer the following recommendations for changes in the management plan:

1. Phosphorus release rates and total loadings from wood debris should be determined.

2. The management plan should address the issue of BOD loadings and their effect on DO depletion in the hypolimnion.

3. The transportation of logs on both the lake and rivers should be viewed as point sources and should be regulated with the use of NPDES permits as any other point source is.

4. Until proper management of the logging traffic occurs and other non-point source strategies are applied, wastewater treatment plants should not be made to comply with stringent nutrient removal requirements that could lead to doubling or tripling of rates.

[1.] Ryding, Sven-Olof, Rast, Walter, *The Control of Eutrophication of Lakes and Reservoirs*, UNESCO and The Parthenon Publishing Group, Paris France. 1989. (p. 38-39, 260-263)

[2.] Michalski, Tom, Personal Communication and video taping. 4470 Pinion Pk. Rd., Post Falls, Idaho. 1993.

[3.] Fredrickson, H. Sid; Personal Communication to Woods. 1993.

[4.] Soltero, Raymond A., Appel, Ronald J., Sexton, Linda M., Buchanan, John P., *Comparison of Non-Point Source Phosphorus Loading to the Spokane River from its Headwaters to Long Lake, Washington, with That Used in the Spokane River Phosphorus Attenuation Model*, Eastern Washington University, Cheney, Washington. July 1993. (p. 7-17, 107-112)

[5.] U. S. Environmental Protection Agency, *Fact Sheet for: Water Quality for Logging Operation in Alaska*, Region 10, Seattle, WA. 1992.

We sincerely hope that you take our recommendations under serious consideration and would hope to receive a response to our questions and concerns.

Sincerely,

H. Sid Fredrickson
Wastewater Superintendent

cc: Dr. Paul Woods, U.S.G.S. - Boise
Ms. Gwen Burr, DEQ - Cd'A
Mr. Roger Tinkey, DEQ - Cd'A
Mr. Allen W. Tudor, WW Supt. - City of Post Falls
Mr. Carl "Corky" Mattingly, WW Supt. - So. Fork Sewer Dist.
Mr. Phil Brown, WW Supt. - City of St. Maries
Mr. Robert Lloyd, Public Works Director - City of Rathdrum
Mr. Kent Helmer, Administrator - HARSB
Mr. Rodger Wm. Lewerenz, Public Works Director - City of Cd'A
Mr. Don Keil, Asst. WW Supt. - City of Cd'A
Mr. Dave Shults, Proj. Coord. - City of Cd'A
Mr. Dave McKeown, Lab. Supr. - City of Cd'A

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 24, 1995

Sid Fredrickson
Waste Management
4902 Industrial Way
Coeur d'Alene ID 83814

Dear Sid:

Thank you for the letter of comment developed by the City of Coeur d'Alene on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, some changes have been made to the plan. The data developed by the USGS indicates that phytoplankton growth in the lake's waters is primarily controlled by phosphorous and zinc concentrations, rather than by nitrogen species concentrations. These observations are for the whole lake system and do not imply there are not problems and sources near the outlet of the lake which may have a localized affect on the Spokane River. These problems are however best addressed as a nutrient source to the river and modeled in the effort to develop a nutrient wasteload allocation for the river. The text of the plan reflects this broader interpretation of the data and is more fully explained in the USGS technical report which is in press.

The general goal for the lake as decided by the public is for slow improvement of the lake's quality. The "goals tables" for each zone of the lake interpret the general goal based on Idaho's water quality standards including the antidegradation and special resource waters policies. The tables have been revised with numerous footnotes to explain the values chosen. Some parameters not specifically noted in the standards, such as Secchi depths were used as benchmarks of the clarity the public expects. Chlorophyll was not used because of its more inherent variability during the year and the difficulty of predicting the variability. Secchi depths will be inclusive of chlorophyll changes. Except for the Secchi depths, all the standards are based on either state standards and/or EPA guidance.

The water quality data indicates that with the exception of a few bays (notably Kidd Island Bay) and locations (the "tub" near the outlet) the near shore parameters suggest it is oligotrophic as are the open waters of the lake. For the purposes of the goal table, the near shore zone is treated this way.

The issue of the log debris near the mouth and its impact on the waters of the "tub" near the lake outlet is an isolated issue which is better addressed in a Spokane River wasteload allocation. Nutrient yield from the logs is a complex issue on which the scientific literature does not agree. The plan does address oxygen concentrations and demand for the lake waters in general through nutrient management.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

COMMENT SHEET

RECEIVED
NOV 22 1994
IDHW-DEQ
Coeur d'Alene Field Office

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)

I feel it is an obvious attempt by the D.E.Q. I.P.A., Environmentists, and Large Corperations, to overregulate and discriminate against small Land Owners and small Sippo Loggers.

2. What do you like in the draft plan? Please be as specific as possible.

It has a lot of good information that can be used to educate people on what actions need to be taken, such as erosion control & waste water management Ideas.

3. What do you dislike in the draft plan? Again, be as specific as possible.

the Implication that some groups of people (Logger Landowners) must be heavily regulated, while other groups need only support and encouragement. Also it seems other problems are not even adressed. (ever hear of (Clear cutts)??

4. Please list any concrete suggestions you have for improving the plan. (Direct)

1, Incorperate the D.C.L.'s Small Salvage Sales progra Into the Lake plan. 2. Give landowners, and Loggers the same chance as boaters by providing Informati and encouragement rather than ultimatums and regulations. (Please!!)

5. List any other comments you have about the draft plan.

the more I look at this plan, since they've decided not to clean up the Lake bottom directly the more it looks like pork, with lots of Tax money and new staffs headed by power hungry Beaurocrats!!

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Dyane Smith
Judy Smith
Owner, 120 acres Timber
Located in Planner cr.
Drainage

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 30, 1995

Duane Smith
Plummer ID 83851

Dear Mr. Smith:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The Coeur d'Alene Lake plan was developed in a cooperative effort with approximately eighty citizens, developing the action items in five different technical advisory groups (TAGs). The citizens emphasis was on taking the common sense steps necessary to protect a lake which has quite good water quality. The plan does not create any new regulatory authority. The plan relies heavily on education and information, although some regulation of development is suggested. Forest practices and agriculture action items rely on existing programs which have a record of results.

In the November draft, tough language in both the forest practices and agriculture sections was requested by development interests, who feel they will have new regulation and are willing to shoulder it as long as agriculture and forest practices do their part. This language was unnecessarily inflammatory and has been removed. Action items are now phrased uniformly throughout the plan.

Clearcutting was addressed by the forest practices TAG. The participants felt that private, state and federal managers currently seldom use the practice and when they do, it is necessary for forest health. For this reason the notes from the meetings indicate the group felt it was not worth addressing.

The plan will require funds to implement its action items. The participants in plan development sought cost effective implementation, with concepts as nutrient trading to gain the largest nutrient reductions at the lowest cost.

The plan does not advocate removing metals contamination from the sediments of the lake. The results of the three years of study clearly indicate that these metals will remain locked in the sediments as long as the lake is well oxygenated. The key to sustaining this condition is nutrient management. Conservative estimates of dredging the lake to remove metals range from 40 to 60 million dollars, while implementation of key lake plan action items to maintain the lake quality is a small fraction of that amount. Given the high expense of dredging not to mention the most probable undesirable environmental effects, nutrient management is clearly the most cost effective option.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey

Geoffrey W. Harvey
Senior Surface Water Analyst

Copy to BH

REFERENCE:

COEUR D'ALENE TRIBE

ROUTE 1
TRIBAL HEADQUARTERS • Cd'A SUBAGENCY
PLUMMER, IDAHO 83851
(208) 686-1800 • Fax (208) 686-1182

RECEIVED
DEC 8 1994
IDHW-DEQ
Coeur d'Alene Field Office

December 2, 1994

Gwen Burr, Regional Administrator
Idaho Dept. of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, Id. 83814

Dear Gwen:

Recently the Tribal Council and myself had an opportunity to review the draft Coeur d'Alene Lake Management Plan collectively drafted by your department, USGS, the Clean Lakes Coordinating Council and Tribal staff. I believe it is important that the Coeur d'Alene Tribe provide you with our initial thoughts and concerns, before the final lake plan begins taking shape.

In general, we have no serious problems with the technical details, the four lake management zones and water quality objectives for these zones. Our concern centers more on how this document deals with the perception of the Tribe's historical role with the lake, the lake's role in the cultural heritage of the Coeur d'Alene Tribe and the future of the Tribe in using and managing this special body of water. I will be more specific.

1. Somewhere in the Plan's introductory section we must include more information and details about the Tribe's use, dependence and enjoyment of this lake and the critical role these waters played in the Tribe's cultural and spiritual development. It is not just another north Idaho water body--Coeur d'Alene Lake hold a special, sacred spot in the life of the Tribe, and this must be conveyed to the public and future managers. The current draft does not convey this message adequately.

2. This draft is labeled a "lake management plan", but in reality it is almost exclusively a water quality management plan. The Coeur d'Alene Tribe is presently exploring preliminary options for future lake "management" in anticipation of a favorable decision(s) on Tribal claims to the lake's bed/banks. It may be less confusing to the public if this present document is renamed the "Coeur d'Alene Lake Water Quality Plan" or "Coeur d'Alene Lake Nutrient Management Plan" to minimize confusion in the future over who is managing what resource.

We realize this may raise questions about whether this plan fulfills certain EPA "Clean Lakes" criteria for implementation funding, or meets Idaho Clean Lakes Act requirements. This needs more consideration.

3. A primary issue that will soon be examined by tribal attorneys is that of tribal sovereign rights within the reservation, and the related legal claims to the bed/banks of Coeur d'Alene Lake. The Council cannot approve or be a signatory on any plan or document that could in any manner weaken our legal claims in these outstanding lawsuits. This will need to be explored very carefully in the next few weeks.

In the extreme case we may insist that the Tribe's name be removed from the document as a cosponsor; however, it may be possible that this issue can be resolved by a strong, clear, up-front discussion and disclaimer as to the Tribe's lake ownership claims. We must have legal counsel on this before we proceed too much further.

We regret having to raise these issues so late in the process, however the Tribal staff has raised some of these concerns in the past through telephone conversations and meeting with DEQ staff. Now that the draft lake plan is written it is critical that you and the other planning participants understand the Tribe's concerns. Please understand our intent is to continue as a full cooperator and participant in the CBRP process. Hopefully we can work out the needed details and proceed without too much delay.

Sincerely,

Ernest Stensgar, Chairman
Coeur d'Alene Tribal Council

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422 Philip E. Batt, Governor

August 30, 1995

Ernest Stensgar, Chairman
Coeur d'Alene Tribal Council
Tribal Headquarters
Route 1
Plummer ID 83851

Dear Chairman Stensgar:

Thank you for the letter of comment developed by the Coeur d'Alene Tribe on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. During the revision process additional material on the tribe was added by tribal personnel working on the plan. As the Tribe and the Coeur d'Alene Basin Restoration Project's Citizen's Advisory Committee suggested, the plan has been limited to a water quality plan. Action items which were developed to address non-water quality issues were preserved in an appendix for use as a starting point for some future planning group.

A disclaimer was developed by tribal legal staff and added to the front of the plan as a mechanism of preserving tribal claims. The text of the disclaimer is attached.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN NOVEMBER, 1994

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DEC 2 1 1994
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Coeur d'Alene Field Office

1. What is your overall impression of the draft plan? (1 or 2 sentences)

It incourages development and recreation at the exclusion of natural resource based activities, which are our customs and culture. As it stands it is illegal.

2. What do you like in the draft plan? Please be as specific as possible.

Its case for future problems with water quality. The section on mechanical harvesting of lake weeds.

3. What do you dislike in the draft plan? Again, be as specific as possible.

Aggressive implementation. The rules and regulations needed for inforcement. Its disreguard for our customs, culture, and economic stability. The foreigners on the upper level committees

4. Please list any concrete suggestions you have for improving the plan.

1) Re do it. Pay more attention to what we the people of the basin say. Protect our property rights, customs, and culture. 2) Redesign the committees to include county commissioners on steering committee 3) Rewrite the forestry section,

(margin note: design machinery to dredge heavy metals.)

5. List any other comments you have about the draft plan.

Take your heads out, this plan tries to regulate and enforce on us. You'd be well advised to come back with a friendly-co-operative attitude,

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Don't treat us like your ignorant x-state, kids.

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)

Excellent! A lot of very good work done by dedicated people.

2. What do you like in the draft plan? Please be as specific as possible.

Complete and thorough approach to the solution and the gradual and steady implementation.

3. What do you dislike in the draft plan? Again, be as specific as possible.

4. Please list any concrete suggestions you have for improving the plan.

High emphasis on reduction of septic contamination both from residences and recreational sources.

5. List any other comments you have about the draft plan.

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)
this report does not reflect the physical and historical facts about this Lake system. such as the great fire of 1910 in the upstream watershed.
The Annual Lowering of the lake level causes an annual flushing of the shallow Benchmark, Chatcolet, Hidden and Round Lakes that could cause the Chemistry of the Lake to change during the year.

2. What do you like in the draft plan? Please be as specific as possible.
Table 21 on page 39 provides real data about the loading of phosphorus and total nitrogen

the Report recognizes that there are seperate areas of the Lake that have very different characteristics and as a result different problems.

3. What do you dislike in the draft plan? Again, be as specific as possible.
the lack of more historical numerical data about the chemistry and amounts of water in the lake and its tributaries
there are several point sources of problem chemicals in the watershed area that the public needs to know about befor any decision about the nutriants in the Lake System.

4. Please list any concrete suggestions you have for improving the plan.
Include a do nothing option along with what the Water Quality would be Like in 10 years if changes in management occur.
Include a numerical model of the lake, its inflow, its outflow discharges and transfers between zones plus a salt balance of each zone showing changes by Quarter of the year for at Least 15 years

5. List any other comments you have about the draft plan.
If federal money is going to be used to finance management of Coeur d'Alene Lake, a do nothing option should be part of the plan To comply with federal Environmental Law.
Many of the Lakes problems can be traced to point sources and the report should discuss them and make projections for water Quality changes if such point sources are eliminated (such as the Page Sewage plant discharge)

Thank you for providing your comments on the Coeur d'Alene Lake Management Plan. Please return this form and/or any other written comments to:

Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

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DEC 20 199
IDHW-DE
Coeur d'Alene Field

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JAN 23 1995
IDHW-DEQ
Coeur d'Alene Field Office

COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)

   Very complete with a large amount of detailed material.

   Most of the plan is being done now and since it is so successful will not need additional staff or funds.

   Studies should have been in English (American) measurements. This country was surveyed in English. Metric means nothing.

2. What do you like in the draft plan? Please be as specific as possible.

   Relies on the things that have been proven, such as the Forest Protective Act, Soil Conservation practices and other BMPs. It shows that these things have been working and that we will not need major additions or restrictions.

3. What do you dislike in the draft plan? Again, be as specific as possible.

   Stream-bank setback for work along streams as proposed is too severe. Should depend on slope and present cover among other things.
   Ag Action 3 is not needed as given. Special grants and plans usually detract from the real conservation work to be done. Projects like the RC&D of several years ago spend money but get little conservation--Iwas on the KSCD board at the time.
   No more studies--St.Joe or any where else.

4. Please list any concrete suggestions you have for improving the plan.

   Reduce damage from Highway construction or other road building.
   Keep up educational programs on use of BMPs-they are much more important than punitive actions after the damage is done. This is particularly important in highway construction.

5. List any other comments you have about the draft plan.

   Try to get the Tribe to improve farming and construction work. They could not even qualify for ASCS conservation payments on practices in 1993, resulting in more soil loss some of which goes into the lake.

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COMMENT SHEET

COEUR D'ALENE LAKE DRAFT MANAGEMENT PLAN
NOVEMBER, 1994

1. What is your overall impression of the draft plan? (1 or 2 sentences)

Generally alright; as more citizens are involved, more improvements are likely to occur.

2. What do you like in the draft plan? Please be as specific as possible.

TAC groups input was generally quite good & most recommendations feasible.

3. What do you dislike in the draft plan? Again, be as specific as possible.

Recreational use responsibilities not well defined.

4. Please list any concrete suggestions you have for improving the plan.

Still need to more adequately address the soil rehabilitation issue not only for a vegetative barrier from the heavy metals, but to reclaim all exposed areas to control, contain sediment erosion.

5. List any other comments you have about the draft plan.

In view of the unlikely prospect that vast amounts of funding will be found, it will be critical that all implementation funds be applied on the ground solutions without any deductions for administrative overhead; implementation with full

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Geoff Harvey
Idaho Division of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

channeled thru the counties (Board of County commissioners) in which the various problems exists as well as the CDA tribe

problems as well as the lak

non-land managing agencies should not recieve any implementation funds, especially if these funds are tax payer dollars.

(Please refer to the SCS CDA Riverbasin Study regarding land ownership & land uses

USFS ≈ 64% . . .
Private ≈ 22%
IDL/IDF&G ≈ 6%
BLM ≈ 5%
CDA Tribe ≈ 0.4%
etc.

IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

2110 Ironwood Parkway, Coeur d'Alene, ID 83814-2648, (208) 769-1422

Philip E. Batt, Governor

August 30, 1995

R. K. Brown
HCO #1 Box 225
Desmet ID

Dear Mr. Brown:

Thank you for the letter of comment you developed on the Coeur d'Alene Lake Management Plan. The plan has been several months in revision, but we are now about to send it to the Clean Lake Coordinating Council (CLCC) for their review process.

In response to the issues raised in your letter on the draft plan, the following comments can be offered. The plan does describe the physical setting of the lake and some historical facts. I believe their is a passing reference to earlier forest fires. The technical report (Woods and Beckwith, in press) contains this information in greater depth and indicates the 1910 fires as a defining historical event.

The hypothesis of flushing of the shallow southern lake has been suggested in several forms both previously and as recently as a CBIG meeting this spring. Insufficient data exists to assess the validity of these hypotheses.

The point discharges of treated wastewater effluents as well as chemicals (most often adit or treatment pond discharges of trace metals), have been quantified. The nutrient sources are covered in the plan. The metals sources are dealt with in our source control program centered in the Silver Valley. Major sources have NPDES permits. The metals sources of the Silver Valley supply 3% of the metals load, while unpermitted adit drainages account for an additional 7%. The majority of the metals load is from nonpoint sources, which consist either of tailing piles or more often fluvially deposited contaminated sediments. These major sources are being addressed with removal programs in the Silver Valley.

The plan does not contain a no action alternative. The plan is developed with state funding under the Nutrient Management Act. No federal NEPA review is necessary. Since a no action alternative was illegal (water quality criteria are exceeded in the lake) and EPA 314 program guidance does not speak to a no action alternative, it was omitted. A discussion of the reasons is present in the goals section.

The plan lays out the action items requiring implementation and a priority for their implementation, but does not include a rigid time line as ten years.

A predictive model of the lake was calibrated and responses to various scenarios were modeled. Among these was the removal of all point discharges. This scenario provided little improvement in the model runs. These are briefly covered in the Nutrient Load/Lake Response Model section. Greater detail is available in the technical paper (Woods and Beckwith, in press).

Reference:

Woods, P.F. and Beckwith, M.A., in press, Nutrient and trace-element enrichment of Coeur d'Alene Lake, Idaho: U.S. Geological Survey Open-File Report 95-xx, xp.

Thank you for participating in the lake planning process. I trust you will continue to participate as the CLCC conducts its review of the plan.

Sincerely,

Geoffrey W. Harvey
Senior Surface Water Analyst

APPENDIX F

Comments and Letters of Comment Received by the Clean Lakes Coordinating Council on the Final Draft

CLEAN LAKES COORDINATING COUNCIL

2195 Ironwood Court • Coeur d'Alene, Idaho 83814

Technical Advisory Group

Public Advisory Committee

Public Awareness

Clean Lakes Planning

Phone (208) 667-3481

MEMORANDUM

DATE: November 1, 1995

TO: CLCC

FROM: Lisa Prochnow LP

SUBJECT: Public Comments on Coeur d'Alene Lake Management Plan and **November 7 meeting on Plan adoption**

As decided at our last October 24th Public Meeting, our next meeting on the CdA Lake Management Plan is scheduled for **Tuesday, November 7, 1995 at 1:30 in the upstairs conference room at the Panhandle Health District.**

At that time the CLCC may review and discuss the additional comments submitted on the Plan (see below - summary of oral comments made at the hearing and; attached - additional written comments). Tuesday afternoon the CLCC is scheduled to vote on adoption of the CdA Lake Management Plan. Please let me know if you cannot make the meeting. I'll look forward to seeing you all next week and thank you for all your efforts.

SUMMARY OF PUBLIC COMMENTS MADE AT THE CLCC 10/24 HEARING ON THE DRAFT COEUR D'ALENE LAKE MANAGEMENT PLAN

The following is a summary of the oral comments made on the draft Coeur d'Alene Lake Management Plan at the Clean Lakes Coordinating Council Public Hearing on October 24, 1995, at North Idaho College.

Liberty Harris asked about the connection of the CdA restoration project with the Plan. She asked if the metals are a problem and asked if the metals cannot escape in the sediment then why are they a problem?

Geoff Harvey with DEQ explained that if we keep phosphorous and sediment out of the lake, metals will be prevented from escaping where the metals stay bound to the sediments.

Buddy Paul, President of the Coeur d'Alene Lake Property Owners Association and as a participant in the development of the Plan through his involvement on the Technical Advisory Groups (TAG), expressed strong support for the Plan. He felt privileged to live on the lake and wanted to continue to drink the water. He stated his group is "willing to do our share". Mr. Paul agrees "no net increase is reasonable, although development can happen and still help reduce phosphorous out of the lake with tax credits and trade-offs, for example.

Chip Corsi is a fisheries biologist with Fish and Game. He expressed his support for the Plan and complimented the approach taken in its development. He was a TAG member and directly involved in the development of the Plan. He would like to see more emphasis on lower cost alternatives for river bank stabilization and reduction of boat wakes. He also discussed the importance of incorporating native vegetation and restoring wildlife habitat along streambanks. He explained there should be an integrated approach. **(Also see Mr. Corsi's written comments, attached).**

Letter from Plum Creek submitted for the record.

Ken Lustig, Environmental Director, PanHandle Health District supports the Plan and the process. He expressed the need for a mechanism to implement the plan and identified the Clean Lakes Coordinating Council as the appropriate group to do so. He also encouraged the Counties to help.

Ken pointed out there were no comments received from the Forest Service but there were comments from BLM. "There is no established mechanism for horizontal communication and there needs to be. The Plan needs to be implemented by the CLCC. The CLCC must evaluate the agencies programs and identify where there are resource needs or management issues. This is the problem with an unfunded mandate." Ken also asked everyone to think about-- when does the lake reach its capacity?

Ron Hanson agreed with Ken's comments and added that the Marine Sheriff's Dept. should also make checking toilets on boats a priority.

Gene Hedland served on the South Lake TAG and discussed methods for removal of aquatic weed. He explained the their weed mower made an 80% difference in water clarity.

Dave Hedland agreed with Gene Hedland's comments. He remarked that there is no such thing as helplessness and there are many things we can do at the local level.

Charles Finan with the CdA Tribe was involved in the process and expressed support for the Plan. He explained extreme care must be taken to prevent point and nonpoint source pollution. "There must be a cooperative management of the watershed such as a Lake Forum where shared responsibility will be taken." He believes in property

rights but there must be implementation of Best Management Practices and the Forest Practices Act. "This is a good place to start but we must take greater care of what we have."

Bob Hammes, Clean Lakes Coordinating Council Member, described the need for mutual responsibility. "It is important to find where the problems are coming from and stop them. Don't pass it on, it's everybody's responsibility."

CLCC Chair, and former Bonner County Commissioner, Susan MacLeod with no further comments, the Chair closed the meeting by asking the audience for a call to help and encouraged the public to contact Agencies, Commissioners and Legislators to help support protection of our lakes and implementation of the lake plans. She explained to members of the public that we need to be advocates and there must also be a call to those citizens who worked on the Lake Management Plans--that our job isn't done yet.

CLCC member and former Shoshone County Commissioner Bill Seaton made a motion to accept any additional public comment until 5:00 October 31, 1995.

The CLCC will reconvene in two weeks, on November 7 to vote on adoption of the CdA Lake Management Plan.

Seconded by CLCC Bob Hammes. Motion carries unanimously.

Plum Creek Timber Company, L.P.
P.O. Box 160
Columbia Falls, MT 59912
406/892-2141

October 24, 1995

Division of Environment
RECEIVED
OCT 26 1995
Coeur d'Alene Field Office

Clean Lakes Coordinating Council
c/o Lisa Prochnow
2195 Ironwood Court
Coeur d'Alene, Idaho 83814

Re: Comments on the final draft of the Coeur d'Alene Lake Management Plan

Dear Council Members,

I am very pleased with the final report that has been prepared. I wish to thank all other individuals who took time to participate on a Technical Advisory Group, and the DEQ personnel who were involved. I have seldom seen a management plan that had so much involvement by affected citizens and businesses. But I believe that this kind of involvement is needed for any watershed planning effort to be successful.

The only comment I have on the document is in regard to Appendix C. This appendix outlines several recommendations which are acknowledged as being beyond the scope of the plan in that they do not directly relate to water quality management.

Several of these recommendations in Appendix C suggest that water quality standards should be modified, most of which would directly influence forest landowners in the watershed. These include requirements for increased tree retention along Class I and II streams, and the modification of water quality standards to require a certain amount of "residual pool volume," and that Riffle Stability Indices be within a certain range.

Plum Creek believes that these Appendix C recommendations should not be included in the report for several reasons. First, as acknowledged in the document, these recommendations are beyond the scope of the management plan. Every other Technical Advisory Group developed recommendations that were within their assigned domain and directly related to attainment of the stated goals. The recreation subcommittee of the Development TAG did not stay within their bounds in this effort and should not be rewarded by having an appendix for all of their recommendations which did not apply. Second, most of the Appendix C recommendations would directly affect forest practices in the watershed and the Forest Practices TAG was not involved in developing them. And third, as a hydrologist, I can tell you that many of the Appendix C recommendations have little or no scientific basis.

I and many other individuals spent many evenings developing a well thought out, achievable, set of forest practice recommendations for maintaining the improving trend of Coeur d'Alene Lake.

It is dismaying to see that this effort has been usurped by another TAG. I guess the lesson learned is that I should have participated in every TAG to ensure that I had a voice in the development of forest practice recommendations. I sincerely hope the Council removes Appendix C from the document.

Sincerely,

Brian D. Sugden
Forest Hydrologist
Plum Creek Timber Company

cc: Geoff Harvey, Idaho DEQ
Jack Skille, Idaho DEQ
Brent Stinnett, Plum Creek Timber Company
Dale McGreer Western Watershed Analysts
Terry Cundy, Potlatch Corporation

IDAHO FISH & GAME
PANHANDLE REGION
2750 Kathleen Avenue
Coeur d'Alene, Idaho
83814

Phone (208) 769-1414 • Fax (208) 769-1418

Philip E. Batt / Governor
Jerry M. Conley / Director

October 27, 1995

RECEIVED
NOV 6 1995
PANHANDLE HEALTH

Clean Lakes Coordinating Council
2195 Ironwood Court
Coeur d'Alene, ID 83814

Dear Council Members:

REFERENCE: COMMENTS ON THE FINAL DRAFT OF THE COEUR D'ALENE LAKE MANAGEMENT PLAN

We have reviewed the final draft of the Coeur d'Alene Lake Management Plan. Overall, we believe the plan represents a strong community effort to address important issues affecting water quality in the lake, including incorporation of a watershed approach to address nutrient loading in the system. Following are comments on some specific portions of the plan:

- The Department supports the Fisheries and Boat Use goals and actions in Appendix C. While direct benefits to water quality may not be apparent from some of these actions, they are clearly designed to protect beneficial uses and therefore go hand in hand with other goals and actions in the plan. Actions 1 and 2 under the Fisheries goal, and Action 1 under the Boat Use goal directly address water quality issues. IDFG should be listed as a lead under Fisheries Action 3 as fish passage is also a Department responsibility. WQ BOT NOT TO LAKE TO STREAMS

- In our comments on a previous draft of this plan (Dec. 13, 1994), we suggested Action 3 under the Forest Practices section was not needed. We believe there has already been considerable streamlining of the stream alteration permit process, and to do any more could compromise the level of peer review and level of information available to make good decisions on. We believe the end result would be impacts to water quality and fish habitat. NOT OVERKILL TAC

- On Action 9 under Forest Practices, we recommend IDL be listed as a lead agency for implementation, as IDL is managing a considerable amount of Endowment land in the basin. We believe road maintenance is currently underfunded, particularly on federal ownership, and that unmaintained roads are major water quality problem in the basin which eventually impact beneficial uses in the lake. We support this Action, and recommend it become a priority 1. OK

- Action 10 encourages landowners to manage forestlands to minimize potential water quality

impacts from high intensity wildfire while maintaining other resources. As we stated in our comments on the previous draft (Dec. 13, 1994), we are unaware of any studies in the Northern Rockies which have observed long term impacts to water quality from large wildfires. Conversely, some management actions designed to prevent wildfire can and do result in long term chronic water quality impacts.

- We would still like to see more emphasis on limiting boat wake damage to river banks through the use of enforceable, sensible boating restrictions. The alternative of mechanically stabilizing banks carries substantially higher economic costs with it. We recognize mechanical stabilization will be necessary in some areas, and commend the plan for emphasizing stabilization with vegetation. We further recommend some consideration be given to the affect of water level management on river bank stability, and that upcoming relicensing of the Washington Water Power project at Post Falls may provide a means for addressing this issue.

We are encouraged by the recognition throughout the plan of the importance of maintaining riparian vegetation to stabilize banks and shorelines and control nutrient and sediment transport. This theme appeared in all aspects of the plan to some degree, and should be an important component of any management, from urban development to recreation and natural resource extraction.

We commend the Council and the large number of participants for drafting this plan, and hope it will become a useful tool in guiding efforts to improve water quality in Lake Coeur d'Alene. Thanks for the opportunity to comment.

Sincerely,

FOR

Paul L. Hanna
Acting Regional Supervisor

PLH:CEC:kh

C: Cal Groen, IDFG, Boise